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## **Appropriate Assessment Screening Report for Proposed Residential Development at Tinakilly, Rathnew, Co. Wicklow**

prepared for Ardale Construction Ltd.

on behalf of Keldrum Limited

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## Document Control

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This report has been prepared by Scott Cawley Ltd. in accordance with the particular instructions and requirements of our agreement with the Client, the project's budgetary and time constraints and in line with best industry standards. The methodology adopted and the sources of information used by Scott Cawley Ltd. in providing its services are outlined in this report. The scope of this report and the services are defined by these circumstances.

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The conclusions presented in this report represent Scott Cawley Ltd.'s best professional judgement based on review of site conditions observed during the site visit (if applicable) and the relevant information available at the time of writing. Scott Cawley Ltd. has used reasonable skill, care and diligence in compiling this report and no warranty is provided as to the report's accuracy.

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## 1 Introduction

- 1 This report, which contains information required for the competent authority (in this instance Wicklow County Council) to undertake a screening for Appropriate Assessment (AA), has been prepared by Scott Cawley Ltd. on behalf of the applicant, Keldrum Ltd. It provides information on, and assesses the potential for, the proposed development to impact on the Natura 2000 network (hereafter referred to as European sites)<sup>1</sup>. The proposed development consists of the construction of a large-scale residential development, including 352 no. residential units, parking for cars and bicycles, private, communal and public green spaces and access routes.
- 2 An AA is required if significant effects on European sites arising from a proposed development cannot be ruled out at the screening stage, either alone or in combination with other plans or projects. It is the responsibility of the competent authority to make a decision as to whether or not the proposed development is likely to have significant effects on European sites, either individually or in combination with other plans or projects.

For the reasons set out in detail in this AA Screening Report, a Stage Two **Appropriate Assessment of the proposed development is required in this instance** as it cannot be concluded, in view of best scientific knowledge and on the basis of objective information, that the proposed development, either individually or in combination with other plans or projects, will not have a significant effect on the following European site(s): **Wicklow Mountain SAC, The Murrough Wetlands SAC and The Murrough SPA.**

## 2 Methodology

### 2.1 Guidance

- 3 This Appropriate Assessment Screening Report has been prepared with regard to the following guidance documents, as relevant:
  - *OPR Practice Note PN01. Appropriate Assessment Screening for Development Management* (Office of the Planning Regulator, 2021);
  - *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities.* (Department of Environment, Heritage and Local Government, 2010 revision);
  - *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities.* Circular NPW 1/10 & PSSP 2/10;
  - *Assessment of Plans and Projects in Relation to Natura 2000 sites: Methodological Guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (European Commission, 2021);
  - *Communication from the Commission on the precautionary principle* (European Commission, 2000);
  - *Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC* (European Commission, 2019):and,

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<sup>1</sup> The Natura 2000 network is a European network of important ecological sites, as defined under Article 3 of the Habitats Directive 92/43/EEC, which comprises both special areas of conservation and special protection areas. Special conservation areas are sites hosting the natural habitat types listed in Annex I, and habitats of the species listed in Annex II, of the Habitats Directive, and are established under the Habitats Directive itself. Special protection areas are established under Article 4 of the Birds Directive 2009/147/EC for the protection of endangered species of wild birds. The aim of the network is to aid the long-term survival of Europe's most valuable and threatened species and habitats.

In Ireland these sites are designed as *European sites* - defined under the Planning Acts and/or the Birds and Habitats Regulations as (a) a candidate site of Community importance, (b) a site of Community importance, (c) a candidate special area of conservation, (d) a special area of conservation, (e) a candidate special protection area, or (f) a special protection area. They are commonly referred to in Ireland as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

- EC (2013) *Interpretation Manual of European Union Habitats*. Version EUR 28. European Commission.

## 2.2 Assessment Methodology

- The above referenced guidance sets out a staged process for carrying out Appropriate Assessment. To determine if an Appropriate Assessment is required, documented screening is required. Screening identifies the potential for effects on the conservation objectives of European sites, if any, which would arise from a proposed plan or project, either alone or in combination with other plans and projects (i.e. likely significant effects).
- Significant effects on a European site are those that would undermine the conservation objectives supporting the favourable conservation condition of the Qualifying Interest (QI) habitats and/or the QI/Special Conservation Interest (SCI) species of a European site(s).
- Stage One Screening for Appropriate Assessment involves the following steps:



- 7 If the conclusions at the end of screening are that there is no likelihood of significant effects occurring on any European sites as a result of the proposed plan or project, either alone or in combination with other plans and projects, then there is no requirement to undertake an Appropriate Assessment.
- 8 In establishing which European sites are potentially at risk (in the absence of mitigation) from the proposed development, a source-pathway-receptor approach was applied. In order for an impact to occur, there must be a risk enabled by having a source (e.g. water abstraction or construction works), a receptor (e.g. a European site or its QI(s) or SCI(s)<sup>2</sup>), and a pathway between the source and the receptor (e.g. pathway by air for airborne pollution, or a pathway by a watercourse for mobilisation of pollution). For an impact to occur, all three elements must exist; the absence or removal of one of the elements means there is no possibility for the impact to occur.
- 9 The identification of source-pathway-receptor connection(s) between the proposed development and European sites essentially is the process of identifying which European sites are within the Zone of Influence (Zoi) of the proposed development, and therefore potentially at risk of significant effects. The Zoi is the area over which the proposed development could affect the receiving environment such that it could potentially have significant effects on the QI habitats or QI/SCI species of a European site, or on the achievement of their conservation objectives<sup>3</sup>.
- 10 The identification of a source-pathway-receptor link does not automatically mean that significant effects will arise. The likelihood for significant effects will depend upon the characteristics of the source (e.g. extent and duration of construction works), the characteristics of the pathway (e.g. direction and strength of prevailing winds for airborne pollution) and the characteristics of the receptor (e.g. the sensitivities of the European site and its QIs/SCIs).
- 11 The 'likely significant effects' test is based on the precautionary principle<sup>4</sup>. The precautionary principle means that, based on the most reliable available information, where there is uncertainty or doubt as to the absence of significant effects, the project cannot be screened out and an appropriate assessment must be carried out.

### 2.3 Desktop Data Review

- 12 The desktop data sources used to inform the assessment presented in this report are as follows (accessed on the 4<sup>th</sup> May 2023):
  - Online data available on European sites and protected habitats/species as held by the National Parks and Wildlife Service (NPWS) from [www.npws.ie](http://www.npws.ie)<sup>5</sup>, including conservation objectives documents
  - Habitat and species GIS datasets provided by the NPWS, including Article 12 and Article 17 data<sup>6</sup>;

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<sup>2</sup> The term Qualifying Interest is used when referring to the habitats or species for which an SAC is designated; the term Special Conservation Interest is used when referring to the bird species (or wetland habitats) for which an SPA is designated.

<sup>3</sup> As defined in the *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2018)

<sup>4</sup> The precautionary principle is a guiding principle that derives from Article 191 of the Treaty on the Functioning of the European Union and has been developed in the case law of the European Court of Justice (e.g. ECJ case C-127/02 – Waddenzee, Netherlands).

The guidance document *Communication from the Commission on the Precautionary Principle* (European Commission, 2000) notes that the precautionary principle "covers those specific circumstances where scientific evidence is insufficient, inconclusive or uncertain and there are indications through preliminary objective scientific evaluation that there are reasonable grounds for concern that the potentially dangerous effects on the environment, human, animal or plant health may be inconsistent with the chosen level of protection" ..

<sup>5</sup> The following SAC and SPA GIS boundary datasets are the most recently available at the time of writing: SAC\_ITM\_2023\_07 and SPA\_ITM\_2023\_07.

<sup>6</sup> Article 17 of the EU Directive on the Conservation of habitats, Floras and Fauna (Habitats Directive) requires that all member states report to the European Commission every six years on the status and on the implementation of the measures taken

- Online data available on protected species as held by the National Biodiversity Data Centre (NBDC) from [www.biodiversityireland.ie](http://www.biodiversityireland.ie)
- Irish Wetland Bird Survey (I-WeBS) summary data for the 'OT401 North Wicklow Coastal Marshes' subsite as held by the BirdWatch Ireland from [www.birdwatchireland.ie](http://www.birdwatchireland.ie)
- Information on the surface water network and surface water quality in the area available from [www.epa.ie](http://www.epa.ie)
- Information on groundwater resources and groundwater quality in the area available from [www.epa.ie](http://www.epa.ie) and [www.gsi.ie](http://www.gsi.ie)
- Ordnance Survey of Ireland mapping and aerial photography available from [www.osi.ie](http://www.osi.ie)
- Spatial information relevant to the planning process including land zoning and planning applications from Department of Housing Planning, Community and Local Government web map portal. Available from <https://myplan.ie/>
- Information on local biodiversity policies and objectives within the Wicklow County Development Plan 2022-2028<sup>7</sup>, and County Wicklow Biodiversity Plan 2010-2015<sup>8</sup>
- Wilson, F., Crushell, P. Curtis, T. & Foss, P.J. (2012) *The County Wicklow Wetland Survey II*. Report prepared for Wicklow County Council and The Heritage Council
- The Central and Regional Fisheries Board (2008) *Broad Lough. Sampling Fish for the Water Framework Directive – Transitional Waters 2008*.
- Information on the location, nature and design of the proposed development supplied by the applicant's design team; and
- Ecological data from other assessments carried out for earlier phases of the sites development, The Appropriate Assessment Screening Report and the Environmental Impact Assessment report – Biodiversity chapter submitted for the adjacent Tinakilly Phase 1 residential development (Wicklow County Council Reg. Planning Ref.: 22837), which has since received Conditional Planning Permission.
  - Scott Cawley Ltd. (2022). Appropriate Assessment Screening Report for (Phase 1) Residential Development at Tinakilly, Rathnew, Co. Wicklow.
  - Scott Cawley Ltd. (2022). Environmental Impact Assessment Report – Biodiversity Chapter for (Phase 1) Residential Development at Tinakilly, Rathnew, Co. Wicklow.

## 2.4 Consultations

### *National Parks and Wildlife Services (NPWS)*

- 13 A data request was submitted to the NPWS for records on protected and rare species within the 10km grid square in which the proposed development is located within, on the 4<sup>th</sup> April 2022, in respect of the overall scheme (i.e. Phase 1 and 2). This data was received on the 8<sup>th</sup> April 2022 and has been considered in the baseline (Section 3.2) and assessment (Section 3.3) sections of this report.

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under the Habitats Directive. In a similar manner, there is an obligation to report on the status and trends of bird species required under Article 12 of the Bird's Directive .

<sup>7</sup> Wicklow County Council (2022) Wicklow County Development Plan 2022-2028. Plan as published for public display. Accessible from <https://www.wicklow.ie>

<sup>8</sup> Wicklow County Council (2010) *Wicklow Biodiversity Action Plan 2010-2015*. Plan as published for public display. Accessible from [www.wicklow.ie](http://www.wicklow.ie) Accessed: 20 June 2023.

- 14 A consultation letter was submitted by email to the Development Applications Unit of the Department of Culture, Heritage and the Gaeltacht on 20<sup>th</sup> May 2022, in respect of the overall scheme (i.e. Phase 1 and 2). The letter included an outline description of the proposed development, and a request for any comments on the proposal. No response has been received by Scott Cawley Ltd., prior to submission of the planning application for the proposed development.

## 2.5 Baseline Surveys

- 15 This section describes the baseline ecological surveys carried out as necessary to inform the assessment of likely significant effects on European sites.

### 2.5.1 Habitats and Flora Survey

- 16 A habitat survey was undertaken of the proposed development site on the 12<sup>th</sup> April 2022 by Cathal O'Brien BSc MSc, Consultant Ecologist with Scott Cawley Ltd., following the methodology described in *Best Practice Guidance for Habitat Survey and Mapping*<sup>9</sup>. All habitat types were classified using the *Guide to Habitats in Ireland*<sup>10</sup>, recording the indicator species and abundance using the DAFOR scale<sup>11</sup> and recording any species of conservation interest. Vascular and bryophyte plant nomenclature generally follow that of *The National Vegetation Database*<sup>12</sup>, having regard to more recent taxonomic changes to species names after the *New Flora of the British Isles*<sup>13</sup> and the British Bryological Society's *Mosses and Liverworts of Britain and Ireland: A Field Guide*<sup>14</sup>. Annex I habitat types were classified after the *Interpretation Manual of European Union Habitats EUR28*<sup>15</sup> with reference to the corresponding national habitat survey reports and NPWS wildlife manuals, as applicable. The nomenclature for Annex I habitats follows that of the *Interpretation manual of European Union Habitats EUR28* with abbreviated names after those used in *The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview*<sup>16</sup>.
- 17 Surveys of the Rathnew Stream and Rossanna Lower Stream were conducted on the 9<sup>th</sup> April 2022 by Triturus Environmental Ltd. (see Appendix III). The survey effort focused on both instream and riparian habitats in the vicinity of four survey sites, two of which were located on the Rathnew Stream, while the other two were located along Rossanna Lower Stream. The surveys were conducted during bright weather and base flow riverine conditions. The watercourses at each survey site were described in terms of the important aquatic habitats and species. This helped to evaluate species and habitats of ecological value in the vicinity of each site. A broad aquatic habitat assessment was conducted utilising elements of the methodology given in the Environment Agency's *River Habitat Survey in Britain and Ireland Field Survey*

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<sup>9</sup> Smith, G.F., O'Donoghue, P., O'Hora, K. & Delaney, E. (2011) *Best Practice Guidance for Habitat Survey and Mapping*. The Heritage Council Church Lane, Kilkenny, Ireland.

<sup>10</sup> Fossitt, J.A. (2000) *A Guide to Habitats in Ireland*. Heritage Council, Kilkenny.

<sup>11</sup> The DAFOR scale is an ordinal or semi-quantitative scale for recording the relative abundance of plant species. The name DAFOR is an acronym for the abundance levels recorded: Dominant, Abundant, Frequent, Occasional and Rare.

<sup>12</sup> Weekes, L.C. & FitzPatrick, Ú. (2010) *The National Vegetation Database: Guidelines and Standards for the Collection and Storage of Vegetation Data in Ireland*. Version 1.0. Irish Wildlife Manuals, No. 49. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

<sup>13</sup> Stace, C. (2019) *New Flora of the British Isles. 4<sup>th</sup> Edition*. C&M Floristics.

<sup>14</sup> Atherton, I., Bosanquet, S. & Lawley, M. (2010) *Mosses and Liverworts of Britain and Ireland: A Field Guide*. Latimer Trend & Co., Plymouth.

<sup>15</sup> CEC. (Commission of the European Communities) (2013) *Interpretation manual of European Union Habitats EUR28*. European Commission, DG Environment.

<sup>16</sup> NPWS (2019). *The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview*. Unpublished NPWS report.



*Guidance Manual 2003*<sup>17</sup> and the Irish Heritage Council's '*A Guide to Habitats in Ireland*'<sup>10</sup>. All sites were assessed in terms of:

- Physical watercourse/waterbody characteristics (i.e., width, depth etc.)
- Substrate type, listing substrate fractions in order of dominance (i.e., bedrock, boulder, cobble, gravel, sand, silt etc.)
- River profile in the sampling area
- An appraisal of the macrophyte and aquatic bryophyte community at each site
- Riparian vegetation composition

## 2.5.2 Fauna Surveys

### 2.5.2.1 Terrestrial Mammals (excluding Bats)

- 18 A terrestrial fauna survey (excluding bats) was undertaken on the 12<sup>th</sup> April and 04<sup>th</sup> May 2022 by Cathal O'Brien BSc MSc, Consultant Ecologist with Scott Cawley Ltd. The presence/absence of terrestrial fauna species were surveyed through the detection of field signs such as tracks, markings, feeding signs, and droppings, as well as by direct observation. The habitats on site were assessed for signs of usage by protected/red-listed fauna species, and their potential to support these species. Surveys to check for the presence of badger setts and to record any evidence of use, were undertaken on the same dates.
- 19 Surveys to check for the presence of otter holts within the study area, and to record any evidence of use, were undertaken on the 9<sup>th</sup> April 2022 by Triturus Environmental Ltd. The presence of otter *Lutra lutra* at each aquatic survey site, as well as upstream and downstream of the proposed development site was determined through the recording of otter signs, if encountered incidentally during surveys. The survey broadly followed the best practice survey methodology for otter as recommended by *Otter Survey of England 1977-79*<sup>18</sup>, *Monitoring the Otter*<sup>19</sup> and the *Otter Survey of Ireland 2004/05*<sup>20</sup>. Notes on the age and location (ITM coordinates) were made for each otter sign recorded, in addition to the quantity and visible constituents of spraint (i.e. remains of fish, molluscs etc.).

### 2.5.2.2 Breeding Birds

- 20 Breeding bird surveys were undertaken on the 12<sup>th</sup> April, 04<sup>th</sup> May and 15<sup>th</sup> June 2022 by Cathal O'Brien BSc MSc, Consultant Ecologist with Scott Cawley Ltd. using a methodology adapted from the *Bird Monitoring Methods - A Manual of Techniques for Key UK Species*<sup>21</sup>. The study area covered the lands enclosed within the proposed development boundary and the surrounding hedgerows and treelines. Lands within the study area were slowly walked in a manner allowing the surveyor to come within 50m of all habitat features. Birds were identified by sight and song, and general location and activity was recorded using the British Trust for Ornithology (BTO) species and activity codes.

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<sup>17</sup> Environment Agency (2003) *River Habitat Survey in Britain and Ireland Field Survey Guidance Manual – 2022 reprint*

<sup>18</sup> Lenton, E.J., Chanin, P.R.F. and Jefferies, D.J. 1980. *Otter Survey of England 1977-79*. Nature Conservancy Council, London.

<sup>19</sup> Chanin, P. 2003. *Monitoring the Otter Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough.

<sup>20</sup> Bailey, M. and Rochford J. (2006) *Otter Survey of Ireland 2004/2005*. Irish Wildlife Manuals, No. 23. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

<sup>21</sup> Gilbert, G., Gibbons, D.W. & Evans, J. (1998) *Bird Monitoring Methods - A Manual of Techniques for Key UK Species*. RSPB: Sandy

### 2.5.2.3 Wintering Birds

- 21 Wintering bird surveys were undertaken on nine dates between the 27<sup>th</sup> January 2022 and the 28<sup>th</sup> March 2022 by Cathal O'Brien BSc MSc, Consultant Ecologist with Scott Cawley Ltd., and Lorna Gill BSc MSc, Consultant Ecologist with Scott Cawley Ltd., using a methodology based on the *Bird Monitoring Methods - A Manual of Techniques for Key UK Species*<sup>21</sup>. The study area covered the lands within and adjacent to the red line boundary. Lands were initially surveyed visually using binoculars/scope from a vantage point(s) at the edge of the study area followed by a walkover of the area to identify birds which may not be visible from a distance (e.g. waders) and evidence of usage by wildfowl such as swans or geese (e.g. droppings). Birds were identified by sight and general location and activity were recorded using the British Trust for Ornithology (BTO) species and activity codes.

### 2.5.2.4 Raptor surveys

- 22 Raptor surveys were undertaken, as part of the previously consented Tinakilly Phase 1 development (Wicklow Reg. Planning Ref. 22837), directly south of the proposed development, on the 9<sup>th</sup> April, 14<sup>th</sup> and 28<sup>th</sup> May and 25<sup>th</sup> June 2021 by Emmi Virkki BSc (Hons) MSc, Senior Ecologist with Scott Cawley Ltd., using methodologies adapted from the *Bird Monitoring Methods - A Manual of Techniques for Key UK Species*<sup>21</sup> and *Raptors: A Field Guide for Surveys and Monitoring*<sup>22</sup>. The raptor activity within the lands was surveyed from two vantage points that allowed a view over a large area which included the proposed development site. The viewshed from each vantage point was surveyed for two hours using binoculars and scope. Raptors were identified by sight, and general location of flight lines and other activity was recorded using the British Trust for Ornithology (BTO) species and activity codes. Given the records produced from the above described survey and the lack of suitable breeding habitat within the proposed development site, these surveys were not carried out as part of the survey work carried out in 2022 to inform this report.

