Planning and Environmental Consultants

Article 6 (3) Appropriate Assessment Screening Report

Proposed Housing Development at Cross West, Co. Mayo

DOCUMENT DETAILS

Client::	**Mayo County Council**
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Project Number:	**200813**
Document Title:	**Article 6 (3) Appropriate Assessment Screening Report**
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Planning and Environmental Consultants

Rev	Status	Date	Author(s)	Approved By
01	Final	03/03/2021	JOS	PR

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1. INTRODUCTION

1.1 Background

MKO has been appointed to provide the information necessary to allow the competent authority to conduct an Article 6(3) Screening for Appropriate Assessment of proposed housing development at Cross West, Co. Mayo.

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

The assessment in this report is based on a desk study and field surveys undertaken in January 2021. It specifically assesses the potential for the proposed works to result in significant effects on European sites in the absence of any best practice, mitigation or preventative measures.

This Appropriate Assessment Screening Report has been prepared in accordance with the European Commission's *Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC* (EC, 2001) and *Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (EC, 2018) as well as the Department of the Environment's *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities* (DoEHLG, 2010).

In addition to the guidelines referenced above, the following relevant documents were also considered in the preparation of this report:

1. *Council of the European Commission (1992) Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. Official Journal of the European Communities. Series L 20, pp. 7-49.*
2. *EC (2019) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg.*
3. *EC (2007) 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.*
4. *EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission.*

1.2 Appropriate Assessment

1.2.1 Screening for Appropriate Assessment

Screening is the process of determining whether an Appropriate Assessment is required for a plan or project. Under Part XAB of the Planning and Development Act, 2000, as amended, screening must be carried out by the Competent Authority. As per Section 177U of the Planning and Development Act, 2000, as amended '*A screening for appropriate assessment shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that Land use plan or proposed development, individually or in combination with another plan or project is likely to have a significant effect on the European site*'. The Competent Authority's determination as to whether an Appropriate Assessment is

required must be made on the basis of objective information and should be recorded. The Competent Authority may request information to be supplied to enable it to carry out screening.

Consultants or project proponents may provide for the competent authority, the information necessary for them to determine whether an Appropriate Assessment is required and provide advice to assist them in the Article 6(3) Appropriate Assessment Screening decision.

Where it cannot be excluded beyond reasonable scientific doubt at the Screening stage, that a proposed plan or project, individually or in combination with other plans and projects, would have a significant effect on the conservation objectives of a European site, an Appropriate Assessment is required.

Where an Appropriate Assessment is required, the Competent Authority may require the applicant to prepare a Natura Impact Statement.

The term Natura Impact Statement (NIS) is defined in legislation[1]. An NIS, where required, should present the data, information and analysis necessary to reach a definitive determination as to 1) the implications of the plan or project, alone or in combination with other plans and projects, for a European site in view of its conservation objectives, and 2) whether there will be adverse effects on the integrity of a European site. The NIS should be underpinned by best scientific knowledge, objective information and by the precautionary principle.

This Article 6(3) Appropriate Assessment Screening Report has been prepared in compliance with the provision of section 177U of the Planning & Development Act 2010 as amended.

1.2.2 Statement of Authority

A baseline ecological survey was undertaken on the 26th of January 2021 by Julie O'Sullivan (BSc, MSc). Julie is an experienced ecologist with over 5 years' experience working in the ecology sector. This report was prepared by Julie O'Sullivan. This report has been reviewed by Pat Roberts (B.Sc., MCIEEM) who has over 15 years' experience in ecological consultancy.

[1] As defined in Section 177T of the Planning and Development Act, 2000 as amended, an NIS means a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own and in combination with other plans and projects, for a European site in view of its conservation objectives. It is required to include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for the European site in view of its conservation objectives

2. DESCRIPTION OF THE PROPOSED WORKS

2.1 Site Location

The proposed residential housing development is located in the townland of Cross West, approximately 180m east of Cross Village, Co. Mayo (grid reference: M 19624 55328). The site will be accessed via the L1614 to the south of the site. The proposed site has an area of 1.08 ha.

The site location is shown in Figure 2.1 along with the nearby EU designated sites.

2.2 Characteristics of the Proposed Works

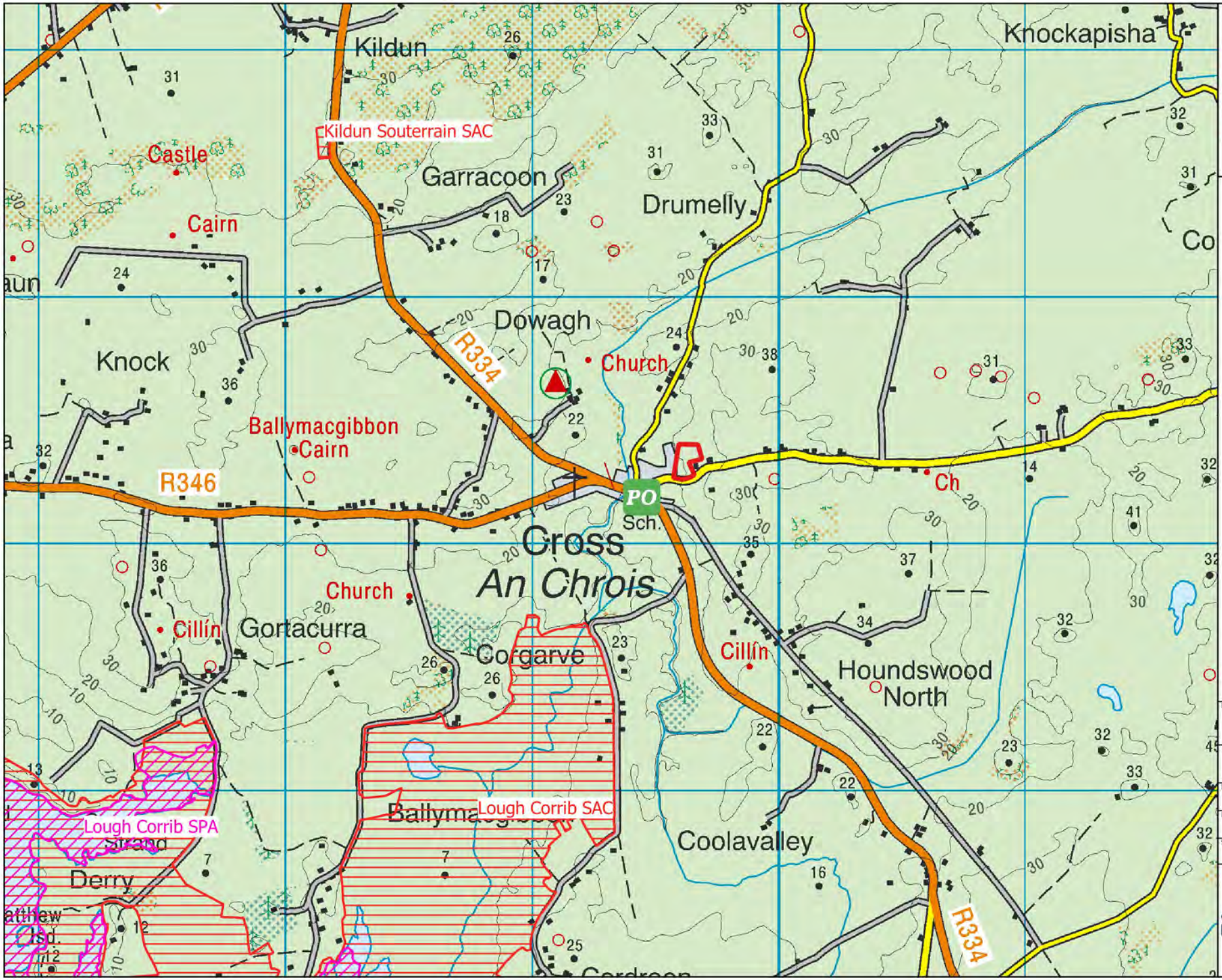
The proposed development will consist of the construction of 8 no. dwellings comprising the following:

- 5 no. 2 bed two storey dormer houses
- 3 no. 3 bed two storey dormer houses
- Provision of shared communal and private open space, site landscaping, site services and all associated site development works.

The proposed site layout is outlined on Figure 2.2.

The surface water network has been designed in line with standard sustainable urban drainage best practice and surface water will discharge to the public stormwater network.

It is proposed to discharge the wastewater from the proposed development to the existing public wastewater network. The wastewater layout has been designed in accordance with Irish Water's latest standard details and codes of practice. Irish water have confirmed that there is capacity for the proposed development to connect to the public foul water supply, subject to the completion and commissioning of the newly constructed Cross foul sewer network and wastewater treatment plant (Reference No CDS19003193, included as Appendix 1). At the time of writing this report the Cross foul sewer network and wastewater treatment plant has been constructed and commissioned. The proposed development will comply with all Irish Water requirements prior to connections.



Map Legend

- Site boundary
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)

Drawing Title: Site Location

Project Title: Housing Development Cross West

Drawn By	Checked By
JOS	PR
Project No.	Drawing No.
200813	Figure 2.1
Scale	Date
1:20000	16.02.21

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2 BED (4P) DORMER
SCALE:1 : 250

(90) 2 BED DORMER SCHEDULE-PHASE 01	
HOUSE TYPE COMMENT	NUMBER
DORMER-2B (4P) HANDED	UNIT 03
DORMER-2B (4P)	UNIT 04
DORMER-2B (4P) HANDED	UNIT 05
DORMER-2B (4P)	UNIT 06
DORMER-2B (4P) HANDED	UNIT 07

2 BED DORMER TOTAL: 5

3 BED(6P) DORMER
SCALE:1 : 250

(90) 3 BED DORMER- SCHEDULE- PHASE 01	
HOUSE TYPE COMMENT	UNIT NUMBER
DORMER-3B (6P) GABLE-ENTRANCE	UNIT 01
DORMER-3B (6P) HANDED	UNIT 02
DORMER-3B (6P)	UNIT 08

3 BED DORMER TOTAL: 3

SITE:	SITE OUTLINED IN RED- 1.08 HECTARES ITM Co-ordinates = 519600,755350 ING Co-ordinates=119631, 255327 08 NO UNITS -DENSITY 7.4 PER HA THE SITE IS LOCATED ON THE L1614 NEAR TO CROSS NATIONAL SCHOOL ACCESS TO THE COMPLETED DEVELOPMENT TO BE VIA THE L1614 APROX 250 METERS FROM THE JUNCTION WITH THE R334 ENTRANCE VISIBILITY ZONE MEASURED 90MM ALONG ROADSIDE CARRIAGEWAY EACH SIDE OF NEW ENTRANCE. LOCAL ROAD HAS 80KM SPEED LIMIT. NEW NATIVE TREES TO DETAIL.	PROPOSAL:	CONSTRUCTION 0F 15 NO. DWELLINGS COMPRISING OF 11 NO. 2 BED TWO STOREY DORMER HOUSES AND 4 O. 3 BED TWO STOREY DORMER HOUSES - SCALE, MASSING, ARCHITECTURAL EXPRESSION AND DETAILING ARE DESIGNED TO BE IN KEEPING WITH THE TRADITIONAL HOUSES OF THE AREA.
		MATERIALS: (EXTERNAL)	**EXTERNAL ROOF FINISH** : NATURAL -SLATE BLUE BLACK IN COLOUR **EXTERNAL WINDOWS & DOORS** : TIMBER ALU CLAD FRAMES IN SELECTED COLOURS **EXTERNAL WALLS** : RENDERED FINISH PAINTED TO SELECTED NEUTRAL COLOUR NEW PLANTING-NATURAL HEDGEROW AND NATIVE TREES TO DETAIL.

Do not scale this drawing. Use written dimensions only

- **Scales as stated are valid on the original drawing only. Written dimensions take precedence. Detail dimensions take precedence over plan dimensions.**
- **Notify architect of any dimensional discrepancies. Any modifications or deviation to be brought to the attention of the architect for review and approval.**
- **All vertical dimensions shall be taken from a "bench mark" or other similar guide established prior to the start of construction. High points, low points, irregularities in floor slab which could affect fabrication / installation, work of other trades or vendors shall be brought to the attention of Mayo County Council Architects immediately.**
- **All drawings are to be read in conjunction with other consultant's drawings**
- **All dimensions, unless otherwise stated, are given in millimetres and must be confirmed and checked by the Contractor on site.**
- **Levels are generally given in metres from a specified datum.**
- **All Levels must be confirmed and checked by the Contractor on site.**
- **Any discrepancies on this drawing are to be brought to the attention of Mayo County Council Architects immediately.**

Rev No.	Date	Comment

01/03/2021 14:25:40 C:\Users\cmcgann\Mayo County Council\Architects Section - A586-CROSS_WEST\(A3t)Drawings\REVIT\A586-MCC-XX-90-M3-A-0000.rvt

STATUS KEY

SHARED / FOR INFORMATION

S0	WORK IN PROGRESS
S1	COORDINATION
S2	INFORMATION
S3	REVIEW / COMMENT
S4	CONST APPROVAL
D1	COSTING
D2	TENDER
D3	CONTRACTOR DESIGN

PUBLISHED

A1	PT8 / FSC/ DAC
A2	CONSTRUCTION
AB	AS-BUILT

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ARCHITECTS DEPARTMENT
MAYO COUNTY COUNCIL

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Project No: A_586	Project Title: Housing CROSS WEST, CO. MAYO	Dwg Type 90	Status: S0
Drawing Title:	SITE LAYOUT PLAN-PHASE 01 Figure 2.2	Drawing No. 1001	Revision: /
		Scale: 1 : 250	First Issue: 01/03/21
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2.2.1 Description of the Baseline Ecological Environment

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

A multidisciplinary walkover survey was conducted on the 26th of January 2019 in line with NRA (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes) by Julie O'Sullivan (BSc., MSc). Although the ecological survey was not undertaken within the optimal time of year to undertake a habitat and flora survey (Smith et. al, 2011) and all habitats were readily identifiable at the time of the visit. A dedicated invasive species survey was also undertaken during the site visit. During the survey, the site was searched for species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011).

2.2.2 Habitats

The site comprises a single field of ***Improved Agricultural Grassland (GA1)*** (Plate 2-1 & Plate 2-2) Species recorded in this habitat included abundant Yorkshire fog (*Holcus lanatus*), annual meadow grass (*Poa annua*), perennial rye-grass (*Lolium perenne*), creeping buttercup (*Ranunculus repens*), daisy (*Bellis perennis*) and ribwort plantain (*Plantago lanceolata*).

Other species recorded frequently in the vegetation included occasional soft rush (*Juncus effusus*), cock's-foot (*Dactylis glomerata*), nettle (*Urtica dioica*), crested dogs-tail (*Cynosaurus cristatus*), red fescue (*Festuca rubra*), creeping thistle (*Cirsium arvense*), clovers (*Trifolium* spp.), broad-leaved dock (*Rumex obtusifolius*), meadow buttercup (*Ranunculus acris*), with occasional spear thistle (*Cirsium vulgare*), mouse-ear chickweed (*Cerastium fontanum*), ragwort (*Jacobaea vulgaris*), pointed spear-moss (*Calliergonella cuspidata*), common bent (*Agrostis capillaris*), germander speedwell (*Veronica chamaedrys*), procumbent pearlwort (*sagina procumbens*) and common sorrel (*Rumex acetosa*). In the north-west corner of the site a small area of bramble scrub occurs, formed on a pile of rocks cleared from the agricultural grassland.

Field boundaries are formed by stonewalls and are classified as ***Stone Walls and Other Stonework (BL1)*** (Plate 2-3). Scattered trees occur along the western site boundary, and include mature sycamore (*Acer pseudoplatanus*), willows (*Salix* spp.) and spindle (*Euonymus europaeus*), with a sparse bramble (*Rubus fructicosus*) understory in places. A mature treeline (WL2) of non-native conifer trees occurs on the roadside of this wall, outside the site western boundary. A species poor hedgerow formed of bramble (*Rubus fructicosus*) occurs along the north-eastern boundary wall. The south east boundary wall has been constructed with concrete blocks and is classified as ***Buildings and Artificial Surfaces (BL3).***

Species recorded along the margins of the field, adjacent to the stonewalls, included sowthistle (*Sonchus* spp.), cleavers (Galium aparine), herb Robert (*Geranium robertianum*), ivy (*Hedera helix*), hedgerow cranes bill (*Geranium pyrenaicum*), dandelion (*Taraxacum officinale* agg.), primrose (*Primula veris*), willowherb (*Epilobium* spp.), hogweed (*Heracleum sphondylium*) and figwort (*Scrophularia nodosa*).

No drainage ditches or watercourses occur within or immediately adjacent to the site.

There are no Annex I habitats listed under the EU Habitats Directive present within the Proposed development site boundary. No botanical species protected under the Flora (protection) Order (1999, as amended 2015), listed in the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded on the site and no suitable habitat occurs within the site. All species recorded are common in the Irish landscape. No invasive species were observed within the proposed development site.

Plate 2-1 Improved Agricultural Grassland (GA1), view looking north-west.

Plate 2-2 Improved agricultural grassland (GA1), view looking south-east

Plate 2-3 Field boundaries are formed by stonewalls and are classified as Stone Walls and Other Stonework (BL1), with non-native conifers outside the western boundary wall.

Plate 2-4 Field boundaries are formed by stonewalls and are classified as Stone Walls and Other Stonework (BL1), with scattered trees growing along the western boundary.

2.2.3 Fauna

The walkover survey was designed to detect the presence, or likely presence, of a range of protected species associated with European protected sites. No Annex listed faunal species were recorded within the proposed works area during the site visit.

No evidence of otter was recorded within the proposed development site including holts, couches, lay-up sites, prints or spraints. There are no drainage ditches or watercourses within the site and the proposed development site does not offer suitable habitat for otter.

A total of seven bird species were recorded within or flying over the site during the field survey, including chaffinch, mistle thrush, robin, wren, rook, jackdaw and starling. Bird species recorded within the site boundaries during the site visit were an assemblage of common birds that are typical of the agricultural grassland habitats in the wider area of the proposed development site.

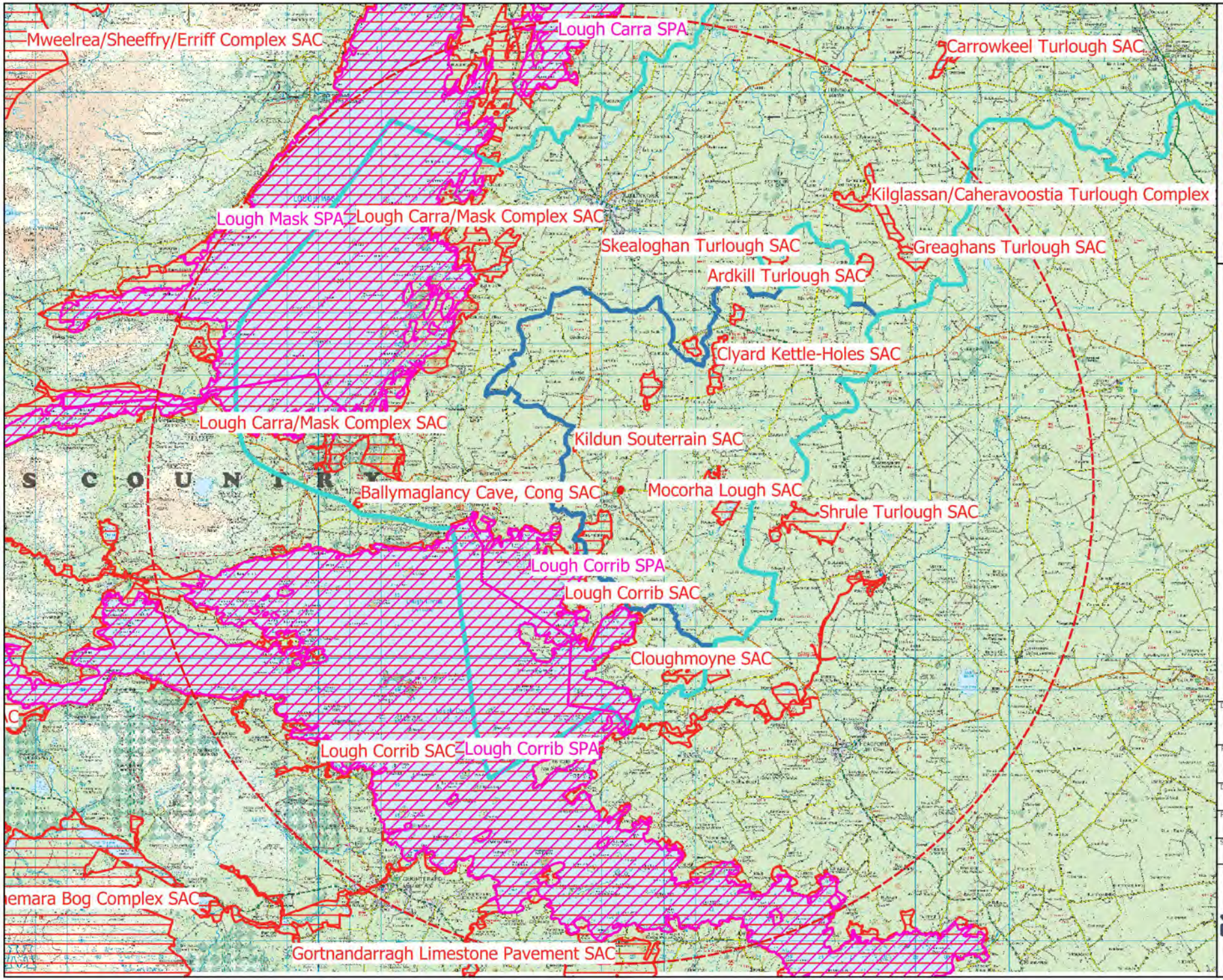
No Annex I bird species or species of conservation concern were recorded within the proposed development site during the field survey. The site is dominated by improved agricultural grassland habitat and does not provide supporting habitat for any bird species that are among the SCIs of any European Site. Given the lack of significant habitat for rare or protected bird species identified within the site, there is no requirement for further bird surveys at the site.

3. IDENTIFICATION OF RELEVANT EUROPEAN SITES

3.1 Identification of the European Sites within the Likely Zone of Impact

The following methodology was used to establish which European Sites are within the Likely Zone of Impact of the proposed development:

- Initially the most up to date GIS spatial datasets for European designated sites and water catchments were downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie) on the 01/03/2021. The datasets were utilized to identify European Sites which could feasibly be affected by the proposed development.
- All European Sites within a distance of 15km surrounding the works site were identified and are shown on Figure 3.1. In addition, the potential for connectivity with European Sites at distances of greater than 15km from the proposed works was also considered in this initial assessment. In this case, no potential connectivity with sites located at a distance of over 15km from the proposed works was identified.
- The catchment mapping was used to establish or discount potential hydrological connectivity between the site of the proposed works and any European Sites. The hydrological catchments are also shown in Figure 3.1.
- In relation to Special Protection Areas, in the absence of any specific European or Irish guidance in relation to such sites, the Scottish Natural Heritage (SNH) Guidance, *'Assessing Connectivity with Special Protection Areas (SPA)'* (2016) was consulted. This document provides guidance in relation to the identification of connectivity between proposed development and Special Protection Areas. The guidance takes into consideration the distances species may travel beyond the boundary of their SPAs and provides information on dispersal and foraging ranges of bird species which are frequently encountered when considering plans and projects.
- Table 3.1 provides details of all relevant European Sites as identified in the preceding steps and assesses which are within the likely Zone of Impact. The assessment considers any likely direct or indirect impacts of the proposed development, both alone and in combination with other plans and projects, on European Sites by virtue of the following criteria: size and scale, land-take, distance from the European Site or key features of the site, resource requirements, emissions, excavation requirements, transportation requirements and duration of construction, operation and decommissioning were considered in this screening assessment
- The site synopses and conservation objectives of these sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report. Figure 3.1 shows the location of the proposed works in relation to all European sites within 15km of the proposed development.
- Where potential pathways for Significant Effect are identified, the site is included within the Likely Zone of Impact and considered in the Screening Assessment



Map Legend

- Site boundary
- 15km buffer
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- Cong Robe Groundwater Catchment
- Kilmaine Subcatchment

Drawing Title: EU Designated Sites within 15km

Project Title: Housing Development Cross West

Drawn By	Checked By
JOS	PR
Project No.	Drawing No.
200813	Figure 3.1
Scale	Date
1:157000	16.02.21

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Table 3.1 Identification of Designated sites within the Likely Zone of Impact

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 01/03/2021	Conservation Objectives	Likely Zone of Impact Determination
Special Areas of Conservation (SAC)			
Lough Corrib SAC [000279] Distance: 687m	› 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) › 3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or Isoeto-Nanojuncetea › 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. › 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation › 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) › 6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) › 7110 Active raised bogs* › 7120 Degraded raised bogs still capable of natural regeneration › 7150 Depressions on peat substrates of the *Rhynchosporion* › 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae** › 7220 Petrifying springs with tufa formation (Cratoneurion)* › 7230 Alkaline fens › 8240 Limestone pavements* › 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles	Detailed conservation objectives for this site, (Version 1, August 2017), were reviewed as part of the assessment and are available at www.npws.ie	This European Site is located 687m south-west of the proposed development site. The proposed development site is located outside the boundary of this European Site and therefore no pathway for direct effect exists. There are no watercourses or drainage ditches within the proposed development site that could act as a conduit for pollution to any aquatic habitat or supporting habitat for aquatic species listed as QIs of this SAC. All surface water and wastewater will discharge to the existing public services network and there is no potential for deterioration in groundwater. There is no potential for indirect effects on the listed aquatic habitats or supporting habitats for aquatic QI species for which this SAC has been designated: › 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) › 3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or Isoeto-Nanojuncetea › 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. › 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation › 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae** › 7220 Petrifying springs with tufa formation (Cratoneurion)* › 7230 Alkaline fens

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 01/03/2021	Conservation Objectives	Likely Zone of Impact Determination
	› 91D0 Bog woodland* › 1096 Brook Lamprey *(Lampetra planeri)* › 1092 White-clawed Crayfish *(Austropotamobius pallipes)* › 1095 Sea Lamprey *(Petromyzon marinus)* › 1393 Slender Green Feather-moss *(Drepanocladus vernicosus)* › 1106 Salmon *(Salmo salar)* › 1303 Lesser Horseshoe Bat *(Rhinolophus hipposideros)* › 1355 Otter *(Lutra lutra)* › 1029 Freshwater Pearl Mussel *(Margaritifera margaritifera)* › 1833 Slender Naiad *(Najas flexilis)*		› 1096 Brook Lamprey *(Lampetra planeri)* › 1092 White-clawed Crayfish *(Austropotamobius pallipes)* › 1095 Sea Lamprey *(Petromyzon marinus)* › 1106 Salmon *(Salmo salar)* › 1355 Otter *(Lutra lutra)* › 1029 Freshwater Pearl Mussel *(Margaritifera margaritifera)* › 1833 Slender Naiad *(Najas flexilis)* No pathway for indirect effect on the terrestrial habitats/species for which this site has been designated exists, including: › 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) › 6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) › 7110 Active raised bogs* › 7120 Degraded raised bogs still capable of natural regeneration › 7150 Depressions on peat substrates of the *Rhynchosporion* › 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae** › 8240 Limestone pavements* › 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles › 91D0 Bog woodland* › 1393 Slender Green Feather-moss *(Drepanocladus vernicosus)* Disturbance effects to the QI species otter, can be ruled out, given the intervening distance between the SAC and the proposed development site.

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 01/03/2021	Conservation Objectives	Likely Zone of Impact Determination
			According to the site-specific conservation objectives document (map 11), Lough Corrib SAC has been selected for lesser horseshoe bats because of the presence of one important summer roost, located near Cong. The proposed development site is outside of the core foraging range of Lesser horseshoe bat (2.5km, NPWS, 2018). There is no potential for effect on the lesser horseshoe bat as a result of the proposed development. No source-pathway-receptor chain for effect was identified between the site of the proposed development and the habitats and species for which this site has been designated. Potential for direct or indirect effects on the European Site can be excluded. **This site is not within the likely zone of impact and no further assessment is required.**
Kildun Souterrain SAC [002320] Distance: 1.8km	› 1303 Lesser Horseshoe Bat *(Rhinolophus hipposideros)*	Detailed conservation objectives for this site, (Version 1, June 2018), were reviewed as part of the assessment and are available at www.npws.ie	This SAC is located 1.8km north-west of the proposed development site. The proposed development site is located outside the boundary of this European Site and therefore no pathway for direct effect exists. The proposed development site is located within the core foraging range of the Lesser Horseshoe Bat 2.5km (NPWS 2018), as mapped in Map 2 of the Site Detailed Conservation Objective document. Lesser horseshoe bats normally forage in woodlands/scrub within 2.5km of their roosts (Schofield, 2008). The proposed development site is located 175m from the closest mapped potential foraging ground, located at golf course west of the development site and is separated from it by existing dwelling houses. There is no suitable foraging habitat for Lesser horseshoe bat within the proposed development site.

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 01/03/2021	Conservation Objectives	Likely Zone of Impact Determination
			This species follows commuting routes from its roost to its foraging grounds. Lesser horseshoe bats will not cross open ground. Consequently, linear features such as hedgerows, treelines and stone walls provide vital connectivity for this species within 2.5km around each roost (Schofield, 2008). There will be no loss of linear commuting habitat associated with the proposed development. Stonewalls and hedgerows along the boundary will be retained, and there will be no lighting along these linear features. No pathway for indirect effects in the form of habitat loss or disturbance exists. **This site is not within the likely zone of impact and no further assessment is required.**
Clyard Kettle-holes SAC [000480] Distance: 2.6km	› 3180 Turloughs* › 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae**	Generic conservation objectives for this site, (Version 7, 2020), were reviewed as part of the assessment and are available at www.npws.ie	This SAC is located 2.6km north-east of the proposed development site. The proposed development site is located outside of this European Site. No pathway for direct effect exists. There are no watercourses or drainage ditches within the proposed development site that could act as a conduit for pollution to any QI habitat of this SAC. All surface water and wastewater will discharge to the existing public services network and there is no potential for deterioration of groundwater. There is no potential for indirect effect. **This site is not within the likely zone of impact and no further assessment is required.**
Mocorha Lough SAC [001536]	› 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae**	Detailed conservation objectives for this site, (Version 1, October 2019), were	This SAC is located 2.6km east of the proposed development site. The proposed development site is located outside of this European Site. No pathway for direct effect exists.

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 01/03/2021	Conservation Objectives	Likely Zone of Impact Determination
Distance: 2.6km		reviewed as part of the assessment and are available at www.npws.ie	There are no watercourses or drainage ditches within the proposed development site that could act as a conduit for pollution to the listed QI habitat of this SAC. All surface water and wastewater will discharge to the existing public services network and there is no potential for deterioration of groundwater. There is no potential for indirect effects. **This site is not within the likely zone of impact and no further assessment is required.**
Shrule Turlough SAC [000525] Distance: 4.8km	› 3180 Turloughs*	Detailed conservation objectives for this site, (Version 1, January 2021), were reviewed as part of the assessment and are available at www.npws.ie	This SAC is located 4.8km east of the proposed development site. The European Site is located entirely outside the boundary of the proposed development site and no pathway for direct effect exists. This site is designated for a groundwater dependent habitat and is located in a separate groundwater catchment. No pathway for indirect effect exists. **This site is not within the likely zone of impact and no further assessment is required.**
Cloughmoyne SAC [000479] Distance: 5.6km	› 8240 Limestone pavements*	Detailed conservation objectives for this site, (Version 1, April 2019), were reviewed as part of the assessment and are available at www.npws.ie	This SAC is located 5.6km south-east of the proposed development site. The European Site is located entirely outside the boundary of the proposed development site and no pathway for direct effect exists. This site is designated for a terrestrial habitat. No pathway for indirect effect on the terrestrial habitats for which the site has been designated exists. **This site is not within the likely zone of impact and no further assessment is required.**

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 01/03/2021	Conservation Objectives	Likely Zone of Impact Determination
Lough Carra/Mask Complex SAC [001774] Distance: 6.7km	› 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) › 3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* › 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. › 4030 European dry heaths › 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) › 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae** › 7230 Alkaline fens › 8240 Limestone pavements* › 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)* › 1303 Lesser Horseshoe Bat *(Rhinolophus hipposideros)* › 1393 Slender Green Feather-moss *(Drepanocladus vernicosus)* › 1355 Otter *(Lutra lutra)*	Generic conservation objectives for this site, (Version 7, 2020), were reviewed as part of the assessment and are available at www.npws.ie	This SAC is located 6.7km north-west of the proposed development site. The European Site is located entirely outside the boundary of the proposed development site and no pathway for direct effect exists. This SAC is located within a separate hydrological sub-catchment. All surface water and wastewater will discharge to the existing public services network and there is no potential for deterioration of groundwater. There is no potential for indirect effects on the listed aquatic habitats for which this SAC has been designated: › 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) › 3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* › 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. › 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae** › 7230 Alkaline fens › 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)* › 1355 Otter *(Lutra lutra)* No pathway for indirect effect on the terrestrial habitats/species for which this site has been designated exists: › 4030 European dry heaths

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 01/03/2021	Conservation Objectives	Likely Zone of Impact Determination
			› 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) › 8240 Limestone pavements* › 1393 Slender Green Feather-moss *(Drepanocladus vernicosus)* The proposed development site is located outside the core foraging range of the Lesser Horseshoe Bat 2.5km (NPWS 2018), and no pathway for indirect effect exists. **This site is not within the likely zone of impact and no further assessment is required.**
Ballymaglancy Cave, Cong SAC [000474] Distance: 8km	› 8310 Caves not open to the public › 1303 Lesser Horseshoe Bat *(Rhinolophus hipposideros)*	Detailed conservation objectives for this site, (Version 1, August 2018), were reviewed as part of the assessment and are available at www.npws.ie	This SAC is located 8km west of the proposed development site. The proposed development site is located entirely outside the boundary of this European Site. No pathway for direct effect exists. The proposed development site is located outside the core foraging range of the Lesser Horseshoe Bat 2.5km (NPWS 2018), and no pathway for indirect effect exists. **This site is not within the likely zone of impact and no further assessment is required.**
Skealoghan Turlough SAC Distance: 8.5km	› 3180 Turloughs*	Detailed conservation objectives for this site, (Version 1, January 2021), were reviewed as part of the assessment and are available at www.npws.ie	This SAC is located 8.5km north-east of the proposed development site. The proposed development site is located outside of this European Site. No pathway for direct effect exists. There are no watercourses or drainage ditches within the proposed development site that could act as a conduit for pollution to the listed QI habitat of this SAC. All surface water and wastewater will discharge

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 01/03/2021	Conservation Objectives	Likely Zone of Impact Determination
			to the existing public services network and there is no potential for deterioration of groundwater. There is no potential for indirect effects. **This site is not within the likely zone of impact and no further assessment is required.**
Ardkill Turlough SAC Distance: 10.2km	› 3180 Turloughs*	Detailed conservation objectives for this site, (Version 1, December 2020), were reviewed as part of the assessment and are available at www.npws.ie	The proposed development site is located outside of this European Site. No pathway for direct effect exists. There are no watercourses or drainage ditches within the proposed development site that could act as a conduit for pollution to the listed QI habitat of this SAC. All surface water and wastewater will discharge to the existing public services network and there is no potential for deterioration of groundwater. There is no potential for indirect effects. **This site is not within the likely zone of impact and no further assessment is required.**
Kilglassan/Caheravoostia Turlough Complex SAC 11.4km	› 3180 Turloughs*	Detailed conservation objectives for this site, (Version 1, January 2021), were reviewed as part of the assessment and are available at www.npws.ie	The proposed development site is located outside of this European Site. No pathway for direct effect exists. There are no watercourses or drainage ditches within the proposed development site that could act as a conduit for pollution to the listed QI habitat of this SAC. All surface water and wastewater will discharge to the existing public services network and there is no potential for deterioration of groundwater. There is no potential for indirect effects. **This site is not within the likely zone of impact and no further assessment is required.**

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 01/03/2021	Conservation Objectives	Likely Zone of Impact Determination
Greaghans Turlough SAC 11.5km	› 3180 Turloughs*	Detailed conservation objectives for this site, (Version 1, January 2021), were reviewed as part of the assessment and are available at www.npws.ie	The proposed development site is located outside of this European Site. No pathway for direct effect exists. There are no watercourses or drainage ditches within the proposed development site that could act as a conduit for pollution to the listed QI habitat of this SAC. All surface water and wastewater will discharge to the existing public services network and there is no potential for deterioration of groundwater. There is no potential for indirect effects. **This site is not within the likely zone of impact and no further assessment is required.**
Gortnandarragh Limestone Pavement SAC Distance: 14.2km	› 8240 Limestone pavements*	Detailed conservation objectives for this site, (Version 1, April 2019), were reviewed as part of the assessment and are available at www.npws.ie	The proposed development site is located outside of this European Site. No pathway for direct effect exists. This site is designated for a terrestrial habitat. No pathway for indirect effect on the terrestrial habitats for which the site has been designated exists. **This site is not within the likely zone of impact and no further assessment is required.**
Special Protection Area (SPA)			
Lough Corrib SPA [004042]	› A395 Greenland White-fronted Goose *(Anser albifrons flavirostris)* › A194 Arctic Tern *(Sterna paradisaea)* › A082 Hen Harrier *(Circus cyaneus)*	This site has the generic conservation objective: *'To maintain or restore the favourable conservation*	This European Site is located 2.1km south-west of the proposed development site. The proposed development is entirely outside the SPA boundary therefore no potential pathway for direct effect exists.

