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Appropriate Assessment Screening Report and Natura Impact Statement

University of Galway –
McLaughlin Building



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Table of Contents

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1.	INTRODUCTION	3
1.1	Background	3
1.2	Statement of Authority	3
1.3	Methodology	3
1.3.1	Appropriate Assessment Process	3
1.3.2	Ecological Survey Methodologies	4
1.3.2.1	Ecological Multidisciplinary Walkover Survey	4
1.3.2.2	Otter Survey	5
1.3.2.3	Fisheries Habitat Assessment	5
1.3.3	Desk Study	5
1.3.3.1	Scoping and Consultation	6
2.	DESCRIPTION OF THE PROPOSED DEVELOPMENT	7
2.1	Site Location	7
2.2	Characteristics of the Proposed Development	9
2.2.1	Development Description	9
2.2.2	Construction Details	12
2.2.3	Site Establishment	12
2.2.4	Demolition Plan – McLaughlin Building	13
2.2.5	In-Stream Works	13
2.2.6	Construction Waste Management	14
2.2.6.1	Demolition waste materials	15
2.2.6.2	Hazardous Waste and Fuels	15
2.2.7	Remedial works to culverts	15
2.3	Water Management	17
2.3.1	Water Mains	17
2.3.2	Foul Water Drainage	17
2.3.3	Surface Water Drainage	17
2.3.4	Flood Risk Assessment	17
2.3.5	Operational Lighting Plan	18
3.	CHARACTERISTICS OF THE RECEIVING ENVIRONMENT	21
3.1	Hydrological Desk Study	21
3.2	Results of Consultation	21
3.3	Results of Baseline Ecological Surveys	22
3.3.1	Habitats Present on the Site and Surrounding Area	22
3.3.2	Fisheries Habitat Assessment	28
3.3.3	Otter	29
3.3.4	Birds	29
3.3.5	Non-native invasive species	29
4.	STAGE 1 – APPROPRIATE ASSESSMENT SCREENING	31
4.1	Identification of Relevant European Sites	31
4.2	Stage 1 Appropriate Assessment Screening Conclusion	43
5.	STAGE 2 - INFORMATION TO INFORM THE APPROPRIATE ASSESSMENT	44
5.1	Identification of Relevant Qualifying Features and Desk Study	44
5.1.1	Lough Corrib SAC [000297]	44
5.1.1.1	Identification of Individual Qualifying Features with the Potential to be Affected	45
5.1.1.2	Site Specific Pressures and Threats	51
5.1.1.3	QI Species Specific Information	52
5.1.1.4	QI Habitat Specific Information	56
5.1.2	1.1.1 Galway Bay Complex SAC [000268]	57
5.1.2.1	Identification of Individual Qualifying Features with the Potential to be Affected	58
5.1.2.2	Site Specific Pressures and Threats	63
5.1.2.3	QI Species Specific Information	64
5.1.2.4	QI Habitat Specific Information	65
5.1.3	Inner Galway Bay SPA [004031]	74

5.1.3.1	Identification of Individual Qualifying Features with the Potential to be Affected	75
5.1.3.2	Site Specific Pressures and Threats	79
5.1.3.3	SCI Habitat Specific Information	79
6.	ASSESSMENT OF POTENTIAL EFFECTS & ASSOCIATED MITIGATION	81
6.1	Potential for Indirect Effects on European Sites	81
6.1.1	Deterioration of Water Quality	81
6.1.1.1	Demolition and Construction Phases	82
6.1.1.2	Operation	87
6.1.2	Disturbance to Aquatic Fauna	87
6.1.2.1	Construction Phase	88
6.1.2.2	Operational Phase	89
6.1.3	Disturbance to Otter	89
6.1.3.1	Construction Phase	89
6.1.3.2	Operational Phase	91
6.1.4	Invasive Species and Biosecurity	92
6.1.4.1	Zebra mussel (<i>Dreissena polymorpha</i>)	92
6.1.4.2	Canadian Waterweed (<i>Elodea canadensis</i>)	92
7.	ASSESSMENT OF RESIDUAL ADVERSE EFFECTS	94
8.	ASSESSMENT OF IN-COMBINATION EFFECTS	95
8.1	Plans	95
8.2	Projects	95
8.3	Conclusions of Assessment of Cumulative Effects	96
9.	CONCLUDING STATEMENT	97
	BIBLIOGRAPHY	98

TABLE OF FIGURES

Figure 2-1 Site Location	8
Figure 2-2 Site Layout	11
Figure 2-3 Existing ground floor walkway works layout plan	14
Figure 2-4 Culvert works layout plan	16
Figure 2-5 Exterior Lighting Simulation	20
Figure 4-1 European Designated Sites within the Likely Zone of Influence	32

APPENDICES

Appendix 1	Exterior Lighting Report
Appendix 2	Invasive Species Management Plan
Appendix 3	List of Plans and Projects Considered in the Assessment of In-Combination Effects
Appendix 4	Construction and Environmental Management Plan
Appendix 5	Civil Engineering Infrastructure Report for Planning

1.

INTRODUCTION

Note: Revisions in green have been added in response to the Further Information Request received by Galway City Council on the 18th of February 2026.

1.1

Background

MKO has been appointed to provide the information necessary to allow the competent authority to conduct an Article 6(3) Appropriate Assessment of the refurbishment of the McLaughlin Building on a site located at Nun's Island, Galway City, Co. Galway.

Screening for Appropriate Assessment is required under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive). Where it cannot be excluded that a project or plan, either alone or in combination with other projects or plans, would have a significant effect on a European Site then same shall be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives. The current project is not directly connected with, or necessary for, the management of any European Site. Consequently, the project has been subject to the Appropriate Assessment Screening process.

This Natura Impact Statement (NIS) has been prepared in accordance with:

- European Commission's Assessment of Plans and Projects Significantly affecting Natura 2000 Sites. Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2021)
- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018)
- Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010)
- Appropriate Assessment Screening for Development Management. Office of the Planning Regulator, Dublin 7, Ireland OPR (2021).

1.2

Statement of Authority

The baseline ecological survey was undertaken on the 21st of August 2025 by MKO Ecologists Katy Beckett (B.A., M.Sc.) and Chandra Walter (B.Sc., M.Sc.). This survey effort also encompassed a dedicated otter survey as well as an aquatic habitat assessment.

This report has been prepared by Chandra Walter who has the necessary qualifications and experience to undertake this assessment. This report has been reviewed by Kate O'Donnell (B.Sc. Ecology, ACIEEM) who is an experienced ecologist with over 6 years' professional ecological consultancy experience.

1.3

Methodology

1.3.1

Appropriate Assessment Process

Screening - The purpose of the screening stage is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project, either alone or in combination with other plans or projects, is likely to have significant effects on a European site in view of the site's conservation objectives.

There is no necessity to establish such an effect; it is merely necessary for the Competent Authority to determine that there may be such an effect. The need to apply the precautionary principle in making any key decisions in relation to the tests of Appropriate Assessment has been confirmed by the case law of the Court of Justice of the European Union (CJEU). Plans or projects that have no appreciable effect on a European site may be excluded. The threshold at this first stage is a very low one and operates as a trigger in order to determine whether Appropriate Assessment of a project is required. Therefore, where significant effects are likely, uncertain or unknown at screening stage, an AA of the project will be required.

Appropriate Assessment - This stage of the process is a focused and detailed examination, analysis and evaluation by the Competent Authority of the implications of the plan or project, either alone or in combination with other plans and projects, on the integrity of a European site in view of that site's conservation objectives. Case law has established that such an Appropriate Assessment, to be lawfully conducted must:

- (i) identify, in the light of the best scientific knowledge in the field, all aspects of the proposed project which may, by itself or in-combination with other plans or projects, affect the conservation objectives of the European site;
- (ii) contain complete, precise and definitive findings and conclusions and may not have lacunae or gaps; and
- (iii) may only include a determination that the proposed project will not adversely affect the integrity of any relevant European site where the competent authority decides (on the basis of complete, precise and definitive findings and conclusions) that no reasonable scientific doubt remains as to the absence of potential adverse effects. If adverse impacts can be satisfactorily avoided or successfully mitigated at this stage, so that no reasonable doubt remains as to the absence of the identified potential effects, then the process is complete. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed to stage three (assessment of alternative) and, if necessary, stage four (IROPI).

1.3.2 Ecological Survey Methodologies

1.3.2.1 Ecological Multidisciplinary Walkover Survey

Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological baseline conditions are those existing in the absence of proposed activities (CIEEM 2018).

A multidisciplinary walkover survey was conducted on the 21st of August 2025 by Chandra Walter and Katy Beckett of MKO in line with NRA (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes). The survey timings fall within the recognised optimum period for vegetation surveys/habitat mapping, i.e. April to September (Smith *et al.*, 2011).

Habitats were identified in accordance with the Heritage Council's 'Guide to Habitats in Ireland' (Fossitt, 2000). Plant nomenclature for vascular plants follows 'New Flora of the British Isles' (Stace, 2019), while mosses and liverworts nomenclature follows 'Mosses and Liverworts of Britain and Ireland - a field guide' (British Bryological Society, 2010).

During the surveys, the site was searched for species listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011).

1.3.2.2 Otter Survey

The McLaughlin Building is bridging the Gaol River, which is channelled underneath the building and road through turbines and culverts. Therefore, an otter survey of the Gaol River 150m upstream and downstream of the site was undertaken in line with NRA TII (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes). As portions of the Convent River to the west and the River Corrib to the east which flow parallel to the Gaol River are also within the 150m buffer for otter, these watercourses were also surveyed for otter.

The survey focused on the suitable otter habitat along the Gaol River upstream and downstream of the Proposed Development site, the Convent River and the River Corrib within 150m of the Proposed Development site, and areas adjacent to these watercourses. Dedicated searches for signs of otter e.g. spraints, scat, prints, slides, trails, couches and holts were undertaken in vicinity to the above watercourses within 150m of the Proposed Development site. In addition to the width of the watercourses, a 10m riparian buffer was considered to comprise part of the otter habitat (NPWS 2009).

1.3.2.3 Fisheries Habitat Assessment

An assessment of the aquatic habitats within the Gaol River at the location of the proposed in-stream works was undertaken on the 21st of August 2025 by MKO Ecologists Chandra Walter and Katy Beckett to determine the potential for the watercourses to support fish species. This Fisheries Habitat Assessment primarily considered the habitat requirements and life history of fish species which are likely to utilise the watercourses within the study area, including but not limited to Salmonid spp., Lamprey spp., and European eel.

Fisheries habitat assessments were informed by and conducted utilising elements of best practice guidelines, methodologies, and literature to characterise the selected sites along the watercourse, including but not limited to:

- Environment Agency's 'River Habitat Survey in Britain and Ireland Field Survey Guidance Manual 2003' (EA, 2003)
- Evaluation of Habitat for Salmon and Trout. Department of Agriculture Fisheries Division. EU Salmonid Enhancement Programme (DOA-NI, 2005)
- Irish Heritage Council's 'A Guide to Habitats in Ireland' (Fossitt, 2000).
- 'Channels & Challenges. Enhancing Salmonid Rivers'. Irish Freshwater Fisheries Ecology & Management Series (O'Grady, 2006)
- 'Ecology of the Atlantic Salmon' (Hendry & Cragg-Hine, 2003)
- The Eel: Biology and Management of Anguillid Eels (Tesch, F.W., 2007)
- Life Cycle Unit method (Kennedy, 1984; O'Connor & Kennedy, 2002)
- 'Ecology of the River, Brook, and Sea Lamprey' (Maitland, 2003)
- NPWS Irish Wildlife Manuals lamprey surveys (O'Connor, 2004; O'Connor, 2006; and O'Connor, 2007)

1.3.3 Desk Study

The desk study undertaken for this assessment included a thorough review of the available ecological data associated with the screened-in European Sites within the Likely Zone of Influence of the Proposed Development. Sources of data included the following:

- Review of NPWS Conservation Objectives supporting documents, site synopsis, standard data forms and supporting documents for European Designated Sites,
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), Environmental Protection Agency (EPA),
- Review of the publicly available National Biodiversity Data Centre (NBDC) web-mapper,
- Review of NPWS Article 17 metadata and GIS database.

- Review of Inland Fisheries Ireland data and mapping.

1.3.3.1 Scoping and Consultation

A scoping request was sent to the NPWS on the 9th of September 2025 outlining the Proposed Development details and outlining the ecological surveys being undertaken to inform the ecology reports accompanying the planning application. The purpose of the scoping request was to obtain comments or observations in relation to the development and the ecological surveys undertaken to date. A reply was received on the 5th of November 2025 acknowledging receipt of the consultation. Data was provided by the NPWS on the 19th of September 2025.

Given the in-stream works within the Gaol River upstream of the Lough Corrib SAC, correspondence was also sent to Inland Fisheries Ireland (IFI) on the 9th of September 2025. A response was received from IFI on the 21st of October 2025.

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2.

DESCRIPTION OF THE PROPOSED DEVELOPMENT

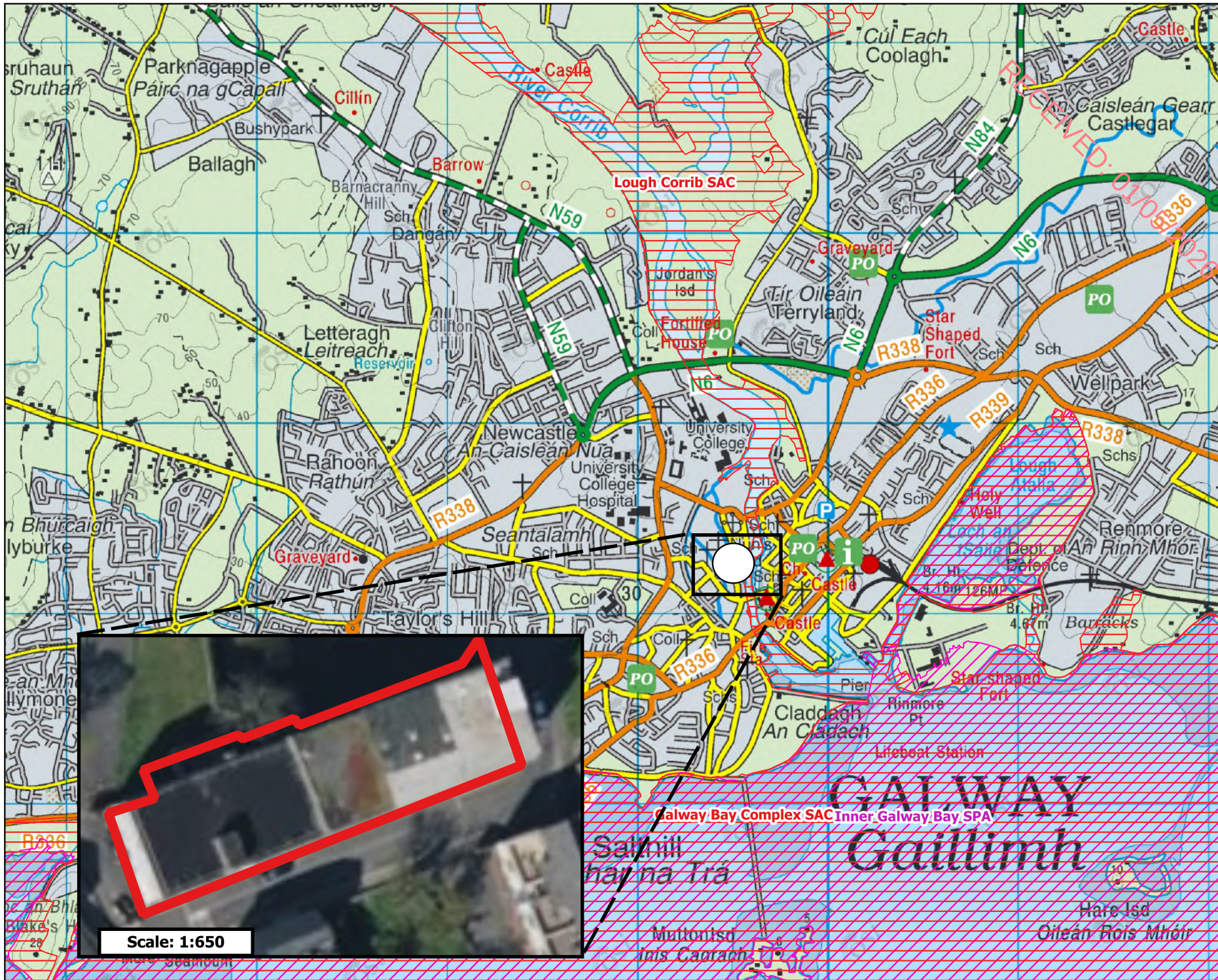
2.1

Site Location

The McLaughlin Building is located on Nun's Island, Galway and is situated near the Galway Cathedral. The site is accessed via the Nun's Island Rd (Grid Reference: ITM 529470, 725313).

Note on the Gaol River: Within this document the canal to the north of the McLaughlin Building as well as to the south of the McLaughlin Building are referred to as the Gaol River, as this is the way it is referred to on EPA mapping. The Gaol River to the north of the McLaughlin Building is an artificial canal which is also referred to as the Eglington Canal in other documents included in the planning application for this project.

The site location is shown in Figure 2-1.



Map Legend

- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Site Boundary
- Site Location



Drawing Title

Site Location

Project Title

University of Galway -
McLaughlin Building

Drawn By AMcD Checked By KOD

Project No. 250316 Drawing No. Figure 2-1

Scale 1:26,000 Date 02.12.2025

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2.2

Characteristics of the Proposed Development

2.2.1

Development Description

The refurbishment of the McLaughlin Building and all associated works will be referenced within the NIS as the 'Proposed Development'.

The proposed development will comprise of the refurbishment and extension of the McLaughlin Building (a Protected Structure: RPS Ref. 7406 Former Mill - NUIG), Nun's Island, Galway.

The McLaughlin Building will be refurbished and extended for educational use including associated academic teaching and study spaces; administrative areas; staff and student welfare facilities; café and ancillary plant and storage areas.

The proposed works to the McLaughlin Building will include the removal of the mid- to late-20th Century roof and fifth floor level (approx. 374.1 sqm gross floor area (GFA)); and the construction of two additional floors, resulting in an overall increase in height of the building from 5 storeys to 6 storeys (with maximum proposed height of 30.03 m). The proposed works will result in an increase in GFA from 2962.17 sqm to 3962.7 sqm.

Further interventions to the McLaughlin Building will include:

1. Removal of existing mid- to late 20th Century building fabric the south-west corner to be replaced with new aluminium curtain walling with glazed openings on all levels.
2. Provision of a new external stair and lift core on the north elevation.
3. Removal of selected areas of the late 20th Century internal steel frame and concrete slabs, provision of new foundations in selected areas, new ground floor slab build-up throughout and new structural frame to support the additional floors.
4. Existing 20th Century windows to be replaced with new timber sliding sash windows with slim-glaze panes and repair of window reveals and sills. Thermally broken aluminium doors and windows to new openings.
5. Creation of new entrance on the northern elevation (incorporating two original window openings); enlargement of three existing openings at ground floor level of southern elevations and alterations to two window and door openings to provide compliant door openings to the new escape stair to the northern elevation. New opening to West elevation to facilitate ESB and Switch room doors.
6. Removal of cement render and retention and repair of original rubble and limestone masonry walls.
7. Removal of mid to late 20th Century extension to the northern elevation.
8. Removal of non-original subdivisions and provision of new subdivisions.
9. Repair and repointing of masonry arch culverts beneath the building, and construction of reinforced concrete plinths at the arch bases to remediate and prevent scouring.
10. Existing access walkway along north elevation upgraded and widened (2m in width).
11. Temporary in-stream works within the red line boundary, during construction phase, to facilitate both the walkway widening and masonry arch culvert repairs.

The proposed works will also include new water and wastewater connections; rooftop plant; new mechanical and electrical services; thermal upgrade of the existing building including solar PV panels at roof level; landscaping to the existing boardwalk; boundary treatments; together with all associated and ancillary site and development works.

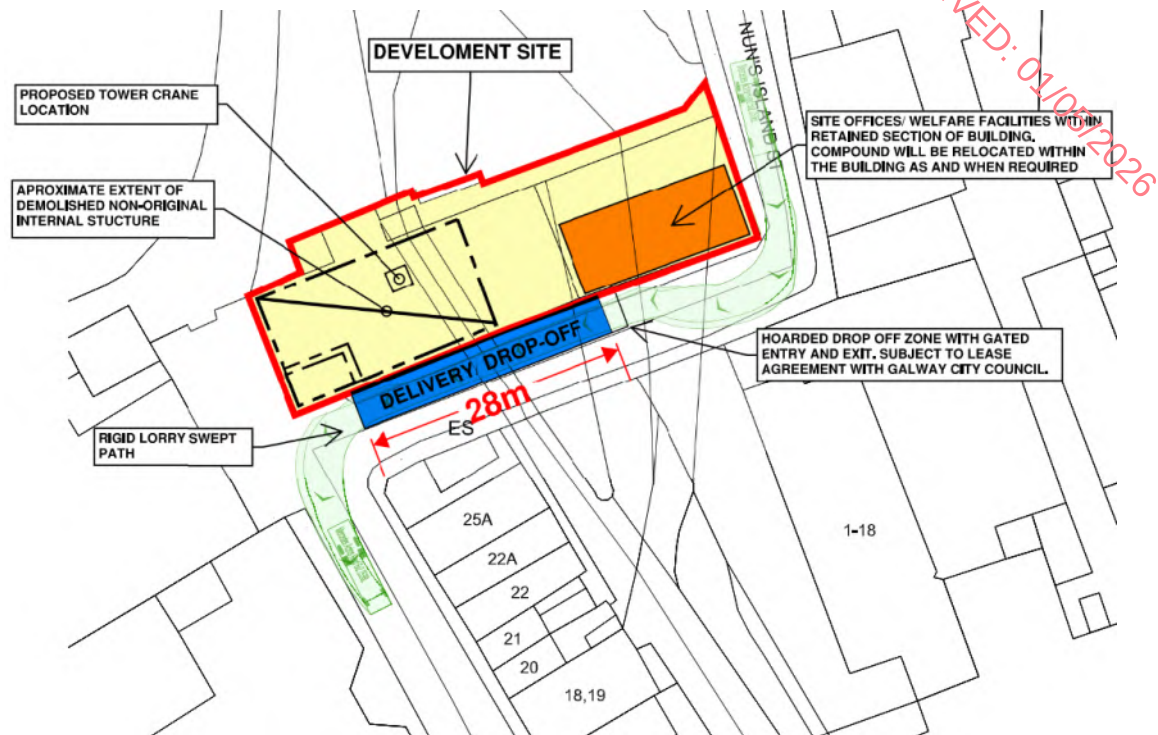


Site offices and temporary construction compound will be contained within the footprint of the McLaughlin Building.

The proposed site layout is provided in Figure 2-2.

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Figure 2-2 Site Layout



2.2.2

Construction Details

It is intended that the Proposed Development will be constructed over a 24-month period as a single phase.

Unless required otherwise by Galway County Council, it is proposed that standard construction **working hours** should apply, i.e.:

- 7am to 6pm Monday to Friday
- 8am to 2pm on Saturdays.

Construction will not take place at the site on Sundays or Bank Holidays. Any works proposed outside of these periods shall be strictly by written agreement with the Local Authority in advance.

The site compound, demolition works, construction operations, waste management, proposed site drainage, flood risk, landscape plan and operational lighting plan are summarised below, and described in more detail in the Construction and Environmental Management Plan (CEMP) which was prepared by Barrett Mahony Civil & Structural Consulting Engineers. The CEMP is included in the planning pack and is attached to this report as Appendix 4.

2.2.3

Site Establishment

On site accommodation will need to consist of:

- Staff welfare facilities (toilets, canteen, drying room, offices/meeting rooms,)
- Materials storage areas and drop off areas.

Given the constrained nature of this site, material storage will be kept to an absolute minimum, with a just in time approach to be adopted for all possible deliveries. The site office and staff welfare will be relocated within the building as required to facilitate the ongoing works.

Fresh Water: The main contractor will make an application for a temporary connection to Irish Water for water supply to the compound.

Wastewater: There are two options available to the contractor.

- Make an application for a temporary connection to Irish Water for wastewater discharge, or
- Employ a licenced environmental contractor to collect wastewater from the compound on a maintenance schedule during construction and dispose of same at an Irish Water wastewater treatment facility.

Works areas around the McLaughlin Building will be hoarded off from the public. Where the existing external walls of the building do not already provide a secure boundary, a 2.4m minimum high plywood painted timber hoarding will be provided, fixed into place with concrete blocks, which sit on the existing hardstanding.

When possible, construction traffic will travel to site via the N6, travel east along the R863 towards the Galway Cathedral (Newcastle Avenue and University Road), before continuing along the R863 south on the Gaol Road and Nun's Island Road to the site. A Construction Traffic Management Plan (CTMP) will be developed by the contractor.

Figure 2-2 above, indicates the location of the proposed drop off areas, material storage and staff welfare facilities.

Temporary water supply, electricity supply and foul drainage will be required for the temporary

facilities. Connections to electricity & water are available in the site or close to the site boundary.

2.2.4

Demolition Plan – McLaughlin Building

Demolition work of parts of the McLaughlin Building will involve the removal of some of the non-original elements of the building, consisting of the roof, the external walls of the fifth floor, internal walls, floor slabs and internal steel frame.

The original building fabric, consisting of both internal and external rubble and cut limestone masonry, will be retained throughout. New openings will be formed in these internal original walls only where necessary for circulation across the floor plates. Existing underground services which are redundant will be decommissioned and removed as necessary.

Removal of sycamore tree from embankment wall to preserve integrity of the wall, and gentle removal of small scrubs/saplings from embankment walkway will take place. The sycamore tree has been inspected and assessed as not having bat roost potential.

2.2.5

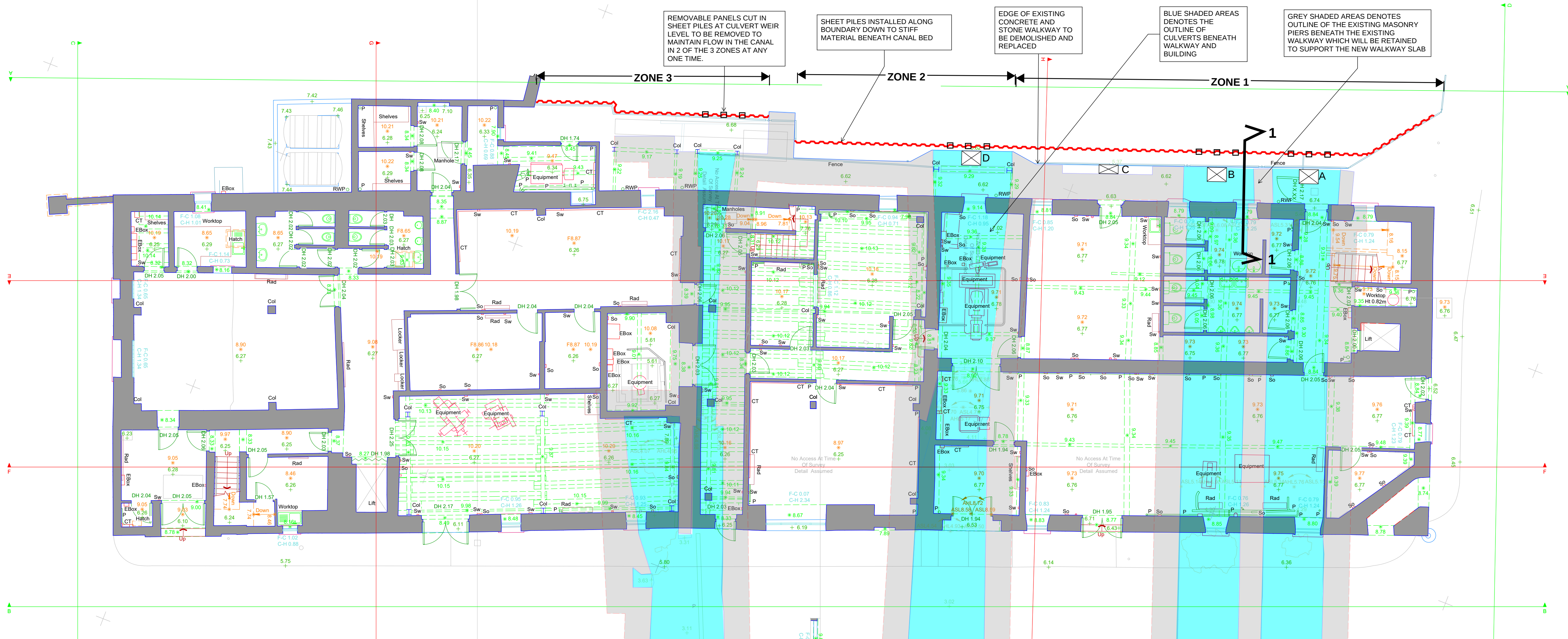
In-Stream Works

The existing walkway along the northern elevation will serve as the primary access into and out of the renovated building. The existing path is too narrow and will need to be replaced with a wider structure. To facilitate these works, dry works areas will be created in three separate zones along the northern application boundary alignment by installing sheet piling on the canal bed. The existing walkway will then be demolished in each dry zone separately, and some repair and preparatory works will take place before installing new pre-cast walkway slabs in three sections.

The layout plan and sequence of the walkway works are detailed in Figure 2-3 below.

REFER TO THE CULVERT WORKS CONSTRUCTION METHODOLOGY DRAWING FOR DETAILED LAYOUT AND DESCRIPTION OF WORKS WITHIN THE CULVERTS UNDER THE BUILDING.
THE WORKS WITHIN THE CULVERTS WILL COINCIDE WITH THE TIMING WHEN THE WATER HAS BEEN REMOVED FROM THE CORRESPONDING ZONE 1,2 OR 3.

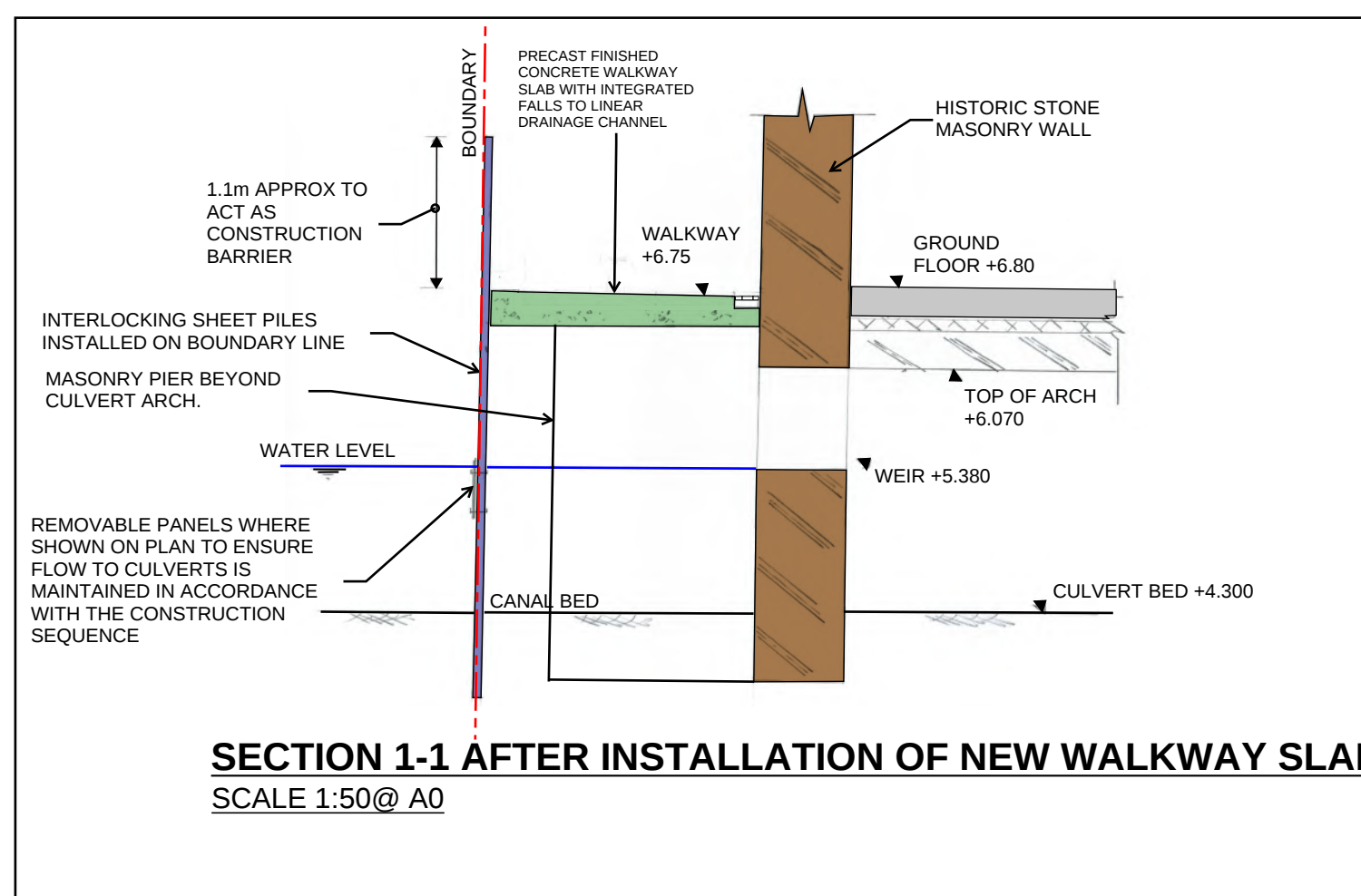
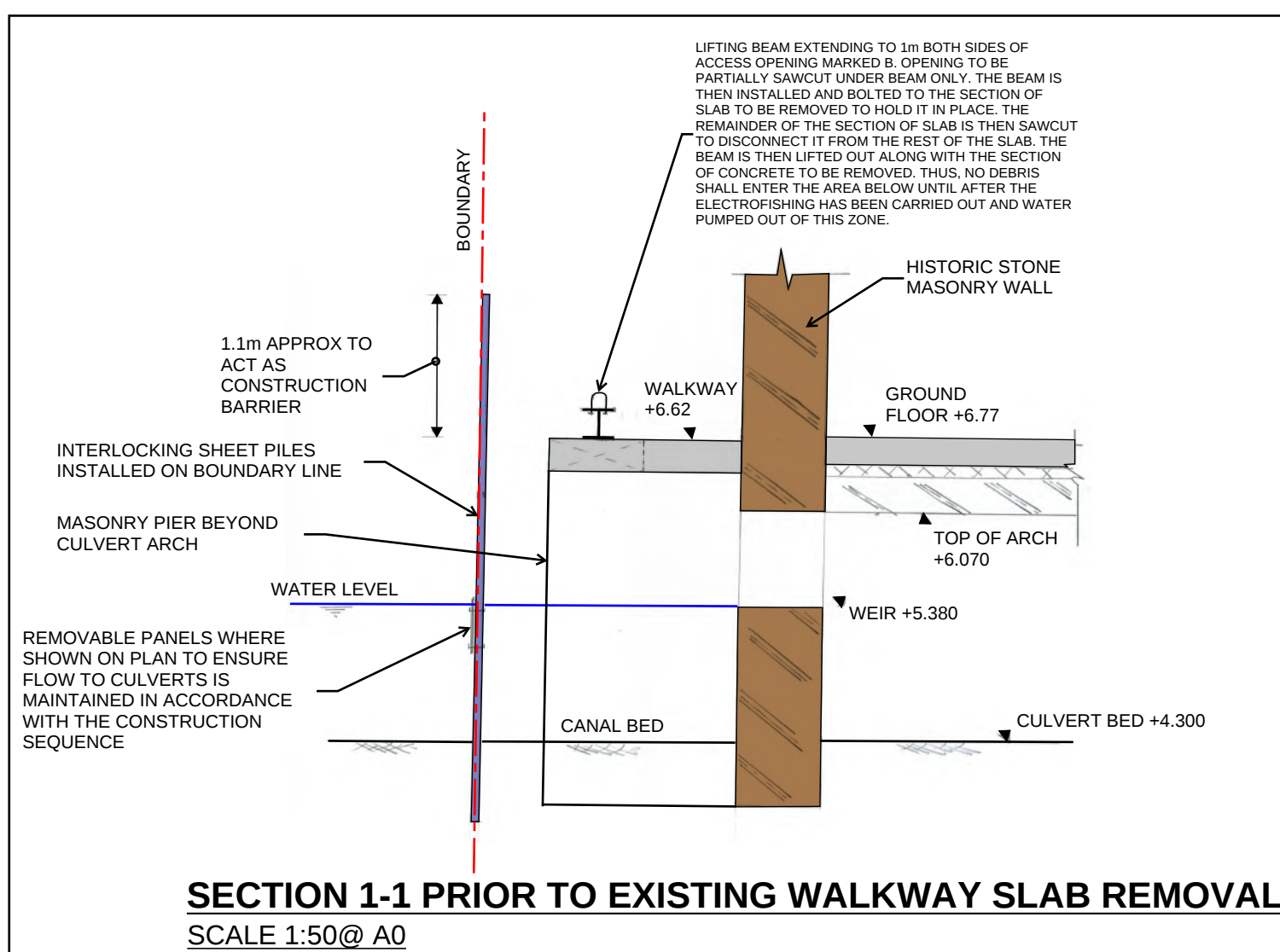
1. INSTALL THE SHEET PILES ACROSS ZONE 1 ALONG THE BOUNDARY USING A VIBRATING HAMMER CLIPPED TO THE TOP OF THE SHEET PILES AND SUSPENDED FROM THE TOWER CRANE ERECTED INSIDE THE BUILDING FOOTPRINT.
2. OPEN THE THREE REMOVEABLE PANELS ACROSS EACH CULVERT TO ALLOW CONTINUOUS FLOW OF WATER INTO THE CULVERTS.
3. INSTALL THE SHEET PILES ACROSS ZONES 2 & 3.
4. OPEN THE THREE REMOVEABLE PANELS ACROSS THE CULVERTS IN ZONE 2 & 3 TO ALLOW CONTINUOUS FLOW OF WATER INTO THE CULVERTS.
5. CLOSE THE REMOVEABLE PANELS ACROSS ZONE 1.
6. LOCALLY REMOVE THE SLAB AT ACCESS HATCH LOCATIONS MARKED A,B,C USING THE METHOD SHOWN IN SECTION 1 TO FACILITATE ENTRY INTO THE TUNNEL.
7. INSERT A STRIP OF BENTONITE WATERSTOP OR EQUIVALENT WATER SWELLING MATERIAL AT THE JOINT BETWEEN THE EXISTING MASONRY PIER AND THE SHEET PILE AT THE INTERFACE BETWEEN ZONES 1 AND 2.
8. CARRY OUT ELECTROFISHING ACROSS ZONE 1 AND RELOCATE ANY FISH WITHIN ZONE ONE ALL TO THE ECOLOGIST'S METHODOLOGY.
9. PUMP OUT THE WATER WITHIN ZONE 1 TO THE CANAL BED.
10. DEMOLISH THE EXISTING WALKWAY SLAB ACROSS ZONE 1 USING HAND HELD DEMOLITION TOOLS ONLY.
11. REMOVE ALL DEMOLITION RUBBLE AND DEBRIS FROM WITHIN ZONE 1.
12. CARRY OUT ANY LOCAL REPAIR/ PREPARATORY WORK TO THE EXISTING STONE MASONRY PIERS TO RECEIVE THE NEW PRECAST WALKWAY SLABS (SUCH PREPARATORY WORK SHALL CONSIST OF REPOINTING/ LOCALLY REPAIRING THE PIERS AND SETTING THE TOP OF PIER LEVEL AT THE CORRESPONDING BOTTOM OF WALKWAY SLAB LEVEL. ALL WORKS TO BE CARRIED OUT BY STONE MASONS EXPERIENCED IN HISTORIC BUILDING REPAIR WORKS)
13. CARRY OUT FINAL INSECTION OF ZONE 1 AND ENTIRELY REMOVE ANY REMAINING MASONRY OR OTHER WASTE.
14. INSTALL THE PERMANENT PRECAST CONCRETE WALKWAY SLABS MARKED 1-4 ACROSS ZONE 1.
15. OPEN THE REMOVEABLE PANELS WITHIN THE SHEET PILES ACROSS THE CULVERTS IN ZONE 1 TO FILL ZONE ONE AND ALLOW FLOW INTO THE CULVERTS.
16. REMOVE THE SLUICE GATE STEELWORK FROM ZONE 2.
17. REPEAT STEPS 5 TO 14 ACROSS ZONE 2.
18. REMOVE THE SLUICE GATE STEELWORK FROM ZONE 3.
19. REPEAT STEPS 5 TO 14 ACROSS ZONE 3.
20. EXTRACT THE SHEET PILES USING THE TOWER CRANE.



EXISTING GROUND FLOOR WALKWAY WORKS LAYOUT PLAN
SCALE 1:100@ A0



PROPOSED GROUND FLOOR WALKWAY WORKS LAYOUT PLAN



1		PLANNING ISSUE	CI
ISSUE	DATE	DESCRIPTION	B
Project Engineer: DEREK HALPIN		Project Director: CIARAN O'RAFFERTY	
RM STAGE			

PLANNING

BM
BARRETT MAHONY
Consulting Engineers, Civil, Structural, Project Management. E-mail: bma@bmce.ie Web: www.bmce.ie



CLIENT
UNIVERSITY OF GALWAY

PROJECT TITLE	BM PROJECT N
McLAUGHLIN BUILDING, FLOUR MILLS, NUN'S ISLAND, GALWAY	25.207

REFERENCE	SUITABILITY	REVISION
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NO.			
DRAWING TITLE			

WALKWAY - CONSTRUCTION METHODOLOGY

DRAWING REFERENCE	STATUS	REVISION
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MCL-09-SW-L00-DR-BMCE-SE-21001	P1	0
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2.2.6

Construction Waste Management

Detailed waste management for construction waste is outlined in the CEMP accompanying the planning application for the Proposed Development.

There will be an appointed Waste Manager on site to ensure this is adhered to. Reduce, re-use, recycle principles will be followed.

2.2.6.1

Demolition waste materials

The waste generated will be mainly broken concrete and concrete blockwork and embedded steel reinforcement. Some asbestos was found in the McLaughlin building by Ian Higgins Surveying. The asbestos will be removed ahead of other demolition works taking place and best practice health and safety standards will be adhered to.

2.2.6.2

Hazardous Waste and Fuels

Hazardous waste may be generated including excavated soils classified as 'Hazardous', batteries, oils/fuels from machinery and equipment, excess paints. The treatment of hazardous waste and the handling of fuels on site is dealt with in Section 8.0 of CEMP.

2.2.7

Remedial works to culverts

The culverts under the footprint of the McLaughlin Building require remedial works to the stonework and concrete plinths as well as removal of all redundant drainage piping from the McLaughlin Building leading into the canal.

These remedial culvert works are illustrated and explained in Figure 2-4 below.

CULVERT WORKS CONSTRUCTION AND SEQUENCE

NOTE: WORKS WITHIN EACH CULVERT WILL COINCIDE WITH THE DAMMING OF THE CORRESPONDING SECTION OF THE CANAL AT THE NORTH BOUNDARY OF THE BUILDING, THUS STOPPING INFLOW OF WATER INTO THE CULVERT.

1. DAM THE DOWNSTREAM END OF THE CULVERT TO STOP OUTFLOW OF ANY CONTAMINANTS (CONCRETE, MORTAR) USING SAND BAGS.
2. REMOVE ALL RUBBLE, DEBRIS, RUBBISH, ACCUMULATED SILT FROM THE CULVERT FLOOR.
3. PUMP OUT ANY REMAINING WATER FROM THE CULVERT FLOOR TO A SETTLEMENT TANK/ TREATMENT SYSTEM, TO BE LOCATED WITHIN THE BUILDING FOOTPRINT AT GROUND FLOOR LEVEL FOR THE DURATION OF THE IN-STREAM WORKS. THE RISING MAIN FROM THE PUMP IN THE CULVERT TO THE SETTLEMENT TANK/ TREATMENT SYSTEM IN THE BUILDING ABOVE MAY BE PASSED THROUGH ONE OF THE EXISTING DRAINAGE CONNECTIONS FROM THE BUILDING INTO THE CULVERTS.
4. REPAIR ALL AREAS OF LOOSE STONE, FRIABLE MORTAR AND MISSING MORTAR JOINTS WITH NEW LIME MORTAR TO THE CONSERVATION ARCHITECT'S SPECIFICATION.
5. REMOVE ALL REDUNDANT DRAINAGE PIPE WORK DISCHARGING DIRECTLY INTO THE CULVERTS FROM THE BUILDING ABOVE.
6. REPAIR CAVITIES LEFT AFTER REMOVAL OF THE PIPES (ISOLATED CAVITIES MAY BE RETAINED FOR BAT BOXES, IF REQUIRED).
7. INSTALL FORMWORK AND CAST CONCRETE PLINTHS (REQUIRED TO PREVENT ONGOING SCOURING OF THE CULVERT BASE).
8. ALLOW MINIMUM 3 DAYS CURING TIME BEFORE APPLYING A CONCRETE SEALANT COMPATIBLE WITH A SALINE ENVIRONMENT TO THE NEW CONCRETE ELEMENTS.
8. REMOVE THE DOWNSTREAM SANDBAGS.
9. REINSTATE FLOW TO THE CULVERT WHEN THE WALKWAY WORKS FOR THE CORRESPONDING ZONE IS COMPLETE.

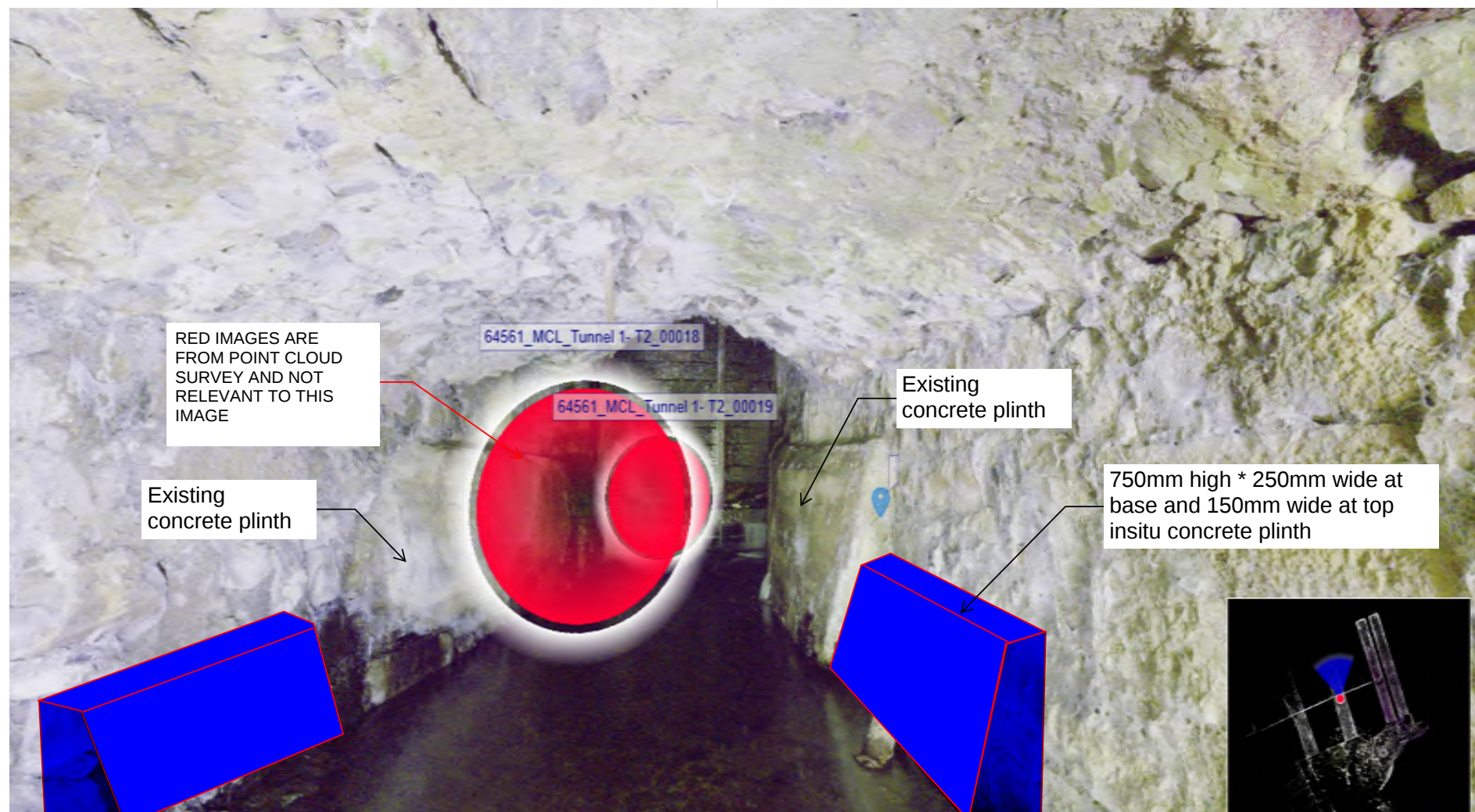
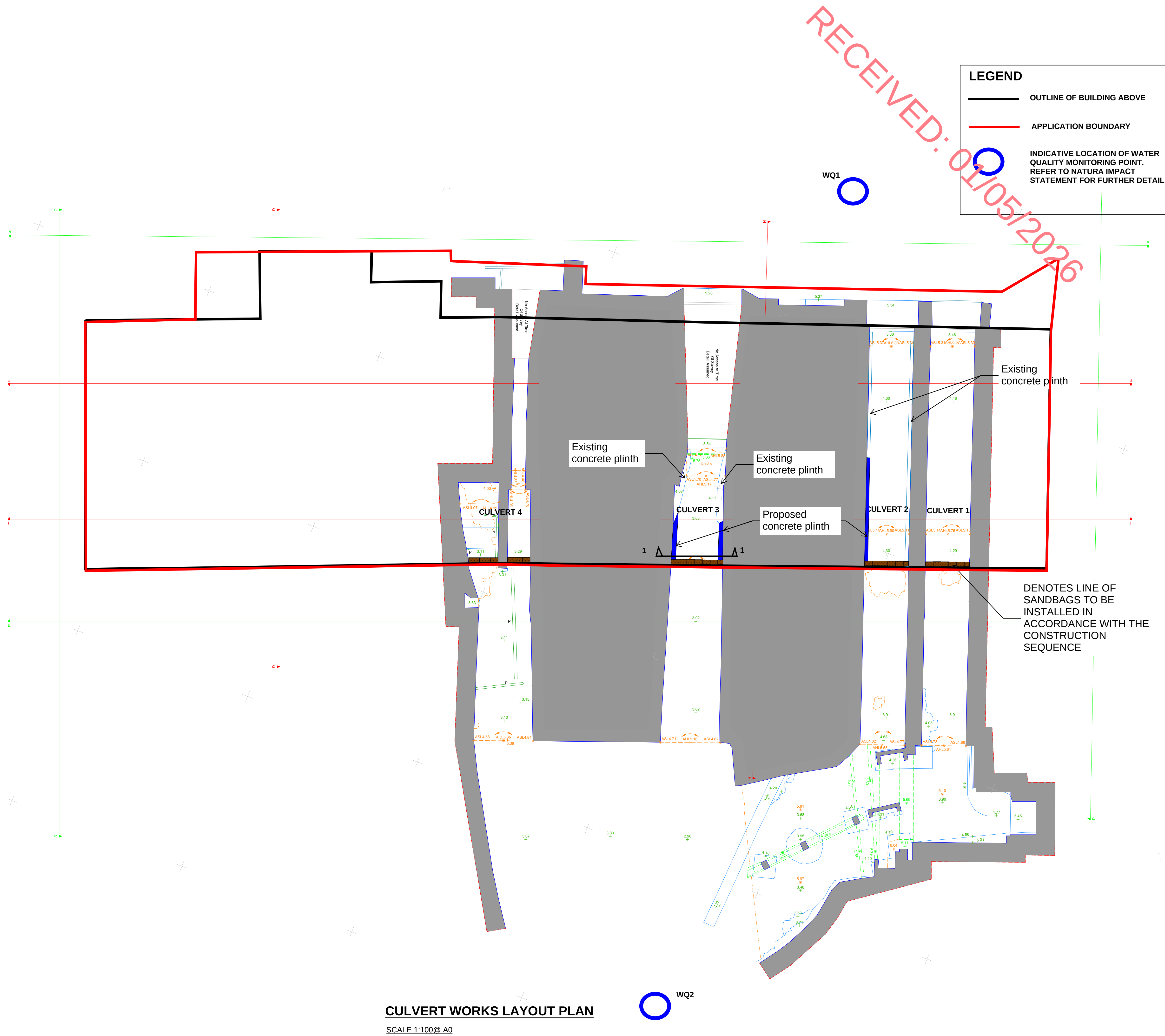


PHOTO 1-1 OF CULVERT 3 SHOWING EXTENT OF EXISTING AND PROPOSED CONCRETE PLINTHS TO PREVENT SCOURING TO THE CULVERT BASES



CULVERT WORKS LAYOUT PLAN
SCALE 1:100@ A0

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECTS DRAWINGS FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - ASK.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

1	PLANNING ISSUE	COR
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ISSUE	DATE	DESCRIPTION	BY
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Project Engineer: DEREK HALPIN | Project Director: DIARAN O'RAFFERTY

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CLIENT
UNIVERSITY OF GALWAY

PROJECT TITLE
McLAUGHLIN BUILDING, FLOUR MILLS,
NUN'S ISLAND, GALWAY

BM PROJECT No.
25.207

REFERENCE
SUITABILITY
REVISION

DRAWING TITLE
CULVERT WORKS - CONSTRUCTION
METHODOLOGY

DRAWING REFERENCE
MCL-09-SW-B01-DR-BMCE-SE-21000

STATUS
P1

REVISION
0

2.3

Water Management

A water supply will be required for various activities on site. The main contractor will require a water source for the duration of the works as well as a foul connection. Details of drainage, and proposed water mains/foul connections are contained within the Civil Engineering Infrastructure Report for Planning prepared by Barret Mahony Civil & Structural Consulting Engineers and is appended to this NIS as Appendix 5.

