TOBIN

Leitrim County Council

Dromahair Flood Relief Scheme

Natura Impact Statement

Leitrim County Council
Comhairle Chontae Liatroma

BUILT ON KNOWLEDGE

Document Control Sheet	
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Client:	Leitrim County Council
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A01	Issue to Client	SOR	08/11/2024				
A02	Addressed Client comments	SOR	17/12/2024				

Contents

Appendices

List of Figures

List of Plates

List of Tables

1. INTRODUCTION

Leitrim County Council are proposing to construct flood defence structures to local properties located along the banks of the Bonet River, in Dromahair, County Leitrim which are at risk of flooding.

A review of the Catchment Flood Risk Assessment and Management Study (CFRAM) Hydraulic Modelling and all other relevant water level data within the town of Dromahair and the surrounding catchment has been carried out by TOBIN to identify the risk of flooding to local properties at risk of flooding from the Bonet River. An engineering and environmental feasibility study for flood mitigation measures was carried out in 2023 in order to identify the best option for the alleviation of flooding within the study area. Leitrim County Council are proposing to implement flood mitigation measures along the boundaries of these properties based on the feasibility study.

The proposed development is not directly connected with, or necessary for, the management of any European site and, hence, the requirements of Article 6(3) of the Habitats Directive and Part XAB of the Planning and Development Act 2000, as amended, in respect of Appropriate Assessment (AA) are engaged. The project design has sought to, in as far as possible, avoid impacts on European sites. This report considers the final design and determines if direct, indirect, or in-combination effects could arise, or if there is uncertainty regarding potential effects.

An AA Screening Report was prepared (see Appendix A), providing information to enable the competent authority to perform its statutory function to undertake a screening for AA in respect of the proposed development. An AA is required where it cannot be objectively concluded that a project or plan, either alone or in-combination with other projects or plans, is not likely to have significant effects on a European site. The AA Screening Report concluded; *The potential impacts of the proposed development have been considered in the context of the European sites potentially affected, their qualifying interests and/or special conservation interests, and their conservation objectives. Using best scientific knowledge through an assessment of the source-pathway-receptor model, which considered the ZoI of effects from the proposed development, and the potential in-combination effects with other plans or projects, it is the considered the opinion of TOBIN that the possibility for likely significant effects on the Lough Gill SAC (001976) exists as a result of the proposed development. Therefore, a Stage 2 Appropriate Assessment is required.*

This Natura Impact statement (NIS) was therefore prepared in accordance with the provisions of the above stated legislation, providing information to enable the competent authority to perform its statutory function to undertake AA in respect of the proposed development. This NIS includes an examination and analysis of the best available scientific knowledge and data in the field to identify and assess the implications of the proposed development for any European sites in view of the conservation objectives of those sites. It considers whether there are ex-situ implications for any European sites, for example from impacts which occur via downstream pathways at a remote but connected location, or from impacts on populations of ex-situ species located outside of European sites, or from impacts on ex-situ supporting habitats. It considers whether the proposed development, by itself or in-combination with other plans or projects, would adversely affect the integrity of any European sites. In reaching a conclusion in this

regard, consideration has been given to any mitigation measures necessary to avoid or reduce any potential adverse effects.

1.1 LEGISLATIVE CONTEXT

The European Communities (EC) Habitats Directive 92/43/EEC (the Habitats Directive), and the Council Directive 2009/147/EC on the conservation of wild birds (the Birds Directive) have been transposed into Irish law by EC (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011), hereafter referred to as the Birds and Habitats Regulations. The Birds Directive seeks to protect birds of special importance by the designation of SPAs. The Habitats Directive does the same for habitats and other species groups with SACs.

The requirement for an AA is outlined in Article 6(3) and further expanded upon in Article 6(4) of the Habitats Directive. Article 6(3) of the Habitats Directive requires that:

"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."

This provision is transposed into Irish law by Part XAB of the Planning and Development Acts, 2000-2017. Section 177U (4) of the said Acts provides for screening for Appropriate Assessment as follows:

"The competent authority shall determine that an appropriate assessment of [...] a proposed development [...] is required if it cannot be excluded, on the basis of objective information, that the [...] proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site."

Section 177U (5) provides as follows:

"The competent authority shall determine that an appropriate assessment of a [...] proposed development, [...], is not required if it can be excluded, on the basis of objective information, that the [...] proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site."

Article 6(4) of the Habitats Directive requires that:

"If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted."

Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to 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.

An Appropriate Assessment should be based on best scientific knowledge and the competent authority should ensure that expertise such as ecological, geological, and hydrological are utilised, where relevant.

The Court of Justice of the European Union (CJEU) has made a number of rulings in relation to AA, regarding when it is required, its purpose, and the standards it should meet. Consideration has been given to the evolution in interpretation and application of directives and national legislation arising from jurisprudence of the European and Irish courts, in respect of Article 6 of the Habitats Directive.

1.2 Stages Involved in the Appropriate Assessment

There are potentially four stages in the AA process; the result of each stage determines the requirement for assessment under the next.

Stage 1: Screening / Test of Significance

This process identifies the likely significant effects upon a European site from a proposed project or plan. Its purpose is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project which is not directly connected with or necessary to the management of the site as a European site, individually or in-combination with other plans or projects is likely to have a significant effect upon the European site, in view of its conservation objectives. A project may be 'screened-in' if there is a possibility or uncertainty of possible effects upon the European site, requiring a Stage Two AA. If there is no evidence to suggest significant effects due to the proposed plan or development the project is 'screened-out' from further assessment.

Stage 2: Appropriate Assessment

In this stage, consideration is given to ascertain whether the plan or project would adversely affect the integrity of a European site(s), either alone or in- combination with other plans or projects, with respect to the European site's structure and function and its conservation objectives. This stage of the assessment is carried out by the consenting authority and is informed by a Natura Impact Statement (NIS). A NIS is required where there is uncertainty as to whether or not an adverse effect arises, uncertainty of the effect itself, or a potential effect has been defined which requires further procedures/mitigation to remove uncertainty of a defined impact (i.e. significant effects cannot be excluded). Where there are adverse effects, an assessment of the potential mitigation to ameliorate those effects is required. If the assessment results in a negative conclusion, i.e., adverse effects on the integrity of a site cannot be excluded (by design or mitigation) or there is uncertainty as to whether an adverse impact arises, then the process must consider alternatives (Stage 3) or proceed to Stage 4.

Stage 3: Assessment of Alternatives

This stage of the potential process arises where adverse effects on the integrity of a European site cannot be excluded and examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the European site. However, in circumstances where there will not be any adverse effects on any European site, the developer places no reliance upon this third stage of the process in the context of this application for planning permission for the proposed development.

Stage 4: Assessment Where Adverse Effects Remain

This is the derogation process of Article 6(4), which examines whether there are imperative reasons of overriding public interest [IROPI] for allowing a project to proceed where adverse effects on the integrity of a European site have been predicted. Compensatory measures must be proposed and assessed as part of this stage and the EU Commission must be informed of the compensatory measures. Again, the developer places no reliance upon this stage of the process in the context of the application for planning permission for the proposed development.

2. METHODOLOGY

2.1 LEGISLATION AND GUIDANCE

This report has been carried out using the following legislation, guidance and relevant rulings by the Court of Justice of the European Union, the High Court, and the Supreme Court:

- Planning & Development Act 2000, as amended including Part XAB;
- European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011);
- Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg (European Commission, 2000);
- Managing Natura 2000 Sites – The provisions of Article 6 of the Habitats Directive 92/43/EEC. European Commission (European Commission, 2019);
- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (European Commission, 2013);
- Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government (DoEHLG, 2010a);
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. Office for Official Publications of the European Communities, Luxembourg (European Commission, 2007);
- Assessment of Plans and Projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC. (European Commission, 2001);
- Office of the Planning Regulator, Practice Note - Appropriate Assessment Screening for Development Management (OPR, 2021);
- Applications for Approval for Local Authority Developments made to An Bord Pleanála under 177AE of the Planning and Development Act, 2000, as amended (Appropriate Assessment) – Guidelines for Local Authorities (An Bord Pleanála, 2013);
- Assessment of Plans and projects in relation to Natura 2000 sites – Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission, 2021); and
- Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg (European Commission, 2006).

Definitions of conservation status, integrity and significance used in this assessment are defined in accordance with '*Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*' (European Commission, 2019):

- Favourable conservation status (FCS) can only be defined and achieved at the level of the natural range of a species or a habitat type. A broad conservation objective aiming at achieving FCS can therefore only be considered at an appropriate level, such as for example the national, biogeographical or European level. The conservation measures have to correspond to the ecological requirements of the natural habitat types in Annex I and of the species in Annex II present on the site. The ecological requirements of those natural habitat types and species involve all the ecological needs which are deemed necessary to ensure the conservation of the habitat types and species. They can only be defined on a case-by-case basis and using scientific knowledge.
- The integrity of a European site is defined as the coherent sum of the site's ecological structure, function, and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated; and
- Significant effect should be determined in relation to the specific features and environmental conditions of the protected site concerned by the plan or project, taking particular account of the site's conservation objectives and ecological characteristics.

2.2 CONSULTATION

Preplanning consultations were undertaken with Leitrim County Council, the Development Application Unit (DAU), National Parks and Wildlife (NPWS) and Inland Fisheries Ireland (IFI).

A pre-planning consultation letter was sent to the above state authorities on the 13th of September 2024 to inform these Departments of the proposed development and to discuss potential environmental sensitivities associated with the proposed works. A response by email was received from NPWS on the 23rd of September 2024 outlining issues relevant to the project site and the potential impacts from the proposed works which NPWS stated will require mitigation measures. All issues raised by NPWS have been considered, and appropriate mitigation measures to avoid and reduce the potential impacts are outlined in the Mitigation Measures Section of this report (Section 7).

No response has been received by IFI at the time of writing this report.

2.3 DESK STUDY AND INFORMATION SOURCES

A desktop assessment of the proposed development site was undertaken in order to inform this assessment. The desktop review included the following key datasets and information sources:

- Review of the National Parks and Wildlife Service (NPWS)[1]: site synopsis, Natura 2000 data forms, datasets on Annex I habitats and Annex II species and Conservation Objectives for European sites identified through potential pathways from the proposed development;
- Review of available literature and web data. This included a detailed review of the NPWS database (NPWS, 2024) of areas designated (and proposed) for nature conservation, and National Biodiversity Data Centre (NBDC) websites and database (NBDC, 2024),

[1] Protected Sites in Ireland | National Parks & Wildlife Service. https://www.npws.ie/protected-sites. Accessed August 2024

including mapping and available reports for relevant sites and in particular qualifying interests (QI) and special conservation interests (SCI) described and their conservation objectives;

- Review of Inland Fisheries Ireland (IFI) research data. This included reviewing research studies carried out for the Habitats Directive and Red Data Book fish species (IFI 2023) within the receiving environment[2];
- Information and data on water catchments from the Draft River Basin Management Plan 2022-2027[3] and the Water Framework Directive (WFD) Ireland Database[4];
- Geological Survey Ireland (GSI) online mapping[5];
- GIS Online mapping[6];
- Environmental Protection Agency (EPA) Appropriate Assessment tool[7];
- Heritage map viewer[8];
- Leitrim County Development Plan, 2023 – 2029[9];
- Ireland's 4th National Biodiversity Action Plan, 2023–2030[10] produced by the Department of Culture, Heritage and the Gaeltacht; and
- Review of previous ecological assessments undertaken within the area.

In addition, aerial photography (Google Maps, Bing Maps) and mapping (Ordnance Survey of Ireland, Geological Survey of Ireland) were used to identify non-designated habitats such as rivers, woodlands, and hedgerows of local ecological importance and invasive non-native species (INNS).

2.4 STATEMENT OF AUTHORITY

This report was prepared by Sinead O'Reilly (M.Res.), Senior Ecologist with TOBIN Consulting Engineers. She holds an honours degree in Zoology from University College Dublin and a Research Masters in Science in Freshwater Ecology from the University of Glasgow. Ms. O' Reilly has over 15 years of professional experience in scientific research in freshwater ecology

[2] Inland Fisheries Ireland https://www.fisheriesireland.ie/sites/default/files/2023-08/habitats-directive-and-red-data-book-species-summary-report-2022.pdf Accessed August 2024
[3] Draft River Basin Management Plan 2022-2027 https://www.gov.ie/en/policy-information/8da54-river-basin-management-plan-2022-2027/ Accessed August 2024
[4]Water Framework Directive (WFD) Ireland Database https://data.epa.ie/api-list/wfd-open-data/#:~:text=This%20is%20the%20Water%20Framework,Application%20and%20GIS%20Vector%20database Accessed August 2024
[5] Geological Survey Ireland (GSI) https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx. Accessed August 2024
[6]Geological Survey Ireland Spatial Resources https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228. Accessed August 2024
[7]Environmental Protection Agency (EPA) Appropriate Assessment tool https://epawebapp.epa.ie/terminalfour/AppropAssess/index.jsp. Accessed August 2024
[8] Heritage map viewer https://heritagemaps.ie/ Accessed August 2024
[9] Leitrim County Development Plan https://www.leitrim.ie/council/services/planning-building/forward-planning-development/leitrim-county-development-plan-2023-2029/ Accessed August 2024
[10] Ireland's 4th National Biodiversity Action Plan, 2023–2030https://www.gov.ie/en/publication/93973-irelands-4th-national-biodiversity-action-plan-20232030/ Accessed August 2024

and environmental consultancy specialising in fisheries. Ms. O' Reilly has prepared and delivered annual fisheries research and technical reports, fisheries research papers, Appropriate Assessment (AA) screenings, Natura Impact Statements (NIS), invasive species reports, mammal survey reports and other ecological reports. Ms. O' Reilly has a strong technical background as a freshwater ecologist and has extensive field survey experience in all freshwater and terrestrial habitats across Ireland.

This report was senior reviewed by Áine Sands B.E. B.Sc. (Hons), Senior Ecologist with eight years' post graduate experience in ecology and environmental consultancy. Áine has predominantly been involved in large renewable energy projects, such as wind, solar and hydrogen developments, where she has acted as Lead Ecologist. Áine has extensive experience in preparing and reviewing ecological reports such as Screenings for Appropriate Assessments, Natura Impact Statements and Ecological Impact Assessments. Áine also has a strong understanding of National and European legislation associated with biodiversity and is cognisant of relevant rulings by the Court of Justice of the European Union (CJEU). Áine also has experience with undertaking ecological surveys for protected habitats and species.

2.5 Study Area

The proposed development site occurs across three different locations, totally 8,000m^2 in size. The study area includes lands within the proposed development site, plus the immediate surrounding area. The extent of the surrounding area was defined by establishing the Zone of Influence (ZoI). Further details on the ZoI of the proposed development are provided in Section 4.4.

2.6 Ecological Field Surveys

A multidisciplinary ecological field survey was undertaken by a qualified and experienced TOBIN Ecologist at the proposed development site on the 26th of July 2023. The survey area included the proposed development site area and a 150m buffer surrounding the site. The data collected was robust and allowed TOBIN to draw accurate, definitive and coherent conclusions on the possible impacts of the proposed development. The findings of the surveys were used to inform this appraisal.

The aim of the surveys was to identify and map the habitats present within the proposed development boundary, determine the presence or absence of protected habitats, and species, including Annex I habitats and to note the occurrence/potential occurrence of protected Annex II and IV species, as well as Annex I birds species and to identify any potential impacts of the proposed development.

The ecological surveys that were carried out, that are relevant to the consideration of the potential for the proposed development to affect the conservation objectives of the European sites in the vicinity of the proposed development: namely the habitat survey, otter surveys and the river assessment survey, are described hereunder. While additional ecological surveys were undertaken, they are not specifically relevant to this AA.

2.6.1 Habitat and Flora

Habitat and botanical surveys were undertaken during the optimal survey period within the proposed development site following the methodology outlined in '*Best Practice Guidance for*

Habitat Survey and Mapping' (Smith *et al.*, 2011) and in *'Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes'* (NRA, 2008). The data was recorded, and the habitats encountered during the site visit were classified in accordance with Fossitt (2000) with reference made to the '*Interpretation Manual of EU Habitats'* (EC, 2013), as appropriate. Species protected under Flora (Protection) Order, 2022 (S.I. No. 235/2022) or listed under the Irish Red Data List of Irish Plants were also searched for.

2.6.2 Invasive Alien Plant Species

The proposed development site was also searched for evidence of invasive alien plant species (IAPS), with particular focus on IAPS listed in Part 1 of the Third Schedule of the Birds and Habitats Regulations. These were recorded and mapped where present.

2.6.3 Fauna

A walkover survey to detect the presence, or likely presence, of protected mammal species, likely to occur within the study area of the proposed development site was undertaken. Habitats were assessed for field signs and/or usage by fauna, such as well-used pathways, droppings, places of shelter and features or areas likely to be of particular value as foraging resources. These surveys were carried out in accordance with the NRA (2008) publication '*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes'.*

Otter

Otter (*Lutra lutra*) surveys were undertaken along accessible waterbodies (which included rivers and drainage ditches) within the proposed development site plus a 150m buffer of the site (including upstream and downstream of waterbodies), to account for noise disturbance impacts, following methodologies outlined within the NRA (2006) guidelines and Chanin (2003) '*Monitoring the Otter Lutra Lutra'.* The survey comprised examining all visual evidence of otter habitation or use, both within suitable areas. Any evidence of otter such as tracks, spraints, couches, slides, feeding remains or holts, were recorded.

Birds

Observations of ornithological activity within the proposed development site were recorded with regards to the Countryside Bird Survey guidelines; '*CBS Manual, Guidelines for Countryside Bird Survey Participants'* (CBS, 2012). Detailed breeding bird surveys were not undertaken and therefore actual occurrence of breeding birds and their nesting sites was not identified. Records of birds observed or heard were made.

2.6.4 Survey Limitation

Some areas could not be accessed and searched for evidence of mammals due to dense scrub. In these instances, the assessment relied on observations of secondary evidence e.g. mammal runs into scrub. As a precautionary measure, it is assumed that all significant woody vegetation cover, rank grassland and buildings within the proposed development areas have the potential to support breeding birds during the breeding bird season. Otter survey limitations included very steep banks and deep water which limited surveys at one or both banks at proposed sites, Site 2, the Mill. However, these sites were surveyed from adjacent accessible land and were supplemented by robust desktop assessment which adequately informed the assessment.

3. DESCRIPTION OF THE PROPOSED DEVELOPMENT

3.1 SITE LOCATION

The proposed development includes three sites, surrounding residential and commercial grounds which are located in Dromahair, County Leitrim, along the banks of the Bonet River. The three sites are located within multiple different townlands, Ardakaip more, Kilananima and Corcusconny, all located within 2km of Dromahair village.

3.2 OVERVIEW OF THE PROPOSED DEVELOPMENT

Leitrim County Council propose to construct flood protection embankments or flood defence structures at three properties, which have been identified as been at risk of flooding from the Bonet River following recent site investigation works and feasibility study for the flood defences at these three sites in the study area (see Appendix A of the AA Screening Report).

The proposed development site occupies an area of approximately 8,000m^2 across the three sites (see Figure 3-1). At each property an earthen embankment or a concrete flood defence wall is proposed with a top-level set 300mm above the predicted 100-year Mid-Range-Future-Scenario (MRFS) maximum water level at the property boundary. The predicted 100-year MRFS was calculated for each site as part of the feasibility study. A Catchment Flood Risk Assessment and Management Study (CFRAM) hydraulic model of the study area was developed. Flood Modeller is the flood modelling software utilized by the OPW and is designed to perform one-dimensional and two-dimensional hydraulic calculations for a full network of natural and constructed channels. This allowed an estimation to be given for the flood defence lengths required at each site (see Appendix A of the AA Screening Report).

In terms of the detailed design and the Appropriate Assessment process, where full detail is not yet known e.g. the surface water outfall system, the precautionary principle requires that a worst-case scenario is assessed e.g. that works although not confirmed, will occur and as such all such possible project elements are assessed.

8°18'20"W 8°17'10"W 8°16'0"W

54°14'0"N 54°13'30"N 54°13'0"N

830835 829630

580000 581250 582500

Legend

Proposed sites layouts

- Site 1: Residential Property No. 1
- Site 2: The Clubhouse Bar & Riverbank Restaurant/Mill Apartments
- Site 3: Residential Property No. 2

0 250 500
Meters

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING\
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE\
3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY \ WORK COMMENCES\
4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

A	17/12/2024	First issue	S.P	S.OR
Rev	Date	Description	By	Chkd.

Client: Comhairle Chontae Liatroma Leitrim County Council

Project: Dromahair Feasibility Report

Title: Figure 3.1 Proposed Site Layout
Proposed site layout

Scale @ A3: 1:10,000

Prepared by:	Checked by:	Date:
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Map Ref: 11271-004-S.LAY-S1.S2.S3-TOB-A

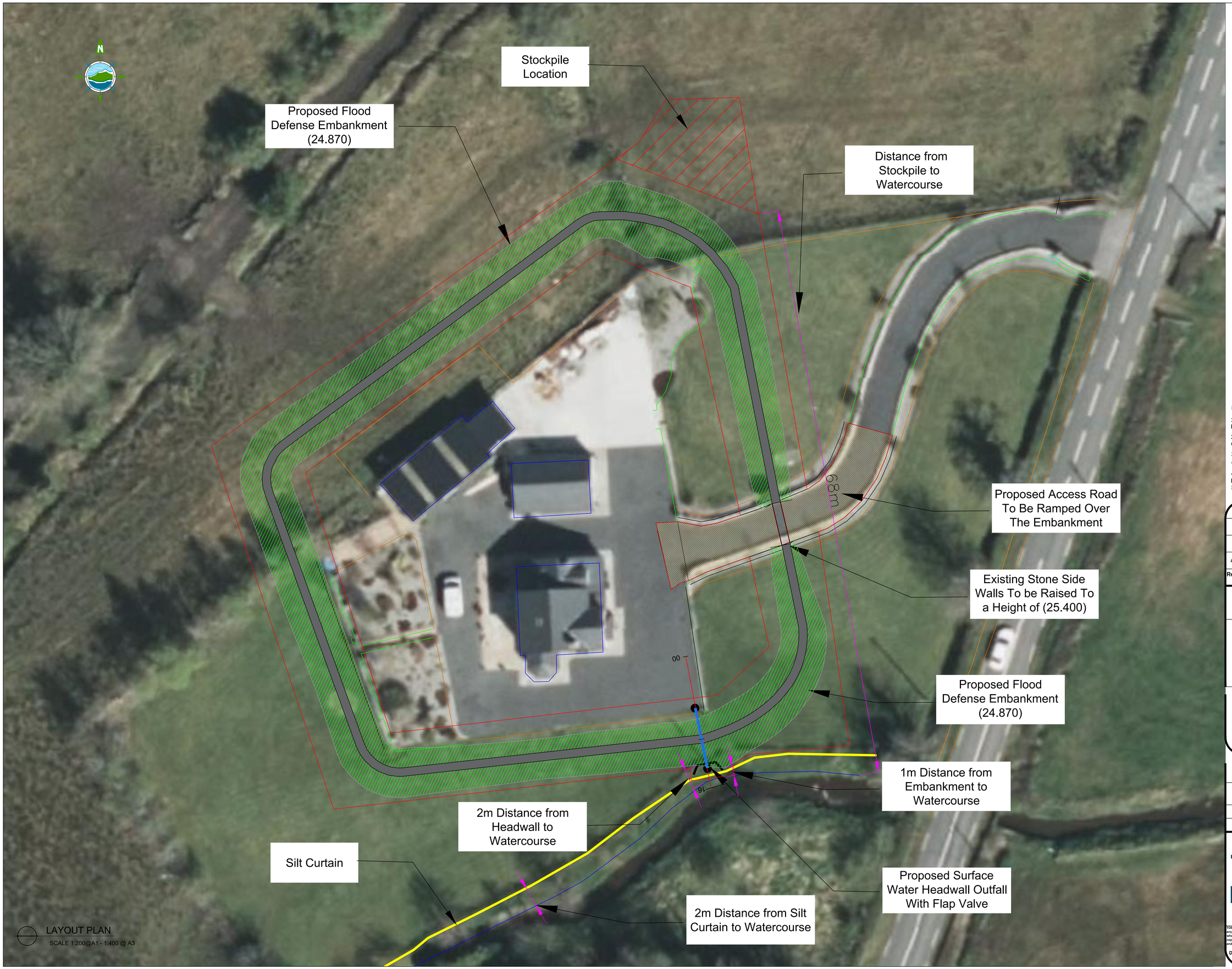
Draft: A

Site 1: Residential Property No. 1

At residential property No. 1, the predicted 100-year Mid-Range-Future-Scenario (MRFS) maximum water level at the property boundary is 24.87m OD. Based on the results of the hydraulic model, it is estimated that a 300m long embankment surrounding the existing property and access would be required to alleviate flooding at the residential site.

The proposed development layout is shown in Figure 3-2 and includes the construction of:

- Embankment flood defences surrounding the existing residential property;
- Proposed surface water headwall outfall with flap valve (300mm);
- Installation of a surface water pipeline to be constructed under/through the embankment and extending towards the river where it will terminate in the proposed headwall with associated non-return valve. The non-return valve system will prevent inflow of flood waters;
- Stone base foundations of headwall;
- Existing stone side walls to be raised to a height of (25.400m);
- Proposed access road to be ramped over the embankment;
- The existing access road will be ramped both sides of the embankment so no flood gates are required. The ramps will integrate with the existing driveway;
- Raise an existing low stone wall along the driveway to align with the ramps;
- Manhole complete with open grating;
- Temporary soil storage areas; and
- Perimeter fencing.



LAYOUT PLAN
SCALE 1:200@A1 - 1:400 @ A3

Legend:

- Embankment
- Stockpile
- Site Boundary
- River Edge
- Silt Curtain

NOTES

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3. ENGINEER TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD, THE GEOGRAPHIC COORDINATE SYSTEM IS TO IRISH TRANSVERSE MERCATOR (ITM)

Rev.	Date	Description	By	Chkd.
A	Sep '24	Planning	FOC	KD

Client
LEITRIM COUNTY COUNCIL

Project
Dromahair Flood Relief Project

Title
Flood Mitigation Measures within proposed development - Residential Property No. 1

Scale	1:200@A1 & 1:400@A3	
Prepared by: FOC	Checked KD.	Date September 2024
Project Director	Brian Downes	
Drawing Status	Planning	

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Drawing No. **11271-5003** | Issue **A**

Site 2: The Mill

At the Mill Apartments and the Clubhouse, the predicted 100-year MRFS upstream water level in the Bonet River is 23.41m OD. Based on the results of the hydraulic model, it is estimated that a 200m long flood defence at the northwest boundary with the Bonet River and Killanummery tributary would be required to alleviate flood risk at this site.