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 01/03/2021	Conservation Objectives	Likely Zone of Impact Determination
Distance: 2.1km	› A061 Tufted Duck *(Aythya fuligula)* › A051 Gadwall *(Anas strepera)* › A059 Pochard *(Aythya ferina)* › A140 Golden Plover *(Pluvialis apricaria)* › A179 Black-headed Gull *(Chroicocephalus ridibundus)* › A182 Common Gull *(Larus canus)* › A125 Coot *(Fulica atra)* › A065 Common Scoter *(Melanitta nigra)* › A193 Common Tern *(Sterna hirundo)* › A056 Shoveler *(Anas clypeata)* › A999 Wetlands	*condition of the bird species listed as Special Conservation Interests for this SPA'* And the additional objective, *'To maintain or restore the favourable conservation condition of the wetland habitat at Lough Corrib SPA as a resource for the regularly-occurring migratory waterbirds that utilise it'.* (Generic Version 7.0 NPWS 2020)	The proposed works area does not offer suitable supporting habitat for the SCI species associated with the SPA. Indirect impact in the form of deterioration in surface water quality was considered with respect to the 'Wetland and Waterbirds [A999]' supporting wetland habitat for SCI species within the SPA, however impacts can be ruled out as there are no watercourses or drainage ditches within the proposed development site that could act as a conduit for pollution. All surface water and wastewater will discharge to the existing public services network and there is no potential for deterioration of groundwater. There is no potential for indirect effects in terms of deterioration of supporting habitat. The potential for disturbance to SCI species was also considered. Given the intervening buffer distance from the SPA and the nature and scale of the proposed development, no potential pathway for disturbance related impacts to SCI populations associated with the SPA was identified. **This site is not within the likely zone of impact and no further assessment is required.**
Lough Mask SPA [004062] Distance: 7km	› A179 Black-headed Gull *(Chroicocephalus ridibundus)* › A193 Common Tern *(Sterna hirundo)* › A061 Tufted Duck *(Aythya fuligula)* › A182 Common Gull *(Larus canus)* › A395 Greenland White-fronted Goose *(Anser albifrons flavirostris)*	This site has the generic conservation objective: '*To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA'*	This European Site is located 7km west of the proposed development site. The proposed development is entirely outside the SPA boundary therefore no potential pathway for direct effect exists. The proposed works area does not offer suitable supporting habitat for the SCI species associated with the SPA.

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 01/03/2021	Conservation Objectives	Likely Zone of Impact Determination
	› A183 Lesser Black-backed Gull *(Larus fuscus)* A999 Wetlands	This site has a second conservation objective: '*To maintain or restore the favourable conservation condition of the wetland habitat at Lough Mask SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.*' (Generic version 7.0 NPWS 2020)	Indirect impact in the form of deterioration in surface water quality was considered with respect to the 'Wetland and Waterbirds [A999]' supporting wetland habitat for SCI species within the SPA, however impact can be ruled out as there are no watercourses or drainage ditches within the proposed development site that could act as a conduit for pollution. All surface water and wastewater will discharge to the existing public services network and there is no potential for deterioration of groundwater. There is no potential for indirect effect in terms of deterioration of supporting habitat. Given the intervening buffer distance from the SPA no potential pathway for disturbance related impact on SCI populations associated with the SPA was identified. **This site is not within the likely zone of impact and no further assessment is required.**
Lough Carra SPA [004051] Distance: 12.8km	› A182 Common Gull *(Larus canus)*	This site has the generic conservation objective: '*To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA'*, (Generic version 7.0 NPWS 2020).	This European Site is located 12.8km north-west of the proposed development site. The proposed development is entirely outside the SPA boundary therefore no potential pathway for direct effect exists. The proposed works area does not offer suitable supporting habitat for the SCI species associated with the SPA. Indirect impact in the form of deterioration in surface water quality was considered with respect to the 'Wetland and Waterbirds [A999]' supporting wetland habitat for SCI species within the SPA, however impact can be ruled out as this SPA is located in a separate groundwater catchment. There is no potential for indirect effects in terms of deterioration of supporting wetland habitat.

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 01/03/2021	Conservation Objectives	Likely Zone of Impact Determination
			Given the intervening buffer distance from the SPA no potential pathway for disturbance related effects on SCI populations associated with the SPA was identified. **This site is not within the likely zone of impact and no further assessment is required.**

3.2 European Sites with the Potential to be Significantly Affected by the Proposed Works

No European Sites with the potential to be significantly affected by the proposed development have been identified.

3.3 Likely Cumulative Impact of the Proposed Works on European Sites, in-combination with other plans and projects

The potential for the proposed works to contribute to a cumulative impact on European Sites was considered. The online planning system for Mayo County Council was consulted on the 01/03/2021. Additional projects identified in the area include;

- Planning permission to retain utility/garage to rear of dwelling. Planning reference: 20259
- Permission to construct extension to the side and front of the existing dwelling house along with all associated services. Planning reference: 17591
- Permission to construct dwelling house and garage with provision for septic tank and percolation area, together with all ancillary site works. Planning reference: 18740
- Permission to retain serviced dwelling house with septic tank, percolation area on revised site boundaries from that granted under p99/1242. Planning reference: 16630
- Permission to construct a 5 bay enclosed slatted shed and underground slurry storage tank along with all associated site works. Planning reference: 20818
- Permission for the construction of a detached dwelling house, connection to existing services and all associated site works. Planning reference: 19228
- Permission to construct an extension to the rear of the existing dwelling house and renovation works together with all ancillary site works and services. Planning reference: 17982
- Permission to construct a dwelling house, proprietary effluent treatment unit, percolation area and domestic garage along with all ancillary site works. Planning reference: 19461

No pathway or mechanism for the proposed works to result in any significant effect on any European Site was identified when considered on its own during the assessment process and therefore there is no potential for it to contribute to any such effects when considered in-combination with other developments.

4. ARTICLE 6(3) APPROPRIATE ASSESSMENT SCREENING STATEMENT AND CONCLUSIONS

The findings of this Screening Assessment are presented following the European Commission's Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2001) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018) as well as the Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010).

4.1 Data Collected to Carry Out Assessment

In preparation of the report, the following sources were used to gather information:

- Review of NPWS Site Synopses, Conservation Objectives for the European Sites.
- Review of 2019, 2013 and 2007 EU Habitats Directive (Article 17) Reports.
- Review of online web-mappers: National Parks and Wildlife Service (NPWS)
- Review of OS maps and aerial photographs of the site of the proposed project.
- Site visits conducted by Julie O'Sullivan (BSc, MSc) on the 26th of January 2021.

4.2 Concluding Statement

It is concluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information and in light of the conservation objectives of the relevant European sites, that the proposed works, individually or in combination with other plans and projects, will not have a significant effect on any European Site.

5. BIBLIOGRAPHY

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Habitats Directive (92/43/EEC).

NPWS (2008) The Status of EU Protected Habitats and Species in Ireland. Conservation Status in Ireland of Habitats and Species listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna 92/43/EEC.

NPWS of the DEHLG (2008) The Report on Status of Habitats and Species in Ireland: Technical Reports and Forms.

NPWS Protected Site Synopses and maps available on http://www.npws.ie/en/ProtectedSites/.

Scottish Natural Heritage (SNH) (July 2013) Assessing Connectivity with Special Protection Areas (SPA)

APPENDIX 1

IRISH WATER CONFIRMATION OF FEASIBILITY LETTER

Uisce Éireann
Bosca OP 6000
Baile Átha Cliath 1
Éire

Irish Water
PO Box 6000
Dublin 1
Ireland

T: +353 1 89 25000
F: +353 1 89 25001
www.water.ie

Paul Downes
Cashel Business Centre
Cashel Road
Kimmage, Dublin 12 D12XY86

10 July 2019

Dear Paul Downes,

Re: Connection Reference No CDS19003193 pre-connection enquiry - Subject to contract | Contract denied

Connection for Housing Development of 15 unit(s) at On the L1614 Road to Kilmaine, Cross West, Mayo.

Irish Water has reviewed your pre-connection enquiry in relation to a water connection at On the L1614 Road to Kilmaine, Cross West, Mayo.

Based upon the details that you have provided with your pre-connection enquiry and on the capacity currently available in the network(s), as assessed by Irish Water, we wish to advise you that, subject to a valid connection agreement being put in place, your proposed connection to the Irish Water network(s) can be facilitated.

A connection to the Irish Water owned foul sewer can be facilitated subject to the completion and commissioning of the newly constructed Cross foul sewer network and wastewater treatment plant.

The nearest existing Irish Water owned water main is located approx. 300m to the east of the proposed site. The new Irish Water Connection Charging policy became live from the 1st April 2019 following a transition period from the 1st January 2019. As a result, the connection charges for this proposed housing development shall be in accordance with this charging regime, please see the Irish Water website which details what the connection charges will be based on the number of domestic connections you are proposing.

Furthermore, as your connection appears to be located approx. 300m from the nearest Irish Water owned water main, a network extension will be required, this is referred to as a quotable connection and will be charged in addition to the standard charges. As the Irish Water Regional Connections Contractor has been live in Mayo since the 22nd March 2019, all works in the public road will be required to be completed by either Mayo Co Co or the Irish Water Regional Contractor and shall be funded by the customer at the quotable rates provided by IW. The below link may be useful as an approximate guide on the quotable element as there are indicative per metre rates (pro-rata depending on distance) for extensions above and beyond the standard connection (above 10m) distance.
https://www.water.ie/connections/information/connection-charges/

All infrastructure should be designed and installed in accordance with the Irish Water Codes of Practice and Standard Details. A design proposal for the water and/or wastewater infrastructure should be submitted to Irish Water for assessment. Prior to submitting your planning application, you are required to submit these detailed design proposals to Irish Water for review.

You are advised that this correspondence does not constitute an offer in whole or in part to provide a connection to any Irish Water infrastructure and is provided subject to a connection agreement being signed at a later date.

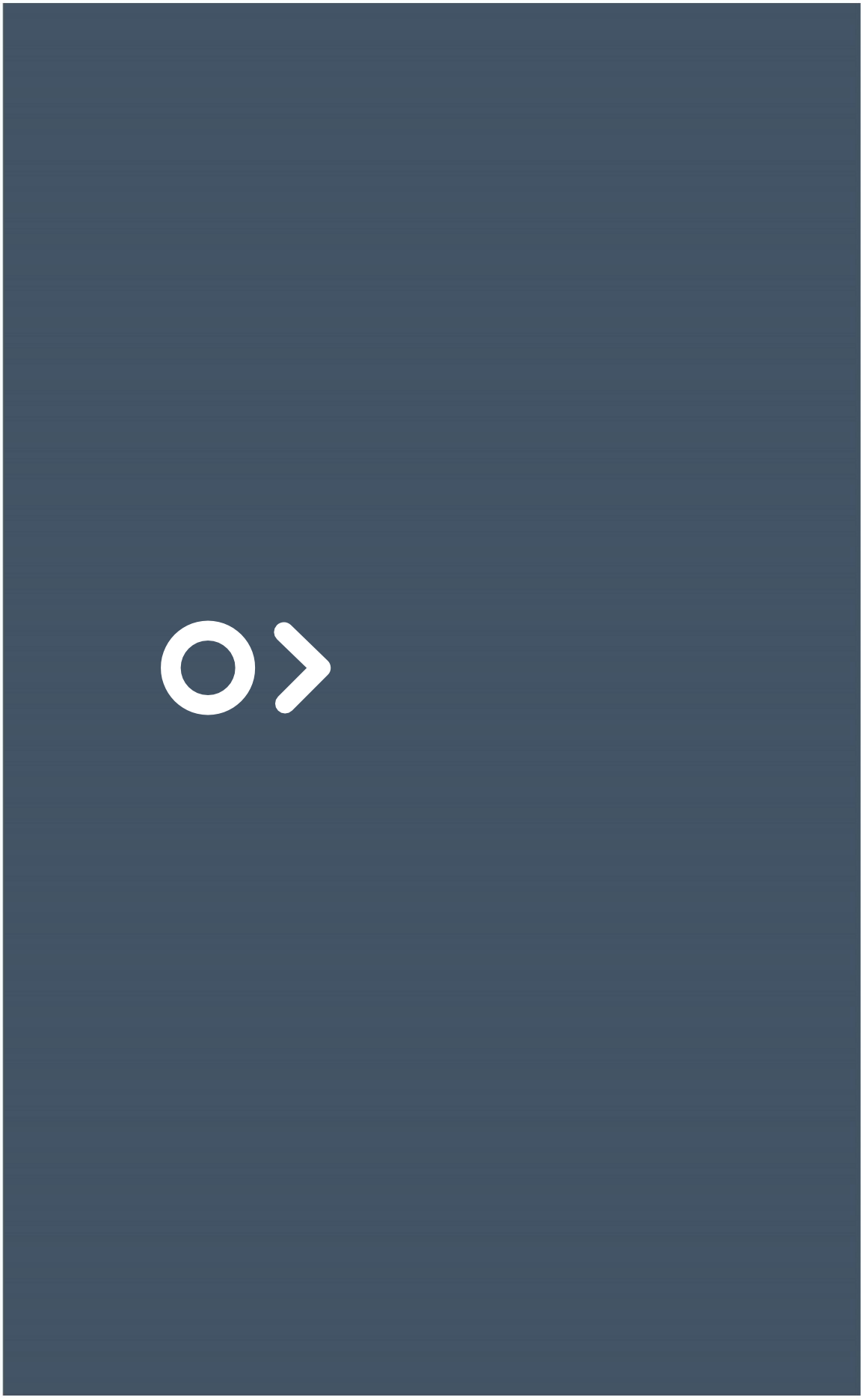
A connection agreement can be applied for by completing the connection application form available at **www.water.ie/connections**. Irish Water's current charges for water and wastewater connections are set out in the Water Charges Plan as approved by the Commission for Regulation of Utilities.

If you have any further questions, please contact Cormac Healy from the design team on 094 90 43347 or email corhealy@water.ie. For further information, visit **www.water.ie/connections.**

Yours sincerely,

Maria O'Dwyer

Connections and Developer Services



Planning and Environmental Consultants

Natura Impact Statement

Proposed Housing Development at Cross West, Co. Mayo

DOCUMENT DETAILS

The Client	**Mayo County Council**
Project Title:	**Proposed Housing Development at Cross West, Co. Mayo**
Project Number:	**200813**
Document Title:	**Natura Impact Statement**
Document File	**NIS D– 2022.03.22 – 200813**
Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

Planning and Environmental Consultants

Rev	Status	Date	Author(s)	Approved By
01	Final	22.03.2022	RW	PR

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APPENDICES

1. INTRODUCTION

1.1 Background

MKO has been appointed to provide the information necessary to allow the competent authority to conduct an Article 6(3) Appropriate Assessment of a proposed housing development at Cross West, Co. Mayo (grid reference: M 19624 55328). An Appropriate Assessment Screening Report has been prepared and is provided in Appendix I. The Article 6(3) Appropriate Assessment Screening Report has identified the European Sites upon which the proposed development has the potential to result in significant effects and the pathways by which those effects may occur. It has also identified those qualifying interests/special conservation interests that have the potential to be affected by the proposed development.

This report has been prepared in accordance with the European Commission guidance document *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 (EC, 2021), *Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC* (EC, 2001), European Communities (2018) *Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*, Office for Official Publications of the European Communities, Luxembourg. European Commission and the Department of the Environment's Guidance on the Appropriate Assessment of Plans and Projects in Ireland (December 2009, amended February 2010).

In addition to the guidelines referenced above, the following relevant guidance was considered in preparation of this report:

1. *European Communities (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
2. *Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
3. *EC (2007) 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. European Commission.*
4. *Office of the Planning Regulator PN01 (2021) – Appropriate Assessment Screening for Development Management.*

1.2 Statement of Authority

A baseline ecological survey was undertaken on the 8th of March 2022 by Rachel Walsh (BSc., QCIEEM) of MKO and on the 26th of January 2021 by Julie O'Sullivan (BSc, MSc). Julie is an experienced ecologist with over 5 years' experience working in the ecology sector. This report was prepared by Rachel Walsh. This report has been reviewed by Pat Roberts (B.Sc., MCIEEM) who has over 16 years' experience in ecological consultancy.

1.3 Structure and Format of this NIS

This NIS firstly provides a summary of the findings of the Article 6(3) Appropriate Assessment Screening Report. This clearly identifies the European Sites that have the potential to be significantly affected by

the proposed development and the pathways by which they might be affected. This sets out the scope of the NIS. Following this, all elements of the proposed project are fully described as is the baseline environment with respect to the relevant QIs/SCIs of the screened in European Sites.

Section 5 provides an assessment of the potential for adverse effects on the identified European Sites and prescribes mitigation to robustly block any identified pathways for impact. Section 6 provides an assessment of residual effects taking into consideration the proposed mitigation.

In Section 7, the potential in combination effects of the proposed project on European Sites, when considered in combination with other plans and projects was considered. A concluding statement is provided in Section 8.

2. SUMMARY OF ARTICLE 6(3) APPROPRIATE ASSESSMENT SCREENING REPORT

The Article 6(3) Appropriate Assessment Screening report identified the potential for the proposed development to result in significant effects on the following European Sites:

- Lough Corrib SAC [000297]
- Lough Corrib SPA [004042]

These sites are discussed below in Table 2-1 in terms of the Qualifying Interests/Special Conservation Interests with the potential to be affected and the pathways by which any such effects may occur.

Table 2-1 Qualifying Interests/Special Conservation Interests with potential to be affected by the proposed development.

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/02/2022	Conservation Objectives	Qualifying Interests/Special Conservation Interests with potential to be affected by the proposed development.
Special Areas of Conservation (SAC)			
Lough Corrib SAC [000279] Distance: 687m	• 1029 Freshwater Pearl Mussel *Margaritifera margaritifera* • 1092 White-clawed Crayfish *Austropotamobius pallipes* • 1095 Sea Lamprey *Petromyzon marinus* • 1096 Brook Lamprey *Lampetra planeri* • 1106 Salmon *Salmo salar* • 1303 Lesser Horseshoe Bat *Rhinolophus hipposideros* • 1355 Otter *Lutra lutra* • 1393 Slender Green Feather-moss *Drepanocladus vernicosus* • 1833 Slender Naiad *Najas flexilis*	Detailed conservation objectives for this site, (Version 1, August 2017), were reviewed as part of the assessment and are available at www.npws.ie	This European Site is located 687m south-west of the proposed development site. The proposed development site is located outside the boundary of this European Site and therefore no pathway for direct effect exists. There are no watercourses or drainage ditches within the proposed development site that could act as a conduit for pollution to any aquatic habitat or supporting habitat for aquatic species listed as QIs of this SAC. All surface water and wastewater will discharge to the existing public services network. However, due to the vulnerability of groundwater in the area, a potential for effect via deterioration in

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/02/2022	Conservation Objectives	Qualifying Interests/Special Conservation Interests with potential to be affected by the proposed development.
	› 3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) › 3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea › 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. › 3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation › 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) › 6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) › 7110 Active raised bogs › 7120 Degraded raised bogs still capable of natural regeneration › 7150 Depressions on peat substrates of the Rhynchosporion › 7210 Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae › 7220 Petrifying springs with tufa formation (Cratoneurion) › 7230 Alkaline fens › 8240 Limestone pavements › 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles › 91D0 Bog woodland		groundwater quality was identified, potentially affecting the following aquatic habitats and species for which this SAC has been designated: › 1092 White-clawed Crayfish *Austropotamobius pallipes* › 1095 Sea Lamprey *Petromyzon marinus* › 1096 Brook Lamprey *Lampetra planeri* › 1106 Salmon *Salmo salar* › 1355 Otter *Lutra lutra* › 1833 Slender Naiad *Najas flexilis* › 3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) › 3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea › 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. › 3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation › 7210 Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae › 7220 Petrifying springs with tufa formation (Cratoneurion) › 7230 Alkaline fens There is no potential for indirect effect on Freshwater Pearl Mussel as the population for which this SAC has been designated is restricted to the Owenriff catchment on the opposite site of Lough Corrib. No pathway for indirect effect on the terrestrial habitats/species for which this site has been designated exists due to the absence of a complete source-pathway-receptor chain for impact, including:

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/02/2022	Conservation Objectives	Qualifying Interests/Special Conservation Interests with potential to be affected by the proposed development.
			› 1393 Slender Green Feather-moss *Drepanocladus vernicosus* › 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) › 6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) › 7110 Active raised bogs › 7120 Degraded raised bogs still capable of natural regeneration › 7150 Depressions on peat substrates of the Rhynchosporion › 8240 Limestone pavements › 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles › 91D0 Bog woodland Disturbance effects to the QI species otter, can be ruled out, given the intervening distance between the surface waters of the SAC and the proposed development site. According to the site-specific conservation objectives document (map 11), Lough Corrib SAC has been selected for lesser horseshoe bats because of the presence of one important summer roost, located near Cong. The proposed development site is outside of the core foraging range of Lesser horseshoe bat (2.5km, NPWS, 2018). There is no potential for effect on the lesser horseshoe bat as a result of the proposed development. **The SAC is within the Likely Zone of Impact and further assessment is required with regard to the above listed QIs of the SAC.**

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/02/2022	Conservation Objectives	Qualifying Interests/Special Conservation Interests with potential to be affected by the proposed development.
Special Protection Area (SPA)			
Lough Corrib SPA [004042] Distance: 2.1km	› A395 Greenland White-fronted Goose *(Anser albifrons flavirostris)* › A194 Arctic Tern *(Sterna paradisaea)* › A082 Hen Harrier *(Circus cyaneus)* › A061 Tufted Duck *(Aythya fuligula)* › A051 Gadwall *(Anas strepera)* › A059 Pochard *(Aythya ferina)* › A140 Golden Plover *(Pluvialis apricaria)* › A179 Black-headed Gull *(Chroicocephalus ridibundus)* › A182 Common Gull *(Larus canus)* › A125 Coot *(Fulica atra)* › A065 Common Scoter *(Melanitta nigra)* › A193 Common Tern *(Sterna hirundo)* › A056 Shoveler *(Anas clypeata)* › A999 Wetlands	This site has the generic conservation objective: *'To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA'* And the additional objective, *'To maintain or restore the favourable conservation condition of the wetland habitat at Lough Corrib SPA as a resource for the regularly-occurring migratory waterbirds that utilise it'.* (Generic Version 9.0 NPWS 2022)	This European Site is located 2.1km south-west of the proposed development site. The proposed development is entirely outside the SPA boundary therefore no potential pathway for direct effect exists. The proposed works area does not offer suitable supporting habitat for the SCI species associated with the SPA. Indirect impact in the form of deterioration in surface water quality was considered with respect to the 'Wetland and Waterbirds [A999]' supporting wetland habitat for SCI species within the SPA. There are no watercourses or drainage ditches within the proposed development site that could act as a conduit for pollution to the SPA. All surface water and wastewater will discharge to the existing public services network. However, due to the vulnerability of groundwater in the area, a potential for effect via deterioration in groundwater quality was identified. The potential for disturbance to SCI species was also considered. Given the intervening buffer distance from the SPA and the nature and scale of the proposed development, no potential pathway for disturbance related impacts to SCI populations associated with the SPA was identified. **The SPA is within the Likely Zone of Impact and further assessment is required with regard to the SCI supporting habitat.**

2.1 Lough Corrib SAC [000297]

The individual pathways for effect that were identified in Table 2-1 and the QIs with the potential to be affected are described below.

A potential for effect via deterioration in groundwater quality was identified, potentially affecting the following aquatic habitats and species for which this SAC has been designated:

- 1092 White-clawed Crayfish *Austropotamobius pallipes*
- 1095 Sea Lamprey *Petromyzon marinus*
- 1096 Brook Lamprey *Lampetra planeri*
- 1106 Salmon *Salmo salar*
- 1355 Otter *Lutra lutra*
- 1833 Slender Naiad *Najas flexilis*
- 3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)
- 3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea
- 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.
- 3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation
- 7210 Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae
- 7220 Petrifying springs with tufa formation (Cratoneurion)
- 7230 Alkaline fens

These effects require further assessment and will be considered below in relation to the conservation objectives for the above listed QIs.

2.2 Lough Corrib SPA [004042]

The individual pathways for effect that were identified in Table 2-1 and the SCIs with the potential to be affected are described below.

Indirect impact in the form of deterioration in surface water quality was considered with respect to the 'Wetland and Waterbirds [A999]' supporting wetland habitat for SCI species within the SPA. There are no watercourses or drainage ditches within the proposed development site that could act as a conduit for pollution to the SPA. All surface water and wastewater will discharge to the existing public services network. However, due to the vulnerability of groundwater in the area, a potential for effect via deterioration in groundwater quality was identified.

The potential effect requires further assessment and will be considered below in relation to the conservation objectives for the SCI '*Wetland and Waterbirds*'. Potential effects on supporting wetland habitat of all SCI species are considered under the wetland and waterbirds designation.

3. DESCRIPTION OF PROPOSED DEVELOPMENT

3.1 Site Location

The proposed residential housing development is located in the townland of Cross West, approximately 180m east of Cross Village, Co. Mayo (grid reference: M 19624 55328). The site will be accessed via the L1614 to the south of the site. The proposed site has an area of 1.08 ha.

The location in of the development site in relation to EU Designated Sites is shown in Figure 3-1.

3.2 Characteristics of the Proposed Development

The proposed development will consist of the construction of 8 no. dwellings comprising the following:

- 5 no. 2 bed two storey dormer houses
- 3 no. 3 bed two storey dormer houses
- Provision of shared communal and private open space, site landscaping, site services and all associated site development works.

The proposed site layout is outlined in Figure 3-2.

3.3 Surface water and wastewater management

3.3.1 Surface water proposals

The surface water network has been designed in line with standard sustainable urban drainage best practice and surface water will discharge to the public stormwater network. Surface water will be conveyed from the site through storm pipes to the entrance at the south of the site where it will pass through a hydrocarbon by-pass separator. Surface water will then pass through a 95m^3 1000mm high modular underground attenuation storage unit. A hydrobrake or similar approved flow control device will be installed to limit outflow from the unit to 4.53 l/s.

3.3.2 Wastewater proposals

It is proposed to discharge the wastewater from the proposed development to the existing public wastewater network. The wastewater layout has been designed in accordance with Irish Water's latest standard details and codes of practice. Irish Water have confirmed that there is capacity for the proposed development to connect to the public foul water supply, subject to the completion and commissioning of the newly constructed Cross foul sewer network and wastewater treatment plant (Reference No CDS19003193, included as Appendix II). At the time of writing this report, the Cross foul sewer network and wastewater treatment plant has been constructed and commissioned. The proposed development will comply with all Irish Water requirements prior to connections.

The proposed layout of storm water and foul water drainage is provided in Figure 3-3.

3.3.3 Flood Risk Assessment Report

Priority Geotechnical Ltd. prepared a Flood Risk Assessment Report for the proposed development which is included as Appendix III of this NIS.

The conclusions of the Flood Risk Assessment are outlined below:

Pluvial Flooding

There is a possibility of pluvial flooding due to urban drainage and water supply infrastructure in the vicinity of the iste. Additionally, the south-west of the development site is located 0.8 to 0.9m below the level of the adjacent road. A mains water supply exists along the south of the development site. A manhole exists on the L1614 next to the southern boundary of the site. It is predicted that flooding due to a surcharge of the manholes next to the southern boundary would cause surcharge waters to spill onto the L1614 road and into the development site. An area of pluvial flooding is predicted to occur within the southwest boundary of the site, with maximum predicted depths of 0.4m.

Fluvial Flooding

There is no potential for fluvial flood risk as the closest watercourse is the Kilmaine River, located 220m west of the site. The site is not within the floodplain of this river.

Groundwater Flooding

The southwestern section of the site is prone to flooding. Water remains for a long period of time after a prolonged ranfall event in the previous days. Based on a worst-case-scenario analysis of potential groundwater flooding within the southwest of the site, the maximum groundwater flood depth is predicted to be 1.696m, with mean flood depth 0.952 m and total flood water volume 3,740.46m^3.

The site is not at risk of coastal flooding due to its elevation and distance inland.

The primary potential risk of flooding at the site is attributed to groundwater. The area may be impacted by a 1% AEP (1 in 100 year) and 0.1% (1 in 1000 year) pluvial and/or groundwater flood event. The site is not at risk of primary and direct fluvial flooding. The area within the southwest of the site indicated as subject to potential groundwater flooding is considered to fall within Flood Zone A.

The report recommended that the development avoid Flood Zond A and be limited to areas of the site beyond maximum potential groundwater flood extent (which are within Flood Zone C). The Flood Zone A area may be utilised as a green open area with no significant infilling or ground level raising.

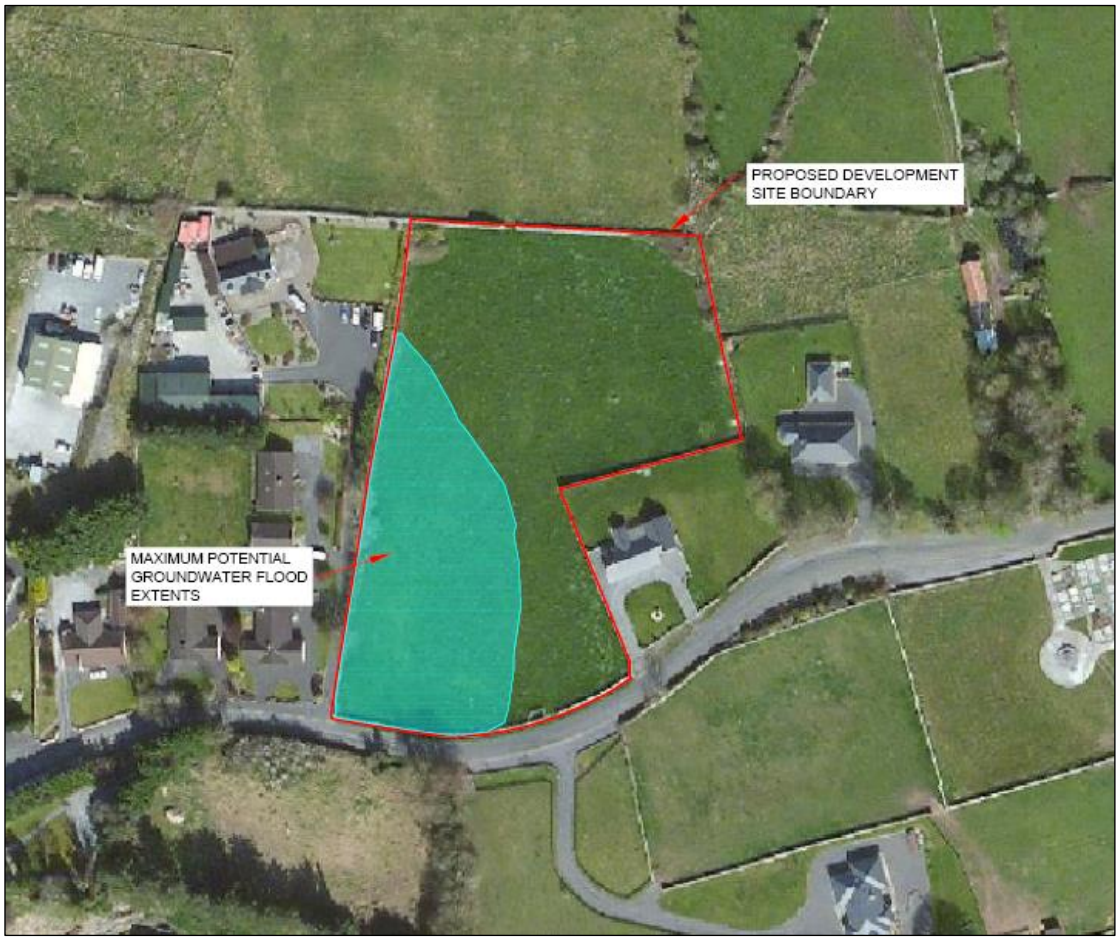
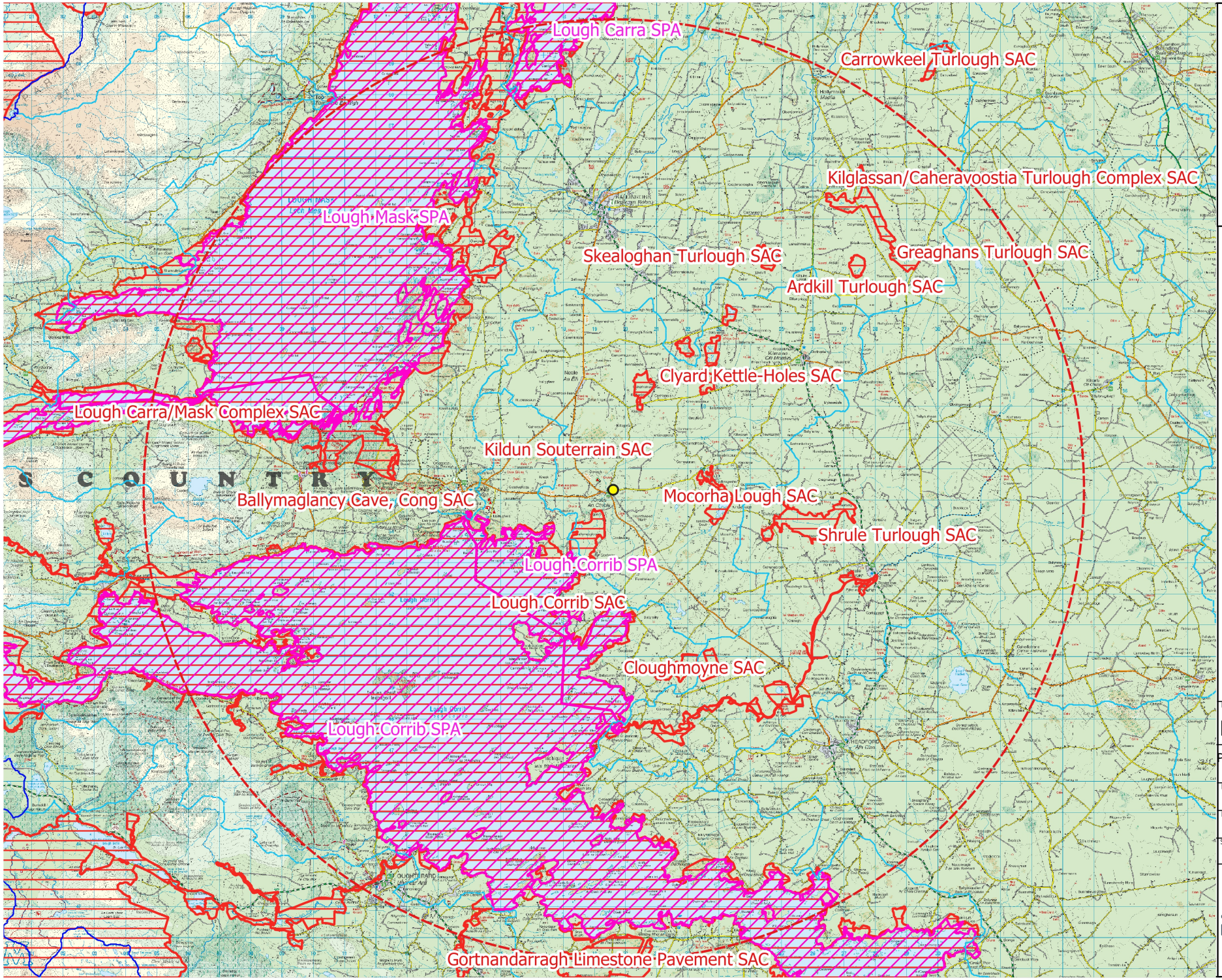


Plate 3-1 - Floodable area within the southwest of the site (blue, Flood Zone A). Souce: Priority Geotechnical Ltd. - Flood Risk Asssessment Report.