2.3.1

Water Mains

There is an existing water supply to the site, which may be retained and used during the construction. Uisce Eireann has provided a positive Confirmation of Feasibility (COF) for this connection.

2.3.2

Foul Water Drainage

The existing foul connections to the public drainage system are two 100mm connections to the existing manhole in the footpath directly outside the east façade of the building. The toilet block in the existing annex to the north discharges directly into a canal culvert beneath the building.

A completely new internal foul drainage network will be developed. Wastewater will be collected on a separate system to stormwater. A new 150mm gravity foul sewer is proposed to connect to the existing 225mm uPVC combined sewer within Nun's Island Road at the manhole located southwest of the McLaughlin Building. Uisce Eireann has provided a positive COF for this connection.

2.3.3

Surface Water Drainage

Sustainable Drainage Systems (SuDS) will be employed for the rainwater falling on the footprint of the McLaughlin Building. It is proposed that 100% of available roofed surfaces will be green roof areas with underlying drainage boards for interception storage. Where PV panels or other roof plant equipment preclude the use of a green roof substrate, a gravel ballast will be provided over the drainage board so that interception storage will still be provided. The remainder of the roof shall provide an extensive green roof with a sedum blanket across the interception storage mat.

Stormwater runoff from the roofs will be collected in rainwater pipes along the north elevation of the building. The rainwater pipes will be brought to ground level on the north elevation and will discharge into the culverts beneath the ground floor, downstream of the canal weirs formed by the northern external wall. Rainwater pipes currently discharging stormwater to the public footpath will be decommissioned.

2.3.4

Flood Risk Assessment

A flood risk assessment was undertaken by BMCE (Barrett Mahony Civil & Structural Consulting Engineers) and is included as part of the planning application for the Proposed Development.

According to the flood risk assessment, the McLaughlin Building is in Flood Zone A (the probability of flooding from rivers and the sea is high (between 1% or 1 in 100 years and 1% or 1 in 10 years for river flooding and/or between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding)).

The site is not known to have been subject to flooding in recent history. The risk of tidal flooding at the Proposed Development site is considered low as it lies outside the 0.1% AEP (Annual Exceedance Probabilities) i.e. a 1 in 1000-year return period.

Both the OPW Western CFRAM study fluvial flood predictive maps and the Galway Flood Relief Scheme Hydraulics Report shows that the proposed development site is within an area with a fluvial flood event AEP of between 10% and 1%. Hence, the risk of fluvial flooding within the proposed development site is considered high and as a result, mitigation measures such as demountable flood barriers and non-return valves on buried drainage outfalls pipes are proposed. Refer to the Flood Risk Assessment for the full list of proposed mitigation measures.

The proposed development site is also considered to be climate change resilient in that the fluvial flood levels adopted in the Site-Specific Flood Risk Assessment allow for an increase in river flows of 20% over the current scenario, in accordance with the Galway City Development Plan 2023-2029 Strategic Flood Risk Assessment requirements.

The risk of flooding due to ground water ingress to the proposed development site is considered low.

The risk of pluvial flooding at the proposed development site is considered to be low.

Given the building footprint covers the entire site, all of the rainwater falling on the site will be falling on either a sedum green roof or a roof containing a gravel ballast over an interception storage mat. Hence, all water will receive a level of treatment prior to discharge to the culverts beneath the building.

Further details on historical flooding, coastal flooding, fluvial flooding, groundwater, pluvial flooding, climate change and flood zone mapping are provided in the Flood Risk Assessment which accompanies the planning application for the Proposed Development.

2.3.5 Operational Lighting Plan

An Exterior Lighting Report has been prepared by EDC for the Proposed Development site and is provided in Appendix 1. The Exterior Lighting simulation is also shown in Figure 2-5 below.

The report contains the details of preliminary external lighting studies and an internal lighting concept. It is proposed that the walkway to the north of the Mclaughlin Building will be lit up by spotlights fixed at 1.1m above path level which are integrated in a handrail and shielded by a solid metallic barrier.

The external lighting has been designed to achieve the performance requirements as set out in the following standards:

- Lighting to all internal areas shall be to CIBSE lighting guides and best practices for educational and administration buildings
- Bats and Lighting – Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland, 2010).
- Bats and Lighting in the UK – Bats and the Built Environment Series (Institute of Lighting Professionals, September 2018).
- BCT guidelines 2023 (Bats and artificial lighting at night)

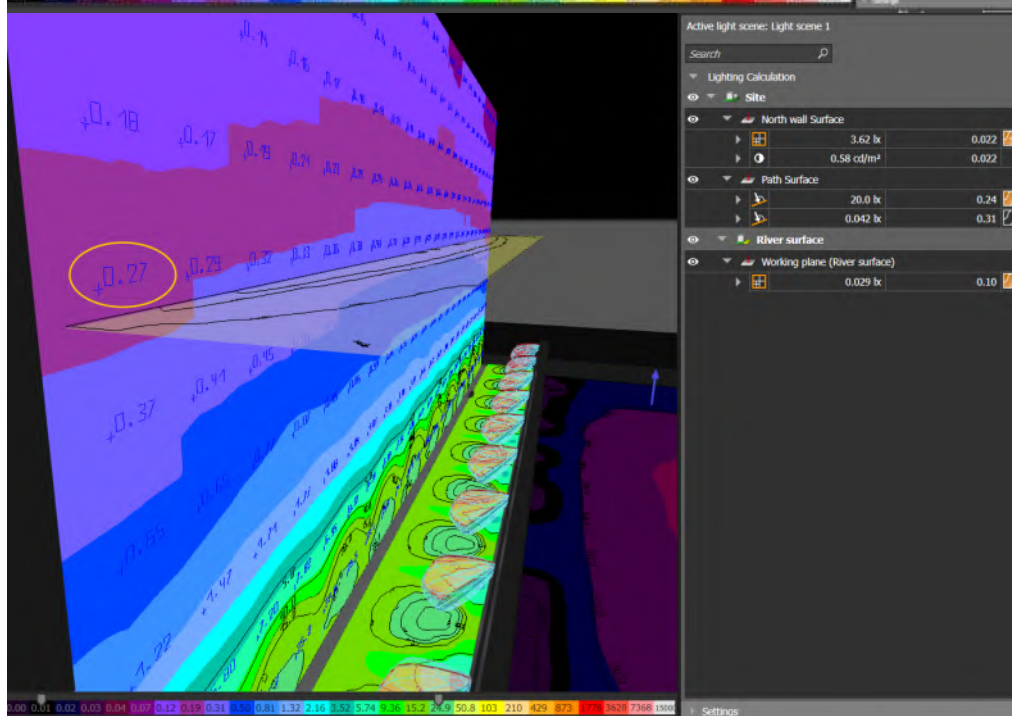
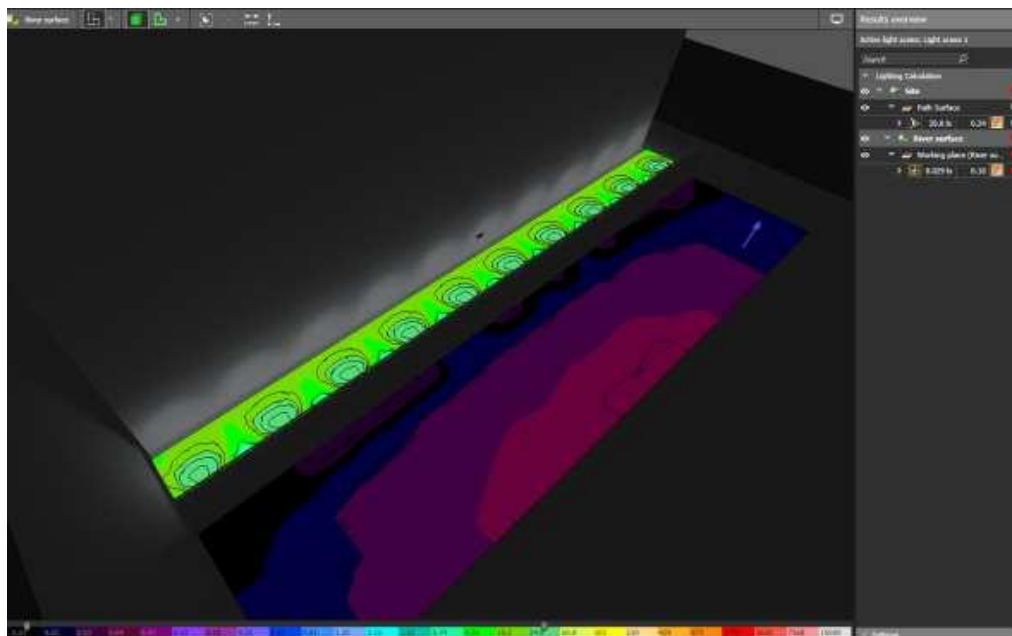
The Basis of Design is summarised as follows:

- Colour temperatures shall be selected with of 2700k or lower and peak emissions above 550nm to minimise blue wavelength output as per ILP and Bat Conservation Trust Guidelines.
- Spotlights shall be LED with no ultraviolet component
- A continuous solid metallic barrier shall be installed between the pathway and the Gaol River.
- All spotlights will be of asymmetric distribution with sharp optical cut-off to ensure lighting is directed downwards towards the pathway only.
- Internal lights at teaching and workspaces shall be illuminated to 300-500lux and circulation routes to 150lux as per CIBSE lighting guides.

- Lighting controls shall be provided to support energy-management strategies — including timed operation and presence/absence detection to reduce light output or turnoff completely during low-occupancy periods or outside normal operational hours (core hours of 8am –5pm)

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Figure 2-5 Exterior Lighting Simulation



3.

CHARACTERISTICS OF THE RECEIVING ENVIRONMENT

3.1

Hydrological Desk Study

The EPA map viewer (<https://gis.epa.ie/EPAMaps/>) was consulted on the 5th of November 2025 regarding the water quality and status of waterbodies and groundwater bodies in the vicinity of the Proposed Development Site.

The Proposed Development is located within the Corrib WFD Catchment (ID 30), the Corrib_SC_010 WFD Sub Catchment (ID 30_18) and the Corrib_020 WFD River Sub Basin.

The McLaughlin Building is spanning the Gaol River which is partially dammed by it. Water flows through culverts underneath the building and road and joins the River Corrib approximately 120m south of the building. The River Corrib (C30C02) has a Q-value score of 4 (Good) recorded at the Salmon Weir Bridge- Galway River Station in 2024 and it has a status of 'Good' (WFD 2019-2024). No Q value or river status has been provided for the Gaol River.

The site of the Proposed Development is located within the Maam-Clonbur Ground Waterbody which is 'Not at risk' and has a WFD status of 'Good' (2019-2024).

3.2

Results of Consultation

Data was provided by the NPWS on the 19th of September 2025.

Protected species data held by the NPWS included QIs of the Lough Corrib SAC:

- [1095] Sea Lamprey (*Petromyzon marinus*)
- [1303] Lesser Horseshoe Bat (*Rhinolophus hipposideros*)
- [1355] Otter (*Lutra lutra*)

The response from the NPWS also noted that breeding seabirds have been recorded along the coastline intersecting the hectad M22, some of which are SCI species of the Inner Galway Bay SPA.

No QIs of the Galway Bay Complex SPA were also part of the NPWS protected species dataset.

Given the in-stream works within the Gaol River upstream of the Lough Corrib SAC, correspondence was also sent to Inland Fisheries Ireland (IFI) on the 9th of September 2025. A response was received from IFI on the 21st of October 2025.

It was noted in the IFI's response that the river and associated riparian habitat supports populations of salmonid and coarse fish species. There may also be lamprey and European eel, a critically endangered red list species, present in the area and as such it was suggested that an electrofishing survey of the site be undertaken to establish the species present. Due to the restricted seasonality of electrofishing surveys, a detailed in-stream fisheries habitat appraisal of the location of the proposed in-stream works was carried out in place of electrofishing surveys and the results incorporated into all ecological reporting in order to inform construction methodology and mitigation measures required. These surveys and results follow the precautionary principle and as such are considered to be sufficient to inform the ecological impact assessment presented in this report and the accompanying Ecological Impact Assessment Report (EcIA).

IFI's recommended guidance for any instream works is 1st July to 31st September subject to the contractor agreeing method statements and pollution mitigation measures with IFI in advance of the

works. Should a temporary diversion be required to accommodate the works, the area will need to be electro-fished prior to dewatering to relocate any species present. Given the presence of the invasive zebra mussel and Canadian waterweed in the catchment, biosecurity measures were also noted as an essential requirement during the works. These measures have been incorporated in full into the recommended mitigations in Section 6 below.

3.3

Results of Baseline Ecological Surveys

The following sections present the results of the baseline ecological surveys, including habitat descriptions, fisheries habitat assessment findings, and species-specific survey results for otter, birds, bats, and non-native invasive species. Habitats Present on the Site and Surrounding Area

The Proposed Development site, site compound and surrounding areas are dominated by **Buildings and artificial surfaces (BL3)**. The Proposed Development site itself consists of the footprint of the existing McLaughlin Building, (Plate 3-1). There is sparse ivy (*Hedera helix*) growing on the western and northern façade of the building. The northern side also has sparse rustyback fern (*Asplenium ceterach*), ivy leaved toadflax (*Cymbalaria muralis*), and pellitory-of-the-wall (*Parietaria judaica*). The parking spaces to the south of the building will serve as a delivery drop off area.

There walkway across the Gaol River along the northern façade of the McLaughlin Building is classified as **Recolonising bare ground (ED3)** (see Plate 3-2). This walkway is overgrown with wall lettuce (*Mycelis muralis*), red valerian, ivy, and herb Robert. Yorkshire fog (*Holcus lanatus*) is also present, along with dandelion, groundsel (*Senecio vulgaris*), common chickweed (*Stellaria media*), white stonecrop, and common mouse ear (*Cerastium fontanum*).

Stone walls and other stonework (BL1) are present at several locations adjacent to the McLaughlin Building and surrounding areas. A stone wall is present at the western edge of the McLaughlin Building bordering the Gaol River on its western bank. This wall is overgrown with ivy and also has a sycamore tree growing out of it next to the walkway spanning the river.

Another small wall is present along the footpath near the eastern bank of the Gaol River. Along the eastern edge of the concrete yard, a stone wall is overgrown with ivy and red valerian. Along the western edge of the concrete yard, there is another lower stone wall (see Plate 3-3). This wall also forms part of the embankment to the Gaol River that flows along the western side of the concrete yard. It is overgrown with bramble, ivy, and red valerian.

Culverts are present underneath the McLaughlin Building and road and open towards the south (see Plate 3-4). There are several cracks in the stonework of the culvert arches, which have been assessed as being suitable for roosting bats. There are also recesses in the stonework which are being used as nesting and roosting opportunities by feral pigeons (*Columba livia domestica*) and magpies (*Pica pica*).

A semi-mature **Treeline (WL2)** is present on the high steep bank to the west of the concrete yard, shading the Gaol River to the south of the McLaughlin building (see Plate 3-3). The treeline overhangs the stone wall. It is made up of sycamore (*Acer pseudoplatanus*), willow (*Salix* spp.), and ash (*Fraxinus excelsior*), with bramble and ivy.

The Gaol River to the north of the McLaughlin Building is classified as a **Canal (FW3)** (see Plate 3-5). The in-stream vegetation near the McLaughlin Building includes European water-milfoil (*Myriophyllum spicatum*), Canadian pondweed (*Elodea canadensis*), and water lilies (*Nymphaea* spp.). Further north, the Gaol River is overgrown with reeds (*Phragmites australis*).

To the south of the McLaughlin Building, the Gaol River emerges from culverts under the road, and three channels merge into one stream (see Plate 3-6). This stretch of the Gaol River is classified as an **Eroding/upland river (FW1)**. The emergent vegetation on the side of the channel(s) includes great willowherb (*Epilobium hirsutum*), bittersweet nightshade, brambles, gypsywort (*Lycopus europaeus*),

nettles, water mint (*Mentha aquatica*), black nightshade, watercress (*Nasturtium officinale*), water parsnip (*Berula erecta*), and water figwort.



Plate 3-1 McLaughlin Building Southern façade (BL3)



Plate 3-2 Walkway at the northern façade of the McLaughlin Building (ED3)



Plate 3-3 Stone wall (BL1) and treeline (WL2) at western edge of concrete yard above the Gaol River to the south of the McLaughlin Building



Plate 3-4 Culvert (BL1) under the McLaughlin Building



Plate 3-5 Gaol River/Eglinton Canal (FW3) to the north of the McLaughlin Building



Plate 3-6 Gaol River (FW1) to the south of the McLaughlin Building



Plate 3-7 Japanese knotweed at the bottom of the embankment of the Gaol River to the north of the McLaughlin Building



Plate 3-8 Zebra mussel in the Gaol River to the north of the McLaughlin Building



Plate 3-9 Canadian waterweed located in the Gaol River to the north of the McLaughlin Building

3.3.1

Fisheries Habitat Assessment

The proposed in-stream works are to facilitate the demolition and construction of the new walkway to the north of the McLaughlin Building and to repair structural damage to the culverts underneath the McLaughlin Building.

The Gaol River at the location of the proposed in-stream works was approximately 35 m in width and around 1.5 m in depth at the time of surveying. The watercourse is classified as a laterally confined, highly modified Canal (FW3) at this location and narrows to approximately 20 m further upstream. Flow was very slow to negligible. Both banks were formed of stone walls, and the channel contained significant detritus and litter. A visible surface film was noted, with the water appearing clear but having a greenish-brown hue.

Aquatic macrophytes were present at the works area, with yellow waterlily (*Nuphar lutea*), water milfoil (*Myriophyllum spicatum*), and Canadian waterweed (*Elodea canadensis*) colonising in places. Further upstream, dense stands of common reed (*Phragmites australis*) and extensive growths of *E. canadensis* were recorded colonising the substrate.

Due to low visibility from surface film, the channel bed composition at the works area could not be determined in full detail. The substrate was likely dominated by fine silt and detritus owing to the stagnant flow regime. Upstream, the substrate included cobbles and boulders interspersed with silt and leaf litter. The silt deposits were unstructured and poorly aerated.

Invasive zebra mussel (*Dreissena polymorpha*) was recorded on a prominent rock within the channel substrate approximately 100 m upstream of the McLaughlin Building, indicating colonisation of this species within the watercourse.

The Gaol River provided sufficient depth for general fisheries holding habitat, and good shelter was available through in-stream and marginal vegetation, particularly reed beds. Numerous shoals of small fish (ca. 15 cm in length) were observed within the channel during the survey.

Atlantic salmon is a Qualifying Interest (QI) of the Lough Corrib SAC. The reach of the Gaol River within the proposed in-stream works area was considered unsuitable for salmonid spawning or nursery use, given the heavily silted substrate, slow flow conditions, and canalised nature of the channel. Clean, well-oxygenated gravels and shallow riffle habitats required for successful spawning and juvenile development were absent. However, good holding habitat was available within deeper sections of the main Gaol River channel and in areas with boulder or reed-bed cover. Overall, habitat suitability for salmonids was assessed as moderate within the Gaol River channel, and poor within the area of the proposed in-stream works.

No suitable spawning substrate for lamprey was recorded within the works area, as appropriately sized, clean, and mobile gravels were absent. The poorly aerated silt beds offered negligible potential as ammocoete nursery habitat.

The Gaol River supported moderate-quality habitat for European eel, particularly north of the McLaughlin Building, where reed beds and deeper, slow-flowing water provided foraging and holding conditions. Larger cobbles and boulders within the channel offered additional refuges for sub-adult and adult eels. Crevices below the waterline in the stone and concrete banks also created suitable nursery and holding microhabitats for this species.

Although barriers such as the culvert beneath the McLaughlin Building and the drop (ca. 1–1.5 m) at the confluence with the River Corrib may restrict fish passage, salmonids and eel may still be capable of navigating these features under certain flow conditions. Furthermore, given the complex network of interconnected rivers, canals, and side channels throughout Galway City, access from upstream reaches may also be possible. Lamprey may access the Gaol River via upstream reaches, as they are unlikely to navigate barriers at the confluence with the River Corrib.

3.3.2 Otter

No signs of otter activity, including resting or breeding sites, were recorded during the dedicated otter survey. However, the Gaol River north of the McLaughlin Building was assessed as providing suitable commuting and foraging habitat for the species, and is likely to be utilised by otters, as plenty of fish were observed in the water.

The Gaol River south of the McLaughlin Building was assessed as having no potential for otter presence, as access is restricted by culverts beneath the building from the north, and by a metal grid at the confluence where the Gaol River enters the River Corrib via an approximately 1–1.5 m drop.

The River Corrib and the Convent River, within 150 m of the site, were also surveyed. No signs of otters were discovered along either watercourse; however, both were assessed as suitable for otter commuting and foraging. The Convent River had an abundance of fish and was assessed as having moderate suitability for otter breeding. Some suitable earth banks for otter holts were noted, although the presence of walking paths and back gardens makes the area less suitable due to anthropogenic disturbance. Suitable resting and sprainting sites were noted, as there are large rocks along the watercourse.

The River Corrib within 150 m of the McLaughlin Building had no suitable holt or resting sites, as the banks along this stretch of the river are artificial and no potential holt holes were observed. Furthermore, NBDC databases show sightings of otter within the Eglinton Canal where it connects to the Gaol River at its northernmost extend, and within the Convent River within 150m of the McLaughlin Building, and within the River Corrib both upstream and downstream of the Proposed Development site.

3.3.3 Birds

Bird species recorded within the Gaol River north of the McLaughlin Building during the site visits included 23 mallards (mostly juveniles), two adult moorhens, each with a small chick. Moorhen and mallard are likely breeding with the reed beds in the Gaol River. Other birds observed near the Proposed Development site are typical of urban habitats in the wider area, including feral pigeons, black-headed gulls, and herring gulls. In the Convent River an adult moorhen was noted with a young chick in reeds, while a mute swan and 17 mallards roosting on amenity grassland to the west of the stream were also noted. No evidence of any species listed on Annex I of the EU Birds Directive or the Birds of Conservation Concern in Ireland 2020-2026 Red List (Gilbert *et al.*, 2021) were recorded. A total of six bird species were recorded during the site surveys, as noted in Table 3-1.

The Proposed Development site does not provide significant supporting habitat for SCI species of the Inner Galway Bay or any other SPA. The only SCI species within the core foraging range from the Inner Galway Bay SPA and the Lough Corrib SPA which was noted during the site visit was black-headed gull (*Larus ridibundus*).

3.3.4 Non-native invasive species

During the survey, the site was searched for invasive species listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and the 'Third Schedule' of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). Several small stands of the First/Third Schedule species Japanese knotweed (*Reynoutria japonica*) were identified at the bottom of the steep and tall embankment between the eastern bank of the Gaol River and the concrete yard used as site compound (see Plate 3-7). Due to the height of the embankment, the stands of Japanese knotweed are isolated from any works activity. No risk for further spread of this species as a result of the Proposed Development exists.

The First/Third Schedule species zebra mussel (*Dreissena polymorpha*) was also found in small numbers within the Gaol River to the north of the McLaughlin Building (see Plate 3-8). Zebra mussel was also present in the Convent River in larger numbers.

Additionally, the Third Schedule species Canadian waterweed is growing within the Gaol River to the north of the McLaughlin Building, and within the Convent River (see Plate 3-9).

An Invasive Species Management Plan was prepared and is included in Appendix 2 of this NIS.

4.

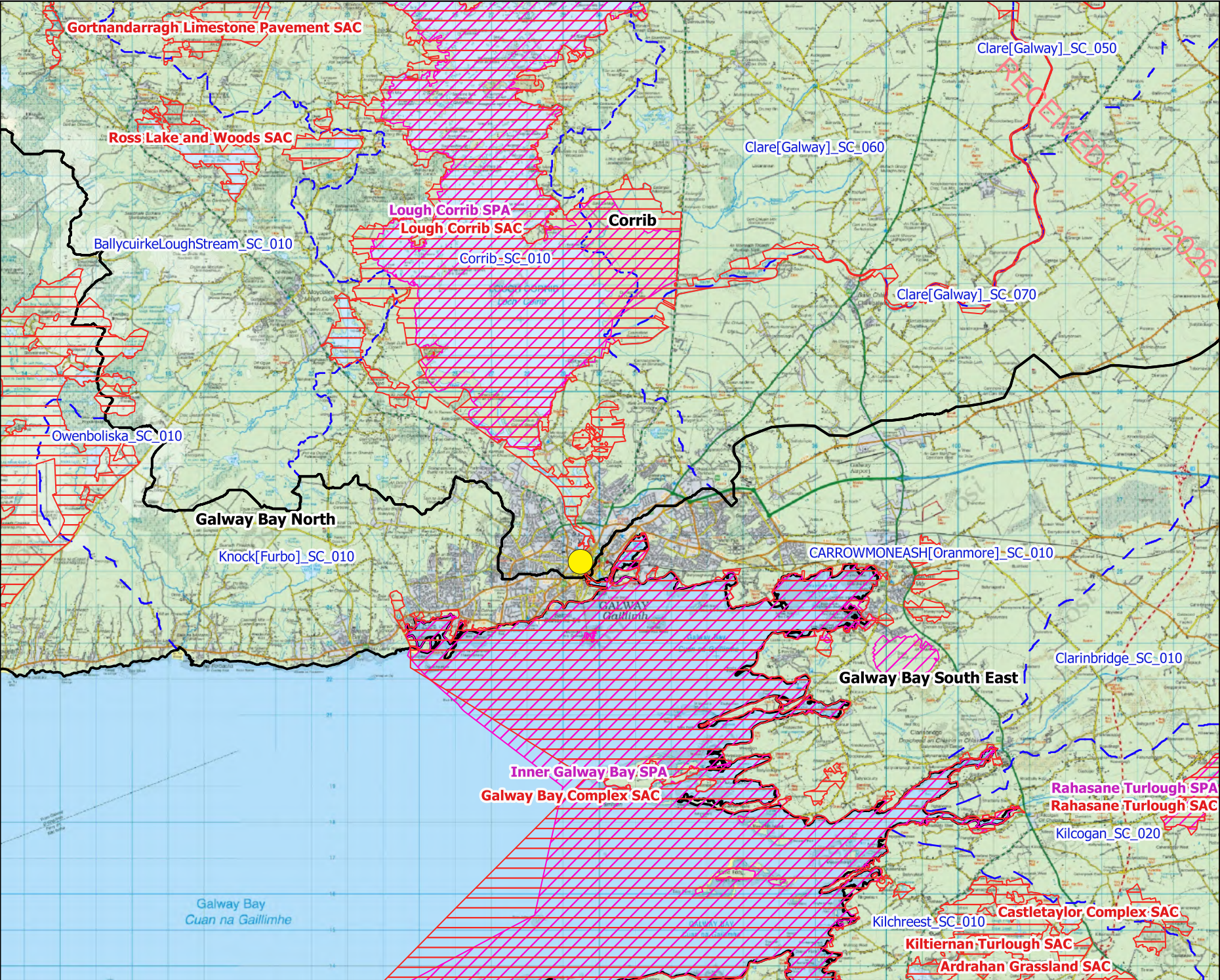
STAGE 1 – APPROPRIATE ASSESSMENT SCREENING

4.1

Identification of Relevant European Sites

The following methodology was used to establish any European Sites upon which there is a potential for a likely significant effect to occur either individually or in combination with other plans and projects as a result of the Proposed Development:

- Initially the most up to date GIS spatial datasets for European designated sites and water catchments were downloaded from the NPWS website (<https://www.npws.ie/maps-and-data/designated-site-data>) and the EPA website (<https://gis.epa.ie/GetData>) on the 06/11/2025.
- All European Sites that could potentially be affected were identified using a source-pathway - receptor model. To provide context for the assessment, European Sites surrounding the Proposed Development site are shown on Figure 4-1. Information on these sites according to the site-specific conservation objectives is provided in Table 4-1. Sites that were further away from the Proposed Development were also considered and no complete source-pathway-receptor chain for likely significant effect was identified for any other European Site.
- The catchment mapping was used to establish or discount potential hydrological connectivity between the Proposed Development site and any European Sites. The hydrological catchments are also shown in Figure 4-1.
- In relation to Special Protection Areas, in the absence of any specific European or Irish guidance in relation to such sites, the Scottish Natural Heritage (SNH) Guidance, '*Assessing Connectivity with Special Protection Areas (SPA)*' (2016) was consulted. This document provides guidance in relation to the identification of connectivity between Proposed Development and Special Protection Areas. The guidance takes into consideration the distances species may travel beyond the boundary of their SPAs and provides information on dispersal and foraging ranges of bird species which are frequently encountered when considering plans and projects.
- Table 4-1 provides details of all relevant European Sites as identified in the preceding steps and assesses the potential for likely significant effects on each.
- The assessment considers any likely direct or indirect effects of the Proposed Development, both alone and in combination with other plans and projects, on European Sites by virtue of criteria including the following: size and scale, land-take, distance from the European Site or key features of the site, resource requirements, emissions, excavation requirements, transportation requirements and duration of construction, operation and decommissioning were considered in this assessment.
- The site synopses and conservation objectives of these sites, as per the NPWS website (<https://www.npws.ie/protected-sites>), were consulted and reviewed at the time of preparing this report 06/11/2025.
- Where potential pathways for Likely Significant Effect are identified, the site is included within the Likely Zone of Influence and further assessment is required within the NIS.
- The potential for the Proposed Development to result in cumulative effects on any European Sites in combination with other plans and projects was considered in the assessment that is presented in Table 4-1. Plans and projects considered include those that are listed in Appendix 3.



Map Legend

- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Site Location
- WFD Hydrological Catchments
- WFD Hydrological Subcatchments



Drawing Title
European Designated Sites within the Likely Zone of Influence

Project Title
University of Galway-McLaughlin Building

Drawn By AMcD	Checked By KOD
Project No. 250316-b	Drawing No. Figure 4-1
Scale 1:138,000	Date 24.11.2025



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Table 4-1 Identification of European Sites within the Likely Zone of Influence

European Sites and Distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives)	Conservation Objectives (available at www.npws.ie)	Identification of Source-Pathway-Receptor Chain and Likely Zone of Influence Determination	Potential for Likely Significant Effects (Yes/No)
Special Areas of Conservation (SACs)				
Lough Corrib SAC [000297] Distance: 57m Hydrological Distance: 110m	➤ [1029] Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>) ➤ [1092] White-clawed Crayfish (<i>Austropotamobius pallipes</i>) ➤ [1095] Sea Lamprey (<i>Petromyzon marinus</i>) ➤ [1096] Brook Lamprey (<i>Lampetra planeri</i>) ➤ [1106] Salmon (<i>Salmo salar</i>) ➤ [1303] Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>) ➤ [1355] Otter (<i>Lutra lutra</i>) ➤ [1393] Slender Green Feather-moss (<i>Drepanocladus vernicosus</i>) ➤ [1833] Slender Naiad (<i>Najas flexilis</i>) ➤ [3110] Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletea uniflorae</i>) ➤ [3130] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoetes-Nanojunctea</i> ➤ [3140] Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara spp.</i>	Detailed Site-Specific Conservation Objectives for this European Site (Version 1, April 2017) were reviewed as part of the assessment and are available at: https://www.npws.ie/protected-sites/sac/000297	There is no potential for direct effects on this SAC as the site of the Proposed Development is located entirely outside this European Site. The Gaol River flows under the McLaughlin Building and flows into the River Corrib approximately 110m downstream of the Proposed Development. The River Corrib at this location is designated as part of the Lough Corrib SAC. Therefore, in the absence of mitigation, a potential pathway for indirect effects on the SAC as a result of water quality deterioration arising from runoff of pollutants during construction and operation of the Proposed Development was identified. While no otter breeding or resting sites were recorded during walkover surveys the Gaol River, Convent River and River Corrib within the likely zone of influence also provide potential suitable habitat to support commuting, foraging and breeding otters. Therefore, a potential pathway for likely significant indirect effects on otter was identified as a result of ex-situ disturbance and displacement was identified. The Proposed Development site is located outside the 2.5km core foraging range of the lesser horseshoe bat roost the SAC is designated for, which is located approx. 35.4km northwest of the Proposed Development site (NPWS, 2018). Therefore, there is no potential for likely significant effects on this QI species due to ex-situ disturbance and displacement as a result of the Proposed Development. In addition, a potential pathway for indirect effects on the SAC was identified as a result of accidental introduction of and/spread of invasive species listed under the	Yes

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European Sites and Distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives)	Conservation Objectives (available at www.npws.ie)	Identification of Source-Pathway-Receptor Chain and Likely Zone of Influence Determination	Potential for Likely Significant Effects (Yes/No)
	➤ [3260] Water courses of plain to montane levels with the <i>Ranunculum fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation ➤ [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (*important orchid sites) ➤ [6410] <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) ➤ [7110] Active raised bogs ➤ [7120] Degraded raised bogs still capable of natural regeneration. ➤ [7150] Depressions on peat substrates of the <i>Rhynchosporion</i> ➤ [7210] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> ➤ [7220] Petrifying springs with tufa formation (<i>Cratoneurion</i>) ➤ [7230] Alkaline fens ➤ [8240] Limestone pavements ➤ [91A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles ➤ [91D0] Bog woodland		First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and the 'Third Schedule' of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) to the SAC boundary. A complete source-pathway-receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Development to result in likely significant effects on this SAC. Therefore, Lough Corrib SAC is located within the Likely Zone of Influence and is considered further in this assessment.	
Galway Bay Complex SAC [000268]	➤ [1140] Mudflats and sandflats not covered by seawater at low tide ➤ [1150] Coastal lagoons	Detailed Site-Specific Conservation	There is no potential for direct effects on Galway Bay Complex SAC as the Proposed Development site is located entirely outside of this European Site.	Yes

European Sites and Distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives)	Conservation Objectives (available at www.npws.ie)	Identification of Source-Pathway-Receptor Chain and Likely Zone of Influence Determination	Potential for Likely Significant Effects (Yes/No)
Distance: 372m Hydrological: ca. 390m	➤ [1160] Large shallow inlets and bays ➤ [1170] Reefs ➤ [1220] Perennial vegetation of stony banks ➤ [1310] <i>Salicornia</i> and other annuals colonising mud and sand ➤ [1330] Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>) ➤ [1355] Otter (<i>Lutra lutra</i>) ➤ [1365] Harbour seal (<i>Phoca vitulina</i>) ➤ [1410] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) ➤ [3180] Turloughs ➤ [5130] <i>Juniperus communis</i> formations on heaths or calcareous grasslands ➤ [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (*important orchid sites) ➤ [7210] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> ➤ [7230] Alkaline fens	Objectives for this European Site (Version 1, April 2013) were reviewed as part of the assessment and are available at: https://www.npws.ie/protected-sites/sac/000268	The potential for likely significant indirect effects was also considered. The Gaol River has direct downstream hydrological connectivity (approximately 390 meters) with Galway Bay Complex SAC via the River Corrib. As such, there is potential for likely significant indirect effects on Galway Bay Complex SAC as a result of water quality deterioration arising from runoff of polluting materials during construction and operation of the Proposed Development. The Gaol River and River Corrib within the likely zone of influence also provide potential suitable habitat to support commuting, foraging and breeding otters. Therefore, a potential pathway for likely significant indirect effects on otter was identified as a result of <i>ex-situ</i> disturbance and displacement. In addition, a potential pathway for indirect effects on the SAC was identified as a result of accidental introduction of and/spread of invasive species listed under the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and the 'Third Schedule' of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) to the SAC boundary. A complete source-pathway-receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Development to result in likely significant effects on this SAC. Therefore, Galway Bay Complex SAC is located within the Likely Zone of Influence and is considered further in this assessment.	
Connemara Bog Complex SAC [002034]	➤ [1065] Marsh Fritillary (<i>Euphydryas aurinia</i>) ➤ [1106] Salmon (<i>Salmo salar</i>) ➤ [1150] Coastal lagoons	Detailed Site-Specific Conservation Objectives for this	There is no potential for direct effects on Connemara Bog Complex SAC as the Proposed Development site is located entirely outside of this European Site.	No

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European Sites and Distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives)	Conservation Objectives (available at www.npws.ie)	Identification of Source-Pathway-Receptor Chain and Likely Zone of Influence Determination	Potential for Likely Significant Effects (Yes/No)
Distance: 12.5km	> [1170] Reefs > [1355] Otter (<i>Lutra lutra</i>) > [1833] Slender Naiad (<i>Najas flexilis</i>) > [3110] Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) > [3130] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> > [3160] Natural dystrophic lakes and ponds > [3260] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation > [4010] Northern Atlantic wet heaths with <i>Erica tetralix</i> > [4030] European dry heaths > [6410] <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) > [7130] Blanket bogs (* if active bog) > [7140] Transition mires and quaking bogs > [7150] Depressions on peat substrates of the <i>Rhynchosporion</i> > [7230] Alkaline fens > [91A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	European Site (Version 1, October 2015) were reviewed as part of the assessment and are available at: https://www.npws.ie/protected-sites/sac/002034	The potential for likely significant indirect effects was also considered. There is no hydrological connectivity between the Proposed Development site and this SAC as they are located in separate surface water sub-catchments and underlain by separate groundwater bodies. Given the lack of connectivity and the intervening distance between the site and the SAC, no potential pathway for likely significant indirect effects on this European Site was identified. As a result, no complete source pathway receptor chain for likely significant effect was identified between the Proposed Development site and this SAC. Therefore, the Connemara Bog Complex SAC is not within the Likely Zone of Influence and no further assessment is required.	

European Sites and Distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives)	Conservation Objectives (available at www.npws.ie)	Identification of Source-Pathway-Receptor Chain and Likely Zone of Influence Determination	Potential for Likely Significant Effects (Yes/No)
Ross Lake and Woods SAC [001312] Distance: 13.8km	➤ [1303] Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>) ➤ [3140] Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.	Detailed Site-Specific Conservation Objectives for this European Site (Version 1, October 2018) were reviewed as part of the assessment and are available at: https://www.npws.ie/protected-sites/sac/001312	There is no potential for direct effects on Ross Lake and Woods SAC as the Proposed Development site is located entirely outside of this European Site. The potential for likely significant indirect effects was also considered. There is no hydrological connectivity between the Proposed Development site and this SAC as they are located in separate surface water sub-catchments and underlain by separate groundwater bodies. Given the lack of connectivity and the intervening distance between the site and the SAC, no potential pathway for likely significant indirect effects on this European Site was identified as a result of water quality deterioration. Furthermore, the Proposed Development site is located 13.8km southeast of the SAC and as such the Proposed Development site is outside the 2.5km core foraging range of lesser horseshoe bat (NPWS, 2018). Therefore, there is no potential for likely significant effect to this QI species due to ex-situ disturbance or displacement as a result of the Proposed Development. As a result, no complete source pathway receptor chain for likely significant effect was identified between the Proposed Development site and this SAC. Therefore, the Ross Lake and Woods SAC is not within the Likely Zone of Influence and no further assessment is required.	No
Lough Fingall Complex SAC [000606] Distance: 13.8km	➤ [1303] Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>) ➤ [3180] Turloughs ➤ [4060] Alpine and Boreal heaths ➤ [5130] <i>Juniperus communis</i> formations on heaths or calcareous grasslands	Detailed Site-Specific Conservation Objectives for this European Site (Version 1, January	There is no potential for direct effects on Lough Fingall Complex SAC as the Proposed Development site is located entirely outside of this European Site. The potential for likely significant indirect effects was also considered. There is no hydrological connectivity between the Proposed Development site and this SAC as they are located in separate surface water catchments and underlain by separate	No

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European Sites and Distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives)	Conservation Objectives (available at www.npws.ie)	Identification of Source-Pathway-Receptor Chain and Likely Zone of Influence Determination	Potential for Likely Significant Effects (Yes/No)
	➤ [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (*important orchid sites) ➤ [7210] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> ➤ [8240] Limestone pavements	2019) were reviewed as part of the assessment and are available at: https://www.npws.ie/protected-sites/sac/000606	groundwater bodies. Given the lack of connectivity and the intervening distance between the site and the SAC, no potential pathway for likely significant indirect effects on this European Site was identified as a result of water quality deterioration. Furthermore, the Proposed Development site is located 13.8km northwest of the SAC and as such the Proposed Development site is outside the 2.5km core foraging range of lesser horseshoe bat (NPWS, 2018). Therefore, there is no potential for significant effect to this QI species due to ex-situ disturbance or displacement as a result of the Proposed Development. As a result, no complete source pathway receptor chain for likely significant effect was identified between the Proposed Development site and this SAC. Therefore, the Lough Fingall Complex SAC is not within the Likely Zone of Influence, and no further assessment is required.	
East Burren Complex SAC [001926] Distance: 13.8km	➤ [1065] Marsh Fritillary (<i>Euphydryas aurinia</i>) ➤ [1303] Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>) ➤ [1355] Otter (<i>Lutra lutra</i>) ➤ [3140] Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara spp.</i> ➤ [3180] Turloughs* ➤ [3260] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> ➤ [Alpine and Boreal heaths]	Detailed Site-Specific Conservation Objectives for this European Site (Version 1, January 2022) were reviewed as part of this assessment and are available at: https://www.npws.ie/protected-sites/sac/001926	There is no potential for direct effects on East Burren Complex SAC as the Proposed Development site is located entirely outside of this European Site. The potential for likely significant indirect effects was also considered. There is no hydrological connectivity between the Proposed Development site and this SAC as they are located in separate surface water catchments and underlain by separate groundwater bodies. Given the lack of connectivity and the intervening distance between the site and the SAC, no potential pathway for likely significant indirect effects on this European Site was identified as a result of water quality deterioration. Furthermore, the Proposed Development site is located 13.8km north of the SAC and as such the Proposed Development site is outside the 2.5km core foraging	No

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European Sites and Distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives)	Conservation Objectives (available at www.npws.ie)	Identification of Source-Pathway-Receptor Chain and Likely Zone of Influence Determination	Potential for Likely Significant Effects (Yes/No)
	> [5130] <i>Juniperus communis</i> formations on heaths or calcareous grasslands > [6130] Calaminarian grasslands of the <i>Violetalia calaminariae</i> > [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) > [6510] Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) > [7210] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>* > [7220] Petrifying springs with tufa formation (<i>Cratoneurion</i>)* > [7230] Alkaline fens > [8240] Limestone pavements* > [8310] Caves not open to the public > [91E0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>)		range of lesser horseshoe bat (NPWS, 2018). Therefore, there is no potential for significant effect to this QI species due to ex-situ disturbance or displacement as a result of the Proposed Development. As a result, no complete source pathway receptor chain for likely significant effect was identified between the Proposed Development site and this SAC. Therefore, the East Burren Complex SAC is not within the Likely Zone of Influence, and no further assessment is required.	
Special Protection Areas (SPAs)				
Inner Galway Bay SPA [004031]	> A003] Great Northern Diver (<i>Gavia immer</i>) > [A017] Cormorant (<i>Phalacrocorax carbo</i>) > [A028] Grey Heron (<i>Ardea cinerea</i>)	Detailed Site-Specific Conservation Objectives for this	There is no potential for direct effects on Inner Galway Bay SPA as the site of the Proposed Development is located entirely outside of this European Site.	Yes

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European Sites and Distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives)	Conservation Objectives (available at www.npws.ie)	Identification of Source-Pathway-Receptor Chain and Likely Zone of Influence Determination	Potential for Likely Significant Effects (Yes/No)
Distance: 825m Hydrological Distance: ca. 1.1km	➤ [A046] Brent Goose (<i>Branta bernicla hrota</i>) ➤ [A050] Wigeon (<i>Anas penelope</i>) ➤ [A052] Teal (<i>Anas crecca</i>) ➤ [A056] Shoveler (<i>Anas clypeata</i>) ➤ [A069] Red-breasted Merganser (<i>Mergus serrator</i>) ➤ [A137] Ringed Plover (<i>Charadrius hiaticula</i>) ➤ [A140] Golden Plover (<i>Pluvialis apricaria</i>) ➤ [A142] Lapwing (<i>Vanellus vanellus</i>) ➤ [A149] Dunlin (<i>Calidris alpina alpina</i>) ➤ [A157] Bar-tailed Godwit (<i>Limosa lapponica</i>) ➤ [A160] Curlew (<i>Numenius arquata</i>) ➤ [A162] Redshank (<i>Tringa totanus</i>) ➤ [A169] Turnstone (<i>Arenaria interpres</i>) ➤ [A179] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) ➤ [A182] Common Gull (<i>Larus canus</i>) ➤ [A191] Sandwich Tern (<i>Sterna sandvicensis</i>) ➤ [A193] Common Tern (<i>Sterna hirundo</i>) ➤ [A999] Wetlands	European Site (Version 1, May 2013) were reviewed as part of this assessment and are available at: https://www.npws.ie/protected-sites/spa/004031	The potential for likely significant indirect effects was also considered. The Gaol River has direct downstream hydrological connectivity (approximately 1.1km) with Inner Galway Bay SPA via the River Corrib. As such, there is potential for likely significant indirect effects on Inner Galway Bay SPA as a result of water quality deterioration arising from runoff of polluting materials during construction and operation of the Proposed Development. The site is located 825m from the SPA, however during the site surveys undertaken, the Proposed Development site was found to be dominated by buildings and artificial surfaces and as such does not provide significant suitable habitat or resources for the listed SCI species. Given the absence of significant supporting habitat, there is no potential for likely significant indirect effects on the SPA due to <i>ex-situ</i> disturbance or displacement of SCI species. In addition, a potential pathway for indirect effects on the SPA was identified as a result of accidental introduction of and/spread of invasive species listed under the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and the 'Third Schedule' of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) to the SPA boundary. A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Development to result in likely significant effects on this SPA. Therefore, the Inner Galway Bay SPA is located within the Likely Zone of Influence and is considered further in this assessment.	
Lough Corrib SPA [004042]	➤ [A051] Gadwall (<i>Anas strepera</i>) ➤ [A056] Shoveler (<i>Anas clypeata</i>)	Detailed Site-Specific	There is no potential for direct effects on Lough Corrib SPA as the site of the Proposed Development is located entirely outside of this European Site.	No

European Sites and Distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives)	Conservation Objectives (available at www.npws.ie)	Identification of Source-Pathway-Receptor Chain and Likely Zone of Influence Determination	Potential for Likely Significant Effects (Yes/No)
Distance: 3.3km	➤ [A059] Pochard (<i>Aythya farina</i>) ➤ [A061] Tufted Duck (<i>Aythya fuligula</i>) ➤ [A065] Common Scoter (<i>Melanitta nigra</i>) ➤ [A082] Hen Harrier (<i>Circus cyaneus</i>) ➤ [A125] Coot (<i>Fulica atra</i>) ➤ [A140] Golden Plover (<i>Pluvialis apricaria</i>) ➤ [A179] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) ➤ [A182] Common Gull (<i>Larus canus</i>) ➤ [A193] Common Tern (<i>Sterna hirundo</i>) ➤ [A194] Arctic Tern (<i>Sterna paradisaea</i>) ➤ [A395] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) ➤ [A999] Wetlands	Conservation Objectives for this European Site (Version 1, January 2023) were reviewed as part of this assessment and are available at: https://www.npws.ie/protected-sites/spa/004042	The potential for likely significant indirect effects was also considered. There is no hydrological connectivity between the Proposed Development site and this SPA. The SPA is located 3.4km upstream from the Proposed Development via the River Corrib. Furthermore, the Proposed Development site and this SPA are underlain by separate groundwater bodies. Given the lack of connectivity and the intervening distance between the Proposed Development site and the SPA, no potential pathway for likely significant indirect effects on this European Site was identified. Furthermore, the Proposed Development site is dominated by buildings and artificial surfaces and as such does not provide significant suitable habitat or resources for the listed SCI species. Given the absence of significant supporting habitat and the distance between the Proposed Development and the SPA, there is no potential for indirect effects on the SPA via <i>ex-situ</i> disturbance or displacement of SCI species. As a result, no complete source pathway receptor chain for likely significant effect was identified between the Proposed Development site and this SPA. Therefore, the Lough Corrib SPA is not within the Likely Zone of Influence and no further assessment is required.	
Cregganna Marsh SPA [004142] Distance: 8.5km	➤ [A395] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>)	Detailed Site-Specific Conservation Objectives for this European Site (Version 1, January 2023) were reviewed as part of	There is no potential for direct effects on Cregganna Marsh SPA as the Proposed Development site is located entirely outside of this European Site. The potential for likely significant indirect effects was also considered. There is no hydrological connectivity between the Proposed Development site and this SPA as they are located in separate surface water catchments and underlain by separate groundwater bodies. Given the lack of connectivity and the intervening distance between the site and the SPA, no potential pathway for likely significant indirect	No

European Sites and Distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives)	Conservation Objectives (available at www.npws.ie)	Identification of Source-Pathway-Receptor Chain and Likely Zone of Influence Determination	Potential for Likely Significant Effects (Yes/No)
		this assessment and are available at: https://www.npws.ie/protected-sites/spa/004142 .	effects on this European Site was identified as a result of water quality deterioration. Furthermore, the Proposed Development site is dominated by buildings and artificial surfaces and as such does not provide significant suitable habitat or resources for the listed SCI species. Therefore, given the absence of supporting habitat, there is no potential for indirect effects on the SPA via <i>ex-situ</i> disturbance or displacement of SCI species. As a result, no complete source pathway receptor chain for likely significant effect was identified between the Proposed Development site and this SPA. Therefore, the Cregganna Marsh SPA is not within the Likely Zone of Influence and no further assessment is required.	

4.2

Stage 1 Appropriate Assessment Screening Conclusion

It cannot be excluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information and in light of the conservation objectives of the relevant European sites, that the Proposed Development, individually or in combination with other plans and projects, would be likely to have a significant effect on the Lough Corrib SAC, Galway Bay Complex SAC and the Inner Galway Bay SPA.

As a result, an Appropriate Assessment (AA) of the Proposed Development is required. Information to enable the competent authority to carry out an AA of the Proposed Development is presented in Sections 5-9 of this report.

5.

STAGE 2 - INFORMATION TO INFORM THE APPROPRIATE ASSESSMENT

The potential for likely significant effects on the following European Sites, in the absence of any mitigation, individually or cumulatively with other plans or projects, was identified in the preceding section:

- Lough Corrib SAC [000297]
- Galway Bay Complex SAC [000268]
- Inner Galway Bay SPA [004031]

The following sections consider each European Site individually to:

1. Determine which individual qualifying features have the potential to be adversely affected by the Proposed Development.
2. Provide information with regard to the Conservation Objectives and site-specific pressures and threats for those qualifying features that have the potential to be adversely affected.
3. Provide the results of any additional survey work that was necessary to inform an impact assessment.