The proposed development layout is shown in Figure 3-3 and includes the following:

- Temporary construction compound;
- Temporary soil storage areas;
- Demolishing of existing stone wall;
- Tree felling along the river bank to facilitate construction of a flood defence wall;
- Construction of a flood defence retaining wall (24.300m);
- Installation of a cast in-situ reinforced concrete flood defence wall to the rear of the Mill Apartments;
- Construct the flood defence wall to the rear of the gas tank;
- Install a cast in-situ reinforced concrete flood defence wall;
- Installation of pre-cast 20m precast RC retaining wall at rear of the existing storage buildings;
- Proposed surface water outfall with flap valve;
- Proposed flap valve to existing surface water outlet;
- Proposed manhole with non return valve on the existing sewer line;
- Install a non-return valve on the flood side of the existing wall;
- Construction of a new gully on the dry side of the wall, installation of a new outlet pipe under the wall and installation of a non-return valve on the river side of the wall;
- Install a non-return valve on existing surface water outfall pipe at the northwest corner of the restaurant site prevent entry of flood waters;
- Install a non-return valve system to existing surface water outfall system to prevent inflow of flood waters;
- Stone base foundations of headwall;
- Removal of fencing, enclosures, oil tanks, wood storage shed, along the river edge etc to facilitate construction works; and
- Perimeter fencing;

There is an existing stone wall along the alignment of the proposed flood defence wall, and it is proposed to demolish the stone wall and, as part of the construction of the flood defence wall, reuse the stone for cladding of the flood defence wall as per the Conservation Architects recommendations (ACP Architectural Conservation Professionals).

LAYOUT PLAN

SCALE 1:250@A1 - 1:500 @ A3

Legend:

- Stockpile
- Site Boundary
- River Edge
- Silt Curtain

NOTES

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2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD, THE GEOGRAPHIC COORDINATE SYSTEM IS TO IRISH TRANSVERSE MERCATOR (ITM)

Rev.	Date	Description	By	Chkd.
A	Sep '24	Planning	FOC	KD

Client

LEITRIM COUNTY COUNCIL

Project

Dromahair Flood Relief Project

Title

Flood Mitigation Measures within Proposed Development - Riverbank Restaurant & The Mill Apartments

Scale **1:250@A1 & 1:500@A3**

Prepared by:	Checked	Date
FOC	KD	September 2024

Project Director	Brian Downes
Drawing Status	Planning

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Drawing No. **11271-5002** | Issue **A**

Site 3: Residential Property No. 2

At residential property No.2, the predicted 100-year MRFS maximum water level at the property boundary is 23.52m OD. Based on the results of the hydraulic model, it is estimated that a 100m embankment and flood gate would be required to alleviate flood risk at the residential property along the ester banks of Killanummery tributary.

The proposed development layout is shown in Figure 3-4 and includes the following:

- Proposed surface water headwall No.1 and headwall No.2 (outfall with flap valve (600mm);
- Proposed flood defence embankment (23.530m);
- Proposed RC wing walls to existing bridge detail;
- Install new precast concrete wing walls to the existing culvert;
- Proposed 600mmØ surface water pipe (I.L. 21.80m).
- Ramp existing access road both sides of the embankment so no flood gates and integrate with the existing driveway;
- Perimeter fencing;
- Temporary soil storage areas;
- Install a headwall containing a non-return valve either side of the embankment and a surface water pipeline (600mm diameter) through embankment;
- Stone base foundations of headwall; and
- Existing fences to be raised wherever impacted by the embankment and / or access road ramp.

LAYOUT PLAN

SCALE 1:200@A1 - 1:400 @ A3

Legend:

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD, THE GEOGRAPHIC COORDINATE SYSTEM IS TO IRISH TRANSVERSE MERCATOR (ITM)

Rev.	Date	Description	By	Chkd.
A	Sep '24	Planning	FOC	KD

Client: LEITRIM COUNTY COUNCIL

Project: Dromahair Flood Relief Project

Title: Flood Mitigation Measures within Proposed Development - Residential Property No. 2

Scale: 1:200@A1 & 1:400@A3

Prepared by:	Checked	Date
FOC	KD	September 2024

Project Director: Brian Downes

Drawing Status: Planning

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Drawing No. 11271-5001 | Issue A

3.2.1 Construction Phase Activities

The proposed site layout and infrastructure of each site are shown in Figure 3-1. The following is the sequence of activities that will be undertaken during the Construction Phase of the of the proposed development:

3.2.1.1 Construction Schedule

It is anticipated that the proposed construction works will commence in Q2-Q3 of 2025 for an approximate duration of 16 weeks however this is subject to obtaining consent from An Bord Pleanála, contractor availability, environmental window, low water levels and will be determined as the project progresses. Normal works hours during the construction phase are expected to be Monday to Friday 08:00 to 17:00 hours. The total number of construction staff on-site will vary during the construction phase but is expected to range from three to five staff. No construction lighting will be used during construction.

3.2.1.2 Storage Compound

Advance works for the proposed development will entail a temporary works compound to be located in a corner of the existing car park at the Mill Apartment. This facility will be secured from unauthorised access for the duration of the works and will include offices, welfare facilities, parking for site vehicles and plant at night, storage of equipment materials used in the construction phase and temporary storage of material to be re-used or awaiting removal by licenced waste contractor.

3.2.1.3 Traffic

All three sites are located adjacent to the R287 regional road. This road will provide the main access route to the sites. Construction material will be transported onto site using the existing access roads. The main construction machinery on site will be an excavator, compaction rollers, crane, transport lorries, cement lorries and tractor and trailers.

Artic lorries will be used to delivery pre-cast retaining walls and rebar reinforcement for the cast in-situ wall and will be lifted into place via a crane. Concrete for the walls will be delivered using concrete lorries. Dump trucks/tipper lorries will be used to deliver embankment fill.

3.2.1.4 Site Clearance

The proposed construction works requires the removal and disturbance of earth, riverbanks and trees within the site in order to accommodate the access tracks, the instalment of walls and embankments, and facilitate the works.

Advance clearance of vegetation along and adjacent to the Bonet River in preparation for construction phase may also be required and material will be temporarily stored at a specific location at each site until disposal or reuse. Soil stockpile locations will be 25m from the nearest watercourse.

Approximately five mature trees, located to the west of the Riverbank restaurant at the Mill will be removed by a competent contractor once the initial site clearance has been completed.

The existing stone wall located at the Mill along the alignment of the proposed flood defence wall, will be demolished. The stone from this wall will used as part of the construction of the flood defence wall for cladding, as per the Conservation Architects recommendations. This demolition and removal will be carried out by a digger.

It is not envisaged that works will generate significant construction waste, such as hardcore stone, and gravel. Although every effort will be made to recycle and re-use of materials on site, some waste will require to be disposed off-site. Cement wash will occur outside the proposed sites. Any disturbed areas will be fully reinstated following the completion of the works. Excavated soil will be stored at temporary storage areas within the proposed development site.

3.2.1.5 Earthworks

Excavation works will be carried out at all three sites for the construction of embankments and retaining walls. A total of 2,459m^3 will be excavated from all the sites. Topsoil will be stripped and stockpiled at designated locations within each site.

Soil will be excavated to the required formation levels. Excavated soil will be stored at temporary soil storage areas within each site of the proposed development.

All excavated topsoil material will be reused within the site, where possible, for embankments. All remaining topsoil and all other excavation material will be disposed of offsite, in accordance with Waste Legislation (Waste Management Act 1996 – 2001).

Soil and other fill material arriving to site will be delivered near existing access roads and used imminently. The delivery locations will not be located near watercourses.

Embankment fill material will be added to the site excavations and compacted until a firm foundation is achieved. Embankment fill material will consist of fine-grained cohesive soil (with between 20% and 40% clay particles, and 13% to 21% moisture content for compaction) is specified for the proposed embankment. No rocks greater than 75mm in size shall be permitted in the soil.

This material will also be used as fill material to form the formation levels of the defences. The material delivered to site will be used once it arrives on site and will not require stockpiling. The excavation and fill works will be carried out with an excavator.

Contaminated wastes e.g. spoil containing third schedule IAPS material will be removed under appropriate waste permit and NPWS licence to a facility licenced to accept such waste therefore no quarantine area is required.

This will be carried out in accordance with Waste Legislation (Waste Management Act 1996 – 2001) and the Invasive Species Management Plan (ISMP) (see Appendix B) carried out for the proposed development.

Minor instream works are required for these proposed works. This will include the placement of clean gravels in the river at the base of the headwalls stormwater outfalls to prevent scouring of the riverbed. No machinery will enter the river during the works.

3.2.1.6 Fencing

A total of 361m of fencing will be removed from Site 1 and Site 3. There will be pre-cast post and wire fencing installed at all three sites. The fencing will be installed at the base of the embankments located along site boundaries. The fence is proposed to be constructed to a height of 1.2m, using concrete posts with high tensile horizontal wire to BS EN 10244. The horizontal lines will also comprise of 2.5mm wire at approximately 150mm centres. A gap measuring a minimum of 150mm will be placed at the bottom of the fence to allow for the continued movement of mammals through the site.

3.2.1.7 Landscaping

All proposed embankment and soils surrounding the retaining walls will be reseeded with grass seed. No trees or other vegetation will be planted.

3.2.1.8 Flood Defence Construction

3.2.1.8.1 Embankments

Topsoil will be removed at each site and the soil will be excavated to the proposed formation levels using an excavator. The excavation site will then be filled with embankment material to the foundation and the embankment will be constructed on top of it. This will be compacted in layers using an excavator and roller until the design height is achieved. Once the level is reached, the earthen embankments will be topped off with topsoil in order to allow them to be planted with grass seed.

3.2.1.8.2 Pre-cast Retaining Walls

Pre-cast retaining walls will be delivered to site and lifted into position by a crane. The base of the retaining walls will be backfilled with embank fill material to insure stability.

3.2.1.8.3 RC Retaining Walls

Formwork will be constructed at the formation levels to allow for the concrete to be poured. Once the formwork is in place, steel structures will be added. The RC wall will then be poured in position using concrete lorries. The base of the retaining walls will be backfilled with suitable material to insure stability.

3.2.1.9 Surface Water Drainage

The existing surface water and foul water drainage systems on all the sites will remain operational during the construction phase of the project. It is proposed to construct new stormwater outfalls at all the sites to prevent ponding inside the flood defences during extreme flooding events. These outfall pipes will be constructed on the existing stormwater network lines. The outlet of the pipes will have a headwall constructed around them and they will be fitted with a non-return valve. The proposed works involves installing headwalls stormwater outfalls on the banks of the river at each site at various locations. These will connect into the surface water networks and discharge all surface water. The headwalls will be precast concrete slab (1.5m X 1.6m). A 300mm flap valve drain is incorporated into the concrete slab. Clear gravels will then be placed within the riverbed directly under below the headwall and to prevent scouring of the riverbed and bank erosion and collapse.

3.2.2 Operational Phase Activities

The operation phase of the proposed development is expected to be characterised by the movement of the river below the embankments and reduced flooding. Any local maintenance activities on the flood defences are not expected to differ from the baseline/present conditions. The maintenance of the proposed flood alleviation scheme will be the responsibility of the Local Authority, although in terms of emergency repairs, the Local Authority would revert to the Office of Public Works (OPW). The following general measures will be required as part of the routine monitoring and maintenance. They include:

- Flood walls – Annual inspection and sealant replacement (every 5 years);
- Flap Valves (if any) – Inspection once every 5 years and replacement (every 25 years);

- Bank protection – Inspection once every 5 years and maintenance (as required);
- Tree Management – Annual inspection and maintenance (as required); and
- Debris Traps – Bi-annual inspections and maintenance (as required).

3.3 DESCRIPTION OF THE EXISTING ENVIRONMENT

A description of the existing environment, which was informed by desktop assessment and field surveys, is provided hereunder.

3.3.1 Existing Environment-Desktop Review Results

3.3.1.1 Surface Water Features

The site of the proposed flood alleviation works located on the Bonet_050 River (EPA water body code: IE_WE_35B060630), and Kilanummery_020 River (EPA water body code: IE_WE_35K030900). Sites 1 and 2 are located on the Bonet River at EPA code 35017 (Site 1 and 2). Site 3 is located on the Kilanummery stream at EPA code 35A11.

The Bonet_050 River is located <5m from site boundaries of Site 1 and Site 2 and the Kilanummery_020 River is located <5m from site boundaries of Site 3 with the study area.

The Kilanummery stream flows east and enters directly into the Bonet River. The Bonet River rises in the Dartry Mountains in Co. Leitrim and flows a south westerly direction into Glenade Lough before passing through Dromahair and entering Lough Gill. It is known to support Atlantic Salmon (*Salmo salar*) with good fishing reported in the river (O' Reilly 2002). The Bonet River flows northwest in direction and discharges into the Garavogue_010 before reaching the Gill SO WFD lake water body (IE_WE_35_158), approximately 4km from the proposed development site (EPA, 2024).

The Bonet River is situated within Lough Gill SAC (001971) which contains Annex I habitat of eutrophic lakes and Annex II species including Atlantic salmon, otter, sea, river and brook lamprey as well as the white-clawed crayfish (*Austropotamobius pallipes*) (NPWS 2006c).

IFI conducted fish stock surveys as part of WFD surveys on the Bonet in 2010[11]. Nine species of fish were recorded present including Atlantic salmon and lamprey. In 2008, 2011, 2014 and 2017, IFI carried out a fish stock survey on Lough Gill[12]. Atlantic salmon were recorded present in 2011 (Kelly *et al.*, 2015b).

In 2022, IFI carried out a lamprey survey on the Bonet River and recorded 30 lamprey larvae from four survey sites[13].

The Bonet_050 was assigned a 'Good' ecological status however it 'Failing to achieve good' chemical water quality status for the monitoring period 2016-2021 (Benzo(a)pyrene Failure). Gill SO WFD lake water body was assigned 'Poor' ecological status as 'Failing to achieve good' chemical water quality status for the monitoring period 2016-2021 and is currently 'At Risk' of achieving good ecological status (EPA, 2024).

[11] WRBD_rivers_report_2010_2012.02.28_fk (wfdfish.ie)
[12] http://wfdfish.ie/wp-content/uploads/2018/11/Gill_2017.pdf
[13] https://www.fisheriesireland.ie/sites/default/files/2023-08/habitats-directive-and-red-data-book-species-summary-report-2022.pdf

The Killaummery_020 WFD river water body was assigned 'good' water quality status for the monitoring period 2016-2021 and is currently 'At Risk' of achieving good ecological status (EPA, 2024). The river flows north and discharges into the Bonet_050. These waterbodies are located within the Sligo Bay WFD Catchment (Catchment ID: 35).

3.3.1.2 Groundwater Features

The proposed development sites are located within three different groundwater bodies. Site 1 is located within the Killarga Groundwater Body (WFD code: IE_WE_G_0055). Site 2 and Site 3 are located within Ballintougher Groundwater Body (WFD code: IE_WE_G_0051). The Groundwater Body WFD status 2016-2021 for all these waterbodies was assessed as being of 'Good' water quality and not at risk (EPA, 2024).

The bedrock has a 'Low' vulnerability to groundwater impacts at Site 1, 'Moderate' groundwater vulnerability at Site 2 and 3 (GSI, 2024)[14].

3.3.1.3 European Sites

There is one European site located within and adjacent to the proposed development sites, Lough Gill SAC (Site Code: 001971). Site's 2 and 3 are located on the boundary of this European site. Site 1 is located approximately 27m north of this SAC. All three proposed development sites are hydrologically connected to the SAC via the Bonet_050 and Killaummery_020 River. Further information on European sites within the ZoI of the proposed development is outlined in Section 4.5 of this report.

3.3.1.4 National Biodiversity Data Centre

A review of the NBDC database was carried out for species protected under the EU Habitat Directive and for species listed under the Third Schedule of the Birds and Natural Habitats Regulations (2011) within the 2km Irish Grid Squares G83A and G83F which encompasses the entirety of the proposed development sites.

3.3.1.4.1 Fauna

Records of White-clawed crayfish and European otter, Annex II species, which are all protected under the Habitats Directive, were noted within the two grid squares encompassing the site.

Annex I bird species, whooper swan (*Cygnus cygnus*) and common kingfisher (*Alcedo atthis*), were also recorded within the two grid squares encompassing the site.

There is no record of freshwater pearl mussel (*Margaritifera Margaritifera*) within the 2km grid squares. In addition, the proposed development study area is not located within catchments of SAC populations listed in S.I. 296 of 2009, Catchments of other extant populations or Catchments with previous records of Margaritifera, where current status unknown.

3.3.1.4.2 Flora

There are no records of rare or protected habitats (including Annex I habitats) within the three grid squares encompassing the site.

A number of IAPS have been recorded within the site. The third schedule IAPS Japanese knotweed (*Reynoutria japonica*), Rhododendron (*Rhododendron ponticum*) are recorded within the grid squares encompassing the site. The animal Sika Deer (*Cervus nippon*), listed in Part 2B

[14] Geological Survey Ireland Spatial Resources (arcgis.com)

of the Birds and Habitats Regulations is also listed, although the proposed development is not likely to promote non-compliance with Regulation 49 or 50, e.g. promote breeding, reproduction, or allow its dispersal or escape from confinement.

3.3.2 Existing Environment-Field Study Results

The findings of surveys carried out on the three site locations 26th of July 2023 and are discussed hereunder.

3.3.2.1 Habitats and Flora

Habitats were classified using habitat descriptions and codes published in the Heritage Council's '*A Guide to Habitat Types in Ireland'* (Fossitt, 2000). A map showing all habitats within each proposed development site is provided in Figure 3-6.

Site 1: Residential Property No. 1

The proposed development site comprised of the following:

Amenity grassland (GA2)

The amenity grassland (garden lawn) surrounding the property was dominated by perennial ryegrass (*Lolium perenne*), with white clover (*Trifolium repens*), meadow buttercup (*Ranunculus acris*), daisy (*Bellis perennis*) and dandelion (*Taraxacum*) recorded occasionally throughout the habitat.

Wet grassland (WS4)

There was a small section of wet grassland habitat located within the northern section of the site. The habitat was dominated with soft rush (*Juncus effusus*), and abundant in jointed rush (*Juncus articulates*), Yorkshire fog (*Holcus lanatus*) and silverweed (*Potentilla anserina*). Meadowsweet (*Filipendula ulmaria)*, tormentil (*Potentilla erecta*), and flag iris (*Iris pseudacorus)* was recorded occasionally throughout the habitat. It was heavily grazed and tramped by cattle.

Hedgerows (WL1)

Hedgerows (WL1) with a secondary habitat of treelines (WL2) was recorded surrounding the boundary of the site. The hedgerow comprised of hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*), with some hawthorn, alder (*Alnus glutinosa*) and silver birch (*Betula pendula*) trees scattered throughout. The hedgerow was sparse gappy in places and ranged for 1-4m in height. The understory contained nettle (*Urtica dioica*), bramble (*Rubus fructicosus*), ivy (*Hedera hibernica*), soft rush and herb Robert (*Geranium robertianum*).

Depositing/lowland river (FW2)

The Bonet_050 River is located northwest and southeast of the site and flows in a southeasterly direction.

There is no shading present along this section of river within the site. At the time of surveying, the water levels were normal, average depth of 35cm, and it had a moderate flow. The bank height of 1m and bank width of 4m with a wetted width of 2m and had a glide profile. It contained boulder, cobble and gravels. It did not contain any instream vegetation. The riparian vegetation included dock (*Rumex obtusifolius*), marestail (*Hippuris vulgaris*), perennial ryegrass, meadowsweet, white clover, cocksfoot (*Dactylis glomerata*), pedunculate oak (*Quercus robur*) and Yorkshire fog.

There was no evidence of otter or fish seen in the river. This section of watercourse contained spawning potential for salmonids and lamprey, as well as good otter and kingfisher commuting, resting and foraging habitat. No suitable sediment habitat was present for lamprey.

Drainage ditch (FW4)

One unmanaged drainage ditch was recorded which contained low levels of water. This drain flows into the Bonet_050. There was bank damage due to cattle access. This habitat does not have fisheries potential.

Other Habitats and Protected Species

Other habitat types (within smaller, non-representative, areas, as per Smith *et al.*, 2011) were recorded within the proposed development site included:

- Buildings and artificial surfaces (BL3) (house and driveway).

No evidence of any Annex I habitats, floral species or IAPs were recorded within the study area of this site.

Site 2: The Mill

The proposed development area of this site comprised of the following.

Mixed broadleaved woodland (WD1)

The mature mixed broadleaved woodland was located surrounding the buildings along the northwest of the site. This habitat is dominated by beech (*Fagus sylvatica*), with sycamore (*Acer psuedeplatanus*) noted frequently and species such as alder, willow (*Salix sp.*), elder (*Sambucus nigra*), and ash (*Fraxinus excelsior*) found occasionally throughout the habitat. The understory contains bramble, ivy, hogweed (*Heracleum sphondylium*), sedge and nettle. It is 13-15m in height and in good condition. The woodland is unmanaged and contains trees.

Scattered trees and parkland (WD5)

The scattered trees and parkland habitat included willow and alder. The habitat was dominated by perennial ryegrass, with species including as red clover (*Trifolium pratense*), meadow buttercup (*Ranunculus acris*), daisy and dandelion found frequently throughout.

Depositing/lowland river (FW2)

The Bonet _050 River is located along the north and northwestern boundary of this site and flows in a southeastern direction. The river has a natural meandering channel with glide and pool profile. It contains very steep banks side (5m). It has a bank width of 20m and a wetted width of 15m. The river is lightly shaded with the riparian vegetation including male fern (*Dryopteris filix-mas*), alder, hogweed, sycamore, elder, beech, bramble, ivy and ash. It contains good holding and spawning habitat for salmonids and lamprey and refuge for crayfish. There were no visible barriers present.

Site pressures include surface water runoff and rubbish dumping as well as the IAPS Japanese knotweed recorded on the bank. There was no evidence of otter present however a full inspection could not be carried out due to the steep banks and water depth below. There is good foraging, resting and feeding habitat for otter and good habitat for kingfisher.

Other Habitats and Protected and Invasive Species

Other habitat types (within smaller, non-representative, areas, as per Smith *et al.*, 2011) were recorded within the proposed development site included:

- Stone walls and other stonework (BL1); and
- Buildings and artificial surfaces (BL3) (apartments, restaurant, a pub and a car park);

No evidence of any Annex I habitats or floral species were recorded within the study area of this site.

The third schedule IAPS Japanese knotweed and Himalayan Balsam (*Impatiens glandulifera*) was recorded present within the woodland (see Section 3.6 for further detail).

Site 3: Residential Property No. 2

The proposed development area of this site comprised of the following.

Amenity grassland (GA2)

The amenity grassland habitat is lawn gardens surrounding the property. This habitat is dominated by perennial ryegrass, with clover abundant throughout as well as dandelion, and meadow buttercup were recorded frequently. The habitat is heavily managed.

Treeline (WL2)

One treeline is present along the west, south and east of the site boundary. It is dominated by Leylandii with hawthorn recorded frequently as well as and one horse chestnut and beech tree present. It was approximately 7m in height and is managed and in good condition.

An additional treeline is located the northeastern boundary of the site. It is abundant with ash and sycamore with hawthorn recorded frequently throughout. It contains an understory of bramble, ivy, bindweed and nettle. It is approximately 7m in height, unmanaged, gappy and in poor condition due to ash dieback.

Depositing/lowland river (FW2)

The Killanummery_020 River is located along the northeastern boundary of the site. It flows in a northern direction into the Bonet_050 River. The river has a natural meandering channel with a dominant glide profile and no riffle and pools present. The river is lightly shaded with the riparian vegetation including canary grass (*Phalaris canariensis*), hawthorn, willow, poplar (*Populus sp.*), bramble, ivy, bindweed (*Calystegia sepium*), meadowsweet, nettle and cocksfoot. It has a bank height of 2m, bank width of 7m and a wetted width of 2m. This section of river has potential spawning and nursery habitat for salmonids and spawning habitat for lamprey. There is also refuge habitat for crayfish. There was no evidence of otter activity along the bank. However, there is suitable otter and kingfisher commuting and foraging habitat present.

Drainage ditch (FW4)

The drainage ditch habitat is located along the northwestern boundary of the site and drains into the Killanummery_020 River. This drainage ditch was sheltered form the adjacent treeline and contained low levels of stagnant water. It is unmanaged but fenced off. Riparian vegetation includes hawthorn, bramble, ivy, bindweed, meadowsweet, nettle and cocksfoot. This habitat does not have fisheries potential.

Other Habitats and Protected and Invasive Species

Other habitat types (within smaller, non-representative, areas, as per Smith *et al.,* 2011) were recorded within the proposed development site included:

- Buildings and artificial surfaces (BL3) (house, outbuildings and driveway).

No evidence of any Annex I habitats or floral species or IAPS were recorded within the study area of this site.

3.3.2.2 Fauna

3.3.2.2.1 Mammals

No Annex I or II species of the Habitats Directive were recorded within the study area during the surveys. No evidence of otter activity, such as holts, prints, feeding remains or scat, were recorded within the study area (the proposed development sites plus a 150m buffer) during the survey. However, potential otter resting, foraging and commuting habitat was noted during the survey along the banks of the Bonet_050 and the Kilanummery_020 WFD River water bodies.

3.3.2.2.2 Birds

No Annex I bird species of the Habitats Directive were recorded within the study area during the surveys. The rivers however provide good perching and foraging habitat for kingfisher.

3.3.2.2.3 Aquatic species

These rivers contain good spawning potential for salmonids and lamprey, and refugee habitat for white clawed crayfish. These three sites also contained suitable crayfish habitat however there was no evidence of crayfish recorded during the survey.

3.3.2.3 Invasive Species

The IAPS Japanese knotweed was recorded at Site 2 the Mill (see Plate 3-1), within the mixed broadleaved woodland behind the stone wall, oil tank (400m^2) and at the bridge. Himalayan balsam was also recorded at one location Site 2 within the woodland along the banks of the river. These are Third Schedule listed species of the Birds and Habitats Regulations. A map showing their location within the proposed development site is provided in Figure 3-5.There were no invasive mammal species recorded during the survey.

Plate 3-1: Invasive Japanese Knotweed Within the Woodland at Site 2

8°18'42"W
8°17'40"W
54°14'0"N
54°13'30"N
831200
830400
829600
579200
580000
580800

Legend

Proposed sites layouts

- 2 - The Clubhouse Bar & Riverbank Restaurant/Mill Apartments
- EPA - Rivers

Invasive species

- Japanese Knotweed
- Himalayan Balsam

0 250 500
Meters

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING\
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE\
3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY \ WORK COMMENCES\
4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

A	02/10/2024	First issue	S.P	S.OR
Rev	Date	Description	By	Chkd.