The development proposal for the site will be limited to the Flood Zone C area, as shown in Figure 3-2. Only small-scale, concrete footpaths are proposed for this area.

3.3.4 Geotechnical Site Investigation Results

Site investigations including bore holes, trial pits and slit trenches were carried out at the development site in 2019 by Priority Geotechnical Ltd. Groundwater was encountered at depths between 0.7m bgl to 4.0m bgl during the period of fieldworks.



Drawing Title

EU Designated Sites

Project Title
Proposed Housing Development at Cross West, Co. Mayo

Drawn By	Checked By
RW	PR
Project No.	Drawing No.
200813	Figure 3.1
Scale	Date
1:158000	16.02.2022

MKO
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email:info@mkoireland.ie
Website: ww.mkoireland.ie

	SITE OUTLINED IN RED- 1.09 HECTARES ITM Co-ordinates = 519600.755350 ING Co-ordinates=119631, 255327 8 NO UNITS -DENSITY 7.3 PER HA		**BOUNDARY TYPE B6 :** PROPOSED SELECTED STONE FACED SCREEN WALL WITH STONE CAPPING ON CONCRETE STRIP FOUNDATION TO ENGINEERS SPECIFICATION AND DETAILS. 2m HIGH TO PRIVATE GARDENS. NEW STONE ROADSIDE WALL & BOUNDARY INFILL WALL HEIGHTS TO MATCH EXISTING.		**SURFACE FINISH S1: GRASS:** GRASS SEEDED AREA: GRASS SELECTION & MAINTENANCE TO BE IN COMPLIANCE WITH RECOMMENDATIONS OF "ALL IRELAND POLLINATOR PLAN".		**SURFACE FINISH S8 : PRIVACY PLANTERS:** PLANTERS FORMED TO ENHANCE PRIVACY TO FRONTS OF NEW DWELLINGS.
	ENTRANCE VISIBILITY ZONE MEASURED 90M ALONG ROADSIDE CARRIAGEWAY EACH SIDE OF NEW ENTRANCE- (SET BACK 3M). LOCAL ROAD HAS 80KM SPEED LIMIT.		**BOUNDARY TYPE B8:** PROPOSED TIMBER PALISADE FENCE MIN 2000MM HIGH FOUNDATIONS TO ENGINEERS SPECIFICATION AND DETAILS.		**SURFACE FINISH S2: VEHICULAR ROADWAY:** ASPHALT FINISH ON BASE LAYERS TO STRUCTURAL ENGINEERS SPECIFICATION AND DETAILS. FINISH COLOURS MAY BE VARIED TO SLOW TRAFFIC AT PARKING AREAS SUBJECT TO DETAIL.		**SURFACE FINISH S9 : TRAFFIC CALMING:** PAVED FINISH AS PER S5 ABOVE - TRAFFIC CALMING PROFILE TO STRUCTURAL ENGINEER'S DETAIL.
	LOCATION OF SITE NOTICE		**EXISTING BOUNDARIES:** EXISTING STONE WALL BOUNDARY TO FRONT (SOUTH ROADSIDE) OF SITE TO BE REMOVED- NATURAL STONE TO BE RETAINED FOR RE-USE IN NEW BOUNDARY WALLS. EXISTING STONE WALL BOUNDARIES TO WEST AND NORTH OF SITE TO BE RETAINED. EXISTING BLOCKWORK BOUNDARY WALLS SEPARATING SITE FROM NEIGHBOURING BUNGALOW ON EAST SIDE TO BE RETAINED. EXISTING HEDGEGROW WITH POST & WIRE FENCE ALONG EASTERN BOUNDARY TO BE RETAINED AND REINFORCED WITH NEW PALISADE TIMBER FENCING. EXISTING BLOCKWORK BOUNDARY WALL TO SOUTH EAST CORNER OF SITE TO BE PARTIALLY REMOVED TO ENSURE VISIBILITY AT NEW ENTRANCE- MAKING GOOD AT EXISTING PILLAR IN LINE WITH EASTERN NEIGHBOUR'S ROADSIDE WALL.		**SURFACE FINISH S3: HOME ZONE TURNING AREA:** PERMEABLE PAVED FINISH AS PER S5. DIMENSIONS TO ALLOW TURNING FOR FIRE APPLIANCE AS PER TGD B & SERVICE VEHICLE.		**NEW OPEN SPACE TREE** "ALL IRELAND POLLINATOR PLAN" FRIENDLY SPECIES
	INDICATES FLOOD RISK ZONE				**SURFACE FINISH S4: FOOTPATHS:** IN-SITU CONCRETE FOOTPATH ON BASE LAYERS TO STRUCTURAL ENGINEERS SPECIFICATION AND DETAILS. LESS THAN 1:20 FALLS TO PROVIDE UNIVERSAL ACCESS- WITH LANDINGS AT MAX RISE 500MM INTERVALS.		**NEW ORNAMENTAL STREET TREE** "ALL IRELAND POLLINATOR PLAN" FRIENDLY SPECIES
MATERIALS: (EXTERNAL)	**EXTERNAL ROOF FINISH** : PITCHED ROOFS FINISHED IN SLATE BLUE BLACK IN COLOUR **EXTERNAL WINDOWS & DOORS** : TIMBER ALU CLAD FRAMES WITH HIGHLY EFFICIENT GLAZING (MAX 0.8W/MK) -FINISHED IN SELECTED COLOURS TO DETAIL. **EXTERNAL WALLS** : GENERALLY MASONRY WITH RENDERED FINISH PAINTED TO SELECTED NEUTRAL COLOUR **DECORATIVE METAL FINISH:** METAL FINISH WITH STANDING SEAM PROFILE IN NEUTRAL COLOUR TO SELECTED AREAS (DORMER WALL FINISHES AND PORCH CANOPY FASCIAS)		**GATE :** PROPOSED TIMBER PEDESTRIAN ACCESS GATE.		**SURFACE FINISH S5: PARKING AREAS:** SELECTED PERMEABLE PAVING ON BASE LAYERS TO STRUCTURAL ENGINEERS SPECIFICATION AND DETAILS. MIN 19 NO SPACES (INCLUDES 1 NO ACCESSIBLE AND 8 NO VISITORS)		**NEW NATIVE HEDGEROW**- "ALL IRELAND POLLINATOR PLAN" FRIENDLY SPECIES
PROPOSAL:	CONSTRUCTION 0F 08 NO. DWELLINGS COMPRISING OF 05 NO. 2 BEDROOMED DORMER SCALE TWO STOREY HOUSES AND 3 NO. 3 BEDROOMED DORMER SCALE TWO STOREY HOUSES IN A SEMI-DETACHED ARRANGEMENT. SCALE, MASSING, ARCHITECTURAL EXPRESSION AND DETAILING ARE DESIGNED TO BE IN KEEPING WITH TRADITIONAL HOUSES OF THE AREA. ACCESS DESIGNED IN COMPLIANCE WITH PART M AND DMURS WITH OFF STREET CAR PARKING AND HOMEZONE. PUBLIC FOOTPATHS NEAR DWELLING STREET FACADES SO THAT STREET IS "ACTIVATED" AND INTERESTING FOR PEDESTRIANS TO ENCOURAGE ACTIVE TRAVEL TO THE LOCAL VILLAGE.		EXISTING NATIVE TREES TO BE RETAINED		**SURFACE FINISH S6: PRIVACY -GRAVEL AREAS:** SELECTED NATURAL STONE GRAVEL AGGREGATE ON PROPRIETARY GRAVEL STABILIZER ON GEO-TEXTILE MEMBRANE ON BASE TO STRUCTURAL ENGINEERS SPECIFICATION AND DETAILS.		**NEW SHRUB PLANTING**- "ALL IRELAND POLLINATOR PLAN" FRIENDLY SPECIES
			EXISTING HEDGEROW TO BE RETAINED		**SURFACE FINISH S7: ACCESS VERGE:** BUFFER ZONES BETWEEN PARKING AREAS AND PUBLIC FOOTPATHS WITH PROPRIETARY BONDED STONE AGGREGATE SURFACE FINISH TO STRUCTURAL ENGINEERS SPECIFICATION AND DETAILS.		

(90) 3 BED (6 PERSON) DORMER SCALE HOUSE TYPE SCHEDULE

HOUSE TYPE COMMENT	UNIT NUMBER
DORMER-3B (6P) GABLE-ENTRANCE	UNIT 01
DORMER-3B (6P) HANDED	UNIT 02
DORMER-3B (6P)	UNIT 08
3 BED DORMER HOUSE TYPE TOTAL: 3	

(90) 2 BED (4 PERSON) DORMER SCALE HOUSE TYPE SCHEDULE

HOUSE TYPE COMMENT	UNIT NUMBER
DORMER-2B (4P) HANDED	UNIT 03
DORMER-2B (4P)	UNIT 04
DORMER-2B (4P) HANDED	UNIT 05
DORMER-2B (4P)	UNIT 06
DORMER-2B (4P) HANDED	UNIT 07
2 BED DORMER HOUSE TYPE TOTAL: 5	

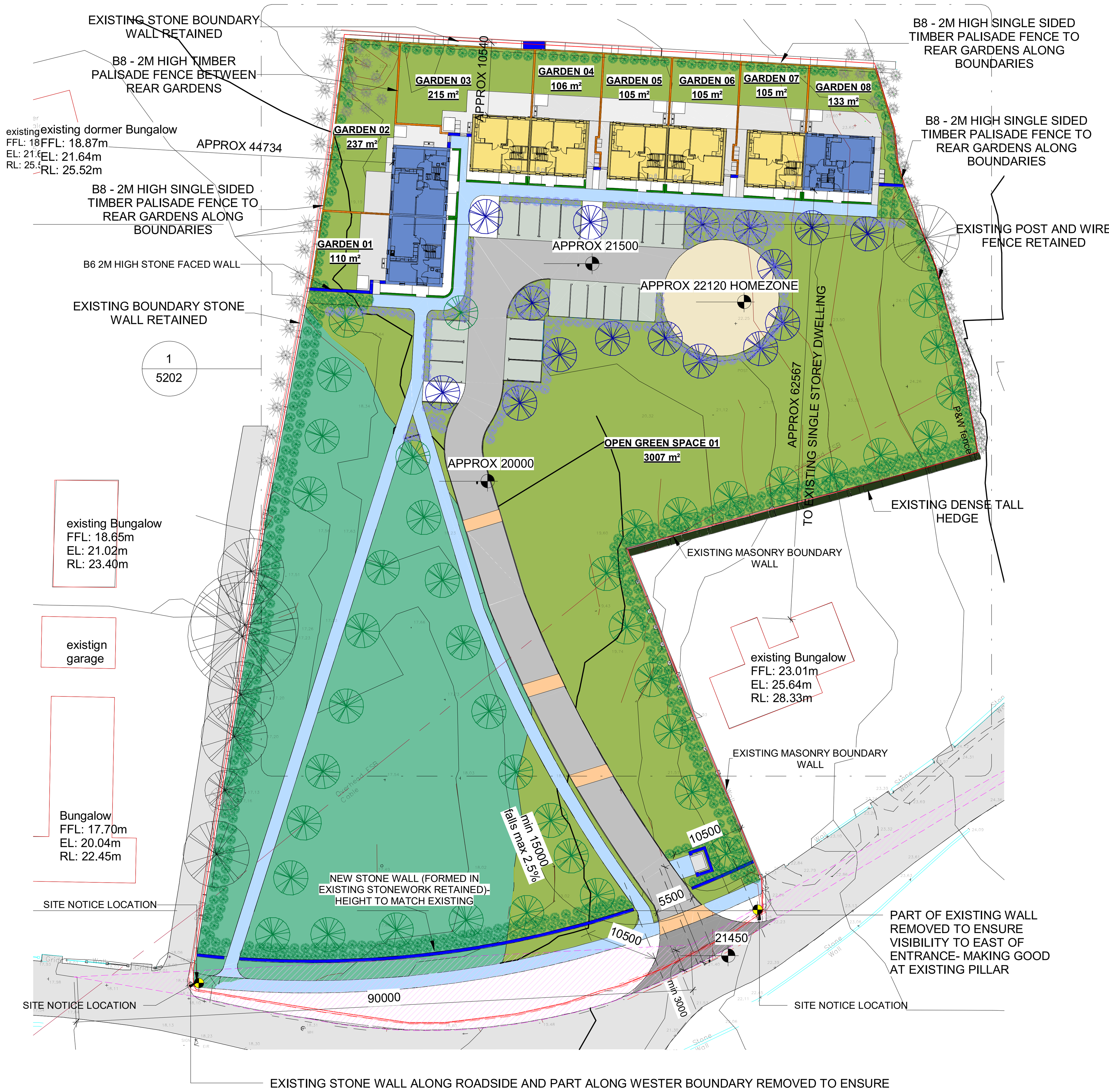
TOTAL SITE AREA (m²)	10983 APPROX
AREA OF OPEN GREEN SPACE (m²)	6196 APPROX
% OF SITE OPEN GREEN SPACE	56% (MIN 15%)

Do not scale this drawing. Use written dimensions only

- Scales as stated are valid on the original drawing only. Written dimensions take precedence. Detail dimensions take precedence over plan dimensions.
- Notify architect of any dimensional discrepancies. Any modifications or deviation to be brought to the attention of the architect for review and approval.
- All vertical dimensions shall be taken from a "bench mark" or other similar guide established prior to the start of construction. High points, low points, irregularities in floor slab which could affect fabrication / installation, work of other trades or vendors shall be brought to the attention of Mayo County Council Architects immediately.
- All drawings are to be read in conjunction with other consultant's drawings
- All dimensions, unless otherwise stated, are given in millimetres and must be confirmed and checked by the Contractor on site.
- Levels are generally given in metres from a specified datum.
- All Levels must be confirmed and checked by the Contractor on site.
- Any discrepancies on this drawing are to be brought to the attention of Mayo County Council Architects immediately.

Figure 3-2

PART 8 SITE LAYOUT PLAN-OVERVIEW
SCALE: 1 : 500



EXISTING STONE WALL ALONG ROADSIDE AND PART ALONG WESTER BOUNDARY REMOVED TO ENSURE VISIBILITY TO WEST OF ENTRANCE. TO BE MADE GOOD AT JUNCTION OF NEW ROADSIDE WALL & EXISTING ... RETAINED FOR RE-USE IN NEW ROADSIDE WALL.

PART 8-LEVELS-BOUNDARY-TREATMENTS PLAN-OVERVIEW
SCALE: 1 : 500

N

0m 50m 100m
SCALE 1:500 NOTE: 1:500 @ A1 1:1000 @ A3

Purpose of Issue: **PART 8 APPLICATION**

STATUS KEY

SHARED / FOR INFORMATION
S0 WORK IN PROGRESS
S1 COORDINATION
S2 INFORMATION
S3 REVIEW / COMMENT
S4 CONST APPROVAL
D1 COSTING
D2 TENDER
D3 CONTRACTOR DESIGN

PUBLISHED
A1 PT8 / FSC/ DAC
A2 CONSTRUCTION
A3 AS-BUILT

Rev No.	Date	Comment

Dia is Muire linn

ARCHITECTS DEPARTMENT
MAYO COUNTY COUNCIL

RIAI

Project No: A_586	Project Title: Housing CROSS WEST, CO. MAYO	Dwg Type: P8	Status: A1
Drawing Title:	SITE LAYOUT PLAN -LEVELS-BOUNDARY TREATMENTS-OVERVIEW	Drawing No. 5201	Revision: /
Drawn By: cm/mw	No. - Orig - Cat - Lvl - Type - Role - No. - Status	Scale: 1 : 500	First Issue: JULY 2021
Checked By: CM	A_586 - MCC - P8 - XX - DR - A - 5201 - A1		

MAYO.IE

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH RELVANT ARCHITECTS AND ENGINEERS DRAWINGS.
2. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING. ALL DIMENSIONS TO BE CHECKED ON SITE. ENGINEER TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE ANY WORK PROCEEDS.
3. REFER TO DRAWING **19014-MCCC-DOW-00-XX-DR-0000** FOR PROJECT SPECIFICATION.

Figure 3-3

LEGEND

- EXISTING FOUL WATER SEWER
- EXISTING SURFACE WATER
- EXISTING COMBINED SEWER
- EXISTING WATERMAIN
- PROPOSED FOUL SEWER PIPE
- PROPOSED SURFACE WATER PIPE
- PROPOSED COMBINED SEWER
- PROPOSED NEW WATERMAIN.
- EXISTING FOUL SEWER MANHOLE
- EXISTING SURFACE WATER MANHOLE
- PROPOSED FOUL SEWER MANHOLE
- IC — PROPOSED INSPECTION CHAMBER (IRISH WATER)
- PROPOSED SURFACE WATER MANHOLE
- H — HYDRANT
- BB — BOUNDARY BOX (IRISH WATER)
- SCV — SCOUR VALVE
- AV — AIR VALVE
- AJ. — PROPOSED FOUL A.J.
- AJ. — PROPOSED SURFACE WATER A.J.
- RG. — ROAD GULLY
- BIGT — BACK INLET GULLY TRAP
- ST. — SILT TRAP
- RWP — RAIN WATER PIPE
- SS — SOIL STACK
- YG. — YARD GULLY
- RE — RODDING EYE/ACCESS HATCH
- 99.950 — PROPOSED LEVEL
- 99.950 — EXISTING LEVEL
- WM M — WATER METER
- SV — SLUICE VALVE
- TB — THRUST BLOCK
- FMWS — FIRE MAIN WATER SUPPLY
- MWS — METERED WATER SUPPLY

NEW 100Ø MDPE (DE80) WATERMAIN

CONNECT TO EXISTING 100mmØ WATERMAIN IN CROSS VILLAGE @ APPROX. 300m FROM SITE

BULK METER (MECHANICAL/NON-MECHANICAL TO IRISH WATER REQUIREMENTS AND STANDARD DETAILS)

EXISTING ROAD DRAINAGE (LOCATION TO BE CONFIRMED WITH MAYO Co. COUNCIL)

EXISTING FOUL DRAINAGE TO BE CONFIRMED WITH IRISH WATER. CONNECTION TO EXISTING FOUL SEWER MANHOLE IN ACCORDANCE WITH REQUIREMENTS OF IRISH WATER.

HYDROBRAKE OR SIMILLAR APPROVED FLOW CONTROL DEVICE TO LIMIT OUTFLOW TO 4.53 l/s WITH WORKING HEAD OF 1.0m

SW ATTENUATION STORAGE 95m³ OF 1000mm HIGH MODULAR UNDERGROUND STORAGE UNITS SUITABLE FOR USE IN AREAS TRAFFICKED BY PEDESTRIANS WITH COVER AVAILABLE DESIGNED IN ACCORDANCE WITH CURRENT AND RELEVANT STANDARDS LL=17.085m

KLARGESTER NSBP006 CLASS 1 BYPASS SEPARATOR (OR SIMILAR APPROVED) INSTALLED STRICTLY IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS

SURFACE WATER MANHOLE SCHEDULE

REF	COVER LEVEL	INVERT LEVEL	COMMENTS
S1	22.986	21.300	
S2	20.649	19.000	
S3	19.894	18.000	
S4	19.440	17.738	
S5	18.808	17.583	
S6	20.816	17.404	
S7	20.863	17.282	
S8	19.021	17.085	
S9	18.803	17.023	
S10	18.214	16.894	
S11	18.360	16.837	
S12	18.093	16.697	

FOUL WATER MANHOLE SCHEDULE

REF	COVER LEVEL	INVERT LEVEL	COMMENTS
F1	23.147	21.148	
F2	20.695	19.378	
F3	20.208	18.808	
F4	19.505	18.154	
F5	18.845	17.801	
F6	20.726	17.520	
F7	18.738	17.217	
F8	18.103	17.036	
Ex.FMH	18.324	16.981	

Rev	Date	Amendments	by	chkd
P01	09.02.22	ISSUED FOR DESIGN TEAM REVIEW	DB	GMcH
P01	21.06.19	ISSUED FOR PLANNING	AG	GMcH

PROJECT
HOUSING DEVELOPMENT AT CROSS WEST, Co. MAYO.

CLIENT
MAYO COUNTY COUNCIL

DRAWING TITLE
PROPOSED SITE LAYOUT & WATER SERVICES

drawn by: AG | date: 06.06.19 | scale: 1:250 @ A1 | chk: GMcH

MCCC - DOW - 00 - XX - DR - CE
Project | Originator | Volume | Level | Type | Role

19014 DOW Project No. | 5000 drg. no. | P02 rev.

S0 - WORK IN PROGRESS
Suitability Status: Code - Description

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4. CHARACTERISTICS OF THE RECEIVING ENVIRONMENT

The ecological surveys that were undertaken to inform this NIS are fully described in this section. A general description of the ecology of the site of the proposed development is provided in the AA Screening Report prepared for the proposed development. The specific surveys that were undertaken to assess the potential effects on the identified European Sites are described below.

4.1 Methodology

4.1.1 Desk Study

The desk study undertaken for this assessment included a thorough review of the available ecological data including the following:

- Review of online web-mappers: National Parks and Wildlife Service (NPWS), EPA, Geological Survey of Ireland (GSI), Inland Fisheries Ireland (IFI)
- Review of Site-Specific Flood Risk Assessment
- Review of the Site-Specific Conservation Objectives (SSCOs) for European Sites identified within the Appropriate Assessment Screening Report as being within the Likely Zone of Impact.

4.1.2 Ecological Multidisciplinary Walkover Surveys

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

A multidisciplinary walkover survey was conducted on the 8th of March 2022 by Rachel Walsh (BSc., MCIEEM) and on the 26th of January 2021 by Julie O'Sullivan (BSc., MSc) in line with NRA (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes). A dedicated invasive species survey was also undertaken during the site visit. During the survey, the site was searched for species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011).

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

4.2 Results of Desk and Field Surveys

4.2.1 Desk Study Results

The proposed development site is located in the townland of Cross West, approximately 180m east of Cross Village, Co. Mayo (grid reference: M 19624 55328). The site is a greenfield site of approximately 1.08ha.
The wider area is comprised of residential dwellings, agricultural fields and hedgerows, and the Kilmaine River. Lough Corrib SAC is located approx. 680m southwest of the development site.

Additional information from the desk study, including information on water quality and information on European Sites in the Likely Zone of Impact of the development is presented below.

4.2.1.1 EPA Water Quality Data

The EPA Envision map viewer was consulted on the 10th of January 2022 regarding the water quality status of watercourses surrounding the proposed development. The Biotic Index of Water Quality (BIWQ) was developed in Ireland by the Environmental Protection Agency (EPA). Q-values are assigned using a combination of habitat characteristics and structure of the macro-invertebrate community within the waterbody. Individual macro-invertebrate families are classified according to their sensitivity to organic pollution and the Q-value is assessed based primarily on their relative abundance within a sample.

The proposed development site is located entirely within the Corrib Catchment, Hydrometric Area 30 and within Kilmaine_SC_010 sub-catchment and the KILMAINE_020 sub-basin.

The Kilmaine River (EPA Code: 30K01) flows in a southerly direction approx. 200m west of the development site. The river flows into Lough Corrib SAC approx. 890m downstream of the vicinity of the development site. The river is buffered from the development site by paved roads and residential dwellings.

According to Geological Survey Ireland (GSI), the development site is located over an area of land marked with a groundwater vulnerability code of 'E' (Extreme). The wider area is marked as 'H' (High) (See Plate 4-1). The groundwater catchment, Cong-Robe (code: IE_WE_G_0019), within which the proposed development is located, is 'at risk' under the Water Framework Directive.

There are just two historic (1989) EPA water quality stations along the Kilmaine River within the vicinity of the site (Table 4.1).

Table 4-1 Water quality status and Q-values of watercourse surrounding the proposed development.

Watercourse Name	Sampling Station	Location	Location relative to development site	Sampling Year	Q-Value & Water Quality Status
Kilmaine River (EPA Code: 30K01)	KILMAINE - Br S. of Dowagh Cross Roads	E 119378 N 255213	At a point parallel with the	1989	Q4 - Good

			development site		
	KILMAINE - Bridge u/s Lough Corrib	E 119245 N 254700	Approx. 750m downstream	1989	Q4 -Good

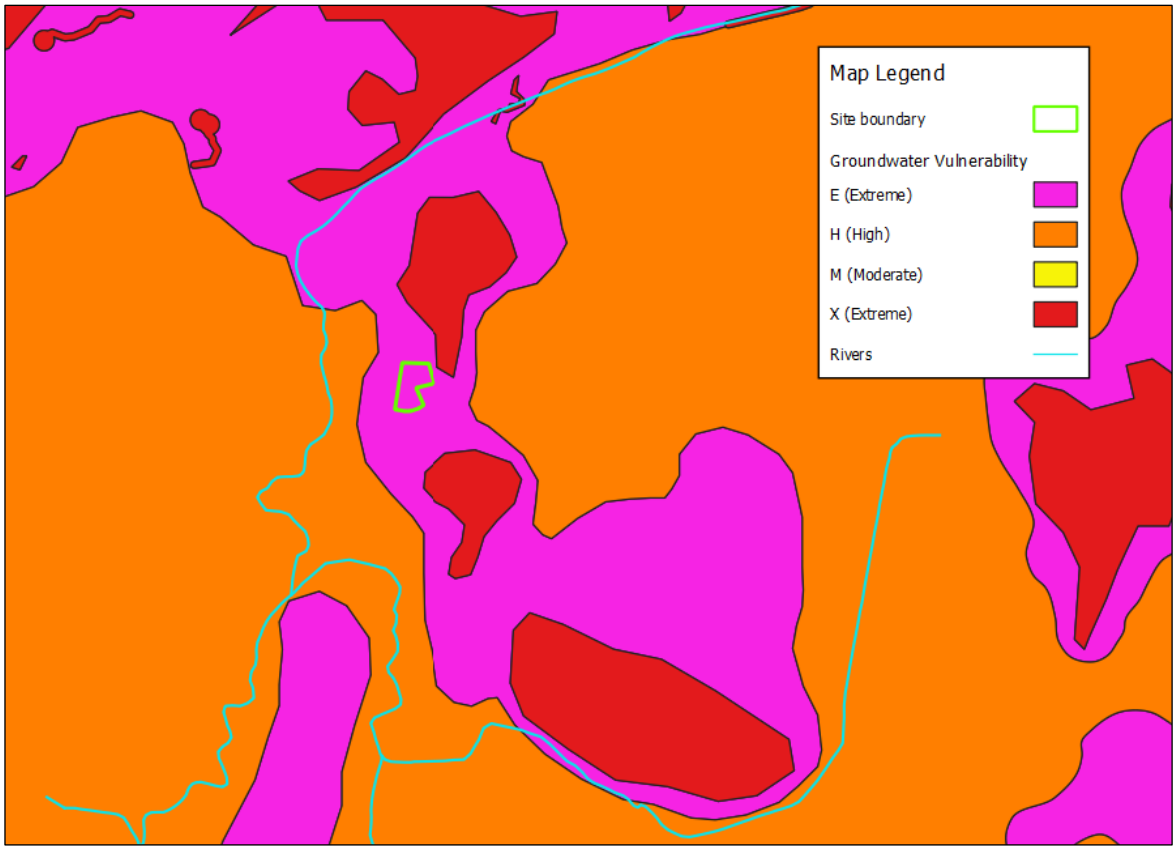

Plate 4-1 Groundwater vulnerability in the vicinity of the development site (Geological Survey Ireland).

4.2.1.2 Inland Fisheries Ireland (IFI)

Inland Fisheries Ireland undertook a fish stock survey of Lough Corrib in 2018 (Connor et al. 2018). Lough Corrib is known internationally for its brown trout fishing. The lake is also known to hold salmon, perch, roach, bream, roach x bream hybrids, eels, three-spined stickleback and pike.

A total of eight fish species and one type of hybrid were recorded on Upper Lough Corrib in June/July 2018. A total of 841 fish were captured. Perch was the most abundant fish species recorded, followed by roach x bream hybrids. Roach, brown trout, pike, salmon, bream, three-spined stickleback and eels were also recorded.

A total of eight fish species and one type of hybrid were recorded on Lower Lough Corrib in June 2018. A total of 567 fish were captured. Perch was the most abundant fish species recorded, followed by roach. Roach x bream hybrid, pike, brown trout, three-spined stickleback, salmon, stone loach and eels were also recorded.

Lough Corrib was also surveyed in 2008, 2011 and 2014 as part of the Water Framework Directive surveillance monitoring programme (Kelly et al., 2009, 2012a and 2015). During the 2014 survey, roach followed by perch were found to be the dominant species present in the lake. Brown trout, salmon, three-spined stickleback, nine-spined stickleback, pike, roach x bream hybrids, rudd, stoneloach and eels were also captured during the survey. Salmon were not recorded during the 2008 survey.

Roach is a non-native invasive fish which was first identified in Lower Lough Corrib in the early 1980s. The aquatic plant, curly waterweed (*Lagarosiphon major),* is an invasive plant identified in the lake in 2005 and has excluded native species from bays in which it has established. Zebra mussel (*Dreissena polymorpha)* is another invasive species which was first recorded in Lough Corrib in 2007.

Both Lower Lough Corrib and Upper Lough Corrib have been assigned an ecological status of 'Good' for 2018 based on the fish populations present (Connor et al. 2018). Lower Lough Corrib was assigned an ecological status of Poor in 2008 and Moderate in both 2011 and 2014. Upper Lough Corrib was assigned an ecological status of Poor in 2011 and Good for both 2008 and 2014.

4.2.1.3 Lough Corrib SAC [000297]

The Conservation Objectives document and Natura 2000 Data Form for this site as available on the NPWS website was reviewed during this assessment. Information in relation to the conservation objectives of the QI's and site-specific pressures and threats for the SAC is detailed below.

4.2.1.3.1 *Review of Conservation Objectives*

The relevant QIs and the associated conservation objectives of the site are presented in Table 4.2.

Table 4-2 Qualifying Interests and Conservation Objectives (Version 1, 2017).

Qualifying Interest	Conservation Objective
Whiteclawed Crayfish *(Austropotamobius pallipes)* [1092]	To maintain the favourable conservation condition of White-clawed Crayfish in the Lough Corrib SAC.
Sea Lamprey *(Petromyzon marinus)* [1095]	To restore the favourable conservation condition of Sea Lamprey in the Lough Corrib SAC.

Brook Lamprey *(Lampetra planeri)* [1096]	To maintain the favourable conservation condition of Brook Lamprey in the Lough Corrib SAC.
Salmon *(Salmo salar)* [1106]	To maintain the favourable conservation condition of Salmon in the Lough Corrib SAC.
Otter *(Lutra lutra)* [1355]	To maintain the favourable conservation condition of Otter in the Lough Corrib SAC.
Slender naiad *(Najas flexilis)* [1833]	To restore the favourable conservation condition of Slender Naiad in Lough Corrib SAC
Oligotrophic waters containing very few minerals of sandy plains *(Littorelletalia uniflorae)* [3110]	To restore the favourable conservation condition of Oligotrophic waters containing very few minerals of sandy plains *(Littorelletalia uniflorae)* in Lough Corrib SAC
Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130]	To restore the favourable conservation condition of Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoëto-Nanojuncetea* in Lough Corrib SAC
Hard oligo-mesotrophic waters with benthic vegetation of *Chara spp.* [3140]	To restore the favourable conservation condition of hard oligo-mesotrophic waters with benthic vegetation of *Chara spp.* in Lough Corrib SAC
Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]	To maintain the favourable conservation condition of water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation in Lough Corrib SAC
Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210]	To maintain the favourable conservation condition of Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* in Lough Corrib SAC
Petrifying springs with tufa formation *(Cratoneurion)* [7220]	To maintain the favourable conservation condition of petrifying springs with tufa formation *(Cratoneurion)** in Lough Corrib SAC
Alkaline fens [7230]	To maintain the favourable conservation condition of Alkaline fens in Lough Corrib SAC

4.2.1.3.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures, and activities with potential to effect on the SAC were reviewed and considered in relation to the proposed works. These are provided in Table 4.3.

Table 4-3 Site-specific threats, pressures and activities with potential to have effects on Lough Corrib SAC (October 2020).

Negative Impacts			
Rank	Threats and pressures [code]		Inside/outside/both [i] o [b]
M	A08	Fertilisation	b
H	H01.08	diffuse pollution to surface waters due to household sewage and waste waters	o
M	J02.01.03	infilling of ditches, dykes, ponds, pools, marshes or pits	i

M	B01	forest planting on open ground	b
M	E01.03	Dispersed habitation	i
M	J02.15	Other human induced changes in hydraulic conditions	b
M	A10.01	removal of hedges and copses or scrub	i
H	A02.01	agricultural intensification	b
L	E03.01	Disposal of household / recreational facility waste	i
L	C01.01	Sand and gravel extraction	o
H	G05	Other human intrusions and disturbances	i
M	D01	Roads, paths and railroads	i
M	D03.01.02	piers / tourist harbours or recreational piers	i
H	C01.03.02	Mechanical removal of peat	i
M	E01.01	continuous urbanisation	o
H	I01	invasive non-native species	i
M	A04.03	abandonment of pastoral systems, lack of grazing	i

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

4.2.1.3.3 *Annex I habitats of Lough Corrib SAC (000297)*

Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]

According to the site-specific conservation objectives, the distribution of lake habitat 3110 within Lough Corrib is likely to be restricted to the north-western bay, however, the habitat has not been fully surveyed. It may occur elsewhere along the northern or western shoreline of Lough Corrib, in Ballydoo Lough (N. of Corrib) and in small lakes in the Owenriff catchment. It is noted that two measures of extent should be used; 1. the area of the lake itself; 2. the extent of the vegetation communities/zones that typify the habitat. (O Connor, 2015). The selection of the SAC for this lake habitat was based on data on the macrophyte flora of Lough Corrib, particularly the north-western bay, from Krause and King (1994).

Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]

According to the site-specific conservation objectives, the full distribution and characteristics of this lake habitat in Lough Corrib SAC have not been mapped. The characteristic species slender naiad *(Najas flexilis)* was recorded in the western arm of Lough Corrib and that area appears to be dominated by lake habitat 3110, with lake habitat 3130 found towards the northern basin proper. The division between lake habitats 3130 and 3140 may be difficult to determine, and both habitats may occur

throughout the lake. Based on Environmental Protection Agency (EPA) macrophyte data, lake habitat 3130 is likely to occur in Ballycuirke Lough (Loch Bhaile Ui Choirc).

Hard oligo-mesotrophic waters with benthic vegetation of *Chara spp.* [3140]

According to the site-specific conservation objectives, the hard water lake habitat 3140 is found in Lough Corrib, notably the southern basin. Its exact distribution and area have not been mapped. It is likely to also extend along the eastern side of the northern basin. The distribution of the hard water lake habitat (3140) in Lough Corrib is determined, in the main, by geology and water chemistry. The hydrological regime (water circulation) in the Lough Corrib basins influences water mixing and, therefore, water chemistry. As a result, lake habitat 3140 is considered to dominate the southern basin but is also likely to be widespread in the northern basin.

Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]

The selection of SACs for this habitat used a broad interpretation of the habitat description, as it is itself broad ranging. According to the site-specific conservation objectives, the habitat description for 3260 ranges from upland bryophyte/macroalgal dominated stretches, to lowland depositing rivers with pondweeds and starworts. There is little known about the characteristics or sub-types in Lough Corrib SAC. Site-specific objectives for the habitat concentrate upon high conservation value sub-types. Many of the rivers included in the Lough Corrib SAC were for Atlantic salmon *(Salmo salar)* and most of these rivers are in arterial drainage schemes which have altered aquatic plant distribution and species composition.

Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae [7210]

According to the site-specific conservation objectives, Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae have not been mapped in detail for Lough Corrib SAC and thus total area of the qualifying habitat is unknown. While the full extent of Annex I fen habitats (both this habitat and Alkaline fens (7230)) within the SAC is currently unknown, their area is extensive and they often occur in association with and transitional to other habitats including Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) (6410), Active raised bogs (7110), Petrifying springs with tufa formation (Cratoneurion) (7220) and Limestone pavements (8240) (NPWS internal files). Maintenance of groundwater, surface water flows and water table levels within natural ranges is essential for this wetland habitat.

Petrifying springs with tufa formation (Cratoneurion) [7220]

Petrifying springs with tufa formation *(Cratoneurion*) have not been mapped within Lough Corrib SAC. The total area of the qualifying habitat in the SAC is unknown. The necessary ecological conditions required for this habitat occur around Lough Corrib. It is often associated with other habitats including Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae (7210), Alkaline fens (7230) and Limestone pavements (8240).

Alkaline fens [7230]

Alkaline fens have not been mapped in detail for Lough Corrib SAC. The total area and distribution of the qualifying habitat is unknown. While the full extent of Annex I fen habitats are unknown their area

is extensive. They often occur in association with and are transitional to other habitats including Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) (6410), Active raised bogs (7110), Petrifying springs with tufa formation (Cratoneurion) (7220) and Limestone pavements (8240) (NPWS 2017). Maintenance of groundwater, surface water flows and water table levels within natural ranges is essential for this wetland habitat.

4.2.1.3.4 *Annex II species of Lough Corrib SAC (000297)*

Whiteclawed Crayfish *(Austropotamobius pallipes)* [1092]

As per the detailed Site-Specific Conservation Objectives document (NPWS, 2017), white-clawed crayfish is known to occur within the aquatic habitat of the SAC. A distribution map is available for this species within the SSCO (Map 10). White-clawed crayfish (*Austropotamobius pallipes*) is recorded from the entire lengths of the four main tributaries of the River Clare, however, its total distribution is unknown. According to the Natura 2000 Form, permanent crayfish populations are present within the SAC. Potential for indirect impacts on this QI exists via potential for deterioration in water quality associated with the construction and operation of the proposed development.

Lamprey species

Lough Corrib SAC is designated for two species of lamprey: Sea Lamprey (*Petromyzon marinus*) and Brook Lamprey (*Lampetra planeri*).

As per the detailed Site-Specific Conservation Objectives document (NPWS, 2017), sea lamprey is known to occur within the aquatic habitat of the SAC. No specific map is available for this species within the SSCO. Sea lamprey (*Petromyzon marinus*) traditionally congregate and build spawning nests in the River Corrib in Galway city, both up- and downstream of the Salmon Weir Bridge. Their further upstream passage is impeded by the regulating weir immediately upstream. According to the Natura 2000 Form, reproducing sea lamprey populations are present within the SAC.

As per the detailed Site-Specific Conservation Objectives document (NPWS, 2017), brook lamprey is known to occur within the aquatic habitat of the SAC. No specific distribution map is available for this species within the SSCO. According to the Natura 2000 Form, permanent brook lamprey populations are present within the SAC.

Salmon *(Salmo salar)* [1106]

As per the detailed Site-Specific Conservation Objectives document (NPWS, 2017), Atlantic salmon is known to occur within the aquatic habitat of the SAC. No specific distribution map is available for this species within the SSCO however, there are no barriers to its migration in Lough Corrib SAC. Salmon are known to spawn in the headwaters of Lough Corrib tributaries. According to the Natura 2000 Form, reproducing salmon populations are common within the SAC. Potential for indirect impacts on this QI exists via potential for deterioration in water quality associated with the construction and operation of the proposed development.

Otter *(Lutra lutra)* [1355]

As per the detailed Site-Specific Conservation Objectives document (NPWS, 2017), otter is known to occur within the aquatic habitat of the SAC. A distribution map is available for this species within the SSCO (Map 12). Otter are likely to use the section of the Grange River to the south of the site on

occasion. Potential for indirect impacts on this QI exists via potential for deterioration in water quality, and disturbance/ displacement associated with the construction and operation of the proposed development.

Slender naiad *(Najas flexilis)* [1833]

Slender naiad is recorded on one occasion from one location in Lough Corrib. The record was made between the 7th and the 12th of July 1986 by W. Krause and J.J. King in the north-western bay of the lake (Krause and King, 1994). It is possible that the Lough Corrib population of *Najas flexilis* has become extinct since 1986. It has not been re-recorded in survey between 2002 – 2004, during EPA surveys since 2007, surveys in 2012 or 2014. The large size of Lough Corrib means that Slender naiad could easily have been missed and may persist in some localities. It is likely, however, given the condition of the lake habitat, that the population has declined in number and/or become more fragmented (NPWS, 2017).

4.2.1.4 Lough Corrib SPA

4.2.1.4.1 *Review of Conservation Objectives*

The relevant SCI and the associated conservation objectives of the site are presented in Table 4-4.

Table 4-4 Special Conservation Interest and Conservation Objectives (Version 8, 2021).

Qualifying Interest	Conservation Objective
Wetland and Waterbirds [A999] (Note: Potential effects on supporting wetland habitat of all SCI species is considered under the wetland and waterbirds designation.)	To maintain or restore the favourable conservation condition of the wetland habitat at Lough Corrib SPA as a resource for the regularly occurring migratory waterbirds that utilise it.

4.2.1.4.2 *Site-Specific Pressures and Threats*

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to effect on the SPA were reviewed and considered in relation to the proposed works. These are provided in Table 4-5.

Table 4-5 Site-specific threats, pressures and activities with potential to have effects on the SPA (October 2020).

Negative Impacts			
Rank	Threats and pressures [code]		Inside/outside/both [i] o [b]
H	E01	Urbanised areas, human habitation	o
H	F02.03	Leisure fishing	i
L	G01.01	Nautical sports	i
L	A04	Grazing	o
L	A08	Fertilisation	o

M	B	Sylviculture, forestry	o
H	F03.01	Hunting	i

4.2.1.4.3 Special Conservation Interests' Specific Information

Lough Corrib is a site of international importance for wintering waterfowl. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest. Potential indirect effects on the supporting wetland habitat of waterbirds within the SPA in the form of degradation of groundwater quality was identified. No detailed Conservation Objectives are available for Lough Corrib SPA. The following relevant information has been extracted from the NPWS site synopsis for the SPA:

'The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Greenland White-fronted Goose, Gadwall, Shoveler, Pochard, Tufted Duck, Common Scoter, Hen Harrier, Coot, Golden Plover, Black-Headed Gull, Common Gull, Common Tern and Arctic Tern. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetlands & Waterbirds.
Lough Corrib SPA is an internationally important site which supports in excess of 20,000 wintering waterbirds, including a population of Pochard that is, itself, of international importance. A further six species of wintering waterfowl have populations of national importance. The site also contains a nationally important communal roost site for Hen Harrier. Lough Corrib is the most important site in the country for breeding Common Scoter. Its populations of breeding gulls and terns are also notable, with nationally important numbers of Black-headed Gull, Common Gull, Common Tern and Arctic Tern occurring. It is of note that several species which regularly occur are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Greenland White-fronted Goose, Hen Harrier, Golden Plover, Common Tern and Arctic Tern. Lough Corrib is a Ramsar Convention site.'

4.3 Results of Field Surveys

4.3.1 General description of Ecology of the Site

4.3.1.1 Habitats

The site comprises a single field of ***Improved Agricultural Grassland (GA1)*** (Plate 4-2 & Plate 4-3) Species recorded in this habitat included abundant Yorkshire fog (*Holcus lanatus*), annual meadow grass (*Poa annua*), perennial rye-grass (*Lolium perenne*), creeping buttercup (*Ranunculus repens*), daisy (*Bellis perennis*) and ribwort plantain (*Plantago lanceolata*).

Other species recorded frequently in the vegetation included occasional soft rush (*Juncus effusus*), cock's-foot (*Dactylis glomerata*), nettle (*Urtica dioica*), crested dogs-tail (*Cynosurus cristatus*), red fescue (*Festuca rubra*), creeping thistle (*Cirsium arvense*), clovers (*Trifolium* spp.), broad-leaved dock (*Rumex obtusifolius*), meadow buttercup (*Ranunculus acris*), with occasional spear thistle (*Cirsium vulgare*), mouse-ear chickweed (*Cerastium fontanum*), ragwort (*Jacobaea vulgaris*), pointed spear-moss (*Calliergonella cuspidata*), common bent (*Agrostis capillaris*), germander speedwell (*Veronica*

chamaedrys), procumbent pearlwort (*Sagina procumbens*) and common sorrel (*Rumex acetosa*). In the north-west corner of the site a small area of bramble scrub occurs, formed on a pile of rocks cleared from the agricultural grassland.

Field boundaries are formed by stonewalls and are classified as ***Stone Walls and Other Stonework (BL1)*** (Plate 4-4). Scattered trees occur along the western site boundary, and include mature sycamore (*Acer pseudoplatanus*), willows (*Salix* spp.) and spindle (*Euonymus europaeus*), with a sparse bramble (*Rubus fructicosus*) understory in places. A mature treeline (WL2) of non-native conifer trees occurs on the roadside of this wall, outside the site western boundary. A species poor hedgerow formed of bramble (*Rubus fructicosus*) occurs along the north-eastern boundary wall. The southeast boundary wall has been constructed with concrete blocks and is classified as ***Buildings and Artificial Surfaces (BL3).***

Species recorded along the margins of the field, adjacent to the stonewalls, included sowthistle (*Sonchus* spp.), cleavers (Galium aparine), herb Robert (*Geranium robertianum*), ivy (*Hedera helix*), hedgerow cranes bill (*Geranium pyrenaicum*), dandelion (*Taraxacum officinale* agg.), primrose (*Primula veris*), willowherb (*Epilobium* spp.), hogweed (*Heracleum sphondylium)* and figwort (*Scrophularia nodosa*).

No drainage ditches or watercourses occur within or immediately adjacent to the site.

There are no Annex I habitats listed under the EU Habitats Directive present within the Proposed development site boundary. No botanical species protected under the Flora (protection) Order (1999, as amended 2015), listed in the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded on the site and no suitable habitat occurs within the site. All species recorded are common in the Irish landscape. No invasive species were observed within the proposed development site.

No species listed as a Third Schedule Invasive Alien Species (IAS) of the European Communities Regulations 2011 (S.I. 477 of 2015) was recorded within the development site boundary.

Plate 4-2 Improved Agricultural Grassland (GA1), view looking north-west.

Plate 4-3 Improved agricultural grassland (GA1), view looking south-east.

Plate 4-4 Field boundaries are formed by stonewalls and are classified as Stone Walls and Other Stonework (BL1), with non-native conifers outside the western boundary wall.

Plate 4-5 Field boundaries are formed by stonewalls and are classified as Stone Walls and Other Stonework (BL1), with scattered trees growing along the western boundary.

4.3.1.2 Fauna

The walkover survey was designed to detect the presence, or likely presence, of a range of protected species associated with European protected sites. No Annex listed faunal species were recorded within the proposed works area during the site visit.

No evidence of otter was recorded within the proposed development site including holts, couches, lay-up sites, prints or spraints. There are no drainage ditches or watercourses within the site and the proposed development site does not offer suitable habitat for otter.

A total of seven bird species were recorded within or flying over the site during the field survey, including chaffinch, mistle thrush, robin, wren, rook, jackdaw and starling. Bird species recorded within the site boundaries during the site visit were an assemblage of common birds that are typical of the agricultural grassland habitats in the wider area of the proposed development site.

No Annex I bird species or species of conservation concern were recorded within the proposed development site during the field survey. The site is dominated by improved agricultural grassland habitat and does not provide supporting habitat for any bird species that are among the SCIs of any European Site. Given the lack of significant habitat for rare or protected bird species identified within the site, there is no requirement for further bird surveys at the site.

5. ASSESSMENT OF POTENTIAL EFFECTS AND ASSOCIATED MITIGATION

This Natura Impact Statement presents the data and information on the project and provides an analysis of the potential adverse effects on the aforementioned EU designated sites. Potential adverse effects are assessed in view of best scientific knowledge, on the basis of objective information in relation to the proposed project, including the proposed avoidance, reduction and preventive measures.

The following sections provide a review of the potential pathways for effect for each of the 'screened-in' EU Designated Sites. Mitigation measures for the avoidance of adverse effects are then provided, followed by an assessment of potential effects, post implementation of the mitigation measures.

5.1 Potential for Indirect Effects on the European Sites

5.1.1 Deterioration in groundwater quality

The proposed development has downstream groundwater connectivity with Lough Corrib SAC and SPA. A potential pathway for indirect effects on the water dependent Qualifying Interests of these European Sites was identified in the form of deterioration of groundwater quality resulting from pollution, associated with the construction and operational phases of the development.

5.1.1.1 Construction phase

The construction of the development will involve excavations and earth moving which create the potential for pollution in various forms, i.e. the generation of suspended solids and the potential for spillage of fuels associated with the refuelling of excavation machinery. There is a risk of pollution of groundwater in the absence of mitigation as a result of the development.

Preventative measures to avoid impact on water quality

The pathway that would allow potential effects to occur to water quality was considered in the design of the project. The sections below set out the environmental management framework to be adhered to during the proposed works and it incorporates the mitigating principles to ensure there are no adverse effects on the integrity of any European Sites. The sections below include comprehensive detail regarding site set up, pollution prevention, hydrocarbon management, construction monitoring and biosecurity.

The measures described below ensure that the proposed works will not prevent or obstruct any of the qualifying interests from reaching favourable conservation status as per Article 1 of the EU Habitats Directive. The measures described below ensure that the proposed works do not adversely affect the integrity of European Sites.

5.1.1.1.2 *Construction Phase Control Measures and Assessment*

Site Set up

- The appointed contractor will be fully briefed by an ecologist as to the sensitive nature of the site, and the required mitigation measures.
- At the outset of the works, a barrier will be erected around the boundaries of the development site. All works will be located within the confines of this barrier.
- A designated section of the site will be fenced off as the construction compound. The exact location will be established by the contractor. The ground will be covered with a layer of Terram and covered with a 300mm layer of stone. The compound will be secured with a 2-meter Tensil fence and double security gate.
- The site compound will be located completely outside of the Flood Zone C area within the southwest of the site.
- An embedded double silt fence will be erected along the southwest boundary of the construction footprint area in order to prevent sediment-laden run-off entering any potential pooling area of rain or groundwater within the southwest of the site (Plate 3-1).
- An ecologist will visit the construction site during the works to ensure that mitigation measures are being implemented.

Pollution Prevention

- Works will not take place during periods of high rainfall and shall be scaled back or suspended if heavy rain is forecast during excavation works.
- The minor works to be undertaken in the Flood Zone C area (i.e. footpaths) will be undertaken in periods of dry weather when there is no potential for inundation.
- Should any waters arise on site and require pumping out of excavations or the works area, these will be discharged to ground on the site through a silt bag. There will be no direct discharge of construction waters directly to any watercourse or to groundwater.
- The Flood Zone C area to the southwest of the site will be protected from construction-phase run-off with an embedded double silt fence.
- All site plant will be inspected at the beginning of each day prior to use. Defective plant shall not be used until the defect is satisfactorily fixed. All major repair and maintenance operations will take place off site.
- Vehicles will never be left unattended during refuelling. Only dedicated trained and competent personnel will carry out refuelling operations and plant refuelling procedures shall be detailed in the contractor's method statements.
- Fuels, lubricants and hydraulic fluids for equipment used on the site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment.
- Potential impacts caused by spillages etc. during the construction phase will be reduced by keeping spill kits and other appropriate equipment on-site.
- No batching of wet-cement products will occur on site. Ready-mixed supply of wet concrete products will be used. Pouring concrete will occur on dry days only. Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.
- No washing out of any plant used in concrete transport or concreting operations will be allowed onsite.
- Where concrete is delivered on site, only chute cleaning will be permitted, using the smallest volume of water possible. No discharge of cement contaminated waters to the construction phase drainage system will be allowed.

- Use weather forecasting to plan dry days for pouring concrete.
- Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.
- All excavated material will be immediately removed off site to the designated site compound or disposed of to an appropriate waste facility.

Measures to avoid effects associated with the disposal of wastewater

- A self-contained port-a-loo with an integrated waste holding tank will be used at the site compounds, maintained by the providing contractor, and removed from site on completion of the construction works;
- No wastewater will be discharged on-site during either the construction or operational phase.

Earthworks

- Excavation depths will be kept to a minimum.
- Material that is not re-used on site will be transported off site to a designated waste facility.
- Suitable stone material will be imported to the site to be used as backfill.
- Soil excavation will be completed during dry periods and will be undertaken with excavators and dump trucks. No excavation works will take place during periods of heavy rainfall.
- Stockpiling of soil during construction will take place in designated areas within the site boundary away from any watercourses.
- A silt fence will be erected around any stockpiling of material to prevent any sediment-laden run-off occurring.

Biosecurity Measures

- No invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011) were recorded within the proposed works area.
- Good construction site hygiene will be employed to prevent the introduction of problematic invasive alien plants by thoroughly washing vehicles prior to entering the site.

Waste Management

- All waste will be collected in skips and the site will be kept tidy and free of debris at all times.
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or recycling.
- All construction waste materials will be stored within the confines of the site, prior to removal from the site to a licenced waste facility.

Environmental Monitoring

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

Construction works will be undertaken in accordance with the following:

- CIRIA (Construction Industry Research and Information Association) Guidance Documents
  - Control of water pollution from construction sites (C532)
  - Control of water pollution from linear construction projects: Technical Guidance (C648)
  - Control of water pollution from linear construction projects: Site Guide (C649)
  - Environmental Good Practice on Site (C692)
- NRA Guidance Documents
  - Guidelines for the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads
  - Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, during and Post Construction of National Road Schemes.

After implementation of best practice and preventive measures as described above, together with measures already incorporated in the project design, no potential for adverse impacts on water quality exists. The measures ensure that the proposed works do not prevent or obstruct any of the QIs and SCIs of the relevant European Sites from reaching favourable conservation status as per Article 1 of the EU Habitats Directive.

5.1.1.2 Operational Phase

The potential for groundwater pollution to occur as a result of the operational phase of the development, namely, via the foul water and surface water drainage systems, was considered and measures to prevent same are outlined below.

The proposed development has undergone geotechnical investigations and site-specific flood risk assessment (Section 3.3.3 and 3.3.4). The development has been designed so that Flood Zone C to the southwest of the site remains undeveloped. Geotechnical investigations showed groundwater levels to be between 0.7m bgl to 4.0m bgl. The storm water and foul water drainage system has been designed to avoid contact with groundwater during operation. Details of the operational phase surface and wastewater management is found in Section 3.3 above.

The surface water drainage system has been designed in accordance with SUDS and incorporates hydrocarbon by-pass separator, attenuation system and hydrobrake in order to discharge storm water from the site at a controlled rate to the public storm water system.

It is proposed to connect the foul water drainage from the site to the public sewer network. A pre-commencement connection enquiry has been submitted to Irish Water to establish whether a wastewater connection to Irish Water infrastructure is possible. Irish Water have confirmed that that the proposed connection to the Irish Water Network can be facilitated into the network. A letter of confirmation has been provided by Irish Water and is included in Appendix II of this NIS.

The proposed layout of the development and of the proposed open space is such that the existing flood capacity of the site will be retained, as there are no major construction or infilling works proposed for the Flood Zone C area within the southwest of the site.

No indirect effects on groundwater during the operational stage of the development are anticipated.

5.1.1.3 Decommissioning

The proposed project is considered to be permanent. Therefore, no effects with regard to decommissioning are anticipated.

6. ASSESSMENT OF RESIDUAL ADVERSE EFFECTS

The sections provided below detail the site-specific residual impact assessment in relation to the relevant QIs of the above EU sites in light of their site-specific targets and attributes. The assessment takes into consideration the proposed measures to avoid, reduce and block identified pathways for impact.

6.1 Lough Corrib SAC [000297]

The potential for adverse residual effects on each of the individual Qualifying Interests that were identified as being at risk of potential effects in the AA Screening Report is assessed in this section in view of the Conservation Objectives of those habitats and species.

Tables below provide an assessment of the proposal, as described in Section 3 of this report and associated Appendices, against the Attributes and Targets for each of the 'Screened in' QIs of the EU Designated Site.

6.1.1 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]

The attributes and targets for Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1, 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-1 below.

Table 6-1 Targets and attributes associated with nominated site-specific conservation objectives for Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110].

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	The proposed works are located more than 680m from the SAC boundary and will not directly impact on this habitat Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Habitat distribution	No decline, subject to natural processes.	
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	There will be no impacts on the vegetation composition or distribution associated with the habitat. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Vegetation distribution: maximum depth	Restore maximum depth of vegetation, subject to natural processes	

Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat	The proposed development will not result in the alteration of the hydrology of the habitat.
Lake substratum quality	Restore appropriate substratum type, extent and chemistry to support the vegetation	There will be no impact or alteration to the lake substratum quality as a result of the proposed works. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water quality: transparency	Restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	There will be no impacts on water quality including transparency, nutrients, phytoplankton biomass, phytoplankton biomass, algal biomass or macrophyte status as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water quality: nutrients	Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species	
Water quality: phytoplankton biomass	Restore appropriate water quality to support the habitat, including high chlorophyll a status	
Water quality: phytoplankton composition	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status	
Water quality: attached algal biomass	Restore/maintain trace/absent attached algal biomass (<5% cover) and high phytobenthos status	
Water quality: macrophyte status	Maintain high macrophyte status	
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	There will be no impacts on water and sediment pH, alkalinity and cation concentrations quality as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water colour	Restore/maintain appropriate water colour to support the habitat	

Dissolved organic carbon (DOC)	Restore/maintain appropriate organic carbon levels to support the habitat	There will be no impact on water colour, dissolved organic carbon or turbidity as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Turbidity	Restore/maintain appropriate turbidity to support the habita	
Fringing habitat : area and condition	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3110	The development site consists of agricultural grassland surrounded by stone wall boundaries which is not considered a fringing habitat necessary for the function of the Annex I habitat 3110. The proposed works are located more than 680m from Lough Corrib SAC and will not directly or indirectly effect fringing habitat. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.1.2 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]

The attributes and targets for Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1, 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-2 below.

Table 6-2 Targets and attributes associated with nominated site-specific conservation objectives for Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130].

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	The proposed works are located more than 680m from Lough Corrib SAC and will not directly impact on this habitat. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Habitat distribution	No decline, subject to natural processes.	
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	There will be no impacts on the vegetation composition or distribution associated with the habitat as the works are located over 680m from Lough Corrib SAC. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Vegetation distribution: maximum depth	Restore maximum depth of vegetation, subject to natural processes	
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat	The proposed development will not result in the alteration of the hydrology of the habitat.
Lake substratum quality	Restore appropriate substratum type, extent and chemistry to support the vegetation	There will be no impact or alteration to the lake substratum quality as a result of the proposed works. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water quality: transparency	Restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	There will be no impacts on water quality including transparency, nutrients, phytoplankton biomass, phytoplankton biomass, algal biomass or macrophyte status as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water quality: nutrients	Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species	
Water quality: phytoplankton biomass	Restore appropriate water quality to support the habitat, including high chlorophyll a status	
Water quality: phytoplankton composition	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status	
Water quality: attached algal biomass	Restore/maintain trace/absent attached algal biomass	
Water quality: macrophyte status	Maintain high macrophyte status	
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to	There will be no impacts on acidification status as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the

	support the habitat, subject to natural processes	proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water colour	Restore/maintain appropriate water colour to support the habitat	There will be no impact on water colour as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Dissolved organic carbon (DOC)	Restore/maintain appropriate organic carbon levels to support the habitat	There will be no impact on dissolved organic carbon (DOC) as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Turbidity	Restore/maintain appropriate turbidity to support the habitat	There will be no impact on turbidity as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3130	The development site consists of agricultural grassland surrounded by stone wall boundaries which is not considered a fringing habitat necessary for the function of the Annex I habitat 3130. The proposed works are located more than 680m from Lough Corrib SAC and will not directly or indirectly effect fringing habitat. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.1.3 Hard oligo-mesotrophic waters with benthic vegetation of *Chara spp.* [3140]

The attributes and targets for Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-3 below.

Table 6-3 Targets and attributes associated with nominated site-specific conservation objectives for Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140].

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	The proposed works are located more than 680m from Lough Corrib SAC and will not directly impact on this habitat. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Habitat distribution	No decline, subject to natural processes.	
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	There will be no impacts on the vegetation composition or distribution associated with the habitat. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Vegetation distribution: maximum depth	Restore maximum depth of vegetation, subject to natural processes	
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat	The proposed development will not result in the alteration of the hydrology of the habitat.
Lake substratum quality	Restore appropriate substratum type, extent and chemistry to support the vegetation	There will be no impact or alteration to the lake substratum quality as a result of the proposed works. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water quality: transparency	Restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	There will be no impacts on water quality including transparency, nutrients, phytoplankton biomass, phytoplankton biomass, algal biomass or macrophyte status as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the
Water quality: nutrients	Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species	

Water quality: phytoplankton biomass	Restore appropriate water quality to support the habitat, including high chlorophyll a status	proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water quality: phytoplankton composition	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status	
Water quality: attached algal biomass	Restore/maintain trace/absent attached algal biomass	
Water quality: macrophyte status	Maintain high macrophyte status	
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	There will be no impacts on acidification status as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water colour	Restore/maintain appropriate water colour to support the habitat	There will be no impact on water colour as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Dissolved organic carbon (DOC)	Restore/maintain appropriate organic carbon levels to support the habitat	There will be no impact on dissolved organic carbon (DOC) as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Turbidity	Restore/maintain appropriate turbidity to support the habitat	There will be no impact on turbidity as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3140	The development site consists of agricultural grassland surrounded by stone wall boundaries which is not considered a fringing habitat necessary for the function of the Annex I habitat 3140. The proposed works are located more than 680m from Lough Corrib SAC and will not directly or indirectly effect fringing habitat. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.1.4 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]

The attributes and targets for Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-4 below.

Table 6-4 Targets and attributes associated with nominated site-specific conservation objectives for Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260].

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	This habitat was not recorded within the development site and therefore there will be no direct loss of this habitat. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Habitat distribution	No decline, subject to natural processes	
Hydrological regime: river flow	Maintain appropriate hydrological regimes	There will be no impacts on the hydrological regime where there is potential for this habitat to occur. There will be no changes to river flow downstream and no changes to groundwater discharge.
Hydrological regime: groundwater discharge	Maintain appropriate hydrological regimes	

Substratum composition: particle size range	Maintain appropriate substratum particle size range, quantity and quality, subject to natural process	The proposed works will not result in the alteration of the substratum particle size range, quantity or quality of the habitat. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water quality	Maintain appropriate water quality to support the natural structure and functioning of the habitat	There will be no impact on water quality associated with the proposed works. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Vegetation composition: typical species	Typical species of the relevant habitat sub-type should be present and in good condition	This habitat was not recorded within the development site and therefore there will be no direct loss of this habitat. There will be no impacts on typical species, floodplain connectivity or riparian habitat area associated with the proposed works. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Floodplain connectivity: area	The area of active floodplain at and upstream of the habitat should be maintained	There will be no changes to the area of active floodplain associated with the development. The development site is outside of the area of active floodplain of the habitat.
Riparian habitat: area	Maintain the area and condition of fringing habitats necessary to support the habitat and its sub-types	This habitat was not recorded within the development site and there will be no direct loss of this habitat as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.1.5 Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae [7210]

The attributes and targets for Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae [7210] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-5 below.

Table 6-5 Targets and attributes associated with nominated site-specific conservation objectives for Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210].

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decline in habitat area or distribution associated with the proposed works. Fen habitat was not recorded within or adjacent to the site and will not be directly impacted. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Habitat distribution	No decline, subject to natural processes	
Ecosystem function: hydrology	Maintain appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	There will be no abstractions which could result in changes to the water table and therefore no changes to the hydrological regime or peat formation as a result of the development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Ecosystem function: peat formation	Maintain active peat formation, where appropriate	
Ecosystem function: water quality	Maintain appropriate water quality, particularly nutrient levels, to support the natural structure and functioning of the habitat	
Vegetation structure: typical species	Maintain vegetation cover of typical species including brown mosses and vascular plants	No fen habitat was recorded within or adjacent to the development. There will be no direct impacts on vegetation composition. There will be no impact on non-native species cover as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational
Vegetation composition: non-native species	Cover of non-native species less than 1%	
Vegetation composition: trees and shrubs	Cover of scattered native trees and shrubs less than 10%	

		stage of the proposed works. There will be no changes to the water table as a result of the proposed works.
Physical structure: disturbed bare ground	Cover of disturbed bare ground not more than 10%. Where tufa is present, disturbed bare ground not more than 1%	No fen habitat was recorded within or adjacent to the development. There will be no disturbance of the habitat or alteration to the water table which could lead to changes in physical structure.
Physical structure: drainage	Areas showing signs of drainage as a result of drainage ditches or heavy trampling not more than 10%	
Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	No fen habitat was recorded within or adjacent to the development. There will be no direct or indirect impacts on rare, threatened or scarce species associated with the habitat.

6.1.6 Petrifying springs with tufa formation (Cratoneurion) [7220]

The attributes and targets for petrifying springs with tufa formation (Cratoneurion) [7220] as per the Site-Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-6 below.

Table 6-6 Targets and attributes associated with nominated site-specific conservation objectives for petrifying springs with tufa formation (Cratoneurion) [7220].

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decline in habitat area or distribution associated with the proposed works. Petrifying spring habitat was not recorded within or adjacent to the site and will not be directly impacted. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Habitat distribution	No decline, subject to natural processes	
Hydrological regime: height of water table; water flow	Maintain appropriate hydrological regimes	

Water quality - nitrate level	No increase from baseline nitrate level and less than 10mg/l	There will be no abstractions which could result in changes to the water table and therefore no changes to the hydrological regime as a result of the development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water quality - phosphate level	No increase from baseline phosphate level and less than 15µg/l	
Vegetation composition: positive indicator species	At least three positive/high quality indicator species as listed in Lyons and Kelly (2016) and no loss from baseline number	There will be no change to positive indicator species associated with the proposed development. There will be no impact on the sward height or physical structure associated with the habitat as a result of the proposed development., as this habitat does not exist within or adjacent to the proposed development site. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Vegetation composition: negative indicator species	Potentially negative indicator species should not be Dominant or Abundant; invasive species should be absent	There will be no impacts on the vegetation composition with introduction of negative indicator species associated with the proposed development. There will be no impact on the sward height or physical structure associated with the habitat as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Vegetation structure: sward height	Field layer height between 10cm and 50cm (except for bryophyte-dominated ground <10cm)	
Physical structure: trampling/dung	Cover should not be Dominant or Abundant	

6.1.7 Alkaline fens [7230]

The attributes and targets for Alkaline fens [7230] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-7 below.

Table 6-7 Targets and attributes associated with nominated site-specific conservation objectives for Alkaline fens [7230].

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	

Habitat distribution	No decline, subject to natural processes	There will be no decline in habitat area or distribution associated with the proposed works. Fen habitat was not recorded within or adjacent to the site and will not be directly impacted. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Ecosystem function: soil nutrients	Maintain soil nutrient status within natural range	There will be no abstractions which could result in changes to the water table and therefore no changes to the hydrological regime or peat formation as a result of the development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Ecosystem function: peat formation	Maintain active peat formation, where appropriate	
Ecosystem function: hydrology	Maintain appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	
Ecosystem function: water quality	Maintain appropriate water quality, particularly nutrient levels, to support the natural structure and functioning of the habitat	
Community diversity	Maintain variety of vegetation communities, subject to natural processes	There will be no impact on community diversity of the habitat as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Vegetation composition: number of positive indicator species (brown mosses)	Number of brown moss species present at each monitoring stop is at least one	There will be no impact on vegetation composition specifically, positive indicator species of brown moss, vascular plants, cover of the indicator species, non-native species or native species of the habitat as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to
Vegetation composition: number of positive indicator species (vascular plants)	Number of positive vascular plant indicator species present at each monitoring stop is at least two for small-sedge flushes and at least three for black	

	bog-rush (Schoenus nigricans) flush and bottle sedge (Carex rostrata) fen	avoid all water pollution during the construction and operational stage of the proposed works.
Vegetation composition: cover of positive indicator species	Total cover of brown moss species and positive vascular plant indicator species at least 20% for small-sedge flushes and at least 75% cover for black bog-rush (Schoenus nigricans) flush and bottle sedge (Carex rostrata) fen	
Vegetation composition: negative indicator species	Total cover of negative indicator species less than 1%	
Vegetation composition: non-native species	Cover of non-native species less than 1%	
Vegetation composition: native trees and shrubs	Cover of scattered native trees and shrubs less than 10%	
Vegetation composition: soft rush and common reed cover	Total cover of soft rush (Juncus effusus) and common reed (Phragmites australis) less than 10%	
Vegetation structure: height	Proportion of live leaves and/or flowering shoots of vascular plants that are more than 5cm above the ground surface should be at least 50%	There will be no impact on vegetation height as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Physical structure: disturbed bare ground	Cover of disturbed bare ground less than 10%	There will be no impact on physical structure specifically disturbed bare round, drainage or tufa formations of the habitat as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Physical structure: drainage	Area showing signs of drainage as a result of drainage ditches or heavy trampling less than 10%	
Physical structure: tufa formations	Disturbed proportion of vegetation cover where tufa is present is less than 1%	

Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	There will be no impact indicators of local distinctiveness specifically of the habitat as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.1.8 Slender naiad *(Najas flexilis)* [1833]

The attributes and targets for Slender naiad *(Najas flexilis)* [1833] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-8 below.