5.1

Identification of Relevant Qualifying Features and Desk Study

5.1.1

Lough Corrib SAC [000297]

The potential for likely significant effects on this SAC was identified in Section 4.1 above. The identified pathways for effect include the following:

- The Gaol River, which flows through the Proposed Development site, has direct surface water connectivity (approximately 110 meters) with the River Corrib and downstream areas of the Lough Corrib SAC. As such, there is potential for likely significant indirect effects on Lough Corrib SAC as a result of water quality deterioration arising from runoff of pollutant during construction and operation of the Proposed Development.
- The Gaol River provides suitable habitat to support commuting and foraging otters. Therefore, a potential pathway for likely significant indirect effects on otter was identified as a result of disturbance and displacement.
- A potential pathway for indirect effects on the SAC due to disturbance and spread of invasive species listed under the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and the 'Third Schedule' of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011), which were recorded within and adjacent to the Proposed Development site boundary, was also identified.

Table 5-1 below lists the qualifying features of this European Site and determines, in the light of their Conservation Objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

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5.1.1.1 Identification of Individual Qualifying Features with the Potential to be Affected

Table 5-1 Assessment of Qualifying features potentially affected in Lough Corrib SAC

Qualifying feature	Conservation Objective (NPWS, Version 1, April 2017 ¹),	Rationale	Potential for Adverse Effects Y/N
[1029] Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>)	To restore the favourable conservation condition of Freshwater Pearl Mussel in Lough Corrib SAC.	There is no potential for adverse effects on freshwater pearl mussel as the population for which this SAC has been designated is restricted to the Owenriff River, within the upper catchments of Lough Corrib (see Map 9 of Site-Specific Conservation Objectives). This is located upgradient and upstream of the Proposed Development site. Therefore, no source-pathway-receptor chain for adverse effects on this QI was identified as a result of the Proposed Development. No further assessment is required	No
[1092] White-clawed Crayfish (<i>Austropotamobius pallipes</i>)	To maintain the favourable conservation condition of White-clawed Crayfish in Lough Corrib SAC.	The Proposed Development site is located upstream of the River Corrib which is designated as part of the Lough Corrib SAC. According to the Site-Specific Conservation Objectives for the SAC, white-clawed crayfish is recorded from Lough Corrib and a number of tributaries of the River Clare, however its total distribution is unknown. Therefore, taking a highly precautionary approach a complete source-pathway-receptor chain for adverse effects on this species was identified due to deterioration in water quality resulting from the construction and operation of the Proposed Development, as well as disturbance during the in-stream works. This potential pathway is assessed further in this NIS.	Yes
[1095] Sea Lamprey (<i>Petromyzon marinus</i>)	To maintain the favourable conservation condition of White-clawed Crayfish in Lough Corrib SAC.	The Proposed Development site is located upstream of the River Corrib which is designated as part of the Lough Corrib SAC. There is potential for these species to inhabit areas downstream of the site. Therefore, a complete source-pathway-receptor chain for adverse effects on these	Yes

¹ NPWS (2017) Conservation Objectives: Lough Corrib SAC 000297. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

Qualifying feature	Conservation Objective (NPWS, Version 1, April 2017 ¹),	Rationale	Potential for Adverse Effects Y/N
[1096] Brook Lamprey (<i>Lampetra planeri</i>)	To restore the favourable conservation condition of Sea Lamprey in Lough Corrib SAC.	species was identified due to deterioration in water quality resulting from construction and operation of the Proposed Development, as well as disturbance during the in-stream works. This potential pathway is assessed further in this NIS.	Yes
[1106] Salmon (<i>Salmo salar</i>)	To maintain the favourable conservation condition of Brook Lamprey in Lough Corrib SAC.		Yes
[1303] Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)	To restore the favourable conservation condition of Lesser Horseshoe Bat in Lough Corrib SAC.	The lesser horseshoe bat roost for which the SAC is designated is located approximately 35.4km northwest of the development site as mapped in Map 11 of the Site-Specific Conservation Objectives. Therefore, the Proposed Development site is located outside of the 2.5km key foraging range for the QI population of this species. There is no potential for disturbance effects on the designated roost or the mapped foraging grounds for lesser horseshoe bat as a result of the Proposed Development. Therefore, no source-pathway-receptor chain for adverse effects on this QIs was identified as a result of the Proposed Development. No further assessment is required.	No
[1355] Otter (<i>Lutra lutra</i>)	To maintain the favourable conservation condition of Otter in Lough Corrib SAC.	While no otter holts were identified during the dedicated otter surveys undertaken, the Gaol River, Convent River and River Corrib within the likely zone of influence also provide potential suitable foraging, commuting and breeding habitat for the species. Therefore, a potential pathway for adverse effects on this species was identified due to disturbance and displacement during construction and operation of the Proposed Development was identified. Additionally, potential for adverse effects on this species in the form of deterioration of water quality during construction and operation of the Proposed Development was identified. This has potential to result in reduced prey (fish) resources for otter. These potential pathways are assessed further in this NIS.	Yes

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Qualifying feature	Conservation Objective (NPWS, Version 1, April 2017 ¹),	Rationale	Potential for Adverse Effects Y/N
[1393] Slender Green Feather-moss (<i>Drepanocladus vernicosus</i>)	To maintain the favourable conservation condition of Slender Green Feather-moss (Shining Sicklemoss) in Lough Corrib SAC.	According to Map 10 of the Site-Specific Conservation Objectives, Slender Green Feather-Moss occurs to the west of Lough Corrib, upgradient and upstream of the Proposed Development. There is no hydrological connectivity between the Proposed Development and the recorded locations of this species. Therefore, no source-pathway-receptor chain for adverse effects on this QI was identified as a result of the Proposed Development. No further assessment is required.	No
[1833] Slender Naiad (<i>Najas flexilis</i>)	To restore the favourable conservation condition of Slender Naiad in Lough Corrib SAC.	According to Map 13 of the Site-Specific Conservation Objectives, known and potential habitat for Slender Naiad is located within the lake waters of Lough Corrib, which is to the north of and upstream of the Proposed Development site. The species is a submerged macrophyte of freshwater lakes (Conservation objectives supporting document - <i>Najas flexilis</i> , Schmidt <i>et al.</i> 2017). Therefore, no source-pathway-receptor chain for adverse effects on this QI was identified as a result of the Proposed Development. No further assessment is required.	No
[3110] Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)	To restore the favourable conservation condition of Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) in Lough Corrib SAC.	According to Map 3 of the Site-Specific Conservation Objectives, these lacustrine habitats are associated with Lough Corrib, which is located to the north of and upstream of the Proposed Development site. Therefore, no source-pathway-receptor chain for adverse effects on these QIs was identified as a result of the Proposed Development. No further assessment is required.	No
[3130] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i>	To restore the favourable conservation condition of Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> in Lough Corrib SAC.		No

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Qualifying feature	Conservation Objective (NPWS, Version 1, April 2017 ¹),	Rationale	Potential for Adverse Effects Y/N
[3140] Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.	To restore the favourable conservation condition of Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. in Lough Corrib SAC.		No
[3260] Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation	To maintain the favourable conservation condition of Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation in Lough Corrib SAC.	The Proposed Development site is located upstream of the River Corrib which is designated as part of the Lough Corrib SAC. Taking a highly precautionary approach, there is potential for this habitat to be adversely affected where it may occur downstream of this site due to deterioration in water quality resulting from construction and operation of the Proposed Development site. Therefore, a complete source-pathway-receptor chain for adverse effects on this habitat was identified. This potential pathway is assessed further in this NIS.	Yes
[6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites)	To maintain the favourable conservation condition of Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) in Lough Corrib SAC.	These QI habitats are terrestrial in nature and were not recorded within or adjacent to the site during the surveys undertaken. Therefore, no source-pathway-receptor chain adverse effects on these QIs was identified as a result of the Proposed Development. No further assessment is required.	No
[6410] <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)	To maintain the favourable conservation condition of <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) in Lough Corrib SAC.		No
[7110] Active raised bogs	To restore the favourable conservation condition of Active raised bogs in Lough Corrib SAC.		No

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Qualifying feature	Conservation Objective (NPWS, Version 1, April 2017 ¹),	Rationale	Potential for Adverse Effects Y/N
[7120] Degraded raised bogs still capable of natural regeneration	The long-term aim for Degraded raised bogs still capable of natural regeneration is that its peat-forming capability is re-established; therefore, the conservation objective for this habitat is inherently linked to that of Active raised bogs (7110) and a separate conservation objective has not been set in Lough Corrib SAC.		No
[7150] Depressions on peat substrates of the <i>Rhynchosporion</i>	Depressions on peat substrates of the <i>Rhynchosporion</i> is an integral part of good quality Active raised bogs (7110) and thus a separate conservation objective has not been set for the habitat in Lough Corrib SAC.		No
[8240] Limestone pavements	To maintain the favourable conservation condition of Limestone pavements in Lough Corrib SAC.		No
[91A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	To maintain the favourable conservation condition of Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles in Lough Corrib SAC.		No
[91D0] Bog woodland	To maintain the favourable conservation condition of Bog woodland in Lough Corrib SAC.		No

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Qualifying feature	Conservation Objective (NPWS, Version 1, April 2017 ¹),	Rationale	Potential for Adverse Effects Y/N
[7210] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>	To maintain the favourable conservation condition of Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> in Lough Corrib SAC.	According to the Site-Specific Conservation Objectives, these habitats have not been mapped in detail for Lough Corrib SAC and thus the total area of the qualifying habitats in the SAC is unknown. However, the River Corrib, after passing by the Proposed Development site, travels through urban landscape before discharging to marine waters. Therefore, there is no potential for indirect effect on these groundwater dependent QIs. Furthermore, NPWS Article 17 mapping shows mapped areas of these QIs are located to the north of and upgradient of the Proposed Development site, and in a separate ground waterbody. Therefore, no source-pathway-receptor chain for adverse effects on these QIs was identified as a result of the Proposed Development. No further assessment is required.	No
[7220] Petrifying springs with tufa formation (<i>Cratoneurion</i>)	To maintain the favourable conservation condition of Petrifying springs with tufa formation (<i>Cratoneurion</i>) in Lough Corrib SAC.		No
[7230] Alkaline fens	To maintain the favourable conservation condition of Alkaline fens in Lough Corrib SAC.		No

5.1.1.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Development. These are provided in Table 5-2.

Table 5-2 Site-specific threats, pressures and activities in Lough Corrib SAC

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
High	A02.01	Agricultural intensification	both
High	C01.03.02	Mechanical removal of peat	inside
High	G05	Other human intrusions and disturbances	inside
High	H01.08	Diffuse pollution to surface waters due to household sewage and waste	outside
High	I01	Invasive non-native species	inside
Moderate	A04.03	Abandonment of pastoral systems, lack of grazing	inside
Moderate	A08	Fertilisation	both
Moderate	A10.01	Removal of hedges and copses or scrub	inside
Moderate	B01	Forest planting on open ground	both
Moderate	D01	Roads, paths and railroads	inside
Moderate	D03.01.02	Piers/ tourist harbours or recreational piers	inside
Moderate	E01.01	Continuous urbanisation	outside
Moderate	E01.03	Dispersed habitation	inside
Moderate	J02.01.03	Infilling of ditches, dykes, ponds, pools, marshes or pits	inside
Moderate	J02.15	Other human induced changes in hydraulic conditions	both
Low	C01.01	Sand and gravel extraction	outside
Low	E03.01	Disposal of household/ recreational facility waste	inside

Rank: H = high, M = medium, L = low; i = inside, o = outside, b = both

Potential pathways for effect with regard to site-specific threats, pressures and activities have been identified in relation to potential for 'Other human intrusions and disturbances' and 'Other human induced changes in hydraulic conditions' associated with the Proposed Development and 'Invasive non-native species' due to the zebra mussel and Canadian waterweed within the Gaol River.

5.1.1.3 QI Species Specific Information

5.1.1.3.1 White Clawed Crayfish (*Austropotamobius pallipes*)

The conservation objective for this QI is:

'To maintain the favourable conservation condition of White-clawed Crayfish in Lough Corrib SAC'.

The attributes and targets for this habitat are provided in Table 5-8 below.

Table 5-3 Targets and attributes associated with nominated site-specific conservation objectives for White-clawed Crayfish in Lough Corrib SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Distribution: River Corrib	No reduction from baseline.	Yes – The Proposed Development has the potential to result in deterioration in water quality. The total distribution of white-clawed crayfish within River Corrib is unknown. There is potential for this species to occur downstream of the Proposed Development in the River Corrib. Therefore, the Proposed Development has the potential to result in habitat degradation for white-clawed crayfish, resulting in reduction in overall distribution
Distribution: Lough Corrib	No reduction from baseline.	No – Lough Corrib is located approximately 5.6km upstream of the Proposed Development. There is no potential for deterioration of water quality in the lake as a result of the Proposed Development and therefore no potential for a reduction in the distribution of this species in Lough Corrib
Population structure: recruitment	Juveniles and/or females with eggs in all occupied tributaries and occupied parts of Lough Corrib.	Yes – The Proposed Development has the potential to result in deterioration in water quality in the downstream River Corrib. The total distribution of white-clawed crayfish within River Corrib is unknown, and there is potential for the species to occur in the River Corrib downstream of the Proposed Development. Therefore, the Proposed Development has the potential to result in degradation of supporting habitat for this species which has potential to affect recruitment.
Negative indicator species	No alien crayfish species.	Yes – In-stream works will take place. There is potential for the Proposed Development to introduce or cause the spread of alien crayfish species or disease in Lough Corrib or the River Corrib.
Disease	No instances of disease.	
Water quality	At least Q3-4 at all sites sampled by EPA.	Yes – The Proposed Development has the potential to result in deterioration in water quality and therefore result in habitat degradation for white-clawed crayfish.
Habitat quality: heterogeneity	No decline in habitat heterogeneity or habitat quality.	Yes – The Proposed Development has the potential to result in deterioration in water quality and therefore result in habitat degradation and a decline of habitat quality for white-clawed crayfish.

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5.1.1.3.2 Sea Lamprey (*Petromyzon marinus*) [1095]

The conservation objective for this QI is:

‘To restore the favourable conservation condition of Sea Lamprey in Lough Corrib SAC.’

The attributes and targets for this species are provided in Table 5-4 below.

Table 5-4 Targets and attributes associated with nominated site-specific conservation objectives for Sea Lamprey in Lough Corrib SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Distribution: extent of anadromy	Greater than 75% of main stem length of rivers accessible from estuary	No – The Proposed Development will not result in any barrier to movement.
Population structure of juveniles	At least three age/size groups present	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Juvenile density in fine sediment	Mean catchment juvenile density at least 1/m ²	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Availability of juvenile habitat	More than 50% of sample sites positive, with a minimum of four positive sites in a catchment, which are at least 5km apart	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.1.3.3 Brook Lamprey (*Lampetra planeri*) [1096]

The conservation objective for this QI is:

‘To maintain the favourable conservation condition of Brook Lamprey in Lough Corrib SAC.’

The attributes and targets for this species are provided in Table 5-6 below.

Table 5-5 Targets and attributes associated with nominated site-specific conservation objectives for Brook Lamprey in Lough Corrib SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Distribution: extent of anadromy	Greater than 75% of main stem length of rivers accessible from estuary	No – The Proposed Development will not result in any barrier to movement.
Population structure of juveniles	At least three age/size groups present	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Juvenile density in fine sediment	Mean catchment juvenile density at least 1/m ²	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Availability of juvenile habitat	More than 50% of sample sites positive, with a minimum of four positive sites in a catchment, which are at least 5km apart	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.1.3.4 Salmon (*Salmo salar*) [1106]

The conservation objective for this QI is:

‘To maintain the favourable conservation condition of Atlantic Salmon in Lough Corrib SAC.’

The attributes and targets for this species are provided in Table 5-6 below.

Table 5-6 Targets and attributes associated with nominated site-specific conservation objectives for Salmon in Lough Corrib SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Distribution: extent of anadromy	100% of river channels down to second order accessible from estuary	No – The Proposed Development will not result in any barrier to movement.
Adult spawning fish	Conservation limit (CL) for each system consistently exceeded	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Salmon fry abundance	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Out-migrating smolt abundance	No significant decline	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Number and distribution of redds	No decline in number and distribution of spawning redds due to anthropogenic causes	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Water quality	At least Q4 at all sites sampled by EPA	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.1.3.5 Otter (*Lutra lutra*)

The conservation objective for this QI is:

‘To maintain the favourable conservation condition of Otter in Lough Corrib SAC.’

The attributes and targets for this species are provided in Table 5-7 below.

Table 5-7 Targets and attributes associated with nominated site-specific conservation objectives for Otter in Lough Corrib SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Distribution	No significant decline	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 1,054ha along riverbanks/ lake shoreline/around ponds	No – The Proposed Development will not result in any reduction to terrestrial otter habitat.
Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 314.2km	No – The Proposed Development will not result in any reduction to river otter habitat.
Extent of freshwater (lake) habitat	No significant decline. Area mapped and calculated as 4,178ha	No – The Proposed Development will not result in any reduction to freshwater otter habitat.

Couching sites and holts	No significant decline	No – The Proposed Development will not result in the loss of couching or resting sites.
Fish biomass available	No significant decline	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Barriers to connectivity	No significant increase	No – The Proposed Development will not result in any barriers to connectivity.

5.1.1.4 QI Habitat Specific Information

5.1.1.4.1 Water courses of plain to montane levels with *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation

The conservation objective for this QI is:

*‘To maintain the favourable conservation condition of Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation in Lough Corrib SAC’.*

The attributes and targets for this habitat are provided in Table 5-8 below.

Table 5-8 Targets and attributes associated with nominated site-specific conservation objectives for Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation in Lough Corrib SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Habitat area	Area stable or increasing, subject to natural processes	Yes – The extent of this habitat in the River Corrib is unknown. On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Habitat distribution	No decline, subject to natural processes	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Hydrological regime: river flow	Maintain appropriate hydrological regimes	No – The Proposed Development will not result in any effects on hydrological regime.
Hydrological regime: groundwater discharge	Maintain appropriate hydrological regimes	No – The Proposed Development will not result in any effects on hydrological regime.
Substratum composition: particle size range	Maintain appropriate substratum particle size range, quantity and quality, subject to natural process	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Water quality	Maintain appropriate water quality to support the natural structure and functioning of the habitat	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Vegetation composition: typical species	Typical species of the relevant habitat sub-type should be present and in good condition	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation and vegetation composition as a result of silt-laden run-off and other pollutants could undermine this target.
Floodplain connectivity: area	The area of active floodplain at and upstream of the habitat should be maintained	No – The Proposed Development will not result in any effects on floodplain connectivity.
Riparian habitat: area	Maintain the area and condition of fringing habitats necessary to support the habitat and its sub-types	Yes - On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.2

1.1.1 Galway Bay Complex SAC [000268]

The potential for likely significant effects on this SAC was identified in Section 4.1 above. The identified pathways for effect include the following:

The Gaol River, which flows through the Proposed Development site, has direct downstream hydrological connectivity (approximately 390m meters) with Galway Bay Complex SAC via the River Corrib. As such, there is potential for likely significant indirect effects on Galway Bay Complex SAC as a result of water quality deterioration arising from runoff of polluting materials during construction and operation of the Proposed Development.

The Gaol River and River Corrib within the likely zone of influence also provide potential suitable habitat to support commuting, foraging and breeding otters. Therefore, a potential pathway for likely significant indirect effects on otter was identified as a result of ex-situ disturbance and displacement.

A potential pathway for indirect effects on the SAC due to disturbance and spread of invasive species listed under the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and the 'Third Schedule' of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) and the 'Third Schedule' of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011), which were recorded within and adjacent to the Proposed Development site boundary, was also identified.

Table 5-9 below lists the qualifying features of this European Site and determines, in the light of their Conservation Objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

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5.1.2.1 Identification of Individual Qualifying Features with the Potential to be Affected

Table 5-9 Assessment of Qualifying features potentially affected in Galway Bay Complex SAC

Qualifying feature	Conservation Objective (NPWS, Version 1, April 2013 ²),	Rationale	Potential for Adverse Effects Y/N
[1140] Mudflats and sandflats not covered by seawater at low tide	To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Galway Bay Complex SAC.	There is direct hydrological connectivity between the Proposed Development site and Galway Bay Complex SAC, which is located downstream at a hydrological surface water distance of approx. 390m via the Gaol River and River Corrib. This habitat is mapped throughout much of the coastal areas of the SAC downstream of the Proposed Development site, as shown in Map 3 of the Site-Specific Conservation Objectives. Taking a precautionary approach, a complete source-pathway-receptor chain for adverse effects on this marine habitat was identified due to deterioration in water quality resulting from construction and operational activities. This potential pathway is assessed further in this NIS.	Yes
[1150] Coastal lagoons	To restore the favourable conservation condition of Coastal lagoons in Galway Bay Complex SAC.	There is direct hydrological connectivity between the Proposed Development site and Galway Bay Complex SAC, which is located downstream at a hydrological surface water distance of approx. 390m via the Gaol River and River Corrib. The distribution of this habitat is shown in Map 4 of the Site-Specific Conservation Objectives, with areas mapped downstream of the Proposed Development site. Taking a precautionary approach, a complete source-pathway-receptor chain for adverse effects on this marine habitat was identified due to deterioration in water quality resulting from construction and operational activities. This potential pathway is assessed further in this NIS.	Yes
[1160] Large shallow inlets and bays	To maintain the favourable conservation condition of Large	There is direct hydrological connectivity between the Proposed Development site and Galway Bay Complex SAC, which is located downstream at a hydrological surface water distance of	Yes

²NPWS (2013) Conservation Objectives: Galway Bay Complex SAC 000268. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

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Qualifying feature	Conservation Objective (NPWS, Version 1, April 2013 ²),	Rationale	Potential for Adverse Effects Y/N
	shallow inlets and bays in Galway Bay Complex SAC.	approx. 390m via the Gaol River and River Corrib. This habitat is mapped throughout much of the designated area of the SAC downstream of the Proposed Development site, as shown in Map 5 of the Site-Specific Conservation Objectives. Taking a precautionary approach, a complete source-pathway-receptor chain for adverse effects on this marine habitat was identified due to deterioration in water quality resulting from construction and operational activities. This potential pathway is assessed further in this NIS.	
[1170] Reefs	To maintain the favourable conservation condition of Reefs in Galway Bay Complex SAC.	There is direct hydrological connectivity between the Proposed Development site and Galway Bay Complex SAC, which is located downstream at a hydrological surface water distance of approx. 390m via the Gaol River and River Corrib. This habitat is scattered in distribution throughout much of the designated area of the SAC downstream of the Proposed Development site, as shown in Map 6 of the Site-Specific Conservation Objectives. Taking a precautionary approach, a complete source-pathway-receptor chain for adverse effects on this marine habitat was identified due to deterioration in water quality resulting from construction and operational activities. This potential pathway is assessed further in this NIS.	Yes
[1220] Perennial vegetation of stony banks	To maintain the favourable conservation condition of Perennial vegetation of stony banks in Galway Bay Complex SAC.	These QI habitats are terrestrial in nature and were not recorded within or adjacent to the site during the surveys undertaken. Therefore, no source-pathway-receptor chain for adverse effects on these QIs was identified as a result of the Proposed Development.	No
[1230] Vegetated Sea cliffs of the Atlantic and Baltic coasts	This site is not listed in the Conservation Objective document for Galway Bay Complex SAC however it has been listed in the Site Synopsis document therefore is included on a precautionary basis.	No further assessment is required.	No

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Qualifying feature	Conservation Objective (NPWS, Version 1, April 2013 ²),	Rationale	Potential for Adverse Effects Y/N
[1310] <i>Salicornia</i> and other annuals colonising mud and sand	To maintain the favourable conservation condition of <i>Salicornia</i> and other annuals colonizing mud and sand in Galway Bay Complex SAC.	There is direct hydrological connectivity between the Proposed Development site and Galway Bay Complex SAC, which is located downstream at a hydrological surface water distance of approx. 390m via the Gaol River and River Corrib. These habitats are scattered throughout the coastal areas of the SAC downstream of the Proposed Development site, as shown in Map 9 of the Site-Specific Conservation Objectives. Taking a precautionary approach, a complete source-pathway-receptor chain for adverse effects on these intertidal habitats was identified due to deterioration in water quality resulting from construction and operational activities. This potential pathway is assessed further in this NIS.	Yes
[1330] Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>)	To restore the favourable conservation condition of Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>) in Galway Bay Complex SAC.		Yes
[1410] Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	To restore the favourable conservation condition of Mediterranean salt meadows (<i>Juncetalia maritimi</i>) in Galway Bay Complex SAC.		Yes
[3180] Turloughs	To maintain the favourable conservation condition of Turloughs in Galway Bay Complex SAC.	The Gaol River and the River Corrib downstream of the Proposed Development site travels through an urban landscape before discharging to marine waters. Therefore, there is no potential for indirect effect on these groundwater dependent QIs. Therefore, no source-pathway-receptor chain for adverse effects on this QI was identified as a result of the Proposed Development. No further assessment is required.	No
[5130] <i>Juniperus communis</i> formations on heaths or calcareous grasslands	To restore the favourable conservation condition of <i>Juniperus communis</i> formations on heaths or calcareous grasslands in Galway Bay Complex SAC.	These QI habitats are terrestrial in nature and were not recorded within or adjacent to the site during the surveys undertaken. Therefore, no source-pathway-receptor chain for adverse effects on these QIs was identified as a result of the Proposed Development.	No

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Qualifying feature	Conservation Objective (NPWS, Version 1, April 2013 ²),	Rationale	Potential for Adverse Effects Y/N
[6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco Brometalia</i>) (*important orchid sites)	To maintain the favourable conservation condition of Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco Brometalia</i>) in Galway Bay Complex SAC.	No further assessment is required.	No
[7210] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>	To maintain the favourable conservation condition of Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> in Galway Bay Complex SAC.	According to the Site-Specific Conservation Objectives, these habitats have not been mapped in detail for Galway Bay Complex SAC and thus the total area of the qualifying habitats in the SAC is unknown. However, the River Corrib, after passing by the Proposed Development site, travels through urban landscape before discharging to marine waters. Therefore, there is no potential for indirect effect on these groundwater dependent QIs. Therefore, no source-pathway-receptor chain for adverse on these QIs was identified as a result of the Proposed Development. No further assessment is required.	No
[7230] Alkaline fens	To maintain the favourable conservation condition of Alkaline fens in Galway Bay Complex SAC.		No
[1355] Otter (<i>Lutra lutra</i>)	To restore the favourable conservation condition of Otter in Galway Bay Complex SAC.	No otter resting or breeding sites were recorded during the surveys undertaken. Disturbance effects on otter could be ruled out, as any works will take place during daylight hours and otters are a crepuscular/nocturnal species and therefore will not be affected by building noise. Operational usage of the area will be equivalent to current usage, therefore there is no potential for disturbance on otter during the operational phase either. However, the Gaol River and River Corrib within the likely zone of influence provide potential suitable foraging, commuting and breeding habitat for the species. Therefore, a potential pathway for adverse effects on this species in the form of deterioration of water quality during construction and operation of the Proposed Development was identified. This has potential to result in reduced prey (fish) resources for otter. These potential pathways are assessed further in this NIS.	Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, April 2013 ²),	Rationale	Potential for Adverse Effects Y/N
[1365] Harbour seal (<i>Phoca vitulina</i>)	To maintain the favourable conservation condition of Harbour Seal in Galway Bay Complex SAC.	There is direct hydrological connectivity between the Proposed Development site and Galway Bay Complex SAC, which is located downstream at a hydrological surface water distance of approx. 390m via the Gaol River and River Corrib. A complete source-pathway-receptor chain for adverse effects on this species was identified due to the deterioration in water quality resulting from construction and operational activities adversely impacting the species' habitat, which comprises much of the designated area of the SAC in Galway Bay, prey (fish) resources, as well as important breeding, moulting and resting sites (see Map 12 of Site-Specific Conservation Objectives). This potential pathway is assessed further in this NIS.	Yes

5.1.2.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Development. These are provided in Table 5-10.

Table 5-10 Site-specific threats, pressures and activities in Galway Bay Complex SAC

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
High	D03	Shipping lanes, ports, marine constructions	inside
High	D03.01.04	Industrial ports	inside
High	H01.05	Diffuse pollution to surface waters due to agricultural and forestry activities	both
High	H01.08	Diffuse pollution to surface waters due to household sewage and waste waters	both
High	J02.12.01	Sea defence or coast protection works, tidal barrages	inside
Low	D01.01	Paths, tracks, cycling tracks	inside
Low	D03.01.01	Slipways	inside
Low	E03.03	Disposal of inert materials	inside
Low	F02.03.01	Bait digging / collection	inside
Low	G01.01.02	Non-motorized nautical sports	inside
Low	G02.01	Golf course	inside
Low	J02.02.02	Estuarine and coastal dredging	inside
Low	J02.05.01	Modification of water flow (tidal & marine currents)	both
Moderate	A02.01	Agricultural intensification	inside
Moderate	A04.02.01	Non intensive cattle grazing	inside
Moderate	A04.02.02	Non intensive sheep grazing	inside
Moderate	C01.01	Sand and gravel extraction	inside
Moderate	C01.01.02	Removal of beach materials	inside
Moderate	D02.02	Pipe lines	inside
Moderate	F01	Marine and Freshwater Aquaculture	both
Moderate	F06	Hunting, fishing or collecting activities not referred to above	inside
Moderate	I01	Invasive non-native species	both

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
Moderate	J02.01.02	Reclamation of land from sea, estuary or marsh	inside

Rank: H = high, M = medium, L = low; i = inside, b = both

Potential pathways for effect as a result of the Proposed Development with regard to site-specific threats, pressures and activities have been identified in relation to potential for 'Diffuse pollution to surface waters due to household sewage and waste waters' associated with the Proposed Development and 'Invasive non-native species' due to the zebra mussel and Canadian waterweed identified adjacent to the site.

5.1.2.3 QI Species Specific Information

5.1.2.3.1 Otter (*Lutra lutra*) [1355]

The conservation objective for this QI is:

'To restore the favourable conservation condition of Otter in Galway Bay Complex SAC.'

The attributes and targets for this species are provided in Table 5-11 below.

Table 5-11 Targets and attributes associated with nominated site-specific conservation objectives for Otter in Galway Bay Complex SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Distribution	No significant decline	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 262ha above high water mark (HWM); 14ha along riverbanks/around ponds	No – The Proposed Development will not result in any reduction to terrestrial otter habitat.
Extent of marine habitat	No significant decline. Area mapped and calculated as 2040ha	No – The Proposed Development will not result in any reduction to marine otter habitat.
Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 4km	No – The Proposed Development will not result in any reduction to freshwater (river) otter habitat.
Extent of freshwater (lake/lagoon) habitat	No significant decline. Area mapped and calculated as 21ha	No – The Proposed Development will not result in any reduction to freshwater (lake/lagoon) otter habitat.
Couching sites and holts	No significant decline	No – The Proposed Development will not result in the loss of couching sites or holts.
Fish biomass available	No significant decline	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
		a result of silt-laden run-off and other pollutants could undermine this target.
Barriers to connectivity	No significant increase	No – The Proposed Development will not result in any barriers to movement.

5.1.2.3.2 **Harbour Seal (*Phoca vitulina*) [1365]**

The conservation objective for this QI is:

‘To maintain the favourable conservation condition of Harbour Seal in Galway Bay Complex SAC.’

The attributes and targets for this species are provided in Table 5-12 below.

Table 5-12 Targets and attributes associated with nominated site-specific conservation objectives for Harbour Seal in Galway Bay Complex SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Access to suitable habitat	Species range within the site should not be restricted by artificial barriers to site use	No – The Proposed Development will not result in any barriers to movement or loss of suitable habitat for this species.
Breeding behaviour	Conserve breeding sites in natural condition	No – The Proposed Development will not result in any loss/alteration of breeding sites.
Moulting behaviour	Conserve moult haul-out sites in natural condition	No – The Proposed Development will not result in any loss/alteration of haul-out sites.
Resting behaviour	Conserve resting haul-out sites in natural condition	No – The Proposed Development will not result in any loss/alteration of haul-out sites.
Disturbance	Human activities should occur at levels that do not adversely affect the harbour seal population at the site	No – The Proposed Development will not result in any disturbance to harbour seals.

5.1.2.4 **QI Habitat Specific Information**

5.1.2.4.1 **[1140] Mudflats and sandflats not covered by seawater at low tide**

The conservation objective for this QI is:

‘To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Galway Bay Complex SAC.’

The attributes and targets for this habitat are provided in Table 5-13 below.

Table 5-13 Targets and attributes associated with nominated site-specific conservation objectives for Mudflats and sandflats not covered at low tide in Galway Bay Complex SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Habitat area	The permanent habitat area is stable or increasing, subject to natural processes	No – The Proposed Development will not result in reduction of the area of this habitat.
Community distribution	Conserve the following community types in a natural condition: Intertidal sandy mud community complex; and Intertidal sand community complex	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could alter community distribution and undermine this target

5.1.2.4.2 [1150] Coastal lagoons

The conservation objective for this QI is:

‘To restore the favourable conservation condition of Coastal lagoons in Galway Bay Complex SAC.’

The attributes and targets for this habitat are provided in Table 5-14 below.

Table 5-14 Targets and attributes associated with nominated site-specific conservation objectives for Coastal lagoons in Galway Bay Complex SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Habitat area	Area stable, subject to slight natural variation. Favourable reference area 76.7ha.	No –The Proposed Development will not result in reduction of the area of this habitat.
Habitat distribution	No decline, subject to natural processes.	No – The Proposed Development will not result in any change of distribution of this habitat.
Salinity regime	Median annual salinity and temporal variation within natural ranges	No – The Proposed Development will not result in any change of salinity levels.
Hydrological regime	Annual water level fluctuations and minima within natural ranges	No – The Proposed Development will not result in any change to the hydrological regime.
Barrier: connectivity between lagoon and sea	Appropriate hydrological connections between lagoons and sea, including where necessary, appropriate management	No – The Proposed Development will not result in any barriers to connectivity.
Water quality: Chlorophyll <i>a</i>	Annual median chlorophyll <i>a</i> within natural ranges and less than 5µg/L	Yes – On a precautionary basis, deterioration in water quality and associated habitat

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
		degradation as a result of silt-laden run-off and other pollutants could undermine this target
Water quality: Molybdate Reactive Phosphorus (MRP)	Annual median MRP within natural ranges 0.1mg/L	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Water quality: Dissolved Inorganic Nitrogen (DIN)	Annual median DIN within natural ranges and less than 0.15mg/L	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Depth of macrophyte colonisation	Macrophyte colonisation to at least 2m depth	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Typical plant species	Maintain number and extent of listed lagoonal specialists, subject to natural variation	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Typical animal species	Maintain listed lagoon specialists, subject to natural variation	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Negative indicator species	Negative indicator species absent or under control	No – The Proposed Development will not result in the introduction/spread of negative indicator species.

5.1.2.4.3 [1160] Large shallow inlets and bays

The conservation objective for this QI is:

‘To maintain the favourable conservation condition of Large shallow inlets and bays in Galway Bay Complex SAC.’

The attributes and targets for this habitat are provided in Table 5-15 below.

Table 5-15 Targets and attributes associated with nominated site-specific conservation objectives for Large shallow inlets and bays in Galway Bay Complex SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Habitat area	The permanent habitat area is stable or increasing, subject to natural processes.	No –The Proposed Development will not result in reduction of the area of this habitat.

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Community extent	Maintain the extent of the <i>Zostera</i> -dominated community complex and the maërl-dominated community, subject to natural processes	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Community structure: <i>Zostera</i> density	Conserve the high quality of <i>Zostera</i> -dominated communities, subject to natural processes	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Community structure	Conserve the high quality of the maërl-dominated community, subject to natural processes	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Community distribution	Conserve the following community types in a natural condition: Intertidal sandy mud community complex; Intertidal sand community complex; Fine to medium sand with bivalves community complex; Sandy mud to mixed sediment community complex; Mixed sediment dominated by Mytilidae community complex; Shingle; Fucoid-dominated community complex; <i>Laminaria</i> -dominated community complex; and Shallow sponge-dominated community complex.	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target

5.1.2.4.4 [1170] Reefs

The conservation objective for this QI is:

‘To maintain the favourable conservation condition of Reefs in Galway Bay Complex SAC.’

The attributes and targets for this habitat are provided in *Table 5-16* below.

Table 5-16 Targets and attributes associated with nominated site-specific conservation objectives for Reefs in Galway Bay Complex SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Distribution	The distribution of reefs is stable or increasing, subject to natural processes.	No –The Proposed Development will not result in a changed distribution of this habitat.
Habitat area	The permanent habitat area is stable, subject to natural processes.	No –The Proposed Development will not result in reduction of the area of this habitat.
Community extent	Maintain the extent of the <i>Mytilus</i> -dominated reef community, subject to natural processes.	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Community structure: <i>Mytilus</i> density	Conserve the high quality of the <i>Mytilus</i> -dominated reef community, subject to natural processes	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Community structure	Conserve the following community types in a natural condition: Furoid-dominated community complex; <i>Laminaria</i> -dominated community complex; and Shallow sponge-dominated community complex	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target

5.1.2.4.5 [1310] *Salicornia* and other annuals colonising mud and sand

The conservation objective for this QI is:

*‘To maintain the favourable conservation condition of *Salicornia* and other annuals colonising mud and sand in Galway Bay Complex SAC.’*

The attributes and targets for this habitat are provided in Table 5-17 below.

Table 5-17 Targets and attributes associated with nominated site-specific conservation objectives for *Salicornia* and other annuals colonising mud and sand in Galway Bay Complex SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Habitat area	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Barna House - 0.067ha, Seaweed Point - 0.003ha, Roscam West and South - 0.023ha, Kilcaimin - 0.015, Kileenaran - 0.007ha, Kinvara West - 0.017ha, Scanlan's Island - 0.117ha, Tawin Island - 1.098ha.	No –The Proposed Development will not result in reduction of the area of this habitat.
Habitat distribution	No decline, or change in habitat distribution, subject to natural processes.	Yes – On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Physical structure: sediment supply	Maintain/restore, natural circulation of sediments and organic matter, without any physical obstructions	No –The Proposed Development will not result in a changed natural circulation of sediments/organic matter or introduce physical obstructions to same.
Physical structure: creeks and pans	Maintain, or where necessary restore creek and pan structure, subject to natural processes, including erosion and succession	No –The Proposed Development will not result in a changed structure of creeks and pans.

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Physical structure: flooding regime	Maintain natural tidal regime	No –The Proposed Development will not result in a changed of flooding regime.
Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.	No –The Proposed Development will not result in a changed to the range of coastal habitats available.
Vegetation structure: vegetation height	Maintain structural variation within sward	On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Vegetation structure: vegetation cover	Maintain more than 90% of area outside creeks vegetated	On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Vegetation composition typical communities and sub-communities	Maintain the range of species-poor communities with typical species listed in SMP (McCorry and Ryle, 2009)	On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Vegetation composition: negative indicator species – <i>Spartina anglica</i>	There is currently no common cordgrass (<i>Spartina anglica</i>) in this SAC. Prevent establishment of cordgrass	No –The Proposed Development will not result in the introduction of common cordgrass to this SAC.

5.1.2.4.6 [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritima*)

The conservation objective for this QI is:

*‘To restore the favourable conservation condition of Atlantic salt meadows (*GlaucoPuccinellietalia maritima*) in Galway Bay Complex SAC.’*

The attributes and targets for this habitat are provided in Table 5-18 below.

Table 5-18 Targets and attributes associated with nominated site-specific conservation objectives for Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) in Galway Bay Complex SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Habitat area	Area increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Barna House -	No –The Proposed Development will not result in a change to the area of this habitat.

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
	2.33ha, Seaweed Point - 1.41ha, Roscam West and South - 3.30ha, Oranmore North - 4.24ha, Kilcaimin - 6.82ha, Tawin Island - 53.85ha, Tyrone House-Dunbulcaun Bay - 9.83ha, Kileenaran - 15.37ha, Kinvara West - 13.33ha, Scanlan's Island - 4.13ha.	
Habitat distribution	No decline or change in habitat distribution, subject to natural processes.	On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Physical structure: sediment supply	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions	No –The Proposed Development will not result in a changed natural circulation of sediments/organic matter or introduce physical obstructions to same.
Physical structure: creeks and pans	Maintain creek and pan structure, subject to natural processes, including erosion and succession	No –The Proposed Development will not result in a changed structure of creeks and pans.
Physical structure: flooding regime	Maintain natural tidal regime	No –The Proposed Development will not result in a changed of flooding regime.
Vegetation structure: zonation	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Vegetation structure: vegetation height	Maintain structural variation within sward	On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Vegetation structure: vegetation cover	Maintain more than 90% of area outside creeks vegetated	On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Vegetation composition typical communities and sub-communities	Maintain range of subcommunities with typical species listed in SMP (McCorry and Ryle, 2009)	On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Vegetation composition: negative indicator species – <i>Spartina anglica</i>	There is currently no common cordgrass (<i>Spartina anglica</i>) in this SAC. Prevent establishment of cordgrass	No –The Proposed Development will not result in the introduction of common cordgrass to this SAC.

5.1.2.4.7 [1410] Mediterranean salt meadows (*Juncetalia maritimi*)

The conservation objective for this QI is:

*‘To restore the favourable conservation condition of Mediterranean salt meadows (*Juncetalia maritimi*) in Galway Bay Complex SAC.’*

The attributes and targets for this habitat are provided in Table 5-19 below.

Table 5-19 Targets and attributes associated with nominated site-specific conservation objectives for Mediterranean salt meadows (*Juncetalia maritimi*) in Galway Bay Complex SAC

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Habitat area	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Barna House - 0.282ha, Seaweed Point - 0.931ha, Kilcaimin - 0.005ha, Tawin Island - 1.799ha. Tyrone House- Dunbulcan Bay - 8.184ha, Kileenaran - 0.271ha	No –The Proposed Development will not result in a change to the area of this habitat.
Habitat distribution	No decline, subject to natural processes.	On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Physical structure: sediment supply	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions	No –The Proposed Development will not result in a changed natural circulation of sediments/organic matter or introduce physical obstructions to same.
Physical structure: creeks and pans	Maintain creek and pan structure, subject to natural processes, including erosion and succession	No –The Proposed Development will not result in a changed structure of creeks and pans.
Physical structure: flooding regime	Maintain natural tidal regime	No –The Proposed Development will not result in a changed of flooding regime.
Vegetation structure: zonation	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Vegetation structure: vegetation height	Maintain structural variation within sward	On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target
Vegetation structure: vegetation cover	Maintain more than 90% of area outside creeks vegetated	On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Vegetation composition typical communities and sub-communities	Maintain range of subcommunities with typical species listed in SMP (McCorry and Ryle, 2009)	On a precautionary basis, deterioration in water quality and associated habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Vegetation composition: negative indicator species – <i>Spartina anglica</i>	There is currently no common cordgrass (<i>Spartina anglica</i>) in this SAC. Prevent establishment of cordgrass	No –The Proposed Development will not result in the introduction of common cordgrass to this SAC.

5.1.3

Inner Galway Bay SPA [004031]

The potential for likely significant effects on this SPA was identified in Section 4.1 above. The identified pathways for effect include the following:

- The Gaol River, which flows through the Proposed Development site, has direct surface water connectivity (approximately 1.1km) with Inner Galway Bay SPA via the Gaol River and the River Corrib. As such, there is potential for likely significant indirect effects on Inner Galway Bay SPA as a result of water quality deterioration arising from runoff of polluting materials during construction and operation of the Proposed Development.
- A potential pathway for indirect effects on the SPA due to disturbance and spread of invasive species listed under the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024), which were recorded within and adjacent to the Proposed Development site boundary, was also identified.

Table 5-20 below lists the qualifying features of this European Site and determines, in the light of their Conservation Objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

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5.1.3.1 Identification of Individual Qualifying Features with the Potential to be Affected:

Table 5-20 Assessment of Qualifying features potentially affected in Inner Galway Bay SPA

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2013 ³),	Rationale	Potential for Adverse Effects Y/N
[A003] Great Northern Diver (<i>Gavia immer</i>)	To maintain the favourable conservation condition of Great Northern Diver in Inner Galway Bay SPA.	The Proposed Development site does not provide significant suitable habitat for these SCIs of the Inner Galway Bay SPA, and these species were not recorded utilising the Proposed Development site during the site surveys undertaken. No complete source-pathway-receptor chain for adverse effects on these SCIs, via <i>ex-situ</i> disturbance or direct habitat loss resulting from the Proposed Development, was identified. A potential pathway for indirect effects on these species via deterioration of water quality resulting in potential degradation of supporting wetland habitat for these species was identified. This is assessed under the SCI 'Wetland' below. No further assessment is required in relation to disturbance or displacement of these species.	No
[A017] Cormorant (<i>Phalacrocorax carbo</i>)	To maintain the favourable conservation condition of Cormorant in Inner Galway Bay SPA.		No
[A028] Grey Heron (<i>Ardea cinerea</i>)	To maintain the favourable conservation condition of Grey Heron in Inner Galway Bay SPA.		No
[A046] Brent Goose (<i>Branta bernicla hrota</i>)	To maintain the favourable conservation condition of Light-bellied Brent Goose in Inner Galway Bay SPA.		No
[A050] Wigeon (<i>Anas Penelope</i>)	To maintain the favourable conservation condition of Wigeon in Inner Galway Bay SPA.		No

³NPWS (2013) Conservation Objectives: Inner Galway Bay SPA 004031. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

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Qualifying feature	Conservation Objective (NPWS, Version 1, May 2013 ³),	Rationale	Potential for Adverse Effects Y/N
[A052] Teal (<i>Anas crecca</i>)	To maintain the favourable conservation condition of Teal in Inner Galway Bay SPA.		No
[A056] Shoveler (<i>Anas clypeata</i>)	To maintain the favourable conservation condition of Shoveler in Inner Galway Bay SPA.		No
[A069] Red-breasted Merganser (<i>Mergus serrator</i>)	To maintain the favourable conservation condition of Red-breasted Merganser in Inner Galway Bay SPA.		No
[A137] Ringed Plover (<i>Charadrius hiaticula</i>)	To maintain the favourable conservation condition of Ringed Plover in Inner Galway Bay SPA.		No
[A140] Golden Plover (<i>Pluvialis apricaria</i>)	To maintain the favourable conservation condition of Golden Plover in Inner Galway Bay SPA.		No
[A142] Lapwing (<i>Vanellus vanellus</i>)	To maintain the favourable conservation condition of Lapwing in Inner Galway Bay SPA.		No
[A149] Dunlin (<i>Calidris alpina</i>)	To maintain the favourable conservation condition of Dunlin in Inner Galway Bay SPA.		No

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Qualifying feature	Conservation Objective (NPWS, Version 1, May 2013 ³),	Rationale	Potential for Adverse Effects Y/N
[A157] Bar-tailed Godwit (<i>Limosa lapponica</i>)	To maintain the favourable conservation condition of Bar-tailed Godwit in Inner Galway Bay SPA.		No
[A160] Curlew (<i>Numenius arquata</i>)	To maintain the favourable conservation condition of Curlew in Inner Galway Bay SPA.		No
[A162] Redshank (<i>Tringa totanus</i>)	To maintain the favourable conservation condition of Redshank in Inner Galway Bay SPA.		No
[A169] Turnstone (<i>Arenaria interpres</i>)	To maintain the favourable conservation condition of Turnstone in Inner Galway Bay SPA.		No
[A179] Black-headed Gull (<i>Chroicocephalus ridibundus</i>)	To maintain the favourable conservation condition of Black-headed Gull in Inner Galway Bay SPA.		No
[A182] Common Gull (<i>Larus canus</i>)	To maintain the favourable conservation condition of Common Gull in Inner Galway Bay SPA.		No
[A191] Sandwich Tern (<i>Sterna sandvicensis</i>)	To maintain the favourable conservation condition of Sandwich Tern in Inner Galway Bay SPA.		No

Qualifying feature	Conservation Objective (NPWS, Version 1, May 2013 ⁹),	Rationale	Potential for Adverse Effects Y/N
[A193] Common Tern (<i>Sterna Hirundo</i>)	To maintain the favourable conservation condition of Common Tern in Inner Galway Bay SPA		No
[A999] Wetlands	To maintain the favourable conservation condition of wetland habitat in Inner Galway Bay SPA as a resource for the regularly occurring migratory waterbirds that utilise it.	There is direct hydrological connectivity between the Proposed Development site and Inner Galway Bay SPA, which is located downstream at a hydrological surface water distance of approx. 1.1km via the Gaol River and River Corrib. Therefore, a complete source-pathway-receptor chain for adverse effects on wetland habitat was identified due to deterioration in water quality and spread of invasive species resulting from construction and operation of the Proposed Development. This potential pathway is assessed further in this NIS.	Yes

5.1.3.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Development. These are provided in Table 5-21.

Table 5-21 Site-specific threats, pressures and activities in Inner Galway Bay SPA

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
Moderate	G01.02	Walking, horse-riding and non-motorised vehicles	inside
Moderate	J02.12	Dykes, embankments, artificial beaches, general	inside
Moderate	E02	Industrial or commercial areas	outside
Low	F03.01	Hunting	inside
Moderate	F01	Marine and Freshwater Aquaculture	inside
High	J02.01.02	Reclamation of land from sea, estuary or marsh	inside
Moderate	G01.01	Nautical sports	inside
Low	A04	Grazing	inside
High	E01	Urbanised areas, human habitation	outside
High	E03	Discharges	inside
Moderate	F02.03	Leisure fishing	inside
Moderate	D01.02	Roads, motorways	outside
Moderate	A08	Fertilisation	outside

Rank: H = high, M = medium, L = low; i = inside, o = outside

Potential pathways for effect with regard to site-specific threats, pressures and activities have been identified in relation to potential for 'Urbanised areas, human habitation' and 'Discharges' arising from run-off of pollutants to surface water during the construction works and operational activities associated with the Proposed Development.

5.1.3.3 SCI Habitat Specific Information

5.1.3.3.1 Wetlands [A999]

The conservation objective for this QI is:

'To maintain the favourable conservation condition of wetland habitat in Inner Galway Bay SPA as a resource for the regularly occurring migratory waterbirds that utilise it.'

The attributes and targets for this habitat are provided in Table 5-22 below.

Table 5-22 Targets and attributes associated with nominated site-specific conservation objectives for Wetlands in Inner Galway Bay SPA

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target in the Absence of Mitigation
Habitat area	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 13,267ha, other than that occurring from natural patterns of variation	No –The Proposed Development will not result in a reduction to the area of this habitat.

6.

ASSESSMENT OF POTENTIAL EFFECTS & ASSOCIATED MITIGATION

This section of the NIS assesses the potential effects of the Proposed Development on the identified relevant Qualifying Interests/Special Conservation Interests. This assessment is undertaken in the absence of any mitigation and in respect of the conservation objectives of the European Sites. The Conservation Objectives each of the European Sites assessed were reviewed on the 5th of September 2025. The Conservation Objectives for these sites are available at the following locations:

- Lough Corrib SAC [000297] <https://www.npws.ie/protected-sites/sac/000297>
- Galway Bay Complex SAC [000268] <https://www.npws.ie/protected-sites/sac/000268>
- Inner Galway Bay SPA [004031] <https://www.npws.ie/protected-sites/spa/004031>

Following the initial impact assessment, mitigation is prescribed where necessary to avoid adverse effects on the Conservation Objectives of the relevant QIs/SCIs.

6.1

Potential for Indirect Effects on European Sites

As outlined in Table 5-1 above, no QI habitats associated with any SACs were recorded within the footprint or in close proximity to the Proposed Development. Therefore, potential for adverse effects on the SACs due to direct loss of QI habitat can be ruled out.

Potential for adverse effects on Lough Corrib SAC, Galway Bay Complex SAC and Inner Galway Bay SPA due to deterioration of water quality and disturbance of the QI species was identified and this potential for adverse effects is discussed further in the sections below.

6.1.1

Deterioration of Water Quality

The Gaol River, which flows through the Proposed Development site has direct surface water connectivity with the Lough Corrib SAC and there are in-stream works proposed within a portion of the Gaol River. Therefore, potential for direct and indirect effects on this SAC due to deterioration of water quality during construction and operation of the Proposed Development was identified. Potential for indirect effects on Galway Bay Complex SAC and Inner Galway Bay SPA due to deterioration of water quality during construction and operation of the Proposed Development was also identified.

The QIs of the relevant European Sites, on which a potential pathway for adverse effects due to deterioration of water quality has been identified, are listed below:

Lough Corrib SAC [000297]

- [1092] White-clawed Crayfish (*Austropotamobius pallipes*)
- [1095] Sea Lamprey (*Petromyzon marinus*)
- [1096] Brook Lamprey (*Lampetra planeri*)
- [1106] Salmon (*Salmo salar*)
- [1355] Otter (*Lutra lutra*)
- [3260] Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation

Galway Bay Complex SAC [000268]

- [1140] Mudflats and sandflats not covered by seawater at low tide
- [1150] Coastal lagoons

- [1160] Large shallow inlets and bays
- [1170] Reefs
- [1310] *Salicornia* and other annuals colonising mud and sand
- [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritima*)
- [1355] Otter (*Lutra lutra*)
- [1365] Harbour seal (*Phoca vitulina*)
- [1410] Mediterranean salt meadows (*Juncetalia maritimi*)

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Inner Galway Bay SPA [004031]

- [A999] Wetlands

6.1.1.1 Demolition and Construction Phases

In-stream works are proposed in order to remove the existing walkway at the north of the McLaughlin Building and to perform some remedial works in the culverts underneath the footprint of the building.