Client: Comhairle Chontae Liatroma Leitrim County Council

Project:

Dromahair Flood Relief Project

Title:

Figure 3-5
Invasive Species Map

Scale @ A3: 1:8,000

Prepared by:	Checked by:	Date:
S.Pezzetta	S.O'Reilly	October 2024

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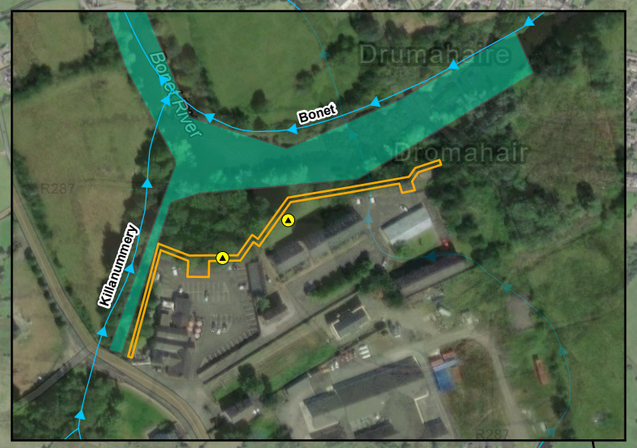
Map Ref: 11271-007-Inv.SP-S2-TOB-A

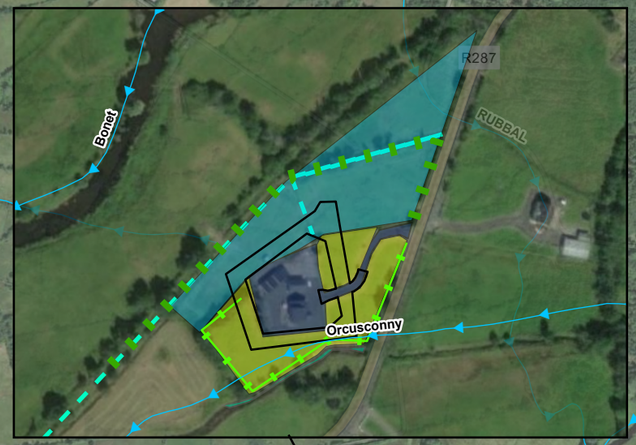
Draft: A

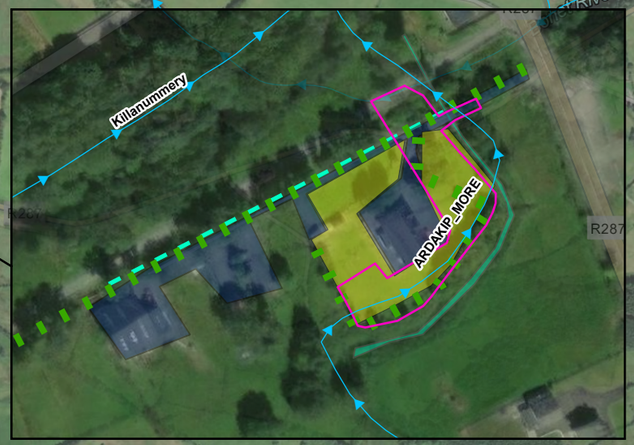
8°18'20"W
8°17'10"W
8°16'0"W
54°14'0"N
54°13'30"N
54°13'0"N
832040
830835
829630
580000
581250
582500

N

Sriff
Drumlease Terrace
DRUMAHAIRE
Drumlease Terrace
Drumlease
Drumlease Road
DRUMAHAIRE
Bonet
Killanummery
ARDAKIP_MORE
Killanummery
Killanummery
Skeanda River
Orcusconny
R287
Cashel (Stream) [Bonet]
CASHEL 35
R289
KILLANANIMA
KILLANANIMA
CLEEN
Cashel (Stream) [Bonet]







World Topographic Map: Esri UK, Esri, TomTom, Garmin, FAO, NOAA, USGS
World Imagery: Maxar, Microsoft
Hybrid Reference Layer: Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

Legend

Proposed sites layouts
- Site 1: Residential Property No. 1
- Site 2 - The Clubhouse Bar & Riverbank Restaurant/Mill Apartments
- Site 3: Residential Property No. 2

Species
- Bat roost potential

Habitats
- BL3 - Buildings and artifical surfaces
- GA2 - Amenity grassland (improved)
- GS4 - Wet grassland

Aquatics
- Aquatics linear
- Aquatics polygon
- EPA - Rivers

0 250 500
Meters

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING\
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE\
3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY \ WORK COMMENCES\
4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Rev	Date	Description	By	Chkd.
A	17/12/2024	First issue	S.P	S.OR

Client: Comhairle Chontae Liatroma Leitrim County Council

Project: Dromahair Feasibility Report

Title: Figure 3-6: Habitat and Species Map

Scale @ A3:	1:10,000	
Prepared by:	Checked by:	Date:
S.Pezzetta	S.O'Reilly	December 2024

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Map Ref:	Draft:
11271-006-HAB-S1.S2.S3-TOB-A	A

4. OVERVIEW OF THE POTENTIAL IMPACTS

An overview of potential impacts from the construction and operational phases of the proposed development on the receiving environment is discussed hereunder. There are several elements associated with the proposed development that may give rise to direct and indirect impacts on the receiving environment that have the potential to result in likely significant effects on European sites within the zone of influence (ZoI) of the proposed development sites. The significance of these impacts depends on its scale, as well as the ecological condition and the sensitivities of the qualifying interests. Elements of the proposed development that may give rise to impacts, which have been considered with regards to potential effects to European sites are discussed hereunder.

4.1 CONSTRUCTION PHASE

Potential construction phase impacts associated with the proposed development are discussed hereunder.

4.1.1 Accidental Mortality

There is potential for the accidental mortality of wildlife during construction works due to disturbance and removal of habitat. It may be caused by moving vehicles throughout the site or felling of trees within the site boundary while if wildlife have been disturbed.

4.1.2 Loss of Habitat

The proposed development will include the construction of flood defence walls, embankments and headwalls within mixed broadleaved woodland, amenity grasses and along the banks of depositing rivers. The construction of flood defence walls and surface water drainage will result in a temporary loss of ca. 6,500m^2 and permanent loss of 10m^2 of habitats.

At Site 1, the section of BL3 habitat will be temporarily lost, to allow for the construction of a ramp over the access road to the residency. There will be temporary loss of amenity habitat during the storage of excavated soils. There will be permanent loss of amenity grassland, wet grass land due to the construction of the proposed embankment surrounding the property. There will be permanent earthbank habitat created from the installation of embankment. There will be permanent loss of riverbank habitat including riparian vegetation due to the installation of a proposed surface water headwall.

At Site 2, a section of BL3 habitat will be temporarily lost, to allow for the storage compound in the carpark. There will be temporary loss of amenity habitat during the storage of excavated soils. There will be permanent loss of mixed broad-leaved woodland, scrub, BL3, stone wall and riverbank habitat including riparian vegetation, to allow for the construction of flood defence retaining wall, precast retaining wall, surface water headwalls and manholes surrounding the property.

At Site 3, the section of BL3 habitat will be temporarily lost, to allow for the realignment of existing access road to the residency. There will be temporary loss of amenity habitat during the storage of excavated soils. There will be permanent loss of amenity ground and riverbank habitat including riparian vegetation, due to the construction of the proposed flood defence proposed embankment, surface water headwalls and RC wingwalls to existing bridge and

installation of surface water pipe surrounding the property. There will be permanent earthbank habitat created from the installation of embankment.

Fencing around the perimeter of all embankments will have a gap of a minimum of 150mm and will allow the free passage of small mammals and prevent fragmentation of wildlife corridors.

It is proposed to remove five mature beech trees from the mixed broadleaved woodland at Site 2 in order to facilitate the construction of a defence wall.

All soils excavated will be temporarily stored before being reinstated into the embankments as part of the construction works. This will be a temporary loss of habitat before it is reinstated as a permanent embankment habitat.

This will result in both a temporary and permanent loss of habitats located on the boundary of a European site as part of the proposed works.

4.1.3 Degradation of Water Quality/Contamination

4.1.3.1 Silt-laden runoff and/or Construction Pollution

The Bonet_050 and the Kilanummery_020 River water bodies are located <5m from the site boundary at all three sites.

Site clearance, soil stripping, excavation and demolition activities near the riverbanks, infilling, stockpiling of material, installation of soil embankments and retaining walls and fencing all have the potential to result in sediment laden surface water runoff discharging into the Bonet_050 River and Kilanummery_020 river during construction. The storage of materials including soil adjacent to any dry or wet surface water drainage feature or watercourse also has the risk for run-off or slippage during rainfall events.

Sediment inputs to rivers and streams may negatively affect their habitat conditions, aquatic plants and fauna. Sedimentation can stunt aquatic plant growth, reducing the particle size of the riverbed, blocking interstitial spaces, limit dissolved oxygen capacity and degrading habitat quality.

Suspended sediment due to runoff of soil from construction areas can have severe negative impacts on invertebrates and fish species (Geist and Auerswald, 2007).

It can cause mortalities in fish of all ages, reducing abundance of food available to fish and impeding movement of fish. It can also displace fish out of prime habitat into less suitable areas (Chilibeck *et al.*,1992). Suspended sediment can settle on spawning areas, settle in gravel voids and smother the eggs and alevins (newly hatched fish) in the gravel.

Fish gills can get clogged or abraded gills, causing asphyxiation and the possibility of infections (Kjelland 2015). It can reduce water clarity and visibility in the stream, impairing the ability of fish to find food items. the overall ecological quality of watercourses can be reduced especially during the most critical period associated with low flow conditions.

Rainfall events or flooding of the construction site has potential to result in the release of increased volumes of suspended solids to these river systems.

4.1.3.2 Accidental Spills and Leak of Chemical, Hydrocarbons and Concrete

Accidental release/mobilisation of pollutants such as oils, fuels, cement or other pollutants from the movement and maintenance of vehicles and machinery in a construction site have potential to be released via surface water runoff into the waterbodies particularly during high rainfall

events. This can result in the degradation of water quality and impacts to aquatic fauna and flora and habitats, particularly when concrete is present.

Concrete and other cement-based products are alkaline and can be corrosive. They generate fine, highly alkaline silt (pH 11.5) that can physically damage fish by burning their skin and blocking their gills (Yandi *et al.*, 2017). A pH range of ≥ 6 ≤ 9 is set in the Quality of Salmonid Water Regulations (S.I. No. 293 of 1988), with artificial variations not in excess of ± 0.5 of a pH unit.

Concrete will be required to facilitate the foundation works associated with the development. This will include the transportation and pouring of concrete onsite. There is also a risk of discharge of chemicals, hydrocarbons and/or concrete, in the absence of mitigation, to the Bonet_050 and the Kilanummery_020 River water bodies, augmented during flooding events.

These events could result in the degradation of water quality and impacts to aquatic fauna and flora species, and potential impacts on downstream European sites. There is potential for pollution from surface water run-off to effect QI(s)/SCI(s) of relevant European sites during the construction of the proposed development.

4.2 GROUNDWATER IMPACTS

The GSI online database was consulted for available geological and hydrological information of the site and its environs.

The groundwater vulnerability to impacts at Site 1 is classified as 'Moderate', and at Site 2 and 3 as 'Low' (GSI, 2024). All three sites are situated within proximity to a European site which have QIs categorised as a Groundwater Dependent Terrestrial Ecosystems (GWDTE) or species dependent on such, and therefore there is potential for likely significant effects on a European site as a result of potential groundwater impacts.

4.2.1 Habitat Degradation due to Air Quality Impacts Dust

The temporary generation of dust in the locality of the works area is likely to arise due to general Construction Phase activities (i.e., movement of construction vehicles and machinery, road upgrade works, excavation activities of the new channel). Plant communities may be affected by dust deposition (effects on photosynthesis, respiration, transpiration) which could in turn, alter community structure. The Institute of Air Quality Management provide guidelines which prescribes potential dust emission risk classes to ecological receptors (Holman *et al.*, 2014). The guidelines specify that receptor sensitivity is 'High' up to 20m from the source and reduces to 'Medium' at 50m. The construction works associated with the access road and works area will be at a much smaller scale. The generation of dust is likely to range between 25-50m form the works area. The guidelines indicate that an assessment will be required where there is an ecological receptor within 50m of the boundary of a site; or 50m of the route(s) used by construction vehicles. The ZoI for dust impacts is therefore considered to be 50m from the proposed development site.

The proposed development sites are located less than 50m from the Bonet_050 River and Kilanummery_020 River which are part of Lough Gill SAC both upstream and downstream of the site.

4.2.2 Noise and Disturbance

The proposed construction works and activities will result in high levels of noise and vibration (i.e demolishing wall and excavations) from the associated construction vehicles and machinery. The construction works will also result in an increase in personnel and traffic movement to and from the site.

Considering the works are located within Lough Gill SAC and just outside its borders, there is potential for noise and disturbance impacts which are likely to occur within this European site.

A temporary increase in noise levels, disturbance and lighting within the site may result in disturbance to mobile QIs of Lough Gill SAC.

Transport Infrastructure Ireland (TII) (formally the National Roads Authority) has produced a series of best practice planning and construction guidelines for the treatment of otter, which indicate that disturbance to breeding otter sites would not extend beyond 150m (NRA, 2006).

However, the plant machinery on site will be designed to ensure that the maximum noise level 10m outside the site boundary do not exceed an equivalent continuous sound level beyond what is recommended in the BSI British Standards (BS5228-1:2009+A1:2014). The construction phase of the proposed development is anticipated to generate relatively low levels of noise during permitted construction hours.

No rock blasting or breaking will be undertaken during the construction phase. It should be noted, no night works or temporary construction lighting is anticipated to be required during the construction works. Fugitive lighting could deter movement of species in the area.

4.2.3 Habitat Degradation Due to the Introduction or Spread of Invasive Alien Plant Species

The Third Schedule IAPS Japanese knotweed and Himalayan Balsam were recorded within, and in close proximity, to the proposed development site boundary. Japanese knotweed was recorded within the boundary of Site 2 and Himalayan balsam was recorded approximately 20m northeast of the site boundary of Site 2 during the ecological surveys along the riverbanks.

The movement of construction vehicles and material to and from the site could carry IAPS fragments/seeds throughout the proposed works area and result in the spread of these IAPS both within and outside the site if not appropriately managed.

There is also potential in the introduction of new IAPS to the site and spread through the movement of people, vehicles, machinery and material to, and from the site.

The introduction and establishment of invasive plant species has the potential to negatively impact habitats, including loss of biodiversity, increased flooding risk by impeding river-water flow, increase riverbank erosion, competitively excluding native plant species, and providing less favourable habitats for native fauna (TII, 2020). These effects are not only restricted to the proposed development site but could extend further into the surrounding environment.

Therefore, there is potential for the construction works associated with the proposed development to accidently spread the IAPS across the proposed development site, into Lough Gill SAC, and also to any European sites within the ZoI of the proposed development (which is defined in Section 4.5

4.3 Operation Phase

As described in Section 3.2.2, the flood defences will require maintenance over a five-year period however any local maintenance activities on the flood defences are not expected to differ from the baseline/present conditions. This includes inspections and maintenance of the defence walls, flap valves, embankments, trees and debris by the Local Authority.

Potential operational phase impacts associated with the proposed development are discussed hereunder.

4.3.1 Water Quality/Contamination Impacts

Flood defence features may collapse overtime due to erosion and extreme weather events. In the case of emergencies, these will require restoration. The impacts related to flood defence and restoration works which are listed in Section 4.1.3 are applicable here.

4.3.2 Noise and Disturbance

During the operational phase, the proposed development will function as a flood defence and thus will no emit direct noise or disturbance related to the operation of its function. Minor noise disturbance may arise from personnel relating to site visitations for routine monitoring and maintenance. These maintenance works may require machinery and personnel over a very short period of time. This may result in low levels of disturbance to wildlife within the immediate vicinity of the site.

4.4 Relevant European Sites

4.4.1 Source-Pathway-Receptor Model

A source-pathway-receptor model (OPR, 2021) was used to identify likely significant effects on QIs or SCIs of European sites from the proposed development sites. In order for an effect to occur, all three elements of this model must be in place. The absence or removal of one of the elements of the model means there is no likelihood for the effect to occur. In the context of the proposed development, the model comprises:

- Source(s) – potential impacts from the proposed development, e.g. loss of habitat, direct emissions (water, air, noise and light);
- Pathway(s) – hydrological, physical or ecological connectivity between the proposed development and the European site (e.g. water bodies, proximity); and
- Receptor(s) – qualifying interests and/or special conservation interests of the European sites.

4.4.2 Determining the Likely Zone of Influence

In order to inform the source-pathway-receptor model, the ZoI needs to be established. The Chartered Institute of Ecology and Environmental Management (CIEEM) defines the ZoI of a project as the area(s) over which ecological features may be affected by the biophysical changes caused by the proposed development and associated activities (CIEEM, 2018).

As an initial approach, all European sites within a 15 km radius were examined (DEHLG, 2010). For some projects, the distance could be much less than 15km, but this must be evaluated on a

case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in-combination effects.

To establish the ZoI of the proposed development, the likely key biophysical changes associated with it were determined having regard to the project characteristics set out in Section 4. The ZoI of the proposed development (in the absence of any mitigation measures) is described hereunder.

The ZoI for terrestrial habitats is limited to the footprint of the proposed development, with groundwater movement and levels considered in relation to groundwater dependent terrestrial habitats outside of the footprint of the development. Impacts associated with the loss of habitats will be confined to within the proposed development site boundary. The ZoI for this type of effects is defined as all lands within the proposed development site boundary.

The introduction and spread of the existing IAPS within the site was identified as a potential impact during the construction phase. The ZoI is considered to be the footprint of all three proposed development sites and downstream via the Bonet_050 River.

Hydrological linkages between a proposed development and aquatic habitats/species can occur over significant distances; however, the significance of the impact will be site specific depending on the receiving water environment and nature of the potential impact.

Considering the sources for impacts on European sites and adopting a precautionary approach for the ZoI for impacts associated with water quality degradation effects associated with the potential release of silt-laden runoff and other pollutants to surface water, the hydrological distance over which surface water discharges could have a significant impact on receiving watercourses is considered to include receiving water bodies adjacent to, or downstream of the proposed development site and extend downstream of each proposed development site to the nearest depositing waterbody (e.g. lake water body; transitional water body).The hydrological pathway for impacts from the proposed development sites therefore includes all downstream surface waterbodies from the three proposed development locations until Lough Gill (Gill SO: IE_WE_35_158).

In terms of groundwater, the proposed development sites are underlain by deep soils, (Site 1, Lisgorman shale formation, Site 2 and 3, oak limestone formation. The nearest site to an Groundwater Dependent Terrestrial Ecosystems (GWDTE) is Site 1 which is located 800m south and downstream of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)* [91E0]. This is not within the zone of contribution to this or any other Groundwater Dependent Terrestrial Ecosystems (GWDTE). The spatial limits of groundwater effects are therefore considered as <50m from the proposed development site.

Mobile species have 'range' outside of the European site in which they are QI/SCI. The range of mobile QI/SCI species varies from several metres (e.g. in the case of whorl snails Vertigo spp.), to hundreds of kilometres (in the case of migratory wetland birds). Whilst static species and habitats are generally considered to have ZoIs within close proximity of the proposed development, they can be significantly affected at considerable distances from an effect source; for example, where an aquatic QI habitat or plant is located many kilometres downstream from a pollution source.

Below is a summary of the documented zones of influence for varying species:

- Transport Infrastructure Ireland (formally the National Roads Authority) has produced a series of best practice planning and construction guidelines for the treatment of otter,

which indicate that disturbance to their resting sites from road construction works would not extend beyond 150m (NPWS, 2006).

- Cutts *et al.* (2013) notes that different types of disturbance *stimuli* are characterised by different avifaunal reactions, however as a general rule of thumb, a distance of 300m can be used to represent the maximum likely disturbance distance for waterfowl. Nevertheless, disturbance to species will be considered individually.

The ZoI for mobile species such as fish species and otters may extend over larger distances due to the fact that they can commute and forage many kilometres from their breeding sites.

The ZoI for noise/disturbance was, therefore, established as the proposed development site plus a 300m buffer. In addition, to further establish any pathways to SPA's and SACs, the foraging/commuting ranges of SCI and QI species will also be considered in relation to ZoI of the proposed development site.

As noted in Section 4.2.1, the spatial limit of dust impacts is established as 50m from all three site boundaries.

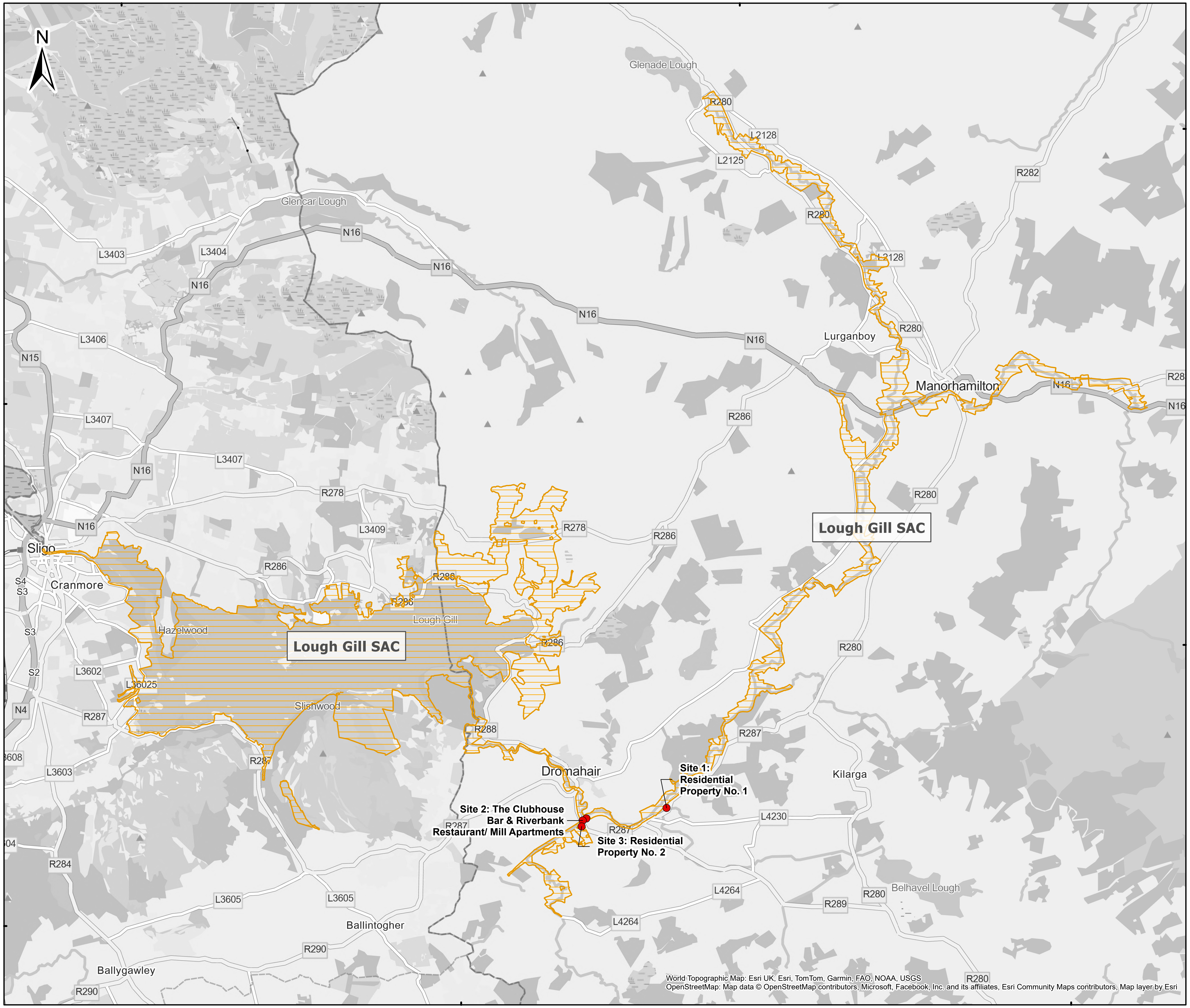
4.5 Identification Of Relevant European Sites Within The ZoI

As mentioned above, as an initial step, all European sites considered relevant to the ZoI of the proposed development site within a 15km radius or with hydrological connectivity to the proposed development site, were reviewed and are illustrated in Figure 4-1. 'Relevant' European sites are those within the potential ZoI of activities associated with the construction and operation of the proposed development, where adverse effects to integrity of QIs/SCIs of these European sites could arise.

The source-pathway-receptor conceptual model (OPR, 2021) was then used to identify a list of 'relevant' European sites (i.e. those which could be potentially affected). A source-pathway-receptor link was identified between the proposed development and European sites that had an ecological or hydrological/hydrogeological connectivity to the proposed site.

The proposed development site is located within the boundaries of Lough Gill SAC (Site code: 001976). In addition, there is hydrologically connectivity between the Bonet River and Lough Gill. There are no other European sites considered relevant to the ZoI of the proposed development site after been assessed in terms of all QIs/SCIs and connectivity.

All European sites within 15km of the proposed development site, or which are hydrologically connected, are illustrated on Figure 4-1 below. The source-pathway-receptor model of relevant European site within the ZoI of the proposed development are shown in Table 4-1.



8°27'0"W
8°14'50"W
54°18'0"N
54°12'0"N
845000
834000
578000
591000
N
Glenade Lough
Glencar Lough
Lough Gill SAC
Lough Gill SAC
Lough Gill
Sligo
Cranmore
Hazelwood
Slishwood
Dromahair
Lurganboy
Manorhamilton
Kilarga
Belhavel Lough
Ballintogher
Ballygawley
Site 1: Residential Property No. 1
Site 2: The Clubhouse Bar & Riverbank Restaurant/ Mill Apartments
Site 3: Residential Property No. 2
N16
N15
N4
R280
R282
R286
R278
R288
R287
R289
R290
R284
L2128
L2125
L3403
L3404
L3406
L3407
L3409
L3602
L36025
L3603
L3605
L4230
L4264
S2
S3
S4
World Topographic Map: Esri UK, Esri, TomTom, Garmin, FAO, NOAA, USGS
OpenStreetMap: Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri

Legend

- Proposed SItes Locations
- Special Areas of Conservation (SACs)

0 2 4
Kilometers

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING\
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE\
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A	17/12/2024	First issue	S.P	S.OR
Rev	Date	Description	By	Chkd.

Client: Comhairle Chontae Liatroma Leitrim County Council

Project:

Dromahair Feasibility Report

Title:

Figure 4.1:
European Sites Within 15km
of the Proposed Project Site

Scale @ A3: 1:75,000

Prepared by:	Checked by:	Date:
S.Pezzetta	S.O'Reilly	December 2024

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Map Ref: 11271-008-S1.S2.S3.S4-EU.S..LGILL-TOB-A

Draft: A

Table 4-1: Assessment of Relevant European Sites Within the Zone of Influence and Possibility of Likely Significant Effects (* indicates a priority habitat under the EU Habitats Directive).

European Site	Qualifying Interests/Special Conservation Interests	Conservation Objectives	Pathway For Effect	Potential for Likely Significant Effects
Lough Gill SAC [001976] (NPWS 2021) Distance: <5m	• Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] • Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) * [91E0] • White-clawed Crayfish (*Austropotamobius pallipes*) [1092] • Sea Lamprey (*Petromyzon marinus*) [1095] • River Lamprey (*Lampetra fluviatilis*) [1099] • Salmon (*Salmo salar*) [1106] • Otter (*Lutra lutra*) [1355] • Brook Lamprey (*Lampetra planeri*) [1096]	To maintain or restore the favourable conservation condition of the species listed as Qualifying Interest for this SAC (1092,1095, 1096, 1099, 1106, 1355) which is defined by a list of attributes and targets. To restore the favourable conservation condition of Annex I habitats in Lough Gill SAC (1350, 6210, 91A0, 91E0) which are defined by a list of attributes and targets.	The proposed development is located within <5m of the SAC boundary and, thus, occur within the ZoI for impacts. No Annex I habitats were recorded within the footprint of the works. Works will occur within the riverbanks of these rivers, within the SAC boundaries. There is potential for direct habitat loss within the SAC. The proposed development is hydrologically linked to the SAC via the Bonet_050 and the Kilanummery_020 river water bodies. There is a high risk for surface water runoff carrying sediment and construction pollution into the watercourses if not appropriately managed. The construction works will result in an increase in noise, vibration, lighting and human presence during movement of vehicles and staff.	Yes - there is potential for pollution from surface water runoff and siltation to affect the QI's of the SAC during construction. This could result in habitat loss or degradation of QI's of the SAC. There is potential for disturbance or displacement of QI species due to human presence and noise. There is potential for the introduction and/or spread of IAPS within the SAC. An assessment of likely significant effects is presented in Section 5 of this report.