### 2.5.2.5 Aquatic surveys

- 23 Surveys to assess habitat quality for fish species within the aquatic survey sites were undertaken on the 9<sup>th</sup> April 2022 by Triturus Environmental Ltd, this report is provided as Appendix III accompanying this AA Screening report. Fisheries habitat quality for salmonids was assessed using the Life Cycle Unit method<sup>23 24</sup> to map the four number riverine sites as nursery, spawning and holding habitat, by assigning quality scores to each type of habitat. Those habitats with poor quality substrata, shallow depth and a poorly defined river profile receive a higher score. Higher scores in the Life Cycle Unit method of fisheries quantification are representative of poorer value, with lower scores being more optimal, despite this appearing counter intuitive.
- 24 Lamprey habitat evaluation for each survey site was undertaken using the *Lamprey Habitat Quality Index (LHQI)* scoring system, as devised by Macklin *et al.* (2018)<sup>25</sup>. The LHQI broadly follows a similar rationale as the Life Cycle Unit score for salmonids. Larval lamprey habitat quality as well as the suitability of adult

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<sup>22</sup> Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013) *Raptors: A Field Guide for Surveys and Monitoring*. Scottish Natural Heritage.

<sup>23</sup> Kennedy, G.J.A. (1984). *Evaluation of techniques for classifying habitats for juvenile salmon (Salmo salar L.)* Proceedings of the Atlantic Salmon trust workshop on stock enhancement. 23 pp.

<sup>24</sup> O'Connor, L. & Kennedy, R.J (2002). *A comparison of catchment-based salmon habitat survey techniques on three rivers in N. Ireland*. Fisheries Management and Ecology, 9, 149-161.

<sup>25</sup> Macklin, R., Brazier, B. & Gallagher, C. (2018). *Fisheries assessment of selected weir sites on the River Barrow, Counties Carlow & Kilkenny*. Unpublished report prepared by Triturus Environmental Services for McCarthy-Keville O' Sullivan on behalf of Waterways Ireland.

spawning habitat is assessed based on the information provided in Maitland (2003)<sup>26</sup> and other relevant literature (e.g. Gardiner, 2003)<sup>27</sup>.

- 25 White-clawed crayfish (*Austropotamobius pallipes*) surveys were undertaken at the aquatic survey sites under a National Parks and Wildlife (NPWS) open licence (no. C31/2022), as prescribed by Sections 9, 23 and 34 of the Wildlife Act (1976-2021), to capture and release crayfish to their site of capture, under condition no. 6 of the licence, and following Inland Fisheries Ireland 'Clean-Check-Dry' biosecurity protocols. Hand-searching of instream refugia and sweep netting was undertaken according to Reynolds *et al.* (2010)<sup>28</sup>. Trapping of crayfish was not feasible given the small nature of the watercourses surveyed. An appraisal of white-clawed crayfish habitat at each site was conducted based on physical channel attributes, water chemistry and incidental records in mustelid spraint.
- 26 Surveys to assess biological water quality through Q-sampling within the aquatic survey sites was undertaken on the 9<sup>th</sup> April 2022 by Triturus Environmental Ltd. All samples were taken with a standard kick sampling hand net (250mm width, 500µm mesh size) from areas of riffle/glide utilising a two-minute sample, with an additional one-minute hand search of instream substrata, as per EPA methodology<sup>29</sup>.

#### 2.5.2.6 Limitations

- 27 The above-described surveys to inform the baseline ecology of the proposed development site have all been conducted over the course of a single year, 2022. This data is now one year old, CIEEM guidance notes that typically, ecological surveys are considered valid for a period of 12-18 months<sup>30</sup>. Given this, and considering that there has not been a significant change in management of the site since these surveys have been conducted, the results of these surveys are still considered valid and representative of the baseline of the proposed development site.
- 28 The above-described wintering bird surveys were limited to a single three-month period in early 2022. Despite being limited to a single half wintering season, a total of 9 survey visits were conducted, one a week between the end of January and the end of March, rather than the standard once a month survey. The increased frequency of these surveys was designed to capture any potential variation in use of the site over that period, to compensate for the missed portion of the early wintering season. As such this is not considered a limitation.

### 3 Provision of Information for Screening for Appropriate Assessment

- 29 The following sections provide information to facilitate the Appropriate Assessment screening of the proposed development to be undertaken by the competent authority.
- 30 A description of the proposed development and the receiving environment is provided to identify the potential ecological impacts. The environmental baseline conditions are discussed, as relevant to the assessment of ecological impacts where they may highlight potential pathways for impacts associated with

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<sup>26</sup> Maitland P.S. (2003) *Ecology of river, brook and sea lamprey*. Conserving Natura 2000 Rivers Ecology Series No. 4. English Nature, Peterborough.

<sup>27</sup> Gardiner R (2003). *Identifying Lamprey. A Field Key for Sea, River and Brook Lamprey*. Conserving Natura 2000 Rivers Conservation Techniques Series No. 4. English Nature, Peterborough.

<sup>28</sup> Reynolds, J.D., O'Connor, W., O'Keeffe, C. & Lynn, D. (2010) *A technical manual for monitoring white-clawed crayfish Austropotamobius pallipes in Irish lakes*. Irish Wildlife Manuals, No 45, National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin.

<sup>29</sup> Feeley, H. B., Bradley, C., Free, G., Kennedy, B., Little, R., McDonnell, N., ... & Boyle, S. O. (2020a). A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018. *Scientific Data*, 7(1), 1-9.

<sup>30</sup> CIEEM (2019) Advice Note on the Lifespan of Ecological Reports & Surveys. April 2019. Chartered Institute of Ecology and Environmental Management, Winchester, England

the proposed development to affect the receiving ecological environment (e.g. geological, hydrogeological and hydrological data).

- 31 The potential impacts are examined in order to define the potential zone of influence of the proposed development on the receiving environment. This then informs the assessment of whether the proposed development will result in significant effects on any European sites; i.e. affect the conservation objectives supporting the favourable conservation condition of the European site's QIs or SCIs.

### 3.1 Description of the Proposed Development

- 32 A full description of the proposed development is included in the planning application documentation. In brief, the proposal involves:
- 33 The construction of a residential development and green spaces comprising the following:
- Construction of 352 no. residential units comprising 220 no. 2-4 bedroom houses and 132 no. 1-3 bedroom apartments
  - Residential open space in the form of public/communal spaces for passive recreation (totalling approximately 10,863m<sup>2</sup>). Active open space constituting retained and developed habitats along the western and northern boundaries (totalling approximately 32,375m<sup>2</sup>).
  - Provision of car parking and bicycle parking.
  - All internal residential access roads and cyclist/pedestrian paths serving the proposed development.
  - Proposed pedestrian connections and landscape revisions to a section of Tinakilly Avenue included in permitted application WCC Ref. 22/837.
  - All vehicular and pedestrian connections between Tinakilly Park and Rathnew Village via a new section of the Rathnew Inner Relief Road.
  - No further changes to development permitted under WCC Refs. 17/219 (ABP Ref. PL27.301261), 20/1000, 21/411, 22/837, or 21/1333.
  - No proposed works to Tinakilly Country House Hotel (a protected structure Reference No. 25-15).
  - All associated site development works, services provision, infrastructural and drainage works, provision of substations, bin stores, bicycle stores, car parking, public lighting, landscaping, open space, and boundary treatment works.
- 34 The proposed development includes the completion of the Rathnew Inner Relief Road (RIRR), connecting the R750 and R761 regional roads, and the provision of 3no. new junctions on this road. It is also proposed under this application to restrict vehicular access along Tinakilly Avenue between the R750 and the RIRR, with vehicular access to the Tinakilly Country House hotel instead provided from the RIRR.
- 35 A series of SuDS measures have been incorporated into the design of the proposed development, including the provision of 3,349m<sup>3</sup> of constructed wetlands (surface water storage basins), attenuation tank (380m<sup>3</sup>), permeable paving, swales, filter drains, water butts and oversized pipes. It is important to note that for the purposes of Appropriate Assessment Screening, that these SuDS design measures have not been considered as part of this assessment.
- 36 In line with good practice effective SuDS measures for surface water have been included in the construction design of the proposed development. However, it must be noted that these are included in the design, not for the purposes of avoiding or reducing any potential harmful effects to any European sites but are required for new developments under the objectives of the Greater Dublin Strategic Drainage Study and Wicklow County Development Plan 2022-2028<sup>7</sup> and in line with good construction practice. It is an objective of the Greater Dublin Strategic Drainage Study, and Wicklow County Development Plan 2022-2028, to incorporate Sustainable Urban Drainage Systems (SuDS) within new developments (see Appendix

II). The SuDS features associated with the design of the proposed development are not included within the design to avoid or reduce any potential harmful effects to any European sites.

- 37 As part of the above vehicular access to the site, it is important to note, that the proposed northern access road is proposed to cross the Rathnew Stream in the north-west corner of the proposed development site. This will likely require instream works within Rathnew Stream, the potential impacts of which are highlighted in Section 3.3.2, below.

## 3.2 Overview of the Receiving Environment

### 3.2.1 European sites

- 38 The proposed development does not overlap with any European sites (see Figure 1 and Figure 2). The nearest European sites to the proposed development are: The Murrough Wetlands SAC (002249) and The Murrough SPA (004186); both located approximately 440m to the east. The above European sites are also hydrologically connected to the proposed development site, approximately 700m downstream, via the Rathnew Stream (EPA Code: 10R02) and its tributary Rossanna Lower Stream (EPA Code: 10R19).
- 39 There are five SACs and two SPAs that are potentially hydrologically connected to the proposed development site via surface water pathways: The Murrough Wetlands SAC, Wicklow Reef SAC, Magherabeg Dunes SAC, Buckronev-Brittias Dunes and Fen SAC, Wicklow Mountains SAC, The Murrough SPA and Wicklow Head SPA.
- 40 There is one SPA, The Murrough SPA, designated for wintering SCI species that are known to forage and/or roost at inland sites in Ireland, and one SPA, Wicklow Mountains SPA, located approximately 12.4km west of the proposed development, designated for birds of prey (peregrine *Falco peregrinus* and merlin *Falco columbarius*) that are known to not hold exclusive home ranges<sup>22</sup>.
- 41 In addition, Wicklow Mountains SAC is designated for mobile QI species (otter *Lutra lutra*) known to utilise a wide range of aquatic habitats (freshwater and marine) on the east coast.
- 42 All of the European sites present in the vicinity of the proposed development are shown on Figure 1 below. The QIs/SCIs of the European sites in the vicinity of the proposed development are provided in Appendix I.

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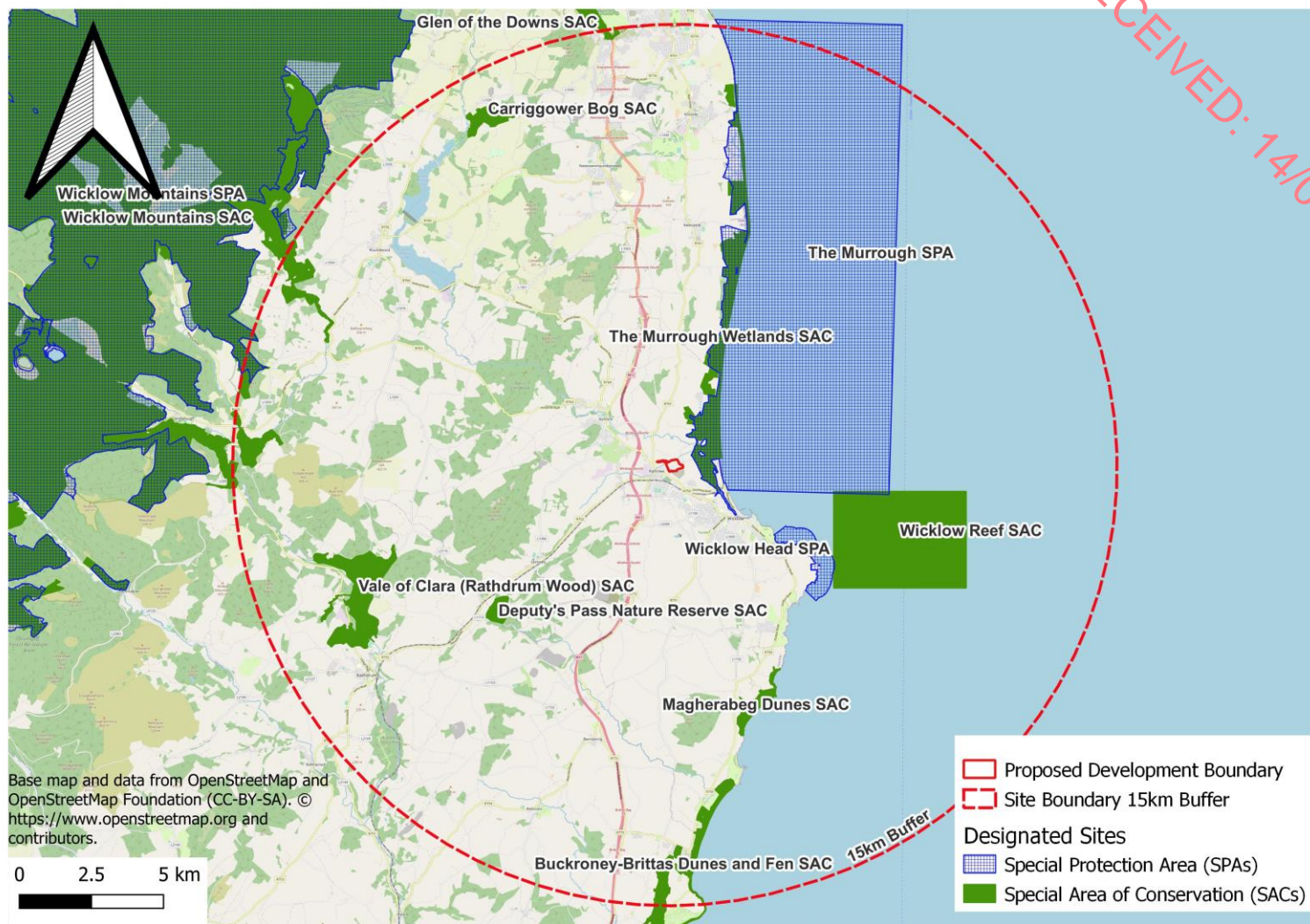
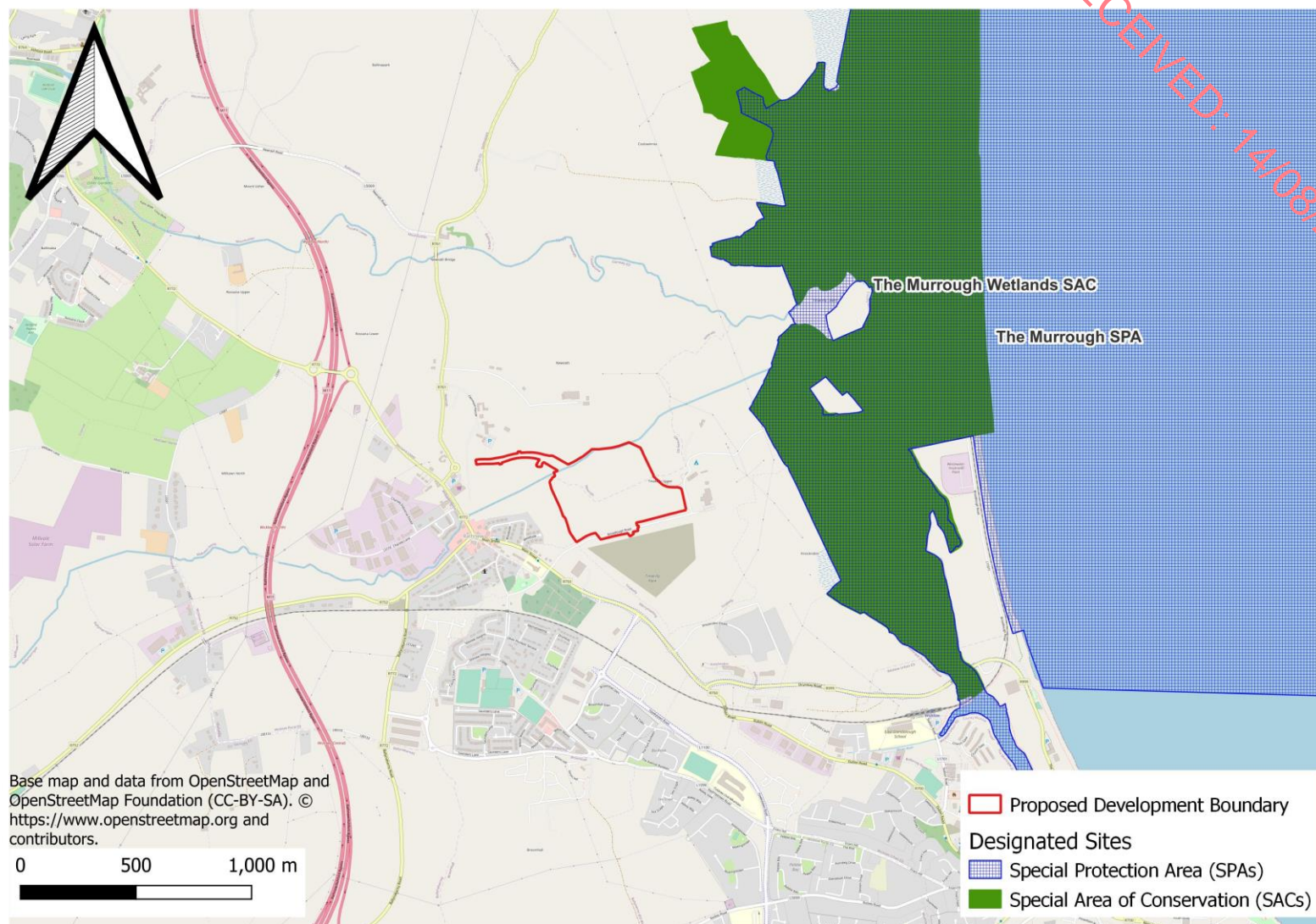


Figure 1 European sites in the vicinity of the proposed development

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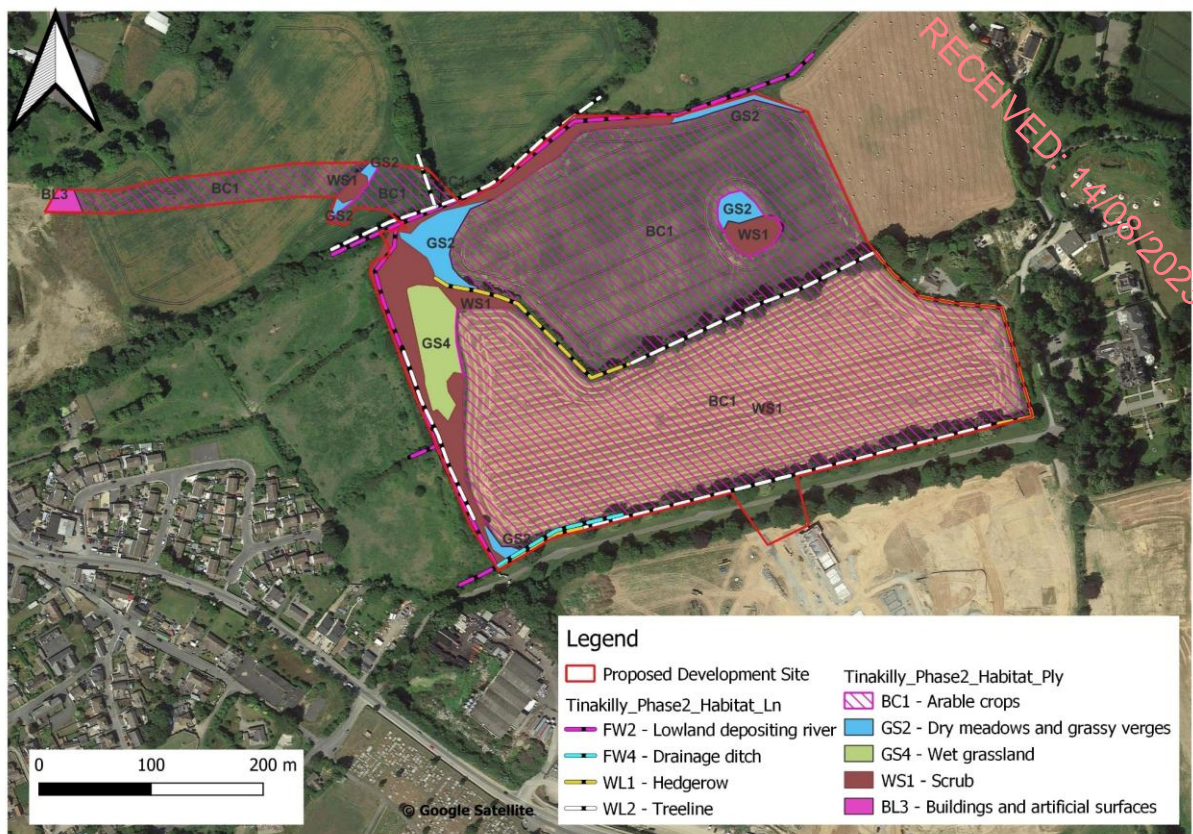