These works have the potential for direct effects on the water quality deterioration in the Gaol River upstream and downstream of the McLaughlin Building. Additionally, the demolition and construction phases of the Proposed Development will involve earthworks and use of machinery which create the potential for pollution in various forms, i.e. the generation of suspended solids and the potential for spillage of fuels associated with the refuelling of excavation machinery as well as the release of cementitious materials into watercourses. There is a risk of run-off of pollutants to surface water during the above activities. Taking a precautionary approach and in the absence of mitigation, the works have potential to impact on water quality and therefore adversely affect the aquatic QIs associated with the above listed European Sites.

6.1.1.1.1 Mitigation

The following best practice mitigation and environmental control measures will be incorporated during the demolition and construction phases of the Proposed Development:

Site Set-up

- Prior to the commencement of works the site boundary will be fenced off.
- A dedicated site compound will be established.
- Access routes will be clearly marked / identified. Access during construction to any working areas will be restricted to land within the outlined works area.

Pollution Prevention

- An Ecological Clerk of Works will be present to supervise any works within or in proximity to the Gaol River (specifically any in-stream works or works on the demolition of the old walkway and construction of the new walkway, as well as remediation works to the culverts), and will stop works and direct the carrying out of emergency mitigation/ clean-up operations, should the need arise.
- Where any works takes place adjacent (and unshielded), to the Gaol River, demolition will occur in a careful manner using only hand demolition in order to prevent the walls and debris from falling into the river.
- For protection against dust and debris entering the canal during demolition and construction works of the roof and façade of the McLaughlin Building, scaffolding will be erected on the walkway along the north elevation of the building. The scaffolding will extend in height to a minimum of 1m above the highest parapet level on that area of the building. The external side of the scaffolding will be entirely wrapped in Monarflex sheeting. While the demolition of the existing roof and non-original top level will be carried out by removal of the façade into the building by hand and

entirely avoiding the use of large demolition equipment, the Monarflex will provide a protective barrier against any incidental debris or dust from the building during demolition. The sheeted scaffolding will remain in place for all façade repair/ refurbishment works, again to ensure any construction dust or debris cannot enter the canal.

- To prevent any demolition or construction waste (liquid or solid) from entering the culverts underneath the McLaughlin Building, all existing penetrations/discharge pipes into the culvert will be sealed. This will be achieved by firstly installing an inflated 'bung' inside the pipe and after airtightness is achieved, a solid concrete plug will be created by filling the pipe above the 'bung' with concrete which will be allowed to solidify.
- Excavated spoil will be stockpiled and contained entirely within the confines of the site boundary. Any requirement for temporary fills or stockpiles will be damped down or covered with polyethylene sheeting to avoid sediment release associated with heavy rainfall. Silt fencing secured with sandbags will also be erected around these stockpiles to prevent run-off of silt laden waters.
- Rainwater falling into the site in the period between demolition of the existing roof and construction of the new roof will be collected in a local sump within the building footprint. From this sump, the rainwater will be pumped to an on-site settlement tank and treatment system which will reduce contaminants/ suspended solids to limits to be set by Uisce Éireann within a temporary connection agreement for discharge to the public foul drainage network via the existing foul drainage connection from the building.
- Good construction practices such as dust suppression on site roads, and regular plant maintenance will ensure minimal risk. The Construction Industry Research and Information Association (CIRIA) provide guidance on the control and management of water pollution from construction sites ('Control of Water Pollution from Construction Sites, guidance for consultants and contractors', CIRIA, 2001), which provides information on these issues. This will ensure that surface water arising during the course of construction activities will contain minimum sediment.

Additional Mitigation for Instream works

- All works will adhere to The Inland Fisheries Ireland (2016) 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters'.
- Timing of instream works will be carried out during the period mid-July-September in line with IFI (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters and OPW (2019) Environmental Guidance: Drainage Maintenance and Construction.
- Prior to the commencement of any works within the canal, all workers should be given a toolbox talk addressing the environmental risks and best practice measures.
- No works will be carried out during or after periods of heavy rain or where the watercourse appears to be flooded.
- Machinery will not enter the water; the demolition of the overhanging section of the existing building and the removal of the columns within the Gaol River will only occur after the dry working area is created.
- In-stream works will be carried out in a dry works environment to avoid siltation of the watercourses within and downstream of the Proposed Development site. This will be achieved by the temporary damming of the Gaol River with sheet piling, for the creation of the temporary enclosure. The dams will be constructed in sections as follows:
 - Sheet piling with removable panels will be utilised to create three distinct zones to create dry works areas for walkway demolition and construction of the new walkway.
 - A submersible pump with a silt bag at the outlet will be used to pump water from the dammed area either to the connecting weir to discharge into the culvert and the Gaol River or into the Gaol River adjacent to the dammed area to create a dry works area.
 - For remediation works of the culverts, the dry works area will equally be created by blocking water flow to one zone at a time and works on the dry culverts will be carried out at the same time as sections of walkway demolition/construction in the corresponding zone.
 - Before commencing works on the culverts, the area downstream of the works along the application boundary will be dammed using sandbags or similar to prevent any cementitious or other polluting material entering the Gaol River.

- Removal of all rubble, debris, rubbish and silt from the culvert floor and careful disposal of these elements, preventing them from entering the Gaol River.
- Remaining water will be pumped into an attenuation tank at ground level, utilising existing piping from the building to the culvert, before these are closed off.
- The concrete will be allowed to cure for a minimum of 3 days, and a concrete sealer will be applied.
- Waterflow to a completed zone will be restored by opening up removable panels in the sheet piling before closing off the next zone to be worked on.
- Once works to the walkway and culverts are complete, the sheet piling for the zone will be removed by lifting it out with the crane located within the building.
- The Ecological Clerk of Works will be the Client's Liaison for the purposes of any necessary consultation with environmental bodies including Inland Fisheries Ireland or the National Parks and Wildlife Service (NPWS). IFI will be contacted prior to any in-stream works taking place.

Refuelling, Fuel and Hazardous Material Storage

- Storage/refuelling will occur within a designated area of the construction site. This area should be underlain by concrete hard standing, and tanks should be inspected for leaks regularly. Spill kits should be supplied at these stations and staff should be trained in their use and in spill control. Drainage from these areas shall be diverted for collection and not discharged into waterbodies without treatment and other best management practices.
- Minimal refuelling or maintenance of construction vehicles or plant will take place on site. Off-site refuelling will occur at a controlled fuelling station.
- Fuel absorbent material and pads will be available in the event of any accidental spillages. Only designated trained and competent operatives will be authorised to refuel plant on site and no refuelling operations shall be left unattended on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations.
- On-site refuelling will take place by direct refuelling from the delivery truck or from fuel stored within a bunded fuel tank. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations.
- Fuel and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage.
- Fuels volumes stored on site will be minimised. Any fuel storage areas will be bunded appropriately. The bunded area will be roofed to prevent the ingress of rainwater.
- Containers and bunding for storage of hydrocarbons and other chemicals will have a holding capacity of 110% of the volume to be stored.
- Ancillary equipment such as hoses and pipes will be contained within the bund.
- Taps, nozzles or valves will be fitted with a lock system.
- Harmful materials shall be stored on site for use in connection with the construction works only. These materials shall be stored in a controlled manner.
- Fuels, lubricants and hydraulic fluids for equipment used on the site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment.
- All site plant will be inspected at the beginning of each day prior to use. Defective plant shall not be used until the defect is satisfactorily fixed. All major repair and maintenance operations will take place off site.
- All plant and machinery will be serviced before being mobilised to site.

Spill Control Measures

In the event of minor spills and leaks from road vehicles and the onsite excavator, the following steps provide the procedure to be followed in the event of any significant spill or leak.

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- If possible, cover or bund off any vulnerable areas where appropriate such as drains or watercourses.
- If possible, clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- Notify the applicant immediately giving information on the location, type and extent of the spill so that they can take appropriate action and further investigate the incident to ensure it has been contained adequately.
- External consultants will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
- The applicant will notify the appropriate regulatory body such as Galway City Council, Inland Fisheries Ireland (IFI) and the Environmental Protection Agency (EPA) if deemed necessary.

Measures to Avoid the Release of Cement Based Material During Construction

The following mitigation measures are proposed to avoid release of cement leachate from the site:

- Batching of wet-cement products will be limited to very small batches for grouting of baseplates and crack repair works. The batching will take place only in a designated secure and bunded area on hardstanding at least 5m from any watercourses.
- Ready-mixed supply of wet concrete products and where possible, pre-cast elements for culverts and concrete works will be used.
- Where concrete is delivered on site, the complete washing out of concrete trucks will not be permitted at the site. Suppliers will be directed back to their own facility to complete the washout process. However, a washout area for chute cleaning will be provided within the site in close proximity to the concrete pour locations. Only chute cleaning will be permitted, using the smallest volume of water possible. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water is to be isolated in temporary lined wash-out pits located at the site. These temporary lined wash-out pits will be removed from the site at the end of the construction phase.
- No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed.
- Use weather forecasting to plan dry days for pouring concrete.
- Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.

Waste Management

- Careful extraction of materials will be undertaken to ensure that the highest proportion of the materials can be re-used
- All waste will be collected in skips, and the site will be kept tidy and free of debris at all times.
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or recycling. It is also essential that all empty oil containers and other hazardous wastes should be disposed of in accordance with the requirements of the Waste Management Act, 1996.
- All construction waste materials will be stored within the confines of the site, prior to removal from the site to a licenced waste facility.
- To provide welfare facilities within the site office, the contractor will either:
 - Make an application for a temporary connection to Irish Water for wastewater discharge and connect into existing sewer.

- Employ a licensed environmental contractor to collect wastewater from the compound for disposal at an Irish Water wastewater treatment facility.
- No wastewater will be discharged on-site during either the construction or operational phase.

Dust Control

Construction dust can be generated from many on-site activities such as excavation and backfilling. The extent of dust generation will depend on the type of activity undertaken, the location, the nature of the dust, i.e., soil, sand, etc and the weather. In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or periods of dry weather. Construction traffic movements also have the potential to generate dust as they travel along the haul route. The measures below will also prevent construction debris arising on the public road network.

- Any roads/site entrances with the potential to give rise to dust will be regularly watered, as required, during very dry and/or windy conditions.
- The designated public roads outside the site and along the main transport routes to the site will be regularly inspected by Site Management for cleanliness and cleaned as necessary.
- Material handling systems and material storage areas will be designed and laid out to minimise exposure to wind.
- Water misting will be utilised on-site as required to mitigate dust in dry weather conditions.
- The transport of soils or other material, which has significant potential to generate dust, will be undertaken in tarpaulin-covered vehicles where necessary.
- Daily inspection of the construction site will be carried out to examine dust measures and their effectiveness.

Environmental Monitoring

The contractor will assign a member of the site staff as the environmental officer with the responsibility for ensuring the environmental measures prescribed in this document are adhered to. Any environmental incidents or non-compliance issues will immediately be reported to the project team.

A project-specific water quality monitoring programme will be implemented during the construction phase to establish baseline conditions, detect any deterioration in water quality, and verify the effectiveness of mitigation measures. This is considered necessary due to the hydrological connectivity between the works area and the downstream SACs. The monitoring approach has been informed by best practice guidance, including that of Inland Fisheries Ireland (2016), and is based on a simple upstream-downstream comparison with defined trigger levels and response actions to ensure that any impacts are identified and addressed promptly. Monitoring will be undertaken as follows:

- Monitoring locations: One upstream control point (WQ1) and one downstream compliance point (WQ2), located immediately upstream and downstream of the works area respectively. These locations will be identified on the relevant engineering drawings.
- Baseline monitoring: A minimum of three sampling events will be undertaken prior to construction, under varying flow conditions where practicable.
- Monitoring frequency: Weekly during in-stream works, monthly during all other periods, and additional monitoring following significant rainfall events (>10 mm in 24 hours).
- Parameters: Turbidity, pH, temperature, and visual inspection (including suspended solids, discolouration, and hydrocarbon sheen).
- Trigger levels:
 - Turbidity >10 NTU above upstream levels or visible plume
 - pH outside 6–9 or >0.5 unit change from upstream
 - Visible hydrocarbon sheen, concrete residue, or sediment deposition
- Response actions: Any exceedance will result in inspection of mitigation measures and, where necessary, suspension of works, identification and rectification of the source, and implementation of additional controls prior to recommencement.

- Responsibility: The appointed Environmental Officer will be responsible for implementation of the monitoring programme and maintaining records of all results and actions taken.

Post implementation of mitigation measures as described above, there is no potential for adverse effects on the listed QIs/SCIs of the Lough Corrib SAC [000297], Galway Bay Complex SAC [000268] or Inner Galway Bay SPA [004031] as a result of deterioration in water quality during the demolition/construction phases. The measures described ensure that the Proposed Development does not prevent or obstruct any of the QIs or SCIs from reaching Favourable Conservation Status as per Article 1 of the EU Habitats Directive.

6.1.1.2 Operation

The operational phase of the Proposed Development will result in the production of surface-water runoff which, if not adequately treated, has the potential to result in indirect effects on surface and groundwater quality and, therefore, potential adverse effects on aquatic receptors of International Importance.

6.1.1.2.1 Mitigation

The drainage proposed for various elements of the Proposed Development is outlined in the Civil Engineering Infrastructure Report for Planning by Barret Mahony Civil and Structural Consulting Engineers which is included as Appendix 5 of this Report.

The proposed surface water drainage system will consist of SuDS including a green roof with sedum blanket, gravel ballast and an interception storage mat. The water will be collected in rainwater pipes along the northern elevation of the McLaughlin Building and will be brought down and discharged into the Gaol River. The SuDS will ensure some attenuation capacity during rain events. The sedum blanket and gravel ballast will add partial containment of any pollutants that may be present in the rainwater.

The existing McLaughlin Building has an old foul outlet, which drained directly into the Gaol River. This will be decommissioned and replaced by a new connection into the existing foul sewer main. Uisce Eireann has issued a confirmation of feasibility for this foul connection. This new connection will prevent pollution by foul water of the canal and river.

Post implementation of mitigation measures as described above, there is no potential for adverse effects on the listed QIs/SCIs of the Lough Corrib SAC [000297], Galway Bay Complex SAC [000268] or Inner Galway Bay SPA [004031] as a result of deterioration in water quality during the operational phase. The measures described ensure that the Proposed Development does not prevent or obstruct any of the QIs or SCIs from reaching Favourable Conservation Status as per Article 1 of the EU Habitats Directive.

6.1.2 Disturbance to Aquatic Fauna

The Gaol River which flows through culverts underneath the McLaughlin Building flows into the River Corrib which is designated as a portion of the Lough Corrib SAC. Sensitive aquatic faunal species designated as part of this SAC, and which have potential to occur within the site, include the following QI species:

Lough Corrib SAC [000297]

- [1092] White-clawed Crayfish (*Austropotamobius pallipes*)
- [1095] Sea Lamprey (*Petromyzon marinus*)
- [1096] Brook Lamprey (*Lampetra planeri*)
- [1106] Salmon (*Salmo salar*)

6.1.2.1 Construction Phase

In-stream works are required during the demolition phase of the Proposed Development in order to remove the existing walkway at the northern elevation of the McLaughlin Building. These sensitive species are small and reside within the riverbed and are therefore vulnerable to mortality as a result of the excavation works.

6.1.2.1.1 Mitigation

- All in-stream works will be undertaken in line with Inland Fisheries Ireland (2016) *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters* and OPW (2019) *Environmental Guidance: Drainage Maintenance and Construction*.
- Taking consideration of OPW (2019) and IFI (2016), in order to accommodate lamprey spawning and, on a highly precautionary basis due to their designation as a QI of Lough Corrib SAC, buried white-clawed crayfish (i.e. carrying eggs), works may be carried out from mid-July to September 30th to minimise potential significant impacts to fisheries.
- In order to minimise causing direct physical damage and mortality of species living in the riverbed, the installation of the **sheet piling** for the creation of the temporary enclosure must be carried out **from the tower crane located within the building**, such that any animals within the vicinity of the footprint will have a chance to leave for alternative suitable areas before potentially harmful effects.
- Prior to the commencement of in-stream works, Section 14 Authorisation from the Inland Fisheries Division of the Department of Environment, Climate and Communications will be obtained. Prior to the pumping out of water from the enclosure, electrofishing will be carried out within the dammed area and any recovered aquatic individuals will be relocated to a suitable similar river habitat location within the same grid reference, under licence by a suitably trained Ecologist.
- A Sections 23 and 34 Licence will be also obtained from the NPWS for white-clawed crayfish on a highly precautionary basis due to their designation as a QI of Lough Corrib SAC, a hand search will also be conducted for white-clawed crayfish prior to the pumping out of water from the enclosure. If any individuals are recovered, they will be relocated to a suitable similar river habitat location within the same grid reference, under licence by a suitably trained Ecologist.
- If any white-clawed crayfish are recovered, a health check may be carried out by the licenced Ecologist in order to screen this species for crayfish plague (*Aphanomyces astaci*), a highly infectious waterborne fungus.
- Only after electrofishing and hand searching is complete and these species are removed, if present, may the water from within the dammed area begin to be pumped out from within this temporary enclosure.
- Machinery will not enter the water; the demolition works involving the deteriorating walkway will only occur after the dry working area is created.
- All machinery, PPE and equipment used within the watercourse will be thoroughly cleaned and disinfected using a broad-spectrum cleaner (e.g. 1% solution of Virkon Aquatic or another proprietary disinfection product) prior to entering the watercourse and after removal from the watercourse to ensure biosecurity is upheld and limit the spread of invasive species and infectious waterborne diseases. This will occur within a designated wash-down area, which will be underlain by a washable membrane or hard surface.

Post implementation of mitigation measures as described above, there is no potential for adverse effects on the listed QIs of Lough Corrib SAC [000297] as a result of disturbance during the construction phase. The measures described ensure that the Proposed Development does not prevent or obstruct any of the QIs from reaching Favourable Conservation Status as per Article 1 of the EU Habitats Directive.

The mitigation measures described in Section 6.1.1.1.1 above for the protection of water quality during the construction phase will also serve to protect aquatic fauna in terms of any potential for indirect impact via supporting habitat deterioration and prey availability.

6.1.2.2 Operational Phase

The mitigation measures and SuDS design outlined in Section 6.1.1.2.1 above for the protection of water quality during the operational phase will also serve to protect aquatic fauna in terms of any potential for indirect impact via supporting habitat deterioration and prey availability.

As described above, there will be no significant increase to ambient noise levels during operation of the Proposed Development. No disturbance of the riverbed or riverbanks will occur as part of the operational phase. Therefore, no disturbance effects are anticipated on aquatic fauna during the operational phase of the Proposed Development.

6.1.3 Disturbance to Otter

As the Proposed Development site and surroundings has suitable foraging and commuting habitat for otter, populations connected to the Lough Corrib SAC could utilise the Gaol River to the north of the McLaughlin Building. Therefore, potential for indirect effects on Lough Corrib SAC was identified as a result of disturbance to/displacement of otter during construction and operation of the Proposed Development.

Following a precautionary approach, potential for indirect effects Galway Bay Complex SAC due to *ex situ* disturbance/displacement of otter, where it occurs outside of the SAC, was also identified.

6.1.3.1 Construction Phase

Potential for effects on otter has been considered with regard to NPWS 'Threat Response Plan' (NPWS, 2009) which identifies four significant threats facing otter in an Irish context: habitat destruction, water pollution, disturbance (recreational sources) and accidental death/persecution.

The Gaol River which flows through culverts underneath the McLaughlin Building flows into the River Corrib which is designated as a portion of the Lough Corrib SAC, and upper Galway Bay Complex SAC further downstream, for which otter is listed as a QI species.

The Proposed Development has the potential to cause deterioration of water quality and percolation of pollutants such as silt and hydrocarbons within the site and downstream.

The construction of the Proposed Development therefore has the potential to cause short-term, negative, reversible effects on otter in the local area and within the watercourse downstream of the Proposed Development site as a result of water quality deterioration.

The Proposed Development will require the use of heavy machinery throughout construction, as well as in-stream works during the demolition of the existing and deteriorating walkway on the north side of the McLaughlin Building. This increase in noise, light and anthropogenic activity during the construction phase has the potential to disturb otter populations associated with the Lough Corrib SAC and Galway Bay Complex SAC. This constitutes a short-term, negative effect on local otter populations.

6.1.3.1.1 Mitigation

The mitigation described in Section 6.1.1.1.1 above for the protection of water quality will also serve to protect otter in terms of any potential for indirect effects via supporting habitat deterioration and reduction of prey availability.

In relation to disturbance, otter is predominantly crepuscular in nature and it is anticipated that the proposed works will be confined to daytime hours, thus minimising potential disturbance related impacts to the species. Chanin P (2003) provides a literary review with regard to anthropogenic disturbance and refers to several reports which have found that disturbance is not detrimental to otters

(Jefferies, 1987; Durbin, 1993; Green & Green 1997). The report also describes successful breeding in towns, under ferry terminals and under the jetties of one of Europe's largest oil and gas terminals at Sullom Voe in North Scotland. Irish Wildlife Manual No 76 (National Otter Survey of Ireland 2010/2012) notes that the occurrence of otter was unaffected by perceived levels of disturbance at the survey sites. It also notes that there is little published evidence demonstrating any consistent relationship between otter occurrence and human disturbance (Mason & Macdonald 1986; Delibes et al. 1991; Bailey & Rochford, 2006).

The Gaol River, Convent River and River Corrib within the likely zone of influence were found to provide potential suitable breeding habitat for the species. While no signs of otter were recorded during the surveys undertaken and no holts identified, due to the time that can pass between baseline pre-planning surveys and commencement of construction, there is potential for the baseline ecological environment to change. Therefore, given the nature of the in-stream works, the following mitigation will be applied:

- A pre-commencement otter survey will be undertaken prior to any construction works to ensure that there have been no changes since the otter surveys undertaken for this assessment. Should otter holts be recorded within 150m of the Proposed Development site, a derogation license will be obtained from NPWS and works carried out in accordance with NRA (2006) Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes.

The following best practice mitigation and environmental control measures will also be incorporated into the construction of the Proposed Development:

- All plant and equipment for use will comply with Statutory Instrument No 359 of 1996 "European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1996".
- Operating machinery will be restricted to the Proposed Development site area.
- Exterior lighting, during construction, shall be designed to minimise light spillage, thus reducing the effect on areas outside the Proposed Development, and consequently on otter i.e. Lighting will be directed away from watercourses to minimise disturbance to otter. Directional accessories will be used to direct light away from these features, e.g. through the use of light shields (Stone, 2013). The luminaries will be of the type that minimise horizontal spillage away from the intended areas.
- The best means practical, including proper maintenance of plant, will be employed to reduce the noise produced by on-site operations.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Compressors will be of the "sound reduced" models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machines which are used intermittently will be shut down or throttled back to a minimum during those periods when they are not in use.
- Any plant such as generators or pumps which are required to work outside of normal working hours will be surrounded by an acoustic enclosure.

These recommendations are in line with the following guidelines:

- NRA (2006). Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes.
- NPWS (2009). Threat Response Plan: Otter (2009-2011). National Parks & Wildlife Service, Department of the Environment, Heritage & Local Government, Dublin.
- Chanin P (2003). Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough.

Based on the above review of scientific literature, given that no evidence of otter was recorded during dedicated surveys and based on the best practice disturbance limitation measures included above, the

potential for adverse effects on the integrity of Lough Corrib SAC or Galway Bay Complex SAC, due to disturbance or displacement of QI species during the construction phase, can be excluded.

6.1.3.2 Operational Phase

Potential for adverse effects on otter due to disturbance during the operational phase of the Proposed Development is considered further below.

The operational phase of the Proposed Development will result in increased human activity adjacent to the watercourses associated with the site. However, as the Proposed Development is located in proximity to busy roads and Galway City, it is likely otter present adjacent to the McLaughlin Building are accustomed to some degree of human activity and as such will not be impacted by any increased activity.

The area surrounding the McLaughlin Building are currently used by pedestrians and motorists with moderate levels of traffic and is subject to associated noise. The Proposed Development will not result in any appreciable change in the local soundscape in this regard.

Exterior and interior lighting is proposed as part of the Proposed Development and, in the absence of appropriate design, has the potential to cause disturbance effects on local otter populations utilising the Gaol River adjacent to the site. This effect constitutes a slight, localised, permanent negative effect on this species.

6.1.3.2.1 Mitigation

An Exterior Lighting Report has been prepared by EDC for the Proposed Development site and is provided in Appendix 1. This report also provides an internal lighting concept to minimise light spill from within the McLaughlin Building.

Additional permanent external lighting included in this planning application is limited to safety lighting for the walkway to the north of the McLaughlin Building. It is proposed that the walkway to the north of the McLaughlin Building will be lit up by spotlights fixed at 1.1m above path level which are integrated in a handrail and shielded by a solid metallic barrier.

Due to the design, there is no residual light spill onto the Gaol River, which has been modelled and can be viewed in the Lighting Report in Appendix 1.

Internal lighting could be a source of light spill toward the Gaol River. Lighting controls shall be provided to support energy-management strategies – including timed operation and presence/absence detection to reduce light output or turnoff completely during low-occupancy periods or outside normal operational hours (core hours of 8am – 5pm). This will restrict the time periods of light spill, as well as minimise the amount of lighting to the areas needed within the building, which in turn minimises light spill to external areas, including the Gaol River.

Post implementation of mitigation measures as described above, there is no potential for adverse effects on otter associated with Lough Corrib SAC [000297] or Galway Bay Complex SAC [000268] as a result of disturbance during the operational phase. The measures described ensure that the Proposed Development does not prevent or obstruct QI otter from reaching Favourable Conservation Status as per Article 1 of the EU Habitats Directive.

The mitigation measures described in Section 6.1.1.1.1 above for the protection of water quality during the operational phase will also serve to protect otter in terms of any potential for indirect impact via supporting habitat deterioration and prey availability.

6.1.4 Invasive Species and Biosecurity

The ISMP attached in Appendix 2 describes the extent of the invasives found adjacent to the Proposed Development site and lays out species specific management and biosecurity measures. For ease these are also laid out below.

6.1.4.1 Zebra mussel (*Dreissena polymorpha*)

A young zebra mussel (*Dreissena polymorpha*) was recorded within the Gaol River during the aquatic surveys undertaken. There is likely further colonisation of this species present within the Gaol River. Zebra mussel was also observed in the Convent River during the surveys.

A site-specific invasive species management plan (ISMP) has been prepared and is included in Appendix 2.

The following biosecurity measures will be implemented on site in order to establish good site hygiene and prevent accidental spread of invasive species:

- All machinery/equipment that will be used within water/has the potential to enter water (including sheet piling, pump, silt bag etc.) will be thoroughly cleaned, dried and disinfected prior to arrival on site and before relocating to another site post-works using Virkon 1% biocide and departure from the site to prevent the spread of invasive species such as Asian Clam, Zebra Mussel, Crayfish plague.
- At the site entrance, a biosecurity cleaning station will be setup, where Footwear will be dipped in or scrubbed with a disinfectant solution (e.g. 1% solution of Virkon Aquatic or another proprietary disinfection product) and thoroughly dried afterwards. This area will contain a washable membrane or hard surface.
- High-pressure steam cleaning, with water > 40 degrees C, is recommended for machinery/equipment that will be moved from one watercourse to another.
- Daily checks will be carried out on plant, machinery and fuel lines for leaks and records kept of same with any faulty plant removed off site for repair.
- In the event of pollution or aquatic habitat damage or fuel spills, Waterways Ireland, IFI and the relevant Local Authority Environment Sections should be contacted immediately.
- Biosecurity measures will be strictly adhered to throughout construction. Measures will be in accordance with IFI (2010) *Biosecurity Protocol for Field Survey Work*. Where staff are working instream, staff footwear and PPE will be inspected on daily completion of the works and vegetation or debris removed. Footwear will be dipped in or scrubbed with a disinfectant solution (e.g. 1% solution of Virkon Aquatic or another proprietary disinfection product) and thoroughly dried afterwards. Machinery that has been working within the channel and other equipment used in channel including PPE will be wiped down with 1% solution of Virkon Aquatic or another proprietary disinfection product. This will be carried out daily on completion of the works and/or prior to staff and machinery moving off site.
- Sandbags used as part of the in-stream works will not be re-used in other watercourses.
- Any materials removed from the watercourse during the demolition phase will be appropriately disposed of and will not be relocated or reused in any other watercourses.

6.1.4.2 Canadian Waterweed (*Elodea canadensis*)

A high degree of colonisation with Canadian waterweed was recorded within the Gaol River directly adjacent to the Proposed Development site, as well as to the north of the Proposed Development site, forming submerged patches across slower-moving sections of the channel.

A site-specific invasive species management plan (ISMP) has been prepared and is included in Appendix 2.

Biosecurity measures will be implemented on site in order to establish good site hygiene and spread of this invasive species. Due to the similar manner of spread between zebra mussel and Canadian waterweed, the biosecurity measures described in Section 6.2.3.1 above will be sufficient to control the spread of this species also.

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7.

ASSESSMENT OF RESIDUAL ADVERSE EFFECTS

The potential for residual adverse effects on each of the individual relevant Qualifying Features of the Screened in European Sites following the implementation of mitigation, is assessed in this section of the report.

Based on the above, in view of best scientific knowledge, on the basis of objective information, there is no potential for adverse effect on the listed QIs/SCIs of the Lough Corrib SAC [000297], Galway Bay Complex SAC [000268] or Inner Galway Bay SPA [004031] and their associated targets and attributes, or on any other European Site. Potential pathways for effect have been robustly blocked through measures to avoid impacts and the incorporation of best practice/mitigation measures into the project design.

Taking cognisance of measures to avoid impacts and best practice/mitigation measures incorporated into the project design which are considered in the preceding section, the Proposed Development will not have an adverse effect on the integrity of any European Site.

The Proposed Development will not prevent the QIs/SCIs of European Sites from achieving/maintaining favourable conservation status in the future as defined in Article 1 of the EU Habitats Directive. A definition of Favourable Conservation Status is provided below:

‘Conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2; The conservation status will be taken as ‘favourable’ when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.’

Based on the above, it can be concluded in view of best scientific knowledge, on the basis of objective information that the Proposed Development will not adversely affect the Qualifying Interests/Special Conservation Interests associated with any European Site.

8.

ASSESSMENT OF IN-COMBINATION EFFECTS

A search and review in relation to plans and projects that may have the potential to result in in-combination effects on European Sites was conducted. This assessment focuses on the potential for in-combination effects on the European Sites where potential for adverse effects was identified in Section 4 of this report. This included a review of online Planning Registers, development plans and other available information and served to identify past and future plans and projects, their activities and their predicted environmental effects. A list of the plans and projects considered is provided in Appendix 3.

8.1

Plans

The following Development Plans have been reviewed and taken into consideration as part of this assessment:

- Galway City Development Plan 2023-2029
- Northern and Western Regional Spatial and Economic Strategy 2020-2032
- 4th National Biodiversity Action Plan 2023-2027

A review of the objectives of the Plans relating to European Designated Sites has been carried out and is provided in Appendix 3. No potential for cumulative effects when considered in-combination with the Proposed Development has been identified, and the Proposed Development is in compliance with the relevant objectives of the Plan.

In addition, the Appropriate Assessment carried out for this plan have been reviewed. The relevant Natura Impact Report (NIR) is found on the Galway City County Council website at the following link:

<https://consult.galwaycity.ie/en/system/files/materials/613/NIR%20for%20Draft%20Galway%20City%20Development%20Plan%202023-2029.pdf>

The Appropriate Assessment carried out for the Development Plan has concluded that there is no potential for Residual Adverse Effect as a result of implementation of the Plan. Therefore, there is no potential for cumulative effect as a result of the Proposed Development in-combination with the Plan.

8.2

Projects

Assessment material for this in-combination effect assessment was compiled on the relevant developments within the vicinity of the Proposed Development and was verified on the 10/11/2025. The material was gathered through a search of relevant online Planning Registers, reviews of relevant documents, planning application details and planning drawings, and served to identify past and future projects, their activities and their environmental impacts. All relevant projects were considered in relation to the potential for in-combination effects. All relevant data was reviewed (e.g. individual EISs/EIARs, layouts, drawings etc.) for all relevant projects where available.

The dominant land uses in the area were also considered in the assessment and included institutional, residential, commercial uses as well as rivers and canals.

The plans and projects considered include those listed in Appendix 3. These consisted mainly of extensions to houses, retention permission, change of use and small alterations.

8.3

Conclusions of Assessment of Cumulative Effects

Following the detailed assessment provided in the preceding sections, it is concluded that, the Proposed Development will not result in any residual adverse effects on any European Sites, their integrity or their conservation objectives when considered on its own. There is therefore no potential for the proposed development to contribute to any cumulative adverse effects on any European Site when considered in-combination with other plans and projects.

In the review of the projects that was undertaken, no connection, that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the Proposed Development.

Taking into consideration the reported residual impacts from other plans and projects in the area and the predicted impacts with the current proposal, no residual cumulative impacts have been identified with regard to any European Site.

9.

CONCLUDING STATEMENT

This NIS has provided an assessment of all potential direct or indirect adverse effects (including in-combination effects with other plans and projects) on European Sites.

Where the potential for any adverse effect on any European Site has been identified, the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within this report and its appendices. The measures ensure that the construction and operation of the Proposed Development do not adversely affect the integrity of European sites.

Therefore, it can be objectively concluded that the Proposed Development, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site.

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APPENDIX 1

EXTERIOR LIGHTING REPORT



> PROGRESSIVE ENGINEERING

PROJECT TITLE:	McLaughlin Building
CLIENT:	University of Galway
DOCUMENT TITLE:	EXTERNAL LIGHTING REPORT
DOCUMENT NUMBER:	G25010-EDC-XX-XX-S-E-00002
REVISION:	P02
DATE:	15-04-2026

Rev.	Status	Date	Originator	Checker	Approved By
P01	FOR COMMENT	21-11-25	SM	GK	GK
P02	FOR COMMENT	15-04-26	JPA	SM	GK

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TABLE OF CONTENTS

INTRODUCTION.....	5
INTERNAL LIGHTING CONCEPT.....	5
EXTERNAL LIGHTING CONCEPT	5
ECOLOGICAL CONSIDERATIONS.....	7
LIGHTING SIMULATION (PATHWAY)	8
LIGHTING SIMULATION (FLIGHT ZONE).....	9
LIGHTING CONTROL	11

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INTRODUCTION

The following document sets out the external lighting strategy for access pathway to the northern entrance of McLaughlin Building

The intention is to provide the client, University of Galway (UG) and other interested parties of our intended lighting strategy and in particular to demonstrate the lighting strategy has been developed with function in mind whilst also giving careful consideration to nearby waterway which is an important habitat for bats and local wildlife.

INTERNAL LIGHTING CONCEPT

Lighting to all internal areas shall be to CIBSE lighting guides and best practices for educational and administration buildings. Generally teaching and work spaces shall be illuminated to 300-500lux and circulation routes to 150lux. Lighting controls shall be provided to support energy-management strategies — including timed operation and presence/absence detection to reduce light output or turn off completely during low-occupancy periods or outside normal operational hours (core hours of 8am – 5pm). In addition to reducing energy consumption, these controls will also assist to mitigate unwanted light spill toward the northern waterway adjacent to McLaughlin.

Window blinds will also be provided to all external windows to further mitigate internal light spill outwards from McLaughlin.

EXTERNAL LIGHTING CONCEPT

The pathway is the primary target to illuminate and solely to provide safe pedestrian access and egress from McLaughlin Building.

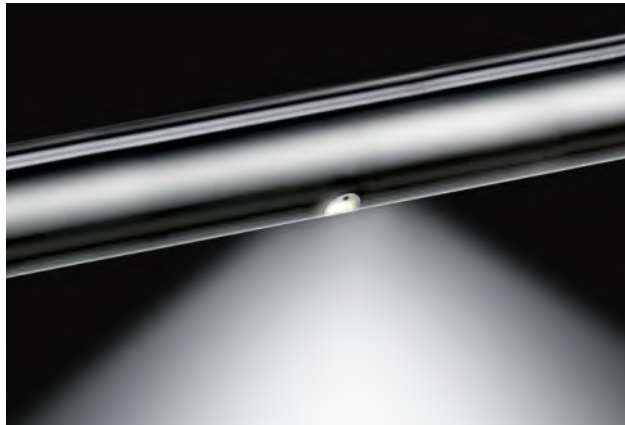
To achieve this, we are proposing to use discreet spot lighting recessed into hand railing or angled formed top along entire length of pathway. We intend to mount these at the river side, pointing back towards the building as shown below. Also shown below satellite view showing river at northern side of McLaughlin.



Spot lights to run along pathway mounted into Architectural steel hand rail / post top – mounted 1M above path level.



Satellite view showing river at northern side of McLaughlin



Indicative images to show intent (will be solid barrier rather than railing for McLaughlin)

ECOLOGICAL CONSIDERATIONS

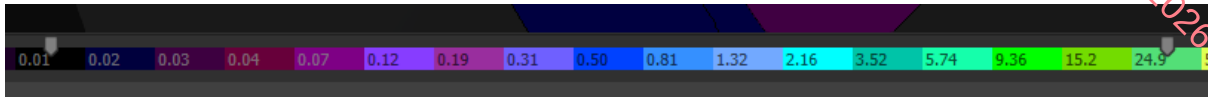
To ensure maximum consideration is given to local wildlife the following measures will be implemented:

- A continuous solid metallic barrier shall be installed between the pathway and the river. This acts as a physical screen ensuring that no light emitted from pathway luminaires can reach the water surface.
- All spot lights will be of asymmetric distribution with sharp optical cut-off to ensure lighting is directed away from river and downwards towards the pathway.
- Photometric calculation snips are included later in this report to demonstrate the above.
- Colour temperatures shall be selected with of 2700k or lower and peak emissions above 550nm to minimise blue wavelength output as per ILP and Bat Conservation Trust Guidelines.
- Spotlights shall be LED with no ultraviolet component.
- In conjunction with University of Galway we intend to further examine employment of time schedules and localised presence detection to further mitigate lighting on northern side of McLaughlin. These measures will need to be discussed and balanced with the University of Galway intending operating hours and safety considerations to staff, students and visitors to the building.

LIGHTING SIMULATION (PATHWAY)

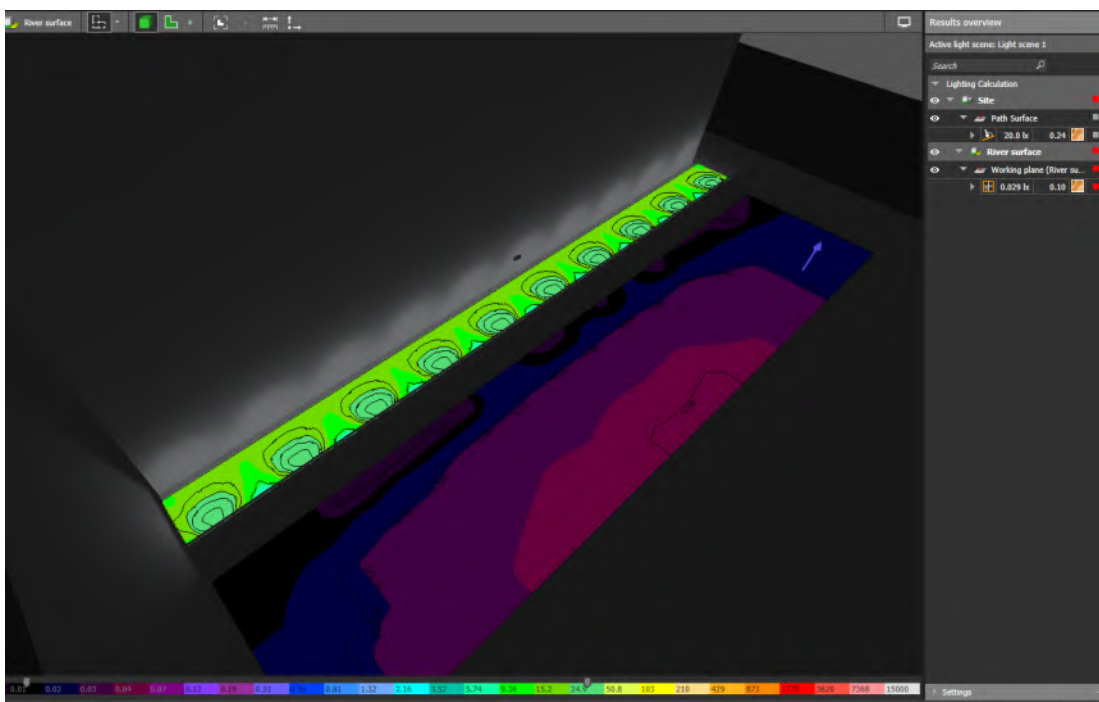
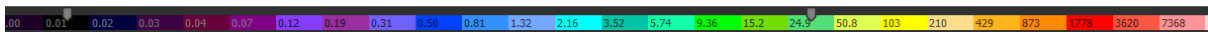
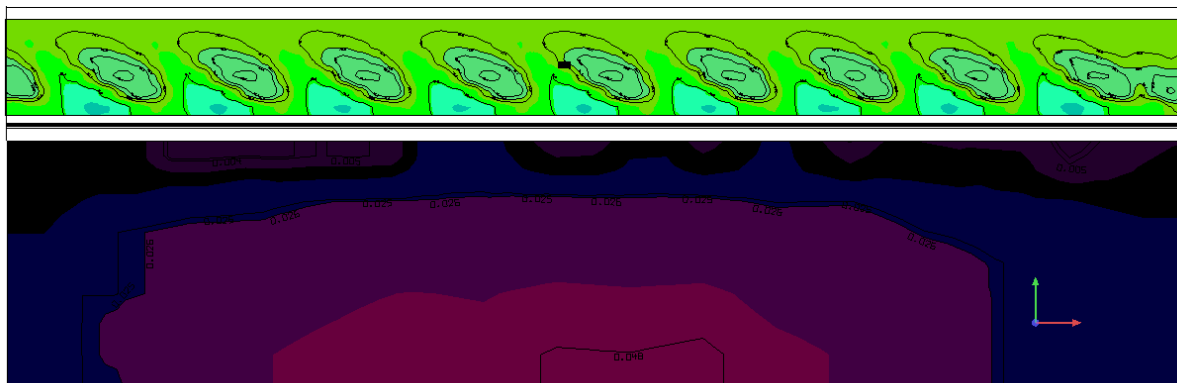
We have modelled the lighting strategy set out above and include the snips below which demonstrate the intended measures will be effective.

These diagrams are known as false colour diagrams, each colour depicting a different lux value as below



False colour diagram

As can be seen the pathway is shown in green achieving 20lux average to provide safe access and egress to the building. In sharp contrast the water way is showing in purple, blues, blacks all indicating lux values close to zero.

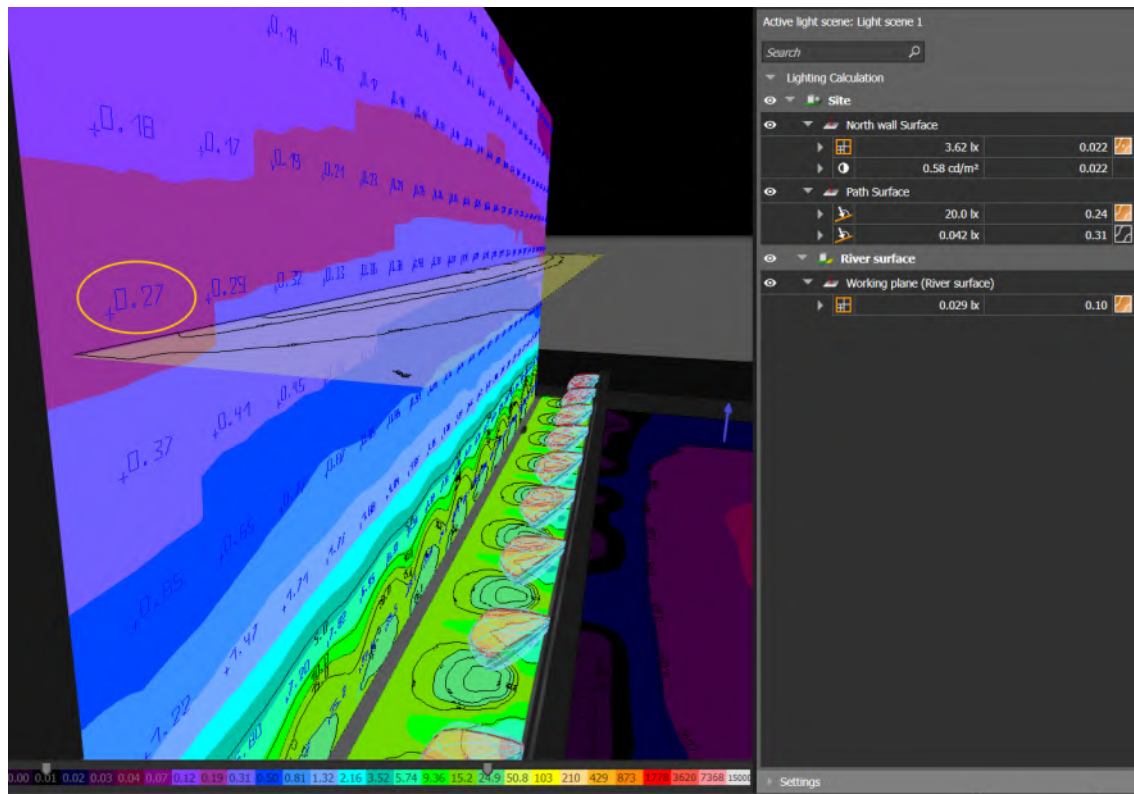


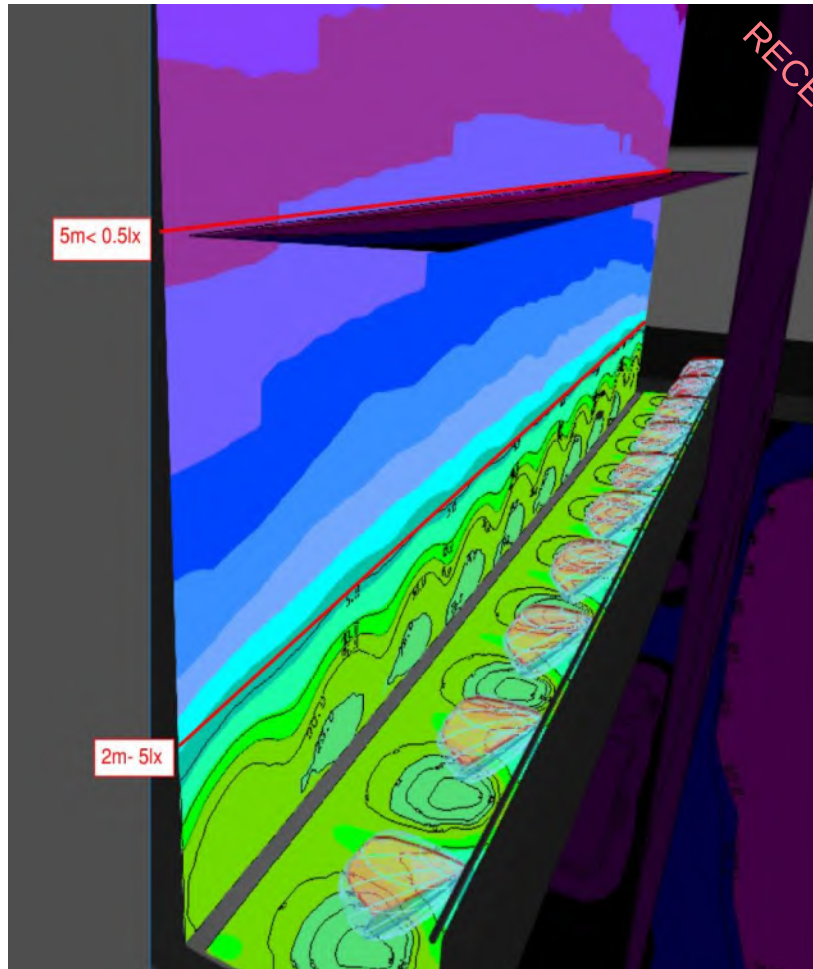
LIGHTING SIMULATION (FLIGHT ZONE)

The figure below illustrates predicted light levels at heights above the pathway, corresponding to the typical flight zone of bats. It demonstrates that illuminance reduces sharply with height, indicating minimal upward light spill.

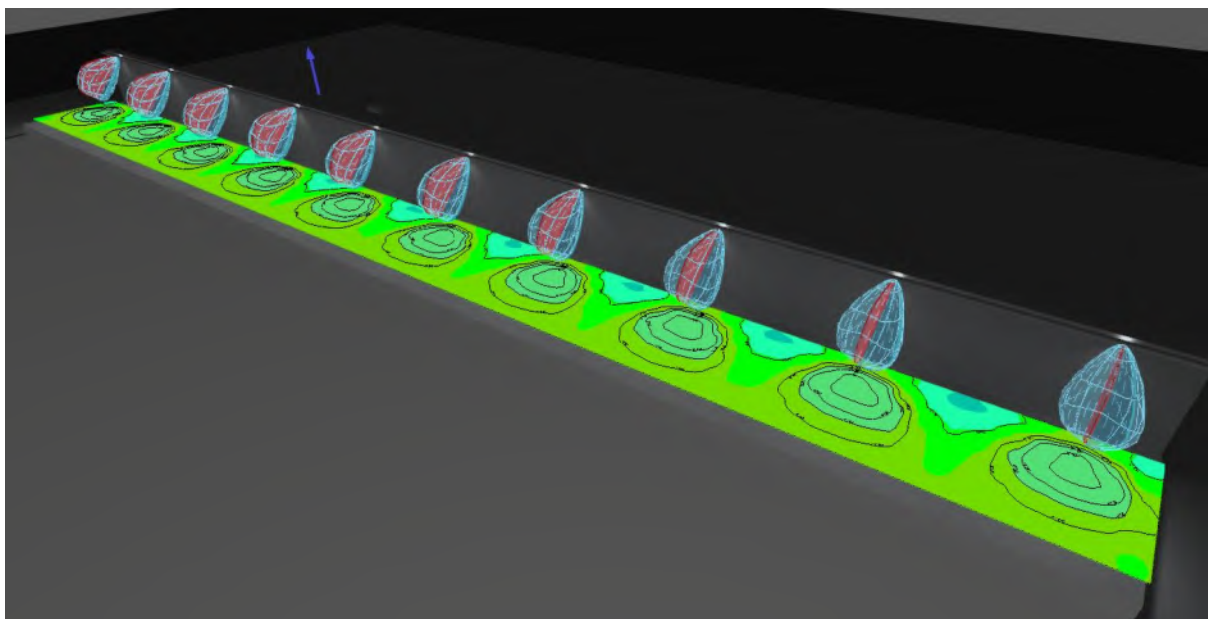
While the average horizontal illuminance along the pathway is approximately 20 lux, levels decrease significantly above this plane. At a height of 2 m, it can be seen the average illuminance reduces to approximately 5 lux, and at 5 m height, vertical illuminance levels further reduces to approximately 0.5 lux on the northern façade of the McLaughlin Building.

This rapid reduction of illuminance with height confirms that upward light spill into the potential bat flight zone is negligible.





False colours on the north wall. 0.27lx at 5m.



Photometric light distribution curves, showing a controlled, targeted throw focused on the pathway with minimal backspill and upspill

LIGHTING CONTROL

Lighting controls will be implemented to ensure operation is limited to core hours of 08:00 to 17:00, and occasionally to 22:00.

Presence detection may be considered to manage lighting outside these hours, subject to maintaining appropriate levels of safety and security for all users of the McLaughlin Building.