European Site	Qualifying Interests/Special Conservation Interests	Conservation Objectives	Pathway For Effect	Potential for Likely Significant Effects
			Increase in noises can have disturbance impacts to otter and their breeding sites. During construction, noise and the construction related disturbance could reduce the ability of populations of QI's to forage, breed, commute or rest. Disturbance of invasive species during the construction of the proposed works could lead to the introduction and/or dispersal of IAPS during its removal off site via machinery, materials or work wear. There is a hydrogeological pathway between the proposed development site to the SAC via Ballintougher and Killarga Ground Waterbodies. However, there will be no impact on groundwater as the excavations are (1.2m) and above groundwater level. A source-pathway-receptor link exists between the proposed works site and the QI of this SAC.	

5. ASSESSMENT OF SIGNIFICANCE

5.1 POTENTIAL FOR SIGNIFICANT EFFECTS

As noted in Table 4-1, the potential for likely significant effects were identified between the proposed development and Lough Gill SAC via hydrological and terrestrial pathways. The proposed development has the potential to impact on the water quality, habitats, disturbance and spread of invasive species impacts.

5.2 DEGRADATION OF QI HABITATS

5.2.1 Terrestrial

The nearest terrestrial QI habitat to the proposed development is Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]. This is located 3.0km downstream of the proposed development. No terrestrial habitats within the footprint or the ZoI of the proposed development have affinities to QI habitats of the SAC. There will be the required removal of riparian vegetation along the boundary of the SAC at Site 2 and Site 3 for the installation of permanent head walls and embankments, which will result in a total loss of approximately $10m^2$ of riparian habitat. While this is a permanent loss of habitat, it does not offer any significant loss of supporting value to QI's such as otter within the SAC. Given the total permanent habitat loss is approximately $10m^2$ of riparian vegetation in relation to the total area of the terrestrial habitat within the SAC, this loss is not considered an adverse effect to the SAC. The removal of the five mature beech trees, would not be of relevance to the integrity of the SAC as they are a non-native species.

5.2.2 Aquatic

A hydrological connection exists between the proposed development site and Lough Gill SAC. It is possible for water quality degradation to occur within the SAC, as a result of an accidental spillage, or discharge of silt laden runoff during the construction phase of the proposed development, due to the hydrological connectivity. Water quality degradation can impact aquatic habitats for QI's such as otter, crayfish or salmon and also reduce and/ or eliminate their feeding resources (fish biomass) or spawning and nursery habitat. Otters are principally piscivorous relying predominantly on salmonids (salmon and brown trout) but also a wide range of other aquatic prey sources where available (Carss 1995).

Therefore, there is a potential for water quality and habitat degradation to occur with Lough Gill SAC as a result of the proposed development. This could result in likely significant effects on the conservation objectives of this European site.

5.3 SPREAD OF INVASIVE ALIEN PLANT SPECIES

Two IAPS (Japanese knotweed and Himalayan balsam) were recorded during the field surveys of the proposed development. An infestation of Japanese knotweed was recorded within Site 2 and will be directly impacted by the proposed works. Himalayan Balsam was also recorded at Site 2, located 20m northeast from the proposed works area. Given the close proximity of the IAPS to the works area, there is potential for the IAPS to be spread present within the footprint and ZoI of the proposed development and within the SAC.

The introduction and establishment of IAPS has the potential to negatively impact habitats, including loss of biodiversity, increased flooding risk by impeding river-water flow, increased riverbank erosion, competitively excluding native plant species, and providing less favourable habitats for native fauna (TII, 2020). Therefore, there is potential spread of IAPS causing habitat degradation to occur within Lough Gill SAC, as a result of the proposed development. This could result in likely significant effects on the conservation objectives of this European site.

5.4 Disturbance To Species

The proposed construction works have the potential to disturb species, including mammals and birds.

5.4.1 Otter

Otter are considered vulnerable given their reliance on fish food supplies, sensitivity to disturbance and pollution in addition to their short life cycle and small litter sizes (Chanin, 2003). The current range of the semi-aquatic species otter within the Lough Gill SAC is estimated at 93.6% (NPWS, 2021). Field surveys did not find evidence of otter activity, or breeding or resting sites within the ZoI of the proposed development. Otter activity has previously been recorded along the Bonet River at Site 2 as well as a tributary of the Bonet 150m from Site 3 and Lough Gill (NBDC 2024).

The proposed development site has suitable habitat for otter to forage, rest and/or breed along the riverbanks. It is possible that otter may forage/rest/commute along the Bonet_050 River which is located within the SAC. Therefore, there is potential for construction works disturbance along otter territory which could result in the disturbance of otter. Disturbance and impacts on their feeding resource would result in likely significant effects on the otter population within the SAC.

5.4.2 Fish and Crayfish

The NBDC and IFI databases only showed records of salmon, lamprey larvae and crayfish to be present in the Bonet River.

While the proposed development is within the favourable reference range for Atlantic salmon, brook lamprey and sea lamprey and it is outside the favourable reference range for river lamprey (NPWS, 2019c)[15].

It is possible that the salmon and lamprey may be present within the Bonet River_050 river which is located within the SAC. Instream works involving the placement of clean gravels within the watercourses are proposed and therefor there is potential for direct impacts for these QI species during construction works, however these works will be carried out during open season and therefore there is limited direct impacts on fish and crayfish. There is potential for indirect impacts from a degradation of water quality. A degradation of water quality would result in likely significant effects on the population of Atlantic salmon and lamprey species within the SAC.

[15] https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol3_Species_Article17.pdf

5.5 SCREENING ASSESSMENT CONCLUSION

The initial step in the assessment of potential significant effects on European sites was the determination of the number and nature of the sites within the ZoI of the proposed development (see Appendix A).

Initially designated SACs and SPAs sites within a 15km buffer from the proposed development site boundary were considered to be within the likely ZoI (Figure 4-1). In addition, using the precautionary principle, sites outside of the 15km buffer zone were also taken into account and assessed where potential pathways for effects were identified. A standard source-receptor-pathway conceptual model was then used to screen the initial list to determine a preliminary list of "relevant" European sites (i.e. those which could be potentially affected). This conceptual model is a standard tool in environmental assessment. In order for an effect to occur, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism means there is no likelihood for the effect to occur. In the context of the proposed development, the model comprises:

- Source (s) – potential impacts from the proposed development, e.g. the runoff of sediment;
- Pathway (s) – hydrological, physical or ecological connectivity to a European site; and
- Receptor (s) – qualifying interests and/or special conservation interests of the European sites.

Using the source-receptor-pathway model, an examination of the potential effects of the proposed development was undertaken (alone and/or in-combination) to identify what European sites, and which of their qualifying interests or special conservation interest species were potentially at risk. This was required to determine the ZoI (refer to Figure 4-1) for the proposed development. The AA screening process considered potential significant effects which may arise during the construction, operational and decommissioning phases of the proposed development. The conclusion of the AA Screening was as follows:

The screening assessment determined that using best scientific knowledge, that adverse effects on the integrity of a Natura 2000 site or sites, within the 15km Zone of Influence, cannot be excluded. By virtue of the requirement for protection or mitigation measures required during the construction and decommissioning phases of the proposed development, the recommendation of the screening process is, therefore, to proceed to Stage Two: Appropriate Assessment for Lough Gill SAC [001976].

Furthermore, considering the Zone of Influence established for the potential spread of IAPS through terrestrial pathways, all European sites in Ireland are also due to proceed to Stage Two: Appropriate Assessment.

A copy of the AA Screening is included in Appendix A of this report.

Thus, this NIS was prepared in accordance with the provisions of Article 6(3) of the Habitats Directive and Part XAB of the Planning and Development Act 2000, as amended, providing information to enable the competent authority to perform its statutory function to undertake an AA in respect of the proposed development.

6. NATURA IMPACT STATEMENT

6.1 DESCRIPTION OF EUROPEAN SITES AND ASSESSMENT OF POTENTIAL ADVERSE EFFECTS

6.1.1 Lough Gill SAC [001976]

The proposed development site is hydrologically connected to Lough Gill SAC via the Bonet_050 and Kilanummery_020 WFD river waterbodies, which are located within and along the boundary of the proposed development sites. This European site includes Lough Gill, Doon Lough to the north-east, the Bonet River (as far as, but not including, Glenade Lough), and a stretch of the Owenmore River near Manorhamilton in Co. Leitrim. Lough Gill itself, 2km east of Sligo town, lies at a geological junction of ancient metamorphic rocks which produce acid groundwater, and limestone which dissolves in the groundwater. Lough Gill is a large lake, being 8km long with steep limestone shores and underwater cliffs. The Qualifying Interests for Lough Gill SAC are listed below (* indicates priority habitat).

- Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]
- Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]
- White-clawed Crayfish [1092]
- Sea Lamprey [1095]
- Brook Lamprey [1096]
- River Lamprey [1099]
- Salmon [1106]
- Otter [1355]

Site-specific conservation objectives (SSCO) were set by the NPWS for each of the listed qualifying interests of the SAC (NPWS, 2021). A site-specific conservation objective aims to define the favourable conservation condition for a particular habitat or species at the site, and consequently at a national level. Additionally, in 2011 each individual qualifying interest was given an overall assessment of conservation status rating at national level, based on the four main parameters for habitats and species (Range, Area or Population, Structure & Functions or Habitat for the species and Future Prospects) as listed in Table 6-1.

Table 6-1: Assessment of the potential for Adverse Effects on the Qualifying Interests (QI) of Lough Gill SAC (Note: Bold Text highlights qualifying interests potentially affected significantly by the proposed development),

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Status	Pathway	Conservation Objective	Attribute	Target	Potential for Adverse Effects
Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]	This habitat type is located 3.3 km northwest (hydrologically c. 6.2km) from the nearest proposed development site.	Inadequate	Yes – the QI is located within Lough Gill WFD lake body and hydrologically connected with the proposed development.	To restore the favourable conservation condition of Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation in Lough Gill SAC	Habitat area	The permanent habitat area is stable or increasing, subject to natural processes.	Yes. The QI habitat is hydrologically connected with the proposed development and could be potentially affected from water pollution from the construction and/or operation phase of the proposed development. A degradation of water quality constitutes an adverse effect on the integrity of the site.
					Habitat distribution	No decline, subject to natural processes.	
					Vegetation composition: typical species	Typical species present, in good condition, and demonstrating typical abundances and distribution	

					Vegetation composition: characteristic zonation	All characteristic zones should be present, correctly distributed and in good condition	
					Vegetation distribution: maximum depth	Maintain maximum depth of vegetation, subject to natural processes	
					Hydrological regime: water level fluctuations	Maintain appropriate hydrological regime necessary to support the habitat	
					Lake substratum quality	Maintain appropriate substratum type, extent and chemistry to support the vegetation	
					Transparency	Maintain/restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	
					Nutrients	Maintain/restore the concentration of nutrients in the	

						water column to sufficiently low levels to support the habitat and its typical species	
					Phytoplankton biomass	Maintain appropriate water quality to support the habitat, including high chlorophyll a status	
					Phytoplankton composition	Maintain/restore appropriate water quality to support the habitat, including high phytoplankton composition status	
					Attached algal biomass	Maintain/restore trace/absent attached algal biomass (<5% cover)	
					Macrophyte status	Restore high/good macrophyte status	
					Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat,	

						subject to natural processes	
					Water colour	Maintain/restore appropriate water colour to support the habitat	
					Dissolved organic carbon (DOC)	Maintain/restore appropriate organic carbon levels to support the habitat	
					Turbidity	Maintain/restore appropriate turbidity to support the habitat	
					Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of the habitat	
Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*	This habitat type is located 6.2km northwest (hydrologically c. 9.1km) from the nearest proposed development site.	Bad	No – no pathway exists. The terrestrial QI habitat is not hydrologically connected with the proposed development.	To restore the favourable conservation condition of Semi-natural dry grasslands and scrubland facies on calcareous	Habitat area	Area stable or increasing, subject to natural processes	No potential for adverse effects – The QI habitat is not hydrologically connected to the proposed development.
					Habitat distribution	No decline, subject to natural processes	

important orchid sites) [6210]				substrates (Festuco-Brometalia) (* important orchid sites) in Lough Gill SAC	Vegetation composition: positive indicator species	At least 7 positive indicator species present in monitoring stop or, if 5–6 present in stop, additional species within 20m of stop; this includes at least two 'high quality' positive indicator species present in stop or within 20m of stop	
					Vegetation composition: negative indicator species	Negative indicator species collectively not more than 20% cover, with cover of an individual species not more than 10%	
					Vegetation composition: non-native species	Cover of non-native species not more than 1%	
					Vegetation composition: woody species and bracken	Cover of woody species (except certain listed species) and bracken (Pteridium aquilinum) not more than 5%	

					Vegetation structure: broadleaf herb: grass ratio	Broadleaf herb component of vegetation between 40% and 90%	
					Vegetation structure: sward height	At least 30% of sward between 5cm and 40cm tall	
					Vegetation structure: litter	Litter cover not more than 25%	
					Physical structure: bare soil	Not more than 10% bare soil	
					Physical structure: grazing or disturbance	Area of the habitat showing signs of serious grazing or disturbance less than 20m²	
Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	NPWS Article 17 spatial data illustrates this habitat type is located 3.7km northwest (hydrologically c. 5.6km) from the nearest proposed development site.	Bad	No – the QI habitat is terrestrial woodlands and are not hydrologically connected with the proposed development.	To restore the favourable conservation condition of Old sessile oak woods with Ilex and Blechnum in the British Isles in Lough Gill SAC	Habitat area	Area stable or increasing, subject to natural processes	No potential for adverse effects – The QI habitat is not hydrologically connected to the proposed development.
					Habitat distribution	No decline, subject to natural processes.	
					Woodland size	Area stable or increasing. Where topographically	

						possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	
					Woodland structure: cover and height	Total canopy cover at least 30%; median canopy height at least 11m; native shrub layer cover 10-75%; native herb/dwarf shrub layer cover at least 20% and height at least 20 cm; bryophyte cover at least 4%	
					Woodland structure: community diversity and extent	Maintain diversity and extent of community types	
					Woodland structure: natural regeneration	Seedlings, saplings and pole age-classes of target species for 91A0 woodlands and other native tree species occur in adequate proportions to ensure survival of woodland canopy	

					Woodland structure: dead wood	At least 19 stems/ha of dead wood of at least 20cm diameter	
					Woodland structure: veteran trees	No decline	
					Woodland structure: indicators of local distinctiveness	No decline in distribution and, in the case of red listed and other rare or localised species, population size	
					Woodland structure: indicators of overgrazing	All four indicators of overgrazing absent	
					Vegetation composition: native tree cover	No decline. Native tree cover at least 90% of canopy; target species cover at least 50% of canopy	
					Vegetation composition: typical species	At least 1 target species for 91A0 woodlands present; at least 6 positive indicator species for 91A0 woodlands present	

					Vegetation composition: negative indicator species	Negative indicator species cover not greater than 10%; regeneration of negative indicator species absent	
Alluvial forests with *Alnus glutinosa* and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	This habitat type is located 10.3 km northwest (hydrologically c. 13.8km) from the proposed development site.	Bad	Yes – this QI is a riverine habitat that is likely to occur in areas with hydrological connectivity with the proposed development	To restore the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)* in Lough Gill SAC	Habitat area	Area stable or increasing, subject to natural processes.	Yes. The QI habitat is hydrologically connected with the proposed development and could be potentially affected from water pollution or spread of invasives from the construction and/or operation phase of the proposed development. A degradation of water quality or the introduction / spread of IAPS would result in adverse effects on the integrity of the site.
					Habitat distribution	No decline, subject to natural processes.	
					Woodland size	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	
					Woodland structure: cover and height	Total canopy cover at least 30%; median canopy height at least 7m; native shrub layer cover 10-75%; native herb/dwarf shrub layer cover at least 20% and height at least	

						20cm; bryophyte cover at least 4%	
					Woodland structure: community diversity and extent	Maintain diversity and extent of community types	
					Woodland structure: natural regeneration	pole age-classes of target species for 91E0* woodlands and other native tree species occur in adequate proportions to ensure survival of woodland canopy	
					Hydrological regime: flooding depth/height of water table	Appropriate hydrological regime necessary for maintenance of alluvial vegetation	
					Woodland structure: dead wood	At least 19 stems/ha of dead wood of at least 20cm diameter	
					Woodland structure: veteran trees	No decline	
					Woodland structure: indicators of	No decline in distribution and, in the case of red	

					local distinctiveness	listed and other rare or localised species, population size	
					Woodland structure: indicators of overgrazing	All five indicators of overgrazing absent	
					Vegetation composition: native tree cover	No decline. Native tree cover at least 90% of canopy; target species cover at least 50% of canopy	
					Vegetation composition: typical species	At least 1 target species for 91E0* woodlands present; at least 6 positive indicator species for 91E0* woodlands present	
					Vegetation composition: negative indicator species	Negative indicator species cover not greater than 10%; regeneration of negative indicator species absent	
					Vegetation composition: problematic native species	Cover of common nettle (Urtica dioica) less than 75%	

White-clawed Crayfish [1092]	The Conservation Objectives report for Lough Gill SAC (NPWS 2021) describe White-clawed Crayfish main population to be present in the Bonet River, i.e. 0km from the proposed development. This species occurs within the Bonet River. Records from NBDC (2024) show the closest crayfish records are less than 50m south of the proposed development at Site 2.	Inadequate	Yes – the QI might be present within the Bonet_050 and Kilanummery_020 WFD river water bodies, which drains the proposed development.	To maintain the favourable conservation condition of White-clawed Crayfish in Lough Gill SAC	Distribution	No reduction from baseline	Yes - As the Bonet_050 and Kilanummery_020 water bodies contain suitable habitat to support the QI, and they are known to occur further downstream (NBDC. 2024) the proposed development may affect White-clawed Crayfish populations and their habitat during the Construction and Operation Phases. Changes in water quality and impacts to the population structure would constitute and adverse effects on site integrity.
					Population structure: recruitment	Juveniles and females with eggs in at least 50% of positive samples taken at appropriate time and methodology	
					Population size	No reduction from baseline of 0.25	
					Negative indicator species	No non-indigenous crayfish species present	
					Disease	No instances of disease	
					River water quality	At least Q3-4 at all sites sampled by EPA	
					Lake water quality	Maintain appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat	

					Habitat quality: heterogeneity	No decline from the baseline	
Sea Lamprey [1095]	NPWS Article 17 spatial data illustrates the current range and distribution for this species throughout the Sligo Bay catchment. The Conservation Objectives report for Lough Gill SAC (NPWS 2021) describe only a small number of records exist for sea lamprey in Lough Gill SAC. Two juvenile lake-feeding sea lamprey were recorded from Lough Gill in 2018 attached to pike (King and O'Gorman, 2018). An electro-fishing survey for larval lamprey was carried out on the Garavogue-Bonet catchment by IFI in 2009 (IFI, 2010),	Bad	Yes – the QI may be present within Lough Gill SAC and potentially the Bonet_050 and Kilanummery_020 WFD river water bodies, which drains the proposed development. However, there is a significant natural barrier, consisting of a sequence of waterfalls, at the village of Dromahair in the lower reaches of the Bonet River which may cause a barrier to their migration upstream.	To restore the favourable conservation condition of Sea Lamprey in Lough Gill SAC	Distribution	Access to all water courses down to first order streams	Yes –the proposed development and operation phase may impact on water quality (Section 5) and affect the QI and its supporting habitat habitats. Changes in water quality would constitute and adverse effects on site integrity.
					Distribution in suitable habitat	Not less than 50% of sample sites with suitable habitat positive for larval brook/river lamprey	
					Population structure of larvae	At least three age/size classes of larval brook/river lamprey present	
					Larval lamprey density in fine sediment	Mean density of brook/river larval lamprey in sites with suitable habitat at least 5/m²	
					Extent and distribution of spawning and nursery habitat	No decline in extent and distribution of spawning and nursery beds	

	with a repeat survey in 2016 (Gallagher *et al.*, 2017). No sea lamprey larvae were recorded from these surveys.						
Brook Lamprey [1096]	NPWS Article 17 spatial data illustrates the current range and distribution range for this species throughout the Sligo Bay catchment. The Conservation Objectives report for Lough Gill SAC (NPWS 2021) describe survey for larval lamprey was carried out on the Garavogue-Bonet catchment in 2009 (IFI, 2010), with a repeat survey in 2016 (Gallagher *et al.,* 2017) with lamprey sp. to be present in 47% of survey sites. In 2022, IFI carried out a lamprey survey on the Bonet River and	Favourable	Yes – the QI may be present within Lough Gill SAC and potentially the Bonet_050 and Kilanummery_020 WFD river water bodies, which drains the proposed development. However, there is a significant natural barrier, consisting of a sequence of waterfalls, at the village of Dromahair in the lower reaches of the Bonet River which may cause a barrier to their migration upstream.	To restore the favourable conservation condition of Brook Lamprey (*Lampetra planeri*) in Lough Gill SAC	Distribution	Access to all water courses down to first order streams	
					Distribution in suitable habitat	Not less than 50% of sample sites with suitable habitat positive for larval brook/river lamprey	
					Population structure of larvae	At least three age/size classes of larval brook/river lamprey present	
					Larval lamprey density in fine sediment	Mean density of brook/river larval lamprey in sites with suitable habitat at least 5/m²	
					Extent and distribution of spawning and nursery habitat	No decline in extent and distribution of spawning and nursery beds	

	recorded 30 lamprey larvae from four survey sites						
River Lamprey [1099]	NPWS Article 17 spatial data illustrates the current range and distribution range for this species is not within the Sligo Bay catchment. However, the Conservation Objectives report for Lough Gill SAC (NPWS 2021) describe survey for larval lamprey was carried out on the Garavogue-Bonet catchment in 2009 (IFI, 2010), with a repeat survey in 2016 (Gallagher *et al.,* 2017) with lamprey sp. to be present in 47% of survey sites. In 2022, IFI carried out a lamprey survey on the Bonet River and recorded 30 lamprey larvae	Favourable	Yes – the QI may be present within Lough Gill SAC and potentially the Bonet_050 and Kilanummery_020 WFD river water bodies, which drains the proposed development. However, there is a significant natural barrier, consisting of a sequence of waterfalls, at the village of Dromahair in the lower reaches of the Bonet River which may cause a barrier to their migration upstream.	To restore the favourable conservation condition of River Lamprey (*Lampetra fluviatilis*) in Lough Gill SAC	Distribution	Access to all water courses down to first order streams	
					Distribution in suitable habitat	Not less than 50% of sample sites with suitable habitat positive for larval brook/river lamprey	
					Population structure of larvae	At least three age/size classes of larval brook/river lamprey present	
					Larval lamprey density in fine sediment	Mean density of brook/river larval lamprey in sites with suitable habitat at least 5/m²	
					Extent and distribution of spawning and nursery habitat	No decline in extent and distribution of spawning and nursery beds	

	from four survey sites						
Salmon [1106]	NPWS Article 17 spatial data illustrates the current range and distribution for this species throughout the Sligo Bay catchment. Records of IFI fish stock surveys as part of WFD surveys, conducted an electrofishing survey on the Bonet River in 2010. Salmon, were recorded present in Lough Gill in 2011 in a fish stock survey, carried out by IFI (Kelly *et al.,* 2015b).	Inadequate	Yes – the QI may be present within Lough Gill SAC and potentially the Bonet_050 and Kilanummery_020 WFD river water bodies, which drains the proposed development.	To restore the favourable conservation condition of Atlantic Salmon (*Salmo salar*) in Lough Gill SAC	Distribution: extent of anadromy	100% of river channels down to second order accessible from estuary	Yes – As salmon may occur downstream of the proposed development sites and within the SAC, they may be affected by water quality from the proposed development. Changes in water quality and the release of sediment can negatively impact suitable spawning habitat. A degradation of water quality and impacts on spawning sites would result in adverse effects on the integrity of the site.
					Adult spawning fish	Conservation limit (CL) for each system consistently exceeded	
					Salmon fry abundance	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling	
					Out-migrating smolt abundance	No significant decline	
					Number and distribution of redds	No decline in number and distribution of spawning redds due to anthropogenic causes	

					Water quality	At least Q4 at all sites sampled by EPA	
Otter [1355]	NPWS Article 17 spatial data illustrates otter habitat throughout the main Bonet River channel and, as such, it is assumed that this species may be present throughout the catchment and associated tributaries present within or near the development site. There are multiple records of otters in the 10km grid square that the proposed development is situated in (NBDC, 2021)[16].	Favourable	Yes – the QI may be present within Lough Gill SAC and potentially the Bonet_050 and Kilanummery_020 WFD river water bodies, which drains the proposed development.	To maintain the favourable conservation condition of Otter (*Lutra lutra*) in Lough Gill SAC	Distribution	No significant decline	Yes – As Otter may occur within the proposed development site, and within water bodies within the hydrological pathway from the proposed development, disturbance, and contamination of habitat would adversely affect the QI population within Lough Gill SAC.
					Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 193.91ha along riverbanks/ lake shoreline/around ponds	
					Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 80.38km	
					Extent of freshwater (lake) habitat	No significant decline. Area mapped and calculated as 353.39ha	
					Couching sites and holts	No significant decline	

[16] National Biodiversity Data Centre, 2021. Biodiversity Maps. [online] Available at: Maps - Biodiversity Maps (biodiversityireland.ie)

					Fish biomass available	No significant decline	
					Barriers to connectivity	No significant increase	

6.2 Summary of Potential Adverse Effects on European Sites

The potential for impacts on the nature conservation objectives and targets have been assessed in light of habitats and the species that are likely to be affected by the proposed development. The approach considers the guidance for ecological impact assessment as stated in Section 2.1.

Ecological impact assessment of potential impacts on the qualifying interests of Lough Gill SAC was conducted utilising the source-pathway-receptor model, where, for an impact to be established all three elements of this mechanism must be in place.

Impacts can be categorised as direct or indirect. Impacts that could potentially occur because of the proposed development works include:

- Disturbance to key species;
- Reduction in species density; and
- Changes in key indicators of conservation value, such as a decrease in water quality.

Potential impacts from the proposed development works which have, been identified to result in likely adverse effects upon the qualifying interests or integrity of Lough Gill SAC are:

- [3150] Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation
- [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, *Alnion incanae, Salicion albae*)
- [1092] White-clawed Crayfish
- [1095] Sea Lamprey
- [1096] Brook Lamprey
- [1099] River Lamprey
- [1106] Salmon
- [1355] Otter

7. MITIGATION MEASURES

In accordance with Article 6(3) of the Habitats Directive, the following mitigation measures are prescribed hereunder to avoid and/or reduce the significance of the potential impacts from the proposed development (Section 3) and prevent the occurrence of likely adverse effects on European sites (Section 7). Leitrim County Council in conjunction with any contractor appointed by Leitrim County Council, shall be required to comply with, and implement the requirements and mitigation measures as set out here (Section 7.1 to 7.3).

The following mitigation measures are set out in accordance with the European Commission (2001) guidance on the '*Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive (92/43/EEC)*'. Mitigation is described with respect to:

- How the measures will avoid / reduce the adverse impacts on the site;
- The degree of confidence in their likely success;
- The timescale, relative to the project, when they will be implemented and secured; and
- How and when the measures will be monitored.

These mitigation measures have been designed and shown in Figure 3-2, Figure 3-3 and Figure 3-4.

7.1 CONSTRUCTION PHASE MITIGATION MEASURES

Mitigation measures to be implemented during the construction phase of the proposed development are detailed hereunder.

Mitigation measures were devised in consideration of the following guidelines:

- Water Framework Directive (2000/60/EC);
- CIRIA (2006). Control of Water Pollution from Construction Sites - Guidance for Consultants and Contractors. CIRIA C532; and Control of Water Pollution from Linear Construction Projects. Technical guidance CIRIA C648;
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters;
- National Roads Authority (2008b). Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes; and
- National Roads Authority (2006). Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes.