**Figure 2 European sites in Proximity to the Proposed Development Site**

### 3.2.2 Habitats

- 43 The proposed development site encompasses two adjacent arable crop (BC1) fields, separated by a central mostly east-west treeline (WL2) which changes into a southeast-northwest hedgerow (WL1) and eventually joins the north-western corner of the site in a patch of scrub (WS1). The Rathnew Stream (FW2) forms the northern boundary of the site, while its tributary the Rossanna Lower Stream (FW2) forms the western boundary along with treelines and hedgerows.
- 44 The southern field is bounded to the east by a hedgerow, beyond which is located Tinakilly House and the associated outbuildings, a number of residential properties and the Knockrobin Glamping Campground. The north is bounded by the central treeline and the south the mature treelined Tinakilly House entrance avenue. The west is bounded by the Rossanna Lower Stream and a treeline, with some willow and bramble scrub developing along this treeline. The north-western portion of the field is comprised of wet grassland (GS4). A small area of scrub is located within the centre of this field.
- 45 The northern field is bounded to the south by the central treeline, the west by a hedgerow which grades into scrub at the north-western corner, the east by an agricultural fenceline and the north by the Rathnew Stream and associated treeline/hedgerow. There is an area of scrub (WS1) and grassy verge (GS2) in the centre of this field in the area of an old quarry, with portions of grassy verge also present in the north-east and north-west corners.
- 46 The following habitat types assigned using the Heritage Council classification system, Fossitt (2000)<sup>10</sup>, were identified within or immediately adjacent to the proposed development site during surveys carried out in April and July 2022:
- Arable Crops (BC1)
  - Dry meadows and grassy verges (GS2)
  - Wet Grassland (GS4)
  - Scrub (WS1)
  - Hedgerow (WL1)
  - Treelines (WL2)
  - Riparian Woodland (WN5)
  - Lowland depositing Watercourses (FW2)
  - Drainage ditches (FW4)
- 47 The locations of these habitats are presented in Figure 3.
- 48 No EU Habitats Directive Annex I habitats were recorded within the proposed development site.





**Figure 3 Habitats recorded within the proposed development site**

### 3.2.3 Flora Species

#### 3.2.3.1 Protected Flora

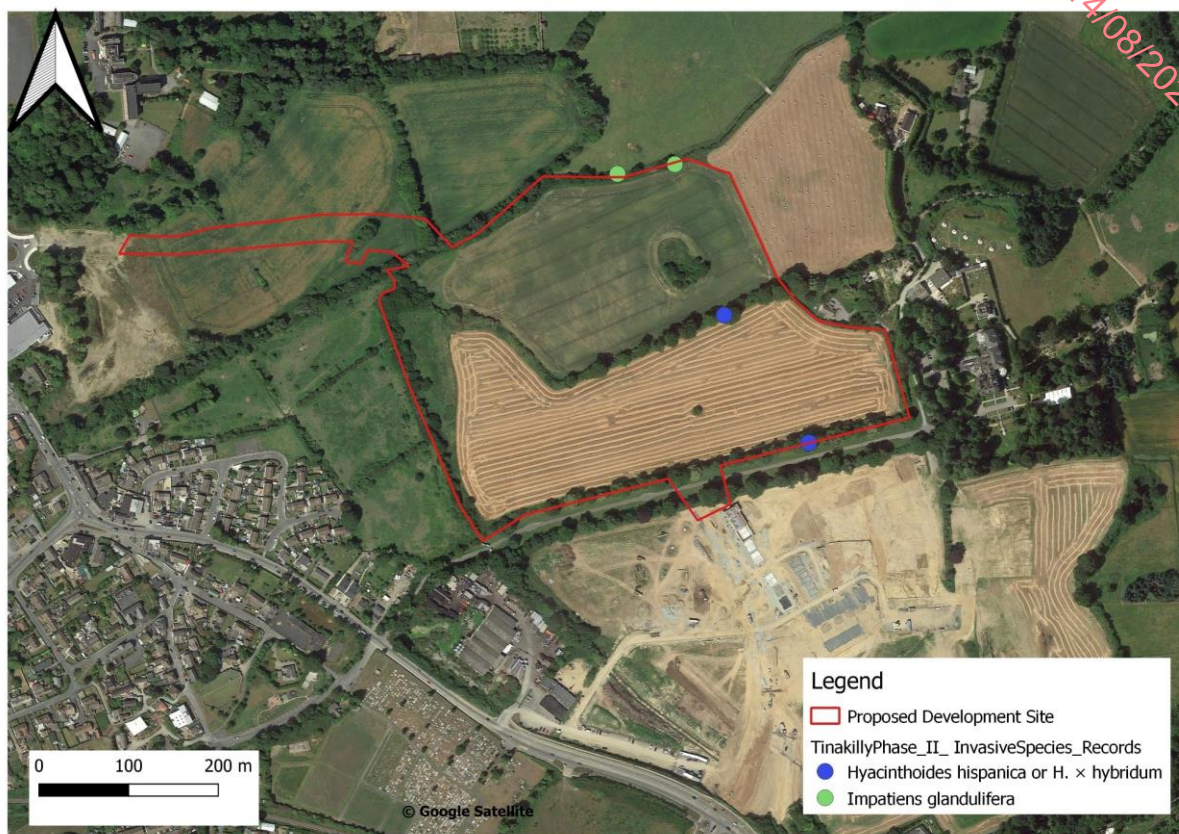
- 49 The desktop study did not return any records for Annex II flora species within c. 10km of the proposed development.
- 50 Field surveys undertaken at the proposed development site in April and July 2022 did not record any Annex II flora species within or adjacent to the proposed development site.

#### 3.2.3.2 Non-native Invasive Flora

- 51 With regards to records for non-native invasive species within c. 2km of the proposed development, the NBDC database search returned records for the following five non-native invasive flora: *Gunnera tinctoria*, *Impatiens glandulifera*, *Reynoutria japonica*<sup>31</sup> and *Rhododendron ponticum* which are all listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended) and also the recently delisted *Elodea canadensis*. There is one record for *E. canadensis* and *I. glandulifera* each, from alongside the River Vartry, c. 1km north-west of the proposed development site. This record dates back to 2009. There are two records of *G. tinctoria* from 2009 and 2021, and one record for *R. ponticum* from 2021, also from along the River Vartry, c. 1km away. The most recent record of the six records on the database for *R. japonica* is from 2021. The nearest of these records is located c. 1km north-west of the proposed development, adjacent to the above records alongside the River Vartry.

<sup>31</sup> Previously known as *Fallopia japonica*.

- 52 Field surveys undertaken at the proposed development site in April and July 2022 recorded two species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended), including Himalayan balsam *Impatiens glandulifera* along the Rathnew Stream on north eastern boundary of the proposed development site and Spanish bluebell *Hyacinthoides hispanica* or its hybrid *Hyacinthoides x hybridum*, within the eastern portion of the central and southern tree lines.



**Figure 4 Non-native invasive species records within the proposed development site**

### 3.2.4 Fauna Species

#### 3.2.4.1 Mammals

##### Otter *Lutra Lutra*

- 53 Otter is listed on Annex II and Annex IV of the EU Habitat Directive and the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended). The NBDC database search returned four records for otter within approximately 2km of the proposed development site. The nearest record is from Broad Lough, approximately 760m east of the proposed development. All the other records are also from Broad Lough. There are additional records for otter in the wider area and Co. Wicklow in the National Otter Survey reports from 1980-1981<sup>32</sup>, 2004-2005<sup>20</sup> and 2010-2011<sup>33</sup>. The nearest of these records is from River Vartry, approximately 9.4km north-west and dates back to 1980. Additionally, Scott Cawley Ltd. ecologist anecdotally recorded otter in River Vartry, approximately 2.1km north-west of the proposed development

<sup>32</sup> Chapman, P.J. and Chapman, L.L. 1982. *Otter Survey of Ireland 1980-81*. The Vincent Wildlife Trust, London.

<sup>33</sup> Reid, N., Hayden, B., Lundy, M.G., Pietravalle, S., McDonald, R.A. & Montgomery, W.I. (2013). *National Otter Survey of Ireland 2010/12*. Irish Wildlife Manuals No. 76. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

in September 2021. The NPWS database holds no records for otter in the 10km grid squares, T29 and T39, in which the proposed development site is located in.

- 54 Otter evidence was recorded during the aquatic surveys undertaken by Triturus Environmental Ltd., for the proposed development, in four locations along the Rathnew Stream, including three spraint sites and a couch site. These are shown in Figure 5, below.
- 55 The nearest European site designated for otter is the Wicklow Mountains SAC, located approximately 12.4km west of the proposed development. Otter territories are within the range of approximately 7.5km for females and can reach up to 21km for males via hydrological pathways (Ó'Neill et al., 2009)<sup>34</sup>. Wicklow Mountains SAC is located within a different sub-catchment (e.g. Avonmore\_SC\_010) to the proposed development (Vatry\_SC\_010), however considering that the distances between some watercourses within the Avonmore and Vartry sub-catchments are not large, i.e. starting from c. 200m, and the fact that otter do not strictly travel within watercourses when commuting, although they never move far from one<sup>35</sup>, there is potential for otter crossing from one sub-catchment to another. Considering this and that the site is within the extent of SAC otter territories, i.e. within approximately 21km of nearly continuous hydrological pathways linked to the Wicklow Mountains SAC, there is potential that local otter populations form part of the Wicklow Mountains SAC population.



**Figure 5 Otter Evidence recorded within the Proposed Development Site**

<sup>34</sup> Ó'Neill, L., Veldhuizen, T., de Jongh, A., Rochford, J. (2009) *Ranging behaviour and socio-biology of Eurasian otters (Lutra lutra) on lowland mesotrophic river systems*. European Journal of Wildlife Research. 55:363-370.

<sup>35</sup> Hayden, T. and Harrington, R. (2000) *Exploring Irish Mammals*. Department of Arts, Heritage, Gaeltacht and the Islands, Dublin, Ireland.

### Marine Mammals

- 56 The NBDC database holds records for two marine mammal species, grey seal *Halichoerus grypus* (Annex II and V species of the EU Habitats Directive) and harbour porpoise *Phocoena phocoena* (Annex II and Annex IV species of the EU Habitats Directive) within approximately 2km of the proposed development site. There is one record for grey seal approximately 1km north-east and one record for harbour porpoise, located approximately 2.5km south-east, from 2014 and 2017, respectively.
- 57 Additionally, the NPWS database holds one record for harbour seal *Phoca vitulina* (Annex II and V species of the EU Habitats Directive) from the same 10km grid square, T39, which the proposed development site is directly adjacent to. The Irish Whale and Dolphin Group holds records for bottlenose dolphin *Tursiops truncatus* (Annex II and Annex IV species of the EU Habitats Directive) and harbour porpoise from the Irish Sea along the coastline running past the proposed development site from 2021. A rare Sowerby's beaked whale *Mesoplodon bidens* (Annex IV species of the EU Habitats Directive) was also recorded at Wicklow Harbour in 2020 (NBDC record beyond 2km of the proposed development site). The NPWS database holds no records for marine mammals within the 10km grid square, T29, in which the proposed development site is located. The grey seal and the harbour seal are of "Least Concern", whereas the Red list statuses for the cetaceans have not been evaluated<sup>36</sup>.
- 58 Grey seal and harbour porpoise are the QI species of Lambay Island SAC and Rockabill to Dalkey Island SAC, and are located approximately 54km and 28km north of the proposed development, respectively. Considering the distance to Lambay Island SAC and the habit of seals travelling long distances in search of food, up to approximately 450km has been recorded for grey seal<sup>35</sup>, seals seen at Broad Lough may form part of the SAC populations. With regard to harbour porpoise, the size of the home ranges are not known<sup>35</sup> but considering that Rockabill to Dalkey Island SAC is relatively close in terms of marine distances, individual harbour porpoises encountered along the coastline within 2km of the proposed development, could likely be associated with the SAC population.
- 59 Other EU Habitats Directive Annex-listed cetaceans<sup>37</sup>, such as bottle-nosed dolphin, are also regular visitors to the east coast of Ireland. The bottle-nosed dolphin is the QI species of the Lower River Shannon SAC, located c. 160km west of the proposed development on the south-west coast of Ireland. Considering the distance to the Lower River Shannon SAC around the coasts of Ireland is even longer, any bottle-nosed dolphins recorded on the east coast are unlikely to form part of this SAC population. There are no designated sites for other cetacean species, such as the Sowerby's beaked whale, encountered in Irish waters.
- 60 There is no suitable habitat within the proposed development site for marine mammals, however, it is hydrologically connected via the surface water network to the coastal waters they inhabit.

### 3.2.4.2 Birds

#### Breeding Birds

- 61 The NBDC database returned records for five SCI species (black-headed gull *Chroicocephalus ridibundus*, dunlin *Calidris alpina*, European herring gull *Larus argentatus*, cormorant *Phalacrocorax carbo* and lesser black-backed gull *Larus fuscus*) for which there are European sites designated in the vicinity of the proposed development site. Of these species, four (black-headed gull, European herring gull, great cormorant and lesser black-backed gull) are Amber-listed (of Medium Conservation Concern) and one (dunlin) is Red-listed (of High Conservation Concern) in the Birds of Conservation Concern in Ireland<sup>38</sup>.

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<sup>36</sup> Marnell, F., Looney, D. & Lawton, C. (2019) *Ireland Red List No. 12: Terrestrial Mammals*. National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Dublin, Ireland.

<sup>37</sup> Irish Whale and Dolphin Group recent sightings. Available at: <https://iwdg.ie/> Accessed on: 20 June 2023.

<sup>38</sup> Gilbert, G., Stanbury, A. and Lewis, L. (2021). *Birds of Conservation Concern in Ireland 4: 2020-2026*. Irish Birds 43: 1-22.

There is no suitable breeding habitat within the proposed development site for these species, as their preferred breeding habitats include cliffs (European herring gull and great cormorant), lakes (black-headed gull, European herring gull, great cormorant and lesser black-backed gull), offshore islands (European herring gull, great cormorant and lesser black-backed gull), vast reedbeds or marshy areas (black-headed gull and great cormorant) and machair (dunlin<sup>39</sup>). Most of these species, with the exception of dunlin, tend to breed in colonies. The majority of dunlin records in coastal areas are recorded during winter months as they are found in a variety of coastal and marshy habitats during migration, however occasionally a few individuals do not migrate back north for the breeding season.

- 62 A single kingfisher *Alcedo atthis* was recorded on the 16<sup>th</sup> June 2022, during field surveys. It was recorded flying upstream along the Rathnew Stream on the northern boundary of the proposed development site. The closest European site designated for the protection of Kingfisher is the River Boyne and Blackwater SPA located approximately 76km north of the proposed development site. Kingfisher populations within close proximity of the proposed development are not deemed to be SCI species associated with the River Boyne and River Blackwater SPA, given the significant distance between the proposed development site and the designated site.
- 63 A single cormorant was recorded foraging in Rathnew Stream approximately 100m downstream of the proposed development site boundary. The closest European site designated for the protection of cormorant is Ireland's Eye SPA, located approximately 44km north of the proposed development. Studies have shown that the cormorant is able to forage up to 33.9km from its wintering roosts or breeding colonies<sup>40</sup>. Most foraging trips are confined to within 10km of the colony (Gremillet 1997<sup>41</sup>, BirdLife International 2000<sup>42</sup>), but trips up to a 35km radius have been recorded (Gremillet 1997<sup>41</sup>). Considering the distance between the proposed development site and Ireland's Eye SPA and the known foraging ranges of this species, cormorant populations in close proximity to the proposed scheme are not deemed to be SCI species associated with the Ireland's Eye SPA.

#### Wintering birds

- 64 The NBDC database returned records for 25 SCI species for which there are European sites designated for their wintering populations. Of these species, 14 are Amber-listed (of Medium Conservation Concern) (Black-headed gull, Shelduck *Tadorna tadorna*, Teal *Anas crecca*, Wigeon *Anas Penelope*, Gadwall *Anas strepera*, cormorant, herring gull, lesser black-backed gull, mallard *Anas platyrhynchos*, common gull *Larus canus*, mute swan *Cygnus olor*, red-breasted merganser *Mergus serrator*, Ringed Plover *Charadrius hiaticula* and tufted duck *Aythya fuligula*) and 11 are Red-listed (of High Conservation Concern) (Bar-tailed godwit *Limosa lapponica*, Black-tailed godwit *Limosa limosa*, Goldeneye *Bucephala clangula*, Redshank *Tringa totanus*, Dunlin *Calidris alpina*, Curlew *Numenius arquata*, Oystercatcher *Haematopus ostralegus*, golden plover *Pluvialis apricaria*, grey plover *Pluvialis Squatarola*, Lapwing *Vanellus vanellus* and knot *Calidris canutus*) in the Birds of Conservation Concern in Ireland<sup>43</sup>. At the time of the wintering bird surveys, there was no suitable habitat within the proposed development site for wintering SCI species as the field was in arable use for winter barley *Hordeum vulgare*.

<sup>39</sup> BirdWatchIreland (2023) *Dunlin*. Available at: [www.birdwatchireland.ie](http://www.birdwatchireland.ie) Accessed on: 20 June 2023.

<sup>40</sup> Woodward I, Thaxter CB, Owen E & Cook ASCP (2019). Desk-based revision of seabird foraging ranges used for HRA screening. Report of work carried out by the British Trust for Ornithology on behalf of NIRAS and The Crown Estate. BTO Research Report No. 724, 139pp.