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APPENDIX 2

INVASIVE SPECIES MANAGEMENT PLAN

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Invasive Species Management Plan

University of Galway –
McLaughlin Building



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DOCUMENT DETAILS

Client: **University of Galway**

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Project Number: **250316**

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Rev	Status	Date	Author(s)	Approved By
01	Final	15/12/2025	AMcD	CW/KOD

Table of Contents

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INTRODUCTION	4
1.1 Background	4
1.2 Statement of Authority	5
1.3 Legislative Framework	5
1.4 Guidance Documents	6
2. CHARACTERISTICS OF THE PROPOSED DEVELOPMENT	8
3. INVASIVE SPECIES RECORDED	10
3.1 Zebra Mussel	10
3.2 Japanese Knotweed	11
3.3 Canadian waterweed	12
4. BIOSECURITY MEASURES	14
6. JAPANESE KNOTWEED MANAGEMENT PLAN	16
6.1 Site Set-up and Associated Measures	16
6.2 General Biosecurity Measures	17
6.3 Japanese Knotweed Treatment	17
6.3.1 Option 1: Excavation of Japanese knotweed and Removal to Off-Site Waste Facility	17
6.3.2 Option 2: Treatment In-Situ	18
7. CONCLUSION	19
BIBLIOGRAPHY	20

TABLE OF FIGURES

<i>Figure 2-1 Site location</i>	9
<i>Figure 3-1 Invasive species map</i>	14

INTRODUCTION

1.1

Background

MKO were commissioned by the University of Galway to prepare an Invasive Species Management Plan for the refurbishment of the McLaughlin Building on site located at Nun's Island, Galway City, Co. Galway (Grid reference ITM 529470, 725313). The location of the proposed development is shown in Figure 2-1 below.

As part of the multi-disciplinary ecological walkover survey carried out by MKO on the 21st of August 2025 the site was searched for invasive species listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and the 'Third Schedule' of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). Several small stands of the First/Third Schedule species Japanese knotweed (*Reynoutria japonica*) were identified at the bottom of the steep and tall embankment between the eastern bank of the Gaol River and the concrete yard also owned by the university. Due to the height of the embankment, the stands of Japanese knotweed are isolated from any works activity and are located at the edge of the channel of the Gaol River, which at this location is not under the ownership of the University of Galway. The stands are also located along the Gaol River ca. 100m to the south of the McLaughlin Building and are therefore at a significant distance and down-stream of any works activity. No risk for further spread of this species as a result of the Proposed Development exists. Management options for this species are outlined below in case pre-construction surveys reveal the presence of this species within 7m of the Proposed Development site.

It was also noted that there was a presence of Zebra Mussel (*Dreissena polymorpha*) and Canadian waterweed (*Elodea canadensis*) within the Gaol River and the Distillery River. Zebra Mussel and Japanese Knotweed are listed under the 'First Schedule' of the European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 374 of 2024) and the Third Schedule under Regulations 49 & 50 in the European Communities (Birds and Natural Habitat) Regulations 2011. Canadian waterweed is only listed under the Third Schedule under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations 2011 as this states 'all *Elodea sp.*' are subject to restrictions under Regulations 49 and 50. In the First schedule however it states 'Elodea species excluding *canadensis*' are subject to restrictions and is therefore of a lesser concern.

This document has been prepared with reference to current legislation and best practice guidelines in identification, treatment and management of invasive alien species listed on the 'First Schedule' of the European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 374 of 2024) and the Third Schedule under Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). This document does not provide advice or guidance with reference to waste legislation.

The objective of this report is to provide site specific best practice recommendations for the management of invasive species listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 374 of 2024) and Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 466 of 2011).

The recorded invasive species are mapped in Figure 3-1, showing their distribution within and adjacent to the Proposed Development site boundary.

1.2

Statement of Authority

The multi-disciplinary ecological walkover survey was undertaken on the 21st of August 2025 by MKO Ecologists Katy Beckett (B.A., M.Sc.) and Chandra Walter (B.Sc., MSc.). The ecological surveyors possess the relevant academic qualifications and are competent in undertaking the ecological surveys in which they were involved.

This invasive species management plan has been prepared by Amy McDermott (B.Sc.) and reviewed by Chandra Walter and Kate O'Donnell who have over 4- and 6-years professional experience in ecological consultancy respectively.

1.3

Legislative Framework

In 2011, the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) were introduced. Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) include legislative measures to deal with the dispersal and introduction of invasive alien species.

Non-native species subject to restrictions under Regulations 49 and 50 are included in the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). High impact invasive species on this list include, among others, Japanese Knotweed, Giant Hogweed, Giant Knotweed, Giant Rhubarb, Himalayan Knotweed, Bohemian Knotweed and Rhododendron. Vector materials which aid in the spread of these species include soil or spoil taken from places infested with Japanese knotweed (*Reynoutria japonica*), Giant Knotweed (*Reynoutria sachalinensis*) or their hybrid Bohemian Knotweed (*Reynoutria x bohemica*). Two vector materials are referred to in the regulations (Third Schedule Part 3), one is blue mussel seed and the second is:

“Soil or spoil taken from places infested with Japanese knotweed, Giant knotweed or their hybrid Bohemian knotweed”

Regulation 49

“Any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place specified in relation to such plant in the third column of Part 1 of the Third Schedule, any plant which is included in Part 1 of the Third Schedule, shall be guilty of an offence”.

Regulation 50

“a person shall be guilty of an offence if he or she has in his or her possession for sale, or for the purpose of breeding, reproduction or propagation, or 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 listed in Part 1 or Part 2 of the Third Schedule can be reproduced or propagated, or*
- (c) a vector material listed in Part 3 of the Third Schedule,”*

In 2024, the European Union (Invasive Species) Regulations 2024 (S.I. 374 of 2024) were then introduced. These Regulations include offences in relation to invasive alien species of national concern under Regulation 17(1) whereby a person shall not:

- a. “introduce into the State,*
- b. keep, including in contained holding,*
- c. breed, including in contained holding,*
- d. import into, export from or transport within the State, except for the transportation of*

- species to facilities in the context of eradication,*
e. place on the market,
f. use, exchange or offer for exchange,
g. permit to reproduce, grow or cultivate, including in contained holding, or
h. release into the environment an invasive alien species of national concern.”

Invasive alien species of national concern under Regulation 16(1) are listed in the ‘First Schedule’ of the European Union (Invasive Species) Regulations 2024. Invasive species in this list include plants such as: Japanese knotweed, giant hogweed, giant knotweed, giant rhubarb, Himalayan balsam, Himalayan knotweed, Bohemian Knotweed and Rhododendron.

Vector materials under Regulation 16(2) are included in the ‘Second Schedule’ of the European Union (Invasive Species) Regulations 2024. Two vector materials are referred to in the regulations, the first is blue mussel seed and the second is:

“Soil or spoil taken from places infested with Japanese knotweed (Reynoutria japonica), Giant knotweed (Reynoutria sachalinensis) or their hybrid Bohemian knotweed’ (Reynoutria x bohemica)”

Under Regulation 17(2), a person shall not

- a. “import or otherwise introduce into the State,*
b. place on the market,
c. use, exchange or offer for exchange, or
d. release into the environment, a vector material.”

The management of invasive plant species should refer to Section 40 of the Wildlife Act particularly during the preparation of Invasive Species Management Plans.

The list of invasive plant species under the First Schedule is not exhaustive and many invasive species, hereafter referred to as “non-First Schedule” invasives, continue to grow prevalently in Ireland. These species include, among others, butterfly bush (*Buddleja davidii*), montbretia (*Crocsmia x crocosmiiflora*), traveller’s joy (*Clematis vitalba*), winter heliotrope (*Petasites pyrenaicus*), cotoneaster (*Cotoneaster horizontalis*), Himalayan honeysuckle (*Leycesteria formosa*) and cherry laurel (*Prunus laurocerasus*).

1.4

Guidance Documents

The following guidance documents and literature sources were consulted during the preparation of this report:

- Irish Water (2016) IW-AMT-SOP-009 Information and Guidance Document on Japanese knotweed
- Stokes et al. (2004). Stokes, K., O'Neill, K. & McDonald, R.A. (2004) Invasive species in Ireland. Unpublished report.
- TII (2020) The Management of Invasive Alien Plant Species on National Roads – Technical Guidance
- Property Care Association (2018) Code of Practice for the Management of Japanese knotweed
- NRA (2010). Guidelines on management of noxious weeds and non-native invasive plant species on national roads. National Roads Authority.
- NPWS (2024). Ireland’s 4th National Biodiversity Action Plan 2023-2030.
- www.invasivespeciesireland.com
- www.invasivespeciesni.co.uk
- EPA (2022). Managing Invasive Alien Plants in Ireland

- TH (2021). Guidelines on management of noxious weeds and non-native invasive plant species on national roads.
- IFI (2010) Biosecurity Protocol for Field Survey Work.

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2.

CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The refurbishment of the McLaughlin Building and all associated works will be referenced within the ISMP as the 'Proposed Development'.

The proposed development will comprise of the refurbishment and extension of the McLaughlin Building (a Protected Structure: RPS Ref. 7406 Former Mill - NUIG), Nun's Island, Galway.

The McLaughlin Building will be refurbished and extended for educational use including associated academic teaching and study spaces; administrative areas; staff and student welfare facilities; café and ancillary plant and storage areas.

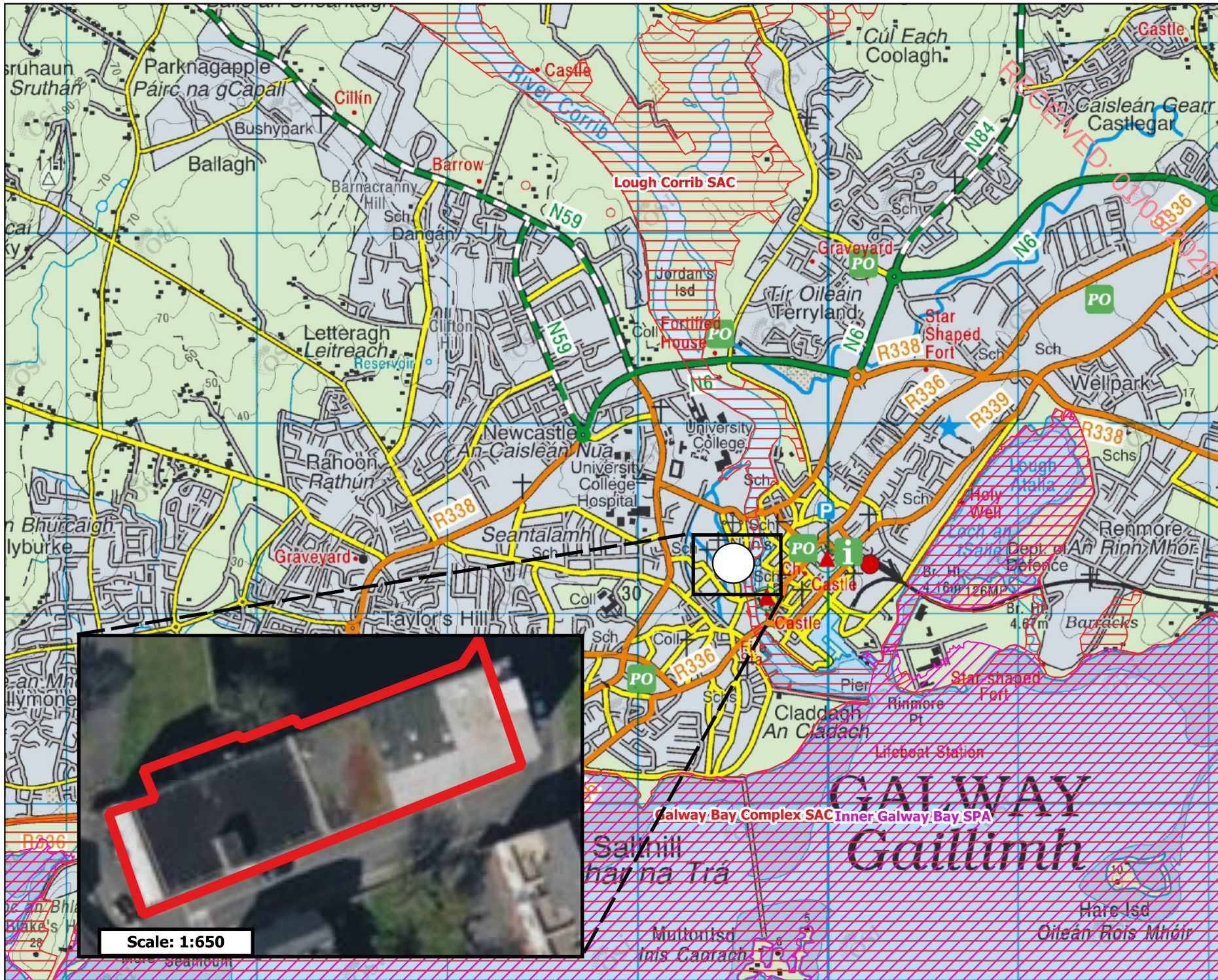
The proposed works to the McLaughlin Building will include the removal of the mid- to late-20th Century roof and fifth floor level (approx. 374.1 sqm gross floor area (GFA)); and the construction of two additional floors, resulting in an overall increase in height of the building from 5 storeys to 6 storeys (with maximum proposed height of 30.03 m). The proposed works will result in an increase in GFA from 2962.17 sqm to 3962.7 sqm.

Further interventions to the McLaughlin Building will include:

1. Removal of existing mid- to late 20th Century building fabric the south-west corner to be replaced with an ESB Substation and Switch room at ground floor level overlaid with perforated aluminium panels to match proposed new aluminium curtain walling with glazed openings on upper levels.
2. Provision of a new external stair and lift core on the north elevation
3. Removal of selected areas of the late 20th Century internal steel frame and concrete slabs, provision of new foundations in selected areas, new ground floor slab build-up throughout and new structural frame to support the additional floors.
4. Existing 20th Century windows and doors to be replaced with new thermally broken aluminium doors and windows to match existing openings, and repair of window reveals and sills.
5. Creation of new entrance on the northern elevation (incorporating two original window openings); enlargement of three existing openings at ground floor level of southern elevations and alterations to two window and door openings to provide compliant door openings to the new escape stair to the northern elevation
6. Removal of cement render and retention and repair of original rubble and limestone masonry walls.
7. Removal of mid to late 20th Century extension to the northern elevation.
8. Removal of non-original subdivisions and provision of new subdivisions
9. Repair and repointing of masonry arch culverts beneath the building, and construction of reinforced concrete plinths at the arch bases to remediate and prevent scouring.
10. Existing access walkway along north elevation upgraded and widened (2m in width)
11. Temporary in-stream works during construction phase comprising localised damming to facilitate both the walkway widening and masonry arch culvert repairs.

The proposed works will also include new water and wastewater connections; rooftop plant; new mechanical and electrical services; thermal upgrade of the existing building including solar PV panels at roof level; landscaping to the existing boardwalk; boundary treatments; together with all associated and ancillary site and development works.

Site offices and temporary construction compound will be contained within the footprint of the McLaughlin Building (See site location in Figure 2-1 below).



Map Legend

- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Site Boundary
- Site Location



Drawing Title

Site Location

Project Title

University of Galway -
McLaughlin Building

Drawn By	AMCd	Checked By	KOD
Project No.	250316	Drawing No.	Figure 2-1
Scale	1:26,000	Date	02.12.2025

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3. INVASIVE SPECIES RECORDED

3.1 Zebra Mussel

The Zebra mussel is a mollusc with a stripy shell. They are small in size, growing up to 3-4 cm in length and lives for 2-3 years. The zebra mussel attaches itself to hard surfaces such as rocks, anchors, boat hulls, intake pipes, and plants using byssal threads. It is native to the Caspian and Black Sea region but has become invasive throughout Europe since the late 1700's following the construction of an extensive canal network. The zebra mussel likely arrived in Ireland in 1994 attached to the hulls of second-hand boats imported from Britain or the Netherlands.

The impacts of zebra mussels include blockages of water intake pipes, reduction of phytoplankton, changes in nutrient cycles, increased water clarity, increased plant growth around lake margins, attachment to the hulls of boats and blockages of boat engines, population declines of native mussels as zebra mussel colonise their shells and changes in fish populations (NIEA, 2020).

During the multi-disciplinary ecological walkover survey of the Proposed Development site, zebra mussel (*Dreissena polymorpha*) was found within the Gaol River north of the Proposed Development site (Plate 3-1). The confirmed presence of zebra mussels within the Gaol River suggests the potential for further colonisation and spread of this invasive species in areas that were inaccessible during the multidisciplinary ecological walkover survey. Furthermore, established high populations of zebra mussels have been recorded in hydrologically connected watercourses, including the Distillery River and the Convent River. These waterbodies may represent potential source populations contributing to the occurrence of zebra mussels within the Gaol River.

Zebra mussel is an invasive species listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 274 of 2024) and Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). Consequently, a management plan has been prepared in Section 4 below. A map showing the location of zebra mussel recorded is shown in Figure 3-1.



Plate 3-1 View of Zebra mussel (*Dreissena polymorpha*) located to the north (and upstream) of the Proposed Development

3.2

Japanese Knotweed

Japanese knotweed (*Reynoutria japonica*) is a tall vigorous, hardy perennial plant native to Japan, Korea and Northwestern China. The species was introduced to Britain in mid-19th century as an ornamental plant for large gardens, prized due to its imposing size and sprays of creamy white flowers. By 1886 it was established in the wild and now considered one of the most problematic plant species in the UK and Ireland. Japanese knotweed has a rapid upward growth rate of shoots at the beginning of the growing season which allows it to outcompete native vegetation, and lateral growth via extension of rhizomes which are capable of penetrating built structures over time. Japanese knotweed is characterised by shield-shaped leaves which are flat at the base and carried on zigzagged stems which are sturdy, purple spotted, hollow and bamboo-like with regular spaced nodes. The flowers (only female in the UK and Ireland), appear in late summer or early autumn and are creamy white in drooping clusters 8cm to 12cm in length. In spring, the emerging stems are green to red/ purple with rolled leaves that unfurl as the shoots extend. At the end of the year, the stems persist and turn various shades of brown, sometimes with an orange tinge. The rhizome is dark brown in colour, generally darker towards the centre with lines often radiating from the centre.

Due in part to spreading vegetatively and rapid growth, Japanese knotweed is highly invasive and can impact native species by shading out native and rare plant species. As with other species of knotweed, Japanese knotweed is expensive to control and difficult to deal with.

During the multi-disciplinary ecological walkover survey of the proposed development site, eight stands of Japanese knotweed (*Reynoutria japonica*) were identified approximately 100m south of the Proposed Development site on the western bank and eastern banks of the Gaol River. These stands were identified at the bottom of the steep and tall embankment between the eastern bank of the Gaol River and the concrete yard used as site compound. Due to the height of the embankment, the stands of Japanese knotweed are isolated from any works activity. No risk for further spread of this species as a result of the Proposed Development exists (Plate 3-2).

A map showing the location of Japanese knotweed recorded is shown in Figure 3-1.



Plate 3-2 View of Japanese Knotweed located in the Gaol River to the south (and downstream) of the Proposed Development site

3.3 Canadian waterweed

Canadian waterweed (*Elodea canadensis*) is a submerged aquatic plant native to North America and naturalised across much of Europe, including Ireland and the UK. It was first recorded in Europe in the 19th century and spread rapidly through waterways and canal systems. This species is rooted in the substrate and forms long, branched stems up to 3 m in length. Leaves are arranged in whorls of three and are minutely serrated. *Elodea* species reproduce exclusively through vegetative fragmentation, as only female plants are present in Ireland. Plant fragments develop adventitious roots, which have aided its rapid establishment. It is a shallow-rooted plant and can occupy a wide range of water depths, from shallow margins to waters over 3m deep, where it develops large, dominant stands. The species occurs in freshwater habitats such as lakes, rivers, canals, and other slow moving or still waterbodies and are rarely found in fast moving waterbodies. It prefers high levels of silt but can tolerate a range of mineral conditions and can persist in anaerobic substrates. It is also an early coloniser of new habitats, such as artificial lakes and waterbodies recovering from pollution. *E. canadensis* has historically shown a pattern of colonisation followed by rapid expansion during which it can form dense mats that impede water flows and displace native vegetation. It is often introduced or spread through the ornamental trade, being sold as an “oxygenating” plant for ponds and water gardens. Escape into natural waterways occurs both accidentally, via flooding or attachment to waterfowl, and deliberately through disposal of unwanted plant material. The primary ecological impacts of *E. canadensis* arise from competition. Dense growth can reduce light penetration, suppressing natural biotic communities.

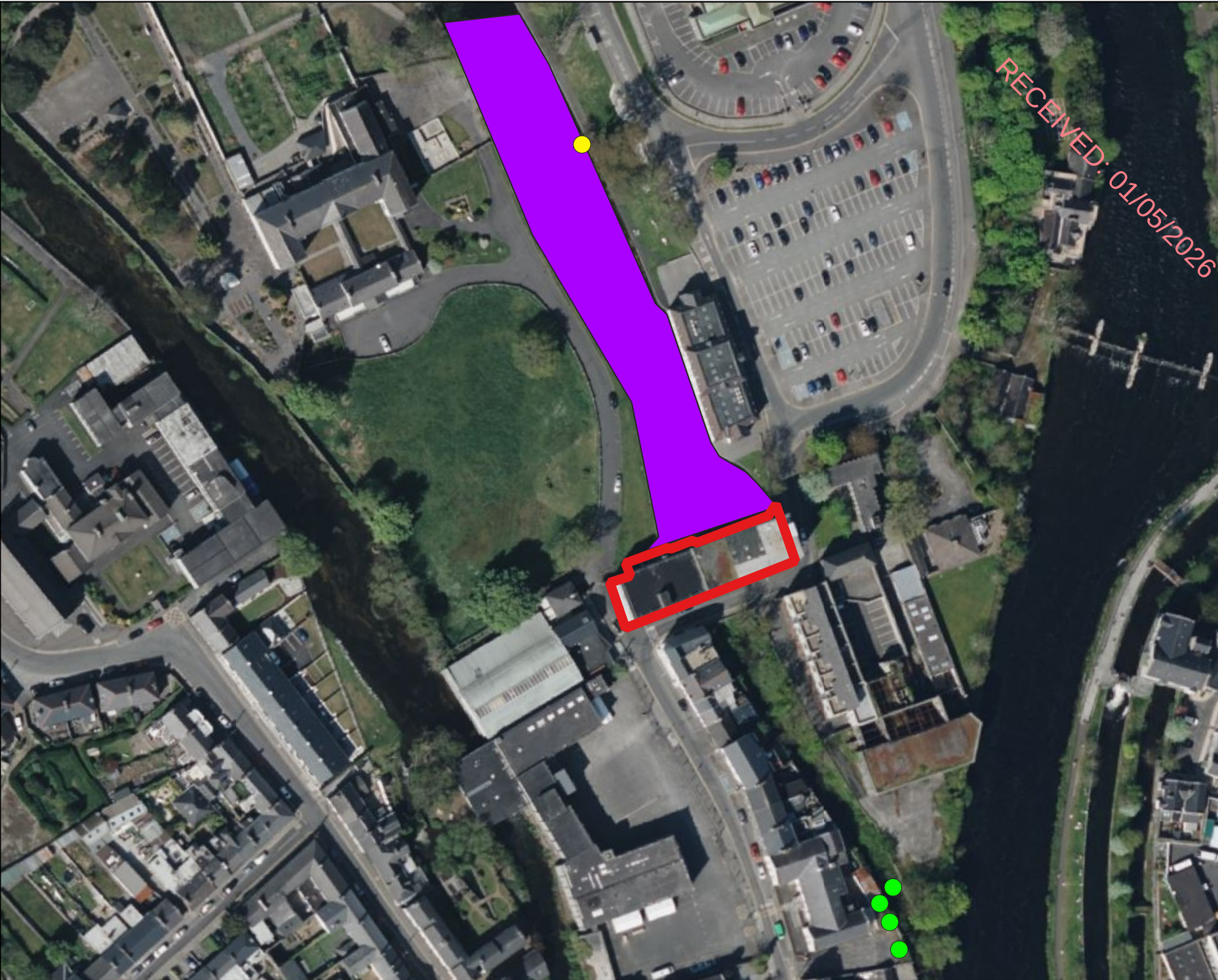
During the multidisciplinary ecological walkover survey of the Proposed Development site, Canadian waterweed was recorded within the Gaol River directly adjacent to the Proposed Development site, as well as to the north of the Proposed Development site, forming submerged patches across slower-moving sections of the channel. (Plate 3-3).

Elodea canadensis is listed as an invasive alien species of concern under the Third Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). Consequently, a management plan has been prepared in Section x below.

A map showing the location of Canadian waterweed (*Elodea canadensis*) recorded is shown in Figure 3-1.



Plate 3-3 View of Canadian waterweed (*Elodea canadensis*) located within the adjacent Gaol River to the Proposed Development site



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Map Legend

-  Site Boundary
-  Broad-leaved rush (*Juncus planifolius*)
-  Japanese knotweed (*Fallopia japonica*)
-  Canadian waterweed (*Elodea canadensis*)



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Drawing Title	
Invasive Species Location	
Project Title	
University of Galway - McLaughlin Building	
Drawn By	Checked By
AMcD	KOD
Project No.	Drawing No.
250316	Figure 3-1
Scale	Date
1:1,451	02.12.2025



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4.

BIOSECURITY MEASURES

Zebra mussel (*Dreissena polymorpha*) and Canadian waterweed (*Elodea canadensis*) was recorded within the Gaol River during the aquatic survey undertaken. A zebra mussel was noted on a prominent rock in the river channel. This indicates further colonisation of this species may be present within this watercourse. A large amount of Canadian waterweed was found within the Gaol river and in close proximity to the Proposed Development site.

Therefore, the following biosecurity measures will be implemented on site in order to establish good site hygiene and prevent accidental spread of Zebra mussel and Canadian waterweed:

- All machinery will be thoroughly cleaned, dried and disinfected prior to arrival on site and before relocating to another site post-works using Virkon 1% biocide and departure from the site to prevent the spread of invasive species such as Asian Clam, Zebra Mussel, Crayfish plague, and Canadian waterweed.
- At the site entrance, a biosecurity cleaning station will be setup, where Footwear will be dipped in or scrubbed with a disinfectant solution (e.g. 1% solution of Virkon Aquatic or another proprietary disinfection product) and thoroughly dried afterwards. This area will contain a washable membrane or hard surface.
- High-pressure steam cleaning, with water > 40 degrees C, is recommended for machinery that will be moved from one watercourse to another.
- Biosecurity measures will be strictly adhered to throughout construction. Measures will be in accordance with IFI (2010) Biosecurity Protocol for Field Survey Work. Where staff are working instream, staff footwear and PPE will be inspected on daily completion of the works and vegetation or debris removed. Footwear will be dipped in or scrubbed with a disinfectant solution (e.g. 1% solution of Virkon Aquatic or another proprietary disinfection product) and thoroughly dried afterwards. Machinery that has been working within the channel and other equipment used in channel including PPE will be wiped down with 1% solution of Virkon Aquatic or another proprietary disinfection product. This will be carried out daily on completion of the works and/or prior to staff and machinery moving off site.
- Sandbags used as part of the in-stream works will not be re-used in other watercourses.
- Any materials removed from the watercourse during the demolition phase will be appropriately disposed of and will not be relocated or reused in any other watercourses. No of zebra mussels are be removed offsite unless under licence from NPWS.

6.

JAPANESE KNOTWEED MANAGEMENT PLAN

The closest stand of Japanese knotweed to the Proposed Development site is 100m downstream along the Gaol River. The Irish Water (2016) information and guidance document "IW-AMT-SOP-009 information and Guidance Document on Japanese knotweed control.

Measures outlined for the management of Japanese knotweed within the document will be detailed below and are recommended to be adopted for the management if the species is found within 7m of the site boundary.

While no Japanese knotweed stands were recorded within 7m of the Proposed Development site during the survey undertaken, due to the time that can pass between baseline pre-planning survey and commencement of construction, there is potential for the baseline ecological environment to change.

Japanese knotweed has been recorded within the wider University of Galway campus during dedicated Japanese knotweed surveys of the campus carried out in 2024 and during surveys carried out in 2025 was also recorded approximately. 100m south of the Proposed Development site along the canal.

Given the widespread distribution of this species throughout the University of Galway campus and surrounding areas and the prolific nature of the plant to spread through tiny fragments, there is potential for accidental introduction of the species to the Proposed Development site through natural seed spreading or through artificial vectors (e.g. pedestrians, cyclists etc.).

Therefore, prior to the commencement of any works, a pre-commencement survey for Japanese knotweed will be undertaken by a fully qualified ecologist to determine the locations and extent of the species within and adjacent to the development site and to determine whether there have been any changes in the extent of the infestation since the undertaking of the survey in 2024.

Currently there is no Japanese knotweed present within 7m of the Proposed Development site. The site set-up and biosecurity measures described in Section 6.1 and 6.2 below shall be undertaken during the construction phase of the development in order to prevent the introduction of Japanese knotweed to the site. These measures will be included in the contractor's method statement. If during the pre-commencement survey a Japanese knotweed infestation is recorded within 7m of the Proposed Development site options outlined in Section 6.3 will apply.

6.1

Site Set-up and Associated Measures

- A clearly defined bio-secure clean-down area will be designated for machinery will be disposed of to the licensed waste facility. The bio-secure area is to be detailed within the appointed contractor's method statement.
- As a precautionary measure, machinery will be thoroughly cleaned down before entering the site to prevent potential spread of invasive species from elsewhere.
- Clean down will be carried out using brushes and shovels and power washing avoided insofar as possible. This is to prevent potentially contaminated run-off spreading outside the site.
- Once the machinery has been cleaned down as much as possible in the dry the machines will be power-washed, or air blasted to remove any remaining material.
- Material used for tracking machinery out of the works area e.g. plywood will be thoroughly cleaned down under supervision of the suitably qualified ecologist.
- The clean-down area will be underlain with an impermeable membrane such as a radon barrier to prevent contamination resulting from this operation. In addition, a boot wash with a stiff brush will be installed at the edge of the exclusion zone for pedestrian use.

- Toolbox talks will be held with all members of the contractors' team responsible for carrying out measures detailed in this management plan. This will detail locations of infested material and how to carry out work on site in a biosecure way.

6.2

General Biosecurity Measures

The following best practice measures should be adhered to during the treatment and management of the Japanese knotweed if identified within 7m of the Proposed Development site.

- No ground works should take place on site prior to the application of the site-specific Invasive Species Management Plan (ISMP). The ISMP will ensure all measures are taken to avoid the spread of species listed on the First and Third Schedule.
- Ensure all visitors to the site are made aware of the location of the Japanese knotweed recorded and are familiar with its characteristics and method of reproduction,
- As described in Section 6.1: Machinery operatives and all staff will be given a Toolbox talk on Japanese knotweed and the risks associated with the Third Schedule invasive species prior to any works commencing within the exclusion zone of 7m if Japanese knotweed is identified.
- Only people familiar with identifying Japanese knotweed will be allowed to work in close proximity to the plant.
- A clearly defined bio-secure clean-down area will be established as outlined in Section 6.1. Additionally, all bio-secure clean-down area associated measures will be carried out as described in Section 6.1.
- No works will take place within a Japanese knotweed exclusion zone if Japanese knotweed is identified within the Proposed Development site or surrounding area.
- All measures prescribed in the Japanese knotweed management plan will be incorporated into the contractor's respective method statements for works in proximity to the Third Schedule invasive species.
- Any material imported to the site should be screened for invasive species by a suitably qualified ecologist before transportation to the site.
- All machinery should be thoroughly cleaned down prior to arriving on the site to avoid the potential spread of invasive species from elsewhere.

6.3

Japanese Knotweed Treatment

If during the pre-commencement survey a Japanese knotweed infestation is recorded within 7m of the Proposed Development site the options outlined in the following subsections will apply.

6.3.1

Option 1: Excavation of Japanese knotweed and Removal to Off-Site Waste Facility

General site set-up measures described above in Section 6.1 will be undertaken. Following this excavation works occurring within 7m of Japanese knotweed stands will take place under the supervision of a qualified ecologist.

- Prior to undertaking any works that will require removal of contaminated material from the site, a licence to transport such material will be in place. This licence must be obtained from the National Park and Wildlife Service in advance of any such operation.
- Once machinery and personnel enter the contaminated area, they will not leave until they have been cleaned down following the procedure that is set out below. Excavations will be supervised at all times by staff trained in the identification of Japanese knotweed rhizomes.
- Where no rhizomes are identified within the excavated material, it will be treated as uncontaminated and may be removed from the site by loading onto a waiting truck, which must be cleaned down prior to leaving the contaminated area.

- Where rhizomatous material is encountered within the excavated material, it will be loaded into a separate truck, which will be filled to no more than 75% capacity to avoid spillage in transit. It will then be transported under licence to a waste facility that is permitted to receive the material. This truck must also be cleaned down before exiting the contaminated area.
- Following works within the contaminated area all personnel, equipment and machinery will be cleaned down as per the methodology below, prior to exiting the contaminated area.
- All plant, machinery, tools and personnel will be cleaned down prior to leaving the contaminated areas.
- Clean down will be undertaken on an impermeable membrane such as a radon barrier and following completion of the clean down operation, this will be brushed clean with sweepings left within the contaminated area to ensure that there is no potential to spread any contaminated material.
- Power washing avoided to prevent potentially contaminated run-off spreading outside the site.
- Toolbox talks will be held with all members of the site and contractors' team responsible for carrying out measures detailed in this management plan. This will detail locations of infested material and how to carry out work on site in a bio secure way.

6.3.2 Option 2: Treatment In-Situ

If no construction works are proposed within the contaminated areas, it is advised to treat the plant insitu and avoid disturbance and potential for dispersal.

- In order to avoid the potential to spread the species, it will be necessary to undertake treatment with Glyphosate based chemical herbicide on an annual basis. It is recommended that a stem injection method is used in order to avoid spray drift and to minimise the potential for spraying of non-target species.
- A specialist injection tool will be utilised to inject a high concentration of glyphosate-based herbicide (injected neat or diluted to up to 5:1) directly into each of the canes in the infestation approximately 20-30cms from the base of each cane (between the 1st and 2nd node).
- This method will be carried out after the plant has flowered in late summer early Autumn (most effective mid-late September) for optimal treatment as the plant will be weaker.
- Monitoring and spot treatment will be required for a minimum of three years until no regrowth is observed.

7.

CONCLUSION

The bespoke invasive species management measures outlined in this document have been designed to follow the guidance outlined in Section 1.4. Careful implementation of the prescribed management measures will ensure that the works are conducted within the confines of legislation as outlined in Section 1.3.

The measures that are set out in this invasive species management plan will ensure that the proposed works will not result in the spread or dispersion of zebra mussel and Canadian waterweed, Japanese knotweed or any other species listed on the 'First Schedule' of the European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 374 of 2024) and 'Third Schedule' of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011).

It should be noted that this is a live document and, is subject to review following the undertaking of detailed pre-commencement surveys prior to the commencement of the construction phase of the project. No works will be undertaken without having first undertaken detailed pre-commencement surveys for invasive species listed on the schedules outlined above.

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APPENDIX 3

LIST OF PLANS AND PROJECTS CONSIDERED IN ASSESSMENT OF IN-COMBINATION EFFECTS

Assessment of In-Combination Effects

A search and review in relation to plans and projects that may have the potential to result in in-combination effects to European sites was conducted. This included a review of online Planning Registers, development plans and other available information and served to identify past and future plans and projects, their activities and their predicted environmental effects. The plans and projects considered are discussed below.

Plans

The following development plans have been reviewed and taken into consideration as part of this assessment:

- Ireland's 4th National Biodiversity Action Plan 2022-2026
- Northern and Western Regional Spatial and Economic Strategy 2020-2032
- Galway City Development Plan 2023-2029

The review focused on policies and objectives that relate to Biodiversity and natural heritage. Policies and objectives relating to sustainable land use were also reviewed

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Table 0-1 Review of plans

Plan	Key Policies/Issues/Objectives Directly Related to Biodiversity in The Zone of Influence	Assessment of development compliance with policy
Ireland's 4 th National Biodiversity Action Plan 2023-2030	Objective 2: Meet urgent conservation and restoration needs Outcome 2A: The protection of existing designated areas and species is strengthened and conservation and restoration within the existing protected area network are enhanced Outcome 2B: Biodiversity and ecosystem services in the wider countryside are conserved and restored – agriculture & forestry Outcome 2C: Biodiversity and ecosystem services in the wider countryside are conserved and restored – peatlands & climate action Outcome 2D: Biodiversity and ecosystem services in the marine and freshwater environment are conserved and restored	The Biodiversity Action Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 network and other natural heritage interests. The Proposed Development will not result in any significant effects on any European sites. The Proposed Development is in compliance with the objectives outlined with the Biodiversity Action Plan.
Northern and Western Regional Assembly Regional Spatial and Economic Strategy 2020-2032	Regional Policy Objective (RPO) 5.4: Encourage the prioritisation of Site-Specific Conservation Objectives (SSCO) for all sites of Conservation Value, designated in EU Directive (i.e. SACs, SPAs) to integrate with the development objectives of this Strategy. RPO 5.2 (a): Protect manage and conserve the quality, character and distinctiveness of our Landscapes and seascapes. RPO 5.5: Ensure efficient and sustainable use of all our natural resources, including inland waterways, peatlands, and forests in a manner which ensures a healthy society a clean environment and there is no net contribution to biodiversity loss arising from development supported in this strategy. Conserve and protect designated areas and natural heritage area. Conserve and protect European sites and their integrity. RPO 5.7: Ensure that all plans, projects and activities requiring consent arising from the RSES are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate.	The Spatial and Economic Strategy was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the biodiversity, protected species, designated sites and other natural heritage interests. The Proposed Development will not result in any significant effects on European sites. The Proposed Development is in compliance with the objectives in this strategy.

Galway City Development Plan 2023-2029	Policy 5.2 Protected Spaces: Sites of European, National and Local Ecological Importance 1. Protect European sites that form part of the Natura 2000 network (including Special Protection Areas and Special Areas of Conservation) in accordance with the requirements in the EU Habitats Directive (92/43/EEC), EU Birds Directive (2009/147/EC) and associated national legislation. 2. Ensure that all plans or projects within the Plan area will only be authorised and / or supported after the competent authority has ascertained based on scientific evidence, screening for appropriate assessment and /or a Habitats Directive Assessment that: i. The plan or project will not give rise to an adverse direct, indirect or secondary effect on the integrity of any European site (either individually or in combination with other plans or projects); or ii. The plan or project will have an adverse effect on the integrity of any European site (that does not host a priority natural habitat type/and or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000; or iii. The plan or project will have an adverse effect on the integrity of any European site (that hosts a natural habitat type and/or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons for overriding public interest, restricted to reasons of human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000. 3. Protect, conserve and promote the nationally designated sites of ecological importance, including existing and proposed Natural Heritage Areas (NHA and pNHAs) in the city. 4. Protect, conserve and support the development of an ecological network throughout the city which will improve the ecological coherence of the Natura 2000 network in accordance with Article 10 of the Habitats Directive.	The Development Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the biodiversity, protected species, designated sites and other natural heritage interests. The Proposed Development will not result in any significant effects on the conservation objectives of any European sites, has appropriate environmental assessments done for it. The Proposed Development is in compliance with the objectives outlined within the Development Plan.
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	10. Protect and conserve rare and threatened habitats and their key habitats, (wherever they occur) listed on Annex I and Annex IV of the EU Habitats Directive (92/43EEC) and listed for protection under the Wildlife Acts 1976-2000 and plant species listed in the Flora Protection Order 2015. 11. Ensure that plans and projects with the potential to have a significant impact on European sites (SAC or SPA) whether directly, indirectly or in combination with other plans or projects are subject to Appropriate Assessment, under Article 6 of the Habitats Directive (92/43EEC) and associated legislation and guidelines, to inform decision making. 13. Support the inclusion of natural features, such as trees, hedgerows, stone walls, ponds and the use of green design features and the incorporation of biodiversity measures in developments layouts. 14. Support and implement measures to control and manage alien/invasive species, where appropriate in accordance with the EU (Birds and Natural Habitats) Regulations 2011. Policy 5.3 Blue Spaces: Coast, Canals and Waterways 1. Protect and maintain the integrity of the coastal environment and waterways by avoiding significant impacts and meeting the requirements of statutory bodies, national and European legislation and standards. 2. Conserve and protect natural conservation areas within the coastal area and along waterways and ensure that the range and quality of associated habitats and the range and populations of species are maintained.	
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Other Projects

Assessment material for this assessment of in-combination effects was compiled on the relevant developments within the vicinity of the Proposed Development and was verified on the 11th of November 2025. The material was gathered through a search of relevant online Planning Registers, reviews of relevant documents, planning application details and planning drawings, and served to identify past and future projects, their activities, and their environmental impacts. All relevant projects were considered in relation to the potential for in-combination effects. All relevant data was reviewed (e.g., individual EISs/EIARs, layouts, drawings etc.) for all relevant projects where available.

The following planning applications are located in close proximity to the Proposed Development site and the Gaol River have been granted permission to proceed in the past 5 years. These projects have been considered as part of the assessment of in-combination effects and there is no potential for the Proposed Development to contribute to any significant effect on biodiversity, protected sites or any other natural heritage interests when considered in-combination with these or any other developments:

- **Planning Ref. 21223:** Permission for the installation of new accessible lift within the existing Monastery and a new glazed porch at the main entrance at the Poor Clare Monastery which is a Protected Structure
- **Planning Ref. 2560204:** Permission for development which consists of: works to an existing three storey office building. Removals of the following: defunct oil tank/bund, roof plant room, external finishes such as cladding, windows, doors, roof coverings and areas of existing ground finishes. New provisions include set down area to Nun's Island Road, new low-level lighting, signage, permeable ground finishes and associated site works, external M&E plant room to the South to support the refurbishment, new external bin store and bicycle shelter, replacement of external opes as part of overall thermal upgrades including new external wall insulation and new cladding, together with internal layout and upgrade works.
- **Planning Ref. 2460092:** Permission for development which will consist of internal layout and upgrade works to existing three-storey education facility (former mill/industrial building). The proposed development site is a protected structure - RPS No. 7409 - as listed in the Record of Protected Structures of the Galway City Development Plan 2023-2029.
- **Planning Ref. 2460352:** Permission for development which consists of; The development will consist of:
1. Retain existing 2 storey extension to rear comprising kitchen & bathroom/ hot press. 2. Provide new corner window to existing kitchen. 3. Demolish existing single storey extension to rear and construct single storey extension comprising utility room & accessible wc/ shower room. 4. Carry out all associated site works/ services

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APPENDIX 4

CONSTRUCTION AND ENVIRONMENTAL MANAGEMENT PLAN



BARRETT MAHONY
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CONSULTING ENGINEERS

Construction & Environmental Management Plan

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Project:

**McLaughlin Building, Flour
Mills, Nun's Island, Galway**

DOCUMENT CONTROL

Project: McLaughlin Building, Flour Mills, Nun's Island, Galway**Project No:** 25.207**Document Title:** Construction & Environmental Management Plan**Document No:** 25.207 – CEMP – 01

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DOCUMENT STATUS

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CONTENTS:

1. INTRODUCTION	5
1.1 Development Description.....	5
1.2 Scope	7
1.3 Purpose of the Report	7
1.4 Reports & Drawings	7
1.5 Key Interfaces	7
2. SITE TOPOGRAPHY – (SITE LAYOUT / LOCATION).....	9
3. GROUND CONDITIONS.....	10
3.1 Summary.....	10
3.2 Construction Considerations:	10
4. DEMOLITION	11
5. EARTHWORKS	14
6. NEW CONSTRUCTION	15
7. CONSTRUCTION MANAGEMENT	16
7.1 Construction Programme	16
7.2 Hoarding & Temporary Fencing.....	16
7.3 Site Security	16
7.4 Cranes	17
7.5 Site Accommodation & Site Parking	18
7.6 Hours of Working / Delivery Times.....	18
7.7 Traffic Management.....	19
7.7.1 General	19
7.7.2 Contractor's Traffic Management Plan.....	19
7.7.3 Construction Traffic	19
7.7.4 Measures to Minimise Construction Vehicle Movements.....	20
7.8 Water Supply	20
7.9 Surface water Control	21

7.10	Public Relations & Community Liaison	21
7.11	Completion	21
7.11.1	Construction Stage.....	21
7.11.2	On Completion.....	21
8.	ENVIRONMENTAL CONSIDERATIONS	23
8.1	Water Quality.....	23
8.1.1	Site Set-up.....	23
8.1.2	Pollution Prevention	24
8.1.3	Additional Mitigation for In-Stream Works	24
8.1.4	Refuelling, Fuel and Hazardous Material Storage.....	25
8.1.5	Spill Control Measures	26
8.1.6	Measures to Avoid the Release of Cement Based Material During Construction	26
8.1.7	Waste Management	27
8.1.8	Dust Control.....	27
8.1.9	Environmental Monitoring	27
8.2	Disturbance to Aquatic Fauna	27
8.2.1	Mitigation Measures.....	28
8.3	Disturbance to Otter	28
8.3.1	Mitigation Measures.....	29
8.4	Invasive Species and Biosecurity	30
8.4.1	Zebra mussel (<i>Dreissena polymorpha</i>)	30
8.4.2	Canadian Waterweed (<i>Elodea canadensis</i>)	30
8.5	Disturbance to Bats.....	30
8.5.1	Mitigation Measures.....	31
8.6	Noise.....	31
8.6.1	Noise Mitigation Measures.....	32
8.7	Vibration	33
8.8	Dust & Air Quality	34
8.9	MONITORING & PROTECTION OF NEIGHBOURING PROPERTIES.....	35
9.	CONSTRUCTION & DEMOLITION WASTE MANAGEMENT	36
9.1	Purpose.....	36
9.2	Proposed Development.....	36
9.3	Demolition Waste	36
9.4	Waste from Excavations and Site Preparation.....	36
9.5	Waste from Construction Activities.....	36
9.6	WASTE RE-USE & RE-CYCLING	37
9.7	Licensed Waste Disposal	37

9.8	The Construction Waste Manager	37
9.9	Waste Auditing	38

APPENDIX 1 – EPA WASTE GUIDANCE

RECEIVED: 01/05/2026

1. INTRODUCTION

Barrett Mahony Consulting Engineers (BMCE) have been commissioned by University of Galway to prepare a Construction & Environmental Management Plan as part of a planning application for the proposed redevelopment of the McLoughlin Building located on Nuns Island in Galway City. The existing building on the site was constructed in circa 1810 as a Flour Mill and is recorded on the National Inventory of Architectural Heritage. The building was purchased in 1980 by the University of Galway. During the 1980's, it was extensively refurbished and utilised as an academic building.

1.1 DEVELOPMENT DESCRIPTION

The proposed development will comprise of the refurbishment and extension of the McLaughlin Building (a Protected Structure: RPS Ref. 7406 Former Mill - NUIG), Nun's Island, Galway.

The McLaughlin Building will be refurbished and extended for educational use including associated academic teaching and study spaces; administrative areas; staff and student welfare facilities; café and ancillary plant and storage areas.

The proposed works to the McLaughlin Building will include the removal of the mid- to late-20th Century roof and fifth floor level (approx. 374.1 sqm gross floor area (GFA)); and the construction of two additional floors, resulting in an overall increase in height of the building from 5 storeys to 6 storeys (with maximum proposed height of 30.03 m). The proposed works will result in an increase in GFA from 2962.17 sqm to 3962.7 sqm.

Further interventions to the McLaughlin Building will include:

- Removal of existing mid- to late 20th Century building fabric the south-west corner to be replaced with an ESB Substation and Switchroom at ground floor level overlaid with perforated aluminium panels to match proposed new aluminium curtain walling with glazed openings on upper levels.
- Provision of a new external stair and lift core on the north elevation.
- Removal of selected areas of the late 20th Century internal steel frame and concrete slabs, provision of new foundations in selected areas, new ground floor slab build-up throughout and new structural frame to support the additional floors.
- Existing 20th Century windows and doors to be replaced with new thermally broken aluminium doors and windows to match existing openings, and repair of window reveals and cills.
- Creation of new entrance on the northern elevation (incorporating two original window openings); enlargement of three existing openings at ground floor level of southern elevations and alterations to two window and door openings to provide compliant door openings to the new escape stair to the northern elevation.
- Removal of cement render and retention and repair of original rubble and limestone masonry walls.
- Removal of mid to late 20th Century extension to the northern elevation.
- Removal of non-original subdivisions and provision of new subdivisions.
- Repair and repointing of masonry arch culverts beneath the building, and construction of reinforced concrete plinths at the arch bases to remediate and prevent scouring.
- Existing access walkway along north elevation upgraded and widened (2m in width).
- Temporary in-stream works during construction phase comprising localised damming to facilitate both the walkway widening and masonry arch culvert repairs.

The proposed works will also include new water and wastewater connections; rooftop plant; new mechanical and electrical services; thermal upgrade of the existing building including solar PV panels at roof level; landscaping to the existing boardwalk; boundary treatments; together with all associated and ancillary site and development works.



Figure 1.1: Aerial view showing the site.



Figure 1.2: Site Layout Plan

1.2 SCOPE

This CEMP defines the approach to construction & environmental management implementation for a main contractor constructing this development.

Compliance with the CEMP, the procedures, work practices and controls will be mandatory and must be adhered to by all personnel and sub-contractors employed in the construction. This CEMP seeks to promote best construction & environmental practices on-site for the duration of the construction.

This CEMP is considered a 'live' document and as such will be reviewed on a regular basis by each individual contractor.

Updates to this CEMP may be necessary due to any changes in environmental management practices and/or contractors. This is in addition to further mitigation measures that may be identified as part of detailed design and review in terms of Environmental Impacts. As set out in the later sections, the procedures agreed in this CEMP will be audited throughout the project roll-out phase to ensure compliance. This CEMP will be updated by the contractor, following grant of planning permission, to ensure all conditions, emission limit values and trigger levels contained within the Grant of Permission are incorporated and it will also set out how these will be achieved.

1.3 PURPOSE OF THE REPORT

This report has been prepared as part of the Planning Application for this educational development. The purpose of this report is to ensure that best construction & environmental management practices are applied to the site by the main contractor and that measures are put in place during construction to reduce as much as possible the impact of the works on people, property and the environment. The contractor will be asked to develop this outline report further in line with his/her detailed requirements.

A separate section of the report deals with Construction & Demolition Waste Management.

1.4 REPORTS & DRAWINGS

This report should be read by the Contractor in conjunction with the other reports and drawings submitted as part of the planning application. Particular attention is to be paid to the Appropriate Assessment Screening Report and Natura Impact Statement and Invasive Species Management Plan by MKO Planning and Environmental Consultants and the associated Construction Mitigation Measures.

1.5 KEY INTERFACES

Access to the site is from Nun's Island. This access will be maintained in the new development. The site is bounded by Nun's Island Road to the south, east and west, by the Eglington canal to the northeast and by the Poor Clares Monastery to the northwest. Overflow from the Eglington canal passes beneath the existing heritage listed building on the site in a series of culverts and discharges to the Gaol River to the south of the site.



Photo 1.1: Site access off Nun's Island Road to the south of the building



Photo 1.2 Site Access from external walkway on the North of the existing building

2. SITE TOPOGRAPHY – (SITE LAYOUT / LOCATION)

The buildings most recent use was as an academic building for the University of Galway. The existing heritage listed building extends across the full site footprint. Figure 2.1 is an extract from the topographical survey carried out by Murphy Geospatial. The ground floor level of the centre and west side of the building is circa +6.27m OD, while in east of the building, the floor level is circa +6.77m OD. Flush access to the building is available via the public footpath to the northeast. There are also access points to the building along the southern elevation. Each of these access point contains steps as the public footpath directly in front of the building gradually falls from the northeast (+6.6m OD) to southwest (+5.9m OD).

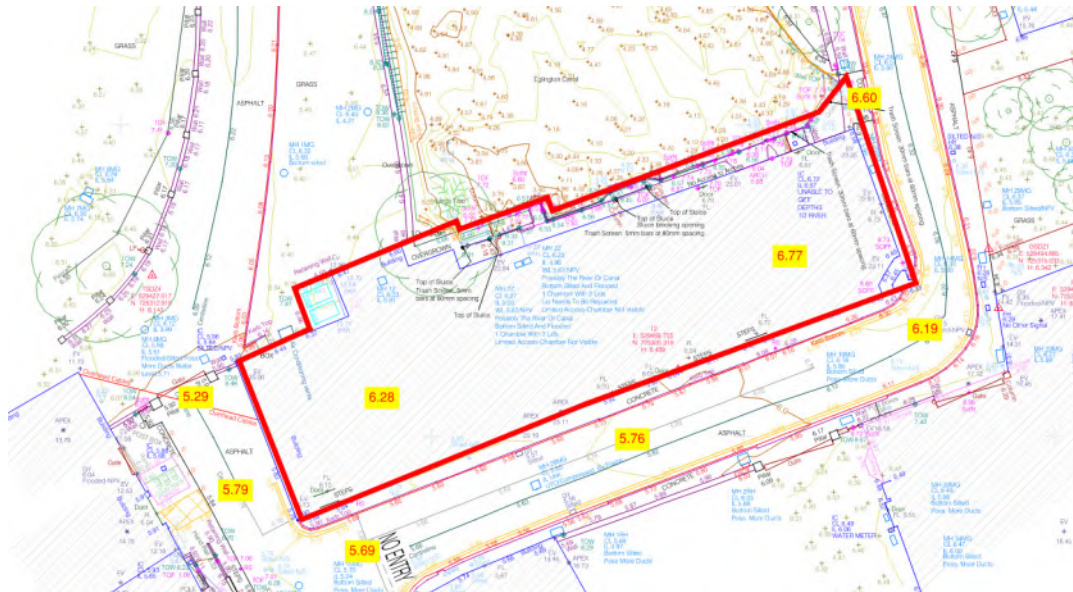


Figure 2.1 Topographical survey extract with Ordnance datum levels highlighted.