7.1.1 Construction Environmental Management Plan

A Construction Environmental Management Plan (CEMP) has been prepared and is included within the consent application under section 177AE of the Planning and Development Act 2000, as amended. All mitigation measures outlined in this NIS, have been incorporated within the CEMP.

All of the information provided within the CEMP will be implemented in full by the appointed Contractor, and its finalisation by the Contractor will not affect the robustness and adequacy of the information presented and replied upon in the NIS.

7.1.2 Appointment of an Ecological Clerk of Works

A suitably qualified Ecological Clerk of Works (ECoW) will be appointed by the Contractor. The ECoW will be present for the duration of the construction phase programme and will ensure that all mitigation measures outlined in this report and, consequently, in the CEMP, are implemented during the construction works. The duties of the ECoW will include, but are not limited to:

- Will liaise regularly with the appointed Contractor and will review all method statements;
- Will ensure all mitigation measures prescribed herein are implemented correctly and effectively throughout the duration of the construction phase;
- Will inspect the installation and removal of all mitigation measures;
- Will undertake regular inspections of all mitigation measures throughout the duration of the construction phase;
- Daily spot checks on the adequacy of cleaning and storage of waste onsite;
- Inspecting compliance with spill kit replacement, and
- Will carry out regular inspection of the silt control measures, such as silt fences.

Further responsibilities of the ECoW are detailed within the below mitigation measures.

7.1.3 Surface Water Quality Mitigation Measures

7.1.3.1 Sediment Control Mitigation Measures

The following are mitigation measures which will be implemented by the appointed Contractor to minimise and avoid the effects of sedimentation during the proposed construction phase.

- Existing surface water drainage infrastructure (e.g. gullies) will not be interfered with or blocked during the proposed works. However, neither will they be used for the unattenuated discharge of silt-laden waters from the works;
- There is potential for sediment runoff during periods of rain from excavated spoil heaps. These spoil heaps will be covered at all times until required for repurposing / landscaping. And it will be surrounded by a silt barrier to capture and control any potential sediment runoff during periods of heavy rainfall;
- All instream works in the Bonet_050 and Kilanummery_020 River watercourses shall only be undertaken during the period July - September in accordance with the IFI Guidelines 2016 unless under previous agreement with the IFI; All construction works will be confined to within the proposed development site boundary. No works will be undertaken outside of this area;
- All excavation works along riverbanks will be carried out during low water levels works only;
- The temporary construction compound and welfare facilities located in the carpark of Site 2 will be setback a minimum of 50m from the drainage ditches and rivers. Temporary welfare facilities will not have any discharge to ground or surface waters;
- Silt fences will be erected along the left bank of Bonet_050 and Kilanummery_020 River as well as any open drainage areas at each of the three proposed development sites prior to any excavation works commencing to ensure sediment from the work area into these watercourses is prevented during the construction phase;

- Silt fencing will be positioned a minimum of 2-5m back on the riverbank between the river and the proposed foundation site for headwalls. The silt fences will stay in position during the entire construction phase;
- Riparian vegetation will be left intact for its protection to a minimum distance of 2m;
- Surface water filtered through the silt fences be intercepted by the riparian vegetation before entering the watercourses;
- The silt fences will be positioned to allow an appropriate working area, but outside of areas prone to flood, or below the high-water mark;
- Silt fences will be constructed using a permeable filter fabric (Hy-Tex Terrastop Premium silt fence or similar) and installed as per the manufacturer's guidelines prior to any ground disturbance works;
- Silt fences will be installed under the ECoW supervision and will be maintained until all ground activities have ceased and vegetation re-established. Once installed, the silt fence will be inspected regularly during construction and more frequently during heavy rainfall events. The ECoW will supervise the removal of all silt fences following the completion of the works;
- Prior to the commencement of excavations, an area for stockpiling excavated material will be identified within the proposed development site;
- Excavation activities will not be carried out during or following heavy rainfall (i.e., if there is a yellow weather warning in place or 5mm in a 1-hour period) or at high water levels;
- Excavations will be covered with tarp or similar material, during high rainfall to avoid the creation of surface water with high concentrations of suspended solids that would require dewatering;
- Excavations, where necessary shall be left open for minimal periods to avoid acting as a conduit for surface water flows. The stockpile shall be bunded to collect any contaminated surface water run-off. The excavated material shall be WAC (Waste Acceptance Criteria) tested for appropriate disposal or reuse on site;
- Stockpiling of construction materials and temporary soil storage areas will be strictly prohibited within 20m of any existing surface water drainage, ditch or water-laden channel (refer to see Drawings 11271- 5001 to 5003 in Appendix B for the allocated stockpile locations);
- The temporary soil storage areas at each site will be located on flat lands during the construction phase (and the existing vegetation will act as an effective buffer against any sediment in runoff from the storage area;
- All temporary excavated storages areas will be regularly checked/monitored to ensure no drainage issues of surface water quality impacts are occurring and no erosion is taking place;
- The amount of excavated material is expected to be small, but stockpiling of large volumes of loose soil material onsite will be avoided, and surplus material removed from the site as soon as work is completed;
- A reduced stockpile height of 2m will apply to any topsoil / soil forming materials to prevent possible degradation of soil structure and instability;
- The excavated material will be delivered by tractor and trailer to the stockpile area via the access tracks; and
- Suspended soils will not exceed 25 mg/l or result in the deposition of silts on gravels of any aquatic flora or fauna as specified in the Salmonid waters regulations SI 293 of 1988.

7.1.3.2 Pollution Control Measures

- Protection measures shall be put in place to ensure that all hydrocarbons used during the construction works are appropriately handled, stored and disposed of in accordance with recognised standards;
- An emergency plan for the construction phase of the proposed development to address accidental spillages will be drawn up, with mandatory adherence and training for all site personnel;
- No material or construction vehicles will be stored within 20m of drainage ditches or watercourses;
- No wheel-washing or cement wash facilities will be present within any of the development sites or at the site entrances. All wheel-washing and cement washing will be carried out offsite;
- All machinery will be regularly maintained and checked for leaks. Services will only be undertaken within the construction compound or offsite;
- Fuels and oils will be stored in a secure bunded area of the construction compound site at Site 2, located more than 50m away from the watercourses;
- Re-fuelling of construction equipment and the addition of hydraulic oil or lubricants to vehicles / equipment will be undertaken in designated hard surface, bunded areas within the construction compound or off site only. If it is not possible to bring machinery to the refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. Only dedicated trained, competent personnel can carry out refuelling operations;
- Mobile storage units such as fuel bowsers should be bunded to 110% capacity to prevent spills. Tanks for bowsers will be double skinned. All valves and fuel trigger guns from fuel storage containers should be locked when not in use;
- The oil and fuel containment facility will be regularly inspected and maintained. In the event of an accidental spill of chemicals, oil, or fuel into the watercourse, IFI will be informed immediately;
- Spill kits, hydrocarbon absorbent packs and drip trays will be on site at all times and available for all refuelling operations. A drip tray will be placed beneath the fill point during refuelling operations in order to contain any spillages that may occur. Equipment will not be left unattended during refuelling. All pipework from containers to pump nozzles will be fitted with antisiphon valves;
- Any spillage of fuels, lubricants of hydraulic oils shall be immediately contained, with an appropriate emergent response put in place. Any contaminated soil will be removed from the site and properly disposed of to a suitably licenced facility;
- Strict procedures for plant inspection, maintenance and repairs detailed in the contractor's method statements and machinery checked for leaks before arrival on site;
- All site plant inspected at the beginning of each day prior to use;
- Services can only be undertaken within the construction compound or offsite. Defective plant machinery will not be used onsite until the defect is satisfactorily fixed;
- The precast headwalls and surface water outfalls will comprise of precast reinforced concrete, placed on foundations on the banks of the watercourses;
- All headwalls and surface water outfalls will be installed within the dry and completely isolated from the watercourses;
- All ready-mixed concrete required for Site 2 shall be brought to site by truck as required and poured in place into formwork at the site.

- All concrete poured at site will be isolated from any flowing water that may drain into the river. There will be no direct discharge of concrete or residues made to watercourses;
- No on-site batching will be permitted within the proposed development site. All raw, uncured waste concrete will be cured off site;
- All concrete works will be scheduled during dry weather conditions only to reduce the elevated risk of runoff. Concrete pouring will be prevented during periods of heavy rainfall (Yellow rain warning event or higher), and quick setting mixes will be preferable;
- A periodic inspection will be carried out by the ECoW at the concrete pouring areas to verify and inspect the integrity of the area to ensure no pollution is taking place;
- Wash down and washout of concrete transporting vehicles will take place at an appropriate facility offsite;
- No chemicals that are deleterious to aquatic organisms can be used in cleaning works;
- Waste materials shall be stored in designated storage compound area at Site 2, isolated from surface water drains;
- No harmful materials shall be deposited into any watercourses, including drainage ditches/pipes on or adjacent to the site; and
- On completion of the works, all apparatus, plant, tools, offices, sheds, surplus materials, waste material, and temporary erections or works of any kind will be removed from the site.

7.1.4 Protection of Aquatic Ecology During Construction

Some of the measures proposed for the protection of the Bonet_050 and Kilanummery_020 River and downstream areas including the Lough Gill European site are captured as standard construction measures in other sections of this NIS mitigation measures e.g. Section 7.1.3. Additional measures for the protection of the aquatic ecology are listed below.

7.1.4.1 Habitat Loss

To minimise the effects of habitat loss on aquatic species, all sections of river/stream channels within the proposed project boundary, and outside the immediate footprint of the proposed development and associated infrastructure, will be protected from site clearance and construction works where possible.

- Site clearance for headwalls and embankments will be kept to a minimum to prevent temporary loss of riparian vegetation. Permanent loss of riparian habitat will only occur where headwalls and precast walls are being located;
- The banks of rivers/streams will be fenced off where any works are taking place nearby and within this zone the natural riparian vegetation will be retained where possible; and
- Trees will not be felled during nesting and breeding season between 1st March to 31st August;

7.1.4.2 Mortality Risk & Disturbance / Displacement

To minimise the potential effects of construction works on aquatic and semi aquatic species the following mitigation measures will be implemented.

- Prior to construction works commencing, the appointed contractor shall engage the services of a suitably qualified ecologist to conduct a pre-construction otter survey

of the proposed development sites, including upstream and downstream of the Bonet_050 and Kilanummery_020 River. The survey should be undertaken immediately prior to the commencement of any works and in accordance with Guidelines for the '*Treatment of Otters Prior to the Construction of National Road Schemes'* (NRA, 2006). This is required in order to identify any changes in otter activity since the original baseline survey. New holts could, however, be established in the interim between planning and construction;

- The ECoW shall maintain a watching brief until such time that mobilisation of plant and personnel is completed along the proposed development;
- If an active otter holt is confirmed within 150m of the proposed works, then works within this ZoI will be immediately halted and the local NPWS conservation ranger will be contacted. This may require an application for a derogation licence from the NPWS to exclude the otter holt. If required, any further mitigation measures required will follow those outlined in the NRA (2006) Guidelines and will be agreed with the NPWS at the time of licence application;
- All works to facilitate the flood alleviation scheme shall be conducted in accordance with IFI guidance and with plans and timing of works agreed;
- Given the likely presence of salmonids, lamprey and crayfish in the Bonet_050 and Kilanummery_020 River, instream works shall only be conducted outside of the spawning season (e.g. instream works to be undertaken between July to September) and with IFI approval upon review of contractor method statement. Temporary, short-term instream works may normally occur during July to September inclusive. Advance notice should be given to IFI ahead of any required stream or river bypass works. Any instream works, therefore must adhere to these recommended seasonal constraints to avoid any impacts upon fish;
- No obstructions to fish passage should be placed in the stream, nor included in the design; and
- Any water required for dust suppression will not be abstracted from the rivers and from the main water network only.

7.1.5 Mitigation Measures for Invasive Alien Plant Species and Pathogens During Construction

In order to comply with Regulations 49 and 50 of the European Communities (Birds and Natural Habitat) Regulations (2011), the appointed Contractor will ensure biosecurity measures are implemented throughout the construction phase to ensure the introduction and translocation of invasive species is prevented.

An ISMP has been prepared for the treatment and removal of the existing IAPS on site. This is included in Appendix B. This ISMP presents the locations and abundance of high-risk Japanese knotweed and Himalayan Balsam recorded within the proposed development sites. A detailed account of all possible treatment options for Japanese knotweed and Himalayan Balsam was subsequently presented within the report. The preferred recommended management options is full physical removal and offsite disposal from site considered the most viable with regards these IAPS as they are located along the boundary line of Site 2 and exactly where the defence walls will be placed.

This must be reviewed and updated if required by the appointed Contractor.

Before any construction works commence, the Japanese knotweed and Himalayan balsam will be removed from site and disposed of offsite in accordance with Waste Legislation (Waste Management Act 1996 – 2001) and the ISMP (Appendix B) carried out for the proposed development.

Mitigation measures are prescribed to control the translocation or spread of invasive species and / or pathogens within the ISMP. This includes pre-construction survey, invasive species management plan, invasive species site management during treatment, prevention and further spread of IAPS.

7.1.5.1 Invasive Species Management During Construction

In order to comply with Regulations 49 and 50 of the European Communities (Birds and Natural Habitat) Regulations (2011), the appointed Contractor will ensure biosecurity measures are implemented throughout the construction phase to ensure the introduction and translocation of invasive species is prevented.

During construction works, the spread or introduction of alien invasive species and noxious weeds will be avoided by adopting appropriate biosecurity measures, as per guidance issued by the Transport Infrastructure Ireland (TII) (2010), Invasive Species Ireland Best Practice Management Guidelines (2012) and Inland Fisheries Ireland (IFI 2010) with respect to the protocols developed for the control of the spread of alien invasive species to both the aquatic and terrestrial environment, including the following measures:

The presence of alien invasive species and requirement for actions (if any new invasive species are found to be present onsite) will be confirmed by a suitably invasive species specialist or qualified ecologist.

The following mitigation measures, along with all measures outlined in the ISMP, are prescribed to control the translocation or spread of invasive species and / or pathogens:

- Biosecurity measures will be employed during the construction works associated with the any instream works. The biosecurity measures will have regard to IFI Biosecurity Protocols including: *'IFI Biosecurity Protocol for Field Survey Work (December 2010)'.*
- Site hygiene measures listed in the ISMP will need to be put in place to ensure that the further spread of invasive species is avoided. All machinery and equipment used during the drainage works will be inspected and will be completely dry prior to works commencing to prevent the risk of pathogen translocation.

A 'Check, Clean, Dry' protocol will be undertaken with all equipment, machinery and vehicles entering and leaving the proposed development site. All equipment/machinery used within the drainage ditch will checked for living plants and animals. Equipment and machinery used will be washed thoroughly and then allowed to dry for at least 48 hours.

7.2 Operation Phase Mitigation Measures

The operation of the flood alleviation measures should not ordinarily result in operational impacts along the watercourse that would adversely affect the integrity of the downstream European sites. However, given the classification of the potential impacts from the proposed development's operation phase (i.e. of same nature as the potential surface water impacts during the construction phase – Section 5.1), the mitigation measures proposed for the construction phase of the proposed development (Section 7.1.) are also proposed for the

proposed development's operation phase. In the unlikely event of an emergency operation being required along the watercourse, the following measures shall be implemented:

- Responding staff (OPW) shall operate to the documented scheduled maintenance or emergency procedures and shall have spillage kits readily available; and
- Any spillage of fuels, lubricants of hydraulic oils will be immediately contained, with an appropriate emergent response put in place. Any contaminated soil shall be removed from the site and properly disposed of.

7.3 Mitigation Effectiveness

The appointed Contractor and ECoW will be responsible for ensuring all mitigation measures listed above, including any additional planning conditions, are fully implemented during construction works. The above listed mitigation measures will be implemented prior to the construction works commencing and undertaken throughout the duration of the works. The above mitigation measures are best practice and are proven technologies/methods.

The mitigation measures, once correctly applied, will avoid, or reduce the magnitude of potential impacts on the receiving environment, therefore ensuring avoidance of significant adverse effects on the integrity of Lough Gill SAC.

8. ANALYSIS OF POTENTIAL IN-COMBINATION EFFECTS

Article 6(3) of the Habitats Directive requires that:

"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives."

It is therefore required that the potential impacts of the proposed development are considered in-combination with any other relevant plans or projects. Projects which have been completed, approved or which are proposed, as well as proposals within county development plans, located within the ZoI of the proposed development, have been considered in the in-combination assessment, and are discussed hereunder.

8.1 PLANNING APPLICATIONS

In-combination effects with other developments in the area were assessed via a review of National Planning Application Database website.

Planning permission was granted for an upgrade to the existing Gaelic Football field at Dromahair Community Park including the development of an adjoining multi-use training field and ancillary works and flood defense measures. Planning permission was also granted to retain & carry out complete renovations and alterations to the Abbey Hotel, Main Street, Dromahair. A number of small-scale residential developments were noted, e.g. residential one-off housing developments and housing upgrades. Planning permission has also been granted for the construction of 34 no. residential units consisting of semidetached houses and apartments blocks with a new site entrance off the existing estate road and the construct of a car park, landscaping, connections to all public services and all ancillary site works at Stonebridge Estate, Drumahaire / Drumlease, Dromahair, Co. Leitrim. A subsequent third party appeal has been lodged against this decision to An Bord Pleanála.

These works are minor in nature and restricted to existing site boundaries with no connectivity to the proposed development under appraisal in this report, therefore there is no potential for in-combination effects with the proposed development.

8.2 COUNTY DEVELOPMENT PLAN

Leitrim County Development Plan (2023-2029) sets out the policies, objectives, and the overall strategy for the development of the County over the plan period 2023-2029. The Plan outlines policies and objectives which are proactive in promoting the protection of European sites, including policies NH POL 1 to NH POL 5 and objective NH OBJ 1 which states:

'To ensure that no project or programme giving rise to significant adverse, direct, indirect, secondary or cumulative impacts on the integrity of any Natura 2000 site(s), having regard to their qualifying interests and conservation objectives, arising from their size, scale, area or land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either alone or in combination with other plans or projects)'.

No specific plans or projects have been identified within the Plan (Leitrim County Council, 2023) which have the potential for likely significant in-combination effects with the proposed development. Furthermore, as stated above, following objective NH OBJ 1, any new plan/project within the local administrative area (i.e. Leitrim County Council) will be subject to the Appropriate Assessment process as per the Habitats Directive, to assess the likelihood of significant effects on European Sites, either alone or in-combination with other plans and projects.

8.3 River Basin Management Plan 2018-2021

The River Basin Management Plan (RBMP) for Ireland 2018-2021 sets out the actions that Ireland will take to improve water quality and achieve 'good' ecological status in water bodies (rivers, lakes, estuaries and coastal waters) by 2021 (DoHPLG, 2018). The RBMP provides a coordinated framework for improving the quality of our waters to protect public health, the environment, water amenities and to sustain water-intensive industries, including agri-food and tourism, particularly in rural Ireland.

The first cycle of RBMPs included the Eastern River Basin District - River Basin Management Plan (ERBDMP) 2009 – 2015 (EPA, 2009). These plans summarised the waterbodies that may not meet the environmental objectives of the WFD by 2015 and identified which pressures are contributing to the environmental objectives not being achieved. The plans described the classification results and identified measures that can be introduced in order to safeguard waters and meet the environmental objectives of the WFD:

- Prevent deterioration of waterbody status;
- Restore good status to waterbodies;
- Achieve protected area objectives; and
- Reduce chemical pollution of waterbodies.

Currently the third cycle Draft River Basin Management Plan (RBMP) 2022-2027 is underway and a consultation report was published which reviews the public consultation submissions (RPS, 2022). Relevant key issues raised included water quality / pollution, agricultural practices, sewage pollution, forestry and peat extraction.

With effective implementation of the RBMP, it can be expected to see the plan's ambitious suite of measures translated into tangible improvements in water quality in over 700 waterbodies around Ireland. Assessment of risks to water quality in planning processes will be enhanced and there will be more analyses of water quality carried out at water catchment level.

Actions that may arise as a result of the RBMP will not have a likely significant negative in-combination effect with the proposed development.

8.4 National Biodiversity Action Plan 2023-2030

The objectives of Ireland's 4th National Biodiversity Action Plan (NBAP) 2023 - 2030 include the enhancement and conservation of biodiversity over five key objectives, as follows.

- Objective 1: Adopt a Whole-of-Government, Whole-of-Society Approach to Biodiversity;
- Objective 2: Meet Urgent Conservation and Restoration Needs;
- Objective 3: Secure Nature's Contribution to People;

- Objective 4: Enhance the Evidence Base for Action on Biodiversity; and
- Objective 5: Strengthen Ireland's Contribution to International Biodiversity Initiatives.

Whilst the above objectives would be dealt with at local or site level, the plan promotes such objectives where possible (DoHLGH 2023).

Actions that may arise as a result of the NBAP will not have a likely significant negative in-combination effect with the proposed development.

8.5 Conclusion of In-combination Effects

Following the precautionary principle, likely indirect effects from the proposed development include introduction or spread of invasive species, disturbance to otter, a reduction in water quality due to the release of pollutants, particularly sediment from ground disturbance activities and potential spills of hydrocarbons and chemicals associated with the proposed development. These potential impacts are associated with the construction phase followed by a lesser extent with the operational phases of the proposed development and are considered to have the potential to give rise to significant effects on aquatic species within Lough Gill SAC.

Given the mitigation measures outlined above in Section 7, it is unlikely that any of the identified potential impact sources would result in any adverse effects on the integrity of Lough Gill SAC and therefore, it is not predicted to result in any significant "in-combination" effects with any other plans or projects.

9. CONCLUSION OF STAGE 2 OF THE APPROPRIATE ASSESSMENT

This NIS has been prepared following the Department of the Environment, Heritage and Local Government guidance 'Appropriate Assessment of Plans and Projects in Ireland, guidance for Planning Authorities'[17]. The function of this report is to assist the competent authority with undertaking an AA in accordance with the Habitats Directive, Part XAB of the Planning and Development Act 2010 (as amended) and case law.

The assessment considers whether the proposed development, alone or in-combination with other projects or plans, will result in significant adverse effects on the integrity of Lough Gill SAC, and includes any mitigation measures necessary to avoid or reduce the risk of negative effects.

In the absence of mitigation, the potential impacts on Lough Gill SAC which were identified included; disturbance of qualifying interest species and a potential reduction in water quality from the release of suspended solids, and/or pollutants into the surface water system. There is also the potential risk of the introduction or spread of IASP to the SAC site boundary. However, following the application of mitigation measures, as detailed in Section 7, potential significant adverse effects will be avoided or reduced. Consequently, it is determined that there will be no risk of significant adverse effects on the qualifying interest habitats and species, or on the overall site integrity, nor in the attainment of the specific conservation objectives for Lough Gill SAC.

Following an analysis and evaluation of the relevant information including, in particular the nature of the proposed development, characteristics of the qualifying interests, the potential link between the proposed development and Lough Gill SAC, no significant adverse effect on the integrity of any European sites, from the proposed development is anticipated alone or in-combination with any other plans or projects. The Appropriate Assessment Process is therefore not required to proceed further to Stage 3 or 4.

[17] Appropriate Assessment of Plans and Projects in Ireland (2009). Guidance for Planning Authorities. (https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2009_AA_Guidance.pdf)

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Appendix A AA SCREENING REPORT

TOBIN

Leitrim County Council

Dromahair Flood Relief Scheme

Appropriate Assessment Screening Report

Leitrim County Council
Comhairle Chontae Liatroma

BUILT ON KNOWLEDGE

Document Control Sheet	
Document Reference	Dromahair AA Screening Report
Client:	Leitrim County Council
Project Reference	11271

Rev	Description	Author	Date	Reviewer	Date	Approval	Date
D01	Draft for Internal Review	SOR	01/08/2024	JM/AS	28/08/2024		
D02	Draft for Internal Review	SOR	02/09/2024	AS	20/09/2024		
A01	Issue to Client	SOR	08/11/2024				

Contents

List of Tables

List of Figures

1. INTRODUCTION

Leitrim County Council are proposing to construct flood defence structures to local properties located along the banks of the Bonet River, in Dromahair, County Leitrim which are at risk of flooding.

A review of the Catchment Flood Risk Assessment and Management Study (CFRAM) Hydraulic Modelling and all other relevant water level data within the town of Dromahair and the surrounding catchment has been carried out by TOBIN to identify the risk of flooding to local properties at risk of flooding from the Bonet River. An engineering and environmental feasibility study for flood mitigation measures was carried out in 2023 in order to identify the best option for the alleviation of flooding within the study area. Leitrim County Council are proposing to implement flood mitigation measures along the boundaries of these properties based on the feasibility study.

A Preliminary Design Report has been prepared by the TOBIN (September 2022) which identified the viable options for the proposed work and a preferred option which is described below (Section 4) and is the subject of this Appropriate Assessment. The proposed development comprises a series of flood alleviation measures including debris management and the introduction of direct defences at various locations along the Bonet River and Kilanummery tributary.

TOBIN have prepared this Screening for Appropriate Assessment (AA) report for the proposed development, on behalf of Leitrim County Council. The purpose of this report is to inform the AA process, to appraise whether the project, alone and/or in-combination with other plans or projects, could have significant effects on a European site(s), collectively known as the Natura 2000 network, in view of the site's conservation objectives.

This report provides information to assist the competent authority in undertaking a Screening Assessment of the proposed development and was informed by a field survey and desktop study undertaken by TOBIN Graduate Ecologist Ciara Byrne (B.Sc.) and TOBIN Senior Ecologist, Sinead O' Reilly (B.Sc., M. Res) and was senior reviewed by TOBIN Senior Ecologist Aine Sands (B. Sc).

2. THE APPROPRIATE ASSESSMENT PROCESS

The AA process is an assessment of the potential for likely significant effects, or negative effects, of a plan or project, alone and/or in-combination with other plans or projects, on the conservation objectives of a European site(s). The Natura 2000 network is made up of European sites, including Special Protection Areas (SPAs), established under the EU Birds Directive (2009/147/EC) (referred to as the 'Birds Directive'), and Special Areas of Conservation (SACs), established under the EU Habitats Directive (92/43/EEC) (referred to as the 'Habitats Directive'). The Natura 2000 network helps provide for the protection and long-term survival of Europe's most valuable and threatened species and habitats.

A series of questions are asked during the Screening Stage of the AA process to determine:

- whether a plan or project can be excluded from AA requirements because it is directly connected with or necessary to the management of a European site; and
- whether the project or plan will have a potentially significant effect on a European site, either alone or in-combination with other projects or plans, in view of the site's conservation objectives or if residual uncertainty exists regarding potential impacts.

2.1 LEGISLATIVE CONTEXT

The European Communities (EC) Habitats Directive 92/43/EEC (the Habitats Directive), and the Council Directive 2009/147/EC on the conservation of wild birds (the Birds Directive) have been transposed into Irish law by EC (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011), hereafter referred to as the Birds and Habitats Regulations. The Birds Directive seeks to protect birds of special importance by the designation of SPAs. The Habitats Directive does the same for habitats and other species groups with SACs.

The requirement for an AA is outlined in Article 6(3) and further expanded upon in Article 6(4) of the Habitats Directive. Article 6(3) of the Habitats Directive requires that:

"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."