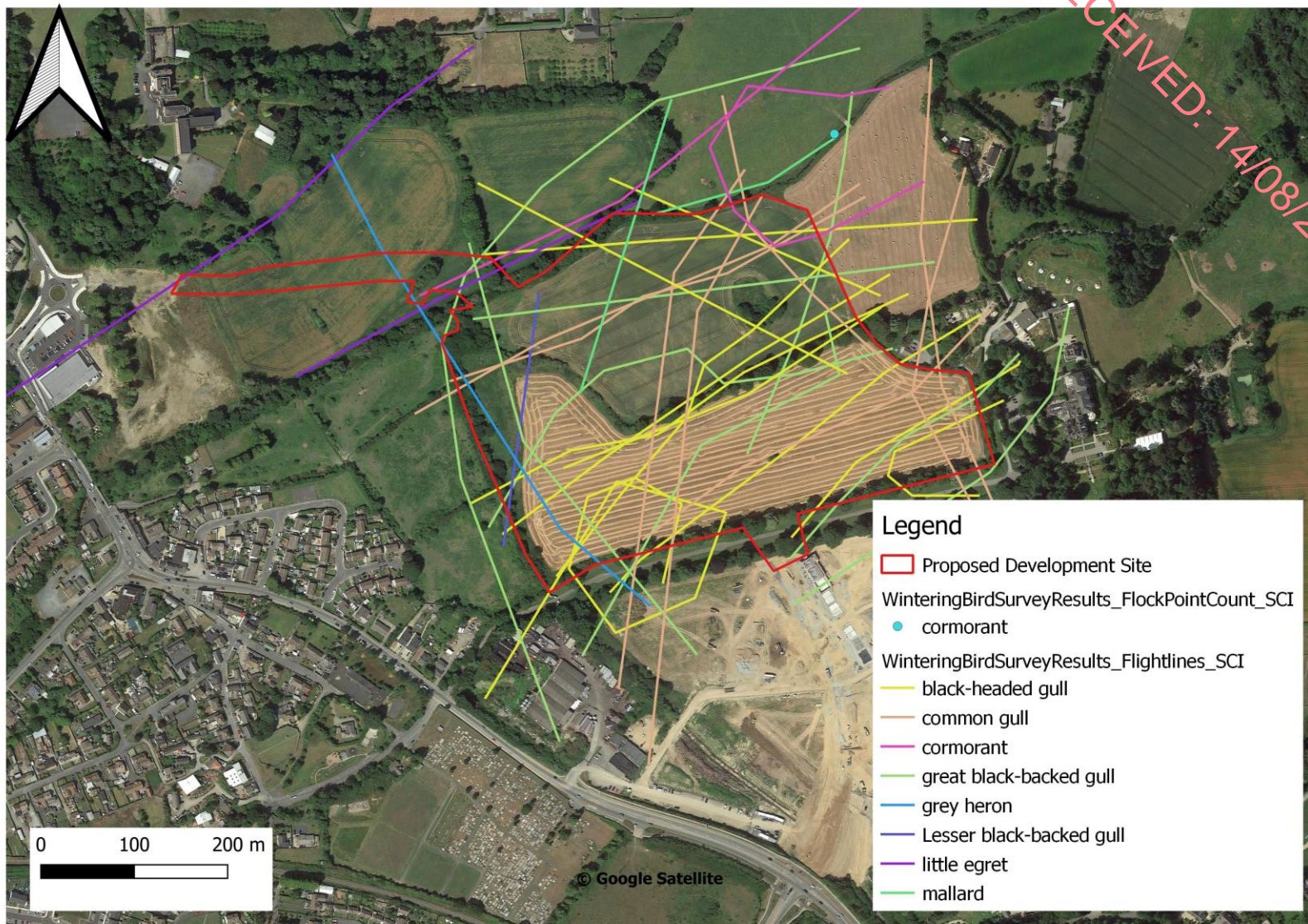
<sup>41</sup> Gremillet, D. 1997. Catch per unit effort, foraging efficiency, and parental investment in breeding great cormorants (*Phalacrocorax carbo carbo*). ICES Journal of Marine Science 54(4): 635-644.

<sup>42</sup> BirdLife International. 2000. The Development of Boundary Selection Criteria for the Extension of Breeding Seabird Special Protection Areas into the Marine Environment. OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic. Vlissingen (Flushing).

<sup>43</sup> Gilbert, G., Stanbury, A. and Lewis, L. (2021). *Birds of Conservation Concern in Ireland 4: 2020-2026*. Irish Birds 43: 1-22.

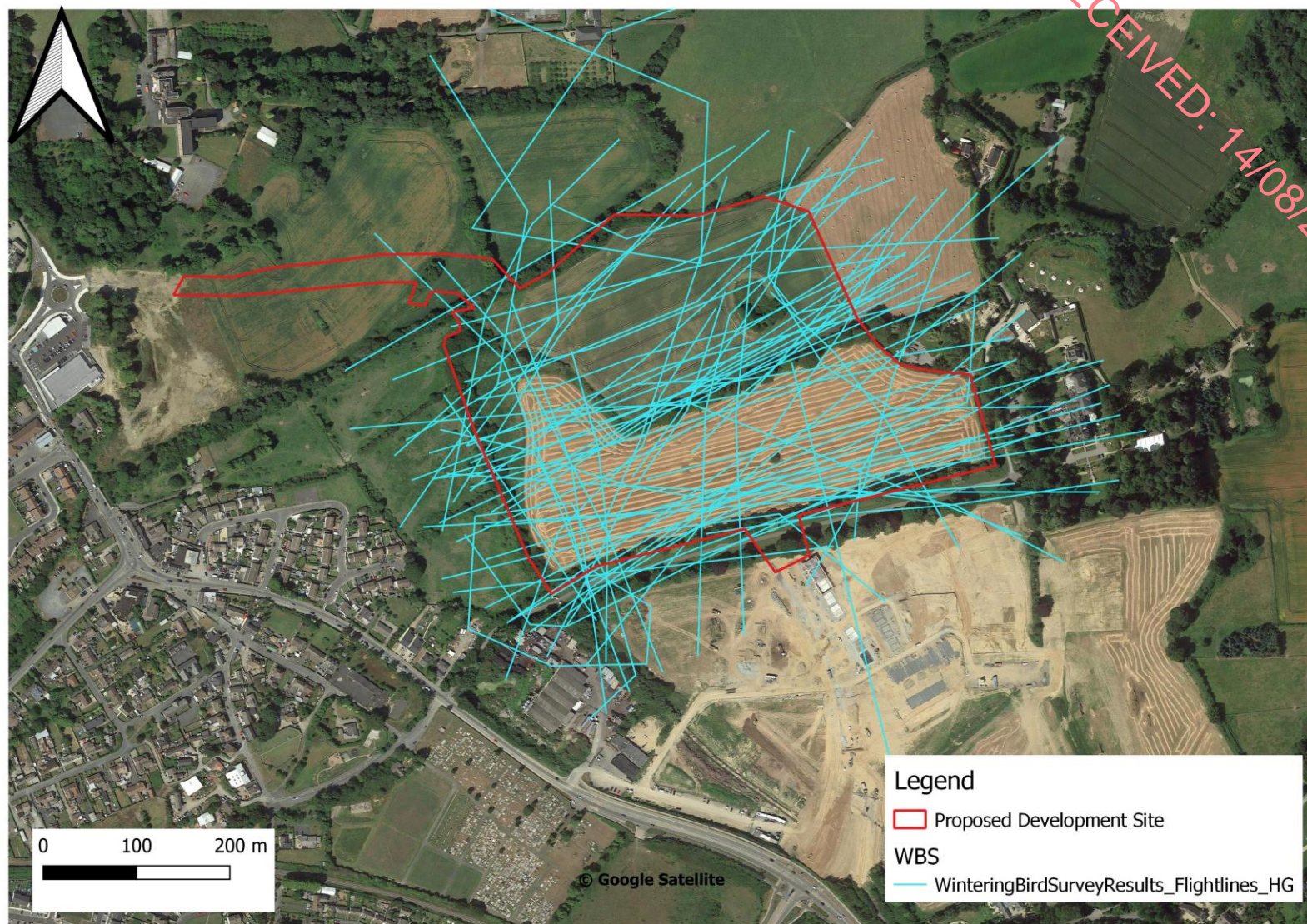
- 65 A total of 19 bird species were recorded during wintering bird surveys carried out at the proposed development site, these included nine SCI species (black-headed gull, common gull, cormorant, great black-backed gull *Larus marinus*, grey heron *Ardea cinerea*, herring gull, lesser black-backed gull, little egret *Egretta garzetta*, mallard), as well as an additional Red-listed species (Kestrel) and two Amber-listed species (red-kite and stock dove). No Annex I species were recorded during the wintering bird surveys. Of the above listed species, only cormorant was recorded utilising habitat in proximity to the proposed development site, recorded foraging in the Rathnew Stream. The remaining records consisted of birds flying over the proposed development site. The results of the wintering bird surveys, as they pertain to SCI species are shown in Figure 6 below, for clarity records of herring gull are shown in Figure 7, the majority of wintering bird records from across the survey period constituted species flying over the proposed development site.
- 66 In addition, the wetland habitats at the adjacent Broad Lough are used by wintering SCI bird populations associated with The Murrough SPA, as well as by wintering SCI populations moving along the east coast at the beginning and end of migration season.

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**Figure 6 Wintering bird survey results for the proposed development**

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**Figure 7 Wintering bird Survey Results for the proposed development - herring gull**



### Raptor Surveys

- 67 During the raptor surveys carried out on the adjacent consented Phase 1 Tinakilly development (Wicklow Reg. Planning Ref. 22837) in 2021, a single hen harrier *Circus cyaneus* and a peregrine *Falco peregrinus* were recorded in the vicinity of Broad Lough. Both of the species are listed under the Annex I of the EU Birds Directive. Hen harrier is also Amber-listed (of Medium Conservation Concern) in the Birds of Conservation Concern in Ireland<sup>43</sup> due to decline in their population across the country.
- 68 The hen harrier (female) was recorded hunting over the reedbeds and saltmarsh on the 26<sup>th</sup> March 2021, whereas the peregrine was recorded flying north along the Broad Lough on the 14<sup>th</sup> May 2021. The nearest designated site for hen harrier is the Slieve Bloom Mountains SPA, and for peregrine, the Wicklow Mountains SPA, located approximately 90.2km and 14.4km west of the proposed development, respectively. Both of these sites are designated for their breeding populations.
- 69 Considering that hen harrier typically spend their non-breeding season (broadly defined as mid-August to mid-March) at lowland sites below 100m<sup>22</sup> and mid-March/late-March to May is the time when a pair is establishing a territory<sup>44</sup>, the individual female recorded adjacent to the site on the 26<sup>th</sup> March, was either late returning to its breeding grounds or perhaps was a non-breeder, e.g. a sub-adult. Although generally males and females have home ranges of up to 7.3km<sup>2</sup> and 3.6km<sup>2</sup> <sup>22</sup>, respectively, the record is from towards the end of non-breeding season when birds are returning to their breeding home ranges, and therefore it is possible that it may form part of the SPA population and just had not returned to the SPA yet. Hen harrier has not been recorded breeding in the Wicklow Mountains (the nearest upland habitats suitable for breeding hen harrier from the proposed development) during national breeding hen harrier surveys<sup>44</sup>.
- 70 With regard to the peregrine, the species was recorded during the breeding season. Although the species is not considered to hold exclusive home ranges, most hunting is carried out within 2km of the nest site, with occasional birds venturing as far as 6km from the nest to hunt<sup>22</sup>. Considering this and the distance to the Wicklow Mountains SPA, it is considered unlikely that the peregrine recorded at Broad Lough forms part of the SPA SCI breeding populations.
- 71 No other SCI raptor species were recorded. Although, the site and the surrounding lands might be used by foraging and/or commuting SCI raptor species, there is no suitable breeding habitat (e.g. upland habitats such as heath (hen harrier) or cliffs (peregrine and merlin)<sup>22</sup>) within the proposed development site.

#### 3.2.4.3 Fish

- 72 The NBDC database returned no records for fish species listed under the EU Habitats Directive within approximately 2km of the proposed development. However, river lamprey *Lampetra fluviatilis* (Annex II and V species of the EU Habitats Directive) was recorded in Broad Lough during Inland Fisheries Ireland (IFI) surveys in 2010<sup>45</sup>. The River Vartry, which discharges to Broad Lough, is designated under the European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. 293) as it is considered capable of supporting Annex II and V species, Atlantic salmon *Salmo salar*. Based on this, and that the river has been listed on the North Atlantic Salmon Conservation Organization (NASCO) Irish Salmon Rivers Database<sup>46</sup> and

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<sup>44</sup> Ruddock, M., Mee, A., Lusby, J., Nagle, A., O'Neill, S. & O'Toole, L. (2016). *The 2015 National Survey of Breeding Hen Harrier in Ireland*. Irish Wildlife Manuals, No. 93. National Parks and Wildlife Service, Department of the Arts, Heritage and the Gaeltacht, Ireland

<sup>45</sup> Inland Fisheries Ireland (2010) Sampling Fish for the Water Framework Directive: Transitional Waters 2010. Broad Lough. Available at: [www.wfdfish.ie](http://www.wfdfish.ie) Accessed on: 20 June 2023.

<sup>46</sup> NASCO Database of Irish Salmon Rivers. Available at: <https://nasco.int/rivers-database/> and <https://nasco.int/wp-content/uploads/2020/02/CNL0545.pdf> Accessed on: 20 June 2023.

Angling Ireland website<sup>47</sup> for Atlantic salmon, it can be considered that these species are present within the river, and Broad Lough, in the absence of other records.

- 73 The proposed development site is not hydrologically connected to any European site designated for EU Habitats Directive fish species. The nearest designated site for *S. salar* and *L. fluviatilis*, or other Annex II and/or Annex V fish species (e.g. brook lamprey *Lampetra planeri*, sea lamprey *Petromyzon marinus* and twaite shad *Alosa fallax fallax*) is the Slaney River Valley SAC, located approximately 31.5km south-west of the proposed development site and in the separate Derreen sub-catchment (Derreen\_SC\_010) which forms part of the Slaney and Wexford Harbour catchment.
- 74 Fisheries data was not available for the Rathnew Stream or Rossanna Lower Stream. However, Atlantic salmon, brown trout, sea trout *Salmo trutta*, European eel *Anguilla anguilla* and lamprey are known from the wider Varty\_SC\_010 sub-catchment<sup>48</sup>.
- 75 Aquatic survey results from the proposed development carried out by Triturus Environmental Ltd. (Appendix III) concluded that the Rathnew Stream was considered as being of high fisheries value given it had excellent nursery habitat for salmonid species, due to the presence of abundant well-oxygenated glide and riffle habitat, good quality salmonid spawning habitat throughout and good quality salmonid holding habitat locally; very good brook lamprey nursery with both spawning areas and soft sediment ammocoete burial areas present; and good value for European eel given undercut banks with pools and high shading.
- 76 Salmonid remains were recorded within the otter spraint (droppings) recorded along the Rathnew Stream, while a live Atlantic salmon fry was recorded in the Q-sampling effort, confirming the presence of this Annex II species within the Stream.
- 77 Triturus Environmental Ltd. concluded that the Rosanna Lower Stream was not considered suitable for salmonid species, however, during winter flows some salmonids may enter the stream from the adjoining Rathnew Stream, which was considered a significant salmonid watercourse. The Rosanna Lower Stream was considered to have good potential for brook lamprey with abundant ammocoete burial habitat present and moderate quality spawning areas featuring medium and fine gravels; and low value to European eel which may occur locally in pools.

#### 3.2.4.4 Invertebrates

##### Marsh Fritillary

- 78 The NBDC database returned no records for the Annex II butterfly species, marsh fritillary *Euphydryas aurinia* within approximately 2km of the proposed development.
- 79 There is a small area of suitable foraging habitat (damp grassland with wildflowers, (GS4)) for the species within the north-west corner of the site. However, the larval foodplant *Succisa pratensis* was not recorded within the footprint of the proposed development. Considering this, the proposed development site is considered unsuitable for marsh fritillary.
- 80 Evidence of the species or suitable supporting species was not recorded within the proposed development site during the surveys carried out in April and July 2022.

##### Freshwater Pearl Mussel

- 81 The NBDC database returned no records for freshwater pearl mussel *Margaritifera margaritifera* (Annex II and V species of the EU Habitats Directive) within approximately 2km of the proposed development, however there are previous records of the species in the Vartry sub-catchment, although the current status

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<sup>47</sup> Angling Ireland. Information on River Vartry fishing available at: [www.fishingireland.info](http://www.fishingireland.info) Accessed on: 20 June 2023.

<sup>48</sup> Kelly, F.L., Connor, L., Matson, R., Feeney, R., Morrissey, E., Coyne, J. & Rocks, K. (2015). Sampling Fish for the Water Framework Directive, Rivers 2014. Inland Fisheries Ireland, 3044 Lake Drive, Citywest Business Campus, Dublin 24, Ireland.

is unknown<sup>49</sup>. The nearest designated site for the species is the Slaney River Valley SAC, located c. 31.5km south-west of the proposed development site and within a different catchment.

- 82 The Rathnew Stream and Rossanna Stream Lower form the northern and western boundaries of the proposed development site. Given the lack of suitable salmonid habitat recorded within Rossanna Stream Lower, by Triturus Environmental Ltd. during field surveys, the presence of freshwater pearl mussel within this stream is considered extremely unlikely given the species' reliance on salmonids for its larval life stages. The Rathnew Stream however, was recorded as having good to excellent quality habitat for salmonids and other fish species and achieved Q4 (good status) biological water quality, therefore the Rathnew stream is considered suitable to support freshwater pearl mussel, although the likelihood of them establishing within this watercourse given their sedentary nature, is extremely low.

#### Other Invertebrates

- 83 The desk study returned no records for other protected invertebrate species, such as White-clawed crayfish *Austropotamobius pallipes* (Annex II and V species of the EU Habitats Directive), within approximately 2km of the proposed development.
- 84 No White-clawed crayfish were recorded during the aquatic surveys carried out by Triturus Environmental on the 9<sup>th</sup> April 2022. The Rossanna Lower Stream was found to have no suitable habitat for this species while the Rathnew Stream had areas of potentially suitable habitat along its banks, although no evidence was recorded.

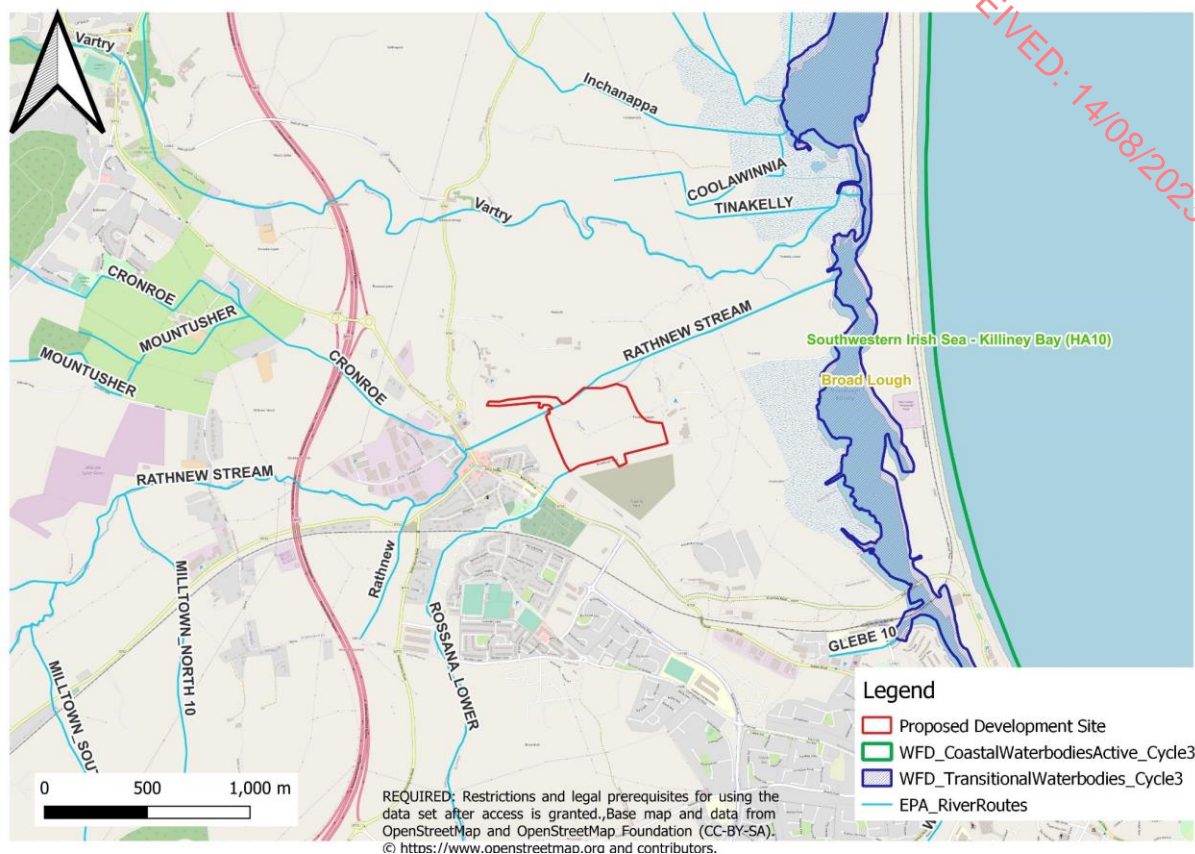
#### 3.2.5 Hydrology

- 85 The watercourses in the vicinity of the proposed residential development are small to medium-sized lowland depositing watercourses (FW2; Fossitt, 2000). The site is located within the Vartry (Vartry\_SC\_010) sub-catchment, which is contained within the Ovoca-Vartry catchment, and Rathnew Stream and Wicklow sub-basins which drain into Broad Lough and subsequently to the Irish Sea.
- 86 The proposed development is bordered to the west by the Rossanna Lower Stream and to the north by the Rathnew Stream within the Vartry\_SC\_010 sub-catchment. The Rathnew Stream flows from the proposed development site approximately 700m metres east where it enters The Murrough Wetlands SAC [002249] and the Murrough SPA [004186].
- 87 The Rossanna Lower Stream converges with the Rathnew Stream in the north-west corner of the Proposed Development site. The Rathnew Stream flows from here along the northern boundary of the Proposed Development site flowing approximately 1.15km to the east where it discharges into Broadlough Estuary (IE\_EA\_130\_0100), See **Figure 8**, below.
- 88 There is a single EPA biological monitoring station on the Rathnew Stream. This site (station RS10R020600 in Rathnew) achieved Q4 (good status) in 2020. There is no biological water quality monitoring station on the Rossanna Lower Stream.
- 89 The Rathnew Stream and Rossanna Lower Stream (both part of the Rathnew Stream\_010 river waterbody) were ranked of 'Good' WFD status and considered 'Not at risk' in the 2016-2021 period (EPA, 2022).
- 90 Aquatic surveys carried out by Triturus Environmental Ltd. included Q sampling efforts at two locations on each of the Rathnew and Rosanna Lower Streams (Appendix III). The surveys carried out on the Rosanna Lower Stream concluded that biological water quality (Q-sampling), was calculated as Q3-4 (moderate status), with no macro-invertebrate species of conservation value greater than 'least concern', according to national red lists, recorded. The surveys carried out on the Rathnew Stream concluded that biological water quality (Q-sampling), was calculated tentatively (due to deep glide habitat) as Q4 (good status), with

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<sup>49</sup> <https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=2fae3c393baa4b79b7dfb1e3c19f3fab> Accessed on: 20 June 2023.

no macro-invertebrate species of conservation value greater than 'least concern', according to national red lists, recorded.