Table 6-8 Targets and attributes associated with nominated site-specific conservation objectives for Slender naiad (Najas flexilis) [1833].

Attribute	Target	Assessment
Population extent	Restore the spatial extent of *Najas flexilis* within the lake, subject to natural processes.	There will be no decline in population extent, depth, viability or abundance associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Population depth	Restore the depth range of *Najas flexilis* within the lake, subject to natural processes	
Population viability	Restore plant fitness, subject to natural processes	
Population abundance	Restore the cover abundance of *Najas flexilis,* subject to natural processes	
Species distribution	Restore to at least the north-western bay, subject to natural processes	The proposed development will not result in the alteration of the species distribution or habitat extent associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Habitat extent	Restore, subject to natural processes	
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to	

	support the habitat for the species	There will be no impact or alteration to the hydrological regime, lake substratum quality, water quality or increased acidification as a result of the proposed works. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Lake substratum quality	Restore appropriate substratum type, extent and chemistry to support the population of the species	
Water quality	Restore appropriate water quality to support the population of the species	
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the population of *Najas flexilis*, subject to natural processes	
Water colour	Restore/maintain appropriate water colour to support the population of *Najas flexilis*	There will be no impacts on water colour, associated species or fringing habitats as associated with the habitat as a result of the proposed works. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Associated species	Restore appropriate associated species and vegetation communities to support the population of *Najas flexilis*	
Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the population of *Najas flexilis*	

6.1.9 White-clawed Crayfish *(Austropotamobius pallipes)* [1092]

The attributes and targets for White-clawed Crayfish *(Austropotamobius pallipes)* as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-9 below.

Table 6-9 Targets and attributes associated with nominated site-specific conservation objectives for White-clawed Crayfish (Austropotamobius pallipes) [1092].

Attribute	Target	Assessment

Distribution: rivers	No reduction from baseline.	There will be no impact on distribution of White-clawed Crayfish as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Distribution: Lough Corrib	No reduction from baseline.	There will be no impact on distribution as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Population structure: recruitment	Juveniles and/or females with eggs in all occupied tributaries and occupied parts of Lough Corrib	Recruitment within this species will not be impacted upon due to the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Negative indicator species	No alien crayfish species	There will be no direct or indirect introduction of negative indicator species due to the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Disease	No instances of disease	There will be no direct or indirect introduction of disease due to the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water quality	At least Q3-4 at all sites sampled by EPA	There will be no reduction in water quality as a result of the proposed works.

		Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Habitat quality: heterogeneity	No decline in heterogeneity or habitat quality	There will be no change in habitat heterogeneity or habitat quality as a result of the proposed works. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

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

The attributes and targets for Sea Lamprey (Petromyzon marinus) is: as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-10 below.

Table 6-10 Targets and attributes associated with nominated site-specific conservation objectives for Sea Lamprey (Petromyzon marinus) [1095].

Attribute	Target	Assessment
Distribution: extent of anadromy	Greater than 75% of main stem length of rivers accessible from estuary	There will be no impact on distribution as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Population structure of juveniles	At least three age/size groups present	There will be no impact on the population structure or juvenile density as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Juvenile density in fine sediment	Mean catchment juvenile density at least 1/m²	

Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	There will be no impact on the extent, distribution or availability of habitat as a result of the proposed development Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Availability of juvenile habitat	More than 50% of sample sites positive, with a minimum of four positive sites in a catchment, which are at least 5km apart	

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

The attributes and targets for large shallow inlets and bays as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-11 below.

Table 6-11 Targets and attributes associated with nominated site-specific conservation objectives for Brook Lamprey (Lampetra planeri) [1096].

Attribute	Target	Assessment
Distribution	Access to all watercourses down to first order streams	There will be no direct negative impact on distribution as a result of the proposed works. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Population structure of juveniles	At least three age/size groups of brook/river lamprey present	There will be no impact on the population structure or juvenile density as a result of the proposed works. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 5/m²	

Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	There will be no impact on the extent, distribution or availability of habitat as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Availability of juvenile habitat	More than 50% of sample sites positive	

6.1.12 Salmon *(Salmo salar)* [1106]

The attributes and targets for reefs as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-12 below.

Table 6-12 Targets and attributes associated with nominated site-specific conservation objectives for Salmon (Salmo salar) [1106].

Attribute	Target	Assessment
Distribution: extent of anadromy	100% of river channels down to second order accessible from estuary	There will be no impact on distrubance as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Adult spawning fish	Conservation Limit (CL) for each system consistently exceeded	There will be no reduction in adult spawning fish, salmon fry abundance, out-migrating smolt abundance or the number and distribution of redds as a result of the propsed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
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	There will be no reduction in water quality as a result of the proposed developement. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.1.13 Otter *(Lutra lutra)* [1355]

The attributes and targets for Otter *(Lutra lutra)* as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-13 below.

Table 6-13 Targets and attributes associated with nominated site-specific conservation objectives for Otter (Lutra lutra).

Attribute	Target	Assessment
Distribution	No significant decline	There will be no decline on the species distribution as a result of the proposed works. There is no suitable habitat available to otter within the area of the proposed works. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 1,054ha along river banks/ lake shoreline/around ponds	There will be no reduction to the terrestiral habitat extent. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 314.2km.	There will be no reduction to the freshwater (river) habitat extent

		Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Extent of freshwater (lake) habitat	No significant decline. Area mapped and calculated as 4,178ha.	There will be no reduction or alteration to the freshwater (lake) habitat extent as a reult of the proposed works. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Couching sites and holts	No significant decline.	There will be no reduction in holt or couching sites as a result of the proposed works. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Fish biomass available	No significant decline	There will be no changes to the fish biomass available to otter as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Barries to connectivity	No significant increase.	There will be no changes to the connectivity between communting routes used by Otter as a result of the proposed development.

6.2 Lough Corrib SPA [004042]

The generic conservation objective for Wetland and Waterbirds [A999] is:

'To maintain or restore the favourable conservation condition of the wetland habitat at Lough Corrib SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.'

As per the Generic Conservation Objectives (SSCOs) for Lough Corrib SPA (NPWS Version 8, 2021), favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The proposed development is located outside of this European site. The proposed development will not prevent this wetland habitat from reaching favourable condition.

Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development and a range of measures, outlined in Sections 3 & 5 of this report, are in place to avoid all water pollution during the construction and operational stages of the proposed works.

6.3 Conclusion of Residual Impact Assessment

Based on the above, in view of best scientific knowledge, on the basis of objective information, the proposed project will not adversely affect ground water in the area during either construction or operation of the proposed project. There is no potential for adverse effect on the identified QIs/SCIs and their associated targets and attributes, or on any European Site. All identified pathways for effect have been robustly blocked through measures to avoid impacts and the incorporation of best practice/mitigation measures into the project design.

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

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

> *'conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2;*

The conservation status will be taken as 'favourable' when:

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

Based on the above, it can be concluded in view of best scientific knowledge, on the basis of objective information that the proposed development will not adversely affect the Qualifying Interests/Special Conservation Interests associated with the following EU sites:

- Lough Corrib SAC [000297]
- Lough Corrib SPA [004042]

7. CUMULATIVE EFFECTS

A search and review in relation to plans and projects that may have the potential to result in cumulative and/or in-combination impacts on European Sites was conducted. This assessment focuses on the potential for cumulative in-combination effects on the European Sites where potential for adverse effects was identified at the screening stage. This included a review of online Planning Registers, development plans and other available information and served to identify past and future plans and projects, their activities and their predicted environmental effects.

7.1 Review of other plans and projects

The potential for the proposed works to contribute to a cumulative impact on European Sites was considered.

The process for review of the Draft Mayo County Development Plan 2021-2027 is underway. The following plans have been considered in Table 7-1 below:

- Mayo County Development Plan 2014-2020
- Northern and Western Regional Assembly Regional Spatial and Economic Strategy 2020-2032
- National Biodiversity Action Plan 2017-2021

7.1.1 Plans

Table 7-1 Review of relevant plans.

Mayo County Development Plan 2014-2020	Key Policies/Issues/Objectives Directly Related To European Sites, Biodiversity and Sustainable Development In The Zone of Influence	Assessment of development compliance with policy
Environment, Heritage & Amenity Strategy	**NH-03** It is an objective of the Council to implement Article 6(3) and 6(4) of the EU Habitats Directive, by screening all plans and projects for appropriate assessment and to ensure those with potential to have significant effects on the integrity of Natura 2000 or European Sites (cSACs, SPAs), whether directly (in situ), indirectly (ex-situ) or in combination with other plans or projects, are subject to an appropriate assessment and the preparation of an NIR or NIS in order to inform decision making. **NH-06** It is an objective of the Council to support the implementation of the National Biodiversity Plan **NH-08** It is an objective of the Council to assist in the control of native and non native invasive or harmful species which represent a serious threat to our environment, fresh water systems and lakes.	The Development plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 network. No potential for cumulative impacts when considered in conjunction with the current proposal were identified. Biosecurity control measures are in place and no instream works are required for the development. There will be no adverse effects on European Sites as a result of the development.

Northern and Western Regional Assembly - Regional Spatial and Economic Strategy 2020-2032		
Northern and Western Regional Assembly - Regional Spatial and Economic Strategy 2020-2032	**Growth Ambition 2: Environment – Natural Region** **RPO 5.4** - Encourage the prioritisation of Site-Specific Conservation Objectives (SSCO) for all sites of Conservation Value, designated in EU Directive (i.e. SACs, SPAs) to integrate with the development objectives of this Strategy.	The site-specific conservation objectives for Lough Corrib SAC and Lough Corrib SPA were comprehensively reviewed in undertaking this assessment. The surveys undertaken in the preparation of this application, the design of the development and the proposed mitigations in place, demonstrate that the proposed project will not adversely affect the Qualifying Interests/Special Conservation Interests associated with Lough Corrib SAC and SPA.
	RPO 5.5 - Ensure efficient and sustainable use of all our natural resources, including inland waterways, peatlands, and forests in a manner which ensures a healthy society a clean environment and there is no net contribution to biodiversity loss arising from development supported in this strategy. Conserve and protect designated areas and natural heritage area. Conserve and protect European sites and their integrity.	
	RPO 5.6 - Develop awareness and create a greater appreciation of the benefits of our natural heritage, including on the health, wealth and well-being of the region's ecosystem services.	

	RPO 5.7 - Ensure that all plans, projects and activities requiring consent arising from the RSES are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate.	
National Biodiversity Action Plan 2017-2021		
	Target 6.2 - Sufficiency, coherence, connectivity, and resilience of the protected areas network substantially enhanced by 2020.	There will be no adverse effects on designated sites or biodiversity as a result of the proposed development. The Proposed Development will not impact on connectivity within the wider area and will not adversely impact groundwater or surface water in the area.

7.2 Other Projects

The online planning system for Mayo County Council was consulted on the 16/02/2022. Projects identified within Cross and the wider area included construction of agriculture buildings, single dwellings and minor extensions to existing dwellings. Other projects identified in the wider area within the last 5 years include:

- Permission to construct agricultural building for hay, straw and feed and all ancillary works (pl ref: 2198)
- Planning permission to retain utility/garage to rear of dwelling. (pl ref: 20259)
- Permission to construct extension to the side and front of the existing dwelling house along with all associated services (pl ref: 17591)
- Permission to construct dwelling house and garage with provision for septic tank and percolation area, together with all ancillary site works (pl ref: 18740)
- Retain serviced dwelling house with septic tank, percolation area on revised site boundaries from that granted under p99/1242 (pl ref: 16630)
- Construct extension to the rear of the existing dwelling house and renovation works together with all ancillary site works and services (pl ref: 17982)
- Permission for construction of a detached dwelling house, connection to existing services and all associated site works (pl ref: 19228)
- Permission for construction of a new private entrance on revised site boundaries to existing private dwelling house and construction of an agricultural entrance to lands and associated farmyard (pl ref: 20899)
- Permission to construct dwelling house, proprietary effluent treatment unit, percolation area and domestic garage along with all ancillary site works (pl ref: 19461)
- Permission for construction of a domestic dwelling house, proprietary treatment system and associated site works (pl ref: 21197)
- Permission to construct dwelling house, domestic garage, onsite wastewater treatment system and all ancillary site works. (pl ref: 20882)
- Construct dwelling house and utility garage with septic tank, wastewater treatment plant and new entrance (pl ref: 18573)
- Permission for construction of a 5 bay open slatted shed and underground slurry storage tank along with all associated site works (pl ref: 20175)
- Construct a new cattle slatted shed with underground slurry storage tanks and all associated works at this existing farmyard. (pl ref: 20384)
- Permission to construct dwelling house, proprietary effluent treatment unit, percolation area and domestic garage along with all associated services. (pl ref: 20863)
- Permission to change of part of a house into a small animal veterinary practice (pl ref: 16793)

7.3 Conclusion of Cumulative Assessment

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

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

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

8. CONCLUDING STATEMENT

This NIS has provided an assessment of all potential direct or indirect adverse effects on European Sites.

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

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

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APPENDIX I

APPROPRIATE ASSESSMENT SCREENING REPORT

Planning and Environmental Consultants

Article 6 (3) Appropriate Assessment Screening Report

Proposed Housing Development at Cross West, Co. Mayo

DOCUMENT DETAILS

Client::	**Mayo County Council**
Project title:	**Proposed Housing Development at Cross West, Co. Mayo**
Project Number:	**200813**
Document Title:	**Article 6 (3) Appropriate Assessment Screening Report**
Document File Name:	**AASR F – 2022.03.22 - 200813**
Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

Planning and Environmental Consultants

Rev	Status	Date	Author(s)	Approved By
01	Final	22/03/2022	JOS/RW	PR

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1. INTRODUCTION

1.1 Background

MKO has been appointed to provide the information necessary to allow the competent authority to conduct an Article 6(3) Screening for Appropriate Assessment of a proposed housing development at Cross West, Co. Mayo.

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

The assessment in this report is based on a desk study undertaken in February 2022 and field surveys undertaken in March 2022 and January 2021. It specifically assesses the potential for the proposed works to result in significant effects on European sites in the absence of any best practice, mitigation or preventative measures.

This Appropriate Assessment Screening Report has been prepared in accordance with the European Commission's *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 EC (2021), Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC* (EC, 2001) and *Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (EC, 2018) as well as the Department of the Environment's *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities* (DoEHLG, 2010).

In addition to the guidelines referenced above, the following relevant documents were also considered in the preparation of this report:

1. *Council of the European Commission (1992) Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. Official Journal of the European Communities. Series L 20, pp. 7-49.*
2. *EC (2019) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg.*
3. *EC (2007) 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.*
4. *EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission.*

1.2 Appropriate Assessment

1.2.1 Screening for Appropriate Assessment

Screening is the process of determining whether an Appropriate Assessment is required for a plan or project. Under Part XAB of the Planning and Development Act, 2000, as amended, screening must be carried out by the Competent Authority. As per Section 177U of the Planning and Development Act,

2000, as amended '*A screening for appropriate assessment shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that Land use plan or proposed development, individually or in combination with another plan or project is likely to have a significant effect on the European site*'. The Competent Authority's determination as to whether an Appropriate Assessment is required must be made on the basis of objective information and should be recorded. The Competent Authority may request information to be supplied to enable it to carry out screening.

Consultants or project proponents may provide for the competent authority, the information necessary for them to determine whether an Appropriate Assessment is required and provide advice to assist them in the Article 6(3) Appropriate Assessment Screening decision.

Where it cannot be excluded beyond reasonable scientific doubt at the Screening stage, that a proposed plan or project, individually or in combination with other plans and projects, would have a significant effect on the conservation objectives of a European site, an Appropriate Assessment is required.

Where an Appropriate Assessment is required, the Competent Authority may require the applicant to prepare a Natura Impact Statement.

The term Natura Impact Statement (NIS) is defined in legislation[1]. An NIS, where required, should present the data, information and analysis necessary to reach a definitive determination as to 1) the implications of the plan or project, alone or in combination with other plans and projects, for a European site in view of its conservation objectives, and 2) whether there will be adverse effects on the integrity of a European site. The NIS should be underpinned by best scientific knowledge, objective information and by the precautionary principle.

This Article 6(3) Appropriate Assessment Screening Report has been prepared in compliance with the provision of section 177U of the Planning & Development Act 2010 as amended.

1.2.2 Statement of Authority

A baseline ecological survey was undertaken on the 8th of March 2022 by Rachel Walsh (BSc., QCIEEM) of MKO and on the 26th of January 2021 by Julie O'Sullivan (BSc, MSc). Julie is an experienced ecologist with over 5 years' experience working in the ecology sector. This report was prepared by Julie O'Sullivan and Rachel Walsh (BSc.). This report has been reviewed by Pat Roberts (B.Sc., MCIEEM) who has over 16 years' experience in ecological consultancy.

[1] As defined in Section 177T of the Planning and Development Act, 2000 as amended, an NIS means a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own and in combination with other plans and projects, for a European site in view of its conservation objectives. It is required to include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for the European site in view of its conservation objectives

2. DESCRIPTION OF THE PROPOSED WORKS

2.1 Site Location

The proposed residential housing development is located in the townland of Cross West, approximately 180m east of Cross Village, Co. Mayo (grid reference: M 19624 55328). The site will be accessed via the L1614 to the south of the site. The proposed site has an area of 1.08 ha.

The site location is shown in Figure 2-1 along with the nearby EU designated sites.

2.2 Characteristics of the Proposed Works

The proposed development will consist of the construction of 8 no. dwellings comprising the following:

- 5 no. 2 bed two storey dormer houses
- 3 no. 3 bed two storey dormer houses
- Provision of shared communal and private open space, site landscaping, site services and all associated site development works.

The proposed site layout is outlined in Figure 3-2 of the accompanying NIS.

The surface water network has been designed in line with standard sustainable urban drainage best practice and surface water will discharge to the public stormwater network. Surface water will be conveyed from the site through storm pipes to the entrance at the south of the site where it will pass through a hydrocarbon by-pass separator. Surface water will then pass through a 95m^3 1000mm high modular underground attenuation storage unit. A hydrobrake or similar approved flow control device will be installed to limit outflow from the unit to 4.53 l/s.

It is proposed to discharge the wastewater from the proposed development to the existing public wastewater network. The wastewater layout has been designed in accordance with Irish Water's latest standard details and codes of practice. Irish water have confirmed that there is capacity for the proposed development to connect to the public foul water supply, subject to the completion and commissioning of the newly constructed Cross foul sewer network and wastewater treatment plant (Reference No CDS19003193, included as Appendix II). At the time of writing this report, the Cross foul sewer network and wastewater treatment plant has been constructed and commissioned. The proposed development will comply with all Irish Water requirements prior to connections.

The proposed layout of storm water and foul water drainage is provided in Figure 3-3 of the accompanying NIS.

2.2.1 Flood Risk Assessment Report

Priority Geotechnical Ltd. prepared a Flood Risk Assessment Report for the proposed development which is included as Appendix III.

The conclusions of the Flood Risk Assessment are outlined below:

Pluvial Flooding

There is a possibility of pluvial flooding due to urban drainage and water supply infrastructure in the vicinity of the iste. Additionally, the south-west of the development site is located 0.8 to 0.9m below the level of the adjacent road. A mains water supply exists along the south of the development site. A manhole

exists on the L1614 next to the southern boundary of the site. It is predicted that flooding due to a surcharge of the manholes next to the southern boundary would cause surcharge waters to spill onto the L1614 road and into the development site. An area of pluvial flooding is predicted to occur within the southwest boundary of the site, with maximum predicted depths of 0.4m.

Fluvial Flooding

There is no potential for fluvial flood risk as the closest watercourse is the Kilmaine River, located 220m west of the site.

Groundwater Flooding

The southwestern section of the site is prone to flooding. Water remains for a long period of time after a prolonged ranfall event in the previous days. Based on a worst-case-scenario analysis of potential groundwater flooding within the southwest of the site, the maximum groundwater flood depth is predicted to be 1.696m, with mean flood depth 0.952 m and total flood water volume 3,740.46m^3.

The site is not at risk of coastal flooding due to its elevation and distance inland.

The primary potential risk of flooding at the site is attributed to groundwater. The area may be impacted by a 1% AEP (1 in 100 year) and 0.1% (1 in 1000 year) pluvial and/or groundwater flood event. The site is not at risk of primary and direct fluvial flooding. The area within the southwest of the site indicated as subject to potential groundwater flooding is considered to fall within Flood Zone A.

The report recommended that the development avoid Flood Zond A and be limited to areas of the site beyond maximum potential groundwater flood extent (which are within Flood Zone C). The Flood Zone A area may be utilised as a green open area with no significant infilling or ground level raising.

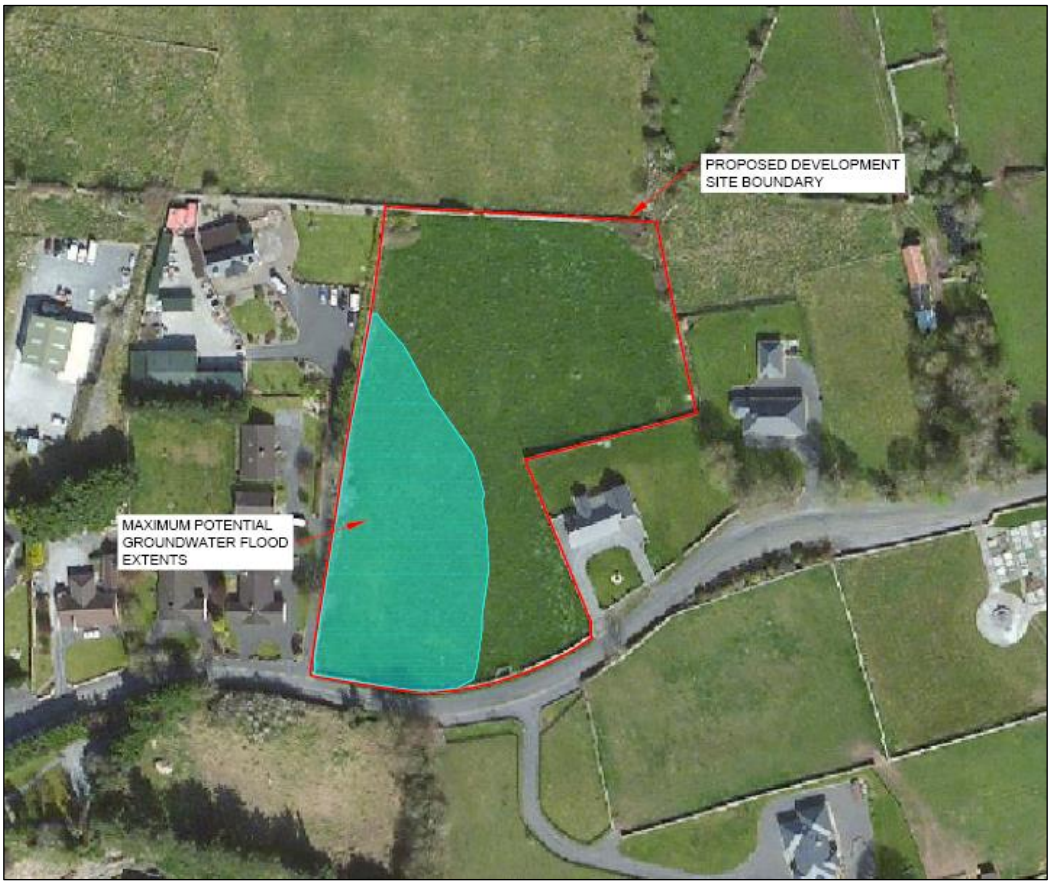
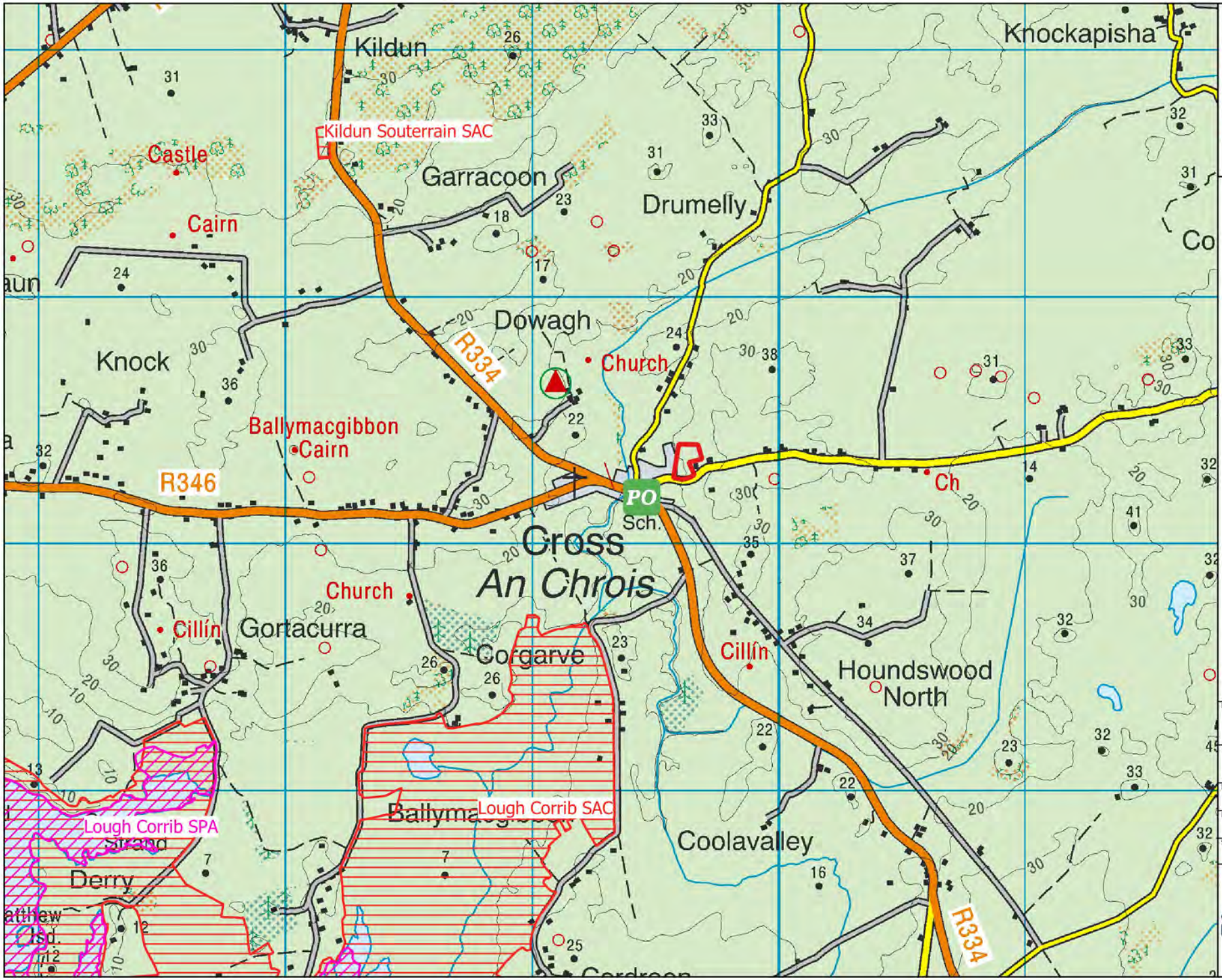


Plate 2-1 - Floodable area within the southwest of the site (blue, Flood Zone A). Souce: Priority Geotechnical Ltd. - Flood Risk Asssessment Report.

The development proposal for the site will be limited to the Flood Zone C area, as shown in Figure 3-2 of the NIS.

2.2.2 Geotechnical Site Investigation Results

Site investigations including bore holes, trial pits and slit trenches were carried out at the development site in 2019 by Priority Geotechnical Ltd. Groundwater was encountered at depths between 0.7m bgl to 4.0m bgl during the period of fieldworks.



Map Legend

- Site boundary
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)

Drawing Title: Site Location

Project Title: Housing Development Cross West

Drawn By	Checked By
JOS	PR
Project No.	Drawing No.
200813	Figure 2.1
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2.2.3 Description of the Baseline Ecological Environment

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

A multidisciplinary walkover survey was conducted on the 8th of March 2022 by Rachel Walsh (BSc., QCIEEM) and on the 26th of January 2021 by Julie O'Sullivan (BSc., MSc) in line with NRA (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes). All habitats were readily identifiable at the time of the visit. A dedicated invasive species survey was also undertaken during the site visit. During the survey, the site was searched for species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011).

The site comprises a single field of ***Improved Agricultural Grassland (GA1)*** (Plate 2-1 & Plate 2-2) Species recorded in this habitat included abundant Yorkshire fog (*Holcus lanatus*), annual meadow grass (*Poa annua*), perennial rye-grass (*Lolium perenne*), creeping buttercup (*Ranunculus repens*), daisy (*Bellis perennis*) and ribwort plantain (*Plantago lanceolata*).

Other species recorded frequently in the vegetation included occasional soft rush (*Juncus effusus*), cock's-foot (*Dactylis glomerata*), nettle (*Urtica dioica*), crested dogs-tail (*Cynosurus cristatus*), red fescue (*Festuca rubra*), creeping thistle (*Cirsium arvense*), clovers (*Trifolium* spp.), broad-leaved dock (*Rumex obtusifolius*), meadow buttercup (*Ranunculus acris*), with occasional spear thistle (*Cirsium vulgare*), mouse-ear chickweed (*Cerastium fontanum*), ragwort (*Jacobaea vulgaris*), pointed spear-moss (*Calliergonella cuspidata*), common bent (*Agrostis capillaris*), germander speedwell (*Veronica chamaedrys*), procumbent pearlwort (*Sagina procumbens*) and common sorrel (*Rumex acetosa*). In the north-west corner of the site a small area of bramble scrub occurs, formed on a pile of rocks cleared from the agricultural grassland.

Field boundaries are formed by stonewalls and are classified as ***Stone Walls and Other Stonework (BL1)*** (Plate 2-3). Scattered trees occur along the western site boundary, and include mature sycamore (*Acer pseudoplatanus*), willows (*Salix* spp.) and spindle (*Euonymus europaeus*), with a sparse bramble (*Rubus fructicosus*) understory in places. A mature treeline (WL2) of non-native conifer trees occurs on the roadside of this wall, outside the site western boundary. A species poor hedgerow formed of bramble (*Rubus fructicosus*) occurs along the north-eastern boundary wall. The south east boundary wall has been constructed with concrete blocks and is classified as ***Buildings and Artificial Surfaces (BL3).***

Species recorded along the margins of the field, adjacent to the stonewalls, included sowthistle (*Sonchus* spp.), cleavers (Galium aparine), herb Robert (*Geranium robertianum*), ivy (*Hedera helix*), hedgerow cranes bill (*Geranium pyrenaicum*), dandelion (*Taraxacum officinale* agg.), primrose (*Primula veris*), willowherb (*Epilobium* spp.), hogweed (*Heracleum sphondylium*) and figwort (*Scrophularia nodosa*).

No drainage ditches or watercourses occur within or immediately adjacent to the site.

There are no Annex I habitats listed under the EU Habitats Directive present within the Proposed development site boundary. No botanical species protected under the Flora (protection) Order (1999, as amended 2015), listed in the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded on the site and no suitable habitat occurs within the site. All species recorded are common in the Irish landscape. No invasive species were observed within the proposed development site.

Plate 2-2 Improved Agricultural Grassland (GA1), view looking north-west.

Plate 2-3 Improved agricultural grassland (GA1), view looking south-east

Plate 2-4 Field boundaries are formed by stonewalls and are classified as Stone Walls and Other Stonework (BL1), with non-native conifers outside the western boundary wall.

Plate 2-5 Field boundaries are formed by stonewalls and are classified as Stone Walls and Other Stonework (BL1), with scattered trees growing along the western boundary.

2.2.3.1 Fauna

The walkover survey was designed to detect the presence, or likely presence, of a range of protected species associated with European protected sites. No Annex listed faunal species were recorded within the proposed works area during the site visit.

No evidence of otter was recorded within the proposed development site including holts, couches, lay-up sites, prints or spraints. There are no drainage ditches or watercourses within the site and the proposed development site does not offer suitable habitat for otter.

A total of seven bird species were recorded within or flying over the site during the field survey, including chaffinch, mistle thrush, robin, wren, rook, jackdaw and starling. Bird species recorded within the site boundaries during the site visit were an assemblage of common birds that are typical of the agricultural grassland habitats in the wider area of the proposed development site.

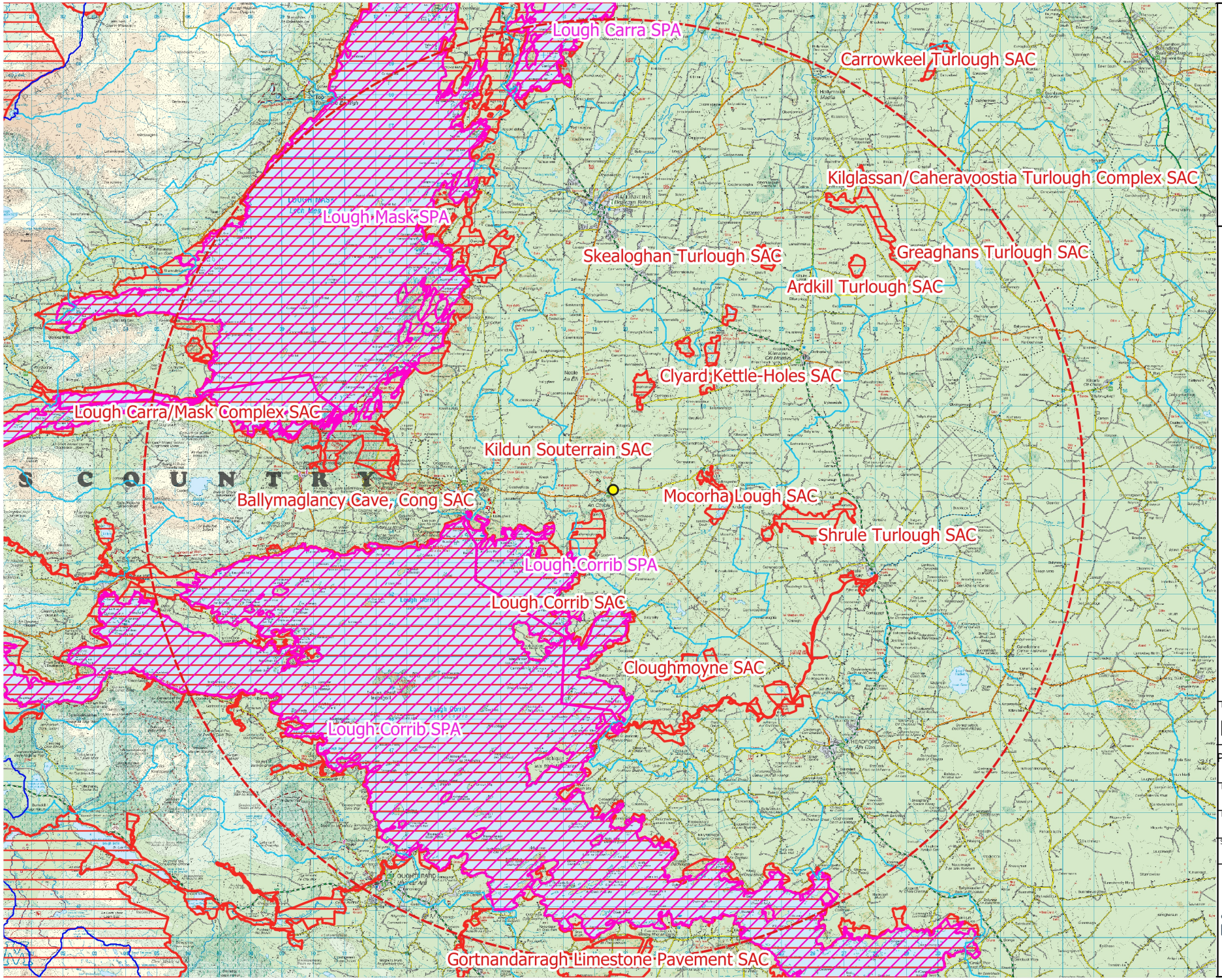
No Annex I bird species or species of conservation concern were recorded within the proposed development site during the field survey. The site is dominated by improved agricultural grassland habitat and does not provide supporting habitat for any bird species that are among the SCIs of any European Site. Given the lack of significant habitat for rare or protected bird species identified within the site, there is no requirement for further bird surveys at the site.