This provision is transposed into Irish law by Part XAB of the Planning and Development Acts, 2000-2017. Section 177U (4) of the said Acts provides for screening for Appropriate Assessment as follows:

"The competent authority shall determine that an appropriate assessment of [...] a proposed development [...] is required if it cannot be excluded, on the basis of objective information, that the [...] proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site."

Section 177U (5) provides as follows:

"The competent authority shall determine that an appropriate assessment of a [...] proposed development, [...], is not required if it can be excluded, on the basis of objective information, that the [...] proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site."

Article 6(4) of the Habitats Directive requires that:

"If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted."

Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to 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.

An AA should be based on best scientific knowledge and the competent authority should ensure that expertise such as ecological, geological, and hydrological are utilised, where relevant.

The Court of Justice of the European Union (CJEU) has made a number of rulings in relation to AA, regarding when it is required, its purpose, and the standards it should meet. Consideration has been given to the evolution in interpretation and application of directives and national legislation arising from jurisprudence of the European and Irish courts, in respect of Article 6 of the Habitats Directive.

2.2 Stages Involved In The Appropriate Assessment

There are potentially four stages in the AA process; the result of each stage determines the requirement for assessment under the next.

Stage 1: Screening / Test of Significance

This process identifies the likely significant effects upon a European site from a proposed project or plan. Its purpose is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project which is not directly connected with or necessary to the management of the site as a European site, individually or in-combination with other plans or projects is likely to have a significant effect upon the European site, in view of its conservation objectives. A project may be 'screened-in' if there is a possibility or uncertainty of possible effects upon the European site, requiring a Stage Two AA. If there is no evidence to suggest significant effects due to the proposed plan or development the project is 'screened-out' from further assessment.

Stage 2: Appropriate Assessment

Consideration is given if potential impact(s) of a project or plan could cause significantly adverse effects to the integrity of surrounding European site(s), either alone or in-combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where likely significant effects have been identified, an assessment of the potential mitigation to avoid/reduce such impacts is required. A NIS is often produced at this

stage to inform the AA which is undertaken by the competent authority. This stage is required where uncertainty of effect arises, or a potential effect has been defined which requires further procedures/mitigation to remove uncertainty of a defined impact.

Stage 3: Assessment of Alternatives

This stage of the potential process arises where adverse effects on the integrity of a European site cannot be excluded and examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the European site. However, in circumstances where there will not be any adverse effects on any European site, the developer places no reliance upon this third stage of the process in the context of this application for planning permission for the proposed development.

Stage 4: Assessment Where Adverse Effects Remain

This is the derogation process of Article 6(4), which examines whether there are imperative reasons of overriding public interest [IROPI] for allowing a project to proceed where adverse effects on the integrity of a European site have been predicted. Compensatory measures must be proposed and assessed as part of this stage and the EU Commission must be informed of the compensatory measures. Again, the developer places no reliance upon this stage of the process in the context of the application for planning permission for the proposed development.

This report details a Stage One: Screening for Appropriate Assessment, to assist the competent authority in carrying out its AA for the proposed development.

3. METHODOLOGY

3.1 LEGISLATION AND GUIDANCE

This report has been carried out using the following legislation, guidance and relevant rulings by the Court of Justice of the European Union, the High Court, and the Supreme Court:

- Planning & Development Act 2000, as amended including Part XAB;
- European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011);
- Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg (European Commission, 2000);
- Managing Natura 2000 Sites – The provisions of Article 6 of the Habitats Directive 92/43/EEC. European Commission (European Commission, 2019);
- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (European Commission, 2013);
- Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government (DoEHLG, 2010a);
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. Office for Official Publications of the European Communities, Luxembourg (European Commission, 2007);
- Assessment of Plans and Projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC. (European Commission, 2001);
- Office of the Planning Regulator, Practice Note - Appropriate Assessment Screening for Development Management (OPR, 2021);
- Applications for Approval for Local Authority Developments made to An Bord Pleanála under 177AE of the Planning and Development Act, 2000, as amended (Appropriate Assessment) – Guidelines for Local Authorities (An Bord Pleanála, 2013);
- Assessment of Plans and projects in relation to Natura 2000 sites – Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission, 2021); and
- Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg (European Commission, 2006).

Definitions of conservation status, integrity and significance used in this assessment are defined in accordance with '*Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*' (European Commission, 2019):

- Favourable conservation status (FCS) can only be defined and achieved at the level of the natural range of a species or a habitat type. A broad conservation objective aiming at achieving FCS can therefore only be considered at an appropriate level, such as for example the national, biogeographical or European level. The conservation measures have to correspond to the ecological requirements of the natural habitat types in Annex I and of the species in Annex II present on the site. The ecological requirements of those natural habitat types and species involve all the ecological needs which are deemed necessary to ensure the conservation of the habitat types and species. They can only be defined on a case-by-case basis and using scientific knowledge.
- The integrity of a European site is defined as the coherent sum of the site's ecological structure, function, and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated; and
- Significant effect should be determined in relation to the specific features and environmental conditions of the protected site concerned by the plan or project, taking particular account of the site's conservation objectives and ecological characteristics.

3.2 CONSULTATIONS

Preplanning consultations were undertaken with Leitrim County Council, the Development Application Unit (DAU), National Parks and Wildlife (NPWS) and Inland Fisheries Ireland (IFI).

A pre-planning consultation letter was sent to the above state authorities on the 13th of September 2024 to inform these Departments of the proposed development and to discuss potential environmental sensitivities associated with the proposed works. A response by email was received from NPWS on the 23rd of September 2024 outlining issues relevant to the project site and the potential impacts from the proposed works which NPWS stated will require mitigation measures. No response has been received by IFI at the time of writing this report.

3.3 DESKTOP REVIEW AND INFORMATION SOURCES

A desktop assessment of the proposed development site was undertaken in order to inform this assessment. The desktop review included the following key datasets and information sources:

- Review of the National Parks and Wildlife Service (NPWS)[1]: site synopsis, Natura 2000 data forms, datasets on Annex I habitats and Annex II species and Conservation Objectives for European sites identified through potential pathways from the proposed development;
- Review of available literature and web data. This included a detailed review of the NPWS database (NPWS, 2024) of areas designated (and proposed) for nature conservation, and National Biodiversity Data Centre (NBDC) websites and database (NBDC, 2024), including mapping and available reports for relevant sites and in particular qualifying

[1] Protected Sites in Ireland | National Parks & Wildlife Service. https://www.npws.ie/protected-sites. Accessed August 2024

interests (QI) and special conservation interests (SCI) described and their conservation objectives;

- Review of Inland Fisheries Ireland (IFI) research data. This included reviewing research studies carried out for the Habitats Directive and Red Data Book fish species (IFI 2023) within the receiving environment[2];
- Information and data on water catchments from the Draft River Basin Management Plan 2022-2027[3] and the Water Framework Directive (WFD) Ireland Database[4];
- Geological Survey Ireland (GSI) online mapping[5];
- GIS Online mapping[6];
- Environmental Protection Agency (EPA) Appropriate Assessment tool[7];
- Heritage map viewer[8];Leitrim County Development Plan, 2023 – 2029[9];
- Ireland's 4th National Biodiversity Action Plan, 2023–2030[10] produced by the Department of Culture, Heritage and the Gaeltacht; and
- Review of previous ecological assessments undertaken within the area.

In addition, aerial photography (Google Maps, Bing Maps) and mapping (Ordnance Survey of Ireland, Geological Survey of Ireland) were used to identify non-designated habitats such as rivers, woodlands, and hedgerows of local ecological importance and invasive non-native species (INNS).

3.4 Study Area

The proposed development site occurs across three different locations, totally 8,000m^2 in size. The study area includes lands within the proposed development site, plus the immediate surrounding area. The extent of the surrounding area was defined by establishing the Zone of Influence (ZoI). Further details on the ZoI of the proposed development are provided in Section 5.4.

[2] Inland Fisheries Ireland https://www.fisheriesireland.ie/sites/default/files/2023-08/habitats-directive-and-red-data-book-species-summary-report-2022.pdf Accessed August 2024
[3] Draft River Basin Management Plan 2022-2027 https://www.gov.ie/en/policy-information/8da54-river-basin-management-plan-2022-2027/ Accessed August 2024
[4]Water Framework Directive (WFD) Ireland Database https://data.epa.ie/api-list/wfd-open-data/#:~:text=This%20is%20the%20Water%20Framework,Application%20and%20GIS%20Vector%20database Accessed August 2024
[5] Geological Survey Ireland (GSI) https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx. Accessed August 2024
[6]Geological Survey Ireland Spatial Resources https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228. Accessed August 2024
[7]Environmental Protection Agency (EPA) Appropriate Assessment tool https://epawebapp.epa.ie/terminalfour/AppropAssess/index.jsp. Accessed August 2024
[8] Heritage map viewer https://heritagemaps.ie/ Accessed August 2024
[9] Leitrim County Development Plan https://www.leitrim.ie/council/services/planning-building/forward-planning-development/leitrim-county-development-plan-2023-2029/ Accessed August 2024
[10] Ireland's 4th National Biodiversity Action Plan, 2023–2030https://www.gov.ie/en/publication/93973-irelands-4th-national-biodiversity-action-plan-20232030/ Accessed August 2024

3.5 ECOLOGICAL FIELD SURVEYS

A multidisciplinary ecological field survey was undertaken by a qualified and experienced TOBIN Ecologist at the proposed development site on the 26th of July 2023. The survey area included the proposed development site area and a 150m buffer surrounding the site. The data collected was robust and allowed TOBIN to draw accurate, definitive and coherent conclusions on the possible impacts of the proposed development. The findings of the surveys were used to inform this appraisal.

The aim of the surveys was to identify and map the habitats present within the proposed development boundary, determine the presence or absence of protected habitats, and species, including Annex I habitats and to note the occurrence/potential occurrence of protected Annex II and IV species, as well as Annex I bird species and to identify any potential impacts of the proposed development.

The ecological surveys that were carried out, that are relevant to the consideration of the potential for the proposed development to affect the conservation objectives of the European sites in the vicinity of the proposed development: namely the habitat survey, otter surveys and the river assessment survey, are described hereunder. While additional ecological surveys were undertaken, they are not specifically relevant to this AA.

3.5.1 Habitat and Flora

Habitat and botanical surveys were undertaken during the optimal survey period within the proposed development site following the methodology outlined in '*Best Practice Guidance for Habitat Survey and Mapping'* (Smith *et al*., 2011) and in *'Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes'* (NRA, 2008). The data was recorded, and the habitats encountered during the site visit were classified in accordance with Fossitt (2000) with reference made to the '*Interpretation Manual of EU Habitats'* (EC, 2013), as appropriate. Species protected under Flora (Protection) Order, 2022 (S.I. No. 235/2022) or listed under the Irish Red Data List of Irish Plants were also searched for.

3.5.2 Invasive Alien Plant Species

The proposed development site was also searched for evidence of invasive alien plant species (IAPS), with particular focus on IAPS listed in Part 1 of the Third Schedule of the Birds and Habitats Regulations. These were recorded and mapped where present.

3.5.3 Fauna

A walkover survey to detect the presence, or likely presence, of protected mammal species, likely to occur within the study area of the proposed development site was undertaken. Habitats were assessed for field signs and/or usage by fauna, such as well-used pathways, droppings, places of shelter and features or areas likely to be of particular value as foraging resources. These surveys were carried out in accordance with the NRA (2008) publication '*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes'.*

Otter

Otter (*Lutra lutra*) surveys were undertaken along accessible waterbodies (which included rivers and drainage ditches) within the proposed development site plus a 150m buffer of the site (including upstream and downstream of waterbodies), to account for noise disturbance impacts, following methodologies outlined within the NRA (2006) guidelines and Chanin (2003) '*Monitoring the Otter Lutra Lutra'*. The survey comprised examining all visual evidence of otter habitation or use, both within suitable areas. Any evidence of otter such as tracks, spraints, couches, slides, feeding remains or holts, were recorded.

Birds

Observations of ornithological activity within the proposed development site were recorded with regards to the Countryside Bird Survey guidelines; '*CBS Manual, Guidelines for Countryside Bird Survey Participants'* (CBS, 2012). Detailed breeding bird surveys were not undertaken and therefore actual occurrence of breeding birds and their nesting sites was not identified. Records of birds observed or heard were made.

3.5.4 Survey Limitations

Some areas could not be accessed and searched for evidence of mammals due to dense scrub. In these instances, the assessment relied on observations of secondary evidence e.g. mammal runs into scrub. As a precautionary measure, it is assumed that all significant woody vegetation cover, rank grassland and buildings within the proposed development areas have the potential to support breeding birds during the breeding bird season. Otter survey limitations included very steep banks and deep water which limited surveys at one or both banks at proposed sites, Site 2, the Mill. However, these sites were surveyed from adjacent accessible land and were supplemented by robust desktop assessment which adequately informed the assessment.

4. DESCRIPTION OF THE PROPOSED DEVELOPMENT

4.1 SITE LOCATION

The proposed development includes three sites, surrounding residential and commercial grounds which are located in Dromahair, County Leitrim, along the banks of the Bonet River. The three sites are located within multiple different townlands, Ardakaip more, Kilananima and Corcusconny, all located within 2km of Dromahair village.

4.2 OVERVIEW OF THE PROPOSED DEVELOPMENT

Leitrim County Council propose to construct flood protection embankments or flood defence structures at three properties, which have been identified as been at risk of flooding from the Bonet River following recent site investigation works and feasibility study for the flood defences at these three sites in the study area (see Appendix A).

The proposed development site occupies an area of approximately 8000m^2 across the three sites. At each property an earthen embankment or a concrete flood defence wall is proposed with a top-level set 300mm above the predicted 100-year Mid-Range-Future-Scenario (MRFS) maximum water level at the property boundary. The predicted 100-year MRFS was calculated for each site as part of the feasibility study. A Catchment Flood Risk Assessment and Management Study (CFRAM) hydraulic model of the study area was developed. Flood Modeller is the flood modelling software utilized by the OPW and is designed to perform one-dimensional and two-dimensional hydraulic calculations for a full network of natural and constructed channels. This allowed an estimation to be given for the flood defence lengths required at each site (see Appendix A).

In terms of the detailed design and the Appropriate Assessment process, where full detail is not yet known e.g. the surface water outfall system, the precautionary principle requires that a worst-case scenario is assessed e.g. that works although not confirmed, will occur and as such all such possible project elements are assessed.

8°18'20"W
8°17'10"W
8°16'0"W
54°14'0"N
54°13'30"N
54°13'0"N
830835
829630
580000
581250
582500

Legend

Proposed sites layouts

- Site 1: Residential Property No. 1
- Site 2: The Clubhouse Bar & Riverbank Restaurant/Mill Apartments
- Site 3: Residential Property No. 2

0 250 500
Meters

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING\
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE\
3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY \ WORK COMMENCES\
4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

A	17/12/2024	First issue	S.P	S.OR
Rev	Date	Description	By	Chkd.

Client: Comhairle Chontae Liatroma Leitrim County Council

Project: Dromahair Feasibility Report

Title: Figure 4.1: Proposed site layout

Scale @ A3: 1:10,000

Prepared by:	Checked by:	Date:
S.Pezzetta	S.O'Reilly	December 2024

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Map Ref: 11271-004-S.LAY-S1.S2.S3-TOB-A

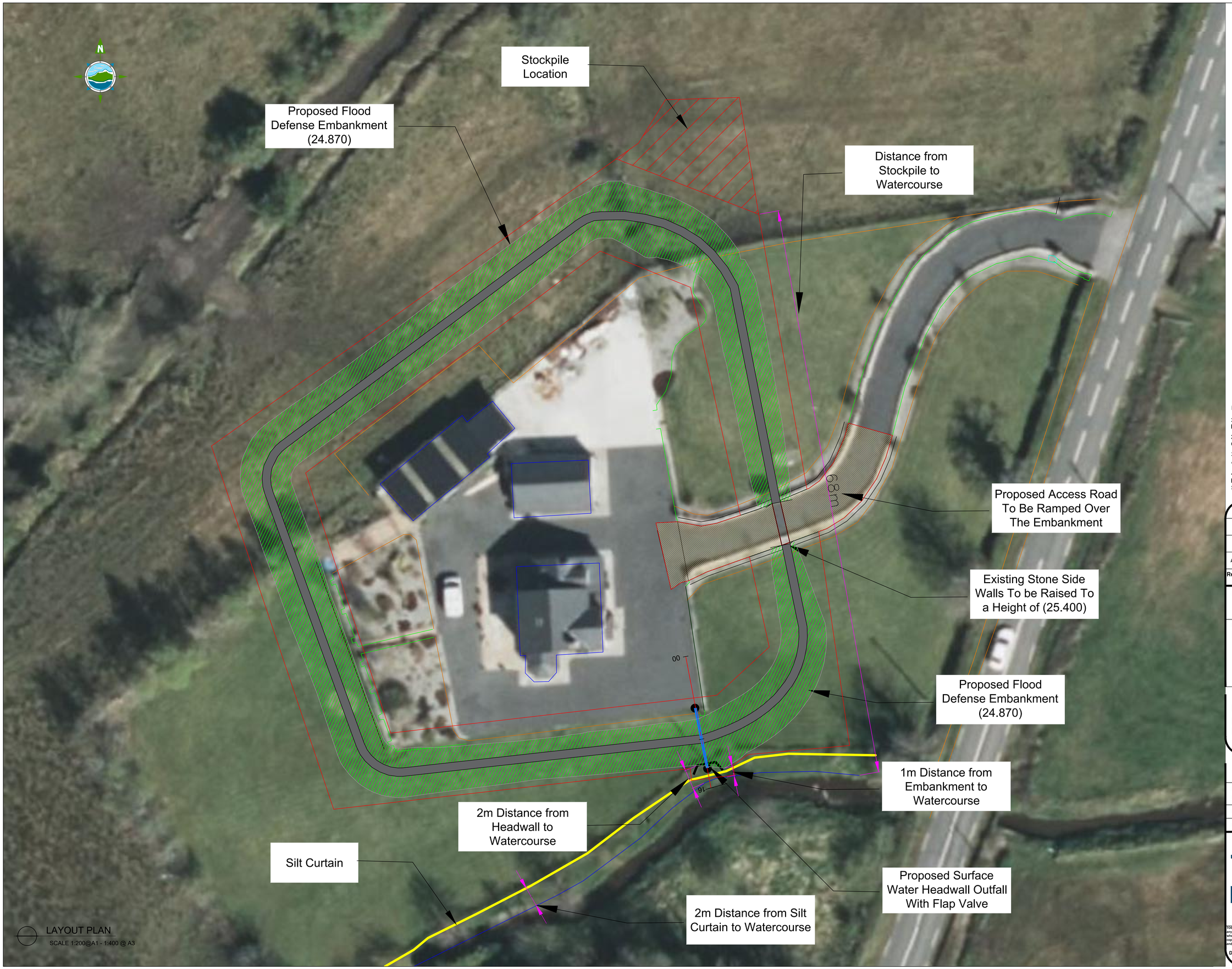
Draft: A

Site 1: Residential Property No. 1

At the residential property No. 1, the predicted 100-year Mid-Range-Future-Scenario (MRFS) maximum water level at the property boundary is 24.87m OD. Based on the results of the hydraulic model, it is estimated that a 300m long embankment surrounding the existing property and access would be required to alleviate flooding at the site.

The proposed development layout is shown in Figure 4-2 and includes the construction of:

- Embankment flood defences surrounding the existing residential property;
- Proposed surface water headwall outfall with flap valve (300mm);
- Installation of a surface water pipeline to be constructed under/through the embankment and extending towards the river where it will terminate in the proposed headwall with associated non-return valve. The non-return valve system will prevent inflow of flood waters;
- Stone base foundations of headwall;
- Existing stone side walls to be raised to a height of (25.400m);
- Proposed access road to be ramped over the embankment;
- The existing access road will be ramped both sides of the embankment so no flood gates are required. The ramps will integrate with the existing driveway;
- Raise an existing low stone wall along the driveway to align with the ramps;
- Manhole complete with open grating;
- Temporary soil storage areas; and
- Perimeter fencing.



LAYOUT PLAN
SCALE 1:200@A1 - 1:400 @ A3

Legend:

- Embankment
- Stockpile
- Site Boundary
- River Edge
- Silt Curtain

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD, THE GEOGRAPHIC COORDINATE SYSTEM IS TO IRISH TRANSVERSE MERCATOR (ITM)

Rev.	Date	Description	By	Chkd.
A	Sep '24	Planning	FOC	KD

Client
LEITRIM COUNTY COUNCIL

Project
Dromahair Flood Relief Project

Title
Flood Mitigation Measures within proposed development - Residential Property No. 1

Scale	1:200@A1 & 1:400@A3	
Prepared by: FOC	Checked KD.	Date September 2024
Project Director	Brian Downes	
Drawing Status	Planning	

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Drawing No. **11271-5003** | Issue **A**

Site 2: The Mill

At the Mill Apartments and the Clubhouse, the predicted 100-year MRFS upstream water level in the Bonet River is 23.41m OD. Based on the results of the hydraulic model, it is estimated that a 200m long flood defence at the northwest boundary with the Bonet River and Killanummery tributary would be required to alleviate flood risk at this site.

The proposed development layout is shown in Figure 4-3 and includes the following:

- Temporary construction compound;
- Temporary soil storage areas;
- Demolishing of existing stone wall;
- Tree felling along the river bank to facilitate construction of a flood defence wall;
- Construction of a flood defence retaining wall (24.300m);
- Installation of a cast in-situ reinforced concrete flood defence wall to the rear of the Mill Apartments;
- Construct the flood defence wall to the rear of the gas tank;
- Install a cast in-situ reinforced concrete flood defence wall;
- Installation of pre-cast 20m precast RC retaining wall at rear of the existing storage buildings;
- Proposed surface water outfall with flap valve;
- Proposed flap valve to existing surface water outlet;
- Proposed manhole with non return valve on the existing sewer line;
- Install a non-return valve on the flood side of the existing wall;
- Construction of a new gully on the dry side of the wall, installation of a new outlet pipe under the wall and installation of a non-return valve on the river side of the wall;
- Install a non-return valve on existing surface water outfall pipe at the northwest corner of the restaurant site prevent entry of flood waters;
- Install a non-return valve system to existing surface water outfall system to prevent inflow of flood waters;
- Stone base foundations of headwall;
- Removal of fencing, enclosures, oil tanks, wood storage shed, along the river edge etc to facilitate construction works; and
- Perimeter fencing.

There is an existing stone wall along the alignment of the proposed flood defence wall, and it is proposed to demolish the stone wall and, as part of the construction of the flood defence wall, reuse the stone for cladding of the flood defence wall as per the Conservation Architects recommendations (ACP Architectural Conservation Professionals).

LAYOUT PLAN

SCALE 1:250@A1 - 1:500 @ A3

Legend:

- Stockpile
- Site Boundary
- River Edge
- Silt Curtain

NOTES

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2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD, THE GEOGRAPHIC COORDINATE SYSTEM IS TO IRISH TRANSVERSE MERCATOR (ITM)

Rev.	Date	Description	By	Chkd.
A	Sep '24	Planning	FOC	KD

Client

LEITRIM COUNTY COUNCIL

Project

Dromahair Flood Relief Project

Title

Flood Mitigation Measures within Proposed Development - Riverbank Restaurant & The Mill Apartments

Scale **1:250@A1 & 1:500@A3**

Prepared by:	Checked	Date
FOC	KD	September 2024

Project Director	Brian Downes
Drawing Status	Planning

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Drawing No. **11271-5002** | Issue **A**

Site 3: Residential Property No. 2

At residential property No. 2, the predicted 100-year MRFS maximum water level at the property boundary is 23.52m OD. Based on the results of the hydraulic model, it is estimated that a 100m embankment and flood gate would be required to alleviate flood risk at the property residential property along the ester banks of Killanummery tributary.

The proposed development layout is shown in Figure 4-4 and includes the following:

- Proposed surface water headwall No.1 and headwall No.2 (outfall with flap valve (600mm);
- Proposed flood defence embankment (23.530m);
- Proposed RC wing walls to existing bridge detail;
- Install new precast concrete wing walls to the existing culvert;
- Proposed 600mmØ surface water pipe (I.L. 21.80m).
- Ramp existing access road both sides of the embankment so no flood gates and integrate with the existing driveway;
- Perimeter fencing;
- Temporary soil storage areas;
- Install a headwall containing a non-return valve either side of the embankment and a surface water pipeline (600mm diameter) through embankment;
- Stone base foundations of headwall; and
- Existing fences to be raised wherever impacted by the embankment and / or access road ramp.

LAYOUT PLAN
SCALE 1:200@A1 - 1:400 @ A3

Legend:

- Embankment
- Stockpile
- Site Boundary
- River Edge
- Silt Curtain

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
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Rev.	Date	Description	By	Chkd.
A	Sep '24	Planning	FOC	KD

Client
LEITRIM COUNTY COUNCIL

Project
Dromahair Flood Relief Project

Title
Flood Mitigation Measures within Proposed Development - Residential Property No. 2

Scale 1:200@A1 & 1:400@A3

Prepared by:	Checked	Date
FOC	KD	September 2024

Project Director: Brian Downes
Drawing Status: Planning

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Drawing No. 11271-5001 | Issue A

4.2.1 Construction Phase Activities

The proposed site layout and infrastructure of each site are shown in Figure 4-1. The following is the sequence of activities that will be undertaken during the Construction Phase of the of the proposed development:

4.2.1.1 Construction Schedule

It is anticipated that the proposed construction works will commence in Q2-Q3 of 2025 for an approximate duration of 16 weeks however this is subject to obtaining consent from An Bord Pleanála, contractor availability, environmental window, low water levels and will be determined as the project progresses. Normal works hours during the construction phase are expected to be Monday to Friday 08:00 to 17:00 hours. The total number of construction staff on-site will vary during the construction phase but is expected to range from three to five staff. No construction lighting will be used during construction.

4.2.1.2 Storage Compound

Advance works for the proposed development will entail a temporary works compound to be located in a corner of the existing car park at the Mill Apartment. This facility will be secured from unauthorised access for the duration of the works and will include offices, welfare facilities, parking for site vehicles and plant at night, storage of equipment materials used in the construction phase and temporary storage of material to be re-used or awaiting removal by licenced waste contractor.

4.2.1.3 Traffic

All four sites are located adjacent to the R287 regional road. This road will provide the main access route to the sites. Construction material will be transported onto site using the existing access roads. The main construction machinery on site will be an excavator, compaction rollers, crane, transport lorries, cement lorries and tractor and trailers.

Artic lorries will be used to delivery pre-cast retaining walls and rebar reinforcement for the cast in-situ wall and will be lifted into place via a crane. Concrete for the walls will be delivered using concrete lorries. Dump trucks/tipper lorries will be used to deliver embankment fill.

4.2.1.4 Site Clearance

The proposed construction works requires the removal and disturbance of earth, riverbanks and trees within the site in order to accommodate the access tracks, the instalment of walls and embankments, and facilitate the works.

Advance clearance of vegetation along and adjacent to the Bonet River in preparation for construction phase may also be required and material will be temporarily stored at a specific location at each site until disposal or reuse. Soil stockpile locations will be 25m from the nearest watercourse.

Approximately five mature trees, located to the west of the Riverbank restaurant at the Mill will be removed by a competent contractor once the initial site clearance has been completed.

The existing stone wall located at the Mill along the alignment of the proposed flood defence wall, will be demolished. The stone from this wall will used as part of the construction of the flood defence wall for cladding, as per the Conservation Architects recommendations. This demolition and removal will be carried out by a digger.