**Figure 8 Hydrological Connectivity**

### 3.2.6 Hydrogeology

- 91 Geological Survey of Ireland (GSI) data indicates that the site is underlain by a Locally Important Bedrock Aquifer (LI), which is moderately productive only in local zones. The site is located in an area of 'Low' to 'High' groundwater vulnerability.
- 92 The Groundwater Body (GWB) underlying the proposed development site is the Wicklow GWB, which is currently classified by the EPA 2016-2021 as having 'Good Status' and is 'At risk'. The Wicklow GWB overlaps with four European sites that are designated for groundwater dependent terrestrial habitats, i.e. The Murrough Wetlands SAC, Magherabeg Dunes SAC, Buckronev-Brittias Dunes and Fen SAC and Knocksink Wood SAC, which are located approximately 450m east, 7.1km and 7.2km south-east, and 23.2km north-west of the proposed development site, respectively.
- 93 Based on information published by GSI on the Wicklow GWB<sup>50</sup>, 'the groundwater discharges directly to the sea along the coast. The GWB will also be discharged to the overlying streams and rivers as baseflow. The proportion of river flow that is baseflow will vary throughout the area.'

### 3.2.7 Soils & Geology

- 94 GSI data indicates that the site is underlain by soils classed as Glaciofluvial sands and gravels, Alluvium and Tills (diamictons). These are described as limestone sand and gravels (Carboniferous), Alluvium

<sup>50</sup> [https://secure.dccae.gov.ie/GSI\\_DOWNLOAD/Groundwater/Reports/GWB/WicklowGWB.pdf](https://secure.dccae.gov.ie/GSI_DOWNLOAD/Groundwater/Reports/GWB/WicklowGWB.pdf)

undifferentiated and sandstone and shale till (Cambrian/Precambrian) with a matrix of Irish Sea basin origin, respectively.

- 95 The bedrock beneath the site comprises the Maulin Formation, which comprises of dark blue-grey slate, phyllite and schist. The Maulin Formation is of Ordovician origin and is described as “penetratively cleaved dark blue grey slates and phyllites which are commonly striped with pale siltstone laminae. Bands of garnetiferous quartzite that are 20m thick occur in the granite aureole. There are also thick lenses of orthoquartzite”.

### 3.3 Assessment of Potential Effects on European Sites

- 96 This section identifies all the potential impacts associated with the proposed development, examines whether there are any European sites within the ZoI of effects from the proposed development, and assesses whether there is any potential for the proposed development to result in a significant effect on any European site, either alone or in combination with other plans or projects.
- 97 In assessing the potential for the proposed development to result in a significant effect on any European sites, any measures intended to avoid or reduce the harmful effects of the project on European sites (i.e. mitigation measures) are not taken into account.

#### 3.3.1 Habitat loss and fragmentation

- 98 The proposed development site does not overlap with the boundary of any European site. Therefore, there are no European sites at risk of direct habitat loss impacts.
- 99 As the proposed development does not traverse any European sites there is no potential for direct habitat fragmentation to occur.
- 100 There was no suitable habitat for foraging and/or roosting SCI bird species within the proposed development site during the winter surveys carried out onsite, with no significant usage of the site by any of the species recorded flying over, and therefore the proposed development site is unlikely support significant populations of any fauna species linked with the SCI populations of any European site(s) and there is no potential for direct habitat loss/fragmentation impacts on these species to occur. However, there is potential for adjacent lands to provide suitable supporting habitat relied upon by wintering SCI species potentially linked with the SCI populations of any European site(s), this is dealt with in Section 3.3.5, below.
- 101 There is suitable habitat for QI species, such as otter, with evidence of use of the site recorded along the northern site boundary along the Rathnew Stream. Therefore, lands alongside proposed development has the potential to support populations of QI fauna species potentially linked with QI populations of the Wicklow Mountains SAC and there is potential for habitat loss/fragmentation impacts on this species to occur, through the construction of the northern access road across the Rathnew Stream.
- 102 The proposed crossing of the Rathnew Stream has the potential to result in habitat severance/ barrier effects to otter along the Rathnew Stream.
- 103 As the proposed development has the potential to result in loss and/or fragmentation of *ex-situ* habitat utilised by a QI species potentially associated with a European site, there is potential for cumulative effects to occur in this regard.

#### 3.3.2 Habitat degradation as a result of hydrological impacts

- 104 The construction of the northern access road which is proposed to cross the Rathnew Stream has the potential to result in the release of contaminated surface water runoff and/or an accidental spillage or a pollution event at construction and operation. This has the potential to affect water quality in the receiving aquatic environment. Such a pollution event may include: the release of sediment into receiving waters and the subsequent increase in mobilised suspended solids; the leakage and/or spillage of cementitious materials into receiving waters; and, the accidental spillage and/or leakage of contaminants into receiving waters.

- 105 Therefore, there is the possibility of the proposed development undermining the conservation objectives of any of the Qualifying Interests or Special Conservation Interests of the European sites in, or associated with Rathnew Stream and Broad Lough, as a result of the release of contaminated surface water runoff and/or an accidental spillage or pollution event discharges during the construction of the northern access road over the Rathnew Stream.
- 106 Given the significant level of hydrological dispersion which would occur between any contamination or spillage event within the proposed development site and the Irish Sea, is it not considered likely that any contamination or spillage event would significantly effect water quality within the Irish Sea, and as such is unlikely to affect any QI/SCI of any European sites within the Irish Sea.
- 107 Surface water run-off and discharges from the proposed development site will be attenuated onsite prior to discharge to the watercourses, Rathnew Stream and Rosanna Lower Stream, which form the western and northern boundaries. Foul waters from the proposed development will be discharged to Wicklow Wastewater Treatment Plant (WwTP) for treatment, via the existing foul water drainage network, prior to discharge into the Irish Sea. Therefore, the Zone of Influence (Zoi) of potential effects on water quality from the proposed development could extend to Broad Lough and the Irish Sea.

#### *Surface Water*

- 108 The proposed development comprises five principal catchments for the collection and disposal of stormwater runoff from impermeable areas:
- Catchment A of 5.93ha, representing the majority of the site to the east of the proposed Rathnew Inner Relief Road.
  - Catchment B of 3.16ha, including the southernmost section of the Rathnew Inner Relief Road proposed under this application, as well as areas to the west and east of this.
  - Catchment C of 1.3ha, comprising the north-east corner of the development site.
  - Catchment D of 0.44ha, representing the central section of the Rathnew Inner Relief Road proposed under this application.
  - Catchment E of 0.62ha, representing the Rathnew inner relief road on the northern side of Rathnew Stream.
- 109 Areas outside these defined catchments shall not be significantly developed and shall maintain their current natural drainage patterns. Full details of the proposed surface water drainage can be found in CS Consulting drawings A034-CSC-ZZ-XX-DR-C-0005/006, A034-CSC-ZZ-XX-DR-C-0036, A034-CSC-ZZ-XX-DR-C-0037/0038.
- 110 Stormwater runoff from the proposed development's five defined catchment areas shall drain to internal swales and stormwater detention basins (ponds). These SuDS features allow some direct infiltration of stormwater, and also provide attenuation storage to cater for extreme rainfall events. All stormwater from the development's drainage network shall discharge to the existing Rathnew Stream and Rossana Lower stream, at the development site's northern and western boundaries, respectively. Flow control devices shall restrict the discharge rate to the greenfield runoff rates established for each catchment. The greenfield runoff rate at the development site has been established as 6.56 l/s/ha. A total attenuation storage volume of 3,369m<sup>3</sup> is required for the development site, and a total attenuation storage volume of 3,453m<sup>3</sup> is provided.
- 111 Wicklow County Council requires that all developments adhere to their policy of implementing Sustainable Drainage Systems (SuDS). The proposed SuDS features within the subject development shall consist of:
- Low water usage sanitary appliances to reduce the volume of potable water required for use within buildings
  - Installation of online water butts to capture rainwater from roof areas and to store this for local use, landscaping and maintenance purposes, further reducing reliance on the potable water network.

- Permeable paving for car-parking bays to allow rainwater to dissipate into the ground, mimicking the current natural arrangement.
- Swales to capture the rainwater from the internal network and permit infiltration.
- Attenuation tank with permeability to allow for infiltration.
- Holding the majority of stormwater collected during extreme storm events in suitably designed detention basins and wetlands, which also allow for infiltration.

#### *Foul Water*

- 112 All effluent generated at the site will be conveyed to the Wicklow Wastewater Treatment Plant via proposed foul drainage network. The P.E. for the proposed development is calculated to be 950 P.E.
- 113 Foul water, comprising sewage (and some surface water run-off), is treated at Wicklow WwTP prior to discharge to the Irish Sea. The most recent information from Irish Water indicates that the plant is operating within its capacity of 34,000 P.E. (Irish Water, 2020<sup>51</sup>), with a current operational loading of c. 18,762 P.E. Wicklow WWTP operates under a discharge licence from the EPA (D0012-01) and must comply with the licence conditions.
- 114 It is also an objective of the Greater Dublin Strategic Drainage Study (DDS 2005), and all land plans sitting under the Wicklow County Development Plan 2022-2028<sup>7</sup> to include Sustainable Urban Drainage Systems (SuDS) within new developments. The relevant development plan also has protective policies/objectives in place to protect water quality in the receiving freshwater and marine environments, and to implement the Water Framework Directive in achieving good water quality status for Irish Sea.
- 115 Considering the above, particularly the current unpolluted status of the Irish Sea, that the Wicklow WwTP has the capacity to treat the additional loading, and that foul water discharges from the proposed development would equate to a very small percentage of the overall discharge volumes sent to Wicklow WwTP for treatment, it is concluded that the proposed development will not impact on the overall water quality status of the Irish Sea.
- 116 Therefore, there is no possibility of the proposed development undermining the conservation objectives of any of the QIs or SCIs of the European sites in, or associated with, the Irish Sea as a result of foul water discharges.

#### *In Combination*

- 117 There is potential for “in combination” effects on water quality in the Broad Lough Transitional Water Body (TWB) and the Irish Sea from any other projects carried out within the functional areas of the *Wicklow County Development Plan 2022-2028*<sup>7</sup>, or any other land use plans which could influence conditions in the Irish Sea via rivers and other surface water features.
- 118 The Eastern & Midland Regional Assembly, Regional Spatial & Economic Strategy 2019-2031<sup>52</sup> (Eastern & Midland Regional Assembly, 2019) includes a range of policy objectives relevant to the protection of European sites and the protection of water quality in Irish Sea, to which the relevant planning authorities must have regard to in the preparation and adoption of their development plans (included in Appendix II).
- 119 The planning authority for the proposed development is Wicklow County Council (WCC). Plans and developments within Wicklow County must comply with the following policy objectives of the Wicklow County Development Plan 2022 – 2028<sup>7</sup> relevant to the protection of European sites and the protection of water quality in Irish Sea:

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<sup>51</sup> Irish Water (2020) Annual Environmental Report 2020 Wicklow D0012-01. [https://www.water.ie/uuid/51cce695-6b1d-43d4-9ccc-30a09b186f1c/d0012-01\\_2020\\_aer\\_1.pdf](https://www.water.ie/uuid/51cce695-6b1d-43d4-9ccc-30a09b186f1c/d0012-01_2020_aer_1.pdf) (Accessed 20/06/2023)

<sup>52</sup> Eastern & Midland Regional Assembly (2019) *Regional Spatial & Economic Strategy 2019-2030*

## CPO13.1

To ensure and support the implementation of the EU Groundwater Directive and the EU Water Framework Directive and associated River Basin and Sub-Basin Management Plans and Blue Dot Catchment Programme, to ensure the protection, improvement and sustainable use of all waters in the County, including rivers, lakes, ground water, coastal and estuarine waters, and to restrict development likely to lead to a deterioration in water quality. The Council will also have cognisance of, where relevant, the EU's Common Implementation Strategy Guidance Document No. 20 and 36 which provide guidance on exemptions to the environmental objectives of the Water Framework Directive.

## CPO13.1

To ensure and support the implementation of the EU Groundwater Directive and the EU Water Framework Directive and associated River Basin and Sub-Basin Management Plans and Blue Dot Catchment Programme, to ensure the protection, improvement and sustainable use of all waters in the County, including rivers, lakes, ground water, coastal and estuarine waters, and to restrict development likely to lead to a deterioration in water quality. The Council will also have cognisance of, where relevant, the EU's Common Implementation Strategy Guidance Document No. 20 and 36 which provide guidance on exemptions to the environmental objectives of the Water Framework Directive.

## CPO 13.5

To ensure compliance with and to implement the provisions of the Nitrates Directive in so far as it falls within the remit of the Council to do so.

## CPO 13.6

To encourage and promote the use of catchment-sensitive farming practices, in order to meet Water Framework Directive targets and comply with the River Basin Management Plan.

## CPO 13.6

To encourage and promote the use of catchment-sensitive farming practices, in order to meet Water Framework Directive targets and comply with the River Basin Management Plan.

## CPO 13.16

Permission will be considered for private wastewater treatment plants for single rural houses where:

- the specific ground conditions have been shown to be suitable for the construction of a treatment plant and any associated percolation area;
- the system will not give rise to unacceptable adverse impacts on ground waters / aquifers and the type of treatment proposed has been drawn up in accordance with the appropriate groundwater protection response set out in the Wicklow Groundwater Protection Scheme (2003);
- the proposed method of treatment and disposal complies with Wicklow County Council's Policy for Wastewater Treatment & Disposal Systems for Single Houses (PE ≤ 10) and the Environmental Protection Agency "Waste Water Treatment Manuals"; and
- in all cases the protection of ground and surface water quality shall remain the overriding priority and proposals must definitively demonstrate that the proposed development will not have an adverse impact on water quality standards and requirements set out in EU and national legislation and guidance documents

## CPO 13.21

Ensure the implementation of Sustainable Urban Drainage Systems (SUDS) in accordance with the Wicklow County Council SuDS Policy to ensure surface water runoff is managed for maximum



benefit. In particular to require proposed developments to meet the design criteria of each of the four pillars of SuDS design; Water Quality, Water Quantity, Amenity and Biodiversity.

#### CPO 13.21

Ensure the implementation of Sustainable Urban Drainage Systems (SUDS) in accordance with the Wicklow County Council SuDS Policy to ensure surface water runoff is managed for maximum benefit. In particular to require proposed developments to meet the design criteria of each of the four pillars of SuDS design; Water Quality, Water Quantity, Amenity and Biodiversity.

#### CPO 17.1

To protect, sustainably manage and enhance the natural heritage, biodiversity, geological heritage, landscape and environment of County Wicklow in recognition of its importance for nature conservation and biodiversity and as a non-renewable resource.

#### CPO17.2

Ensure the protection of ecosystems and ecosystem services by integrating full consideration of these into all decision making.

#### CPO17.3

To support and promote the implementation of the County Wicklow Heritage Plan and the County Wicklow Biodiversity Action Plan.

#### CPO 17.4

To contribute, as appropriate, towards the protection of designated ecological sites including Special Areas of Conservation (SACs) and Special Protection Areas (SPAs); Wildlife Sites (including proposed Natural Heritage Areas); Salmonid Waters; Flora Protection Order sites; Wildfowl Sanctuaries (see S.I. 192 of 1979); Freshwater Pearl Mussel catchments; and Tree Preservation Orders (TPOs). To contribute towards compliance with relevant EU Environmental Directives and applicable National Legislation, Policies, Plans and Guidelines, including but not limited to the following and any updated/superseding documents:

- EU Directives, including the Habitats Directive (92/43/EEC, as amended)<sup>6</sup>, the Birds Directive (2009/147/EC)<sup>7</sup>, the Environmental Liability Directive (2004/35/EC)<sup>8</sup>, the Environmental Impact Assessment Directive (2011/92/EU, as amended), the Water Framework Directive (2000/60/EC), EU Groundwater Directive (2006/118/EC) and the Strategic Environmental Assessment Directive (2001/42/EC); EU 'Guidance on integrating ecosystems and their services into decision-making' (European Commission 2019)
- National legislation, including the Wildlife Acts 1976 and 2010 (as amended)<sup>9</sup>, European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, the Wildlife (Amendment) Act 2000, the European Union (Water Policy) Regulations 2003 (as amended), the Planning and Development Act 2000 (as amended), the European Communities (Birds and Natural Habitats) Regulations 2011 (SI No. 477 of 2011), the European Communities (Environmental Liability) Regulations 2008 (as amended)<sup>10</sup> and the Flora Protection order 2015.
- National policy guidelines (including any clarifying circulars or superseding versions of same), including 'Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment' (2018), 'Guidance for Consent Authorities regarding Sub-Threshold Development' (2003), 'Tree Preservation Guidelines', 'Landscape and Landscape Assessment' (draft 2000), 'Appropriate Assessment Guidance' (2010);
- Catchment and water resource management plans, including the National River Basin Management Plan 2018-2021 (including any superseding versions of same),

- Biodiversity plans and guidelines, including National Biodiversity Action Plan 2017-2021 (including any superseding versions of same) and the County Wicklow Biodiversity Action Plan;
- Ireland's Environment – An Integrated Assessment 2020 (EPA), including any superseding versions of same), and to make provision where appropriate to address the report's goals and challenges

#### CPO 17.5

Projects giving rise to adverse effects on the integrity of European sites (cumulatively, directly or indirectly) arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall not be permitted on the basis of this plan

#### CPO 17.6

Ensure that development proposals, contribute as appropriate towards the protection and where possible enhancement of the ecological coherence of the European Site network and encourage the retention and management of landscape features that are of major importance for wild fauna and flora as per Article 10 of the EU Habitats directive. All projects and plans arising from this Plan will be screened for the need to undertake Appropriate Assessment under Article 6 of the Habitats Directive.

#### CPO 17.7

To maintain the conservation value of all proposed and future Natural Heritage Areas (NHAs) and to protect other designated ecological sites in Wicklow.