3. GROUND CONDITIONS

3.1 SUMMARY

A site-specific geotechnical investigation has not been carried out at the time of writing this report. Based on extensive topographical, measured building and culvert surveys carried out by Murphy Geospatial along with visual inspection on site by the structural engineers, it has been confirmed that the culverts which pass beneath the building have been constructed on bedrock. Given the reasonably good condition of the original masonry walls, it is anticipated that the entire structure is founded on bedrock.

3.2 CONSTRUCTION CONSIDERATIONS:

- Surface Water Control: Surface water (rainwater) which falls on the site will need to be treated prior to it being discharged from the site into the canal.
- Contaminated Material: Any contaminated material in the ground identified by sight or by odour during excavations shall be classified by an Environmental Engineer as Inert, Non-Hazardous or Hazardous. Disposal shall be by a licensed contractor to a suitably licensed facility.

4. DEMOLITION

Demolition work will involve the removal of some of the non-original elements of the building, consisting of the roof, the external walls of the fifth floor, internal walls, floor slabs and internal steel frame. The original building fabric, consisting of both internal and external rubble and cut limestone masonry, will be retained throughout. New openings will be formed in these internal original walls only where necessary for circulation across the floor plates. Existing underground services which are redundant will be decommissioned and removed as necessary. Figures 4.1 – 4.5 below give a colour coded representation of the extent of retained and replaced existing structure.

Demolitions shall be carried out in accordance with the following:

- BS 6187:2000 'Code of practice for demolition'
- Health and Safety Executive Guidance Notes GS 29 / 1, 2, 3 & 4.
- S.I. 504 Safety, Health & Welfare at Work (construction) regulations 2006
- Air Pollution Act 1987
- Environmental Protection Agency Act 1992
- BS 5228:2009 Part 1 'Noise Control on Construction & Open Sites'

Demolition works shall also be carried out in accordance with the Asbestos report for the building.



Figure 4.1 Ground floor structural interventions



Figure 4.2 Level 1 structural interventions

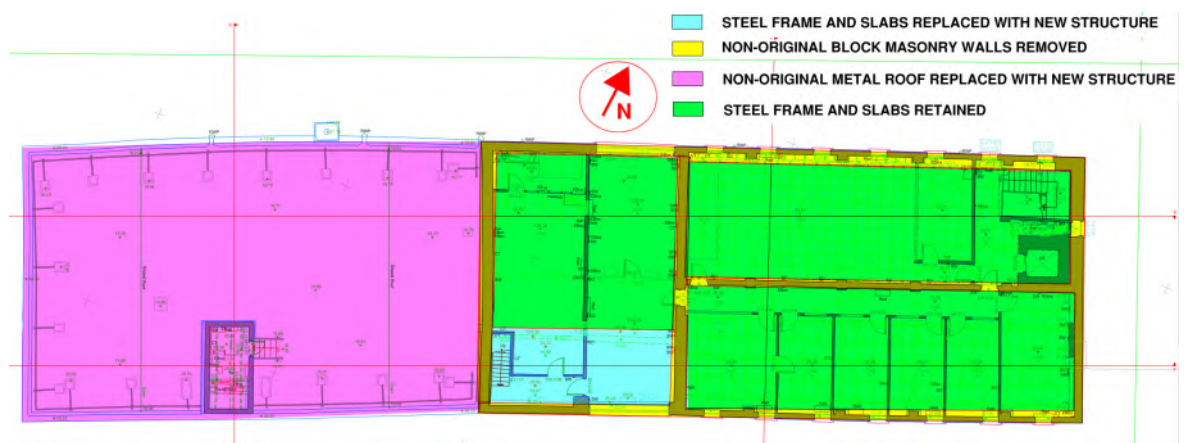
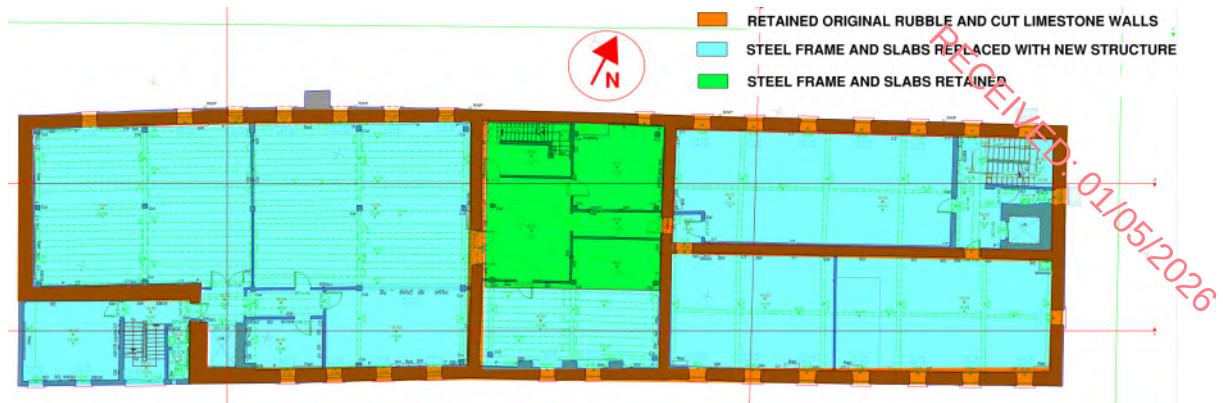




Photo 4.1 Aerial view of site

5. EARTHWORKS

Given the existing structure covers the entire site footprint, earthworks associated with this development will be limited to excavations to provide compliant hardcore build-ups under the ground floor slab and to provide for new internal foundations, where required. Excavated material will be safely stockpiled within the plot until disposal off site by a licensed disposal contractor.

6. NEW CONSTRUCTION

Construction of the development will consist of the following primary elements:

- Demolition of selected non-original elements.
- Retention of all original rubble and limestone masonry walls.
- Remedial and repair works to the culverts beneath the building, such as repointing, repair and reinstatement of deteriorated masonry or provision of concrete plinths in areas where scouring has undermined the arch base.
- Replacement of existing access walkway over the canal along north elevation with a wider walkway.
- Excavation for new foundations and ground floor slab build-up.
- Construction of the new internal frame and vertical extension – Steel beams and columns with composite deck floor slabs and metal deck roof.
- Glazing, cladding & roof finishes.
- Internal studwork & finishes.
- Heating, plumbing & electrical systems. Other services & life safety systems
- Buried site services installation within the site & connection to existing services.
- Soft/hard landscaping and boundary treatments.

7. CONSTRUCTION MANAGEMENT

7.1 CONSTRUCTION PROGRAMME

It is intended that the development will be constructed over a 24-month period as a single phase.

7.2 HOARDING & TEMPORARY FENCING

The site is bounded by the Eglington Canal (north) and Nun's Island Road (south, east and west). Pedestrians and vehicular traffic numbers along Nun's Island will be moderate. The new works will be hoarded off or fenced off from the public at all times. Where the existing external walls of the building do not already provide a secure boundary, a 2.4m minimum high plywood painted timber hoarding will be provided. The hoarding alignment and specification are to be confirmed by the appointed Contractor prior to commencement of construction.

Controlled access points to the site, in the form of gates or doors/turnstiles, will be kept locked for any time that these areas are not monitored (e.g., outside working hours).

During working hours, a gateman will control traffic movements and deliveries to ensure safe access and egress to and from site. All personnel working on site must have a valid Safe Pass card and be inducted by the Main Contractor with regard to site specific information.



Photo 7.1: Typical Site Hoarding Arrangement

7.3 SITE SECURITY

The Contractor will be responsible for the security and safety on site. The Contractor will be required to:

- Operate a site induction process for all site staff.
- Ensure all site staff shall have current 'safe pass' cards.
- Install protective fencing to the site boundary as noted in 7.2 above.
- Provide out-of-hours CCTV or in person security to the site.

- Ensure restricted access is maintained to the works with controlled access through the gate.

7.4 CRANES

A tower crane is anticipated to be required on site for construction of the works. This is anticipated to have approximately 30m hook height and 40m slewing radius. The proposed crane location within the building footprint is shown in Figure 7.1.

All materials being lifted by crane will be controlled by guide ropes and will only be completed under the strict supervision of appropriately qualified and experienced banksmen.

Mobile cranes and hoists will likely also be required for construction works at different times.

Any works outside of the site boundary will be subject to a method statement to be agreed with Galway City Council. Temporary removal of the public parking to the south side of the building for use as an unloading zone will be subject to a temporary lease agreement with GCC.

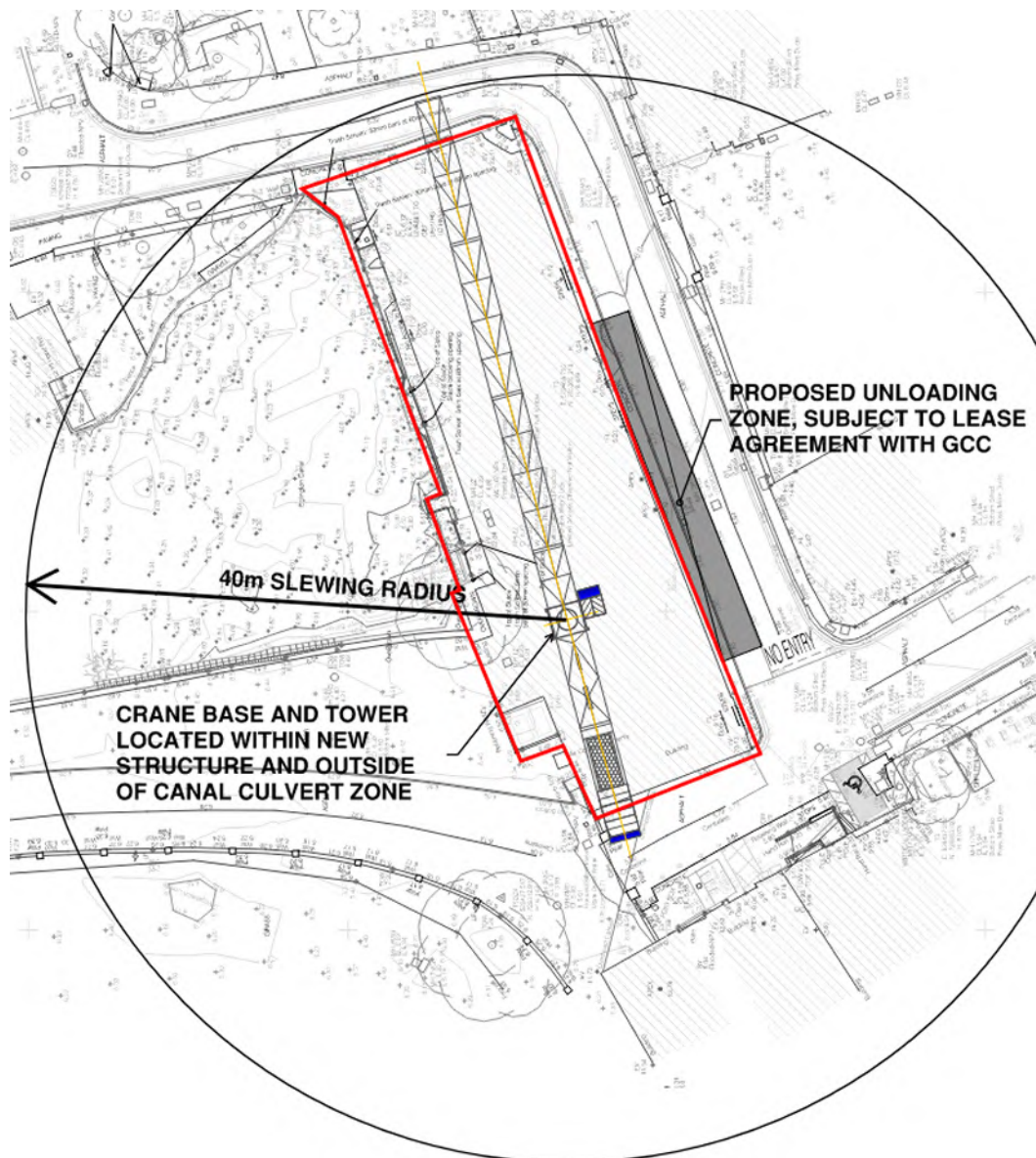


Figure 7.1: Proposed Crane Location and Slewing Radius

7.5 SITE ACCOMMODATION & SITE PARKING

On site accommodation will need to consist of:

- Staff welfare facilities (toilets, canteen, drying room, offices/meeting rooms,)
- Materials storage areas and drop off areas.

Given the constrained nature of this site, material storage will be kept to an absolute minimum, with a just in time approach to be adopted for all possible deliveries. Figure 7.2 indicates the location of the proposed drop off areas, site office and staff welfare facilities, along with associated swept path analyses. The site office and staff welfare will be relocated within the building as required to facilitate the ongoing works.

Temporary water supply, electricity supply and foul drainage will be required for the new facilities. Connection to an electricity supply is available in the site or close to the site boundary. There are existing foul drainage and water connections to the public foul sewer and watermains from the building. These will be replaced by new connections, but may be utilized during construction, subject to a temporary connection agreement with Uisce Éireann being put in place.

Very limited parking may be available near the site. There are 4No. bus stops serving multiple TFI buses at the nearby Galway Cathedral, approximately 200m north of the site, and Ceannt Station is approximately 1km east of the site, both of which construction personnel should use. Parking of cars by personnel in the surrounding area is to be discouraged.

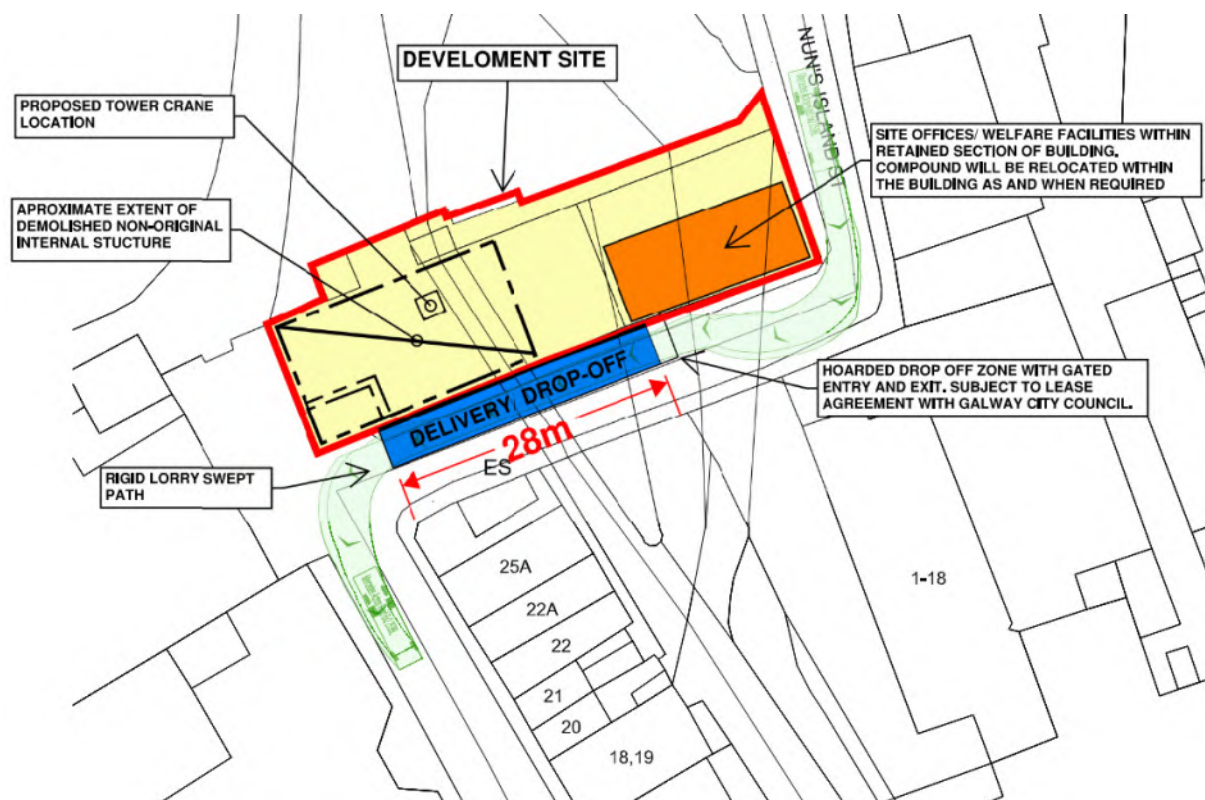


Figure 7.2: Proposed Site Logistics Plan

7.6 HOURS OF WORKING / DELIVERY TIMES

Unless required otherwise by Galway County Council, it is proposed that standard construction working hours should apply, i.e.:

- 7am to 6pm Monday to Friday
- 8am to 2pm on Saturdays.

Construction will not take place at the site on Sundays or Bank Holidays. Any works proposed outside of these periods shall be strictly by written agreement with the Local Authority in advance.

7.7 TRAFFIC MANAGEMENT

7.7.1 General

The works associated with the new development will result in additional traffic on the road network with the vehicles for the possible disposal of excavated/demolition material, for the importation of earthworks fill material and the delivery of new materials for construction – steel, concrete, concrete blocks, pipes, timber, roof tiles, glazing, road surfacing materials, electrical & plumbing supplies etc.

Construction traffic access to the site will be via the existing entrance along Nun's Island shown in Photo 1.1. Figure 7.3 shows the shortest route to the site entrance from the N6. The contractor should ensure there is a dedicated area for deliveries and removals on site. Deliveries and site traffic to and from the site should, when possible, avoid traffic peak hours in the morning & evening.

7.7.2 Contractor's Traffic Management Plan

The contractor will be required to discuss the traffic management strategy with GCC. The following will need to be considered:

1. The contractor shall be responsible for and make good any damage to existing roads or footpaths caused by his own contractor's or suppliers transport to and from the site.
2. The contractor shall at all times keep all public and private roads, footpaths entirely free of excavated materials, debris, rubbish, provide vehicle wheel wash and thoroughly clean all wheels and arches of all vehicles as they leave the site.
3. Flagmen to be used to control the exit of construction vehicles onto Nun's Island if required for safety reasons. This road is narrow with parked cars on each side.
4. Existing fire hydrants are to remain accessible as required.

7.7.3 Construction Traffic

The vehicles associated with the construction activities are as follows: -

- Excavators
- Dump trucks
- Concrete delivery trucks
- Concrete pumps
- Delivery trucks – flatbed & containers
- Mobile cranes
- Mobile hoists/telescopic hoists

When possible, construction traffic will travel to site via the N6, travel east along the R863 towards the Galway Cathedral (Newcastle Avenue and University Road), before continuing along the R863 south on the Gaol Road and Nun's Island road to the site.

Access from Nun's Island will be tight for turning larger vehicles, particularly at the southwest corner of the development, although the swept path diagrams in Figure 7.2 demonstrate that this can be achieved safely. It should also be noted that the Gaol and Nun's Island roads are one-way streets.

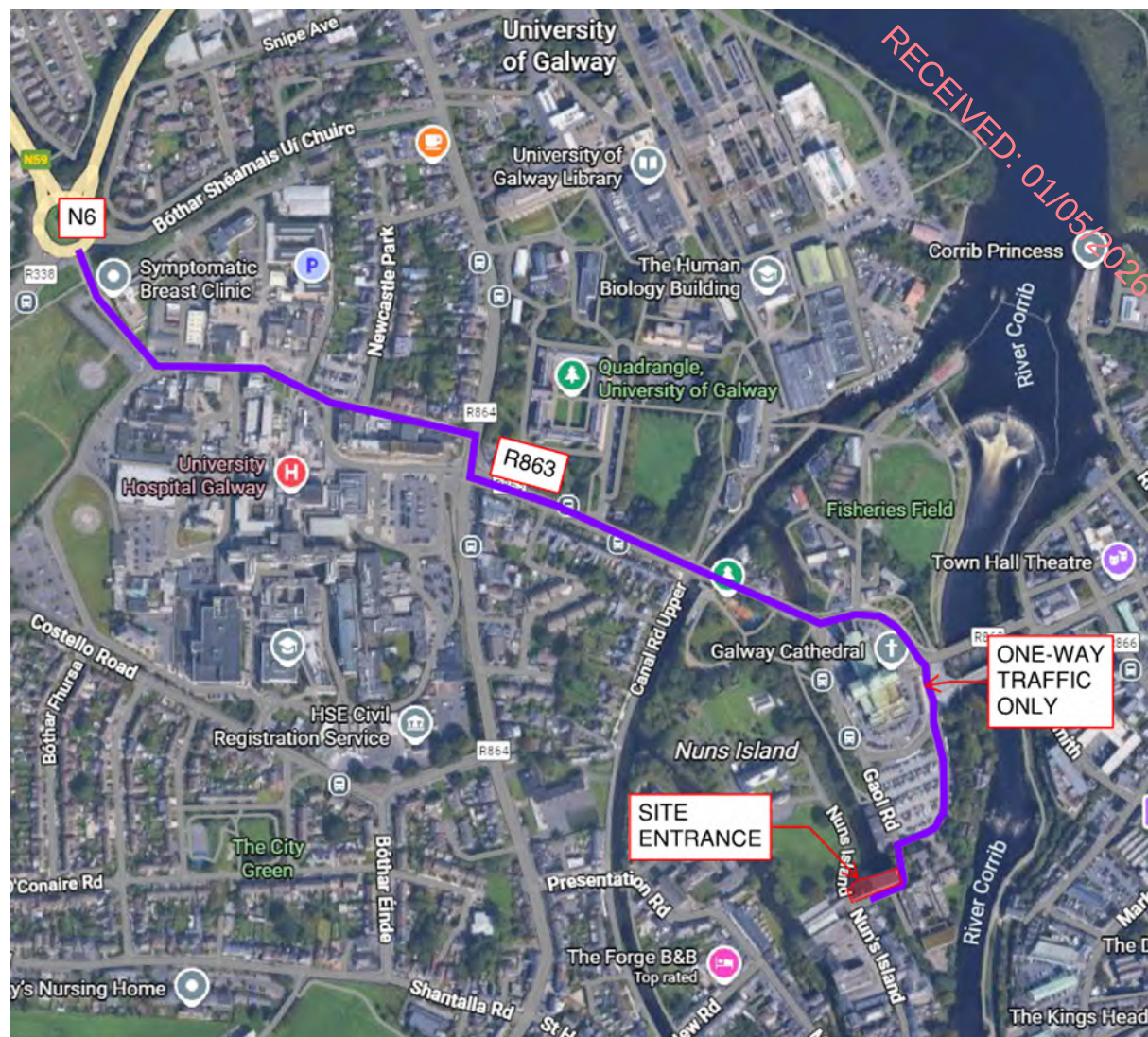


Figure 7.3: Construction traffic access routes along R863 from the N6 shown in red.

7.7.4 Measures to Minimise Construction Vehicle Movements

Construction vehicle movements will be minimized through:

- Consolidation of delivery loads to/from the site and scheduling of large deliveries to site to occur outside of peak periods;
- Use of precast/prefabricated materials where possible;
- 'Cut' material generated by the construction works will be re-used on site where possible, through various accommodation works.
- Adequate storage space on site will be provided;
- Car sharing among the construction staff may be used to reduce traffic numbers.
- Public Transport: An information leaflet to all staff as part of their induction on site highlighting the location of the public transport services in the vicinity of the construction site.

7.8 WATER SUPPLY

A water supply will be required for various activities on site. The main contractor will require a water source for the duration of the works. Water will be required for:

- Main contractor's welfare facilities.
- Wheel wash and vehicle wash-down (use recycled water where feasible).

- Dust suppression (as applicable).
- Curing of concrete in warm weather.
- General construction cleaning materials/equipment etc.
- Small batch site mixing of concrete & mortar.

There is an existing water supply to the site, which may be retained and used during the construction subject to Uisce Eireann approval.

7.9 SURFACE WATER CONTROL

It should be noted that the site is located above the Eglington Canal. It is important that the control of water quality and water quantity entering this watercourse is closely monitored during construction in tandem with GCC and Waterways Ireland and that action is taken if the water quantity or quality exceeds limits to be agreed with GCC and Waterways Ireland. Refer to Section 8 of this report for details of surface water management & pollution control during construction.

7.10 PUBLIC RELATIONS & COMMUNITY LIAISON

The site is immediately adjacent to a residential area, other university buildings and the Poor Clares monastery. The Main Contractor will be required to ensure that all agents, sub-contractors, and suppliers act in a manner to minimise disruption to the residents in accordance with best practice guidelines including the Good Neighbour Site Guide from the UK Contractors Group (UKCG). The contractor shall keep the residents briefed as necessary on progress and issues. Noise, dust control & other environmental measures outlined in Section 8.0 of this report will be important for neighbours.

Due to the nature of construction works, it is essential to operate Good Neighbour Policies wherever possible. The key aspects of the Projects Team's Good Neighbour Policy include:

- Early implementation
- Good client, staff, and neighbourhood liaison.
- Reduction of nuisance factors.
- Clear access to neighbouring premises at all times unless agreed otherwise.
- Clear and concise information.
- Designated senior staff member to act as a liaison officer.
- Working within the prescribed hours

The Good Neighbour Policy and procedures should be in place before any works are commenced on site.

7.11 COMPLETION

7.11.1 Construction Stage

Prior to the works commencing, detailed photographic surveys (condition schedules) of adjoining walls, roads, footpaths, fences etc. are to be prepared. Copies of the relevant parts are to be made available to adjoining owners, as necessary. This record will form the basis of assessing repairs to adjoining areas in the future should a dispute arise as to their cause. Roadways are to be kept clean of muck and other debris. A road sweeping truck is to be provided if necessary to ensure that this is achieved.

7.11.2 On Completion

Reinstatement at completion of the works will involve:

- Testing and cleaning of all watermain in the development to the requirements of Uisce Eireann prior to connecting to the watermain. This will reduce the risk of contamination to the water supply when the new network is connected to the system.
- Repair of any damage to any adjacent roadways, kerbs, grass verges etc. in accordance with the GCC requirements.
- Reinstatement of all excavations to the requirements of GCC.
- Leaving the area in a neat and clean condition, removing all deleterious materials that may have been deposited during construction works.

8. ENVIRONMENTAL CONSIDERATIONS

The main contractor will be required to be accredited with ISO14001 Environmental Management Systems. The main contractor will be required to mitigate the impact of the construction works on the environment. Proposed measures in relation to a number of items are set out below.

8.1 WATER QUALITY

In-stream works are proposed in order to remove the existing walkway at the north of the McLaughlin Building and to perform some remedial works in the culverts underneath the footprint of the building. These works have the potential for direct effects on the water quality deterioration in the Eglington Canal and Gaol River upstream and downstream of the McLaughlin Building. Additionally, the demolition and construction phases of the Proposed Development will involve earthworks and use of machinery which create the potential for pollution in various forms, i.e. the generation of suspended solids and the potential for spillage of fuels associated with the refuelling of excavation machinery as well as the release of cementitious materials into watercourses. There is a risk of run-off of pollutants to surface water during the above activities. Taking a precautionary approach and in the absence of mitigation, the works have potential to impact on water quality and therefore adversely affect the aquatic QIs associated with the above listed European Sites. The following best practice mitigation and environmental control measures will be incorporated during the demolition and construction phases of the Proposed Development:

8.1.1 Site Set-up

Prior to the commencement of works the site boundary will be fenced off.

- A dedicated site compound will be established.
- Access routes will be clearly marked / identified. Access during construction to any working areas will be restricted to land within the outlined works area.
- Prior to the commencement of earthworks, silt fencing will be placed down-gradient of the construction areas where watercourses and drainage pathways are present.
 - Silt fencing will be erected along the northern, western and southern boundaries of the site adjacent to the length of the Eglington Canal/Gaol River. Additional silt fencing/sand bags will be placed surrounding the temporary construction compound to create a 'bund area' (excluding the access from the north) to shield the Gaol River.
 - Where silt fencing cannot be driven into the ground with poles, sandbags will be used to secure the silt fencing in place.

The maintenance of the silt fence will also follow the manufacturer's prescribed methodology as follows:

- The contractor shall inspect all temporary silt fences immediately after each rainfall, and at least daily during prolonged rainfall. The contractor shall immediately correct any deficiencies.
- The contractor shall also make a daily review of the location of silt fences in areas where construction activities have altered the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness. Where deficiencies exist, as determined by the ecologist, additional silt fence shall be installed as directed by the Ecological Clerk of Works (ECOW).
- Repair damaged or otherwise ineffective silt fences or replace promptly.
- Either remove sediment deposits when the accumulation reaches one third the height of the exposed fence or install a second silt fence as directed by the ECOW.
- The silt fence shall remain in place until the ECOW directs it to be removed.

8.1.2 Pollution Prevention

- The installation and maintenance of silt fencing for the protection of the Gaol River will be undertaken as outlined in the 'Site Set-up' section above.
- An Ecological Clerk of Works will be present to supervise any works within or in proximity to the Eglington Canal/ Gaol River (specifically any in-stream works or works on the demolition of the old walkway and construction of the new walkway, as well as remediation works to the culverts), and will stop works and direct the carrying out of emergency mitigation/ clean-up operations, should the need arise.
- Where the works takes place adjacent (and unshielded), within, or above the Gaol River, demolition will occur in a careful manner using only hand demolition in order to prevent the walls and debris from falling into the river.
- Excavated spoil will be stockpiled and contained entirely within the confines of the site boundaries. Any requirement for temporary fills or stockpiles will be damped down or covered with polyethylene sheeting to avoid sediment release associated with heavy rainfall. Silt fencing secured with sandbags will also be erected around these stockpiles to prevent run-off of silt laden waters.
- In the event of encountering groundwaters during excavation, the excavation will be de-watered using a pump equipped with a silt bag on the outlet to capture any silty material prior to subsequent natural percolation to ground. The discharge area will be surrounded by a layer of embedded silt fencing.
- As construction advances there may be a small requirement to collect and treat surface water within the site. This will be completed using settlement tanks, and if required water will be pumped from the tanks into silt bags prior to overland discharge allowing water to percolate naturally to ground. The discharge area will be surrounded by a layer of embedded silt fencing. Alternatively, collected water will be transported and treated off-site at an appropriate treatment facility.
- Earthworks will take place during periods of low rainfall to reduce run-off and potential suspended solids generation.
- Good construction practices such as wheel washers and dust suppression on site roads, and regular plant maintenance will ensure minimal risk. The Construction Industry Research and Information Association (CIRIA) provide guidance on the control and management of water pollution from construction sites ('Control of Water Pollution from Construction Sites, guidance for consultants and contractors', CIRIA, 2001), which provides information on these issues. This will ensure that surface water arising during the course of construction activities will contain minimum sediment.

8.1.3 Additional Mitigation for In-Stream Works

- The Ecological Clerk of Works (ECOW) will be present to oversee the erection of all silt fencing for the development and OPW (2019) Environmental Guidance: Drainage Maintenance and Construction.
- All works will adhere to The Inland Fisheries Ireland (2016) 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters'.
- Timing of instream works will be carried out during the period mid July-September in line with IFI (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters and OPW (2019) Environmental Guidance: Drainage Maintenance and Construction.
- Prior to the commencement of any works within the river, all workers should be given a toolbox talk addressing the environmental risks and best practice measures.
- No works will be carried out during or after periods of heavy rain or where the watercourse appears to be flooded.

- Machinery will not enter the water; the demolition of the overhanging section of the existing building and the removal of the columns within the Eglington Canal/Gaol River will only occur after the dry working area is created.
- In-stream works will be carried out in a dry works environment to avoid siltation of the watercourses within and downstream of the Proposed Development site. This will be achieved by the temporary damming of the Eglington Canal/Gaol River with sandbags at a time of low water, for the creation of the temporary enclosure. The dams will be constructed in sections as follows:
 - A dam will be constructed between two adjacent piers, allowing a continuous flow of the Eglington Canal/Gaol River through the other culverts.
 - A submersible pump with a silt bag at the outlet will be used to pump water from the dammed area either to the connecting weir to discharge into the culvert and the Gaol River or into the Eglington Canal/Gaol River adjacent to the dammed area to create a dry works area.
 - For remediation works of the culverts, the dry works area will equally be created by blocking water flow above the weir, one culvert at a time.
 - Before commencing works a dam will also be constructed downstream of the works to prevent any cementitious or other polluting material to enter the Gaol River.
 - Removal of all rubble, debris, rubbish and silt from the culvert floor and careful disposal of these elements, preventing them from entering the Gaol River.
 - Remaining water will be pumped into an attenuation tank.
The concrete will be allowed to cure for a minimum of 14 days and a concrete sealer will be applied.
 - Once works are complete, the dam will be removed to resume water flow.
 - The Ecological Clerk of Works will be the Client's Liaison for the purposes of any necessary consultation with environmental bodies including Inland Fisheries Ireland or the National Parks and Wildlife Service (NPWS).

8.1.4 Refuelling, Fuel and Hazardous Material Storage

- Storage/refuelling will occur within a designated area of the construction site. This area should be underlain by concrete hard standing, and tanks should be inspected for leaks regularly. Spill kits should be supplied at these stations and staff should be trained in their use and in spill control. Drainage from these areas shall be diverted for collection and not discharged into waterbodies without treatment and other best management practices.
- Minimal refuelling or maintenance of construction vehicles or plant will take place on site. Off-site refuelling will occur at a controlled fuelling station.
- Fuel absorbent material and pads will be available in the event of any accidental spillages. Only designated trained and competent operatives will be authorised to refuel plant on site and no refuelling operations shall be left unattended on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations.
- On-site refuelling will take place by direct refuelling from the delivery truck or from fuel stored within a bunded fuel tank. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations.
- Fuel and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage.
- Fuel volumes stored on site will be minimised. Any fuel storage areas will be bunded appropriately. The bunded area will be roofed to prevent the ingress of rainwater.
- Containers and bunding for storage of hydrocarbons and other chemicals will have a holding capacity of 110% of the volume to be stored.
- Ancillary equipment such as hoses and pipes will be contained within the bund.
- Taps, nozzles or valves will be fitted with a lock system.

- Harmful materials shall be stored on site for use in connection with the construction works only. These materials shall be stored in a controlled manner.
- Fuels, lubricants and hydraulic fluids for equipment used on the site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment.
- All site plant will be inspected at the beginning of each day prior to use. Defective plant shall not be used until the defect is satisfactorily fixed. All major repair and maintenance operations will take place off site.
- All plant and machinery will be serviced before being mobilised to site

8.1.5 Spill Control Measures

In the event of minor spills and leaks from road vehicles and the onsite excavator, the following steps provide the procedure to be followed in the event of any significant spill or leak.

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- If possible, cover or bund off any vulnerable areas where appropriate such as drains or watercourses.
- If possible, clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- Notify the applicant immediately giving information on the location, type and extent of the spill so that they can take appropriate action and further investigate the incident to ensure it has been contained adequately.
- External consultants will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
- The applicant will notify the appropriate regulatory body such as Galway City Council, Inland Fisheries Ireland (IFI) and the Environmental Protection Agency (EPA) if deemed necessary.

8.1.6 Measures to Avoid the Release of Cement Based Material During Construction

The following mitigation measures are proposed to avoid release of cement leachate from the site:

- Batching of wet-cement products will be limited to very small batches for grouting of baseplates and crack repair works. The batching will take place only in a designated secure and bunded area on hardstanding at least 5m from any watercourses.
- Ready-mixed supply of wet concrete products and where possible, pre-cast elements for culverts and concrete works will be used.
- Where concrete is delivered on site, the complete washing out of concrete trucks will not be permitted at the site. Suppliers will be directed back to their own facility to complete the washout process. However, a washout area for chute cleaning will be provided within the site in close proximity to the concrete pour locations. Only chute cleaning will be permitted, using the smallest volume of water possible. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water is to be isolated in temporary lined wash-out pits located at the site. These temporary lined wash-out pits will be removed from the site at the end of the construction phase.
- No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed.
- Use weather forecasting to plan dry days for pouring concrete.

- Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.

8.1.7 Waste Management

- Careful extraction of materials will be undertaken to ensure that the highest proportion of the materials can be re-used
- All waste will be collected in skips and the site will be kept tidy and free of debris at all times.
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or recycling. It is also essential that all empty oil containers and other hazardous wastes should be disposed of in accordance with the requirements of the Waste Management Act, 1996.
- All construction waste materials will be stored within the confines of the site, prior to removal from the site to a licenced waste facility.
- To provide welfare facilities within the site office, the contractor will either:
 - Make an application for a temporary connection to Irish Water for wastewater discharge and connect into existing sewer.
 - Employ a licensed environmental contractor to collect wastewater from the compound for disposal at an Irish Water wastewater treatment facility.
- No wastewater will be discharged on-site during either the construction or operational phase.

8.1.8 Dust Control

Construction dust can be generated from many on-site activities such as excavation and backfilling. The extent of dust generation will depend on the type of activity undertaken, the location, the nature of the dust, i.e., soil, sand, etc and the weather. In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or, periods of dry weather. Construction traffic movements also have the potential to generate dust as they travel along the haul route. The measures below will also prevent construction debris arising on the public road network.

- Any roads/site entrances with the potential to give rise to dust will be regularly watered, as required, during very dry and/or windy conditions.
- The designated public roads outside the site and along the main transport routes to the site will be regularly inspected by Site Management for cleanliness and cleaned as necessary.
- Material handling systems and material storage areas will be designed and laid out to minimise exposure to wind.
- Water misting will be utilised on-site as required to mitigate dust in dry weather conditions.
- The transport of soils or other material, which has significant potential to generate dust, will be undertaken in tarpaulin-covered vehicles where necessary.
- Daily inspection of the construction site will be carried out to examine dust measures and their effectiveness.

8.1.9 Environmental Monitoring

- The contractor will assign a member of the site staff as the environmental officer with the responsibility for ensuring the environmental measures prescribed in this document are adhered to. Any environmental incidents or non-compliance issues will immediately be reported to the project team.

8.2 DISTURBANCE TO AQUATIC FAUNA

The Gaol River which flows through culverts underneath the McLaughlin Building flows into the River Corrib which is designated as a portion of the Lough Corrib SAC. Sensitive aquatic faunal species designated as part of this SAC, and which have potential to occur within the site, include the following QI species:

Lough Corrib SAC [000297]

- [1092] White-clawed Crayfish (*Austropotamobius pallipes*)
- [1095] Sea Lamprey (*Petromyzon marinus*)
- [1096] Brook Lamprey (*Lampetra planeri*)
- [1106] Salmon (*Salmo salar*)

In-stream works are required during the demolition phase of the Proposed Development in order to remove the existing walkway at the northern elevation of the McLaughlin Building. These sensitive species are small and reside within the riverbed and are therefore vulnerable to mortality as a result of the excavation works. Mitigation measures described in 8.1.3 above, along with the following additional measures, shall apply as mitigation against disturbance to aquatic fauna.

8.2.1 Mitigation Measures

- In order to minimise causing direct physical damage and mortality of species living in the riverbed, the installation of the sand bags/ inflatable dam for the creation of the temporary enclosure must be carried out by hand, such that any animals within the vicinity of the footprint will have a chance to leave for alternative suitable areas before potentially harmful effects.
- Prior to the commencement of in-stream works, Section 14 Authorisation from the Inland Fisheries Division of the Department of Environment, Climate and Communications will be obtained. Prior to the pumping out of water from the enclosure, electrofishing will be carried out within the dammed area and any recovered aquatic individuals will be relocated to a suitable similar river habitat location within the same grid reference, under licence by a suitably trained Ecologist.
- A Sections 23 and 34 Licence will be also obtained from the NPWS for white-clawed crayfish on a highly precautionary basis due to their designation as a QI of Lough Corrib SAC, a hand search will also be conducted for white-clawed crayfish prior to the pumping out of water from the enclosure. If any individuals are recovered, they will be relocated to a suitable similar river habitat location within the same grid reference, under licence by a suitably trained Ecologist.
- If any white-clawed crayfish are recovered, a health check may be carried out by the licenced Ecologist in order to screen this species for crayfish plague (*Aphanomyces astaci*), a highly infectious waterborne fungus.
- Only after electrofishing and hand searching is complete and these species are removed, if present, may the water from within the dammed area begin to be pumped out from within this temporary enclosure.
- All machinery, PPE and equipment used within the watercourse will be thoroughly cleaned and disinfected using a broad-spectrum cleaner (e.g. 1% solution of Virkon Aquatic or another proprietary disinfection product) prior to entering the watercourse and after removal from the watercourse to ensure biosecurity is upheld and limit the spread of invasive species and infectious waterborne diseases. This will occur within a designated wash-down area, which will be underlain by a washable membrane or hard surface.

8.3 DISTURBANCE TO OTTER

As the Proposed Development site and surroundings has suitable foraging and commuting habitat for otter, populations connected to the Lough Corrib SAC could utilise the Gaol River to the north of the McLaughlin Building. Therefore, potential for indirect effects on Lough Corrib SAC was identified as a result of disturbance to/displacement of otter during construction and operation of the Proposed Development.

Following a precautionary approach, potential for indirect effects Galway Bay Complex SAC due to *ex situ* disturbance/displacement of otter, where it occurs outside of the SAC, was also identified.

Potential for effects on otter has been considered with regard to NPWS 'Threat Response Plan' (NPWS, 2009) which identifies four significant threats facing otter in an Irish context: habitat destruction, water pollution, disturbance (recreational sources) and accidental death/persecution.

The Gaol River which flows through culverts underneath the McLaughlin Building flows into the River Corrib which is designated as a portion of the Lough Corrib SAC, and upper Galway Bay Complex SAC further downstream, for which otter are listed as a QI species.

The Proposed Development has the potential to cause deterioration of water quality and percolation of pollutants such as silt and hydrocarbons within the site and downstream.

The construction of the Proposed Development therefore has the potential to cause short-term, negative, reversible effects on otter in the local area and within the watercourse downstream of the Proposed Development site as a result of water quality deterioration.

The Proposed Development will require the use of heavy machinery throughout construction, as well as in-stream works during the demolition of the existing and deteriorating walkway on the north side of the McLaughlin Building. This increase in noise, light and anthropogenic activity during the construction phase has the potential to disturb otter populations associated with the Lough Corrib SAC and Galway Bay Complex SAC. This constitutes a short-term, negative effect on local otter populations.

8.3.1 Mitigation Measures

The mitigation described above for the protection of water quality will also serve to protect otter in terms of any potential for indirect effects via supporting habitat deterioration and reduction of prey availability. Given the nature of the in-stream works, the following mitigation will be applied.

- A pre-commencement otter survey will be undertaken prior to any construction works to ensure that there have been no changes since the otter surveys undertaken for this assessment. Should otter holts be recorded within 150m of the Proposed Development site, a derogation license will be obtained from NPWS and works carried out in accordance with NRA (2006) Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes.
- All plant and equipment for use will comply with Statutory Instrument No 359 of 1996 "European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1996".
- Operating machinery will be restricted to the Proposed Development site area.
- Exterior lighting, during construction, shall be designed to minimise light spillage, thus reducing the effect on areas outside the Proposed Development, and consequently on otter i.e. Lighting will be directed away from watercourses to minimise disturbance to otter. Directional accessories will be used to direct light away from these features, e.g. through the use of light shields (Stone, 2013). The luminaries will be of the type that minimise horizontal spillage away from the intended areas.
- The best means practical, including proper maintenance of plant, will be employed to reduce the noise produced by on-site operations.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Compressors will be of the "sound reduced" models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machines which are used intermittently will be shut down or throttled back to a minimum during those periods when they are not in use.
- Any plant such as generators or pumps which are required to work outside of normal working hours will be surrounded by an acoustic enclosure.

8.4 INVASIVE SPECIES AND BIOSECURITY

8.4.1 Zebra mussel (*Dreissena polymorpha*)

A young zebra mussel (*Dreissena polymorpha*) was recorded within the Gaol River during the aquatic surveys undertaken. There is likely further colonisation of this species present within the Gaol River. Zebra mussel was also observed in the Convent River during the surveys.

A site-specific invasive species management plan (ISMP) has been prepared for this application under separate cover by MKO – Planning and Environmental Consultants.

The following biosecurity measures will be implemented on site in order to establish good site hygiene and prevent accidental spread of invasive species:

- All machinery will be thoroughly cleaned, dried and disinfected prior to arrival on site and before relocating to another site post-works using Virkon 1% biocide and departure from the site to prevent the spread of invasive species such as Asian Clam, Zebra Mussel, Crayfish plague.
- At the site entrance, a biosecurity cleaning station will be setup, where Footwear will be dipped in or scrubbed with a disinfectant solution (e.g. 1% solution of Virkon Aquatic or another proprietary disinfection product) and thoroughly dried afterwards. This area will contain a washable membrane or hard surface.
- High-pressure steam cleaning, with water > 40 degrees C, is recommended for machinery that will be moved from one watercourse to another.
- Daily checks will be carried out on plant, machinery and fuel lines for leaks and records kept of same with any faulty plant removed off site for repair.
- In the event of pollution or aquatic habitat damage or fuel spills, Waterways Ireland, IFI and the relevant Local Authority Environment Sections should be contacted immediately.
- Biosecurity measures will be strictly adhered to throughout construction. Measures will be in accordance with IFI (2010) *Biosecurity Protocol for Field Survey Work*. Where staff are working instream, staff footwear and PPE will be inspected on daily completion of the works and vegetation or debris removed. Footwear will be dipped in or scrubbed with a disinfectant solution (e.g. 1% solution of Virkon Aquatic or another proprietary disinfection product) and thoroughly dried afterwards. Machinery that has been working within the channel and other equipment used in channel including PPE will be wiped down with 1% solution of Virkon Aquatic or another proprietary disinfection product. This will be carried out daily on completion of the works and/or prior to staff and machinery moving off site.
- Sand bags used as part of the in-stream works will not be re-used in other watercourses.
- Any materials removed from the watercourse during the demolition phase will be appropriately disposed of and will not be relocated or reused in any other watercourses.

8.4.2 Canadian Waterweed (*Elodea canadensis*)

A high degree of colonisation with Canadian waterweed was recorded within the Gaol River directly adjacent to the Proposed Development site, as well as to the north of the Proposed Development site, forming submerged patches across slower-moving sections of the channel.

Biosecurity measures will be implemented on site in order to establish good site hygiene and spread of this invasive species. Due to the similar manner of spread between zebra mussel and Canadian waterweed, the biosecurity measures described in Section 8.4.1 above will be sufficient to control the spread of this species also.

8.5 DISTURBANCE TO BATS

The Proposed Development has the potential to result in habitat loss to the local bat species. The construction phase has direct impacts on bats via the removal of potential bat roosting habitat through the repointing of culverts suitable for roosting bats. The construction of the Proposed Development

has the potential to result in a long-term slight negative effect on the local bat populations in the form of habitat loss and disturbance. Given the potential effects, the following mitigation will be applied.

8.5.1 Mitigation Measures

- A pre-construction survey, at the appropriate time of year, will be undertaken on the culverts underneath the building, by a qualified ecologist to ensure there are no roosting bats. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the surveys in 2025. If a bat roost is identified within any of the culverts to be repointed, a bat derogation licence will be obtained from the NPWS, prior to repointing works taking place and the works will be supervised by a qualified ecologist. If structurally supportable, some gaps suitable for roosting bats will be kept.
- The Proposed Development works can also provide new roosting opportunities for bats. Bat bricks (min. 2 no.) will be incorporated into the culverts where suitable (i.e. at adequate height for safe bat entry and exit (minimum height 1m) and away from drafts and waterflow. Bat boxes (approximately 2 no.) will be erected on the southern façade of the culverts if agreed to by the relevant stakeholders. The bat bricks and boxes will be installed following best practice guidelines (Marnel *et al.*, 2022; NRA, 2006).
- For the bat boxes, it is recommended to use Schwegler 1FF and/or 2FN woodcrete bat boxes. Bat boxes will have a southerly orientation and be positioned at least 2m from the ground, away from artificial lighting.
- Where lighting is unavoidable during construction, low-intensity lighting and motion sensors will be used to limit illumination.
- Exterior lighting, during construction, shall be designed to minimise light spillage, thus reducing the effect on areas outside the Proposed Development, and consequently on bats i.e. Lighting will be directed away from treelines and watercourses to minimise disturbance to bats. Directional accessories will be used to direct light away from these features, e.g. through the use of light shields (Stone, 2013). The luminaries will be of the type that prevent upward spillage of light and minimise horizontal spillage away from the intended areas.
- Existing trees to be retained will be protected throughout the construction period of the development in accordance with industry best practice.

8.6 NOISE

The proposed residential development is located in close proximity to existing housing, other university buildings and the Poor Clares monastery. Steps will be taken to ensure that any noise arising will be adequately mitigated for residents.

Some impact of noise is likely to occur as a result of the construction activity. Construction work is of a temporary nature and the resulting noise levels are usually acceptable, subject to typical management and time control procedures which are common to most development projects.

Attention should be paid to the recommendations given in BS 5228. 'Noise Control on construction & Open Sites' & BS 6187 Code of Practice for Demolition (latest editions).

The noise limits to be applied for the duration of the works are to be those specified below unless requested otherwise by GCC.

- Daytime (07:00 to 19:00 hrs) – 70dB LAeq, 1 hour (Residential Receptors)
- Daytime (07:00 to 19:00 hrs) – 75db LAeq, 1 hour (Commercial Receptors)
- Evening (19:00 to 23.00 hrs) – 65dB LAeq, 1 hour

- Night-time (23:00 to 07:00 hrs) – 55dB LAeq, 1 hour

8.6.1 Noise Mitigation Measures

The following noise management measures shall be implemented at the site from the outset of site activities to control and manage noise levels during the construction phase of the proposed development:

- Noise Control: A noise management programme shall be implemented at the site from the outset of construction activities. The contractor shall appoint a designated person to manage all environmental complaints including noise and vibration. A noise complaint procedure shall be implemented in which the details of any noise related complaint are logged, investigated and, where required, measures are taken to ameliorate the source of the noise complaint.
- Construction plant: Plant used on site will comply with the relevant Irish regulations in relation to noise and vibration requirements. Noise to be minimized as far as possible, by limiting the use of compressors and other plant to stated hours and by fitting and use of silencing devices wherever practicable. Noisy stationary equipment shall be sited away from sensitive site boundaries as far as practicable. Proper use of plant with respect to minimising noise emissions and regular maintenance will be required. Any plant, equipment or items fitted with noise control equipment found to be defective in shall not be operated until repaired / replaced. Select rubber-tyred equipment over steel track equipment where practicable.
- Heavy Vehicles: Appropriate signage shall be erected on all access roads in the vicinity of the site to inform HGV drivers that engines shall not be left idling for prolonged periods and that the use of horns shall be banned at all times. HGV's queuing on any local or public road shall not be permitted and it shall be the responsibility of site management to ensure this policy is enforced.
- Generators and Compressors: All onsite generator & compressor units (if required) used to supply electricity to the site shall be silenced models or enclosed and located away from any receptor. Ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers. The use of generators during the night-time shall be avoided. Mains power shall be used to supply electricity to all site offices and site lighting at the earliest instance.
- Site Compound: The site compound shall be located at a point on site furthest away from any existing residential development. Fixed items of plant shall be electrically powered in preference to being diesel or petrol driven.
- Construction Activities: Where reasonable & practicable, noisy plant or activities shall be replaced by less noisy alternatives if noise breaches and/or complaints occur. All excavator mounted pneumatic breakers used for rock breaking activities, if required, shall be fitted with effective dampeners and/or enclosed within a noise absorbing blanket structure to minimise noise emissions. Other mitigation measures as follows:
 - Excessive revving of all vehicles shall be avoided.
 - Unnecessary dropping of heavy items onto ground surfaces shall be banned.
 - The use of an excavator bucket to break up slabs of concrete or tarmacadam shall not be permitted.
 - The dragging of materials such as steel covers, plant or excavated materials along ground surfaces shall not be permitted.
- Receptor Exposure: Site activities shall be staggered when working in proximity to any receptor, that is concrete cutting and rock breaking should where possible not occur at the same time. Acoustic screening to be provided if necessary to maintain sound levels within agreed levels if significant noise generation is expected.