3. IDENTIFICATION OF RELEVANT EUROPEAN SITES

3.1 Identification of the European Sites within the Likely Zone of Impact

The following methodology was used to establish which European Sites are within the Likely Zone of Impact of the proposed development:

- Initially the most up to date GIS spatial datasets for European designated sites and water catchments were downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie) on the 16/02/2022. The datasets were utilized to identify European Sites which could feasibly be affected by the proposed development.
- All European Sites within a distance of 15km surrounding the works site were identified and are shown on Figure 3.1. In addition, the potential for connectivity with European Sites at distances of greater than 15km from the proposed works was also considered in this initial assessment. In this case, no potential for significant effect on sites located at a distance of over 15km from the proposed works was identified.
- The catchment mapping was used to establish or discount potential hydrological connectivity between the site of the proposed works and any European Sites. The hydrological catchments are also shown in Figure 3.1.
- In relation to Special Protection Areas, in the absence of any specific European or Irish guidance in relation to such sites, the Scottish Natural Heritage (SNH) Guidance, *'Assessing Connectivity with Special Protection Areas (SPA)'* (2016) was consulted. This document provides guidance in relation to the identification of connectivity between proposed development and Special Protection Areas. The guidance takes into consideration the distances species may travel beyond the boundary of their SPAs and provides information on dispersal and foraging ranges of bird species which are frequently encountered when considering plans and projects.
- Table 3.1 provides details of all relevant European Sites as identified in the preceding steps and assesses which are within the likely Zone of Impact. The assessment considers any likely direct or indirect impacts of the proposed development, both alone and in combination with other plans and projects, on European Sites by virtue of the following criteria: size and scale, land-take, distance from the European Site or key features of the site, resource requirements, emissions, excavation requirements, transportation requirements and duration of construction, operation and decommissioning were considered in this screening assessment
- The site synopses and conservation objectives of these sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report. Figure 3.1 shows the location of the proposed works in relation to all European sites within 15km of the proposed development.
- Where potential pathways for Significant Effect are identified, the site is included within the Likely Zone of Impact and considered in the Screening Assessment



Drawing Title

EU Designated Sites

Project Title
Proposed Housing Development at Cross West, Co. Mayo

Drawn By	Checked By
RW	PR
Project No.	Drawing No.
200813	Figure 3.1
Scale	Date
1:158000	16.02.2022

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Table 3.1 Identification of Designated sites within the Likely Zone of Impact

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/02/2022	Conservation Objectives	Likely Zone of Impact Determination
Special Areas of Conservation (SAC)			
Lough Corrib SAC [000279] Distance: 687m	› 1029 Freshwater Pearl Mussel *Margaritifera margaritifera* › 1092 White-clawed Crayfish *Austropotamobius pallipes* › 1095 Sea Lamprey *Petromyzon marinus* › 1096 Brook Lamprey *Lampetra planeri* › 1106 Salmon *Salmo salar* › 1303 Lesser Horseshoe Bat *Rhinolophus hipposideros* › 1355 Otter *Lutra lutra* › 1393 Slender Green Feather-moss *Drepanocladus vernicosus* › 1833 Slender Naiad *Najas flexilis* › 3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) › 3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea › 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. › 3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation › 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	Detailed conservation objectives for this site, (Version 1, August 2017), were reviewed as part of the assessment and are available at www.npws.ie	This European Site is located 687m south-west of the proposed development site. The proposed development site is located outside the boundary of this European Site and therefore no pathway for direct effect exists. Due to the vulnerability of groundwater in the area, a potential for indirect effect via deterioration in groundwater quality during construction and operation of the proposed development was identified. **The SAC is within the Likely Zone of Impact and further assessment is required.**

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/02/2022	Conservation Objectives	Likely Zone of Impact Determination
	› 6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) › 7110 Active raised bogs › 7120 Degraded raised bogs still capable of natural regeneration › 7150 Depressions on peat substrates of the Rhynchosporion › 7210 Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae › 7220 Petrifying springs with tufa formation (Cratoneurion) › 7230 Alkaline fens › 8240 Limestone pavements › 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles › 91D0 Bog woodland		
Kildun Souterrain SAC [002320] Distance: 1.8km	› 1303 Lesser Horseshoe Bat *(Rhinolophus hipposideros)*	Detailed conservation objectives for this site, (Version 1, June 2018), were reviewed as part of the assessment and are available at www.npws.ie	This SAC is located 1.8km north-west of the proposed development site. The proposed development site is located outside the boundary of this European Site and therefore no pathway for direct effect exists. The proposed development site is located within the core foraging range of the Lesser Horseshoe Bat 2.5km (NPWS 2018), as mapped in Map 2 of the Site Detailed Conservation Objective document. Lesser horseshoe bats normally forage in woodlands/scrub within 2.5km of their roosts (Schofield, 2008). The proposed development site is located 175m from the closest mapped potential foraging ground, located at golf course west of the development site and is separated from it by existing dwelling houses. There is no suitable foraging habitat for Lesser horseshoe bat within the proposed development site.

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/02/2022	Conservation Objectives	Likely Zone of Impact Determination
			This species follows commuting routes from its roost to its foraging grounds. Lesser horseshoe bats will not cross open ground. Consequently, linear features such as hedgerows, treelines and stone walls provide vital connectivity for this species within 2.5km around each roost (Schofield, 2008). There will be no loss of linear commuting habitat associated with the proposed development. Stonewalls and hedgerows along the boundary will be retained, and there will be no lighting along these linear features. No pathway for indirect effects in the form of habitat loss or disturbance exists. **This site is not within the likely zone of impact and no further assessment is required.**
Clyard Kettle-holes SAC [000480] Distance: 2.6km	› 3180 Turloughs* › 7210 Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae*	Detailed conservation objectives for this site, (Version 1, October 2021), were reviewed as part of the assessment and are available at www.npws.ie	This SAC is located 2.6km north-east of the proposed development site. The proposed development site is located outside of this European Site. No pathway for direct effect exists. There are no watercourses or drainage ditches within the proposed development site that could act as a conduit via surface water for pollution to any QI habitat of this SAC. There is no potential for downstream groundwater connectivity from the development site to the SAC as the SAC is located upgradient of the development site, 2.6km northeast. Given the difference in gradient and the separation distance between the SAC and the proposed development, a significant groundwater connection is unlikely. **This site is not within the likely zone of impact and no further assessment is required.**

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/02/2022	Conservation Objectives	Likely Zone of Impact Determination
Mocorha Lough SAC [001536] Distance: 2.6km	› 7210 Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae*	Detailed conservation objectives for this site, (Version 1, October 2019), were reviewed as part of the assessment and are available at www.npws.ie	This SAC is located 2.6km east of the proposed development site. The proposed development site is located outside of this European Site. No pathway for direct effect exists. There are no watercourses or drainage ditches within the proposed development site that could act as a conduit via surface water for pollution to this SAC. There is no potential for downstream groundwater connectivity from the development site to the SAC as the SAC is located upgradient of the development site, 2.6km east. Given the difference in gradient and the separation distance between the SAC and the proposed development, a significant groundwater connection is unlikely. **This site is not within the likely zone of impact and no further assessment is required.**
Shrule Turlough SAC [000525] Distance: 4.8km	› 3180 Turloughs*	Detailed conservation objectives for this site, (Version 1, January 2021), were reviewed as part of the assessment and are available at www.npws.ie	This SAC is located 4.8km east of the proposed development site. The European Site is located entirely outside the boundary of the proposed development site and no pathway for direct effect exists. This site is designated for a groundwater dependent habitat and is located in a separate groundwater catchment. No pathway for indirect effect exists. **This site is not within the likely zone of impact and no further assessment is required.**
Cloughmoyne SAC [000479]	› 8240 Limestone pavements*	Detailed conservation objectives for this site, (Version 1, April 2019), were reviewed	This SAC is located 5.6km south-east of the proposed development site. The European Site is located entirely outside the boundary of the proposed development site and no pathway for direct effect exists.

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/02/2022	Conservation Objectives	Likely Zone of Impact Determination
Distance: 5.6km		as part of the assessment and are available at www.npws.ie	This site is designated for a terrestrial habitat. No pathway for indirect effect on the terrestrial habitats for which the site has been designated exists. **This site is not within the likely zone of impact and no further assessment is required.**
Lough Carra/Mask Complex SAC [001774] Distance: 6.7km	› 3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) › 3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea › 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. › 4030 European dry heaths › 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) › 7210 Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae* › 7230 Alkaline fens › 8240 Limestone pavements* › 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)* › 1303 Lesser Horseshoe Bat *(Rhinolophus hipposideros)* › 1393 Slender Green Feather-moss *(Drepanocladus vernicosus)* › 1355 Otter *(Lutra lutra)*	Detailed conservation objectives for this site, (Version 1, November 2021), were reviewed as part of the assessment and are available at www.npws.ie.	This SAC is located 6.7km north-west of the proposed development site. The European Site is located entirely outside the boundary of the proposed development site and no pathway for direct effect exists. This SAC is located within a separate hydrological sub-catchment to the development site and is upgradient of the development site. There is no potential for indirect effects on the listed aquatic habitats for which this SAC has been designated: › 3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) › 3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea › 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. › 7210 Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae* › 7230 Alkaline fens › 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)* › 1355 Otter *(Lutra lutra)*

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/02/2022	Conservation Objectives	Likely Zone of Impact Determination
			No pathway for indirect effect on the terrestrial habitats/species for which this site has been designated exists: › 4030 European dry heaths › 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) › 8240 Limestone pavements* › 1393 Slender Green Feather-moss *(Drepanocladus vernicosus)* The proposed development site is located outside the core foraging range of the Lesser Horseshoe Bat 2.5km (NPWS 2018), and no pathway for indirect effect exists. **This site is not within the likely zone of impact and no further assessment is required.**
Ballymaglancy Cave, Cong SAC [000474] Distance: 8km	› 8310 Caves not open to the public › 1303 Lesser Horseshoe Bat *(Rhinolophus hipposideros)*	Detailed conservation objectives for this site, (Version 1, August 2018), were reviewed as part of the assessment and are available at www.npws.ie	This SAC is located 8km west of the proposed development site. The proposed development site is located entirely outside the boundary of this European Site. No pathway for direct effect exists. The proposed development site is located outside the core foraging range of the Lesser Horseshoe Bat 2.5km (NPWS 2018), and no pathway for indirect effect exists. **This site is not within the likely zone of impact and no further assessment is required.**

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/02/2022	Conservation Objectives	Likely Zone of Impact Determination
Skealoghan Turlough SAC Distance: 8.5km	› 3180 Turloughs*	Detailed conservation objectives for this site, (Version 1, January 2021), were reviewed as part of the assessment and are available at www.npws.ie	This SAC is located 8.5km north-east of the proposed development site. The proposed development site is located outside of this European Site. No pathway for direct effect exists. This site is designated for a groundwater dependent habitat and is located in a separate groundwater catchment. No pathway for indirect effect exists. **This site is not within the likely zone of impact and no further assessment is required.**
Ardkill Turlough SAC Distance: 10.2km	› 3180 Turloughs*	Detailed conservation objectives for this site, (Version 1, December 2020), were reviewed as part of the assessment and are available at www.npws.ie	The proposed development site is located outside of this European Site. No pathway for direct effect exists. There is no potential for downstream groundwater connectivity from the development site to the SAC as the SAC is located upgradient of the development site. Given the difference in gradient and the separation distance between the SAC and the proposed development, a significant groundwater connection is unlikely. **This site is not within the likely zone of impact and no further assessment is required.**
Kilglassan/Caheravoostia Turlough Complex SAC 11.4km	› 3180 Turloughs*	Detailed conservation objectives for this site, (Version 1, January 2021), were reviewed as part of the assessment and are available at www.npws.ie	The proposed development site is located outside of this European Site. No pathway for direct effect exists. There is no potential for downstream groundwater connectivity from the development site to the SAC as the SAC is located upgradient of the development site. Groundwater flowing from the development site

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/02/2022	Conservation Objectives	Likely Zone of Impact Determination
			is likely to flow in a similar direction as nearby surface waters towards Lough Corrib. **This site is not within the likely zone of impact and no further assessment is required.**
Greaghans Turlough SAC 11.5km	› 3180 Turloughs*	Detailed conservation objectives for this site, (Version 1, January 2021), were reviewed as part of the assessment and are available at www.npws.ie	The proposed development site is located outside of this European Site. No pathway for direct effect exists. There is no potential for downstream groundwater connectivity from the development site to the SAC as the SAC is located upgradient of the development site. Given the difference in gradient and the separation distance between the SAC and the proposed development, a significant groundwater connection is unlikely. **This site is not within the likely zone of impact and no further assessment is required.**
Gortnandarragh Limestone Pavement SAC Distance: 14.2km	› 8240 Limestone pavements*	Detailed conservation objectives for this site, (Version 1, April 2019), were reviewed as part of the assessment and are available at www.npws.ie	The proposed development site is located outside of this European Site. No pathway for direct effect exists. This site is designated for a terrestrial habitat. No pathway for indirect effect on the terrestrial habitats for which the site has been designated exists. **This site is not within the likely zone of impact and no further assessment is required.**

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/02/2022	Conservation Objectives	Likely Zone of Impact Determination
Special Protection Area (SPA)			
Lough Corrib SPA [004042] Distance: 2.1km	› A395 Greenland White-fronted Goose *(Anser albifrons flavirostris)* › A194 Arctic Tern *(Sterna paradisaea)* › A082 Hen Harrier *(Circus cyaneus)* › A061 Tufted Duck *(Aythya fuligula)* › A051 Gadwall *(Anas strepera)* › A059 Pochard *(Aythya ferina)* › A140 Golden Plover *(Pluvialis apricaria)* › A179 Black-headed Gull *(Chroicocephalus ridibundus)* › A182 Common Gull *(Larus canus)* › A125 Coot *(Fulica atra)* › A065 Common Scoter *(Melanitta nigra)* › A193 Common Tern *(Sterna hirundo)* › A056 Shoveler *(Anas clypeata)* › A999 Wetlands	This site has the generic conservation objective: *'To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA'* And the additional objective, *'To maintain or restore the favourable conservation condition of the wetland habitat at Lough Corrib SPA as a resource for the regularly-occurring migratory waterbirds that utilise it'.* (Generic Version 8.0 NPWS 2021)	This European Site is located 2.1km south-west of the proposed development site. The proposed development is entirely outside the SPA boundary therefore no potential pathway for direct effect exists. Due to the vulnerability of groundwater in the area, a potential for indirect effect via deterioration in groundwater quality was identified. **The SPA is within the Likely Zone of Impact and further assessment is required.**
Lough Mask SPA [004062] Distance: 7km	› A179 Black-headed Gull *(Chroicocephalus ridibundus)* › A193 Common Tern *(Sterna hirundo)* › A061 Tufted Duck *(Aythya fuligula)* › A182 Common Gull *(Larus canus)* › A395 Greenland White-fronted Goose *(Anser albifrons flavirostris)* › A183 Lesser Black-backed Gull *(Larus fuscus)*	This site has the generic conservation objective: '*To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA'*	This European Site is located 7km west of the proposed development site. The proposed development is entirely outside the SPA boundary therefore no potential pathway for direct effect exists. The proposed works area does not offer suitable supporting habitat for the SCI species associated with the SPA.

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/02/2022	Conservation Objectives	Likely Zone of Impact Determination
	› A999 Wetlands	This site has a second conservation objective: '*To maintain or restore the favourable conservation condition of the wetland habitat at Lough Mask SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.*' (Generic version 8.0 NPWS 2021)	This SPA is located within a separate hydrological sub-catchment to the development site and is upgradient of the development site. There is no potential for indirect effects on the SCI supporting habitat via water quality deterioration. Given the intervening buffer distance from the SPA no potential pathway for disturbance related impact on SCI populations associated with the SPA was identified. **This site is not within the likely zone of impact and no further assessment is required.**
Lough Carra SPA [004051] Distance: 12.8km	› A182 Common Gull *(Larus canus)*	This site has the generic conservation objective: '*To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA',* (Generic version 8.0 NPWS 2021).	This European Site is located 12.8km north-west of the proposed development site. The proposed development is entirely outside the SPA boundary therefore no potential pathway for direct effect exists. The proposed works area does not offer suitable supporting habitat for the SCI species associated with the SPA. This SPA is located within a separate hydrological sub-catchment to the development site and is upgradient of the development site. There is no potential for indirect effects on the SCI supporting habitat via water quality deterioration. Given the intervening buffer distance from the SPA no potential pathway for disturbance related impact on SCI populations associated with the SPA was identified.

European Sites and distance from proposed works	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/02/2022	Conservation Objectives	Likely Zone of Impact Determination
			This site is not within the likely zone of impact and no further assessment is required.

3.2 European Sites with the Potential to be Significantly Affected by the Proposed Works

The following European Sites were identified as having the potential to be affected by the proposed development in the absence of mitigation:

- Lough Corrib SAC
- Lough SPA

3.3 Likely Cumulative Impact of the Proposed Works on European Sites, in-combination with other plans and projects

Where potential pathways for effect have been identified in Table 3.1, the potential for cumulative effects resulting from the proposed development, when considered in combination with other plans and projects, cannot be discounted at this stage and further assessment is required.

4. ARTICLE 6(3) APPROPRIATE ASSESSMENT SCREENING STATEMENT AND CONCLUSIONS

The findings of this Screening Assessment are presented following the European Commission's Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2001) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018) as well as the Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010).

4.1 Data Collected to Carry Out Assessment

In preparation of the report, the following sources were used to gather information:

- Review of NPWS Site Synopses, Conservation Objectives for the European Sites.
- Review of 2019, 2013 and 2007 EU Habitats Directive (Article 17) Reports.
- Review of online web-mappers: National Parks and Wildlife Service (NPWS)
- Review of OS maps and aerial photographs of the site of the proposed project.
- Site visits conducted by Rachel Walsh (BSc., QCIEEM) on the 8th of March 2022 and by Julie O'Sullivan (BSc, MSc) on the 26th of January 2021.

4.2 Concluding Statement

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

As a result, an Appropriate Assessment is required, and a Natura Impact Statement shall be prepared in respect of the proposed development.

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NPWS Protected Site Synopses and maps available on http://www.npws.ie/en/ProtectedSites/.

OPR (2021) Practice Note PN01 – Appropriate Assessment Screening for Development Management. Office of the Planning Regulator.

Scottish Natural Heritage (SNH) (July 2013) Assessing Connectivity with Special Protection Areas (SPA)

APPENDIX II

IRISH WATER LETTER OF CONFIRMATION OF FEASABILITY

Uisce Éireann
Bosca OP 6000
Baile Átha Cliath 1
Éire

Irish Water
PO Box 6000
Dublin 1
Ireland

T: +353 1 89 25000
F: +353 1 89 25001
www.water.ie

Paul Downes
Cashel Business Centre
Cashel Road
Kimmage, Dublin 12 D12XY86

10 July 2019

Dear Paul Downes,

Re: Connection Reference No CDS19003193 pre-connection enquiry - Subject to contract | Contract denied

Connection for Housing Development of 15 unit(s) at On the L1614 Road to Kilmaine, Cross West, Mayo.

Irish Water has reviewed your pre-connection enquiry in relation to a water connection at On the L1614 Road to Kilmaine, Cross West, Mayo.

Based upon the details that you have provided with your pre-connection enquiry and on the capacity currently available in the network(s), as assessed by Irish Water, we wish to advise you that, subject to a valid connection agreement being put in place, your proposed connection to the Irish Water network(s) can be facilitated.

A connection to the Irish Water owned foul sewer can be facilitated subject to the completion and commissioning of the newly constructed Cross foul sewer network and wastewater treatment plant.

The nearest existing Irish Water owned water main is located approx. 300m to the east of the proposed site. The new Irish Water Connection Charging policy became live from the 1st April 2019 following a transition period from the 1st January 2019. As a result, the connection charges for this proposed housing development shall be in accordance with this charging regime, please see the Irish Water website which details what the connection charges will be based on the number of domestic connections you are proposing.

Furthermore, as your connection appears to be located approx. 300m from the nearest Irish Water owned water main, a network extension will be required, this is referred to as a quotable connection and will be charged in addition to the standard charges. As the Irish Water Regional Connections Contractor has been live in Mayo since the 22nd March 2019, all works in the public road will be required to be completed by either Mayo Co Co or the Irish Water Regional Contractor and shall be funded by the customer at the quotable rates provided by IW. The below link may be useful as an approximate guide on the quotable element as there are indicative per metre rates (pro-rata depending on distance) for extensions above and beyond the standard connection (above 10m) distance.
https://www.water.ie/connections/information/connection-charges/

All infrastructure should be designed and installed in accordance with the Irish Water Codes of Practice and Standard Details. A design proposal for the water and/or wastewater infrastructure should be submitted to Irish Water for assessment. Prior to submitting your planning application, you are required to submit these detailed design proposals to Irish Water for review.

You are advised that this correspondence does not constitute an offer in whole or in part to provide a connection to any Irish Water infrastructure and is provided subject to a connection agreement being signed at a later date.

A connection agreement can be applied for by completing the connection application form available at **www.water.ie/connections**. Irish Water's current charges for water and wastewater connections are set out in the Water Charges Plan as approved by the Commission for Regulation of Utilities.

If you have any further questions, please contact Cormac Healy from the design team on 094 90 43347 or email corhealy@water.ie. For further information, visit **www.water.ie/connections.**

Yours sincerely,

Maria O'Dwyer

Connections and Developer Services

APPENDIX III

FLOOD RISK ASSESSMENT REPORT

PRIORITY GEOTECHNICAL LTD.

PROPOSED DEVELOPMENT SITE AT CROSS WEST, CLAREMORRIS, CO. MAYO

SITE SPECIFIC FLOOD RISK ASSESSMENT

IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL

Integrated Engineering Consulting

IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL

PRIORITY GEOTECHNICAL LTD.

PROPOSED DEVELOPMENT SITE AT CROSS WEST, CLAREMORRIS, CO. MAYO

SITE SPECIFIC FLOOD RISK ASSESSMENT

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Revision:	1.0
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Table of Contents

1 Introduction

IE Consulting was requested by Priority Geotechnical Ltd to undertake a Site Specific Flood Risk Assessment (SSFRA) for a proposed development Cross West, Co. Mayo.

The purpose of this SSFRA is to assess the potential flood risk to the proposed development site and to assess the impact that the development as proposed may or may not have on the hydrological regime of the area, in accordance with the OPW Guidelines.

Quoted ground levels or estimated flood levels relate to ordinance datum (Malin) unless stated otherwise.

This SSFRA has been undertaken in consideration of the following guidance document:-

'The Planning System and Flood Risk Management – Guidelines for Planning Authorities' DOEHLG 2009.

2 Proposed Site Description

2.1 General

The site is located 4 km west of the town of Cong in County Mayo and has a total area of approximately 1.1 hectares. The L1614 runs along the southern boundary of the site, to the east and west is developed residential land and to the north is undeveloped land. The site is earmarked for a proposed social housing development. This SSFRA will be used to inform the layout of the proposed residential properties and all associated works at the site.

The location of the proposed development site is illustrated on *Figure 1* below and shown on *Drawing Number IE1946-001-A in Appendix A*.

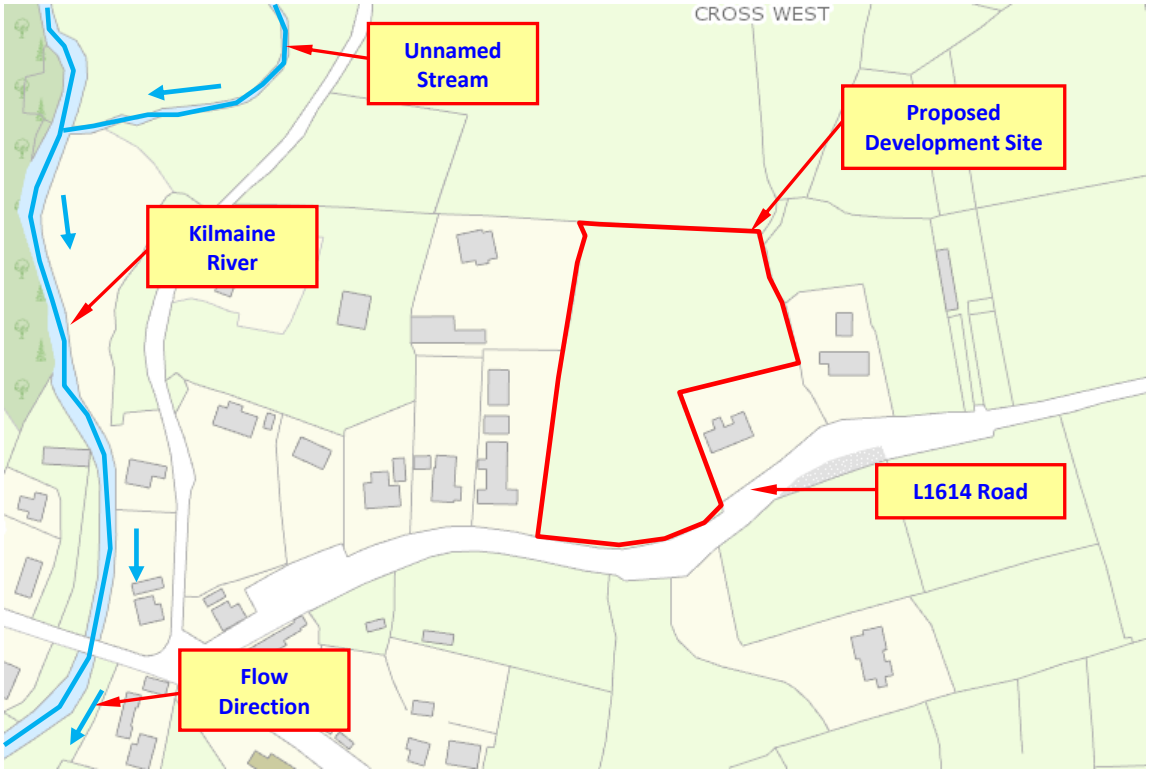


Figure 1 - Site Location

2.2 Existing Topography Levels at Site

The proposed development site slopes from the north eastern side of the site towards the south western corner of the site.

Existing ground elevations range from approximately 24.5 m OD (Malin) in the north eastern area of the site to 17.16 m OD (Malin) at the south western boundary of the site.

2.3 Local Hydrology, Landuse & Existing Drainage

The most significant hydrological feature in the vicinity of the proposed development site is the Kilmaine River, which is located approximately 220m beyond the western boundary of the site.

At its closest position to the proposed development site the Kilmaine River generally flows in a north to south direction. Utilising the OPW Flood Studies Update (FSU) Portal software, the catchment area of the Kilmaine Stream was delineated. The total catchment area of the stream was found to be approximately **32.37km^2** to a point downstream of the site. Assessment of the Kilmaine River upstream catchment area indicates that the catchment is predominantly rural in nature with urban development accounting for approximately 1.04% of the total catchment area.

3 Initial Flood Risk Assessment

The flood risk assessment for the proposed development site is undertaken in three principle stages, these being *'Step 1 – Screening', 'Step 2 – Scoping'* and *'Step 3 – Assessing'*.

3.1 Possible Flooding Mechanisms

Table 1 below summarises the possible flooding mechanisms in consideration of the proposed development site:-

Source/Pathway	Significant?	Comment/Reason
Tidal/Coastal	No	The site is not located close to a coastal area.
Fluvial	No	The nearest watercourse to the site is the Kilmaine River, which is located approximately 220m beyond the western boundary of the site.
Pluvial (urban drainage)	Possible	There is urban drainage/water supply infrastructure located in the vicinity of the site.
Pluvial (overland flow)	Possible	The south western area of the proposed development is located 0.8 – 0.9m below the adjacent road level.
Blockage	No	There are no significant or restrictive hydraulic structures located in the vicinity of the site
Groundwater	Possible	Based on anecdotal evidence from local landowners a portion of the south western section of the site is known to flood. The water tends to remain for a long period of time in the site and appears after a prolonged rainfall event the previous days.

Table 1

The primary potential flood risk to the proposed development site can be attributed to potential groundwater flooding. Pluvial flooding from overland flow from the surrounding catchment and topography may also present a pluvial flood risk to the site. Secondary or residual flood risk can be attributed to a potential surcharge of the urban infrastructure located in the vicinity of the site.

In accordance with 'The Planning System and Flood Risk Management – Guidelines for Planning Authorities - DOEHLG 2009' these potential flood risks are analysed in the subsequent 'Screening Assessment' and ''Scoping Assessment'' section of this study report.

4 Screening Assessment

The purpose of the screening assessment is to establish the level of flooding risk that may or may not exist for a particular site and to collate and assess existing current or historical information and data which may indicate the level or extent of any flood risk.

If there is a potential flood risk issue then the flood risk assessment procedure should move to *'Step 2 – Scoping Assessment'* or if no potential flood risk is identified from the screening stage then the overall flood risk assessment can end at *'Step 1'*.

The following information and data was collated as part of the flood risk screening assessment for the proposed development site:-

4.1 OPW/EPA/Local Authority Hydrometric Data

Existing sources of OPW, EPA and local authority hydrometric data were investigated. As illustrated in *Figure 2* below, this assessment has determined that there is one hydrometric gauging station (30104) located on the Kilmaine River in the vicinity of the proposed development site. Gauging Station 30104 is located approximately 200 m south west of the site and is entered into the Register of Hydrometric Stations in Ireland as an inactive flow measure staff station, with hydrometric data available for years March 1997 - August 2007.

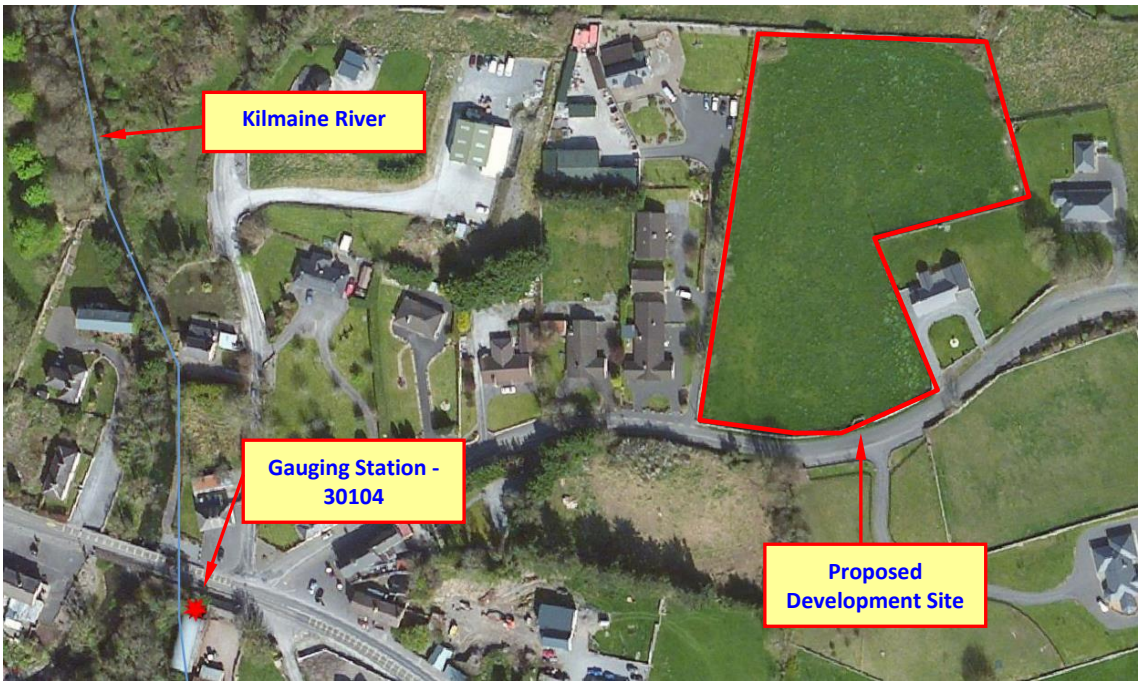


Figure 2 – Hydrometric Gauging Stations

4.2 OPW PFRA Indicative Flood Mapping

Preliminary Flood Risk Assessment (PFRA) Mapping for Ireland was produced by the OPW in 2011. OPW PFRA flood mapping illustrates indicative flood zones within this area of Co. Mayo. *Figure 3* below illustrates the indicative PFRA flood zones in the vicinity of the proposed development site.