#### CPO 17.8

Ensure ecological impact assessment is carried out for any proposed development likely to have a significant impact on proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Statutory Nature Reserves, Refuges for Fauna, Annex I habitats, or rare and threatened species including those species protected by law and their habitats. Ensure appropriate avoidance and mitigation measures are incorporated into development proposals as part of any ecological impact assessment.

#### CPO 17.12

To protect non-designated sites from inappropriate development, ensuring that ecological impact assessment is carried out for any proposed development likely to have a significant impact on locally important natural habitats, species or wildlife corridors. Ensure appropriate avoidance and mitigation measures are incorporated into development proposals as part of any ecological impact assessment.

#### CPO 17.14

Ensure that development proposals support the protection and enhancement of biodiversity and ecological connectivity within the plan area in accordance with Article 10 of the Habitats Directive, including linear landscape features like watercourses (rivers, streams, canals, ponds, drainage channels, etc), woodlands, trees, hedgerows, road and railway margins, semi-natural grasslands, natural springs, wetlands, stonewalls, geological and geo-morphological systems, features which act as stepping stones, such as marshes and woodlands, other landscape features and associated wildlife where these form part of the ecological network and/or may be considered as ecological corridors or stepping stones that taken as a whole help to improve the coherence of the European network in Wicklow.

#### CPO 17.15

To protect and enhance wetland sites that are listed as being of C+ or higher importance in the County Wicklow wetlands survey and any subsequent updates or revisions thereof and to implement the recommendations of the County Wicklow wetlands survey.

CPO 17.17

Work with statutory authorities to prevent and control the spread of invasive plant and animal species and require, where appropriate Invasive Species Management Plans to be prepared as part of the development management process where necessary.

CPO17.18

To promote the preservation of trees, groups of trees or woodlands in particular native tree species, and those trees associated with demesne planting, in the interest of the long-term sustainability of a stable ecosystem amenity or the environment generally, as set out in Schedule 17.05 and Maps 17.05 and 17.05A - H of this plan.

CPO 17.22

To require and ensure the preservation and enhancement of native and semi-natural woodlands, groups of trees and individual trees, as part of the development management process, and require the planting of native broad leaved species, and species of local provenance in all new developments

CPO 17.24

To ensure and support the implementation of the EU Groundwater Directive and the EU Water Framework Directive and associated River Basin and Sub-Basin Management Plans and Blue Dot Catchment Programme, to ensure the protection, improvement and sustainable use of all waters in the County, including rivers, lakes, ground water, coastal and estuarine waters, and to restrict development likely to lead to a deterioration in water quality. The Council will also have cognisance of, where relevant, the EU's Common Implementation Strategy Guidance Document No. 20 and 36 which provide guidance on exemptions to the environmental objectives of the Water Framework Directive.

CPO 17.25

Ensure that floodplains and wetlands are retained for their biodiversity and ecosystems services value and resist development and activities that would interfere with the natural water cycle to a degree that would interfere with the survival and stability of these natural habitats.

CPO 17.26

Protect rivers, streams and other water courses by avoiding interference with river / stream beds, banks and channels and maintaining a core riparian buffer zone of generally 25m along watercourses (or other width, as determined by the Planning Authority having particular regard to 'Planning for Watercourses in the Urban Environment' by Inland Fisheries Ireland for urban locations) free from inappropriate development, with Wicklow County Development Plan 2022-2028 Chapter 17 | Natural Heritage & Biodiversity undeveloped riparian vegetation strips, wetlands and floodplains generally being retained in as natural a state as possible. Structures such as bridges should be clear span, and designed and built in accordance with Inland Fisheries Ireland guidance.

120 Plans and developments within the other local authority areas which could influence conditions in the Irish Sea via rivers and other surface water features, also must comply with the policies and objectives relevant to the protection of European sites and water quality. These include the *Dublin City Development Plan*

2022-2028<sup>53</sup> and the *Dún Laoghaire-Rathdown County Development Plan 2022-2028*<sup>54</sup>. The relevant policies and objectives in those plans for the protection of European sites and water quality are included in Appendix II.

- 121 As noted under the surface water and foul water sections above, the Irish Sea is currently unpolluted and the proposed development will not result in any measurable effect on water quality in Irish Sea. There are also protective policies and objectives in place at a strategic planning level to protect water quality in the Irish Sea.
- 122 Therefore, and having regard to the policies and objectives referred to under the relevant development plans, it is concluded that the possibility of any other plans acting in combination with the proposed development to give rise to significant effects on any European site in, or associated with, the Irish Sea can be excluded.
- 123 The main development with the potential for cumulative effect is the adjacent, consented Tinakilly Phase 1, located directly south of the proposed development. The remaining majority of nearby planning applications are concerned with minor adjustments/ renovations to existing houses, and thus these small-scale developments are covered under the appropriate policies and objectives of the Wicklow County Development Plan, referred to above.
- 124 Therefore, it is concluded that without mitigation any other large -scale projects acting in combination with the proposed development has the potential to give rise to significant effects on any European site in, or associated with, the Irish Sea.

### 3.3.3 Habitat degradation as a result of hydrogeological impacts

- 125 The proposed development lies within the Wicklow Groundwater Body (Dublin GWB). There are four European sites within the Wicklow GWB that are designated for groundwater dependant habitats and/or species:
- The Murrough Wetlands SAC, located approximately 440m east;
  - Magherabeg Dunes SAC, approximately 7.5km south-east;
  - Buckroney-Brittias Dunes and Fen SAC, approximately 10.8km south-east; and
  - Knocksink Wood SAC, approximately 22.8km north-west.
- 126 The following Qualifying Interest (QI) habitats of the above SACs are dependent upon the existing condition and functioning of the groundwater regime:
- Alkaline fens (The Murrough Wetlands SAC and Buckroney-Brittias Dunes and Fen SAC);
  - Calcareous fens with *Cladium mariscus* and species of the Caricion davallinae\* (The Murrough Wetlands SAC);
  - Petrifying springs with tufa formation (Cratoneurion)\* (Magherabeg Dunes SAC and Knocksink Wood SAC); and
  - Humid dune slacks (Buckroney-Brittias Dunes and Fen SAC).
- 127 Two of these habitats, calcareous fens with *Cladium mariscus* and species of the Caricion davallinae and petrifying springs with tufa formation (Cratoneurion), are listed as priority habitats in the EU Habitats Directive, identified by the asterisk (\*).

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<sup>53</sup> Dublin City Council (2022). *Dublin City Development Plan 2022-2028*. Plan as published for public display, [Development Plan 2022 - 2028 | Dublin City Council](#). Accessed on: 22<sup>nd</sup> June 2023

<sup>54</sup> Dún Laoghaire-Rathdown County Council (2022). *Dún Laoghaire-Rathdown County Development Plan 2022-2028*. Plan as published for public display, <https://www.dlrcoco.ie/en/county-development-plan/county-development-plan-2022-2028>. Accessed on: 22<sup>nd</sup> June 2023

- 128 Based on information published by Geological Survey Ireland (GSI) on the Wicklow GWB<sup>50</sup>, 'the groundwater will discharge directly to the sea along the coast'. As the proposed development is located away from the SACs along the coast, with the exception of The Murrough Wetlands SAC, it cannot influence groundwater conditions in these European sites. With regard to the Murrough Wetlands SAC, the known locations of fens for which the European site is designated for are located approximately 7.3km north-east of the proposed development, and considering the distance and the fact that the proposed development will not interact directly with the underlying groundwater body, as such, it cannot influence groundwater conditions at the locations of the QI fen habitats of The Murrough Wetlands SAC.
- 129 Therefore, there is no possibility of the proposed development undermining the conservation objectives of any of the Qualifying Interests or Special Conservation Interests of any European sites, either alone or in combination with any other plans or projects, as a result of hydrogeological effects.

#### 3.3.4 Habitat degradation as a result of introducing/spreading non-native invasive species

- 130 The ecological surveys carried out within the proposed development recorded two species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended), Himalayan balsam and Spanish bluebell (or its hybrid). In the absence of mitigation, there is potential for these species to spread or be introduced, during construction and / or routine maintenance / management works, to terrestrial habitat areas in European sites downstream. The introduction and / or spread of these invasive species to downstream European sites could potentially result in the degradation of existing habitats present, in particular coastal habitats not permanently or regularly inundated by seawater. These species may outcompete other native species present, negatively impacting the species composition, diversity and abundance and the physical structural integrity of the habitat. This in turn could undermine the conservation objectives of these European sites.
- 131 As the proposed development has the potential to result in habitat degradation of the Qualifying / Special Conservation Interest species of European sites as the result of the spread of invasive species, there is potential for cumulative effects to occur in this regard.

#### 3.3.5 Disturbance and displacement impacts

- 132 Construction-related disturbance and displacement of fauna species could potentially occur within the vicinity of the proposed development. For mammal species such as otter, disturbance effects would not be expected to extend beyond 150m<sup>55</sup>. For birds, disturbance effects would not be expected to extend beyond a distance of approximately 300m, as noise levels associated with general construction activities would attenuate to close to background levels at that distance<sup>56</sup>.
- 133 Evidence of the QI mammal species, otter, potentially associated with the Wicklow Mountains SAC, has been recorded along the northern boundary of the proposed development site within the disturbance Zol of the proposed development. Therefore, otter associated with the Wicklow Mountains SAC have the potential to be disturbed or displaced from the surrounding area due to the disturbance associated with

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<sup>55</sup> This is consistent with Transport Infrastructure Ireland (TII) guidance (Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes (NRA 2006) and Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes) (NRA 2005) documents. This is a precautionary distance, and likely to be moderated by the screening effect provided by surrounding vegetation and buildings, with the actual Zol of construction related disturbance likely to be much less in reality.

<sup>56</sup> The disturbance zone of influence for waterbirds is based on the relationship between the noise levels generated by general construction traffic/works (BS 5228:2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1 Noise) and the proximity of those noise levels to birds – as assessed in Cutts, N. Phelps, A. & Burdon, D. (2009) *Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance*, and Wright, M., Goodman, P & Cameron, T. (2010) Exploring Behavioural Responses of Shorebirds to Impulsive Noise. *Wildfowl* (2010) 60: 150–167. At 300m, noise levels are below 60dB or, in most cases, are approaching the 50dB threshold below which no disturbance or displacement effects would arise.

the construction and operation of the proposed scheme, including the provision of vehicular access over the Rathnew Stream.

134 The Murrough SPA is located just outside the disturbance Zol for birds, at approximately 140m east of the proposed development, however there are terrestrial habitat areas within the disturbance Zol of the proposed development that have the potential support populations of special conservation interest species of this European site<sup>57</sup>.

135 As the proposed development will potentially result in the disturbance/displacement of the Qualifying/Special Conservation Interest species of any European site, there is potential for in combination effects to occur in that regard.

### 3.3.6 Direct Mortality Impacts

136 The construction of the proposed northern access road across the Rathnew Stream has the potential to cause direct mortality to otter, potentially associated with the Wicklow Mountains SAC. However, considering the location of the proposed development in proximity to an existing urban area, the crepuscular (active at dusk and dawn) nature of otter and that no proposed works will take place at night; the proposed development is not considered to have the potential to result in direct mortality of otter.

### 3.3.7 Summary

137 The habitat loss/ fragmentation, habitat degradation as a result of hydrological impacts, habitat degradation as a result of introducing/spreading non-native invasive species and disturbance/ displacement impacts associated with the proposed development have the potential to affect the receiving environment and, consequently, have the potential to affect the conservation objectives supporting the Qualifying Interest/ Special Conservation Interests of European sites. Therefore, the possibility of significant effects on European sites cannot be ruled out.

138 As the proposed development itself is likely to affect the QIs/ SCIs or conservation objectives of European sites, there is also the potential for other plans or projects to act in combination with it to result in likely significant effects on European sites.

139 The potential impacts of the proposed development on the receiving environment, their Zol, and the European sites at risk of likely significant effects are summarised in

140 Table 1 below. In assessing the potential for the proposed development to result in a significant effect on any European sites, any measures intended to avoid or reduce the harmful effects of the project on European sites are not taken into account.

**Table 1 Summary of Analysis of Likely Significant Effects on European sites**

Potential Direct, Indirect In Combination Effects and the Zol of the Potential Effects	Are there any European sites within the Zol of the proposed development?
Habitat loss / fragmentation. Habitat loss will be confined to the lands within the proposed development boundary. Vegetation clearance along the Rathnew Stream along the northern boundary of the proposed development site,	Yes There are <i>ex-situ</i> habitats utilised by a QI mammal species, otter, potentially associated with the Wicklow Mountains SAC.

<sup>57</sup>There is a need to consider use of habitat areas outside of an SPA by SCI bird species where they support the SCI populations and the site's conservation objectives. These habitat areas can comprise alternative roosting sites, foraging areas, staging grounds or migration routes and can, but not necessarily exclusively, be situated within the immediate hinterland of the SPA, or in areas ecologically connected to it.

Potential Direct, Indirect In Combination Effects and the Zol of the Potential Effects	Are there any European sites within the Zol of the proposed development?
which is utilised by the QI species otter, has the potential to result in <i>ex-situ</i> loss and/or fragmentation of habitats utilised by this species	
Habitat degradation as a result of hydrological impacts. Habitats and species downstream of the proposed development site and the associated surface water drainage discharge points, and downstream of offsite wastewater treatment plants.	Yes There are European sites at risk of hydrological effects associated with the proposed development, these include Wicklow Mountains SAC (Otter), The Murrough Wetlands SAC and The Murrough SPA.
Habitat degradation as a result of hydrogeological impacts. Groundwater-dependant habitats, and the species those habitats support, in the local area that lie downgradient of the proposed development site.	No There are no European sites at risk of hydrogeological effects associated with the proposed development
Habitat degradation as a result of introducing/spreading non-native invasive species. Habitat areas within, adjacent to, and potentially downstream of the proposed development site.	Yes There are two non-native invasive species listed on the Third Schedule, Himalayan Balsam and Spanish bluebell or its hybrid, present on the proposed development site. Therefore, there is a risk to downstream European sites from the spread/introduction of these non-native invasive species.
Disturbance and displacement impacts. Potentially up to several hundred metres from the proposed development boundary, dependent upon the predicted levels of noise, vibration and visual disturbance associated with the proposed development, taking into account the sensitivity of the qualifying interest species to disturbance effects	Yes There are <i>ex-situ</i> habitats utilised by QI/SCI species of European sites within the potential zone of influence of disturbance effects associated with the construction or operation of the proposed development, including Wicklow Mountains SAC (Otter), and The Murrough SPA.

#### 4 Conclusions of Screening Assessment Process

- 141 Following an examination, analysis and evaluation of all the relevant information and in view of best scientific knowledge, and applying the precautionary principle, it can be concluded that there is the possibility for significant effects on the following European sites, in the absence of mitigation either arising from the project alone or in combination with other plans and projects, as a result habitat loss/ fragmentation, habitat degradation as a result of hydrological impacts, habitat degradation as a result of introducing/spreading non-native invasive species, and disturbance/ displacement impacts: Wicklow Mountains SAC, The Murrough Wetlands SAC and the Murrough SPA
- 142 In reaching this conclusion, the nature of the project and its potential relationship with all European sites within the zone of influence, and their conservation objectives, have been fully considered.
- 143 Therefore, it is the professional opinion of the authors of this report that the application for consent for the proposed development does require a Stage Two Appropriate Assessment in respect of the above listed European sites and the preparation of a Natura Impact Statement (NIS).

## Appendix I

### The Qualifying Interests (QIs) and Special Conservation Interests (SCIs) of the European sites in the vicinity of the proposed development site

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
<b>Special Area of Conservation (SAC)</b>	
<p><b>The Murrough Wetlands SAC [00002249]</b>            1210 Annual Vegetation of drift Lines            1220 Perennial Vegetation of stony banks            1330 Atlantic Slat meadows (<i>Glauco-Puccinellietalia maritimae</i>)            1410 Mediterranean Salt Meadows (<i>Juncetalia maritimi</i>)            7210 Calcareous Fens with <i>Cladium mariscus</i> and species of the Caricion davallianae*            7230 Alkaline Fens</p> <p><i>S.I. No. 622/2017 - European Union Habitats (The Murrough Wetlands Special Area of Conservation 002249) Regulations 2017</i>            NPWS (2021) Conservation Objectives: The Murrough Wetlands SAC 002249. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.<sup>58</sup></p>	<p>The proposed development lies c.440m west of this European site.</p>
<p><b>Wicklow Reef SAC [002274]</b>            1170 Reefs</p> <p><i>S.I. No. 104/2016 - European Union Habitats (Wicklow Reef Special Area of Conservation 002274) Regulations 2016.</i>            NPWS (2013) Conservation Objectives: Wicklow Reef SAC 002274. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.</p>	<p>The proposed development lies c.5.3km from this European site.</p>
<p><b>Deputy's Pass Nature Reserve SAC [000717]</b>            91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles</p> <p><i>S.I. No. 192/2016 - European Union Habitats (Deputy's Pass Nature Reserve Special Area of Conservation 000717) Regulations 2016.</i>            NPWS (2021) Conservation Objectives: Deputy's Pass Nature Reserve SAC 000717. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.</p>	<p>The proposed development lies c.7.1km from this European site.</p>

<sup>58</sup> The versions of the conservation objectives documents referenced in this table are the most recent published versions at the time of writing



European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
<p><b>Magherabeg Dunes SAC [001766]</b>            1210 Annual vegetation of drift lines            2110 Embryonic shifting dunes            2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)            2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)*            2150 Atlantic decalcified fixed dunes (Calluno-Uliceatea)*            7220 Petrifying springs with tufa formation (<i>Cratoneurion</i>)</p> <p><i>S.I. No. 611/2019 - European Union Habitats (Magherabeg Dunes Special Area of Conservation 001766) Regulations 2019.</i>            NPWS (2017) Conservation Objectives: Magherabeg Dunes SAC 001766. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.</p>	<p>The proposed development lies c.7.5km from this European site.</p>
<p><b>Vale of Clara (Rathdrum Wood) SAC [000733]</b>            91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles</p> <p><i>S.I. No. 212/2019 - European Union Habitats (Vale of Clara (Rathdrum Wood) Special Area of Conservation 000733) Regulations 2019.</i>            NPWS (2021) Conservation Objectives: Vale of Clara (Rathdrum Wood) SAC 000733. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.</p>	<p>The proposed development lies c.9.8km from this European site.</p>
<p><b>Buckronev-Brittis Dunes And Fen SAC [000729]</b>            1210 Annual vegetation of drift lines            1220 Perennial vegetation of stony banks            1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>)            2110 Embryonic shifting dunes            2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)            2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)*            2150 Atlantic decalcified fixed dunes (Calluno-Ulicetea)*            2170 Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (Salicion arenariae)            2190 Humid dune slacks            7230 Alkaline fens</p> <p><i>S.I. No. 67/2022 - European Union Habitats (Buckronev-Brittis Dunes and Fen Special Area of Conservation 000729) Regulations 2022.</i>            NPWS (2017) Conservation Objectives: Buckronev-Brittis Dunes and Fen SAC 000729. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.</p>	<p>The proposed development lies c.10.8km from this European site.</p>