- Out of Hours Working: Out-of-hours work to be agreed with GCC. In the event of the requirement for out of hours work to occur which will involve the generation of noise levels that are predicted to exceed out of hours noise limit criteria, GCC shall be informed and control measures agreed.



Figure 8.1: Typical Acoustic Screening

8.7 VIBRATION

The following specific vibration mitigation and control measures shall be implemented during the construction phase:

- Vibration Control: A strictly enforced vibration management programme shall be implemented at the site from the outset of construction activities. This shall include vibration monitoring of the existing heritage listing building. The contractor shall appoint a designated person to manage all environmental complaints including noise and vibration. A vibration complaint procedure shall be implemented in which the details of any vibration related complaint are logged, investigated and, where required, measures are taken to ameliorate the source of the vibration complaint.
- Ground compaction or ground improvement: While not envisaged to be required for this project, any ground improvement techniques or other compaction activities, where used on site in proximity to receptors, are to be scheduled for the least sensitive time of day. Dynamic rolling of fill material or existing formations is to be carried out in a manner to minimize ground borne vibrations - heavy dynamic rolling of deep layers of fill is to be avoided in preference for lighter rolling of thinner layers.
- Other measures to be employed are as follows:
 - Breaking out concrete elements using low vibration tools
 - Choosing alternative, lower-impact equipment or methods wherever possible.
 - Routing, operating, or locating high vibration sources as far away from sensitive areas as possible.
 - Sequencing operations so that vibration causing activities do not occur simultaneously.
 - Isolating the equipment causing the vibration on resilient mounts
 - Keeping equipment well maintained.
 - Confining vibration-generating operations to the least vibration-sensitive part of the day which could be when the background disturbance is highest.

- **Vibration monitoring:** This shall be conducted during the course of the project works on the existing heritage listed building walls, and on adjacent structures if vibration generating activities are carried out. Unless agreed otherwise, the transient vibration guide values for cosmetic damage as specified in British Standard BS7385: Evaluation and measurement for vibration in buildings, Part 2 1993 Guide to damage levels arising from ground borne vibration is 15 mm/sec Peak Component Particle Velocity at 4 Hz increasing to 20 mm/sec at 15 Hz. This limit value rises to 50 mm/sec at frequencies of 40 Hz and greater.

8.8 DUST & AIR QUALITY

The Contractor's proposals are to include dust control measures in accordance with best practice and with reference to the Air Pollution Act 1987.

In order to ensure that adverse air quality impacts are minimised during the construction phase and that the potential for soiling of property and amenity and local public roads is minimised, the following mitigation measures shall be implemented during the course of all construction activities:

- Avoid unnecessary vehicle movements and manoeuvring, and limit speeds on site so as to minimise the generation of airborne dust.
- Use of rubble chutes and receptor skips during construction activities.
- During dry periods, dust emissions from heavily trafficked locations (on and off site) will be controlled by spraying surfaces with water and wetting agents.
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic only.
- Re-suspension in the air of spillages material from trucks entering or leaving the site will be prevented by limiting the speed of vehicles in the vicinity of the site to 10km/h and by use of a mechanical road sweeper.
- The overloading of tipper trucks exiting the site shall not be permitted.
- Aggregates will be transported to and from the site in covered trucks.
- Where the likelihood of windblown fugitive dust emissions is high and during dry weather conditions, dusty site surfaces will be sprayed by a mobile tanker bowser.
- Wetting agents shall be utilised to provide a more effective surface wetting procedure.
- Exhaust emissions from vehicles operating within the construction site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor by ensuring that emissions from vehicles are minimised by routine servicing of vehicles and plant, rather than just following breakdowns; the positioning of exhausts at a height to ensure adequate local dispersal of emissions, the avoidance of engines running unnecessarily and the use of low emission fuels.
- All plant not in operation shall be turned off and idling engines shall not be permitted for excessive periods.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- Material stockpiles containing fine or dusty elements including topsoil shall be covered with tarpaulins.
- Where drilling or pavement cutting, grinding or similar types of stone finishing operations are taking place, measures to control dust emissions will be used to prevent unnecessary dust emissions by the erection of wind breaks or barriers. All concrete cutting equipment shall be fitted with a water dampening system.
- A programme of air quality monitoring shall be implemented at the site boundaries for the duration of construction phase activities to ensure that the air quality standards relating to dust deposition and PM₁₀ are not exceeded. Where levels exceed specified air quality limit

values, dust generating activities shall immediately cease and alternative working methods shall be implemented.

- A complaints log shall be maintained by the construction site manager and in the event of a complaint relating to dust nuisance, an investigation shall be initiated.
- Dust netting and site hoarding shall be installed along the north, south, east, and western site boundaries to minimise fugitive windblown dust emissions falling on third party lands and existing residential areas.

A dust minimisation plan will be formulated for the construction phase of the project. The Contactor will put in place a regime for monitoring dust levels on the boundary at at least one location, during the works using the Bergerhoff Method. The minimum criteria to be maintained shall be the limit specified by the Environmental Protection Agency (EPA) for licensed facilities in Ireland which is 350mg/m²/day as a 30-day average.

8.9 MONITORING & PROTECTION OF NEIGHBOURING PROPERTIES

A monitoring regime will be put in place to protect neighbours & neighbouring properties. This will comprise a full and detailed vibration, noise, and dust monitoring regime in place for the duration of the work as per the requirements set out in Section 8 of this report.

9. CONSTRUCTION & DEMOLITION WASTE MANAGEMENT

9.1 PURPOSE

The purpose of a Construction and Demolition Waste Management Plan is to provide information necessary to ensure that the management of construction and demolition (C&D) waste at a site is undertaken in accordance with the current legal requirements and best practice guidelines. Refer to Appendix 1 for the EPA Guidelines on the Statutory framework for Waste Disposal.

9.2 PROPOSED DEVELOPMENT

The development consists of demolition works as set out in Section 4.0 of this report, limited earthworks as set out in Section 5.0 and new construction as set out in Section 6.0. During construction there will be construction waste generated such as excavated earth spoil from foundations, excavation from service trenches, hazardous materials in small quantities (paints, oils, diesel etc), timber formwork, excess steel reinforcing bars and over-supply of materials along with packaging such as cardboard, plastic and polystyrene.

9.3 DEMOLITION WASTE

Demolition work will involve the removal of some of the non-original elements of the building, consisting of the roof, the external walls of the fifth floor, internal walls, floor slabs and internal steel frame. The original building fabric, consisting of both internal and external rubble and cut limestone masonry, will be retained throughout. The original internal stone masonry walls will also be retained, with new openings formed in these walls only where necessary for circulation across the floor plates. Existing underground services which are redundant will be decommissioned and removed as necessary. Figures 4.1 – 4.4 above give a colour coded representation of the extent of retained and replaced existing structure.

The waste generated will be mainly broken concrete and concrete blockwork and embedded steel reinforcement.

9.4 WASTE FROM EXCAVATIONS AND SITE PREPARATION

There are no major earthworks associated with this development. Bulk earthworks are associated with the site strip down to ground floor formation level. There will be additional excavation associated with foundation trenches and service trenches. Excavated material will be generally disposed of off-site to a licensed facility.

If excavated material is found to be contaminated, an appropriate disposal method shall be selected depending on the type of contaminant found. Testing will be carried out in advance of site possession by the contractor to determine the soil classification; i.e. inert, non-hazardous, or hazardous. A detailed geotechnical and environmental site investigation will be carried out prior to the commencement of construction. This will include testing of soil samples for contaminants and the preparation of a Waste Classification Report.

Material classifications are 'Hazardous,' 'Non-Hazardous' and 'Inert'. Material of a particular classification is to be disposed of to a landfill or facility licensed to take that class of material. All contracted hauliers and disposal facilities used to dispose of excavation waste from the site must be licensed to dispose of this waste as noted, and all licenses/permits must be valid/current, and conditions adhered to. Current Waste Permits and licences are to be in accordance with the Waste Management Acts, 1996 to 2008.

9.5 WASTE FROM CONSTRUCTION ACTIVITIES

The following is a list of the main types of waste generated during a typical construction project in addition to the demolition & soils waste noted above:

- Excess new concrete, brick, tiles and ceramics
- Excess plasterboard
- Scrap metal
- Cardboard & plastic (wrapping & packaging)
- Plastic
- Waste timber
- Wastepaper
- Broken glass & other damaged materials

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Hazardous waste may be generated including excavated soils classified as 'Hazardous', batteries, oils/fuels from machinery and equipment, excess paints. The treatment of hazardous waste and the handling of fuels on site is dealt with in Section 8.0 of this report.

The main contractor should take measures to ensure unnecessary waste is not generated during construction, including the following:

- Avoiding excess ordering of material by accurate advance measurement and planning. Excess material should be returned to the supplier if possible.
- Careful handling & storage of materials to avoid damage that would result in their disposal.
- Use of recycled materials where possible.
- Purchase of materials pre-cut to length to avoid waste off-cuts on site.

9.6 WASTE RE-USE & RE-CYCLING

All waste should be segregated on site into separate skips, receptacles or waste holding areas.

The principal categories of waste for segregation are listed above in the preceding sections. The material should be disposed off-site to an appropriate facility for re-cycling or re-use where possible. Crushed concrete and masonry waste, suitably classified, can be used as fill material either on-site if possible or if not, disposed off-site for licensed landfill or construction use.

Packaging waste should be collected and re-cycled by a Repak approved waste contractor.

9.7 LICENSED WASTE DISPOSAL

Material will be disposed off-site by suitably licensed waste contractors. Material will be brought to a facility which holds a current waste permit as set out in Section 9.1.4. Refer also to the EPA Guidelines in Appendix 1. All waste disposal will need to be recorded and audited as noted in Sections 9.8 & 9.9 below.

9.8 THE CONSTRUCTION WASTE MANAGER

The main contractor should employ or appoint from his/her own management team a Construction Waste Manager (CWM). The role of the CWM is summarised as follows:

- Organise and manage waste disposal, collection and recycling facilities in accordance with the preceding sections.
- Maintain records of all waste leaving site including the type & quantity of waste material, quantity, waste disposal contractor details & destination of the disposed material.
- The CWM is to work with the contractor's team to re-use & re-cycle waste material on site if possible or, where that is not possible, aim to maximise the amount of re-cycling/re-use of waste material going off site. The amount of waste re-cycled or re-used should be recorded.
- The CWM will ensure that the Construction Waste Plan is followed by the main contractor and by all sub-contractors on site. Members of staff should be instructed on waste segregation, material reuse, and how to comply with the construction waste management plan. Posters

should be displayed on site setting out the key messages of the construction waste management plan.

9.9 WASTE AUDITING

The appointed CWM for each site will be responsible for conducting a waste audit on site. In relation to any demolition or strip out works, advance reference should be made to the EU document 'Guidelines for Waste Audits before Demolition & Renovation Works of Buildings' and the EPA document 'Best Practice Guidelines for The Preparation of Resource & Waste Management Plans for Construction & Demolition Projects.'

The audits should be carried out regularly and should focus on the waste outputs & costs for each construction operation, identifying additional opportunities for waste reduction, re-use and recycling. This information will help tailor practices on site to reduce waste & the cost of waste disposal on the project. The audit will include the following:

- Materials In: Records of material arriving on site.
- Waste Out: Reviewing the amount, nature and composition of waste leaving site plus the associated waste disposal costs.
- Costs: The full cost of waste management should be estimated by the appointed contractor/CWM covering the cost of the waste material if purchased and the cost of the handling, storage and disposal of the material. The total waste cost for different categories of waste can then be calculated e.g. the cost for steel, other metals, masonry, concrete, timber etc.

A record summary of waste arising during the project should be kept and made available to the EPA on completion of the project if required.

Appendix 1

EPA WASTE GUIDANCE

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Private Sector Activities

Exempt from requirement to hold a Waste Licence, Permit or COR:

- WMA Section 39(7):- Specified waste activities on an IPPC regulated site; deposit of litter in a bin; the disposal of specified animal by-products; the disposal of household waste within the curtilage of the dwelling where produced; transfer of waste to an authorised person for Recovery.
- WMA Section 51:- Recovery of sludge for use in agriculture; recovery of animal or poultry blood or slurry/manure.
- Temporary storage (<6 months) of waste on the site of its production (certain limitations for WEEE distribution centres, see Art 39(1a) of SI 340 of 2005).
- WEEE Regs SI 340 of 2005. Art 39(1) & (1b):- Temporary storage of certain quantities & types of WEEE at a distribution outlet; and storage by registered charities of <90m³ of certain household WEEE and <50kg mobile phones (at any one time).
- Tyre supplier temporarily storing <180m³ waste 'take-back' tyres (SI 664 of 2007, Article 33(1))
- Temp storage of waste batteries at workplaces, distributors & charity venues. Certain limits apply. See Article 44 of SI 268 of 2008

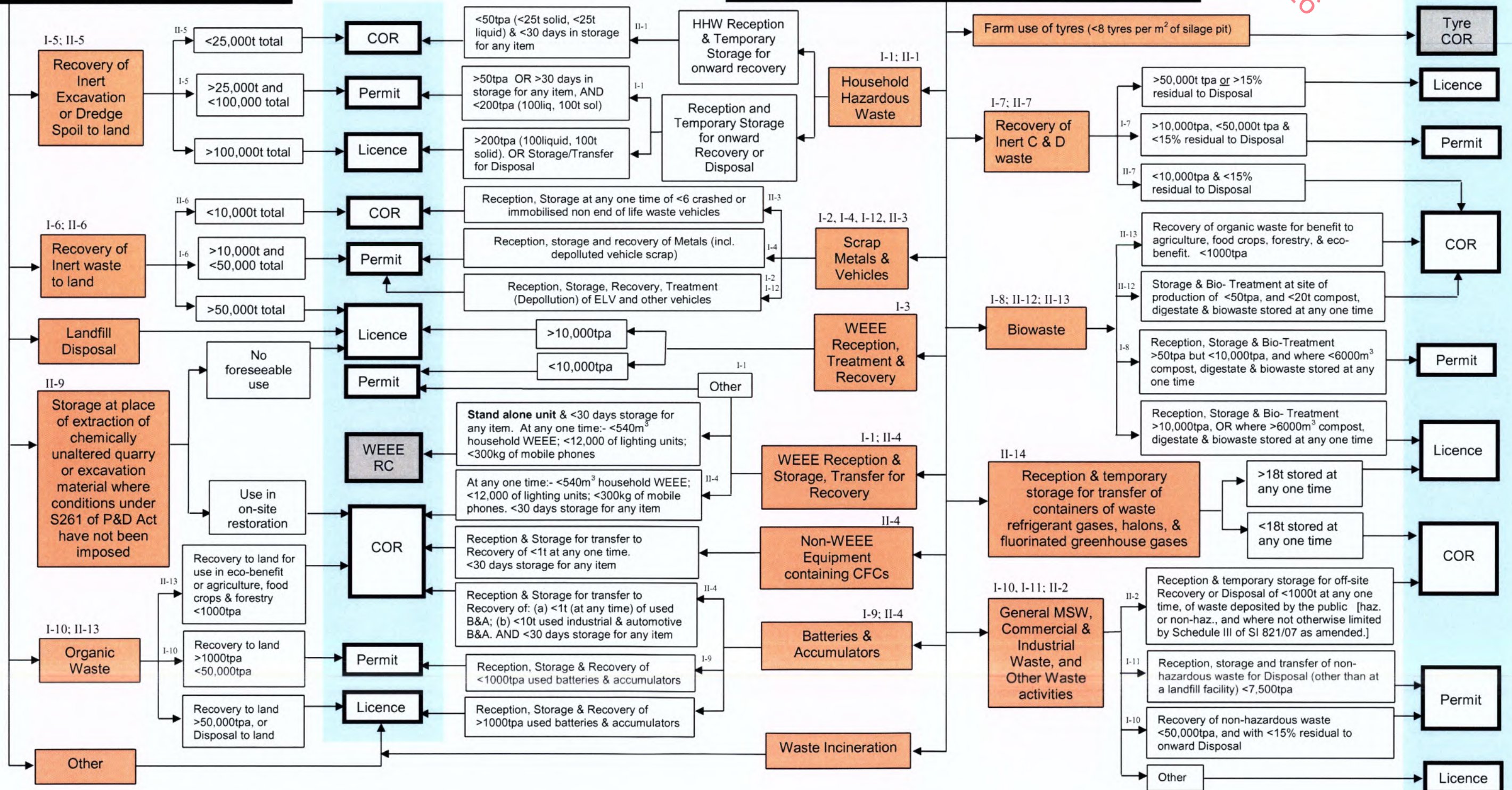
KEY

COR – Certificate of Registration under SI 821 of 2007 as amended
Permit – under SI 821 of 2007 as amended
Licence – under Part V of the Waste Management Act
Tyre COR – under Tyre Regulations SI 664 of 2007
WEEE RC – Registration Cert. under WEEE Regulations SI 340 of 2005
P&D Act - Planning & Development Act 2000

NB: See definitions in Article 5 of SI 821 of 2007

Recovery or Disposal of waste to Land

Waste Transfer/Storage/Treatment/Collection Location



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APPENDIX 5

CIVIL ENGINEERING INFRASTRUCTURE REPORT FOR PLANNING



Civil Engineering Infrastructure Report for Planning

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Project:

**McLaughlin Building, Flour
Mills, Nun's Island, Galway**

[CO1]**DOCUMENT CONTROL**

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CONTENTS

1. INTRODUCTION

- 1.1 Development Description**
- 1.2 Scope of this report**
- 1.3 Uisce Éireann Liaison**
- 1.4 Galway City Council Liaison**
- 1.5 Topography**
- 1.6 Ground Conditions**

- 1.6.1 Substructures

2. Surface Water drainage

- 2.1 Introduction**
- 2.2 Existing Surface Water Infrastructure**
- 2.3 Proposed Surface Water Infrastructure**

- 2.3.1 Catchment Area
 - 2.3.2 Compliance with the Principles of SuDS
 - 2.3.3 SuDS Measure Selection
 - 2.3.4 SuDS Management Train
 - 2.3.5 SuDS Pollutant Analysis
 - 2.3.6 Interception Storage
 - 2.3.7 Treatment Storage
 - 2.3.8 GDSDS Criterion Compliance
 - 2.3.9 CIRIA SuDS Manual Pillars of Design
 - 2.3.10 SuDS Conclusion

3. Foul drainage System

- 3.1 Existing Foul Sewer Infrastructure**

- 3.2 Proposed Foul Drainage System**

- 3.2.1 Proposed Educational Development Flows – 3810m2 classroom/office space Bedrooms

- 3.3 Uisce Eireann Pre-Connection Application**

4. Water Supply

- 4.1 Existing Water Supply Infrastructure**

- 4.2 Proposed Watermain Supply**

- 4.2.1 Proposed Educational Development Flows – 3810m2 classroom/office space Bedrooms

- 4.3 Uisce Eireann Pre-Connection Application**

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APPENDICES

Appendix I

Uisce Éireann Existing Services Map

Appendix II

Uisce Éireann Pre-Connection Enquiry

APPENDIX III

Uisce éireann COnfirmation of Feasibility

APPENDIX IV

SI Records

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1. INTRODUCTION

Barrett Mahony Consulting Engineers have been appointed by University of Galway to prepare a Civil Engineering Infrastructure Report for the proposed educational development at the McLaughlin Building, University of Galway, Nun's Island, Galway.

1.1 DEVELOPMENT DESCRIPTION

The proposed development will comprise of the refurbishment and extension of the McLaughlin Building (a Protected Structure: RPS Ref. 7406 Former Mill - NUIG), Nun's Island, Galway.

The McLaughlin Building will be refurbished and extended for educational use including associated academic teaching and study spaces; administrative areas; staff and student welfare facilities; café and ancillary plant and storage areas.

The proposed works to the McLaughlin Building will include the removal of the mid- to late-20th Century roof and fifth floor level (approx. 374.1 sqm gross floor area (GFA)); and the construction of two additional floors, resulting in an overall increase in height of the building from 5 storeys to 6 storeys (with maximum proposed height of 30.03 m). The proposed works will result in an increase in GFA from 2962.17 sqm to 3962.7 sqm.

Further interventions to the McLaughlin Building will include:

- Removal of existing mid- to late 20th Century building fabric the south-west corner to be replaced with an ESB Substation and Switchroom at ground floor level overlaid with perforated aluminium panels to match proposed new aluminium curtain walling with glazed openings on upper levels.
- Provision of a new external stair and lift core on the north elevation.
- Removal of selected areas of the late 20th Century internal steel frame and concrete slabs, provision of new foundations in selected areas, new ground floor slab build-up throughout and new structural frame to support the additional floors.
- Existing 20th Century windows and doors to be replaced with new thermally broken aluminium doors and windows to match existing openings, and repair of window reveals and cills.
- Creation of new entrance on the northern elevation (incorporating two original window openings); enlargement of three existing openings at ground floor level of southern elevations and alterations to two window and door openings to provide compliant door openings to the new escape stair to the northern elevation.
- Removal of cement render and retention and repair of original rubble and limestone masonry walls.
- Removal of mid to late 20th Century extension to the northern elevation.
- Removal of non-original subdivisions and provision of new subdivisions.
- Repair and repointing of masonry arch culverts beneath the building, and construction of reinforced concrete plinths at the arch bases to remediate and prevent scouring.
- Existing access walkway along north elevation upgraded and widened (2m in width).
- Temporary in-stream works during construction phase comprising localised damming to facilitate both the walkway widening and masonry arch culvert repairs.

The proposed works will also include new water and wastewater connections; rooftop plant; new mechanical and electrical services; thermal upgrade of the existing building including solar PV panels at roof level; landscaping to the existing boardwalk; boundary treatments; together with all associated and ancillary site and development works.



Figure 1-1: Location Map of the Site and Surrounding Road Network (Ref Google Maps)



Figure 1-2: Site Layout Plan

1.2 SCOPE OF THIS REPORT

This report describes the proposed civil engineering infrastructure for the development and how it connects to the public infrastructure serving the area. The report will highlight methods that will be used to comply with the local authority requirements.

In particular, foul and surface water drainage and water supply are addressed. A separate Site-Specific Flood Risk Assessment report has also been prepared and submitted under separate cover. This report should be read in conjunction with the civil engineering drawings submitted with the planning application.

1.3 UISCE ÉIREANN LIAISON

A Pre-Connection Enquiry was submitted to Uisce Éireann on 06/11/2025 outlining proposals for both foul drainage and water supply connections and development flow rates. Uisce Éireann provided a Confirmation of Feasibility letter on 03/12/2025 advising that the proposed development could be catered for without public network upgrades. A copy of the submitted Pre-Connection Enquiry form is included in Appendix II; and the subsequent Confirmation of Feasibility letter is included in Appendix III.

1.4 GALWAY CITY COUNCIL LIAISON

BMCE have liaised with Mr. Liam Flynn, Executive Engineer with Galway City Council, via email on 19th September 2025, outlining in principle, the development stormwater management proposals. Mr Flynn advised that the proposals are generally accepted, subject to detailed design drawings and infrastructure report submission. Those stormwater management proposals are outlined in detail in section 2 of this report and the civil engineering drawings submitted as part of this application.

1.5 TOPOGRAPHY

A detailed topographical survey of the existing site and structures has been prepared by Murphy Geospatial. The area of the site is approximately 1983m². The internal structural slab level varies with the east of the of the existing building at +6.77m O.D. and the west side of the building at +6.28m O.D. The new development will have a proposed floor level of +6.80m

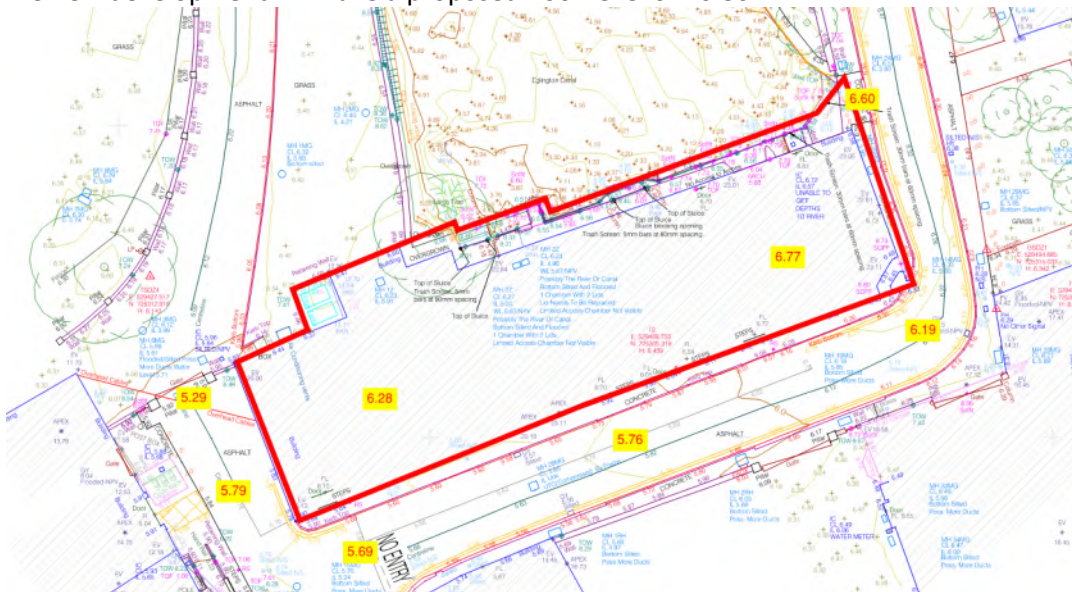


Figure 1-3: Site Topographical Survey

1.6 Ground Conditions

A site-specific investigation has not yet been commissioned for the subject site as demolition of existing structures will be necessary in advance of a site investigation being carried out. An extract from site investigations on nearby sites is contained in Appendix IV. The typical sequence of stratigraphy identified in the site investigation is Made Ground, overlying Sandy Gravelly Clay, overlying Black Boulder Clay, overlying Limestone bedrock. Based on the SI Records from nearby areas, we expect the ground profile at the proposed development site to closely mirror this. Each Stratum is described below:

- **Made Ground:** Deposits were encountered from ground level or below the surfacing at all locations and were present to a variable depth of 0m to 3 m BGL. The deposits were described generally as surface fill containing concrete, brick, gravel and clay along with stone and peaty clay further down
- **Cohesive deposits:** Beneath the Made Ground a stratum of grey/brown fine to coarse sandy Gravel containing cobbles and boulders was encountered at a depth range of approximately 2.5-3.5m BGL. The gravel stratum was found to overlay stiff to very stiff brown/dark grey gravelly clay (Boulder Clay).
- **Limestone Bedrock:** The rotary core boreholes recovered blue grey Limestone at depths ranging from 3-5m BGL. This is typical of the Galway City Formation, which is noted on the Geological Survey of Ireland's mapping of the site with depth to bedrock known to vary significantly close to the River Corrib.

1.6.1 Substructures

A series of stone masonry arches are located beneath the central and eastern parts of the building. The walls of the arches are constructed off bedrock at the culvert bases. While a site investigation has not been carried out at the site, bedrock was observed during the culvert surveys at the base of the culverts. Additionally, site investigation records available on the geological survey of Ireland website, for a site approximately 120m to the east of the McLaughlin Building, indicate bedrock at approximately 4m below ground level. This depth correlates broadly with the depth of the culvert bases. The side walls of some of the culverts extend up through the building to form the central internal walls which run from north to south facades and split the building into 3 sections. It can reasonably be assumed that the east-west original walls were also constructed off the bedrock under the building. The building contains 2 hydroelectric turbines which are located at ground floor. The turbine rooms contain pits which extend into the culverts beneath. In the areas of the culverts beneath and close to the turbine rooms, concrete interventions have taken place. It is assumed these interventions were associated with the installation of operation of the turbines.

2. SURFACE WATER DRAINAGE

2.1 INTRODUCTION

This chapter will follow the guidelines set out in Galway City Council Development Plan (2023-2029) and the CIRIA 2015 SuDS Manual.

The aim of any SuDS strategy is to ensure that a new development does not negatively affect the surrounding watercourse system, existing surface water network and groundwater system. The SuDS strategy will aim to achieve this by using the most appropriate SuDS measures applicable to the proposed development. These measures include water interception and treatment.

2.2 EXISTING SURFACE WATER INFRASTRUCTURE

A 375mm stormwater sewer flows from north to south along Gaol Road to the northeast of the development site. It connects to a 450mm diameter stormwater sewer which flows from west to east along Gaol Road away from the development site.

The Eglington Canal is located directly north of the existing building. Below the building on the development site, there are a series of culverts. The northern external wall of the building is constructed in front of the culverts and forms a weir at the entrance to each culvert. When the canal level rises above the weir level, the discharge passes under both the building and the road to the south of the building inside the culverts and discharges into the Gaol River to the south of the road.

The existing building on the site covers the entire site footprint. The roof of the building is a conventionally drained metal deck.

Rainwater downpipes from the roof currently discharge to both the public footpaths and directly to the culverts beneath the building.

There are currently no SUDS measures or flow controls on the stormwater runoff from the site.

Figure 2.1 shows the existing drainage surface infrastructure in the vicinity of the proposed development site.

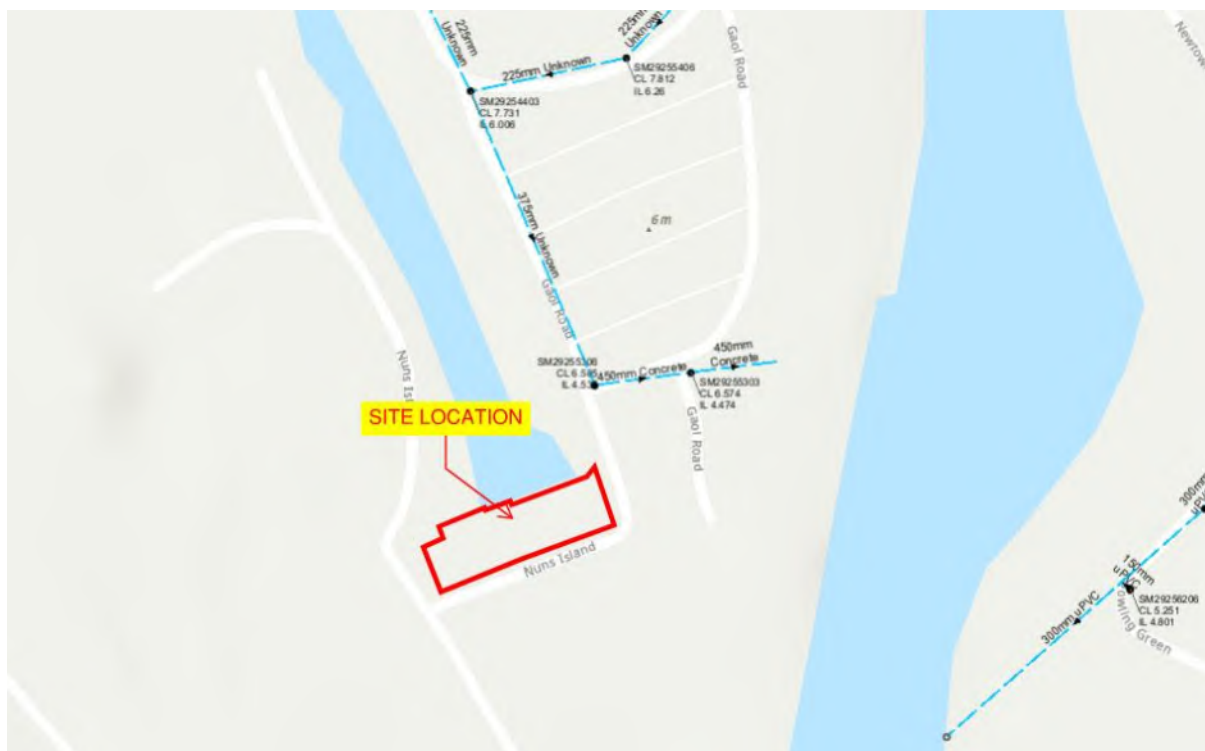


Figure 2-1: Existing Stormwater Drainage Layout

2.3 PROPOSED SURFACE WATER INFRASTRUCTURE

The proposed surface water drainage system is designed to comply with the 'Greater Dublin Strategic Drainage Study (GDSDS) Regional Drainage Policies Technical Document – Volume 2, New Developments, 2005' and the 'Greater Dublin Regional Code of Practice for Drainage Works, V6.0 2005'. Both of these documents are widely accepted across Ireland. CIRIA Design Manuals C753, C697 and C609 have also been used to design the surface water drainage system within the site.

As outlined in section 1.6, the predominantly clay and gravel soils at this site will not provide sufficient soakage on the site. Further, as the existing building covers the full site footprint, there is no possibility of discharge of stormwater to soakaways. It is proposed that 100% of available roofed surfaces will be green roof areas with underlying drainage boards for interception storage. Where PV panels or other roof plant equipment preclude the use of a green roof substrate, a gravel ballast will be provided over the drainage board so that interception storage will still be provided. The remainder of the roof shall provide an extensive green roof with a sedum blanket across the interception storage mat.

Stormwater runoff from the roofs will be collected in rainwater pipes along the north elevation of the building. The rainwater pipes will be brought to ground level on the north elevation and will discharge into the culverts beneath the ground floor, downstream of the canal weirs formed by the northern external wall. Rainwater pipes currently discharging stormwater to the public footpath will be decommissioned.

There will be no increase in drained area for the proposed development, with the proposed redevelopment of this heritage listed building covering the same site footprint. The Gaol River is located to the south of the site and receives runoff from the culverts under the building. The Gaol River discharges into the Corrib River approximately 125m further south. The Gaol River meets the Corrib River downstream of the Salmon Weir within the tidally influenced zone of the river. Given the receiving watercourse for stormwater runoff from the building is tidally influenced, the provision of attenuation storage for this building would have negligible impact on flow capacity or water levels within the relevant sections of the river. Hence, stormwater attenuation is deemed not necessary and is not proposed to be provided for this development. It is also worth noting that due to the nature of this heritage listed structure and the presence of the culverts below the building, the provision of attenuation storage beneath the building would not be practical.

As discussed further below, the provision of a sedum blanket and, in places, gravel ballast over a interception storage mat on the roofs will provide interception storage and filtration to the stormwater prior to discharge to the culverts. The green roof will also provide an effective reduction in discharge rates for most common rainfall events.

The following sections discuss in detail the following aspects:

- Site Catchment Areas
- Greenfield Runoff Rates
- SuDS Measures Selection
- SuDS Management Train
- SuDS Pollutant Analysis
- GDSDS Criterion Compliance

2.3.1 Catchment Area

The proposed development has a site area of approximately 736.2m². The site is a brownfield site which is covered entirely in impermeable roof surfaces, which are positively drained to the drainage collection system.

Proposed roof surfaces in the catchment area will consist entirely of green roofs, made up from a mix of sedum blankets on an interception storage mat and, where solar panels or mechanical plant areas are located on the roof, a gravel ballast on an interception storage mat. Table 2-1 contains the runoff coefficients which have been applied to the runoff areas within this development. Applying these runoff coefficients to their relevant contributing area, the resulting effective drained area of the site is 0.063ha. Refer to Table 2-1 for a breakdown of total and effective drained areas. Note, impermeable areas relate to parapets, lift overruns etc. The entire available flat roof surface will be provided with a green roof surface.

Type of areas	Drained Area (m ²)	CV	Effective Drained Area (m ²)
Green Roof	690.2	0.9	621.18
Impermeable Roof	46.0	0.95	43.70
Total Drained Area	736.2	-	664.88

Table 2-1: Runoff Coefficients

Refer to the BMCE SuDS layout drawing MCL-94-SW-XXX-DR-BMCE-CE-11300 for the illustration and location of the SuDS measures.

2.3.2 Compliance with the Principles of SuDS

2.3.2.1 Compliance with the principles of the GDSDS

The proposed development will be designed in accordance with the principles of Sustainable Drainage Systems (SuDS) as embodied in the recommendations of the Greater Dublin Strategic Drainage Study (GDSDS) (widely accepted across the country) and will reduce run-off rates and improve storm water quality discharging to the public stormwater system. The GDSDS addresses the issue of sustainability by requiring designs to comply with a set of drainage criteria which aim to minimise the impact of urbanisation by replicating the run-off characteristics of the greenfield site. The criteria provide a consistent approach to addressing the increase in both rate and volume of run-off, as well as ensuring the environment is protected from any pollution from roads and buildings. These drainage design criteria are as follows:

- Criterion 1 – River Water Quality Protection
- Criterion 2 – River Regime Protection
- Criterion 3 – Flood Risk Assessment
- Criterion 4 – River Flood Protection

The requirements of SuDS are typically addressed by provision of the following:

- Interception Storage
- Treatment Storage (commonly addressed in interception storage)
- Attenuation Storage (not required for this development)
- Long Term Storage (not applicable if growth factors are not applied to Qbar when designing attenuation storage)

2.3.2.2 Compliance with the principles of the CIRIA SuDS Manual

The C753 SuDS Manual explains that the primary function of SuDS measures is to protect watercourses from any impact due to new development. However, SuDS can also improve the quality of life in a

new development and urban spaces by making them more vibrant, visually attractive, sustainable and more resilient to change. This document explains the wider social context of SuDS and how SuDS can deliver high quality drainage while supporting urban area to cope better with severe rainfall both in the present and the future.

There are four main categories of benefits that can be achieved by SuDS:

1. Water Quantity (mitigate flood risk & protect natural water cycle)
2. Water Quality (manage the quality of the runoff to prevent pollution)
3. Amenity (create and sustain better places for people)
4. Biodiversity (create and sustain places for nature)

2.3.3 SuDS Measure Selection

Below are the applicable SuDS measures which have been chosen based on the specific characteristics of the site itself and the proposed development.

2.3.3.1 Green Roofs – General

Green roofs are areas of living vegetation, installed on the top of buildings. They provide water quality, water quantity, amenity and provide biodiversity benefits. Green roofs also intercept rainfall at source reducing the reliance on attenuation storage structures. Roof areas where PV panels are proposed without extensive green roof, will have a drainage board installed to provide interception and treatment storage.

Refer to the Barrett Mahony SuDS layout plan and detail drawings and Landscape Architects drawings for typical green roof details.

2.3.3.2 Green Roof – Extensive

Extensive green roofs have low substrate depths and therefore low loadings on the building structure. They are lightweight and have a low cost to maintain. These systems cover the entire roof area with hardy, slow growing, drought resistant, low maintenance plants and vegetation, such as sedums. The planting usually matures slowly, with the long-term biodiversity benefits being the sought after results. These roofs are typically only accessed for maintenance and are usually comprised of between 20mm – 80mm overall total depth.

Extensive green roofs have the effect of providing some initial storage of rainwater, while also reducing the rate at which rainwater from heavier rainfall events will discharge to the follow on drainage system. It can also help to filter the run-off, removing any pollutants and resulting in a higher quality of water discharging to the drainage system. A typical extensive green roof system can intercept and retain over 30 litres/m² (i.e. 30mm) depending on the build-up. Where solar panels or other roof plant equipment are located on the roof, it will not be possible to provide a sedum blanket. Here, a gravel ballast will be placed of an interception storage mat which will provide a minimum of 10l/m² of storage.

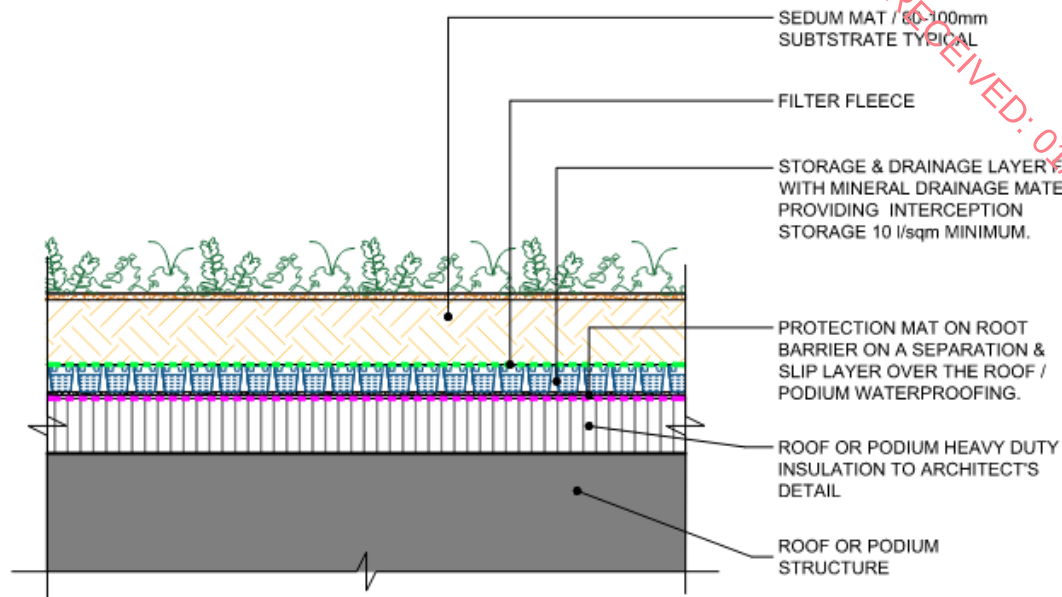


Figure 2-2: Green Roof Extensive

2.3.4 SuDS Management Train

The SuDS measures proposed are linked in series, and this is commonly known as a SuDS Management Train, (SMT). The SMT ensures that rainwater falling on a site is captured, conveyed, stored, intercepted, and removed of pollutant correctly and efficiently before it is discharged back into the surrounding water course of network.

A robust SMT will ensure that the most effective measures are utilized in the correct sequence throughout the site. Table 26.3 (Figure 2.5 below) in *(CIRIA, SuDS Manual 2015)* illustrates the effectiveness of each SuDS measure along the SMT.

Proposed SuDS management / drainage trains on this site are as follows:



SuDS component	Interception ¹	Close to source/ primary treatment	Secondary treatment	Tertiary treatment
Rainwater harvesting	Y			
Filter strip	Y	Y		
Swale	Y	Y	Y	
Filter drain	Y		Y	
Permeable pavement	Y	Y		
Bioretention	Y	Y	Y	
Green roof	Y	Y		
Detention basin	Y	Y	Y	
Pond	³	Y ²	Y	Y
Wetland	³	Y ²	Y	Y
Infiltration system (soakaways/ trenches/ blankets/basins)	Y	Y	Y	Y
Attenuation storage tanks	Y ⁴			
Catchpits and gullies		Y		
Proprietary treatment systems		Y ⁵	Y ⁵	Y ⁵

Figure 2-3: C573 SuDS Manual Table 26.7

Type of SuDS component	Mitigation indices ¹		
	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4 ²	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond ⁴	0.7 ³	0.7	0.5
Wetland	0.8 ³	0.8	0.8
Proprietary treatment systems ^{5,6}	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

Figure 2-4: C573 SuDS Manual Table 26.3 Extract

2.3.5 SuDS Pollutant Analysis

To ensure that the SuDS measures proposed are sufficient in removing pollutants from the generated run-off, a SuDS pollutant analysis has been carried out. This is performed in conjunction with the guidelines and steps set out in Section 26.7 of CIRIA SuDS Manual (2015).

The forms of pollutant to the proposed development are from surface water run-off from any roofs or hard landscaped surfaces within the development. Table 26.2 highlights the pollution hazards for different land uses (extract in Figure 2.6 below). The pollution hazards on site are generally 'Low'.

TABLE 26.2 Pollution hazard indices for different land use classifications				
Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4

Figure 2.6: C573 SuDS Manual Table 26.2 Extract

Giving the low pollution index the 'Simple Index Approach,' is applied and can be summarized below;

Total SuDS Mitigation Index ≥ Pollution Hazard Index

By inspection, the SuDS measures throughout the site ensure the criterion is met, for example, considering roof surfaces as listed in table 26.2. Green roofs are not indicated in Table 26.3, however, the gravel drainage layer within a green roof build up would perform in a similar manner but with improved mitigation to that of permeable paving. Therefore, using Table 26.2 and Table 26.3 from the SuDS manual, we can compare the mitigation index for permeable paving with the hazard index for typical commercial roofs:

Table 2-2: Pollution Hazard Assessment

	Total SuDS Mitigation Index		Pollution Hazard Index	Status
Total Suspended Solids	0.7	>	0.3	O.K.
Metals	0.6	>	0.2	O.K.
Hydrocarbons	0.7	>	0.05	O.K.

From Table 2-2 above it is clear that the SuDS strategy for the site is effective in removing pollutants from the surface water and therefore protecting the watercourse.

2.3.6 Interception Storage

The GDSDS requires that Interception storage, where provided, should ensure that at a minimum the first 5mm and preferably the first 10mm of rainfall is intercepted on site and does not directly pass to the receiving watercourse.

Interception storage can be attained using SuDS features which allow the rainwater to infiltrate into the ground, evaporate into the atmosphere or transpire through vegetation. Soft landscaping and planted areas are conservatively taken as providing natural interception storage of 15mm.

Interception storage required for New Development Area = $736.2\text{m}^2 \times 5\text{mm}/1000 = 3.68\text{m}^3$

Green Roof:

There will be an interception tray in the green roof build-up area of the roof. An interception storage tray will provide storage at a rate of 10 litres/m².

Interception tray storage provided = $690.2 \times 0.010 = 6.92\text{m}^3$

Note: This ignores the additional contribution of the sedum.

The total proposed interception storage of **6.92m³** is in excess of the required storage of 3.68m³.

2.3.7 Treatment Storage

In accordance with the GSDS, interception storage & treatment storage are interchangeable. Since full interception storage has been provided, treatment storage is not required.

2.3.8 GSDS Criterion Compliance

2.3.8.1 Criterion 1 GSDS – River Water Quality Protection

Run-off from natural greenfield areas contributes very little pollution and sediment to rivers and for most rainfall events direct run-off from greenfield sites to rivers does not take place as rainfall percolates into the ground. By contrast, urban run-off, when drained by pipe systems, results in run-off from virtually every rainfall event with high levels of pollution, particularly in the first phase of run-off, with little rainfall percolating to the ground. To prevent this happening, Criterion 1 requires that interception storage and/or treatment storage is provided, thereby replicating the run-off characteristics of the pre-development greenfield site.

2.3.8.2 Criterion 3 GSDS – Site Flooding

The GSDS requires that no flooding should occur on site for storms up to and including the 1 in 30-year event. The pipe network and the attenuation storage volumes should be designed to accommodate such storms to ensure that no site flooding occurs although partial surcharging of the system is allowed if it does not threaten to flood.

For the 1 in 100-year event, the pipe network can fully surcharge and cause site flooding, but the top water level due to any such flooding must be at least 500mm below any vulnerable internal floor levels, and the flood waters should be contained within the site boundaries.

There is no proposed buried stormwater pipe network for the proposed development as the rainwater pipes will discharge directly into the culverts below the ground floor along the north elevation.

2.3.8.3 Criterion 2 & Criterion 4 GSDS – River Regime and Flood Protection

As outlined in 2.3, there will no increase in the proposed catchment for the proposed development, the provision of green roofs will provide an effective reduction in total discharge quantity and rate of discharge for most rainfall events and the point of discharge to the receiving watercourse is within a tidally influenced zone, meaning attenuation storage would have negligible effect on river flow or water levels. Hence, attenuation storage is deemed unnecessary.

2.3.9 CIRIA SuDS Manual Pillars of Design

2.3.9.1 Water Quantity

The “Water Quantity” design objective is to ensure that the surface water runoff from a developed site does not have a detrimental impact on people, property, or the environment, it is important to control:

- How fast the runoff is discharged from the site (i.e., the peak runoff rate) and
- How much runoff is discharged from the site (i.e., the runoff volume)

2.3.9.2 Water Quality

The “Water Quality” design object seeks to ensure the surface water runoff from the site does not compromise the groundwater or surrounding water courses relating to the site.

A pollutant analysis was performed in 2.4.7 of this report which demonstrates that the water quality at discharge point to the public sewer meets with the recommendations of Section 26.7 of CIRIA SuDS Manual (2015).

2.3.9.3 Amenity

The “Amenity” design objective aims to deliver attractive, pleasant, useful and above all liveable urban environments. SuDS measures should be designed to replicate the existing natural environment and blend in with the urban development. Given the heritage listed structure covers the full site footprint, it is not possible to provide surface-based SUDS proposals. Given that a roof terrace is not proposed, this pillar is deemed to not be applicable.

2.3.9.4 Biodiversity

The encouragement of biodiverse environments within urban environments is incredibly important. The SuDS measures must not only replicate the pre-development surface water runoff and treatment for rainfall, but they must replicate the existing habitats pre-development. By incorporating a sedum blanket where possible biodiversity is promoted.

2.3.10 SuDS Conclusion

This section of the report has comprehensively discussed the various SuDS measures which can be applied to the proposed development site and then incorporate them based on the site layout. A pollutant analysis and a SuDS management train have then been developed based upon these SuDS measures to ensure the collected water is adequately treated.

3. FOUL DRAINAGE SYSTEM

3.1 EXISTING FOUL SEWER INFRASTRUCTURE

The existing public drainage system in the vicinity of the site is a combined sewer system, as described in Section 2.2 and shown in Figure 2.1. Foul flows are combined with stormwater runoff and together they discharge to the combined sewer line. An extensive utility survey and CCTV survey were carried out by Murphy Geospatial. These surveys confirmed that wastewater from the east side of the existing building discharges to the public manhole located to the northeast of the proposed development site and that the wastewater from the west side of the building currently discharges into one of the surface water culverts that is located beneath the building and discharges into the Gaol River.



Figure 3.1 – Existing Foul Network

The Uisce Éireann sewer and water supply network map for the area is included in Appendix I.

3.2 PROPOSED FOUL DRAINAGE SYSTEM

A entirely new buried drainage system will be provided for the proposed refurbishment of the heritage listed structure. Wastewater will be collected on a separate system to stormwater. A new 150mm gravity foul sewer is proposed to connect to the existing 225mm uPVC combined sewer within Nun's Island Road at the manhole located southwest of the existing building. Refer to drawing BMCE MCL-94-SW-XXX-DR-BMCE-CE-11041 for the Buried Site Drainage and Watermain Layout.

The proposed development will have approximately 3810m² of classrooms/office space. The new development foul discharge rates and volumes from the proposed educational development are calculated in the following sections in accordance with Uisce Éireann Code of Practice for Wastewater Infrastructure (August 2025).

3.2.1 Proposed Educational Development Flows – 3810m² classroom/office space Bedrooms

Average Daily Demand	= (Population)(Consumption/Capita)
Proposed Gross Floor Area	= 3810m ²
Occupancy	= 1 person per 10m ² = (3810/10)

=381 Persons
 Consumption/capita = 50 litres / person / day
 Infiltration = 10% (as per App C Section 1.2.4 of CoP for WW Infrastructure)
 Average Flow (DWF) = $(3810/10 \times 50 \times 1.1) = 20,955$ litres/day
 = 0.24 l/s
 Peak Flow = (average flow) x (4.5) = 0.24×4.5
 = 1.08 l/s

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3.3 UISCÉ ÉIREANN PRE-CONNECTION APPLICATION

A Pre-Connection Enquiry was submitted to Uisce Éireann on 06/11/2025 outlining proposals for both foul drainage and water supply connections and development flow rates. Uisce Éireann provided a Confirmation of Feasibility letter on 03/12/2025 advising that the proposed development could be catered for without public network upgrades. A copy of the submitted Pre-Connection Enquiry form is included in Appendix II; and the subsequent Confirmation of Feasibility letter is included in Appendix III.

4. WATER SUPPLY

4.1 EXISTING WATER SUPPLY INFRASTRUCTURE

An existing 3" cast-iron watermain is located to the west and northwest of the site and provides water supply to the adjacent Poor Clare's monastery.

An existing 101.6mm cast-iron/100mm MOPVC watermain is located in the roads to the east, south and southwest of the site. There is an existing boundary box meter located in the footpath directly in front of the south elevation of the building.

Uisce Éireann maps show there are 2 fire hydrants on the public watermain on the streets surrounding the site.