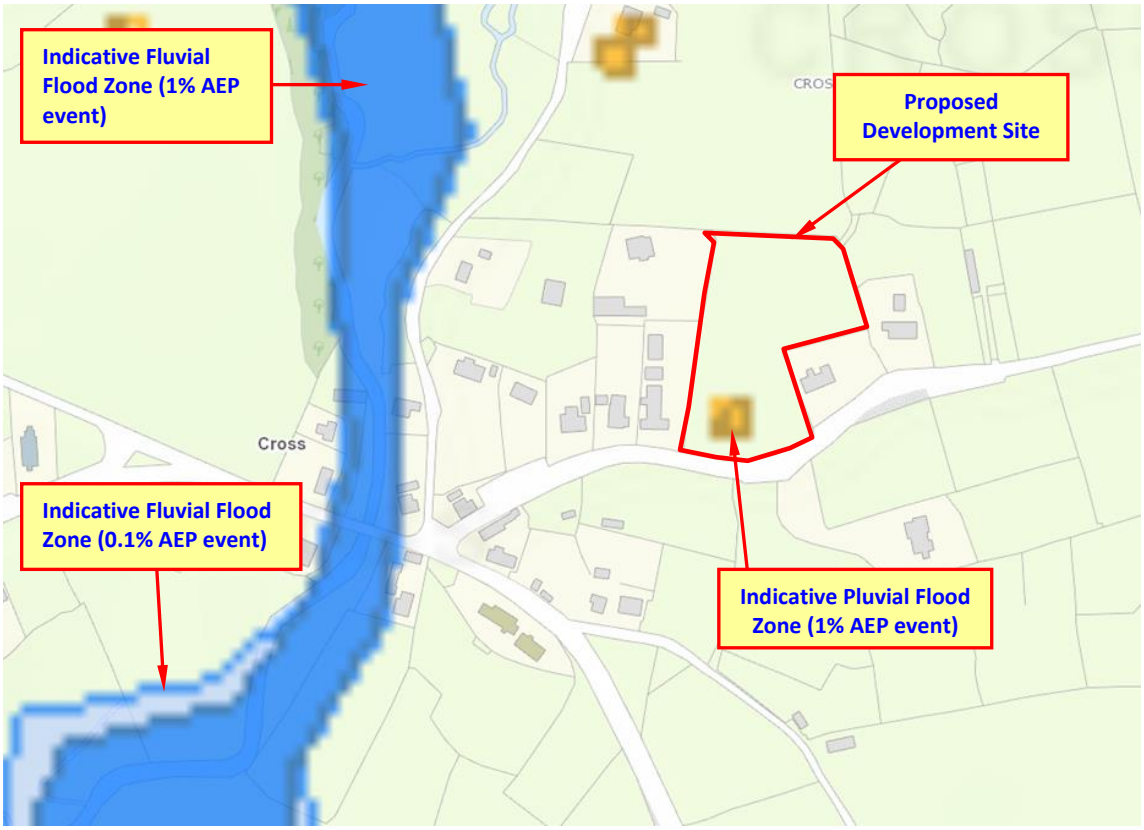


Figure 3 – PFRA Fluvial Mapping

The PFRA flood mapping indicates an indicative pluvial flood zone within the south western boundary of the proposed development site. Anecdotal evidence from surrounding land owners suggests that a limited area in the south western corner of that site is known to flood due to either pluvial or groundwater flooding.

There is no records of fluvial flood zones within or adjacent to the boundary of the proposed development site.

It should be noted that the indicated extent of flooding illustrated on these maps was developed using a low resolution digital terrain model (DTM) and are intended to be indicative only. The flood extents mapped on the PFRA maps are not intended to be used on a site specific basis.

4.3 OPW Flood Maps Website

The OPW Flood Maps Website (www.floods.ie) was consulted in relation to available historical or anecdotal information on any flooding incidences or occurrences in the vicinity of the proposed development site. *Figure 4* below illustrates mapping from the Flood Maps website in the vicinity of the site.

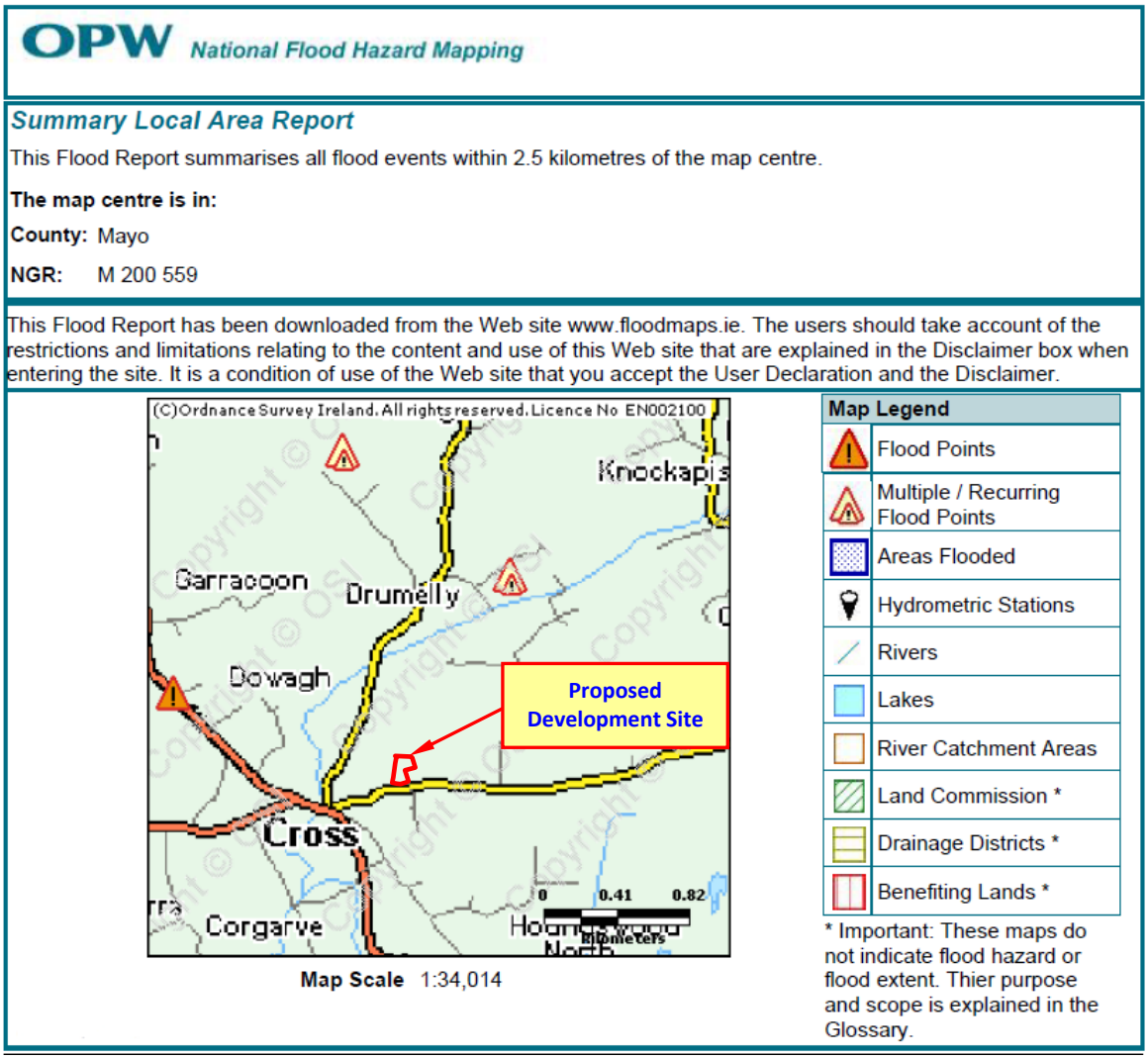


Figure 4 – OPW Flood Maps

Figure 4 above indicates that there are no recorded or anecdotal instances of flooding at or in the immediate vicinity of the proposed development site.

4.4 Ordnance Survey Historic Mapping

Available historic mapping for the area was consulted, as this can provide evidence of historical flooding incidences or occurrences. The maps that were consulted were the historical 6-inch maps (pre-1900), and the historic 25-inch map series.

Figure 5 and *Figure 6* below illustrate the historic mapping for the area of the proposed development site.

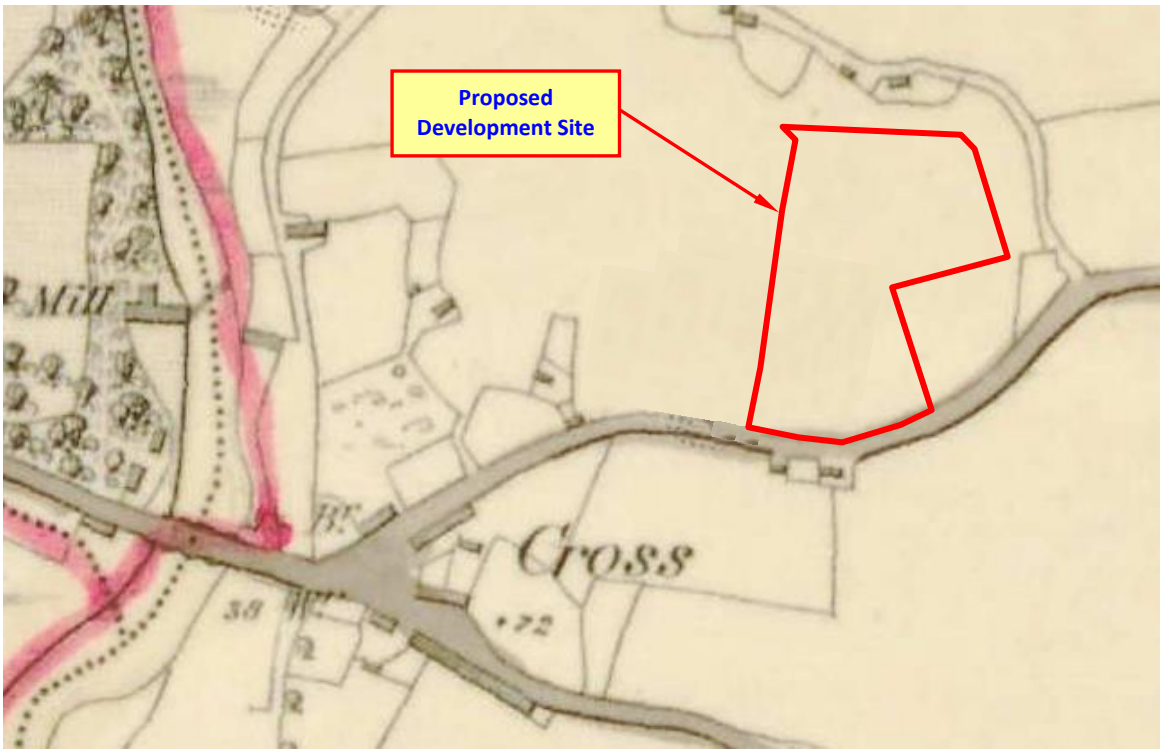


Figure 5 – Historic 6-Inch Mapping

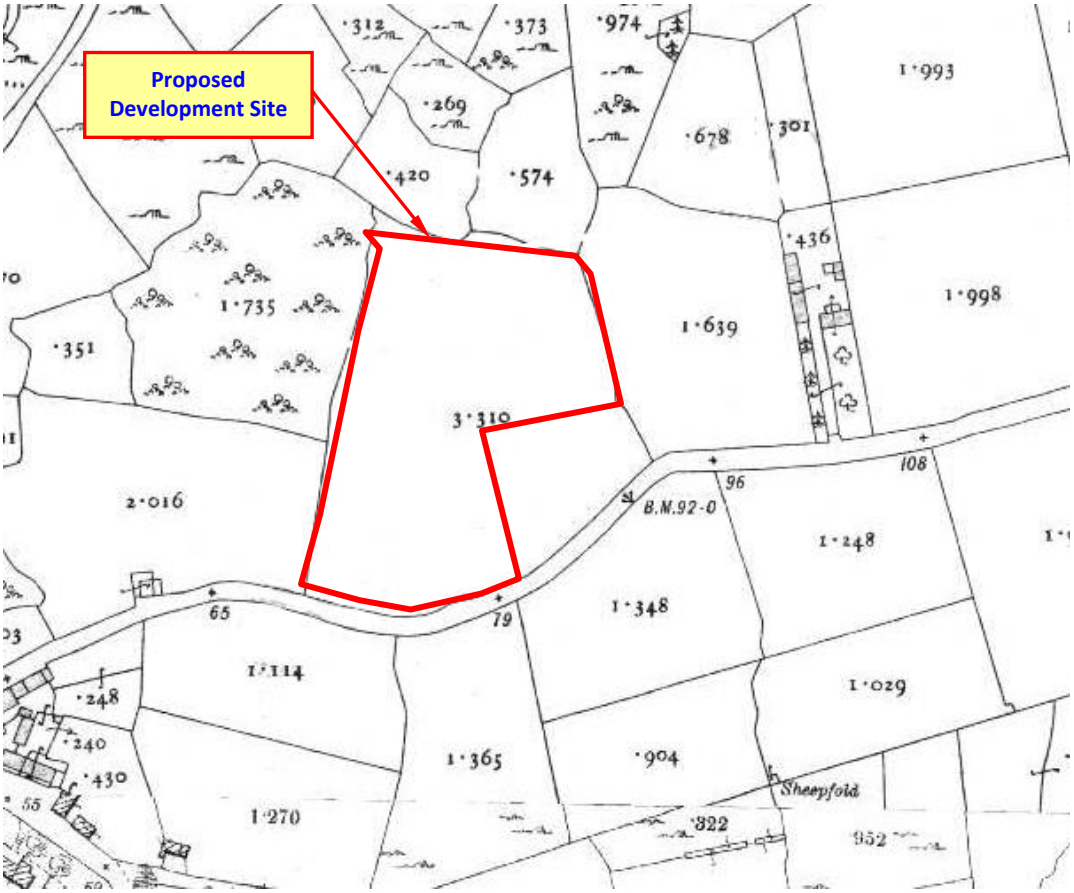


Figure 6 – Historic 25-Inch Mapping

The historic 6 inch and 25 inch mapping do not indicate any historical or anecdotal instances of flooding within or adjacent to the boundary of the proposed development site.

4.5 Geological Survey of Ireland Mapping

The alluvial deposit maps of the Geological Survey of Ireland (GSI) were consulted to assess the extent of any alluvial deposits in the vicinity of the proposed development site. Alluvial deposits can be an indicator of areas that have been subject to flooding in the recent geological past.

Figure 7 below illustrates the sub-soils mapping for the general area of the site.

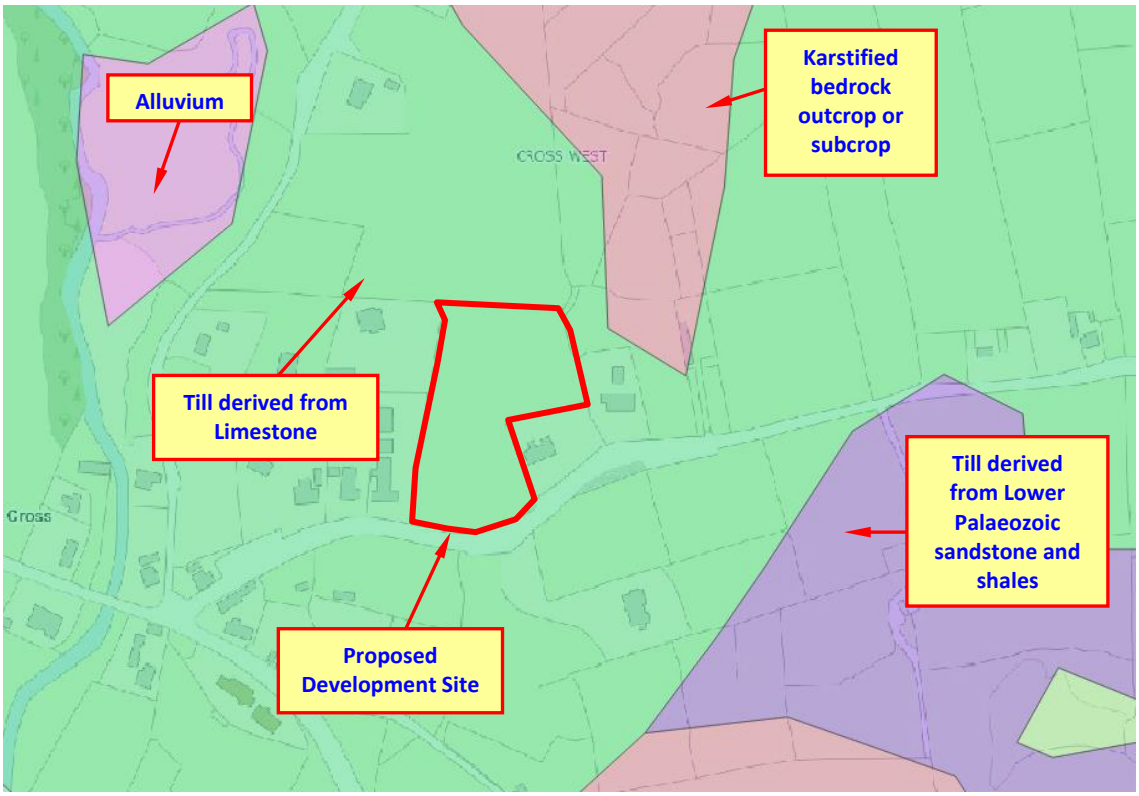


Figure 7 – GSI Subsoil Mapping

Figure 7 above indicates that the proposed development site is underlain by Till derived from Limestone. No alluvial deposits are mapped within or in the vicinity of the site boundary.

4.6 Western CFRAM Study

This area of County Mayo has not been included as an area of further assessment as part of the Western CFRAM study.

5 Screening assessment

The purpose of the scoping stage is to identify possible flood risks and to implement the necessary level of detail and assessment to assess these possible risks, and to ensure these can be adequately addressed in the flood risk assessment. The scoping exercise should also identify that sufficient quantitative information is already available to complete a flood risk assessment appropriate to the scale and nature of the development proposed.

The above screening assessment indicates that an area in the south west of the proposed development site may be impacted by a 1% AEP (1 in 100 year) and 0.1% AEP (1 in 1000 year) pluvial and/or groundwater flood event. Anecdotal evidence collected from local land owners also indicates a limited section in the south western corner of the site floods. The screening assessment indicates that the site is not at risk of primary and direct fluvial flooding.

In consideration of the information collated as part of the screening exercise, and the availability of other information and data specific to the proposed development site, it is considered that sufficient quantitative information to complete an appropriate flood risk assessment for the proposed development site can be derived from the information collated as part of the screening exercise alone.

The specific flood risk to and from the proposed development site is assessed in the subsequent 'Assessing Flood Risk' stage of this study report.

6 Assessing Flood Risk

The following sections present an analysis and assessment of the overland flow paths and potential pluvial flood risk to and from the proposed development site. In addition, potential groundwater flood risk to the development site is also assessed.

6.1 Topographic Survey and Mapping

In order to assist in the assessment of any potential flooding in the general area of the proposed development site, topographical survey information was utilised to develop a Digital Terrain Model (DTM) of the proposed development site area. The contour mapping and DTM developed for the area is illustrated in *Figure 11 and Figure 12* below.

Figure 11 – Contour mapping (0.5m contours)

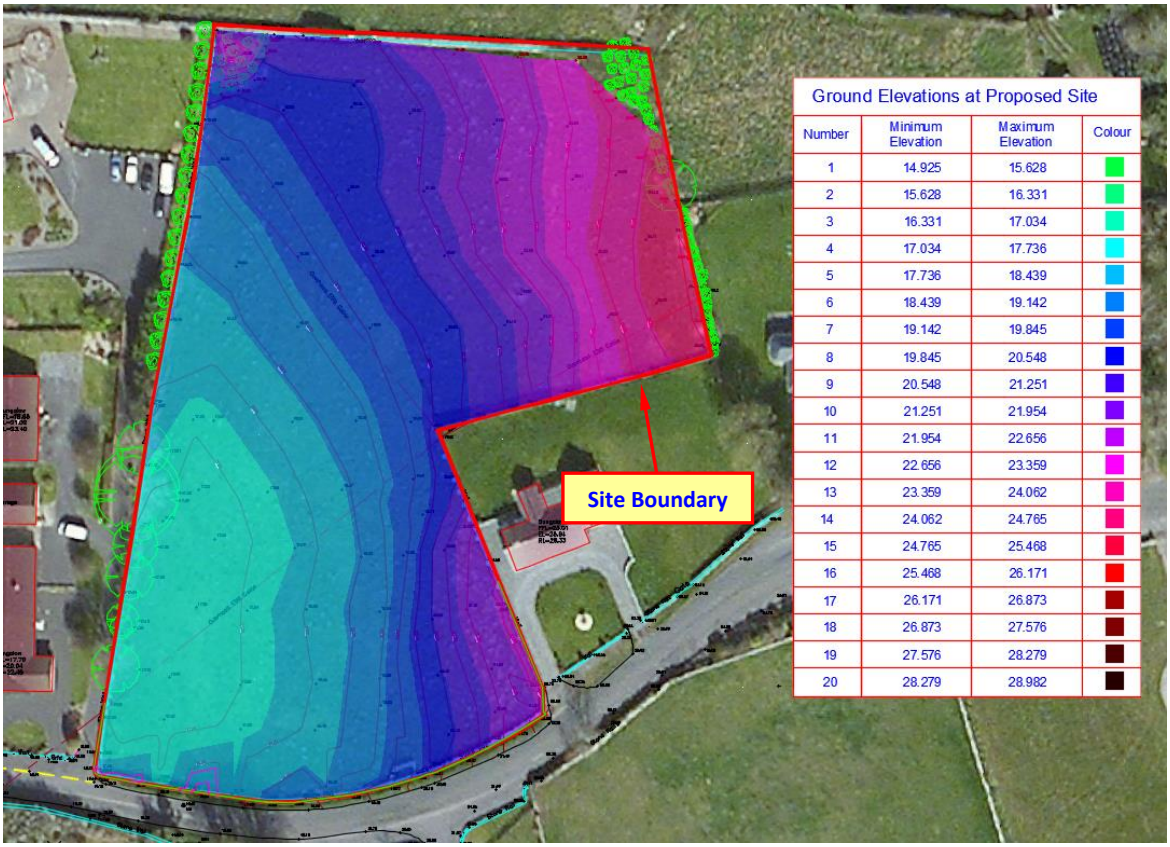


Figure 12 – DTM Mapping

6.2 Assessment of Pluvial Flood Risk

The OPW PFRA map (*Figure 3* above) indicates an area of indicative pluvial flooding located within the boundary of the proposed development site. The PFRA pluvial flood maps are indicative maps only and were developed using a low-resolution DTM suitable for a regional spatial analysis as opposed to a site specific analysis.

The pluvial flooding regime and overland flow paths in the vicinity of the site were assessed and examined by a hydrological engineer from IE Consulting. The purpose of the site assessment works was to obtain a greater understanding of the potential pluvial flood mechanisms at and in the vicinity of the site, to assess the potential for predictive pluvial flooding in the area to impact the proposed development site and the surrounding lands and the effect that the proposed development may or may not have on the hydrological regime of the area.

As the OPW PFRA maps are indicative only a more accurate site specific analysis is required.

6.3 2D Surface Water Model

A 2D Surface Water Runoff Model was developed to provide a more accurate determination of pluvial flood risk to the site by assessing surface water runoff characteristics over a significant precipitation event, determine areas where surface water ponding and flooding may occur and to determine the depth and volume of any pluvial flooding within the area of the proposed development site.

The 2D hydraulic surface water model developed is based on an appropriate computer software package that utilises a detailed Digital Terrain Model (DTM) of the site area and surrounding lands and specific extreme rainfall data for the area obtained from Met Éireann, (refer to *Appendix B*).

6.3.1 Surface Water Model Extent

The extent of the surface water run-off modelled area is illustrated in *Figure 13* below:-

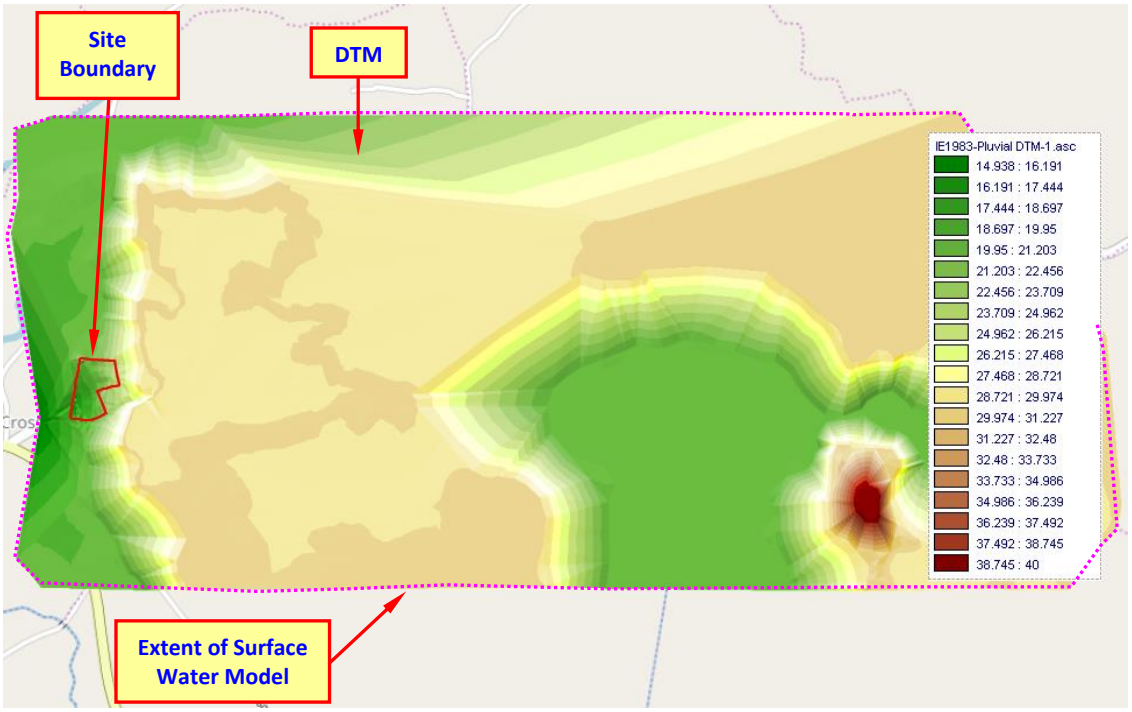


Figure 13 – Surface Water Model Extent

The surface water modelled area illustrated above includes the topographical catchment area that may be expected to drain towards the area of the proposed development site. The catchment area is approximately 272 hectares and was delineated from a topographical survey derived Digital Terrain Model (DTM) and OSI 1:50,000 scale Discovery Series contour mapping.

6.3.2 Surface Water Runoff Model Selection

A number of computer based hydraulic surface water runoff models are available, which analyse and predict pluvial surface water flooding, including surface water velocities, flood depth and flood volume. For this particular assessment the Flood Modeller 2D (formally known as ISIS) computer model, developed by CH2M Hill, was employed.

The computational engine of the Flood Modeller 2D surface water model is based on a set of rules to simulate spreading of surface waters and flood waters over a given land surface area. The model relies on the data provided to it as a detailed DTM or DTM of the study area to estimate the response that the area will produce upon receiving a certain amount of water as input.

The Flood Modeller 2D surface water model inundation method routes water over the study area through a series of depressions. These depressions can fill with water either from sources (e.g. rainfall) or by spilling in from neighbouring depressions.

A depression is defined in terms of its lowest point, and all water with a source within that depression will drain into that point.

To run the Flood Modeller 2D surface water model, a description of the land surface in terms of these depressions is required, which is generated by a pre-processing stage. The following information is required for this:

- A map giving depression ID for each DTM cell;

For each depression:-

- A stage vs. area relationship
- A stage vs. volume relationship
- A list of neighbouring depressions
- The lowest elevation at which water can flow between the depression and its neighbour

In addition, the model requires:-

- Roughness estimates of the land surface (Manning's 'n' values)
- Runoff co-efficients for differing land surfaces

The following section describes the methods utilised within Flood Modeller 2D surface water model for generating the required model input datasets.

DTM Preparation

The DTM/DTM code works on the assumption that the natural surface has variation in elevation from cell to cell. Thus, the code will have difficulties in working on rather flat surfaces. This is avoided by modifying the DTM / DTM using the formula below:

$$z_{ij} = (1-\alpha)z_{ij} + \frac{\alpha}{9}\sum_{3x3\ Window} z_{ij}$$

The averaging window distorts the flat surfaces slightly so that points are not on the same elevation. The parameter defining the scale of distortion is provided as the filter parameter.

Identify Depression Low Points

This step marks the start of depression delineation by identifying points that have neighbouring points all at a higher elevation.

Find Surface Water Drainage Directions

For each cell of the DTM, a drainage direction is then determined. This can be any of eight possible directions, i.e. into any of the surrounding cells (including diagonal directions), namely travelling in directions: north, south, east, west, north-east, north-west, south-east or south-west. The selected direction is based on the highest gradient with neighbouring cells.

Determine Depression ID Map

As ultimately, water will follow these drainage directions towards a low point, this is used to define the initial 'depression area' of each low point.

Merge Neighbouring Depressions

Many of the above generated depressions will be separated by a barrier of small elevation difference, which in reality might not block the exchange of water to a large extent and thus, it would be easier (computationally) to merge these depressions. This minimum elevation difference (as illustrated in *Figure 14* below) is specified as the 'merge parameter'.

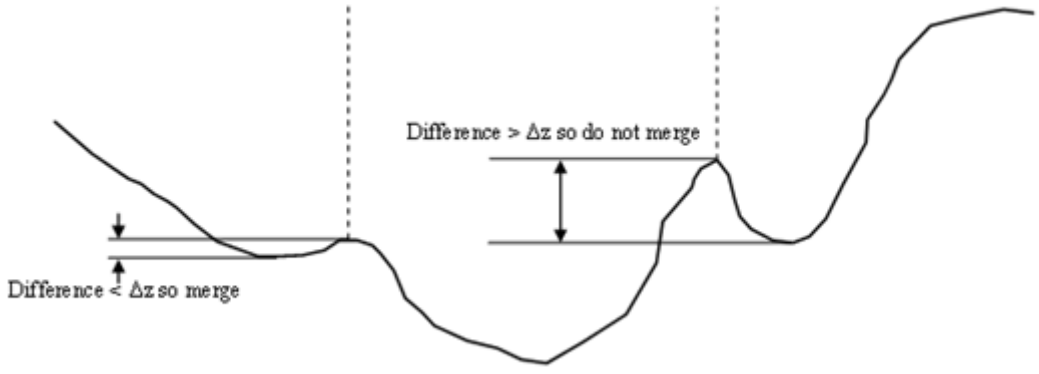


Figure 14 – Merge Neighbour depressions

Compile Stage-Area-Volume Tables

This penultimate step uses the catchment boundaries set in the above step to find each depression's stage-area-volume relationship along with the number of neighbours it has. The discretisation parameter sets the minimum distance between recorded stages for the relationship.

Write Results to File

The depression ID grid is written as an ASCII raster file. The depression information is written as separate text files for the depression neighbours, stages, areas, volumes and connection levels.

6.3.3 Derived Digital Terrain Model (DTM)

The DTM mapping was developed using a topographical survey of the site and surrounding lands and OSI Discovery Series contour mapping using a specialist computer software package employed by IE Consulting. The DTM and contour mapping developed for the area of the proposed development site is illustrated in *Figure 15* and *Figure 16* below.

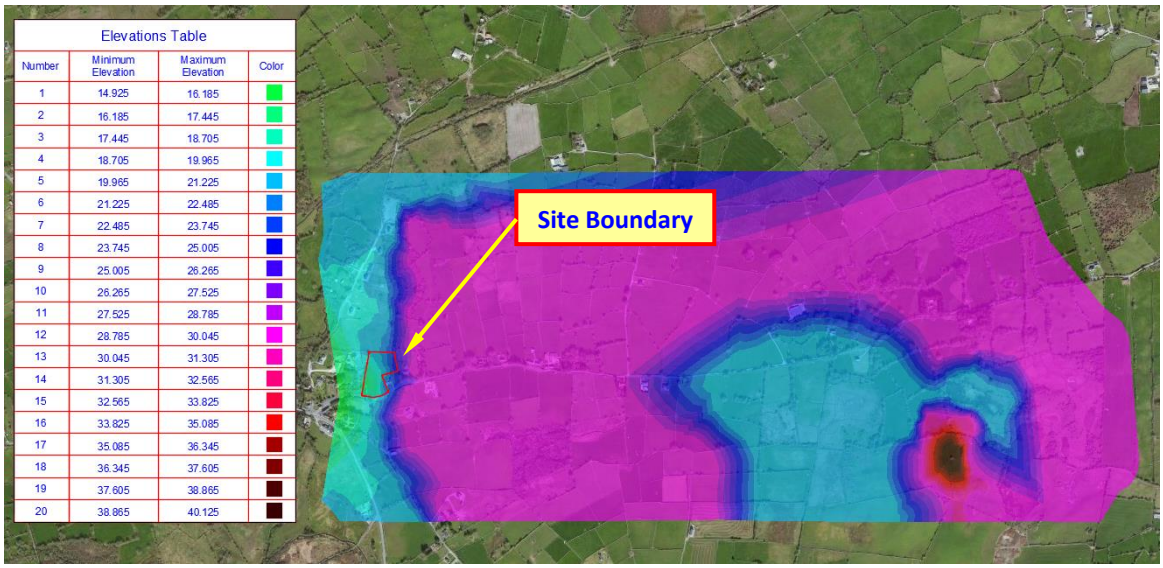


Figure 15 – DTM

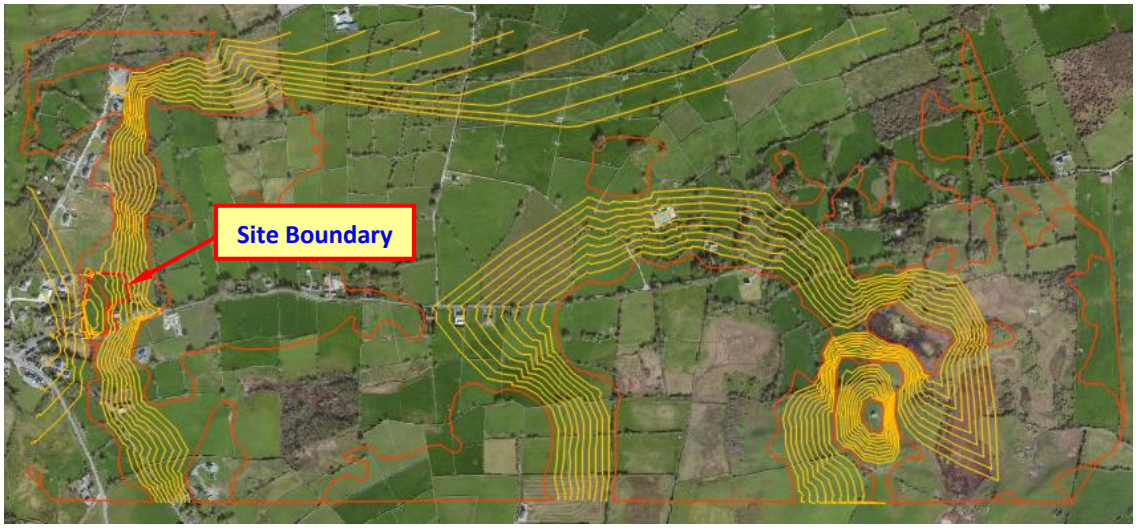


Figure 16 – Contour Mapping

6.3.4 Roughness

Roughness values are used to allow the model to determine the nature of the flood flows across the surface of the ground as surface water will flow more slowly over vegetated areas in comparison to hard-standing areas. Manning's roughness coefficients for various surfaces are based on a detailed walkover survey of the modelled area and are standardised throughout the model. A global roughness value of 0.035 was employed, reflecting mainly long grassland areas.

6.3.5 Surface Water Model Build

A model was developed based on a resolution cell size of 4m x 4m. The surface water model was run in Flood Modeller Pro by applying a time series rainfall event over the modelled area as illustrated in *Figure 15* above.

The time series rainfall event utilised was the 1 in 100 year event, which was applied for a duration of 5 minutes to 6 hours. The rural loss model methodology described in the OPW 'National Pluvial Screening Project Report – November 2010' was implemented into the model. An additional 10% was including accounting for the effects of potential future climate change.

Site specific Intensity-Duration-Frequency (IDF) rainfall data was obtained from Met Éireann and utilising the OPW Flood Studies Update Rainfall DDF module. A copy of the IDF rainfall data for the area is included in *Appendix B*.

The surface water model was based on a 'bare earth' derived Digital Terrain Model (DTM), with vegetation digitally removed.