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
<p><b>Wicklow Mountains SAC [002122]</b></p> <p>3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)</p> <p>3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea</p> <p>3160 Natural dystrophic lakes and ponds</p> <p>4010 Northern Atlantic wet heaths with <i>Erica tetralix</i></p> <p>4030 European dry heaths</p> <p>4060 Alpine and Boreal heaths</p> <p>6130 Calaminarian grasslands of the Violetalia calaminariae</p> <p>6230 Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)*</p> <p>7130 Blanket bogs (* if active bog)</p> <p>8110 Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)</p> <p>8210 Calcareous rocky slopes with chasmophytic vegetation</p> <p>8220 Siliceous rocky slopes with chasmophytic vegetation</p> <p>91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles</p> <p>1355 Otter <i>Lutra lutra</i></p> <p>NPWS (2017) <i>Conservation Objectives: Wicklow Mountains SAC 002122</i>. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.</p>	<p>The proposed development lies c.12.4km from this European site.</p>
<p><b>Carriggower Bog SAC [000716]</b></p> <p>7140 Transition mires and quaking bogs</p> <p>S.I. No. 293/2018 - European Union Habitats (Carriggower Bog Special Area of Conservation 000716) Regulations 2018</p> <p>NPWS (2019) <i>Conservation Objectives: Carriggower Bog SAC 000716</i>. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.</p>	<p>The proposed development lies c.13km from this European site.</p>
<p><b>Glen of the Downs SAC [000719]</b></p> <p>91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles</p> <p>S.I. No. 526/2019 - European Union Habitats (Glen of the Downs Special Area of Conservation 000719) Regulations 2019</p> <p>NPWS (2020) <i>Conservation Objectives: Glen of the Downs SAC 000719</i>. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.</p>	<p>The proposed development lies c.14.6km from this European site.</p>
<p><b>Special Protection Area (SPA)</b></p>	
<p><b>The Murrough SPA [004186]</b></p> <p>A001 Red-throated Diver <i>Gavia stellata</i></p> <p>A043 Greylag Goose <i>Anser anser</i></p> <p>A046 Light-bellied Brent Goose <i>Branta bernicla hrota</i></p>	<p>The proposed development lies c.440m from this European site.</p>

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
<p>A050 Wigeon <i>Anas penelope</i>  A052 Teal <i>Anas crecca</i>  A179 Black-headed Gull <i>Chroicocephalus ridibundus</i>  A184 Herring Gull <i>Larus argentatus</i>  A195 Little Tern <i>Sterna albifrons</i>  A999 Wetland and Waterbirds</p> <p><i>S.I. No. 298/2011 - European Communities (Conservation of Wild Birds (The Murrough Special Protection Area 004186)) Regulations 2011.</i>  NPWS (2022) <i>Conservation objectives for The Murrough SPA [004186]</i>. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.</p>	<p>RECEIVED: 14/08/2023</p>
<p><b>Wicklow Head SPA [004127]</b>  A188 Kittiwake <i>Rissa tridactyla</i></p> <p>NPWS (2022) <i>Conservation objectives for Wicklow Head SPA [004127]</i>. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.</p>	<p>The proposed development lies c.3.9km from this European site.</p>
<p><b>Wicklow Mountains SPA [004040]</b>  A098 Merlin <i>Falco columbarius</i>  A103 Peregrine <i>Falco peregrinus</i></p> <p><i>S.I. No. 586/2012 - European Communities (Conservation of Wild Birds (Wicklow Mountains Special Protection Area 004040)) Regulations 2012.</i>  NPWS (2022) <i>Conservation objectives for Wicklow Mountains SPA [004040]</i>. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.</p>	<p>The proposed development lies c.14.2km from this European site.</p>

**Appendix II****Planning policies/objectives relating to the protection of European sites and water quality****Eastern & Midland Regional Assembly, Regional Spatial & Economic Strategy 2019-2031****Regional Policy Objective 3.4**

Ensure that all plans, projects and activities requiring consent arising from the Regional Spatial and Economic Strategy are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate. In addition the future strategic development of settlements throughout the Region will have full cognisance of the legal requirements pertaining to sites of International Nature Conservation Interest.

**Regional Policy Objective 7.2**

To achieve and maintain 'Good Environmental Status' for marine waters and to ensure the sustainable use of shared marine resources in the Region, and to promote the development of a cross-boundary and cross-border strategic management and stakeholder engagement framework to protect the marine environment.

**Regional Policy Objective 7.10**

Support the implementation of the Water Framework Directive in achieving and maintaining at least good environmental status for all water bodies in the Region and to ensure alignment between the core objectives of the Water Framework Directive and other relevant Directives, River Basin Management plans and local authority land use plans.

**Regional Policy Objective 7.11**

For water bodies with 'high ecological status' objectives in the Region, local authorities shall incorporate measures for both their continued protection and to restore those water bodies that have fallen below high ecological status and areas 'At Risk' into the development of local planning policy and decision making any measures for the continued protection of areas with high ecological status in the Region and for mitigation of threats to waterbodies identified as 'At Risk' as part of a catchment based approach in consultation with the relevant agencies. This shall include recognition of the need to deliver efficient wastewater facilities with sufficient capacity and thus contribute to improved water quality in the Region.

**Regional Policy Objective 7.12**

Future statutory land use plans shall include Strategic Flood Risk Assessment (SFRA) and seek to avoid inappropriate land use zonings and development in areas at risk of flooding and to integrate sustainable water management solutions (such as SuDS, nonporous surfacing and green roofs) to create safe places in accordance with the Planning System and Flood Risk Assessment Guidelines for Local Authorities.

**Regional Policy Objective 7.15**

Local authorities shall take opportunities to enhance biodiversity and amenities and to ensure the protection of environmentally sensitive sites and habitats, including where flood risk management measures are planned.

**Regional Policy Objective 7.16**

Support the implementation of the Habitats Directives in achieving an improvement in the conservation status of protected species and habitats in the Region and to ensure alignment between the core objectives of the EU Birds and Habitats Directives and local authority development plans.

**Regional Policy Objective 7.22**

Local authority development plan and local area plans, shall identify, protect, enhance, provide and manage Green Infrastructure in an integrated and coherent manner and should also have regard to the required targets in relation to the conservation of European sites, other nature conservation sites, ecological networks and protected species.

**Regional Policy Objective 10.6**

Delivery and phasing of services shall be subject to the required appraisal, planning and environmental assessment processes and shall avoid adverse impacts on the integrity of the Natura 2000 network.

**Regional Policy Objective 10.7**

Local authority core strategies shall demonstrate compliance with DHPLG Water Services Guidelines for local authorities and demonstrate phased infrastructure – led growth that is commensurate with the carrying

capacity of water services and prevent adverse impacts on the integrity of water dependent habitats and species within the Natura 2000 network.

**Regional Policy Objective 10.10**

Support Irish Water and the relevant local authorities in the Region to eliminate untreated discharges from settlements in the short term, while planning strategically for long term growth in tandem with Project Ireland 2040 and in increasing compliance with the requirements of the Urban Waste Water Treatment Directive from 39% today to 90% by the end of 2021, to 99% by 2027 and to 100% by 2040.

**Regional Policy Objective 10.11**

EMRA supports the delivery of the waste water infrastructure set out in Table 10.2, subject to appropriate environmental assessment and the planning process.<sup>59</sup>

**Regional Policy Objective 10.12**

Development plans shall support strategic wastewater treatment infrastructure investment and provide for the separation of foul and surface water networks to accommodate the future growth of the Region.

**Regional Policy Objective 10.15**

Support the relevant local authorities (and Irish Water where relevant) in the Region to improve storm water infrastructure to improve sustainable drainage and reduce the risk of flooding in the urban environment and in the development and provision at a local level of Sustainable Urban Drainage solutions.

**Regional Policy Objective 10.16**

Implement policies contained in the Greater Dublin Strategic Drainage Study (GDSDS), including SuDS.

**Regional Policy Objective 10.18**

Local authorities shall ensure adequate surface water drainage systems are in place which meet the requirements of the Water Framework Directive and the associated River Basin Management Plans.

**Wicklow County Development Plan 2022-2028**

**CPO13.1**

To ensure and support the implementation of the EU Groundwater Directive and the EU Water Framework Directive and associated River Basin and Sub-Basin Management Plans and Blue Dot Catchment Programme, to ensure the protection, improvement and sustainable use of all waters in the County, including rivers, lakes, ground water, coastal and estuarine waters, and to restrict development likely to lead to a deterioration in water quality. The Council will also have cognisance of, where relevant, the EU's Common Implementation Strategy Guidance Document No. 20 and 36 which provide guidance on exemptions to the environmental objectives of the Water Framework Directive.

**CPO13.1**

To ensure and support the implementation of the EU Groundwater Directive and the EU Water Framework Directive and associated River Basin and Sub-Basin Management Plans and Blue Dot Catchment Programme, to ensure the protection, improvement and sustainable use of all waters in the County, including rivers, lakes, ground water, coastal and estuarine waters, and to restrict development likely to lead to a deterioration in water quality. The Council will also have cognisance of, where relevant, the EU's Common Implementation Strategy Guidance Document No. 20 and 36 which provide guidance on exemptions to the environmental objectives of the Water Framework Directive.

**CPO 13.5**

To ensure compliance with and to implement the provisions of the Nitrates Directive in so far as it falls within the remit of the Council to do so.

**CPO 13.6**

To encourage and promote the use of catchment-sensitive farming practices, in order to meet Water Framework Directive targets and comply with the River Basin Management Plan.

<sup>59</sup> The Greater Dublin Drainage Project, the Ringsend Wastewater Treatment Plant Project, the Athlone Main Drainage Project and the Upper Liffey Valley Sewerage Scheme

**CPO 13.6**

To encourage and promote the use of catchment-sensitive farming practices, in order to meet Water Framework Directive targets and comply with the River Basin Management Plan.

**CPO 13.16**

Permission will be considered for private wastewater treatment plants for single rural houses where:

- the specific ground conditions have been shown to be suitable for the construction of a treatment plant and any associated percolation area;
- the system will not give rise to unacceptable adverse impacts on ground waters / aquifers and the type of treatment proposed has been drawn up in accordance with the appropriate groundwater protection response set out in the Wicklow Groundwater Protection Scheme (2003);
- the proposed method of treatment and disposal complies with Wicklow County Council's Policy for Wastewater Treatment & Disposal Systems for Single Houses (PE ≤ 10) and the Environmental Protection Agency "Waste Water Treatment Manuals"; and
- in all cases the protection of ground and surface water quality shall remain the overriding priority and proposals must definitively demonstrate that the proposed development will not have an adverse impact on water quality standards and requirements set out in EU and national legislation and guidance documents

**CPO 13.21**

Ensure the implementation of Sustainable Urban Drainage Systems (SUDS) in accordance with the Wicklow County Council SuDS Policy to ensure surface water runoff is managed for maximum benefit. In particular to require proposed developments to meet the design criteria of each of the four pillars of SuDS design; Water Quality, Water Quantity, Amenity and Biodiversity.

**CPO 13.21**

Ensure the implementation of Sustainable Urban Drainage Systems (SUDS) in accordance with the Wicklow County Council SuDS Policy to ensure surface water runoff is managed for maximum benefit. In particular to require proposed developments to meet the design criteria of each of the four pillars of SuDS design; Water Quality, Water Quantity, Amenity and Biodiversity.

**CPO 17.1**

To protect, sustainably manage and enhance the natural heritage, biodiversity, geological heritage, landscape and environment of County Wicklow in recognition of its importance for nature conservation and biodiversity and as a non-renewable resource.

**CPO17.2**

Ensure the protection of ecosystems and ecosystem services by integrating full consideration of these into all decision making.

**CPO17.3**

To support and promote the implementation of the County Wicklow Heritage Plan and the County Wicklow Biodiversity Action Plan.

**CPO 17.4**

To contribute, as appropriate, towards the protection of designated ecological sites including Special Areas of Conservation (SACs) and Special Protection Areas (SPAs); Wildlife Sites (including proposed Natural Heritage Areas); Salmonid Waters; Flora Protection Order sites; Wildfowl Sanctuaries (see S.I. 192 of 1979); Freshwater Pearl Mussel catchments; and Tree Preservation Orders (TPOs). To contribute towards compliance with relevant EU Environmental Directives and applicable National Legislation, Policies, Plans and Guidelines, including but not limited to the following and any updated/superseding documents: 333 Chapter 17 | Natural Heritage & Biodiversity Draft Wicklow County Development Plan 2021-2027

- EU Directives, including the Habitats Directive (92/43/EEC, as amended)<sup>6</sup>, the Birds Directive (2009/147/EC)<sup>7</sup>, the Environmental Liability Directive (2004/35/EC)<sup>8</sup>, the Environmental Impact Assessment Directive (2011/92/EU, as amended), the Water Framework Directive (2000/60/EC), EU Groundwater Directive (2006/118/EC) and the Strategic Environmental Assessment Directive (2001/42/EC); EU 'Guidance on integrating ecosystems and their services into decision-making' (European Commission 2019)

- National legislation, including the Wildlife Acts 1976 and 2010 (as amended)<sup>9</sup>, European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, the Wildlife (Amendment) Act 2000, the European Union (Water Policy) Regulations 2003 (as amended), the Planning and Development Act 2000 (as amended), the European Communities (Birds and Natural Habitats) Regulations 2011 (SI No. 477 of 2011), the European Communities (Environmental Liability) Regulations 2008 (as amended)<sup>10</sup> and the Flora Protection order 2015.
- National policy guidelines (including any clarifying circulars or superseding versions of same), including 'Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment' (2018), 'Guidance for Consent Authorities regarding Sub-Threshold Development' (2003), 'Tree Preservation Guidelines', 'Landscape and Landscape Assessment' (draft 2000), 'Appropriate Assessment Guidance' (2010);
- Catchment and water resource management plans, including the National River Basin Management Plan 2018-2021 (including any superseding versions of same),
- Biodiversity plans and guidelines, including National Biodiversity Action Plan 2017-2021 (including any superseding versions of same) and the County Wicklow Biodiversity Action Plan;
- Ireland's Environment – An Integrated Assessment 2020 (EPA), including any superseding versions of same), and to make provision where appropriate to address the report's goals and challenges

**CPO 17.5**

Projects giving rise to adverse effects on the integrity of European sites (cumulatively, directly or indirectly) arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall not be permitted on the basis of this plan

**CPO 17.6**

Ensure that development proposals, contribute as appropriate towards the protection and where possible enhancement of the ecological coherence of the European Site network and encourage the retention and management of landscape features that are of major importance for wild fauna and flora as per Article 10 of the EU Habitats directive. All projects and plans arising from this Plan will be screened for the need to undertake Appropriate Assessment under Article 6 of the Habitats Directive.

**CPO 17.7**

To maintain the conservation value of all proposed and future Natural Heritage Areas (NHAs) and to protect other designated ecological sites in Wicklow.

**CPO 17.8**

Ensure ecological impact assessment is carried out for any proposed development likely to have a significant impact on proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Statutory Nature Reserves, Refuges for Fauna, Annex I habitats, or rare and threatened species including those species protected by law and their habitats. Ensure appropriate avoidance and mitigation measures are incorporated into development proposals as part of any ecological impact assessment.

**CPO 17.12**

To protect non-designated sites from inappropriate development, ensuring that ecological impact assessment is carried out for any proposed development likely to have a significant impact on locally important natural habitats, species or wildlife corridors. Ensure appropriate avoidance and mitigation measures are incorporated into development proposals as part of any ecological impact assessment.

**CPO 17.14**

Ensure that development proposals support the protection and enhancement of biodiversity and ecological connectivity within the plan area in accordance with Article 10 of the Habitats Directive, including linear landscape features like watercourses (rivers, streams, canals, ponds, drainage channels, etc), woodlands, trees, hedgerows, road and railway margins, semi-natural grasslands, natural springs, wetlands, stonewalls, geological and geo-morphological systems, features which act as stepping stones, such as marshes and woodlands, other landscape features and associated wildlife where these form part of the ecological network and/or may be considered as ecological corridors or stepping stones that taken as a whole help to improve the coherence of the European network in Wicklow.

**CPO 17.15**

To protect and enhance wetland sites that are listed as being of C+ or higher importance in the County Wicklow wetlands survey and any subsequent updates or revisions thereof and to implement the recommendations of the County Wicklow wetlands survey.

**CPO 17.17**

Work with statutory authorities to prevent and control the spread of invasive plant and animal species and require, where appropriate Invasive Species Management Plans to be prepared as part of the development management process where necessary.

**CPO17.18**

To promote the preservation of trees, groups of trees or woodlands in particular native tree species, and those trees associated with demesne planting, in the interest of the long-term sustainability of a stable ecosystem amenity or the environment generally, as set out in Schedule 17.05 and Maps 17.05 and 17.05A - H of this plan.

**CPO 17.22**

To require and ensure the preservation and enhancement of native and semi-natural woodlands, groups of trees and individual trees, as part of the development management process, and require the planting of native broad leaved species, and species of local provenance in all new developments

**CPO 17.24**

To ensure and support the implementation of the EU Groundwater Directive and the EU Water Framework Directive and associated River Basin and Sub-Basin Management Plans and Blue Dot Catchment Programme, to ensure the protection, improvement and sustainable use of all waters in the County, including rivers, lakes, ground water, coastal and estuarine waters, and to restrict development likely to lead to a deterioration in water quality. The Council will also have cognisance of, where relevant, the EU's Common Implementation Strategy Guidance Document No. 20 and 36 which provide guidance on exemptions to the environmental objectives of the Water Framework Directive.

**CPO 17.25**

Ensure that floodplains and wetlands are retained for their biodiversity and ecosystems services value and resist development and activities that would interfere with the natural water cycle to a degree that would interfere with the survival and stability of these natural habitats.

**CPO 17.26**

Protect rivers, streams and other water courses by avoiding interference with river / stream beds, banks and channels and maintaining a core riparian buffer zone of generally 25m along watercourses (or other width, as determined by the Planning Authority having particular regard to 'Planning for Watercourses in the Urban Environment' by Inland Fisheries Ireland for urban locations) free from inappropriate development, with Wicklow County Development Plan 2022-2028 Chapter 17 | Natural Heritage & Biodiversity undeveloped riparian vegetation strips, wetlands and floodplains generally being retained in as natural a state as possible. Structures such as bridges should be clear span, and designed and built in accordance with Inland Fisheries Ireland guidance.

**Dún Laoghaire-Rathdown County Development Plan 2022-2028**

**Policy Objective GIB18: Protection of Natural Heritage and the Environment**

It is a Policy Objective to protect and conserve the environment including, in particular, the natural heritage of the County and to conserve and manage Nationally and Internationally important and EU designated sites - such as Special Protection Areas (SPAs), Special Areas of Conservations (SACs), proposed Natural Heritage Areas (pNHAs) and Ramsar sites (wetlands) - as well as non-designated areas of high nature conservation value known as locally important areas which also serve as 'Stepping Stones' for the purposes of Article 10 of the Habitats Directive

**Policy Objective GIB19: Habitats Directive**

It is a Policy Objective to ensure the protection of natural heritage and biodiversity, including European Sites that form part of the Natura 2000 network, in accordance with relevant EU Environmental Directives and applicable National Legislation, Policies, Plans and Guidelines.

**Policy Objective GIB21: Designated Sites**



It is a Policy Objective to protect and preserve areas designated as proposed Natural Heritage Areas, Special Areas of Conservation, and Special Protection Areas. It is Council policy to promote the maintenance and as appropriate, delivery of 'favourable' conservation status of habitats and species within these areas.

**Policy Objective GIB22: Non-Designated Areas of Biodiversity Importance**

It is a Policy Objective to protect and promote the conservation of biodiversity in areas of natural heritage importance outside Designated Areas and to ensure that notable sites, habitats and features of biodiversity importance - including species protected under the Wildlife Acts 1976 and 2000, the Birds Directive 1979, the Habitats Directive 1992, Flora (Protection) Order, 2015, Annex I habitats, local important areas, wildlife corridors and rare species - are adequately protected. Ecological assessments will be carried out for all developments in areas that support, or have potential to support, features of biodiversity importance or rare and protected species and appropriate mitigation/ avoidance measures will be implemented. In implementing this policy, regard shall be had to the Ecological Network, including the forthcoming DLR Wildlife Corridor Plan, and the recommendations and objectives of the Green City Guidelines (2008) and 'Ecological Guidance Notes for Local Authorities and Developers' (Dún Laoghaire-Rathdown Version 2014)

**Policy Objective GIB23: County-Wide Ecological Network**

It is a Policy Objective to protect the Ecological Network which will be integrated into the updated Green Infrastructure Strategy and will align with the DLR County Biodiversity Action Plan. Creating this network throughout the County will also improve the ecological coherence of the Natura 2000 network in accordance with Article 10 of the Habitats Directive. The network will also include non-designated sites.