It is not envisaged that works will generate significant construction waste, such as hardcore stone, and gravel. Although every effort will be made to recycle and re-use of materials on site, some waste will require to be disposed off-site. Cement wash will occur outside the proposed sites. Any disturbed areas will be fully reinstated following the completion of the works. Excavated soil will be stored at temporary storage areas within the proposed development site.

4.2.1.5 Earthworks

Excavation works will be carried out at all three sites for the construction of embankments and retaining walls. A total of 2,459m^3 will be excavated from all the sites. Topsoil will be stripped and stockpiled at designated locations within each site.

Soil will be excavated to the required formation levels. Excavated soil will be stored at temporary soil storage areas within each site of the proposed development.

All excavated topsoil material will be reused within the site, where possible, for embankments. All remaining topsoil and all other excavation material will be disposed of offsite, in accordance with Waste Legislation (Waste Management Act 1996 – 2001).

Soil and other fill material arriving to site will be delivered near existing access roads and used imminently. The delivery locations will not be located near watercourses.

Embankment fill material will be added to the site excavations and compacted until a firm foundation is achieved. Embankment fill material will consist of fine-grained cohesive soil (with between 20% and 40% clay particles, and 13% to 21% moisture content for compaction) is specified for the proposed embankment. No rocks greater than 75mm in size shall be permitted in the soil.

This material will also be used as fill material to form the formation levels of the defences. The material delivered to site will be used once it arrives on site and will not require stockpiling. The excavation and fill works will be carried out with an excavator.

Contaminated wastes e.g. spoil containing third schedule IAPS material will be removed under appropriate waste permit and NPWS licence to a facility licenced to accept such waste therefore no quarantine area is required.

This will be carried out in accordance with Waste Legislation (Waste Management Act 1996 – 2001).

Minor instream works are required for these proposed works. This will include the placement of clean gravels in the river at the base of the headwalls stormwater outfalls to prevent scouring of the riverbed. No machinery will enter the river during the works.

4.2.1.6 Fencing

A total of 361m of fencing will be removed from Site 1 and Site 3. There will be pre-cast post and wire fencing installed at all three sites. The fencing will be installed at the base of the embankments located along site boundaries. The fence is proposed to be constructed to a height of 1.2m, using concrete posts with high tensile horizontal wire to BS EN 10244. The horizontal lines will also comprise of 2.5mm wire at approximately 150mm centres. A gap measuring a minimum of 150mm will be placed at the bottom of the fence to allow for the continued movement of mammals through the site.

4.2.1.7 Landscaping

All proposed embankment and soils surrounding the retaining walls will be reseeded with grass seed. No trees or other vegetation will be planted.

4.2.1.8 Flood Defence Construction

4.2.1.8.1 Embankments

Topsoil will be removed at each site and the soil will be excavated to the proposed formation levels using an excavator. The excavation site will then be filled with embankment material to the foundation and the embankment will be constructed on top of it. This will be compacted in layers using an excavator and roller until the design height is achieved. Once the level is reached, the earthen embankments will be topped off with topsoil in order to allow them to be planted with grass seed.

4.2.1.8.2 Pre-cast Retaining Walls

Pre-cast retaining walls will be delivered to site and lifted into position by a crane. The base of the retaining walls will be backfilled with embank fill material to insure stability.

4.2.1.8.3 RC Retaining Walls

Formwork will be constructed at the formation levels to allow for the concrete to be poured. Once the formwork is in place, steel structures will be added. The RC wall will then be poured in position using concrete lorries. The base of the retaining walls will be backfilled with suitable material to insure stability.

4.2.1.9 Surface Water Drainage

The existing surface water and foul water drainage systems on all the sites will remain operational during the construction phase of the project. It is proposed to construct new stormwater outfalls at all the sites to prevent ponding inside the flood defences during extreme flooding events. These outfall pipes will be constructed on the existing stormwater network lines. The outlet of the pipes will have a headwall constructed around them and they will be fitted with a non-return valve. The proposed works involves installing headwalls stormwater outfalls on the banks of the river at each site at various locations. These will connect into the surface water networks and discharge all surface water. The headwalls will be precast concrete slab (1.5m X 1.6m). A 300mm flap valve drain is incorporated into the concrete slab. Clean gravels will be placed on the riverbed directly below the headwall to prevent scouring of the riverbed and bank erosion and collapse.

4.2.2 Operational Phase Activities

The operation phase of the proposed development is expected to be characterised by the movement of the river below the embankments and reduced flooding. Any local maintenance activities on the flood defences are not expected to differ from the baseline/present conditions. The maintenance of the proposed flood alleviation scheme will be the responsibility of the Local Authority, although in terms of emergency repairs, the Local Authority would revert to the Office of Public Works (OPW). The following general measures will be required as part of the routine monitoring and maintenance. They include:

- Flood walls – Annual inspection and sealant replacement (every 5 years);
- Flap Valves (if any) – Inspection once every 5 years and replacement (every 25 years);

- Bank protection – Inspection once every 5 years and maintenance (as required);
- Tree Management – Annual inspection and maintenance (as required); and
- Debris Traps – Bi-annual inspections and maintenance (as required).

4.3 DESCRIPTION OF THE EXISTING ENVIRONMENT

A description of the existing environment, which was informed by desktop assessment and field surveys, is provided hereunder.

4.3.1 Existing Environment-Desktop Review Results

4.3.1.1 Surface Water Features

The site of the proposed flood alleviation works located on the Bonet_050 (EPA water body code: IE_WE_35B060630), and Kilanummery_020 (EPA water body code: IE_WE_35K030900). Sites 1 and 2 are located on the Bonet River at EPA code 35017 (Site 1 and 2). Site 3 is located on the Kilanummery stream at EPA code 35A11.

The Bonet_050 is located <5m from site boundaries of Site 1 and Site 2 and the Kilanummery_020 (IE_WE_35K030900) which is located <5m from site boundaries of Site 3 with the study area.

The Kilanummery stream flows east and enters directly into the Bonet River. The Bonet River rises in the Dartry Mountains in Co. Leitrim and flows a south westerly direction into Glenade Lough before passing through Dromahair and entering Lough Gill. It is known to support Atlantic Salmon (*Salmo salar*) with good fishing reported in the river (O' Reilly 2002). The Bonet River flows northwest in direction and discharges into the Garavogue_010 before reaching the Gill SO WFD lake water body (IE_WE_35_158), approximately 4km from the proposed development site (EPA, 2024).

The Bonet River is situated within Lough Gill SAC (001971) which contains Annex I habitat of eutrophic lakes and Annex II species including Atlantic salmon, otter, sea, river and brook lamprey as well as the white-clawed crayfish (*Austropotamobius pallipes*) (NPWS 2006c).

IFI conducted fish stock surveys as part of WFD surveys on the Bonet in 2010[11]. Nine species of fish were recorded present including Atlantic salmon and lamprey. In 2008, 2011, 2014 and 2017, IFI carried out a fish stock survey on Lough Gill[12]. Atlantic salmon were recorded present in 2011 (Kelly *et al.*, 2015b).

In 2022, IFI carried out a lamprey survey on the Bonet River and recorded 30 lamprey larvae from four survey sites[13].

The Bonet_050 was assigned a 'Good' ecological status however it 'Failing to achieve good' chemical water quality status for the monitoring period 2016-2021 (Benzo(a)pyrene Failure). Gill SO WFD lake water body was assigned 'Poor' ecological status as 'Failing to achieve good' chemical water quality status for the monitoring period 2016-2021 and is currently 'At Risk' of achieving good ecological status (EPA, 2024).

[11] WRBD_rivers_report_2010_2012.02.28_fk (wfdfish.ie)
[12] http://wfdfish.ie/wp-content/uploads/2018/11/Gill_2017.pdf
[13] https://www.fisheriesireland.ie/sites/default/files/2023-08/habitats-directive-and-red-data-book-species-summary-report-2022.pdf

The Killaummery_020 WFD river water body was assigned 'good' water quality status for the monitoring period 2016-2021 and is currently 'At Risk' of achieving good ecological status (EPA, 2024). The river flows north and discharges into the Bonet_050. These waterbodies are located within the Sligo Bay WFD Catchment (Catchment ID: 35).

4.3.1.2 Groundwater Features

The proposed development sites are located within three different groundwater bodies. Site 1 is located within the Killarga Groundwater Body (WFD code: IE_WE_G_0055). Site 2 and Site 3 are located within Ballintougher Groundwater Body (WFD code: IE_WE_G_0051). The Groundwater Body WFD status 2016-2021 for all these waterbodies was assessed as being of 'Good' water quality and not at risk (EPA, 2024).

The bedrock has a 'Low' vulnerability to groundwater impacts at Site 1, 'Moderate' groundwater vulnerability at Site 2 and 3 (GSI, 2024)[14].

4.3.1.3 European Sites

There is one European site located within and adjacent to the proposed development sites, Lough Gill SAC (Site Code: 001971). Site's 2 and 3 are located on the boundary of this European site. Site 1 is located approximately 27m north of this SAC. All three proposed development sites are hydrologically connected to the SAC via the Bonet_050 and Killaummery_020 River. Further information on European sites within the ZoI of the proposed development is outlined in Section 5.5 of this report.

4.3.1.4 National Biodiversity Data Centre

A review of the NBDC database was carried out for species protected under the EU Habitat Directive and for species listed under the Third Schedule of the Birds and Natural Habitats Regulations (2011) within the 2km Irish Grid Squares G83A and G83F which encompasses the entirety of the proposed development sites.

4.3.1.4.1 Fauna

Records of white-clawed crayfish and European otter, Annex II species which are protected under the Habitats Directive, were noted within the two grid squares encompassing the site.

Annex I bird species, whooper swan (*Cygnus cygnus*) and common kingfisher (*Alcedo atthis*), were also recorded within the three grid squares encompassing the site.

There is no record of freshwater pearl mussel (*Margaritifera Margaritifera*) within the 2km grid squares. In addition, the proposed development study area is not located within catchments of SAC populations listed in S.I. 296 of 2009, Catchments of other extant populations or Catchments with previous records of Margaritifera, where current status unknown.

4.3.1.4.2 Flora

There are no records of rare or protected habitats (including Annex I habitats) within the three grid squares encompassing the site.

A number of IAPS have been recorded within the site. The third schedule IAPS Japanese knotweed (*Reynoutria japonica*), Rhododendron (*Rhododendron ponticum*) are recorded within the grid squares encompassing the site. The animal sika deer (*Cervus nippon*), listed in Part 2B of the Birds and Habitats Regulations is also listed, although the proposed development is not

[14] Geological Survey Ireland Spatial Resources (arcgis.com)

likely to promote non-compliance with Regulation 49 or 50, e.g. promote breeding, reproduction, or allow its dispersal or escape from confinement.

4.3.2 Existing Environment-Field Study Results

The findings of surveys carried out on the three site locations 26th of July 2023 and are discussed hereunder.

4.4 HABITATS AND FLORA

Habitats were classified using habitat descriptions and codes published in the Heritage Council's '*A Guide to Habitat Types in Ireland'* (Fossitt, 2000). A map showing all habitats within each proposed development site is provided in Figure 4-6.

Site 1: Residential Property No. 1

The proposed development site comprised of the following:

Amenity grassland (GA2)

The amenity grassland (garden lawn) surrounding the property was dominated by perennial ryegrass (*Lolium perenne*), with white clover (*Trifolium repens*), meadow buttercup (*Ranunculus acris*), daisy (*Bellis perennis*) and dandelion (*Taraxacum*) recorded occasionally throughout the habitat.

Wet grassland (WS4)

There was a small section of wet grassland habitat located within the northern section of the site. The habitat was dominated with soft rush (*Juncus effusus*), and abundant in jointed rush (*Juncus articulates*), Yorkshire fog (*Holcus lanatus*) and silverweed (*Potentilla anserina*). Meadowsweet (*Filipendula ulmaria)*, tormentil (*Potentilla erecta*), and flag iris (*Iris pseudacorus)* was recorded occasionally throughout the habitat. It was heavily grazed and tramped by cattle.

Hedgerows (WL1)

Hedgerows (WL1) with a secondary habitat of treelines (WL2) was recorded surrounding the boundary of the site. The hedgerow comprised of hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*), with some hawthorn, alder (*Alnus glutinosa*) and silver birch (*Betula pendula*) trees scattered throughout. The hedgerow was sparse gappy in places and ranged for 1-4m in height. The understory contained nettle (*Urtica dioica*), bramble (*Rubus fructicosus*), ivy (*Hedera hibernica*), soft rush and herb Robert (*Geranium robertianum*).

Depositing/lowland river (FW2)

The Bonet_050 River is located northwest and southeast of the site and flows in a southeasterly direction.

There is no shading present along this section of river within the site. At the time of surveying, the water levels were normal, average depth of 35cm, and it had a moderate flow. The bank height of 1m and bank width of 4m with a wetted width of 2m and had a glide profile. It contained boulder, cobble and gravels. It did not contain any instream vegetation. The riparian vegetation included dock (*Rumex obtusifolius*), marestail (*Hippuris vulgaris*), perennial ryegrass, meadowsweet, white clover, cocksfoot (*Dactylis glomerata*), pedunculate oak (*Quercus robur*) and Yorkshire fog.

There was no evidence of otter or fish seen in the river. This section of watercourse contained spawning potential for salmonids and lamprey, as well as good otter and kingfisher commuting, resting and foraging habitat. No suitable sediment habitat was present for lamprey.

Drainage ditch (FW4)

One unmanaged drainage ditch was recorded which contained low levels of water. This drain flows into the Bonet_050. There was bank damage due to cattle access. This habitat does not have fisheries potential.

Other Habitats and Protected Species

Other habitat types (within smaller, non-representative, areas, as per Smith *et al.*, 2011) were recorded within the proposed development site included:

- Buildings and artificial surfaces (BL3) (house and driveway).

No evidence of any Annex I habitats, floral species or IAPs were recorded within the study area of this site.

Site 2: The Mill

The proposed development area of this site comprised of the following.

Mixed broadleaved woodland (WD1)

The mature mixed broadleaved woodland was located surrounding the buildings along the northwest of the site. This habitat is dominated by beech (*Fagus sylvatica*), with sycamore (*Acer psuedeplatanus*) noted frequently and species such as alder, willow (*Salix sp.*), elder (*Sambucus nigra*), and ash (*Fraxinus excelsior*) found occasionally throughout the habitat. The understory contains bramble, ivy, hogweed (*Heracleum sphondylium*), sedge and nettle. It is 13-15m in height and in good condition. The woodland is unmanaged and contains trees.

Scattered trees and parkland (WD5)

The scattered trees and parkland habitat included willow and alder. The habitat was dominated by perennial ryegrass, with species including as red clover (*Trifolium pratense*), meadow buttercup (*Ranunculus acris*), daisy and dandelion found frequently throughout.

Depositing/lowland river (FW2)

The Bonet _050 River is located along the north and northwestern boundary of this site and flows in a southeastern direction. The river has a natural meandering channel with glide and pool profile. It contains very steep banks side (5m). It has a bank width of 20m and a wetted width of 15m. The river is lightly shaded with the riparian vegetation including male fern (*Dryopteris filix-mas*), alder, hogweed, sycamore, elder, beech, bramble, ivy and ash. It contains good holding and spawning habitat for salmonids and lamprey and refuge for crayfish. There were no visible barriers present.

Site pressures include surface water runoff and rubbish dumping as well as the IAPS Japanese knotweed recorded on the bank. There was no evidence of otter present however a full inspection could not be carried out due to the steep banks and water depth below. There is good foraging, resting and feeding habitat for otter and good habitat for kingfisher.

Other Habitats and Protected and Invasive Species

Other habitat types (within smaller, non-representative, areas, as per Smith *et al.*, 2011) were recorded within the proposed development site included:

- Stone walls and other stonework (BL1); and
- Buildings and artificial surfaces (BL3) (apartments, restaurant, a pub and a car park).

No evidence of any Annex I habitats or floral species were recorded within the study area of this site.

The third schedule IAPS Japanese knotweed and Himalayan Balsam (*Impatiens glandulifera*) was recorded present within the woodland (see Section 4.6 for further detail).

Site 3: Residential Property No. 2

The proposed development area of this site comprised of the following.

Amenity grassland (GA2)

The amenity grassland habitat is lawn gardens surrounding the property. This habitat is dominated by perennial ryegrass, with clover abundant throughout as well as dandelion, and meadow buttercup were recorded frequently. The habitat is heavily managed.

Treeline (WL2)

One treeline is present along the west, south and east of the site boundary. It is dominated by Leylandii with hawthorn recorded frequently as well as one horse chestnut and beech tree present. This treeline was approximately 7m in height and is managed and in good condition.

An additional treeline is located the northeastern boundary of the site. It is abundant with ash and sycamore with hawthorn recorded frequently throughout. It contains an understory of bramble, ivy, bindweed and nettle. It is approximately 7m in height, unmanaged, gappy and in poor condition due to ash dieback.

Depositing/lowland river (FW2)

The Killanummery_020 River is located along the northeastern boundary of the site. It flows in a northern direction into the Bonet_050 River. The river has a natural meandering channel with a dominant glide profile and no riffle and pools present. The river is lightly shaded with the riparian vegetation including canary grass (*Phalaris canariensis*), hawthorn, willow, poplar (*Populus sp.*), bramble, ivy, bindweed (*Calystegia sepium*), meadowsweet, nettle and cocksfoot. It has a bank height of 2m, bank width of 7m and a wetted width of 2m. This section of river has potential spawning and nursery habitat for salmonids and spawning habitat for lamprey. There is also refuge habitat for crayfish present. There was no evidence of otter activity along the bank. However, there is suitable otter and kingfisher commuting and foraging habitat present.

Drainage ditch (FW4)

The drainage ditch habitat is located along the northwestern boundary of the site and drains into the Killanummery_020 River. This drainage ditch was sheltered form the adjacent treeline and contained low levels of stagnant water. It is unmanaged but fenced off. Riparian vegetation includes hawthorn, bramble, ivy, bindweed, meadowsweet, nettle and cocksfoot. This habitat does not have fisheries potential.

Other Habitats and Protected and Invasive Species

Other habitat types (within smaller, non-representative, areas, as per Smith *et al.,* 2011) were recorded within the proposed development site included:

- Buildings and artificial surfaces (BL3) (house, outbuildings and driveway).

No evidence of any Annex I habitats or floral species or IAPS were recorded within the study area of this site.

4.5 FAUNA

4.5.1.1 Mammals

No Annex I or II species of the Habitats Directive were recorded within the study area during the surveys. No evidence of otter activity, such as holts, prints, feeding remains or scat, were recorded within the study area (the proposed development sites plus a 150m buffer) during the survey. However, potential otter resting, foraging and commuting habitat was noted during the survey along the banks of the Bonet_050 and the Kilanummery_020 WFD River water bodies.

4.5.1.2 Birds

No Annex I bird species of the Habitats Directive were recorded within the study area during the surveys. The rivers however provide good perching and foraging habitat for kingfisher.

4.5.1.3 Aquatic species

These rivers contain good spawning potential for salmonids and lamprey, and refugee habitat for white clawed crayfish. These three sites also contained suitable crayfish habitat however there was no evidence of crayfish recorded during the survey.

4.6 INVASIVE SPECIES

The IAPS Japanese knotweed was recorded at Site 2 the Mill (see Plate 4-1), within the mixed broadleaved woodland behind the stone wall, oil tank (400m^2) and at the bridge. Himalayan balsam was also recorded at one location Site 2 within the woodland along the banks of the river. These are Third Schedule listed species of the Birds and Habitats Regulations. A map showing their location within the proposed development site is provided in Figure 4-5. There were no invasive mammal species recorded during the survey.

Plate 4-1: Invasive Japanese Knotweed Within the Woodland at Site 2

8°18'42"W
8°17'40"W
54°14'0"N
54°13'30"N
831200
830400
829600
579200
580000
580800

Legend

Proposed sites layouts

- 2 - The Clubhouse Bar & Riverbank Restaurant/Mill Apartments
- EPA - Rivers

Invasive species

- Japanese Knotweed
- Himalayan Balsam

0 250 500
Meters

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING\
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3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY \ WORK COMMENCES\
4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

A	02/10/2024	First issue	S.P	S.OR
Rev	Date	Description	By	Chkd.

Client: Comhairle Chontae Liatroma Leitrim County Council

Project:

Dromahair Flood Relief Project

Title:

Figure 4-5:
Invasive Species Map

Scale @ A3: 1:8,000

Prepared by:	Checked by:	Date:
S.Pezzetta	S.O'Reilly	October 2024

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Map Ref: 11271-007-Inv.SP-S2-TOB-A

Draft: A

8°18'20"W
8°17'10"W
8°16'0"W
54°14'0"N
54°13'30"N
54°13'0"N
832040
830835
829630
580000
581250
582500

Legend

Proposed sites layouts
- Site 1: Residential Property No. 1
- Site 2 - The Clubhouse Bar & Riverbank Restaurant/Mill Apartments
- Site 3: Residential Property No. 2

Species
- Bat roost potential

Habitats
- BL3 - Buildings and artifical surfaces
- GA2 - Amenity grassland (improved)
- GS4 - Wet grassland

Aquatics
- Aquatics linear
- Aquatics polygon
- EPA - Rivers

0 250 500
Meters

NOTES

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Client: Comhairle Chontae Liatroma Leitrim County Council

Project: Dromahair Flood Relief Project

Title:

Figure 4-6:
Habitat and Species Map

Scale @ A3: 1:10,000

Prepared by:	Checked by:	Date:
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5. OVERVIEW OF THE POTENTIAL IMPACTS

An overview of potential impacts from the construction and operational phases of the proposed development on the receiving environment is discussed hereunder. There are several elements associated with the proposed development that may give rise to direct and indirect impacts on the receiving environment that have the potential to result in likely significant effects on European sites within the zone of influence (ZoI) of the proposed development sites. The significance of these impacts depends on its scale, as well as the ecological condition and the sensitivities of the qualifying interests. Elements of the proposed development that may give rise to impacts, which have been considered with regards to potential effects to European sites are discussed hereunder.

5.1 CONSTRUCTION PHASE

Potential construction phase impacts associated with the proposed development are discussed hereunder.

5.1.1 Accidental Mortality

There is potential for the accidental mortality of wildlife during construction works due to disturbance and removal of habitat. It may be caused by moving vehicles throughout the site or felling of trees within the site boundary while if wildlife have been disturbed.

5.1.2 Loss of Habitat

The proposed development will include the construction of flood defence walls, embankments and headwalls within mixed broadleaved woodland, amenity grasses and along the banks of depositing rivers. The construction of flood defence walls and surface water drainage will result in a temporary loss of ca. 6,500m2 and permanent loss of 10m^2 of habitats.

At Site 1, the section of BL3 habitat will be temporarily lost, to allow for the construction of a ramp over the access road to the residency. There will be temporary loss of amenity habitat during the storage of excavated soils. There will be permanent loss of amenity grassland, wet grass land due to the construction of the proposed embankment surrounding the property. There will be permanent earthbank habitat created from the installation of embankment. There will be permanent loss of riverbank habitat including riparian vegetation due to the installation of a proposed surface water headwall.

At Site 2, a section of BL3 habitat will be temporarily lost, to allow for the storage compound in the carpark. There will be temporary loss of amenity habitat during the storage of excavated soils. There will be permanent loss of mixed broad-leaved woodland, scrub, BL3, stone wall and riverbank habitat including riparian vegetation, to allow for the construction of flood defence retaining wall, precast retaining wall, surface water headwalls and manholes surrounding the property.

At Site 3, the section of BL3 habitat will be temporarily lost, to allow for the realignment of existing access road to the residency. There will be temporary loss of amenity habitat during the storage of excavated soils. There will be permanent loss of amenity ground and riverbank habitat including riparian vegetation, due to the construction of the proposed flood defence proposed embankment, surface water headwalls and RC wingwalls to existing bridge and

installation of surface water pipe surrounding the property. There will be permanent earthbank habitat created from the installation of embankment.

Fencing around the perimeter of all embankments will have a gap of a minimum of 150mm and will allow the free passage of small mammals and prevent fragmentation of wildlife corridors.

It is proposed to remove five mature beech trees from the mixed broadleaved woodland at Site 2 in order to facilitate the construction of a defence wall.

All soils excavated will be temporarily stored before being reinstated into the embankments as part of the construction works. This will be a temporary loss of habitat before it is reinstated as a permanent embankment habitat.

This will result in both a temporary and permanent loss of habitats located on the boundary of a European site as part of the proposed works.

5.1.3 Degradation of Water Quality/Contamination

5.1.3.1 Silt-laden runoff and/or Construction Pollution

The Bonet_050 and the Kilanummery_020 River water bodies are located <5m from the site boundary at all three sites.

Site clearance, soil stripping, excavation and demolition activities near the riverbanks, infilling, stockpiling of material, installation of soil embankments and retaining walls and fencing all have the potential to result in sediment laden surface water runoff discharging into the Bonet_050 River and Kilanummery_020 river during construction. The storage of materials including soil adjacent to any dry or wet surface water drainage feature or watercourse also has the risk for run-off or slippage during rainfall events.

Sediment inputs to rivers and streams may negatively affect their habitat conditions, aquatic plants and fauna. Sedimentation can stunt aquatic plant growth, reducing the particle size of the riverbed, blocking interstitial spaces, limit dissolved oxygen capacity and degrading habitat quality.

Suspended sediment due to runoff of soil from construction areas can have severe negative impacts on invertebrates and fish species (Geist and Auerswald, 2007).

It can cause mortalities in fish of all ages, reducing abundance of food available to fish and impeding movement of fish. It can also displace fish out of prime habitat into less suitable areas (Chilibeck *et al* 1992). Suspended sediment can settle on spawning areas, settle in gravel voids and smother the eggs and alevins (newly hatched fish) in the gravel.

Fish gills can get clogged or abraded gills, causing asphyxiation and the possibility of infections (Kjelland 2015). It can reduce water clarity and visibility in the stream, impairing the ability of fish to find food items. The overall ecological quality of watercourses can be reduced especially during the most critical period associated with low flow conditions.

Rainfall events or flooding of the construction site has potential to result in the release of increased volumes of suspended solids to these river systems.

5.1.3.2 Accidental Spills and Leak of Chemical, Hydrocarbons and Concrete

Accidental release/mobilisation of pollutants such as oils, fuels, cement or other pollutants from the movement and maintenance of vehicles and machinery in a construction site have potential to be released via surface water runoff into the waterbodies particularly during high rainfall

events. This can result in the degradation of water quality and impacts to aquatic fauna and flora and habitats, particularly when concrete is present.

Concrete and other cement-based products are alkaline and can be corrosive. They generate fine, highly alkaline silt (pH 11.5) that can physically damage fish by burning their skin and blocking their gills (Yandi *et al.*, 2017). A pH range of ≥ 6 ≤ 9 is set in the Quality of Salmonid Water Regulations (S.I. No. 293 of 1988), with artificial variations not in excess of ± 0.5 of a pH unit.

Concrete will be required to facilitate the foundation works associated with the development. This will include the transportation, pouring of concrete onsite. There is also a risk of discharge of chemicals, hydrocarbons and/or concrete, in the absence of mitigation, to the Bonet_050 and the Kilanummery_020 River water bodies, augmented during flooding events.

These events could result in the degradation of water quality and impacts to aquatic fauna and flora species, and potential impacts on downstream European sites. There is potential for pollution from surface water run-off to effect QI(s)/SCI(s) of relevant European sites during the construction of the proposed development.

5.2 GROUNDWATER IMPACTS

The GSI online database was consulted for available geological and hydrological information of the site and its environs.