6.3.6 *Model Results*

The extents of the surface water modelling results utilising the topographical survey data were thematically mapped in GIS (Flood Modeller 2D Mapper) over a range of resultant surface water depths according to the following minimum and maximum depth classifications as illustrated in *Figure 17* below:-

Figure 17 – 2D Modelled Pluvial Flood Extents and Depths

As illustrated in *Figure 17* above, an area of pluvial flooding is predicted to occur within the boundary of the proposed development site with maximum predicted depths of 0.4m. The pluvial flood extent illustrated above is based on the results of a 2D surface water runoff analayis and is considered to present an accurate representation of the potential pluvial flood risk to the proposed development site. The pluvial flood extents illustrated above are similar to the indicative pluvial flood extents illustrated on the OPW PFRA flood map (*Figure 3* above).

6.4 Assessment of Potential Groundwater Flood Risk

As discussed in *Section 3.1* above, the lower ground within the south-west corner of the site is potentially at risk from groundwater flooding. Assessment of groundwater flooding requires detailed modelling and analysis. Therefore, for the sake of simplicity, this report examines the potential worst case scenario.

For this analysis it was assumed that the bounding wall along the western and southern boundary of the site is not porous. Utilising the hydrology module of an appropriate 3D software package, the site was examined to find the maximum depth of water that may be contained in the south-west corner of the site before the bounding wall is overtopped and flood waters spill out onto the adjacent road. This analysis indicates a maximum water level of 18.53mOD (Malin). *Drawing Number IE1983-002-A, Appendix A* indicates the maximum predicted groundwater extents within the boundary of the proposed development site.

The possible depth of groundwater floodwaters is illustrated on the *Drawing Number IE1983-003-A, Appendix A* via a graphical representation and via tables of predicted floodwater depths. The floodwater depth table presents floodwater depths over 20 separate elevation ranges of the possible inundated areas within the boundary of the proposed development site.

By applying a Triangulated Irregular Network (TIN) analysis to the existing DTM surface and to the predicted maximum groundwater flood level, the volume of flood waters that may inundate the south-west corner of the proposed developed site was calculated.

The potential maximum and mean floodwater depths and flood volumes that may inundate the site are summarised in *Table 2* below.

	Maximum Groundwater Flood Event
Maximum Flood Depth (m)	**1.696**
Mean Flood Depth (m)	**0.952**
Total Flood Water Volume (m^3)	**3,740.46**

Table 2 – Flood Depth and Inundation Volumes

This analysis presented above and the extent of ground water flooding illustrated on *Drawing Number IE1983-002-A, Appendix A* illustrates a potential worse case scenario. In reality, the extent of ground water flooding that may occur at the proposed development site is expected to be less than that indicated on the above drawing.

6.5 *Assessment of Secondary Flood Risk*

Pluvial - Urban Drainage/Water Supply Infrastructure

Secondary or residual pluvial flood risk can also be attributed to a potential surcharge of the urban drainage network and /or damage to the water supply infrastructure in the general vicinity of the site. An urban drainage infrastructure map was obtained from Irish Water, an extract of which is illustrated in *Figure 18* below. The following infrastructure has been identified in the vicinity of the proposed development site:

- A mains water supply running through the south of the proposed development site.
- A manhole on the L1614 road, next to the southern boundary of the proposed site.

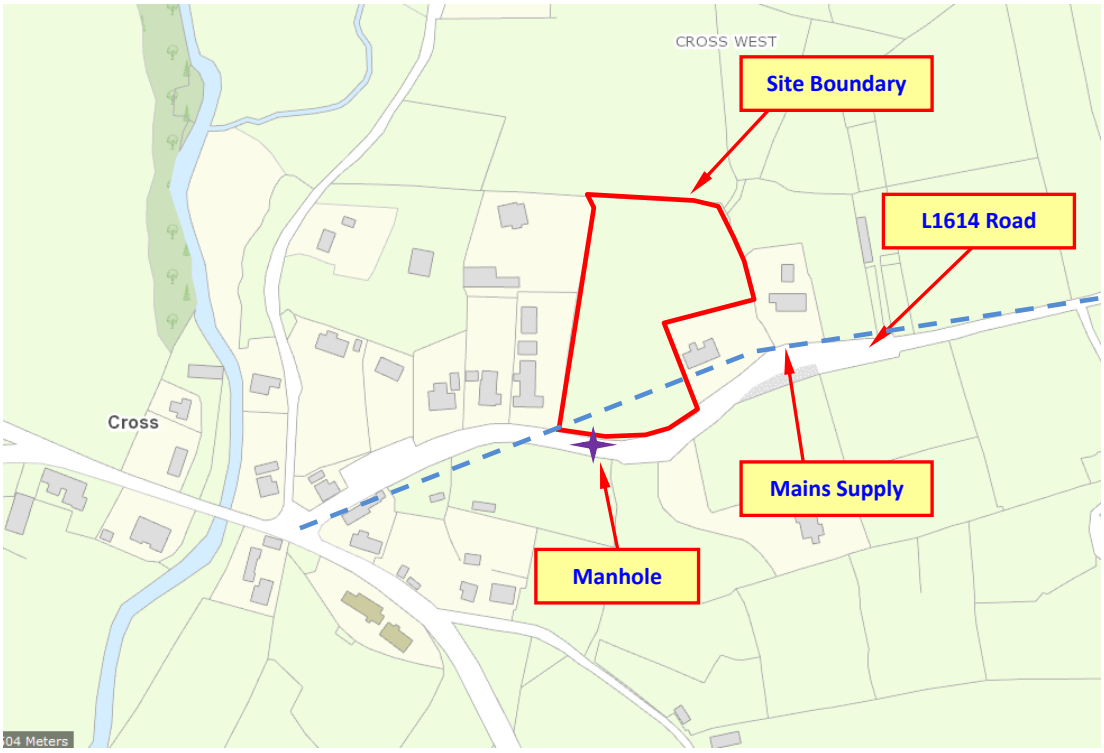


Figure 19 – Urban Drainage Records – Irish Water

It is predicted that any flooding due to a surcharge of the manholes located next to the southern boundary of the site would likely cause pluvial surcharge waters to spill out onto the L1614 Road and flow into the proposed development site, as illustrated in *Figure 20* below.

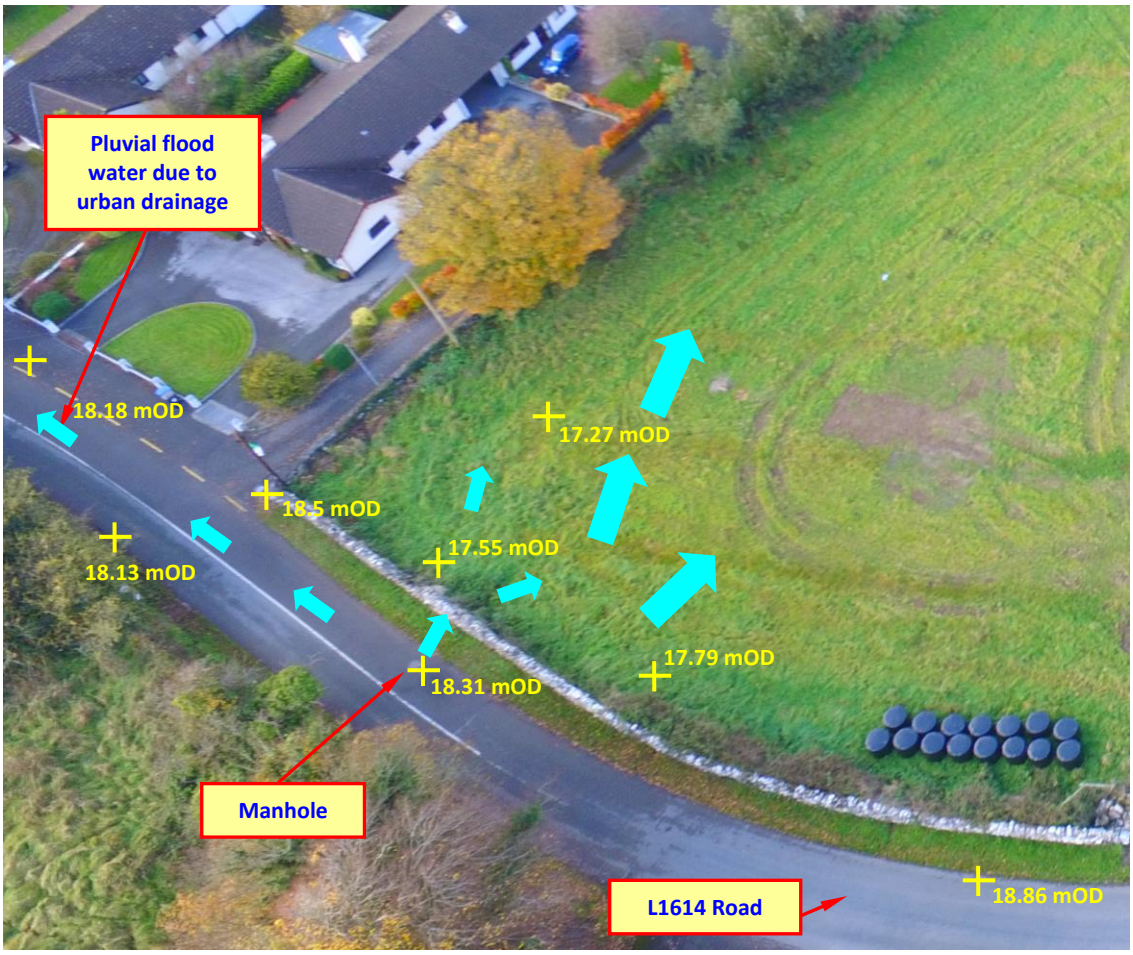


Figure 20 – Overland flow paths

Based on the topography of the site and surrounding land, secondary or residual pluvial surcharge waters are anticipated to first enter the site at the southern boundary. However, the maximum extent which could inundate the site is smaller to that of the groundwater flooding extent, as illustrated on *Drawing Number IE1983-003-A, Appendix A.* Once the surcharge waters reach the level of the L1614 road to the south (18.13m OD) any surcharge waters will be conveyed along the road on a north-westerly directly.

The probability of the sewer and/ or water main of failing or significantly surcharging is generally considered to be **Low**. However, in the unlikely event that the system does fail or surcharge the risk to the site from surcharged pluvial flood water is considered to be **Medium**.

7 Proposed Development in the Context of the Guidelines

In the context of the *'Planning System and Flood Risk Management Guidelines, DOEHLG, 2009'* three flood zones are designated in consideration of flood risk to a particular development site.

Flood Zone 'A' – where the probability of flooding from rivers and watercourses is the highest (greater than 1% or 1 in 100 year for river and watercourse flooding and 0.5% or 1 on 200 for coastal or tidal flooding).

Flood Zone 'B' – where the probability of flooding from rivers and watercourses is moderate (between 0.1% or 1 in 1000 year for river and watercourse flooding and 0.5% or 1 on 200 for coastal or tidal flooding).

Flood Zone 'C' – where the probability of flooding from rivers and watercourses is low or negligible (less than 0.1% or 1 in 1000 year for both river and watercourse and coastal flooding). *Flood Zone 'C'* covers all areas that are not in *Zones 'A'* or '*B*'.

The *'Planning System and Flood Risk Management Guidelines'* list the planning implications for each flood zone, as summarised below:-

Zone A – High Probability of Flooding. Most types of development would not be considered in this zone unless the Justification Test is satisfied. Development in this zone should be only be considered in exceptional circumstances, such as in city and town centres, or in the case of essential infrastructure that cannot be located elsewhere, and where the *'Planning System and Flood Risk Management Guidelines'* justification test has been applied. Only water-compatible development, such as docks and marinas, dockside activities that require a waterside location, amenity open space and outdoor sports and reaction would be considered appropriate in this zone.

Zone B – Moderate Probability of Flooding. Highly vulnerable development such as hospitals, residential care homes, Garda, fire and ambulance stations, dwelling houses, strategic transport and utilities infrastructure would generally be considered inappropriate in this zone, unless the requirements of the justification test can be met. Less vulnerable development such as retail, commercial and industrial uses and recreational facilities might be considered appropriate in this zone. In general however, less vulnerable development should only be considered in this zone if adequate lands or sites are not available in *Zone 'C'* and subject to a flood risk assessment to the appropriate level of detail to demonstrate that flood risk to the development can be adequately managed and that development in this zone will not adversely affect adjacent lands and properties.

Zone C – Low to Negligible Probability of Flooding. Development in this zone is appropriate from a flood risk perspective. Developments in this zone are generally not considered at risk of fluvial flooding and would not adversely affect adjacent lands and properties from a flood risk perspective.

The assessment and analysis undertaken as part of this Site Specific Flood Risk Assessment (SSFRA) indicates that an area of the site is potentially at risk of pluvial and groundwater flooding, with groundwater flooding presenting the most significant potential flood risk to the site. The maximum potential, or worst case scenario, groundwater flood extents is illustrated on *Drawing Number IE1983-002-A, Appendix*. For the purposes of this SSFRA the area of the site indicated as subject to potential ground water flooding is considered to fall within Flood Zone 'A'.

In terms of the development potential of the site it is recommended that any proposed development is limited to areas of the site beyond the maximum potential groundwater flood extent as illustrated on *Drawing Number IE1983-002-A, Appendix* – i.e. areas of the site that fall within Flood Zone 'C'.

The area of the site that falls within Flood Zone 'A' may be utilised as green open area as part of any development proposals, however it is recommended that no significant infilling or ground level raising is undertaken within this area.

In the context of the *'Planning System and Flood Risk Management Guidelines, DOEHLG, 2009'*, and in consideration that development proposals for the site will be limited to Flood Zone 'C', development as proposed is not subject to the requirements of the Justification Test.

8 Summary Conclusions and Recommendations

In consideration of the findings of this site specific flood risk assessment and analysis the following conclusions are made in respect of the proposed development site:-

- *A Site Specific Flood Risk (SSFRA) assessment, appropriate to the type and scale of development proposed, and in accordance with 'The Planning System and Flood Risk Management Guidelines – DoEHLG-2009' has been undertaken.*
- *The proposed development site has been screened, scoped and assessed for flood risk in accordance with the above guidelines.*
- *The primary potential flood risk to the development site can be attributed to a pluvial flood event from overland flow and groundwater flooding.*
- *2-D surface water modelling has been undertaken in consideration of an extreme 1 in 100 year rainfall event of duration 6 hours including climate change. The surface water modelling undertaken as part of this flood risk assessment examined the pluvial flood risk to the site in consideration of the ground levels in the site.*
- *A detailed Digital Terrain Model (DTM) has been developed for the site. Utilizing the DTM, an appropriate 2D software package and OPW pluvial analysis methodology, the pluvial flood extents within the site were delineated.*
- *The model results of the 2D surface water modelling indicates that a portion of the south western are of the site may be susceptible to pluvial flood inundation, as illustrated in Figure 17.*
- *Primary flood risk to the site can also be attributed to groundwater flooding within the site. Assessment of groundwater flooding requires detailed modelling and analysis. Therefore, for the sake of simplicity, this report examined the potential worst case scenario.*
- *As illustrated on Drawing Number IE1983-002-A, Appendix A, on a worst case scenario an area of the site is potentially at risk of groundwater flooding.*
- *In terms of the development potential of the site it is recommended that any proposed development is limited to areas of the site beyond the maximum potential groundwater flood extent as illustrated on Drawing Number IE1983-002-A, Appendix – i.e. areas of the site that fall within Flood Zone 'C'.*

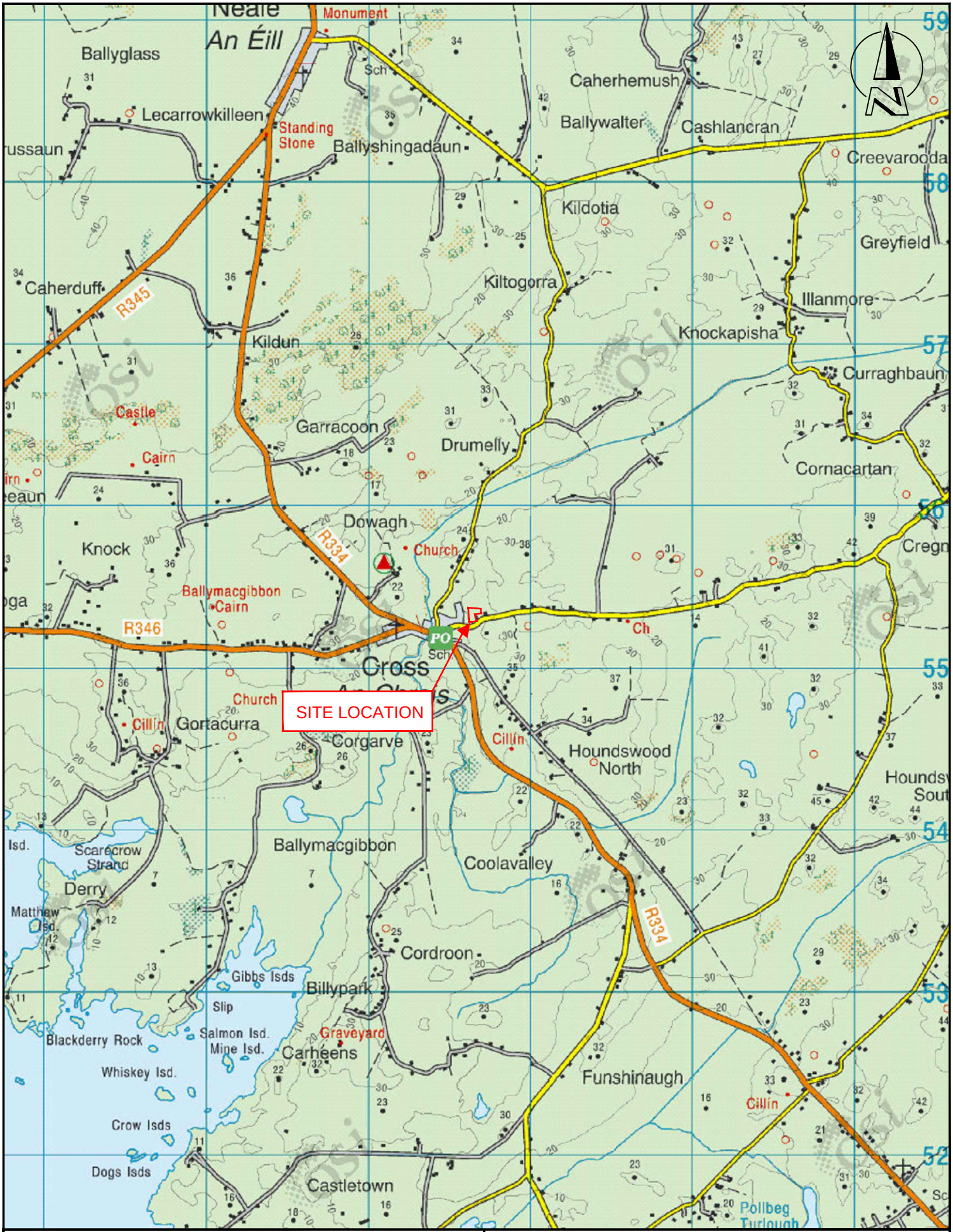
- *It is recommended that any development of the site includes an appropriate stormwater management system that shall limited stormwater discharge from the site to existing greenfield runoff rates and.*
- *It is recommended that any proposed finished road levels and finished floor levels be constructed to a minimum level of 0.15m and 0.30m respectively above the maximum worst case scenario groundwater flood level of 18.53m OD.*
- *In consideration that any development proposals for the site will be limited to Flood Zone 'C', development of the site is not expected to result in an adverse impact to the existing hydrological or groundwater regime of the area and is therefore considered to be appropriate from a flood risk perspective.*

APPENDIX A

Drawing Number IE1983-001-A

Drawing Number IE1983-002-A

Drawing Number IE1983-003-A



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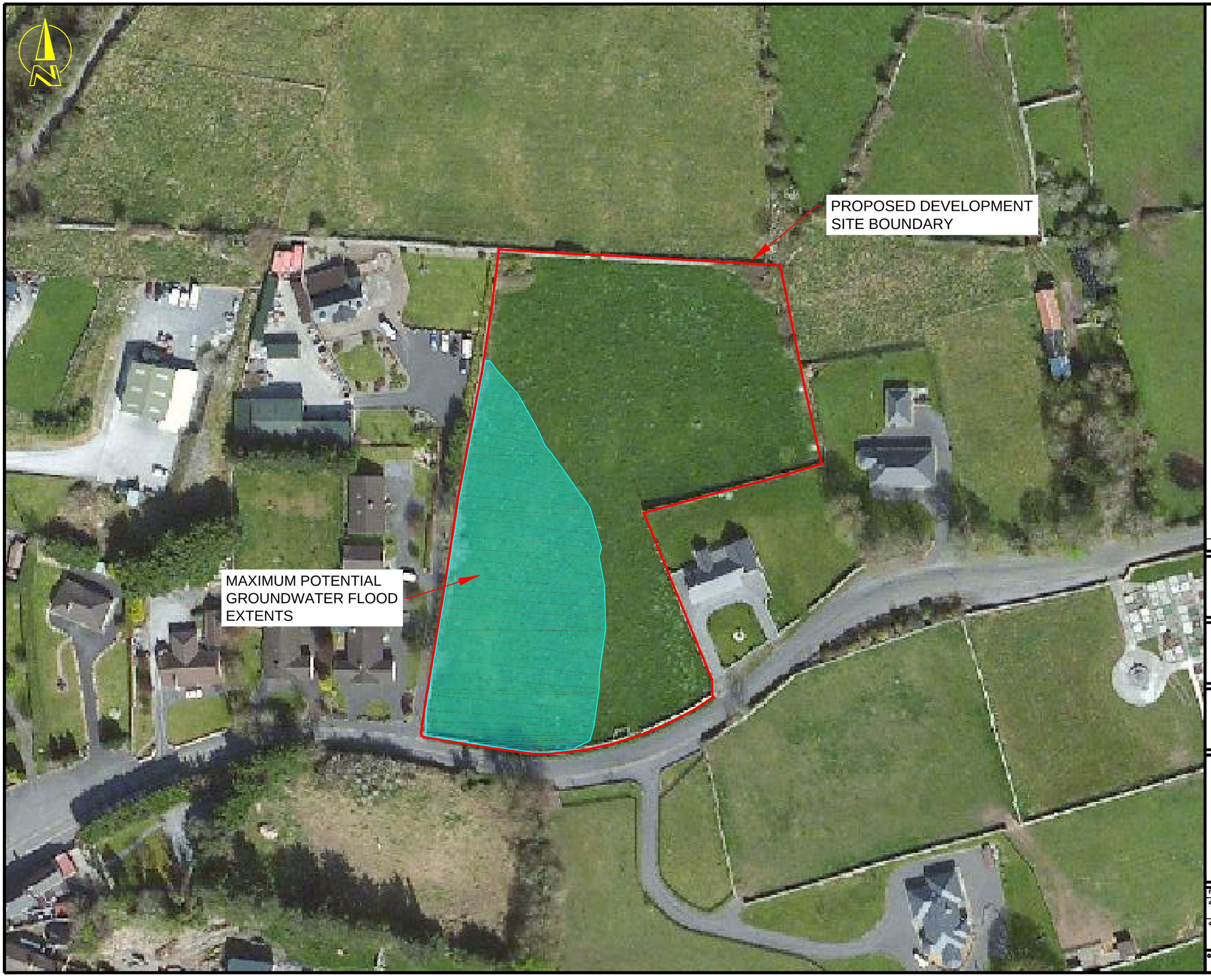
Project Title:	SITE SPECIFIC FLOOD RISK ASSESSMENT
Project Address:	CROSS WEST, CO. MAYO
Client:	PRIORITY GEOTECHNICAL LTD.
Drg. Title:	SITE LOCATION MAP

Dwg.Scale:	Date:	Dwg.No:	Job No:	Revision:	Dwg.By:
1:50,000	14-11-19	IE1983-001	IE1983	A	MOF



LEGEND

SITE BOUNDARY

MAXIMUM POTENTIAL GROUNDWATER FLOOD EXTENTS

rev.	date	amendment	drn	ckd
A	13.11.19	PLANNING	LMc	PMS

PROPOSED DEVELOPMENT AT
CROSS WEST,
CO. MAYO

SITE SPECIFIC FLOOD
RISK ASSESSMENT

MAXIMUM POTENTIAL
GROUNDWATER FLOOD EXTENTS

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CARLOW

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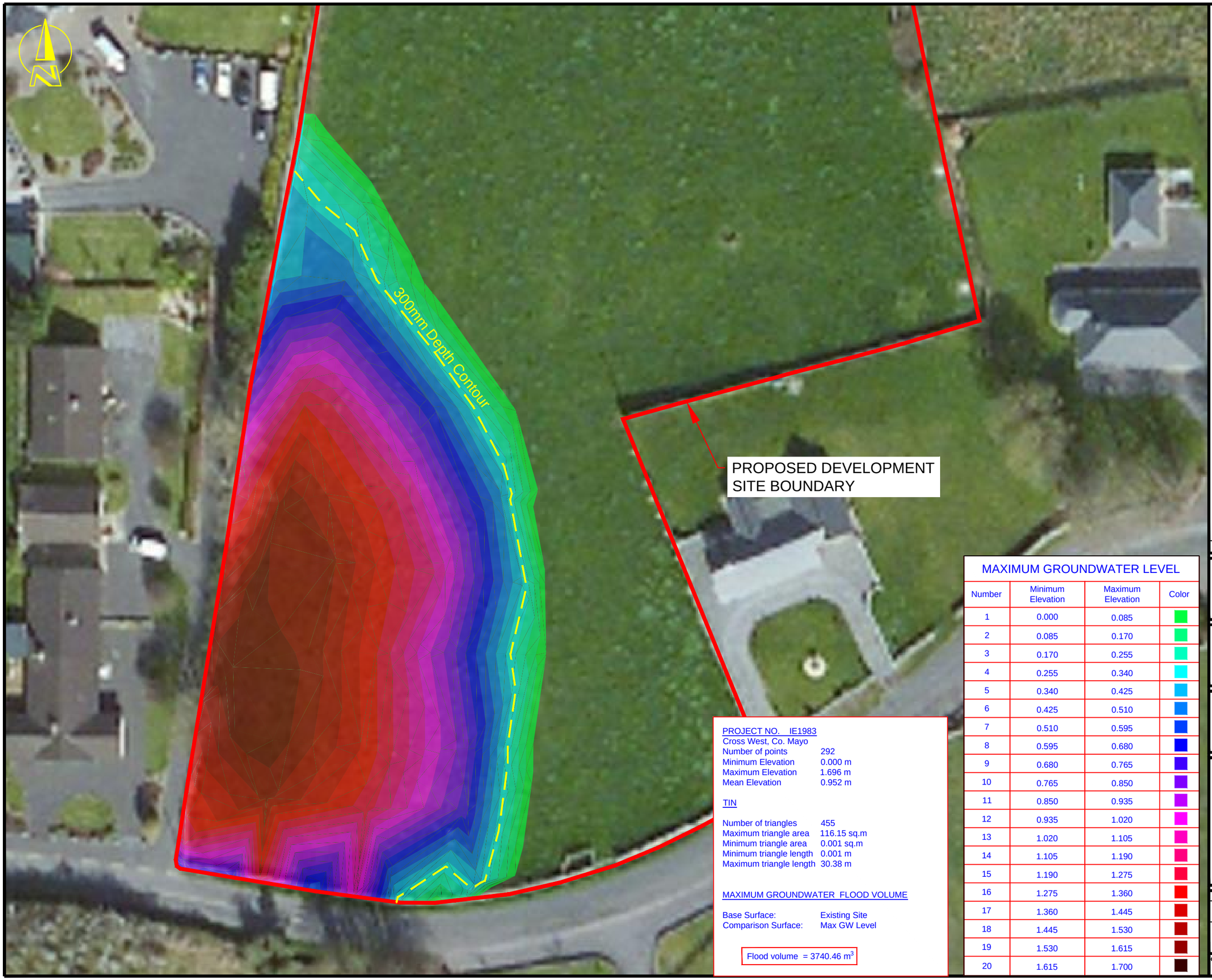
file location: N:\IE1983\DRAWINGS		scale: 1:1,000 @ A3	
drawing status: PLANNING		datum: MALIN	
		drawn: LMC	
drawing no. IE1983-002	rev A	checked: PMS	
		approved: PMS	
		date: 13.11.2019	



LEGEND

SITE BOUNDARY

rev.	date	amendment	drn	ckd
A	13.11.19	PLANNING	LMc	PMS

PROPOSED DEVELOPMENT AT
CROSS WEST,
CO. MAYO

SITE SPECIFIC FLOOD
RISK ASSESSMENT

MAXIMUM POTENTIAL GROUNDWATER
FLOOD VOLUME & DEPTH ANALYSIS

PROJECT NO. IE1983
Cross West, Co. Mayo

Number of points	292
Minimum Elevation	0.000 m
Maximum Elevation	1.696 m
Mean Elevation	0.952 m

TIN

Number of triangles	455
Maximum triangle area	116.15 sq.m
Minimum triangle area	0.001 sq.m
Minimum triangle length	0.001 m
Maximum triangle length	30.38 m

MAXIMUM GROUNDWATER FLOOD VOLUME

Base Surface:	Existing Site
Comparison Surface:	Max GW Level

Flood volume = 3740.46 m^3

MAXIMUM GROUNDWATER LEVEL

Number	Minimum Elevation	Maximum Elevation	Color
1	0.000	0.085	
2	0.085	0.170	
3	0.170	0.255	
4	0.255	0.340	
5	0.340	0.425	
6	0.425	0.510	
7	0.510	0.595	
8	0.595	0.680	
9	0.680	0.765	
10	0.765	0.850	
11	0.850	0.935	
12	0.935	1.020	
13	1.020	1.105	
14	1.105	1.190	
15	1.190	1.275	
16	1.275	1.360	
17	1.360	1.445	
18	1.445	1.530	
19	1.530	1.615	
20	1.615	1.700	

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file location:	N:\IE1983\DRAWINGS	scale:	1:500 @ A3
drawing status:	PLANNING	datum:	MALIN
		drawn:	LMC
drawing no.	rev	checked:	PMS
IE1983-003	A	approved:	PMS
		date:	13.11.2019

APPENDIX B

MET ÉIREANN D-D-F TABLES

Met Eireann

Return Period Rainfall Depths for sliding Durations

Irish Grid: Easting: 119628, Northing: 255328,

	Interval		Years											
DURATION	6months,	1year,	2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	150,	200,	250,	500,
5 mins	2.8,	3.9,	4.5,	5.3,	5.9,	6.4,	7.9,	9.6,	10.7,	12.2,	13.6,	14.7,	16.3,	17.6,	18.6,	N/A ,
10 mins	3.9,	5.4,	6.2,	7.4,	8.3,	8.9,	11.0,	13.3,	14.9,	17.0,	18.9,	20.4,	22.7,	24.5,	25.9,	N/A ,
15 mins	4.5,	6.3,	7.3,	8.7,	9.7,	10.5,	12.9,	15.7,	17.5,	20.0,	22.3,	24.0,	26.7,	28.8,	30.5,	N/A ,
30 mins	6.1,	8.3,	9.5,	11.2,	12.4,	13.3,	16.2,	19.4,	21.5,	24.4,	27.0,	29.0,	32.0,	34.3,	36.2,	N/A ,
1 hours	8.1,	10.9,	12.3,	14.4,	15.8,	16.8,	20.2,	24.0,	26.4,	29.7,	32.7,	34.9,	38.3,	40.9,	43.0,	N/A ,
2 hours	10.8,	14.2,	15.9,	18.4,	20.1,	21.4,	25.3,	29.7,	32.5,	36.3,	39.6,	42.1,	45.9,	48.8,	51.1,	N/A ,
3 hours	12.8,	16.6,	18.5,	21.3,	23.2,	24.5,	28.9,	33.6,	36.6,	40.7,	44.2,	46.9,	51.0,	54.0,	56.5,	N/A ,
4 hours	14.4,	18.6,	20.7,	23.7,	25.6,	27.1,	31.7,	36.7,	39.9,	44.2,	47.9,	50.7,	54.9,	58.1,	60.7,	N/A ,
6 hours	17.1,	21.7,	24.1,	27.4,	29.5,	31.1,	36.2,	41.6,	45.0,	49.6,	53.6,	56.6,	61.0,	64.4,	67.1,	N/A ,
9 hours	20.3,	25.4,	28.0,	31.7,	34.0,	35.8,	41.3,	47.1,	50.8,	55.7,	59.9,	63.1,	67.8,	71.4,	74.2,	N/A ,
12 hours	22.8,	28.4,	31.2,	35.1,	37.6,	39.5,	45.3,	51.5,	55.3,	60.5,	64.9,	68.2,	73.1,	76.8,	79.7,	N/A ,
18 hours	27.1,	33.3,	36.3,	40.6,	43.3,	45.4,	51.7,	58.3,	62.4,	67.9,	72.5,	76.0,	81.2,	85.1,	88.2,	N/A ,
24 hours	30.5,	37.2,	40.5,	45.0,	47.9,	50.1,	56.8,	63.7,	68.0,	73.7,	78.5,	82.1,	87.5,	91.5,	94.7,	105.4,
2 days	38.9,	46.6,	50.3,	55.4,	58.7,	61.1,	68.5,	76.0,	80.7,	86.8,	92.0,	95.8,	101.5,	105.7,	109.1,	120.2,
3 days	46.2,	54.7,	58.8,	64.5,	68.0,	70.6,	78.6,	86.8,	91.8,	98.4,	103.9,	108.0,	114.0,	118.4,	122.0,	133.7,
4 days	52.8,	62.2,	66.6,	72.7,	76.5,	79.3,	87.9,	96.6,	101.9,	108.9,	114.7,	119.0,	125.4,	130.0,	133.8,	146.0,
6 days	65.0,	75.7,	80.8,	87.7,	92.0,	95.2,	104.8,	114.4,	120.3,	128.0,	134.4,	139.1,	146.0,	151.1,	155.2,	168.5,
8 days	76.4,	88.3,	93.9,	101.5,	106.2,	109.7,	120.2,	130.7,	137.1,	145.5,	152.4,	157.4,	164.8,	170.3,	174.7,	188.9,
10 days	87.1,	100.2,	106.2,	114.5,	119.6,	123.4,	134.7,	146.0,	152.9,	161.8,	169.2,	174.6,	182.5,	188.3,	192.9,	207.9,
12 days	97.5,	111.6,	118.1,	127.0,	132.5,	136.5,	148.6,	160.6,	167.9,	177.4,	185.2,	190.9,	199.2,	205.3,	210.2,	226.0,
16 days	117.6,	133.5,	140.9,	150.8,	157.0,	161.5,	175.0,	188.4,	196.4,	206.8,	215.4,	221.7,	230.8,	237.5,	242.8,	260.1,
20 days	136.9,	154.5,	162.7,	173.7,	180.4,	185.4,	200.1,	214.7,	223.4,	234.8,	244.1,	250.8,	260.7,	267.9,	273.6,	292.1,
25 days	160.4,	180.1,	189.1,	201.3,	208.7,	214.2,	230.4,	246.3,	255.9,	268.2,	278.3,	285.7,	296.4,	304.2,	310.3,	330.3,

NOTES:

N/A Data not available

These values are derived from a Depth Duration Frequency (DDF) Model

For details refer to:

'Fitzgerald D. L. (2007), Estimates of Point Rainfall Frequencies, Technical Note No. 61, Met Eireann, Dublin',
Available for download at www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies_TN61.pdf