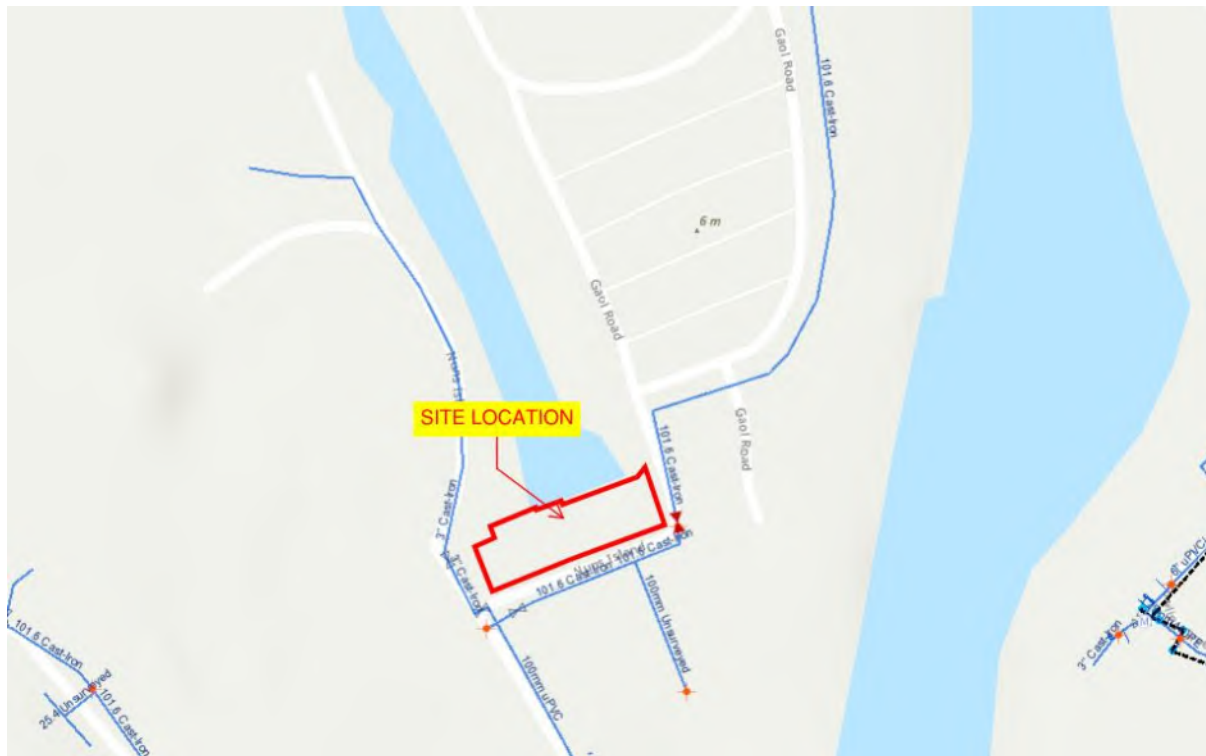


Figure 3.2 – Existing Water Supply Network

The Uisce Éireann sewer and water supply network map for the area is included in Appendix I.

4.2 PROPOSED WATERMAIN SUPPLY

The existing water supply to the development site is insufficient to service the proposed development. It is proposed that the existing supply will be upgraded to a 50mm connection to the 101.6 cast-iron main in Nun's Island Road to the southwest of the development. A bulk meter shall be provided on this main to facilitate flow monitoring and shut off of this supply by Uisce Éireann, if required.

Refer to MCL-94-SW-XXX-DR-BMCE-CE-11041 for the Buried Site Drainage and Watermain Layout.

The proposed development will have approximately 3810m² of classrooms/office space. The new development water demand rates and volumes from the proposed educational development are calculated in the following sections in accordance with Uisce Éireann Code of Practice for Wastewater Infrastructure (August 2025).

4.2.1 Proposed Educational Development Flows – 3810m² classroom/office space Bedrooms

Average Daily Demand = (Population)(Consumption/Capita)

Area	= 3810 m ²
Population Estimate	= 3810 / 10 = 381 persons
Consumption/capita	= 50 litres / person / day
Average Daily Demand	= 381 x 50 = 19050 litres / day
Average Day/Peak Week Demand	= (Average Daily Demand) x 1.25 = 23813 litres/day
	= 0.28 l/s
Peak Demand	= (Average Day/Peak Week Demand) x 5
	= 1.4 l/s

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4.3 UISCÉ ÉIREANN PRE-CONNECTION APPLICATION

A Pre-Connection Enquiry was submitted to Uisce Éireann on 06/11/2025 outlining proposals for both foul drainage and water supply connections and development flow rates. Uisce Éireann provided a Confirmation of Feasibility letter on 03/12/2025 advising that the proposed development could be catered for without public network upgrades. A copy of the submitted Pre-Connection Enquiry form is included in Appendix II; and the subsequent Confirmation of Feasibility letter is included in Appendix III.

APPENDIX I

UISCE EIREANN EXISTING SERVICES MAP

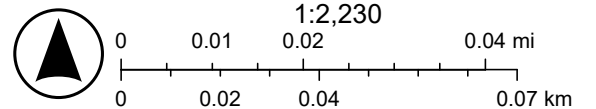
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Combined Network Map



6/17/2025

- | | | | | | | | |
|--|---|--|---|--|---|---|---|
| <ul style="list-style-type: none"> Storm Manholes <ul style="list-style-type: none"> Standard Backdrop Cascade Catchpit Bifurcation Hatchbox | <ul style="list-style-type: none"> Lampole Hydrobrake Other; Unknown Surface Gravity Mains Surface Gravity Mains Private Surface Water Pressurised Mains Surface Water Pressurised Mains Private | <ul style="list-style-type: none"> Storm Inlets <ul style="list-style-type: none"> Gully Standard Other; Unknown Storm Culverts Storm Clean Outs Storm Weirs | <ul style="list-style-type: none"> Storm Open Drains Storm Detention Areas Storm Chambers Sewer Manholes <ul style="list-style-type: none"> Standard Backdrop Cascade | <ul style="list-style-type: none"> Catchpit Bifurcation Hatchbox Lampole Hydrobrake Other; Unknown Sewer Discharge Points <ul style="list-style-type: none"> Outfall Overflow Soakaway Other; Unknown Sewer Clean Outs Rodding Eye | <ul style="list-style-type: none"> Flushing Structure Other; Unknown Waste Water Treatment plant Waste Water Pump station Sewer Inlets <ul style="list-style-type: none"> Standard Catchpit | <ul style="list-style-type: none"> Gully Other; Unknown Vent/Col Other; Unknown Sewer Chambers | <ul style="list-style-type: none"> Sewer Mains <ul style="list-style-type: none"> Gravity - Gravity - Foul Gravity - Gravity - Pumping - Pumping - Foul |
|--|---|--|---|--|---|---|---|



Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Sources: Esri, Maxar, Airbus DS,

APPENDIX II

UISCE ÉIREANN PRE-CONNECTION ENQUIRY

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and/or wastewater connection. The application must be submitted in CAPITALS and black ink.

*** Denotes mandatory/ required field. Please note, if mandatory fields are not completed the application will be returned.**

1 *Applicant details:

[illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible]

B	u	i	l	d	i	n	g	s		&		E	s	t	a	t	e	s							
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[illegible][illegible]

H	9	1	T	K	3	3
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[illegible]

0	8	6	4	4	1	1	1	8	8						
---	---	---	---	---	---	---	---	---	---	--	--	--	--	--	--

2 Agent details (if applicable):

The fields marked with * in this section are mandatory if using an agent

*Contact name: C i a r a n O ' R a f f e r t y

Company name (if applicable): B a r r e t t M a h o n y

*Postal address: S a n d w i t h H o u s e

5 2 - 5 4 L o w e r S a n d w i t h S t r e e t

D u b l i n 2

*Eircode: D 0 2 W R 2 6

Please provide either a landline or a mobile number

Landline: 0 1 6 7 7 3 2 0 0

*Mobile: 0 8 6 0 8 1 8 7 2 5

*Email: c o r a f f e r t y @ b m c e . i e

3 *Please indicate whether it is the applicant or agent who should receive future correspondence in relation to the enquiry:

Applicant ☐

Agent ☒

Section B | Site details

4 *Site address 1 (include Site name/Building name/Building number):

M c L a u g h l i n B u i l d i n g

*Address 2 N u n ' s I s l a n d

*Address 3

*City/Town G a l w a y

*County G a l w a y Eircode

5 *Irish Grid co-ordinates (proposed connection point):

Eastings (X) 1 2 9 5 0 7 Northings (Y) 2 2 5 2 8 5

Note: Values for Eastings must be between 015,900 and 340,000. Northings, between 029,000 and 362,000
Eg. co-ordinates of GPO, O'Connell St., Dublin: E(X) 315,878 N(Y) 234,619

6 *Local Authority where proposed development is located:

G a l w a y C i t y C o u n c i l

7 *Has full planning permission been granted?

Yes ☐

No ☒

If 'Yes', please provide the current or previous planning reference number:

No ☒[illegible]

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9 *Please outline the domestic and/or industry/business use proposed:

Property type	Number of units	Property type	Number of units
House		Apartments	
Duplex		Number of Apartment Blocks	

Property type	Number of units	Property type	Number of units
Agricultural		Brewery / Distillery	
Restaurant / Café / Pub		Car Wash / Valeting	
Creche		Data Centre	
Fire Hydrant		Fire Station	
Food Processing		Hotel Accommodation	
Industrial / Manufacturing		Laundry / Laundrette	
Office		Primary Care Centre	
Residential / Nursing Care Home		Retail	
School		Sports Facility	
Student Accommodation		Warehouse	

Other (please specify type)	University office/ lecture building	No. of Units	1
-----------------------------	-------------------------------------	--------------	---

[illegible]

- 9.2** Please provide the maximum expected occupancy in number of people, according to the proposed development you selected, e.g. Number of office workers, number of nursing home residents, maximum pub occupancy, number of hotel beds, number of retail workers:

3	8	1			
---	---	---	--	--	--

- 10 *Approximate start date of proposed development:

0 2 / 1 1 / 2 0 2 6

- 11 *Is the development multi-phased?**

Yes ☐ No ☒

If 'Yes', application must include a master-plan identifying the development phases and the current phase number.

If 'Yes', please provide details of variations in water demand volumes and wastewater discharge loads due to phasing requirements.

- 12 *Please indicate the type of connection required by ticking the appropriate box below:**

Both Water and Wastewater ☒ Please complete both Sections D and E

☒

Please complete both Sections D and E

Water only	Please go to Section D
-------------------	------------------------

7

Please go to Section D

Wastewater only	Please go to Section E
------------------------	------------------------

9

Please go to Section E

Reason for only applying for one service (if applicable):

[illegible]

Section D | Water connection and demand details

13 *Is there an existing connection to public water mains at the site?

Yes ☒

No ☐

13.1 If yes, is this enquiry for an additional connection to one already installed?

Yes ☐

No ☒

13.2 If yes, is this enquiry to increase the size of an existing connection?

Yes ☒

No ☐

14 Approximate date water connection is required:

/ /

15 *What diameter of water connection is required to service the development?

mm

16 *Is more than one connection required to the public infrastructure to service this development?

Yes ☐

No ☒

If 'Yes', how many?

17 Please indicate the business water demand (shops, offices, schools, hotels, restaurants, etc.):

Post-development peak hour water demand	1.4	l/s
Post-development average hour water demand	0.28	l/s

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

18 Please indicate the industrial water demand (industry-specific water requirements):

Post-development peak hour water demand		l/s
Post-development average hour water demand		l/s

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

19 What is the existing ground level at the property boundary at connection point (if known) above Malin Head Ordnance Datum?

m

20 What is the highest finished floor level of the proposed development above Malin Head Ordnance Datum?

m

21 Is on-site water storage being provided?

Yes ☒

No ☐

Please include calculations on the attached sheet provided.

22 Are there fire flow requirements?

Yes ☐No ☒

Additional fire flow requirements over and above those identified in Q17-18	REC	I/s
---	-----	-----

Please include calculations on the attached sheet provided, and include confirmation of requirements from the Fire Authority.

23 Do you propose to supplement your potable water supply from other sources?

Yes ☐No ☒

If 'Yes', please indicate how you propose to supplement your potable water supply from other sources (see **Guide to completing the application form** on page 15 of this document for further details):

[illegible]

Section E | Wastewater connection and discharge details

24 *Is there an existing connection to a public sewer at the site?

Yes ☒

No ☐

24.1 If yes, is this enquiry for an additional connection to the one already installed?

Yes ☐No ☒

24.2 If yes, is this enquiry to increase the size of an existing connection?

Yes ☒

No ☐

25 ***Approximate date that wastewater connection is required:**

$$\boxed{2} \boxed{5} / \boxed{1} \boxed{0} / \boxed{2} \boxed{0} \boxed{2} \boxed{7}$$

26 ***What diameter of wastewater connection is required to service the development?**

1	5	0	mm
---	---	---	----

27 ***Is more than one connection required to the public infrastructure to service this development?**

Yes ☐

No ☒

If 'Yes', how many?

--	--

28 Please indicate the commercial wastewater hydraulic load (shops, offices, schools, hotels, restaurants, etc.):

Post-development peak discharge	1.1	l/s
Post-development average discharge	0.24	l/s

Please include calculations on the attached sheet provided.

29 Please indicate the industrial wastewater hydraulic load (industry-specific discharge requirements):

Post-development peak discharge		l/s
Post-development average discharge		l/s

Please include calculations on the attached sheet provided.

30 Wastewater organic load:

Characteristic	Max concentration (mg/l)	Average concentration (mg/l)	Maximum daily load (kg/day)
Biochemical oxygen demand (BOD)			
Chemical oxygen demand (COD)			
Suspended solids (SS)			
Total nitrogen (N)			
Total phosphorus (P)			
Other			

Temperature range	
pH range	

31 *Storm water run-off will only be accepted from brownfield sites that already have a storm/surface water connection to a combined sewer. In the case of such brownfield sites, please indicate if the development intends discharging surface water to the combined wastewater collection system:

Yes ☐ No ☒

If 'Yes', please give reason for discharge and comment on adequacy of SUDS/attenuation measures proposed.

[illegible]

Please submit detailed calculations on discharge volumes, peak flows and attenuation volumes with this application

32 *Do you propose to pump the wastewater? Yes ☐ No ☒

If 'Yes', please include justification for your pumped solution with this application.

33 What is the existing ground level at the property boundary at connection point (if known) above Malin Head Ordnance Datum?

--	--	--	--	--	--

6	.	6	0	
---	---	---	---	--

 m

34 What is the lowest finished floor level on site above Malin Head Ordnance Datum?

6	.	8	0	
---	---	---	---	--

 m

6	.	8	0	
---	---	---	---	--

 m

35 What is the proposed invert level of the pipe exiting the property to the public road?

4	.	3	5	
---	---	---	---	--

m

Section F | Supporting documentation

Please provide the following additional information (all mandatory):

- > Site location map: A site location map to a scale of 1:1000, which clearly identifies the land or structure to which the enquiry relates. The map shall include the following details:
 - i. The scale shall be clearly indicated on the map.
 - ii. The boundaries shall be delineated in red.
 - iii. The site co-ordinates shall be marked on the site location map.
- > Details of planning and development exemptions (if applicable).
- > Calculations (calculation sheets provided below).
- > Site layout map to a scale of 1:500 showing layout of proposed development, water network and wastewater network layouts, additional water/wastewater infrastructure if proposed, connection points to Uisce Éireann infrastructure.
- > Conceptual design of the connection asset from the proposed development to the existing Uisce Éireann infrastructure, including service conflicts, gradients, pipe sizes and invert levels.
- > Any other information that might help Uisce Éireann assess this pre-connection enquiry.



Section G | Declaration

I/We hereby make this application to Uisce Éireann for a water and/or wastewater connection as detailed on this form.

I/We understand that any alterations made to this application must be declared to Uisce Éireann.

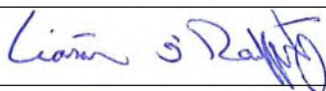
The details that I/we have given with this application are accurate.

I/We have enclosed all the necessary supporting documentation.

Any personal data you provide will be stored and processed by Uisce Éireann and may be transferred to third parties for the purposes of the water and/or wastewater connection process. I hereby give consent to Uisce Éireann to store and process my personal data and to transfer my personal data to third parties, if required, for the purposes of the connection process.

If you wish to revoke consent at any time or wish to see Uisce Éireann's full Data Protection Notice, please see <https://www.water.ie/privacy-notice/>

Signature:



Date:

06 / 11 / 2025

Your full name (in BLOCK CAPITALS):

C I A R A N O ' R A F F E R T Y

Uisce Éireann will carry out a formal assessment based on the information provided on this form. Any future connection offer made by Uisce Éireann will be based on the information that has been provided here.

Please submit the completed form to **newconnections@water.ie** or alternatively, post to:

Uisce Éireann
PO Box 860
South City Delivery Office
Cork City

Please note that if you are sending us your application form and any associated documentation by email, the maximum file size that we can receive in any one email is 35MB.

Please note, if mandatory fields are not completed the application will be returned.

Uisce Éireann is subject to the provisions of the Freedom of Information Act 2014 ("FOIA") and the codes of practice issued under FOIA as may be amended, updated or replaced from time to time. The FOIA enables members of the public to obtain access to records held by public bodies subject to certain exemptions such as where the requested records may not be released, for example to protect another individual's privacy rights or to protect commercially sensitive information. Please clearly label any document or part thereof which contains commercially sensitive information. Uisce Éireann accepts no responsibility for any loss or damage arising as a result of its processing of freedom of information requests.

Calculations

Water demand

While this is an academic building, it is largely laid out as a commercial office. Hence, water demand and foul flow for both the existing usage and proposed usage will be calculated on the basis of commercial office occupancy.

Existing Water Demand

Existing Gross Floor Area = 2714m²

Occupancy = 1 person per 10m²

Occupancy = 272 persons

Water Demand = 50l/p/day

Existing Average Water Demand = $50 \times 272 \times 1.25 / 24 / 60 / 60 = 0.2 \text{ l/s}$

Existing Peak Water Demand = $0.2 \times 5 = 1.0 \text{ l/s}$

Proposed Water Demand

Proposed Gross Floor Area = 3810m²

Occupancy = 1 person per 10m²

Occupancy = 381 persons

Water Demand = 50l/p/day

Proposed Average Water Demand = $50 \times 381 \times 1.25 / 24 / 60 / 60 = 0.28 \text{ l/s}$

Proposed Peak Water Demand = $0.28 \times 5 = 1.4 \text{ l/s}$

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Calculations

Water demand

RECEIVED: 01/05/2026

24 hour storage break tank to MEP consultants details

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Fire flow requirements

While this is an academic building, it is largely laid out as a commercial office. Hence, water demand and foul flow for both the existing usage and proposed usage will be calculated on the basis of commercial office occupancy.

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Existing Wastewater Flow

Existing Gross Floor Area = 2714m²

Occupancy = 1 person per 10m²

Occupancy = 272 persons

Wastewater Flow = 50l/p/day

Existing Average Wastewater Flow = $50 \times 272 \times 1.1 / 24 / 60 / 60 = 0.17$ l/s

Existing Peak Wastewater Flow = $0.17 \times 4.5 = 0.77$ l/s

Proposed Wastewater Flow

Proposed Gross Floor Area = 3810m²

Occupancy = 1 person per 10m²

Occupancy = 381 persons

Wastewater Flow = 50l/p/day

Proposed Average Water Demand = $50 \times 381 \times 1.1 / 24 / 60 / 60 = 0.24$ l/s

Proposed Peak Water Demand = $0.24 \times 4.5 = 1.1$ l/s

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Guide to completing the pre-connection enquiry form

This form should be completed by applicants enquiring about the feasibility of a water and/or wastewater connection to Uisce Éireann infrastructure.

The Uisce Éireann Codes of Practice are available at www.water.ie for reference.

Section A | Applicant Details

- Question 1:** This question requires the applicant or company enquiring about the feasibility of a connection to identify themselves, their postal address, and to provide their contact details.
- Question 2:** If the applicant has employed a consulting engineer or an agent to manage the enquiry on their behalf, the agent's address and contact details should be recorded here.
- Question 3:** Please indicate whether it is the applicant or the agent who should receive future correspondence in relation to the enquiry.

Section B | Site details

- Question 4:** This is the address of the site requiring the water/wastewater service connection and for which this enquiry is being made.
- Question 5:** Please provide the Irish Grid co-ordinates of the proposed site. Irish grid positions on maps are expressed in two dimensions as Eastings (E or X) and Northings (N or Y) relative to an origin. You will find these coordinates on your Ordnance Survey map which is required to be submitted with an application.
- Question 6:** Please identify the Local Authority that is or will be dealing with your planning application, for example Cork City Council.
- Question 7:** Please indicate if planning permission has been granted for this application, and if so, please provide the planning permission reference number.
- Question 8:** Please indicate if this development is affiliated with a government body/agency, and if so, specify

Section C | Development details

- Question 9:** Please specify the number of different property/premises types by filling in the tables provided.
- Question 9.1:** Please provide additional details if your proposed business use are in the Food Processing, Industrial unit/ Manufacturing, Sports Facility or Other Categories.
- Question 9.2:** Please indicate the maximum expected occupancy in numbers of people according to the proposed development you selected.
- Question 10:** Please indicate the approximate commencement date of works on the development.
- Question 11:** Please indicate if a phased building approach is to be adopted when developing the site. If so, please provide details of the phase master-plan and the proposed variation in water demand/wastewater discharge as a result of the phasing of the development.
- Question 12:** Please indicate the type of connection required by ticking the appropriate box and proceed to complete the appropriate section or sections.

Section D | Water connection and demand details

- Question 13:** Please indicate if a water connection already exists for this site.
- Question 13.1:** Please indicate if this enquiry concerns an additional connection to one already installed on the site.
- Question 13.2:** Please indicate if you are proposing to upgrade the water connection to facilitate an increase in water demand. Uisce Éireann will determine what impact this will have on our infrastructure.
- Question 14:** Please indicate the approximate date that the proposed connection to the water infrastructure will be required.
- Question 15:** Please indicate what diameter of water connection is required to service this development.

- Question 16:** Please indicate if more than one connection is required to service this development. Please note that the connection size provided may be used to determine the connection charge.
- Question 17:** If this connection enquiry concerns a business premises, please provide calculations for the water demand and include your calculations on the calculation sheet provided. Business premises include shops, offices, hotels, schools, etc. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). For design purposes, please refer to the Uisce Éireann Codes of Practice for Water Infrastructure.
- Question 18:** If this connection enquiry is for an industrial premises, please calculate the water demand and include your calculations on the calculation sheet provided. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak demand for sizing of the pipe network will be as per the specific business production requirements. For design purposes, please refer to the Uisce Éireann Codes of Practice for Water Infrastructure.
- Question 19:** Please specify the ground level at the location where connection to the public water mains will be made. This is required in order to determine if there is sufficient pressure in the existing water infrastructure to serve your proposed development. Levels should be quoted in metres relative to Malin Head Ordnance Datum.
- Question 20:** Please specify the highest finished floor level on site. This is required in order to determine if there is sufficient pressure in the existing water infrastructure to serve your proposed development. Levels should be quoted in metres relative to Malin Head Ordnance Datum.
- Question 21:** If storage is required, water storage capacity of 24-hour water demand must usually be provided at the proposed site. In some cases, 24-hour storage capacity may not be required, for example 24-hour storage for a domestic house would be provided in an attic storage tank. Please calculate the 24-hour water storage requirements and include your calculations on the attached sheet provided. Please also confirm that on-site storage is being provided by ticking the appropriate box.
- Question 22:** The water supply system shall be designed and constructed to reliably convey the water flows that are required of the development including fire flow requirements by the Fire Authority. The Fire Authority will provide the requirement for fire flow rates that the water supply system will have to carry. Please note that while flows in excess of your required demand may be achieved in the Uisce Éireann network and could be utilised in the event of a fire, Uisce Éireann cannot guarantee a flow rate to meet your fire flow requirement. To guarantee a flow to meet the Fire Authority requirements, you should provide adequate fire storage capacity within your development. Please include your calculations on the attached sheet provided, and further provide confirmation of the Fire Authority requirements.
- Question 23:** Please identify proposed additional water supply sources, that is, do you intend to connect to the public water mains or the public mains and supplement from other sources? If supplementing public water supply with a supply from another source, please provide details as to how the potable water supply is to be protected from cross contamination at the premises.

Section E | Wastewater connection and discharge details

- Question 24:** Please indicate if a wastewater connection to a public sewer already exists for this site.
- Question 24.1:** Please indicate if this enquiry relates to an additional wastewater connection to one already installed.
- Question 24.2:** Please indicate if you are proposing to upgrade the wastewater connection to facilitate an increased discharge. Uisce Éireann will determine what impact this will have on our infrastructure.
- Question 25:** Please specify the approximate date that the proposed connection to the wastewater infrastructure will be required.
- Question 26:** Please indicate what diameter of wastewater connection is required to service this development.
- Question 27:** Please indicate if more than one connection is required to service this development. Please indicate number required.
- Question 28:** If this enquiry relates to a business premises, please provide calculations for the wastewater discharge and include your calculations on the attached sheet provided. Business premises include shops, offices, hotels, schools, etc. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). For design purposes, please refer to the Uisce Éireann Codes of Practice for Wastewater Infrastructure.

- Question 29:** If this enquiry relates to an industrial premises, please provide calculations for the wastewater discharge and include your calculations on the calculation sheet provided. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak discharge for sizing of the pipe network will be as per the specific business production requirements. For design purposes, please refer to the Uisce Éireann Codes of Practice for Wastewater Infrastructure.
- Question 30:** Please specify the maximum and average concentrations and the maximum daily load of each of the wastewater characteristics listed in the wastewater organic load table (if not domestic effluent), and also specify if any other significant concentrations are expected in the effluent. Please complete the table and provide additional supporting documentation if relevant. Note that the concentration shall be in mg/l and the load shall be in kg/day. Note that for business premises (shops, offices, schools, hotels, etc.) for which only domestic effluent will be discharged (excluding discharge from canteens/restaurants which would require a Trade Effluent Discharge licence), there is no need to complete this question.
- Question 31:** In exceptional circumstances, such as brownfield sites, where the only practical outlet for storm/surface water is to a combined sewer, Uisce Éireann will consider permitting a restricted attenuated flow to the combined sewer. Storm/surface water will only be accepted from brownfield sites that already have a storm/surface water connection to a combined sewer and the applicant must demonstrate how the storm/surface water flow from the proposed site is minimised using sustainable urban drainage system (SUDS). This type of connection will only be considered on a case by case basis. Please advise if the proposed development intends discharging surface water to the combined wastewater collection system.
- Question 32:** Please specify if the development needs to pump its wastewater discharge to gain access to Uisce Éireann infrastructure.
- Question 33:** Please specify the ground level at the location where connection to the public sewer will be made. This is required to determine if the development can be connected to the public sewer via gravity discharge. Levels should be quoted in metres relative to Malin Head Ordnance Datum.
- Question 34:** Please specify the lowest floor level of the proposed development. This is required in order to determine if the development can be connected to the public sewer via gravity discharge. Levels should be quoted in metres relative to Malin Head Ordnance Datum.
- Question 35:** Please specify the proposed invert level of the pipe exiting the property to the public road.

Section F | Supporting documentation

Please provide additional information as listed.

Section G | Declaration

Please review the declaration, sign, and return the completed application form to Uisce Éireann by email or by post using the contact details provided in Section G.

THIS PROPOSED DEVELOPMENT IS THE REFURBISHMENT OF THE EXISTING MCLAUGHLIN BUILDING ON NUN'S ISLAND CO. GALWAY. THE PROPOSED DEVELOPMENT INCLUDES AN INCREASE IN FLOOR AREA OF THE FOURTH FLOOR ONLY BY APPROXIMATELY 50%. THE REMAINDER OF THE BUILDING WILL REMAIN LARGELY THE SAME WITH SOME REARRANGING OF OFFICES/CLASSROOMS ETC.

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APPENDIX III

UISCE ÉIREANN CONFIRMATION OF FEASIBILITY

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CONFIRMATION OF FEASIBILITY

Ciaran O'Rafferty

Barrett Mahony
Sandwith House
52-54 Lower Sandwith Street
Dublin
D02WR26

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Uisce Éireann
PO Box 448
South City
Delivery Office
Cork City

www.water.ie

3 December 2025

Our Ref: CDS25008453 Pre-Connection Enquiry
Site at, McLaughlin Building, Nun's Island, Galway

Dear Applicant/Agent,

We have completed the review of the Pre-Connection Enquiry.

Uisce Éireann has reviewed the pre-connection enquiry in relation to a Water & Wastewater connection for a Business Connection of 1 unit(s) at Site at, McLaughlin Building, Nun's Island, Galway, (the **Development**).

Based upon the details provided we can advise the following regarding connecting to the networks;

- **Water Connection** - Feasible without infrastructure upgrade by Uisce Éireann
- **Wastewater Connection** - Feasible without infrastructure upgrade by Uisce Éireann

This letter does not constitute an offer, in whole or in part, to provide a connection to any Uisce Éireann infrastructure. Before the Development can be connected to our network(s) you must submit a connection application and be granted and sign a connection agreement with Uisce Éireann.

As the network capacity changes constantly, this review is only valid at the time of its completion. As soon as planning permission has been granted for the Development, a completed connection application should be submitted. The connection application is available at www.water.ie/connections/get-connected/

Stiúthóirí / Directors: Niall Gleeson (POF / CEO), Jerry Grant (Cathaoirleach / Chairperson), Gerard Britchfield, Liz Joyce, Michael Nolan, Patricia King, Eileen Maher, Cathy Mannion, Paul Reid, Michael Walsh.

Oifig Chláraithe / Registered Office: Teach Colvill, 24-26 Sráid Thalbóid, Baile Átha Cliath 1, D01 NP86 / Colvill House, 24-26 Talbot Street, Dublin, Ireland D01NP86

Is cuideachta ghníomhaíochta ainmnithe atá faoi theorainn scaireanna é Uisce Éireann / Uisce Éireann is a designated activity company, limited by shares.

Cláraithe in Éirinn Uimh.: 530363 / Registered in Ireland No.: 530363.

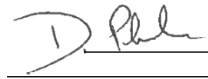
Where can you find more information?

- **Section A** - What is important to know?

This letter is issued to provide information about the current feasibility of the proposed connection(s) to Uisce Éireann's network(s). This is not a connection offer and capacity in Uisce Éireann's network(s) may only be secured by entering into a connection agreement with Uisce Éireann.

For any further information, visit www.water.ie/connections, email newconnections@water.ie or contact 1800 278 278.

Yours sincerely,



Dermot Phelan
Connections Delivery Manager

RECEIVED 01/05/2026

Section A - What is important to know?

What is important to know?	Why is this important?
Do you need a contract to connect?	• Yes, a contract is required to connect. This letter does not constitute a contract or an offer in whole or in part to provide a connection to Uisce Éireann's network(s). • Before the Development can connect to Uisce Éireann's network(s), you must submit a connection application <u>and be granted and sign</u> a connection agreement with Uisce Éireann.
When should I submit a Connection Application?	• A connection application should only be submitted after planning permission has been granted.
Where can I find information on connection charges?	• Uisce Éireann connection charges can be found at: https://www.water.ie/connections/information/charges/
Who will carry out the connection work?	• All works to Uisce Éireann's network(s), including works in the public space, must be carried out by Uisce Éireann*. *Where a Developer has been granted specific permission and has been issued a connection offer for Self-Lay in the Public Road/Area, they may complete the relevant connection works
Fire flow Requirements	• The Confirmation of Feasibility does not extend to fire flow requirements for the Development. Fire flow requirements are a matter for the Developer to determine. • What to do? - Contact the relevant Local Fire Authority
Plan for disposal of storm water	• The Confirmation of Feasibility does not extend to the management or disposal of storm water or ground waters. • What to do? - Contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges.
Where do I find details of Uisce Éireann's network(s)?	• Requests for maps showing Uisce Éireann's network(s) can be submitted to: datarequests@water.ie

What are the design requirements for the connection(s)?	The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this Development shall comply with <i>the Uisce Éireann Connections and Developer Services Standard Details and Codes of Practice</i>, available at www.water.ie/connections
Trade Effluent Licensing	- Any person discharging trade effluent** to a sewer, must have a Trade Effluent Licence issued pursuant to section 16 of the Local Government (Water Pollution) Act, 1977 (as amended). - More information and an application form for a Trade Effluent License can be found at the following link: https://www.water.ie/business/trade-effluent/about/ **trade effluent is defined in the Local Government (Water Pollution) Act, 1977 (as amended)

APPENDIX IV

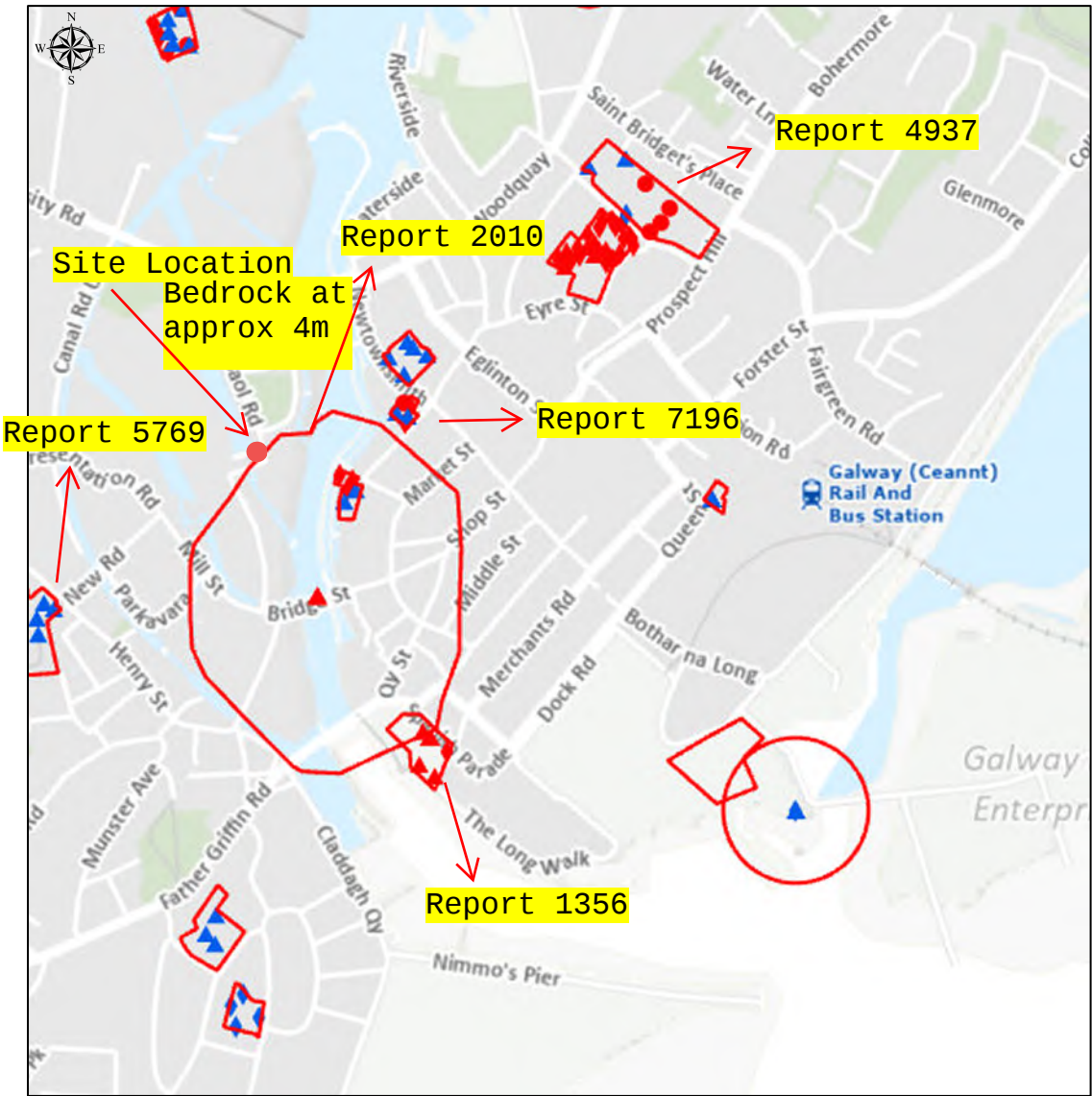
SI RECORDS

RECEIVED: 01/05/2026

Legend

- Geotechnical Site Investigations
- ▲ 0-5m Bedrock Met
- ◆ 5-10m Bedrock Met
- 10-20m Bedrock Met
- ★ 20-30m Bedrock Met
- 30-1000m Bedrock Met
- ▲ 0-5m Bedrock Not Met
- ◆ 5-10m Bedrock Not Met
- 10-20m Bedrock Not Met
- ★ 20-30m Bedrock Not Met
- 30-1000m Bedrock Not Met

RECEIVED: 01/05/2026



Record 2010

RECEIVED: 01/05/2026

THE CEMENTATION CO. (IRELAND) LTD.

SOIL INVESTIGATION BORING RECORD

CONTRACT Galway Waterworks.

BOREHOLE No. 3.

Report No.

Order No.

Bored for Galway Corporation.

Site Address Galway.

Boring Commenced 7.3.71.

Boring Completed 7.3.71.

Type of Boring Percussive

Diameter of Borehole 15. ins.

Ground level O.D.

Water Struck (1) Nil (2) (3)

Standing Water Level -

Remarks All levels are related to ground level.

Description of Strata	Depth		Thickness	Samples		
	From	To		Ref No.	Type	Depth
Filling of clay, gravel cobbles etc.	0	6'0"	6'0"	19886	J	3'0"
Sandy gravel with cobbles	6'0"	9'0"	3'0"	19887	D	6'6"
Fairly compact medium to coarse gravel with cobbles, boulders & traces of clay.	9'0"	14'0"	5'0"	19888	D	11'6"
Presumed rock (chiselling 2 hrs.)	14'0"	14'6"	6"	19889	D	14'0"
Final level.	14'6"					
Presumed rock.						
<u>Standard Penetration Tests.</u>						
At 3'6" 3 blows to 12"						
" 7'0" 73 " " 12"						
" 12'0" 60 " " 7" Refusal.						

Code: U — Undisturbed Sample D — Large Disturbed Sample J — Jar Sample W — Water Sample

Checked by:

Date:

Driller's Signature:

Date:

This form to be returned to Head Office immediately the borehole is completed.

THE CEMENTATION COMPANY (IRELAND) LTD.

9 MOUNT STREET CRESCENT DUBLIN 2

SOIL INVESTIGATION DEPARTMENT

78217

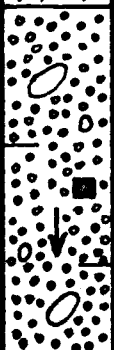
CONTRACT Waterworks.

LOG OF BOREHOLE No. 3

LOCATION Galway.

DATE 7/3/71

SHEET No. 1.

DESCRIPTION	LEVEL	LEGEND	SAMPLE	DEPTH	THICKNESS	N	REMARKS
				0			
Filling of clay, gravel, etc.			J.19886	6' 0"	6' 0"	3	
Sandy gravel with cobbles.			D.19887	6' 0"	3' 0"	73	
Gravel with cobbles, boulders & traces of clay.			D.19888	8' 0"	5' 0"	60	T Refusal.
Presumed rock.			D.19889	14' 0"	6"		
				14' 6"			

SOIL INVESTIGATION BORING RECORD

Remarks All levels are related to ground level.

Office immediately the borehole is completed.

THE CEMENTATION COMPANY (IRELAND) LTD.

9 MOUNT STREET CRESCENT DUBLIN 2

SOIL INVESTIGATION DEPARTMENT

78218

CONTRACT Waterworks

LOG OF BOREHOLE No. 4

LOCATION Galway.

DATE 8/3/71

SHEET No. 1.

DESCRIPTION	LEVEL	LEGEND	SAMPLE	DEPTH	THICKNESS	N	REMARKS
				0			
Filling of clay, gravel, etc.			J.19890		5' 6"	3	
				5' 6"			
Sandy gravel with cobbles & boulders.			D.19891			29	
					5' 6"		
			D.19892				
Boulder.				11' 0"	1' 6"	30	Refusal.
Gravel with traces of clay.				12' 6"	6"		
Presumed rock.			J.19893	13' 0"	6"		
				13' 6"			

RECEIVED: 01/05/2026

Record 5769

RECEIVED: 01/05/2026

REPORT NO. 10272		WINDOW SAMPLING RECORD				I.G.S.L.		
CONTRACT: COURT CONNAUGHT LAUNDRY				SAMPLE NO 2		SHEET: 1 OF 1		
CLIENT: Kabvanagh Mansfield		GROUND LEVEL (mOD)		DATE STARTED: 2.12.04		DATE COMPLETED: 3.12.04		
ENGINEER: ST HELEN STREET		BOREHOLE DIAMETER (mm) 100		BORED BY: MH		LOGGED BY: I.G.S.L.		
LOCATION: GALWAY		CASING DEPTH (m) 1.00						
DEPTH (m)	DESCRIPTION	LEGEND	ELEVATION (mOD)	DEPTH (m)	SAMPLES			FIELD TEST RESULTS
					REFERENCE NUMBER	SAMPLE TYPE	DEPTH RECOVERED	
0	Concrete			0.35	WS2/1	D	0.50	
-1	Dense rubble fill with brick, concrete, gravel and clay			1.00				
-2	Dense sandy GRAVEL (Possibly FILL) with fragments of grey granite			1.90	WS2/2	D	0.60	
-3	REFUSAL AT 1.90							
-4								
-5								
-6								
-7								
-8								
-9								
-10								

Hard Strata Boring / Chiselling

From (m)	To (m)	Hours	Comments

Remarks

Groundwater Observations

Date	Hole Depth	Casing Depth	Depth to Water	Comments

Standpipe Installation Details

FIELD TEST KEY: U-U100. Db-Disturbed Sample. W-Water Sample. Cs-Chemical Sample. N-CPT N-value. R-Refusal. V-Vane.

REPORT NO. 10272		WINDOW SAMPLING RECORD					I.G.S.L.	
CONTRACT: COURT CONNAUGHT LAUNDRY						SAMPLE NO 5 SHEET: 1 OF 1		
CLIENT:		GROUND LEVEL (mOD)				DATE STARTED: 2.12.04		
ENGINEER: Kabvanagh Mansfield		BOREHOLE DIAMETER (mm) 100				DATE COMPLETED: 3.12.04		
LOCATION: ST HELEN STREET		BOREHOLE DEPTH (m)				BORED BY: MH		
GALWAY		CASING DEPTH (m) 1.00				LOGGED BY: I.G.S.L.		

DEPTH (m)	DESCRIPTION	LEGEND	ELEVATION (mOD)	DEPTH (m)	SAMPLES			FIELD TEST RESULTS
					REFERENCE NUMBER	SAMPLE TYPE	DEPTH RECOVERED	
0	Concrete			0.25	WS5/1	D	0.50	
	Loose rubble fill with brick, concrete, gravel and clay			0.80				
-1	REFUSAL (presumed Rock) at 0.80							
-2								
-3								
-4								
-5								
-6								
-7								
-8								
-9								
-10								

Hard Strata Boring / Chiselling				Groundwater Observations				
From (m)	To (m)	Hours	Comments	Date	Hole Depth	Casing Depth	Depth to Water	Comments

Remarks 	Standpipe Installation Details
--	---

FIELD TEST KEY: U-U100, Db-Disturbed Sample, W-Water Sample, Cs-Chemical Sample, N-CPT N-value, R-Refusal, V-Vane.

Record 7196

RECEIVED: 01/05/2026



GEOTECHNICAL BORING RECORD

REPORT NUMBER

13311

CONTRACT Newtownsmith , Galway

BOREHOLE NO. BH3

SHEET Sheet 1 of 1

CO-ORDINATES(_)

GROUND LEVEL (m)

BOREHOLE DIAMETER (mm) 200

DATE STARTED 06/02/2008

DATE COMPLETED 06/02/2008

CLIENT Galway City Council

ENGINEER Mott MacDonald

BOREHOLE DEPTH (m) 3.60

CASING DEPTH (m) 3.60

BORED BY J.Edwards

PROCESSED BY F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples			Field Test Results	Standpipe Details
					Ref. Number	Sample Type	Depth (m)		
0	MADE GROUND (Comprised of sand,gravel and cobbles)				AD8745	B	0.50	N = 9 (1, 1, 1, 2, 3, 3)	
1					AD8746	B	1.20		
2	MADE GROUND (Comprised of brick ,stone and peaty clay)			2.10	AD8747	B	2.00		
3	Light grey very sandy very gravelly SILT/CLAY with occasional cobbles			3.00	AD8748	B	3.00	N = 25/75 mm (25, 25)	
4	End of Borehole at 3.60 m			3.60					
5									
6									
7									
8									
9									

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
3.1	3.2	0.75	
3.4	3.6	2	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
3.00	3.00	No	2.50	20	Moderate

GROUNDWATER DETAILS

INSTALLATION DETAILS					Date	Hole Depth	Casing Depth	Depth to Water	Comments
Date	Tip Depth	RZ Top	RZ Base	Type					

REMARKS Hand dug pit for services

Sample Legend

D - Small Disturbed (tub)

B - Bulk Disturbed

LB - Large Bulk Disturbed

Env - Environmental Sample (Jar + Vial + Tub)

U - Undisturbed 100mm Diameter

Sample

P - Undisturbed Piston Sample



GEOTECHNICAL BORING RECORD

REPORT NUMBER

13311

CONTRACT Newtownsmith , Galway

BOREHOLE NO. BH4

SHEET Sheet 1 of 1

CO-ORDINATES(_)

GROUND LEVEL (m)

BOREHOLE DIAMETER (mm) 200

DATE STARTED 05/02/2008

DATE COMPLETED 05/02/2008

CLIENT Galway City Council

BOREHOLE DEPTH (m) 3.80

BORED BY J. Edwards

ENGINEER Mott MacDonald

CASING DEPTH (m) 3.80

PROCESSED BY F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples			Field Test Results	Standpipe Details
					Ref. Number	Sample Type	Depth (m)		
0	Tarmac			0.10	AD8736	B	0.50		
	MADE GROUND (Comprised of sand and gravel)								
1									
	MADE GROUND (Comprised of black sandy gravelly clay with cobbles and bricks)			1.10	AD8737	B	1.20	N = 10 (1, 2, 2, 2, 3, 3)	
2									
					AD8738	B	2.00	N = 10 (1, 2, 3, 3, 2, 2)	
3									
	Stiff grey sandy gravelly SILT/CLAY with large cobbles			3.00	AD8739	B	3.00	N = 24 (2, 4, 4, 5, 6, 9)	
4									
	End of Borehole at 3.80 m			3.80				N = 25/75 mm (25, 25)	
5									
6									
7									
8									
9									

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
3.2	3.3	1	
3.5	3.8	2	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

GROUNDWATER DETAILS

INSTALLATION DETAILS					Date	Hole Depth	Casing Depth	Depth to Water	Comments
Date	Tip Depth	RZ Top	RZ Base	Type					

REMARKS Hand dug pit for services

Sample Legend

D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)

U - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample



GEOTECHNICAL BORING RECORD

REPORT NUMBER

13311

CONTRACT Newtownsmith, Galway

BOREHOLE NO. BH5

SHEET Sheet 1 of 1

CO-ORDINATES(_)

GROUND LEVEL (m)

BOREHOLE DIAMETER (mm) 200

DATE STARTED 05/02/2008

DATE COMPLETED 05/02/2008

CLIENT Galway City Council

BOREHOLE DEPTH (m) 3.40

BORED BY J. Edwards

ENGINEER Mott MacDonald

CASING DEPTH (m) 3.40

PROCESSED BY F.C.

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples			Field Test Results	Standpipe Details
					Ref. Number	Sample Type	Depth (m)		
0	Tarmac			0.20					
	MADE GROUND (Comprised of sand and rubble)			0.50	AD8741	B	0.50		
	MADE GROUND (Comprised of large boulders and stone blocks)			0.80					
1	MADE GROUND (Comprised of gravelly silt and rubble)				AD8742	B	1.20	N = 15/225 mm (25, 3, 3, 3, 9)	
2					AD8743	B	2.00	N = 26 (3, 5, 6, 6, 7, 7)	
	Stiff grey sandy gravelly CLAY/SILT with occasional cobbles			2.30					
3					AD8744	B	3.00	N = 50/75 mm (25, 50)	
	End of Borehole at 3.40 m			3.40					
4									
5									
6									
7									
8									
9									

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
2.9	3	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

GROUNDWATER DETAILS

INSTALLATION DETAILS					Date	Hole Depth	Casing Depth	Depth to Water	Comments
Date	Tip Depth	RZ Top	RZ Base	Type					

REMARKS Hand dug pit for services

Sample Legend

D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)U - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample

Record 4937

RECEIVED: 01/05/2026

REPORT NO. 8071

GEOTECHNICAL BORING RECORD

IGSL

CONTRACT: Galway Co. Council Offices

BOREHOLE NO: BH6

CLIENT: Galway County Council

Sheet 1 of 1

ENGINEER: Arup

GROUND LEVEL (mOD) 0.00

DATE STARTED: 29/06/2002

BOREHOLE DIAMETER (mm) 200

DATE COMPLETED: 29/06/2002

CO-ORDINATES: E 0.00
N 0.00

BOREHOLE DEPTH (m) 4.40

BORED BY: T McCarthy

CASING DEPTH (m) 4.40

DEPTH (M)	DESCRIPTION	LEGEND	ELEVATION (mOD)	DEPTH (m)	SAMPLES			FIELD TEST RESULTS	STAND PIPE DETAILS
					REF. NUMBER	SAMPLE TYPE	DEPTH (m)		
	MADE GROUND (containing hardcore and rubble)				5373	DB	0.00-1.00		
1	MADE GROUND (containing gravelly clay with some damp patches and organics)			0.60	5374	DB	1.00-1.45	18/300mm	
2	Firm-stiff light brown sandy gravelly CLAY with cobbles and occasional boulders			1.80	5375	DB	2.00-2.45	17/300mm	
3					5376	DB	3.00-3.45	21/300mm	
4				4.20	5377	DB	4.00-4.40	84/225mm	
	Broken cobbles and boulders with some CLAY smearing			4.40					
	End of Borehole at 4.40 m								
5									
6									
7									
8									
9									

Hard Strata Boring / Chiselling

From (m)	To (m)	Hours	Comments
3.60	3.80	0.45	
4.20	4.40	2.00	

Water Strike Details

Water Strike	Casing Depth	Sealed at	Rise to	Time	Comments
4.40	4.40	0.00	4.35	20	Very Slow

Standpipe Installation Details

Date	Tip Depth	RZ Top	RZ Base	Type

Groundwater Observations

Date	Hole Depth	Casing Depth	Depth to Water	Comments
29/06/2002	4.40	4.40	4.35	End of Borehole

Remarks:

REPORT NO. 8071

GEOTECHNICAL BORING RECORD

IGSL

CONTRACT: Galway Co. Council Offices

BOREHOLE NO: BH8

CLIENT: Galway County Council

Sheet 1 of 1

ENGINEER: Anup

GROUND LEVEL (mOD) 0.00

DATE STARTED: 29/06/2002

BOREHOLE DIAMETER (mm) 200

DATE COMPLETED: 30/06/2002

CO-ORDINATES: E 0.00
N 0.00BOREHOLE DEPTH (m) 2.60
CASING DEPTH (m) 2.50

BORED BY: T McCarthy

DEPTH (M)	DESCRIPTION	LEGEND	ELEVATION (mOD)	DEPTH (m)	SAMPLES			FIELD TEST RESULTS	STAND PIPE DETAILS
					REF. NUMBER	SAMPLE TYPE	DEPTH (m)		
	MADE GROUND (containing hardcore)				5378	DB	0.00-1.00		
1	MADE GROUND (containing brown + black sandy CLAY with some gravel + fragments of red brick)			0.50	5379	DB	1.00-1.45	18/300mm	
	Soft/firm grey/brown sandy gravelly CLAY with cobbles			1.40					
2	Stiff brown CLAY with angular cobbles and boulders			2.30	5380	DB	2.00-2.45	81/300mm	
	End of Borehole at 2.60 m			2.60					
3									
4									
5									
6									
7									
8									
9									

Hard Strata Boring / Chiselling

From (m)	To (m)	Hours	Comments
2.40	2.60	2.00	

Water Strike Details

Water Strike	Casing Depth	Sealed at	Rise to	Time	Comments

Standpipe Installation Details

Date	Tip Depth	RZ Top	RZ Base	Type

Groundwater Observations

Date	Hole Depth	Casing Depth	Depth to Water	Comments
30/06/2002	2.60	2.50	0.00	Borehole Dry

Remarks:

RECEIVED: 01/05/2026

Barrett Mahony Consulting Engineers

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