The groundwater vulnerability to impacts at Site 1 is classified as 'Moderate', and at Site 2 and 3 as 'Low' (GSI, 2024). All three sites are situated within proximity to a European site which have QIs categorised as a Groundwater Dependent Terrestrial Ecosystems (GWDTE) or species dependent on such, and therefore there is potential for likely significant effects on a European site as a result of potential groundwater impacts.

5.2.1 Habitat Degradation due to Air Quality Impacts Dust

The temporary generation of dust in the locality of the works area is likely to arise due to general Construction Phase activities (i.e., movement of construction vehicles and machinery, road upgrade works, excavation activities of the new channel). Plant communities may be affected by dust deposition (effects on photosynthesis, respiration, transpiration) which could in turn, alter community structure. The Institute of Air Quality Management provide guidelines which prescribes potential dust emission risk classes to ecological receptors (Holman *et al.*, 2014). The guidelines specify that receptor sensitivity is 'High' up to 20m from the source and reduces to 'Medium' at 50m. The construction works associated with the access road and works area will be at a much smaller scale. The generation of dust is likely to range between 25-50m form the works area. The guidelines indicate that an assessment will be required where there is an ecological receptor within 50m of the boundary of a site; or 50m of the route(s) used by construction vehicles. The ZoI for dust impacts is therefore considered to be 50m from the proposed development site.

The proposed development sites are located less than 50m from the Bonet_050 and Kilanummery_020 River which are part of Lough Gill SAC both upstream and downstream of the site.

5.2.2 Noise and Disturbance

The proposed construction works and activities will result in high levels of noise and vibration (i.e. demolishing wall and excavations) from the associated construction vehicles and machinery. The construction works will also result in an increase in personnel and traffic movement to and from the site.

Considering the works are located within Lough Gill SAC and just outside its borders, there is potential for noise and disturbance impacts which are likely to occur within this European site.

A temporary increase in noise levels, disturbance and lighting within the site may result in disturbance to mobile QIs of Lough Gill SAC.

Transport Infrastructure Ireland (TII) (formally the National Roads Authority) has produced a seriesof best practice planning and construction guidelines for the treatment of otter, which indicate that disturbance to breeding otter sites would not extend beyond 150m (NRA, 2006).

No rock blasting or breaking will be undertaken during the construction phase. It should be noted, no night works or temporary construction lighting is anticipated to be required during the construction works. Fugitive lighting could deter movement of species in the area.

5.2.3 Habitat Degradation Due to the Introduction or Spread of Invasive Alien Plant Species

The Third Schedule IAPS Japanese knotweed and Himalayan Balsam were recorded within, and in close proximity to the proposed development site boundary. Japanese knotweed was recorded within the boundary of Site 2, and Himalayan balsam was recorded approximately 20m northeast of the site boundary of Site 2 during the ecological surveys along the riverbanks.

The movement of construction vehicles and material to and from the site could carry IAPS fragments/seeds throughout the proposed works area and result in the spread of these IAPS both within and outside the site if not appropriately managed.

There is also potential in the introduction of new IAPS to the site and spread through the movement of people, vehicles, machinery and material to, and from the site.

The introduction and establishment of invasive plant species has the potential to negatively impact habitats, including loss of biodiversity, increased flooding risk by impeding river-water flow, increase riverbank erosion, competitively excluding native plant species, and providing less favourable habitats for native fauna (TII, 2020). These effects are not only restricted to the proposed development site, but could extend further into the surrounding environment.

Therefore, there is potential for the construction works associated with the proposed development to accidently spread the IAPS across the proposed development site, into Lough Gill SAC, and also to any European sites within the ZoI of the proposed development (which is defined in Section 5.4.2).

5.3 Operation Phase

As described in Section 4.2.2, the flood defences will require maintenance over a five-year period however any local maintenance activities on the flood defences are not expected to differ

from the baseline/present conditions. This includes inspections and maintenance of the defence walls, flap valves, embankments, trees and debris by the Local Authority.

Potential operational phase impacts associated with the proposed development are discussed hereunder.

5.3.1 Water Quality/Contamination Impacts

Flood defence features may collapse overtime due to erosion and extreme weather events. In the case of emergencies, these will require restoration. The impacts related to flood defence and restoration works which are listed in Section 5.1.3 are applicable here.

5.3.2 Noise and Disturbance

During the operational phase, the proposed development will function as a flood defence and thus will not emit direct noise or disturbance related to the operation of its function. Minor noise disturbance may arise from personnel relating to site visitations for routine monitoring and maintenance. These maintenance works may require machinery and personnel over a very short period of time. This may result in low levels of disturbance to wildlife within the immediate vicinity of the site.

5.4 Relevant European Sites

5.4.1 Source-Pathway-Receptor Model

A source-pathway-receptor model (OPR, 2021) was used to identify likely significant effects on QIs or SCIs of European sites from the proposed development sites. In order for an effect to occur, all three elements of this model must be in place. The absence or removal of one of the elements of the model means there is no likelihood for the effect to occur. In the context of the proposed development, the model comprises:

- Source(s) – potential impacts from the proposed development, e.g. loss of habitat, direct emissions (water, air, noise and light);
- Pathway(s) – hydrological, physical or ecological connectivity between the proposed development and the European site (e.g. water bodies, proximity); and
- Receptor(s) – qualifying interests and/or special conservation interests of the European sites.

5.4.2 Determining the Likely Zone of Influence

In order to inform the source-pathway-receptor model, the ZoI needs to be established. The Chartered Institute of Ecology and Environmental Management (CIEEM) defines the ZoI of a project as the area(s) over which ecological features may be affected by the biophysical changes caused by the proposed development and associated activities (CIEEM, 2018).

As an initial approach, all European sites within a 15km radius were examined (DEHLG, 2010). For some projects, the distance could be much less than 15km, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in-combination effects.

To establish the ZoI of the proposed development, the likely key biophysical changes associated with it were determined having regard to the project characteristics set out in Section 4. The ZoI of the proposed development (in the absence of any mitigation measures) is described hereunder.

The ZoI for terrestrial habitats is limited to the footprint of the proposed development, with groundwater movement and levels considered in relation to groundwater dependent terrestrial habitats outside of the footprint of the development. Impacts associated with the loss of habitats will be confined to within the proposed development site boundary. The ZoI for this type of effects is defined as all lands within the proposed development site boundary.

The introduction and spread of the existing IAPS within the site was identified as a potential impact during the construction phase. The ZoI is considered to be the footprint of all three proposed development sites and downstream via the Bonet_050 River.

Hydrological linkages between a proposed development and aquatic habitats/species can occur over significant distances; however, the significance of the impact will be site specific depending on the receiving water environment and nature of the potential impact.

Considering the sources for impacts on European sites and adopting a precautionary approach for the ZoI for impacts associated with water quality degradation effects associated with the potential release of silt-laden runoff and other pollutants to surface water, the hydrological distance over which surface water discharges could have a significant impact on receiving watercourses is considered to include receiving water bodies adjacent to, or downstream of the proposed development site and extend downstream of each proposed development site to the nearest depositing waterbody (e.g. lake water body; transitional water body).The hydrological pathway for impacts from the proposed development sites therefore includes all downstream surface waterbodies from the three proposed development locations until Lough Gill (Gill SO: IE_WE_35_158).

In terms of groundwater, the proposed development sites are underlain by deep soils, (Site 1, Lisgorman shale formation, Site 2 and 3, oak limestone formation. The nearest site to an Groundwater Dependent Terrestrial Ecosystems (GWDTE) is Site 1 which is located 800m south and downstream of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)* [91E0]. This is not within the zone of contribution to this or any other Groundwater Dependent Terrestrial Ecosystems (GWDTE). The spatial limits of groundwater effects are therefore considered as <50m from the proposed development site.

Mobile species have 'range' outside of the European site in which they are QI/SCI. The range of mobile QI/SCI species varies from several metres (e.g. in the case of whorl snails Vertigo spp.), to hundreds of kilometres (in the case of migratory wetland birds). Whilst static species and habitats are generally considered to have ZoIs within close proximity of the proposed development, they can be significantly affected at considerable distances from an effect source; for example, where an aquatic QI habitat or plant is located many kilometres downstream from a pollution source.

Below is a summary of the documented zones of influence for varying species:

- Transport Infrastructure Ireland (formally the National Roads Authority) has produced a series of best practice planning and construction guidelines for the treatment of otter, which indicate that disturbance to their resting sites from road construction works would not extend beyond 150m (NPWS, 2006).

- Cutts *et al.* (2013) notes that different types of disturbance *stimuli* are characterised by different avifaunal reactions, however as a general rule of thumb, a distance of 300m can be used to represent the maximum likely disturbance distance for waterfowl. Nevertheless, disturbance to species will be considered individually.

The ZoI for mobile species such as fish species and otters may extend over larger distances due to the fact that they can commute and forage many kilometres from their breeding sites.

The ZoI for noise/disturbance was, therefore, established as the proposed development site plus a 300m buffer. In addition, to further establish any pathways to SPA's and SACs, the foraging/commuting ranges of SCI and QI species will also be considered in relation to ZoI of the proposed development site.

As noted in Section 5.2.1, the spatial limit of dust impacts is established as 50m from all three site boundaries.

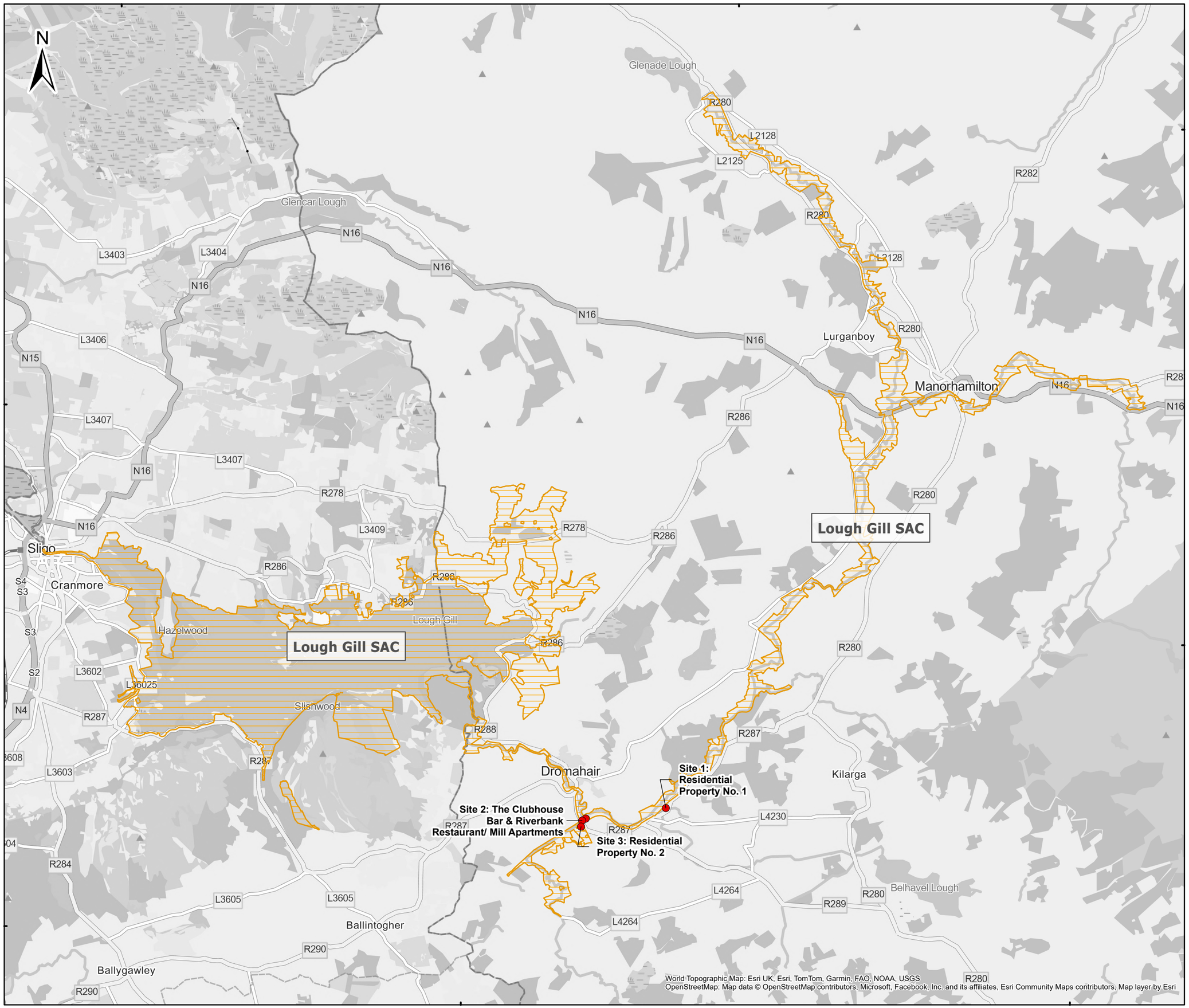
5.5 IDENTIFICATION OF RELEVANT EUROPEAN SITES WITHIN THE ZoI

As mentioned above, as an initial step, all European sites considered relevant to the ZoI of the proposed development site within a 15km radius or with hydrological connectivity to the proposed development site, were reviewed and are illustrated in Figure 5-1. 'Relevant' European sites are those within the potential ZoI of activities associated with the construction and operation of the proposed development, where adverse effects to integrity of QIs/SCIs of these European sites could arise.

The source-pathway-receptor conceptual model (OPR, 2021) was then used to identify a list of 'relevant' European sites (i.e. those which could be potentially affected). A source-pathway-receptor link was identified between the proposed development and European sites that had an ecological or hydrological/hydrogeological connectivity to the proposed site.

The proposed development site is located within the boundaries of Lough Gill SAC (Site code: 001976). In addition, there is hydrologically connectivity between the Bonet River and Lough Gill. There are no other European sites considered relevant to the ZoI of the proposed development site after been assessed in terms of all QIs/SCIs and connectivity.

All European sites within 15km of the proposed development site, or which are hydrologically connected, are illustrated on Figure 5-1 below. The source-pathway-receptor model of relevant European site within the ZoI of the proposed development are shown in Table 5-1.



Legend

- Proposed SItes Locations
- Special Areas of Conservation (SACs)

0 2 4
Kilometers

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING\
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE\
3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY \ WORK COMMENCES\
4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Rev	Date	Description	By	Chkd.
A	17/12/2024	First issue	S.P	S.OR

Client: Comhairle Chontae Liatroma Leitrim County Council

Project: Dromahair Feasibility Report

Title: Figure 5.1: European Sites Within 15km of the Proposed Project Site

Scale @ A3:	1:75,000	
Prepared by:	Checked by:	Date:
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Map Ref: 11271-008-S1.S2.S3.S4-EU.S..LGILL-TOB-A

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Table 5-1: Assessment of Relevant European Sites Within the Zone of Influence and Possibility of Likely Significant Effects (* indicates a priority habitat under the EU Habitats Directive).

European Site	Qualifying Interests/Special Conservation Interests	Conservation Objectives	Pathway For Effect	Potential for Likely Significant Effects
Lough Gill SAC [001976] (NPWS 2021) Distance: <5m	• Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] • Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) * [91E0] • White-clawed Crayfish (*Austropotamobius pallipes*) [1092] • Sea Lamprey (*Petromyzon marinus*) [1095] • River Lamprey (*Lampetra fluviatilis*) [1099] • Salmon (*Salmo salar*) [1106] • Otter (*Lutra lutra*) [1355] • Brook Lamprey (*Lampetra planeri*) [1096]	To maintain or restore the favourable conservation condition of the species listed as Qualifying Interest for this SAC (1092,1095, 1096, 1099, 1106, 1355) which is defined by a list of attributes and targets. To restore the favourable conservation condition of Annex I habitats in Lough Gill SAC (1350, 6210, 91A0, 91E0) which are defined by a list of attributes and targets.	The proposed development is located within <5m of the SAC boundary and, thus, occur within the ZoI for impacts. No Annex I habitats were recorded within the footprint of the works. Works will occur within the riverbanks of these rivers, within the SAC boundaries. There is potential for direct habitat loss within the SAC. The proposed development is hydrologically linked to the SAC via the Bonet_050 and the Kilanummery_020 river water bodies. There is a high risk for surface water runoff carrying sediment and construction pollution into the watercourses if not appropriately managed. The construction works will result in an increase in noise, vibration, lighting and human presence during	Yes - there is potential for pollution from surface water runoff and siltation to affect the QI's of the SAC during construction. This could result in habitat loss or degradation of QI's of the SAC. There is potential for disturbance or displacement of QI species due to human presence and noise. There is potential for the introduction and/or spread of IAPS within the SAC. An assessment of likely significant effects is presented in Section 6 of this report.

European Site	Qualifying Interests/Special Conservation Interests	Conservation Objectives	Pathway For Effect	Potential for Likely Significant Effects
			movement of vehicles and staff. Increase in noises can have disturbance impacts to otter and their breeding sites. During construction, noise and the construction related disturbance could reduce the ability of populations of QI's to forage, breed, commute or rest. Disturbance of invasive species during the construction of the proposed works could lead to the introduction and/or dispersal of IAPS during its removal off site via machinery, materials or work wear. There is a hydrogeological pathway between the proposed development site to the SAC via Ballintougher and Killarga Ground Waterbodies. However, there will be no impact on groundwater as the excavations are (1.2m) and above groundwater level. A source-pathway-receptor link exists between the proposed works site and the QI of this SAC.	

6. ASSESSMENT OF SIGNIFICANCE

6.1 POTENTIAL FOR SIGNIFICANT EFFECTS

As noted in Table 5-1, the potential for likely significant effects were identified between the proposed development and Lough Gill SAC via hydrological and terrestrial pathways. The proposed development has the potential to impact on the water quality, habitats, disturbance and spread of invasive species impacts.

6.2 DEGRADATION OF QI HABITATS

6.2.1.1 Terrestrial

The nearest terrestrial QI habitat to the proposed development is Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]. This is located 3.0km downstream of the proposed development. No terrestrial habitats within the footprint or the ZoI of the proposed development have affinities to QI habitats of the SAC. There will be the required removal of riparian vegetation along the boundary of the SAC at Site 2 and Site 3 for the installation of permanent head walls and embankments, which will result in a total loss of approximately 10m2 of riparian habitat. While this is a permanent loss of habitat, it does not offer any significant loss of supporting value to QI's such as otter within the SAC. Given the total permanent habitat loss is approximately 10m2 of riparian vegetation in relation to the total area of the terrestrial habitat within the SAC, this loss is not considered an adverse effect to the SAC. The removal of the five mature beech trees, would not be of relevance to the integrity of the SAC as they are a non-native species.

6.2.1.2 Aquatic

A hydrological connection exists between the proposed development site and Lough Gill SAC. It is possible for water quality degradation to occur within the SAC, as a result of an accidental spillage, or discharge of silt laden runoff during the construction phase of the proposed development, due to the hydrological connectivity. Water quality degradation can impact aquatic habitats for QI's such as otter, crayfish or salmon and also reduce and/ or eliminate their feeding resources (fish biomass) or spawning and nursery habitat. Otters are principally piscivorous relying predominantly on salmonids (salmon and brown trout) but also a wide range of other aquatic prey sources where available (Carss 1995).

Therefore, there is a potential for water quality and habitat degradation to occur with Lough Gill SAC as a result of the proposed development. This could result in likely significant effects on the conservation objectives of this European site.

6.3 SPREAD OF INVASIVE ALIEN PLANT SPECIES

Two IAPS (Japanese knotweed and Himalayan balsam) were recorded during the field surveys of the proposed development. An infestation of Japanese knotweed was recorded within Site 2 and will be directly impacted by the proposed works. Himalayan Balsam was also recorded at Site 2, located 20m northeast from the proposed works area. Given the close proximity of the IAPS to the works area, there is potential for the IAPS to be spread present within the footprint and ZoI of the proposed development and within the SAC.

The introduction and establishment of IAPS has the potential to negatively impact habitats, including loss of biodiversity, increased flooding risk by impeding river-water flow, increased riverbank erosion, competitively excluding native plant species, and providing less favourable habitats for native fauna (TII, 2020). Therefore, there is potential spread of IAPS causing habitat degradation to occur within Lough Gill SAC, as a result of the proposed development. This could result in likely significant effects on the conservation objectives of this European site.

6.4 Disturbance To Species

The proposed construction works have the potential to disturb species, including mammals, fish and birds.

Otter

Otter are considered vulnerable given their reliance on fish food supplies, sensitivity to disturbance and pollution in addition to their short life cycle and small litter sizes (Chanin, 2003). The current range of the semi-aquatic species otter within the Lough Gill SAC is estimated at 93.6% (NPWS, 2021). Field surveys did not find evidence of otter activity, or breeding or resting sites within the ZoI of the proposed development. Otter activity has previously been recorded along the Bonet River at Site 2 as well as a tributary of the Bonet 150m from Site 3 and Lough Gill (NBDC 2024).

The proposed development site has suitable habitat for otter to forage, rest and/or breed along the riverbanks. It is possible that otter may forage/rest/commute along the Bonet_050 River which is located within the SAC. Therefore, there is potential for construction works disturbance along otter territory which could result in the disturbance of otter. Disturbance and impacts on their feeding resource would result in likely significant effects on the otter population within the SAC.

Fish and Crayfish

The NBDC and IFI databases only showed records of salmon, lamprey larvae and crayfish to be present in the Bonet River.

While the proposed development is within the favourable reference range for Atlantic salmon, brook lamprey and sea lamprey and it is outside the favourable reference range for river lamprey (NPWS, 2019c)[15].

It is possible that the salmon and lamprey may be present within the Bonet River_050 river which is located within the SAC. Instream works involving the placement of clean gravels within the watercourses are proposed and therefor there is potential for direct impacts for these QI species during construction works, however these works will be carried out during open season and therefore there is limited direct impacts on fish and crayfish. There is potential for indirect impacts from a degradation of water quality. A degradation of water quality would result in likely significant effects on the population of Atlantic salmon and lamprey species within the SAC.

6.5 Potential for In-Combination Effects

Article 6(3) of the Habitats Directive requires that:

[15] https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol3_Species_Article17.pdf

"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives."

It is therefore required that the potential impacts of the proposed development are considered in-combination with any other relevant plans or projects.

6.6 Planning Applications

In-combination effects with other developments in the area were assessed via a review of National Planning Application Database website. Planning permission was granted for an upgrade to the existing Gaelic Football field at Dromahair Community Park including the development of an adjoining multi-use training field and ancillary works and flood defense measures. Planning permission was also granted to retain & carry out complete renovations and alterations to the Abbey Hotel, Main Street, Dromahair. A number of small-scale residential developments were noted, e.g. residential one-off housing developments and housing upgrades. Planning permission has also been sought for the construction of 34 no. residential units consisting of semidetached houses and apartments blocks with a new site entrance off the existing estate road and the construct of a car park, landscaping, connections to all public services and all ancillary site works at Stonebridge Estate, Drumahaire / Drumlease, Dromahair, Co. Leitrim. A subsequent third party appeal has been lodged against this decision to An Bord Pleanála.

These works are minor in nature and restricted to existing site boundaries and have no connectivity to the proposed development under appraisal in this report. There is therefore no potential for in-combination effects with the proposed development.

6.7 County Development Plan

Leitrim County Development Plan (2023-2029) sets out the policies, objectives, and the overall strategy for the development of the County over the plan period 2023-2029. The Plan outlines policies and objectives which are proactive in promoting the protection of European sites, including policies NH POL 1 to NH POL 5 and objective NH OBJ 1 which states:

'To ensure that no project or programme giving rise to significant adverse, direct, indirect, secondary or cumulative impacts on the integrity of any Natura 2000 site(s), having regard to their qualifying interests and conservation objectives, arising from their size, scale, area or land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either alone or in combination with other plans or projects)'.

No specific plans or projects have been identified within the Plan (Leitrim County Council, 2023) which have the potential for likely significant in-combination effects with the proposed development. Furthermore, as stated above, following objective NH OBJ 1, any new plan/project within the local administrative area (i.e. Leitrim County Council) will be subject to the Appropriate Assessment process as per the Habitats Directive, to assess the likelihood of significant effects on European Sites, either alone or in-combination with other plans and projects.

6.8 River Basin Management Plan 2018-2021

The River Basin Management Plan (RBMP) for Ireland 2018-2021 sets out the actions that Ireland will take to improve water quality and achieve 'good' ecological status in water bodies (rivers, lakes, estuaries and coastal waters) by 2021 (DoHPLG, 2018). The RBMP provides a coordinated framework for improving the quality of our waters to protect public health, the environment, water amenities and to sustain water-intensive industries, including agri-food and tourism, particularly in rural Ireland.

The first cycle of RBMPs included the Eastern River Basin District - River Basin Management Plan (ERBDMP) 2009 – 2015 (EPA, 2009). These plans summarised the waterbodies that may not meet the environmental objectives of the WFD by 2015 and identified which pressures are contributing to the environmental objectives not being achieved. The plans described the classification results and identified measures that can be introduced in order to safeguard waters and meet the environmental objectives of the WFD:

- Prevent deterioration of waterbody status;
- Restore good status to waterbodies;
- Achieve protected area objectives; and
- Reduce chemical pollution of waterbodies.

Currently the third cycle Draft River Basin Management Plan (RBMP) 2022-2027 is underway and a consultation report was published which reviews the public consultation submissions (RPS, 2022). Relevant key issues raised included water quality / pollution, agricultural practices, sewage pollution, forestry and peat extraction.

With effective implementation of the RBMP, it can be expected to see the plan's ambitious suite of measures translated into tangible improvements in water quality in over 700 waterbodies around Ireland. Assessment of risks to water quality in planning processes will be enhanced and there will be more analyses of water quality carried out at water catchment level.

Actions that may arise as a result of the RBMP will not have a likely significant negative in-combination effect with the proposed development.

6.9 National Biodiversity Action Plan 2023-2030

The objectives of Ireland's 4th National Biodiversity Action Plan (NBAP) 2023 - 2030 include the enhancement and conservation of biodiversity over five key objectives, as follows.

- Objective 1: Adopt a Whole-of-Government, Whole-of-Society Approach to Biodiversity;
- Objective 2: Meet Urgent Conservation and Restoration Needs;
- Objective 3: Secure Nature's Contribution to People;
- Objective 4: Enhance the Evidence Base for Action on Biodiversity; and
- Objective 5: Strengthen Ireland's Contribution to International Biodiversity Initiatives.

Whilst the above objectives would be dealt with at local or site level, the plan promotes such objectives where possible (DoHLGH 2023).

Actions that may arise as a result of the NBAP will not have a likely significant negative in-combination effect with the proposed development.

7. SCREENING ASSESSMENT CONCLUSION

TOBIN has prepared this Screening for AA report to inform the AA process and determine whether the proposed development located in Dromahair, Co. Leitrim on the, individually or in-combination with other plans or projects, and in view of best scientific knowledge, is likely to give rise to likely significant effects on any European site.

The potential impacts of the proposed development have been considered in the context of the European sites potentially affected, their qualifying interests and/or special conservation interests, and their conservation objectives. Using best scientific knowledge through an assessment of the source-pathway-receptor model, which considered the ZoI of effects from the proposed development, and the potential in-combination effects with other plans or projects, it is the considered the opinion of TOBIN that the possibility for likely significant effects on the Lough Gill SAC (001976) exists as a result of the proposed development. Therefore, a Stage 2 Appropriate Assessment is required.

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Appendix B INVASIVE SPECIES MANAGEMENT PLAN

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