**Policy Objective EI7: Water Supply and Wastewater treatment and Appropriate Assessment**

It is a Policy Objective to require that all developments relating to water supply and wastewater treatment are subject to screening for Appropriate Assessment to ensure there are no likely significant effects on the integrity, defined by the structure and function, of any European sites and that the requirements of Article 6 of the EU Habitats Directive are met. (Consistent with RPO 10.7 of the RSES).

**Policy Objective EI8: Groundwater Protection and Appropriate Assessment**

It is a Policy Objective to ensure the protection of the groundwater resources in and around the County and associated habitats and species in accordance with the Groundwater Directive 2006/118/EC and the European Communities Environmental Objectives (Groundwater) Regulations, 2010. In this regard, the Council will support the implementation of Irish Water's Water Safety Plans to protect sources of public water supply and their contributing catchment.

**Policy Objective EI2: Irish Water Enabling Policies Irish Water's Plans and Programmes**

It is a Policy Objective - in conjunction with the Eastern and Midland Regional Authority, where appropriate - to work with and support Irish Water in the delivery of the strategic objectives and strategic water and wastewater projects and infrastructure as set out in the 'Water Services Strategic Plan' (2015), any subsequent plan, Irish Water's Capital Investment Plan 2020 – 2024, any subsequent Capital Investment Plans and the forthcoming National Water Resources Plan, so as to ensure provision of infrastructure to service settlements in accordance with the Core Strategy of this Plan, and the settlement strategy of the RSES. (Consistent with RPO 10.2, 10.3, 10.11, 10.16 of the RSES).

**Policy Objective EI5: River Basin Management Plans (RMBPs)**

It is a Policy Objective: To ensure the delivery of the relevant policies and objectives of the River Basin Management Plan for Ireland 2018 – 2021 and any subsequent plan, including those relating to protection of water status, improvement of water status, prevention of deterioration and meeting objectives for designated protected sites. To support Irish Water in its implementation of Water Quality Management Plans for ground, surface, coastal and estuarine waters as part of the implementation of the EU Water Framework Directive. To support Irish Water in the development of Drinking Water Protection Plans.

**Policy Objective EI6: Sustainable Drainage Systems**

It is a Policy Objective to ensure that all development proposals incorporate Sustainable Drainage Systems (SuDS).

**Policy Objective EI17: Water Pollution**

It is a Policy Objective to implement the provisions of water pollution abatement measures in accordance with national and EU Directives and other legislative requirements in conjunction with other agencies as appropriate.

**Dublin City Development Plan 2022-2028****Two Overarching Environmental Protection Requirements****The following will apply to all plans:**

To ensure that plans, including land use plans, will only be adopted, if they either individually or in combination with existing and/ or proposed plans or projects, will not have a significant effect on a European Site, or where such a plan is likely or might have such a significant effect (either alone or in combination), the planning authority will, as required by law, carry out an appropriate assessment as per requirements of Article 6(3) of the Habitats Directive 92/43/EEC of the 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, as transposed into Irish legislation. Only after having ascertained that the plan will not adversely affect the integrity of any European site, will the planning authority adopt the plan, incorporating any necessary mitigation measures. A plan which could adversely affect the integrity of a European site may only be adopted in exceptional circumstances, as provided for in Article 6(4) of the Habitats Directive as transposed into Irish legislation. Plans will also be subject to screening for the requirement for environmental assessment, and to environmental assessment if required, in accordance with the provisions of Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (the SEA Directive) as transposed into national legislation.

**The following will apply to all development proposals:**

To ensure that planning permission will only be granted for a development proposal that, either individually or in combination with existing and/or proposed plans or projects, will not have a significant effect on a European site(s), or where such a development proposal is likely or might have such a significant effect (either alone or in combination), the planning authority will, as required by law, carry out an appropriate assessment as per requirements of Article 6(3) of the Habitats Directive 92/43/EEC of the 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, as transposed into Irish legislation. Only after having ascertained that the development proposal will not adversely affect the integrity of any European site, will the planning authority agree to the development and impose appropriate mitigation measures in the form of planning conditions. A development proposal which could adversely affect the integrity of a European site may only be permitted in exceptional circumstances, as provided for in Article 6(4) of the Habitats Directive as transposed into Irish legislation. Development proposals will also be subject to screening for the requirement for environmental impact assessment, and to environmental impact assessment if required, in accordance with the provisions of Directive 2011/52/EU on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU (the EIA Directive) as transposed into national legislation.

**S11: Support for Irish Water**

To support and facilitate Irish Water in the provision of high quality drinking water, water conservation and drainage infrastructure and to promote the ongoing upgrade and expansion of water supply and wastewater services to meet the future needs of the city and the Region

**S12: Integrating Water Services with Development**

To ensure that development is permitted in tandem with available water supply and wastewater treatment and to manage development, so that new schemes are permitted only where adequate capacity or resources exists or will become available within the life of a planning permission.

**SIO1 Commitment to Working in Partnership with Irish Water**

To support Irish Water in the implementation of the Water Services Strategic Plan (2015) and National Water Resources Plan (2021) for Ireland's public water supplies and to work closely with Irish Water to facilitate the timely delivery of the public water services required to realise the core strategy growth targets of this plan in accordance with the Draft Water Services Guidelines for Planning Authorities (2018).

**S17 Water Quality Status**

To promote and maintain the achievement of at least good status in all water bodies in the city.

**S19: Groundwater Pollution**

To promote the progressive reduction of pollution of groundwater

**SIO6 Groundwater Protection**

To protect ground water resources in Dublin City and to implement the recommendations contained in any Groundwater Protection Scheme prepared under EU Ground Water Directives.

**SIO8 River Restoration Strategies/ Masterplans**

To prepare river-specific restoration strategies/ masterplans for the city's rivers and their tributaries in order to create a comprehensive, collaborative and integrated catchment management planning approach to improving the river corridor which addresses water quality, flooding, hydromorphology, ecology, biodiversity, heritage, amenity and tourism

**SI14: Strategic Flood Risk Assessment**

To implement and comply fully with the recommendations of the Strategic Flood Risk Assessment prepared as part of the Dublin City Development Plan 2022-2028 and to have regard to the Flood Risk Management Guidelines (2009), as revised by Circular PL 2/2014, when assessing planning applications and in the preparation of statutory and non-statutory plans

**SI21 Managing Surface Water Flood Risk**

To minimise flood risk arising from pluvial (surface water) flooding in the city by promoting the use of natural or naturebased flood risk management measures as a priority and by requiring the use of sustainable drainage systems (SuDS) to minimise and limit the extent of hard surfacing and paving, and requiring the use of sustainable drainage techniques, where appropriate, for new development or for extensions to existing developments, in order to reduce the potential impact of existing and predicted flooding risk and to deliver wider environmental and biodiversity benefits

**SI22: Sustainable Drainage Systems**

To require the use of Sustainable Drainage Systems (SuDS) in all new developments, where appropriate, as set out in the Greater Dublin Strategic Drainage Study (Vol 2: New Development)/ Greater Dublin Regional Code of Practice for Drainage Works. Sustainable Drainage Systems (SuDS) should incorporate nature-based solutions and be designed in accordance with the Dublin City Council Sustainable Drainage Design and Evaluation Guide (2021) which is summarised in Appendix 12. SuDS should protect and enhance water quality through treatment at source while enhancing biodiversity and amenity. **SI25 Surface Water Management**

To require the preparation of a Surface Water Management Plan as part of all new developments in accordance with the requirements of Appendix 13 – the Council's Surface Water Management Guidance.

**SIO13 New Surface Water Infrastructure**

To provide for new and improved surface water public networks, including projects undertaken in conjunction with Irish Water where applicable / where required, in order to reduce pollution and negative impacts on receiving waters to allow for more sustainable development.

**GI9 European Union Natura 2000 Sites**

To conserve, manage, protect and restore the favourable conservation condition of all qualifying interest/special conservation interests of all European sites designated, or proposed to be designated, under the EU Birds and Habitats Directives, as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) (European / Natura 2000 sites).

**GI13 Areas of Ecological Importance for Protected Species**

To ensure the protection, conservation and enhancement of all areas of ecological importance for protected species, and especially those listed in the EU Birds and Habitats Directives, including those identified as supporting the favourable conservation condition of any European sites, in accordance with development standards set out in this plan.

**GI30 Maintain and Improve Connectivity of Freshwater and Estuarine Habitats/ EU Birds and Habitats Directives**

To conserve, maintain and restore freshwater and estuarine habitats which are of importance for species listed in the annexes of the EU Birds and Habitats Directives and to ensure connectivity of these in accordance with Article 10 of the EU Habitats Directive.

**Appendix III**

**Aquatic baseline report for Tinakilly Demesne Residential Development, Rathnew, Co. Wicklow. Triturus Environmental Ltd.**

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# Aquatic baseline report for Tinakilly Demesne Residential Development, Rathnew, Co. Wicklow



Prepared by Triturus Environmental Ltd. for Scott Cawley Ltd.

**April 2022**

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Please cite as:

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## 1. Introduction

### 1.1 Background

The following report provides a baseline assessment of the aquatic ecology and fisheries of watercourses in the vicinity of a proposed residential development at Tinakilly Demesne, Rathnew, Co. Wicklow. The site was bordered by the Rathnew Stream (EPA code: 10R02) and its tributary, the Rossana Lower Stream (10R19), which were the focus of the study.

The aquatic baseline surveys recorded the fisheries potential for species of high conservation value (i.e. salmonids, European eel and lamprey) based on habitat characteristics. The surveys also assessed the value of the watercourses in the vicinity of the proposed development for white-clawed crayfish (*Austropotamobius pallipes*) and evaluated the biological water quality by Q-sampling. The surveys also evaluated the importance of the watercourses for macrophytes, aquatic bryophytes and associated linkages with Annex I habitats. A survey of otter (*Lutra lutra*) on the Rathnew Stream and Rossanna Lower Stream was also undertaken to establish otter presence and utilisation of the streams bordering the study area. The presence of aquatic and riparian invasive species was also noted in the vicinity of the proposed site boundary. Aquatic surveys were undertaken on the 9<sup>th</sup> of April 2022 during base flow conditions.

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## 2. Methodology

### 2.1 Selection of watercourses for assessment

Watercourses adjoining the western and northern boundaries of the proposed development were surveyed as part of the current assessment. The  $n=4$  total aquatic survey sites were surveyed on the bordering Rossanna Lower Stream and Rathnew Stream (**Table 2.1**; **Figure 2.1**). The nomenclature for the watercourses surveyed is as per the Environmental Protection Agency's (EPA) online map viewer.

Please note this aquatic report should be read in conjunction with the Ecological Impact Assessment Report (EclA) prepared for the proposed development by Scott Cawley Ltd. The aquatic survey methodology is outlined in the sections below.

### 2.2 Aquatic site surveys

Surveys of the Rathnew Stream and Rossanna Lower Stream were conducted on the 9<sup>th</sup> April 2022. Survey effort focused on both instream and riparian habitats in the vicinity of each survey site (**Figure 2.1**). The surveys were conducted during bright weather and base flow riverine conditions. The watercourses at each survey site were described in terms of the important aquatic habitats and species. This helped to evaluate species and habitats of ecological value in the vicinity of each site. The aquatic baseline prepared would inform mitigation for the project.

A broad aquatic habitat assessment was conducted utilising elements of the methodology given in the Environment Agency's 'River Habitat Survey in Britain and Ireland Field Survey Guidance Manual 2003' (EA, 2003) and the Irish Heritage Council's 'A Guide to Habitats in Ireland' (Fossitt, 2000). All sites were assessed in terms of:

- Physical watercourse/waterbody characteristics (i.e., width, depth etc.)
- Substrate type, listing substrate fractions in order of dominance (i.e., bedrock, boulder, cobble, gravel, sand, silt etc.)
- River profile in the sampling area
- An appraisal of the macrophyte and aquatic bryophyte community at each site
- Riparian vegetation composition

**Table 2.1** Location of  $n=4$  aquatic survey sites in the vicinity of Tinakilly Demesne Residential Development, Rathnew, Co, Wicklow

Site	Watercourse	EPA code	Location	X (ITM)	Y (ITM)
S1	Rossanna Lower Stream	10R19	Upstream of site boundary, Tinakilly Lane	729173	695516
S2	Rossanna Lower Stream	10R19	Upstream of confluence with Rathnew Stream	729070	695771
S3	Rathnew Stream	10R02	Upstream of confluence with Rossanna Lower Stream	729046	695780
S4	Rathnew Stream	10R02	Adjoining downstream extent of site boundary	729338	695912



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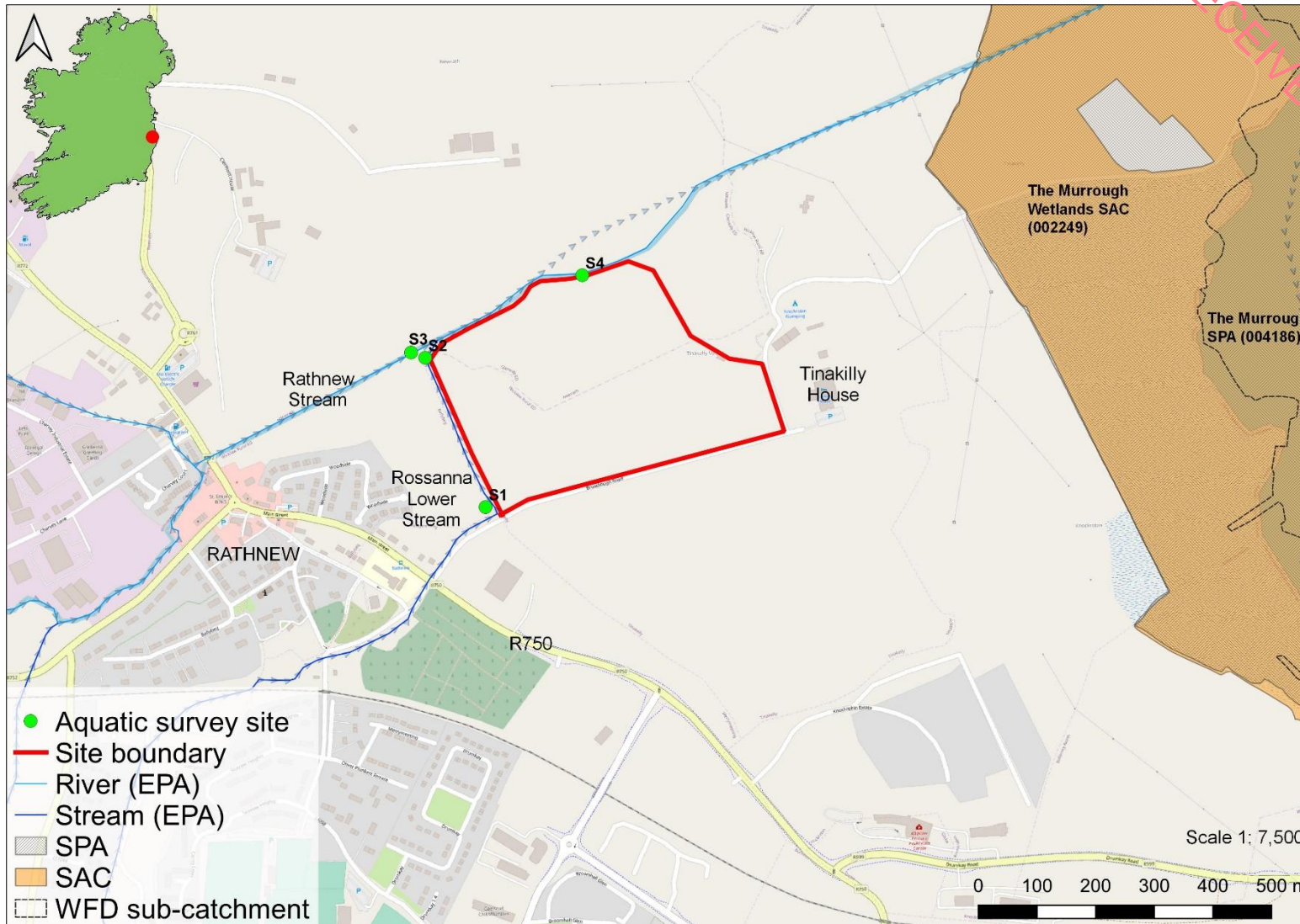


Figure 2.1 Overview of the aquatic survey site locations for the proposed Tinakilly Demesne Residential Development, Rathnew, Co. Wicklow

## 2.3 Otter signs

The presence of otter (*Lutra lutra*) at each aquatic survey site was determined through the recording of otter signs, if encountered incidentally during surveys. The survey broadly followed the best practice survey methodology for otter as recommended by Lenton et al. (1980), Chanin (2003) and Bailey & Rochford (2006). Notes on the age and location (ITM coordinates) were made for each otter sign recorded, in addition to the quantity and visible constituents of spraint (i.e. remains of fish, molluscs etc.).

## 2.4 Fisheries habitat

### 2.4.1 Salmonid habitat

Fisheries habitat quality for salmonids was assessed using the Life Cycle Unit method (Kennedy, 1984; O'Connor & Kennedy, 2002) to map the  $n=4$  riverine sites as nursery, spawning and holding habitat, by assigning quality scores to each type of habitat. Those habitats with poor quality substrata, shallow depth and a poorly defined river profile receive a higher score. Higher scores in the Life Cycle Unit method of fisheries quantification are representative of poorer value, with lower scores being more optimal despite this appearing counter intuitive.

**Table 2.1** Life Cycle Unit scoring system for salmonid nursery, spawning and holding habitat value (as per Kennedy, 1984 & O'Connor & Kennedy, 2002)

Habitat quality	Habitat score	Total score (three components)
Poor	4	12
Moderate	3	9-11
Good	2	6-8
Excellent	1	3-5

### 2.4.2 Lamprey habitat

Lamprey habitat evaluation for each survey site was undertaken using the Lamprey Habitat Quality Index (LHQI) scoring system, as devised by Macklin et al. (2018). The LHQI broadly follows a similar rationale as the Life Cycle Unit score for salmonids. Those habitats with a lack of soft, largely organic sediment areas for ammocoete burrowing, shallow sediment depth (<10cm) or compacted sediment nature receive a higher score. Higher scores in this index are thus of poorer value (in a similar fashion to the salmonid Life Cycle Unit Index), with lower scores being more optimal. Overall scores are calculated as a simple function of the sum of individual habitat scores.

Larval lamprey habitat quality as well as the suitability of adult spawning habitat is assessed based on the information provided in Maitland (2003) and other relevant literature (e.g. Gardiner, 2003). Unlike the salmonid Life Cycle Unit index, holding habitat for adult lamprey is not assessed owing to their

different migratory and life history strategies, and that electro-fishing surveys routinely only sample larval lamprey.

The LHQI scoring system provides additional information compared to the habitat classification based on the observations of Applegate (1950) and Slade et al. (2003), which deals specifically with larval (sea) lamprey settlement habitat. Under this scheme, habitat is classified into three different types: preferred (Type 1), acceptable (Type 2), and not acceptable for larvae (Type 3) (Slade et al., 2003). Type 1 habitat is characterized by soft substrate materials usually consisting of a mixture of sand and fine organic matter, often with some cover over the top such as detritus or twigs in areas of deposition. Type 2 habitat is characterized by substrates consisting of shifting sand with little if any organic matter and may also contain some gravel and cobble (lamprey may be present but at much lower densities than Type 1). Type 3 habitat consists of materials too hard for larvae to burrow including bedrock and highly compacted sediment. This classification can also be broadly applied to other lamprey species ammocoetes, including *Lampetra* species.

**Table 2.2** Lamprey Habitat Quality Index (LHQI) scoring system for lamprey spawning and nursery habitat value (Macklin et al., 2018).

Habitat quality	Habitat score	Total score (two components)
Poor	4	8
Moderate	3	6-7
Good	2	3-5
Excellent	1	2

## 2.5 White-clawed crayfish survey

White-clawed crayfish (*Austropotamobius pallipes*) surveys were undertaken at the aquatic survey sites under a National Parks and Wildlife (NPWS) open licence (no. C31/2022), as prescribed by Sections 9, 23 and 34 of the Wildlife Act (1976-2021), to capture and release crayfish to their site of capture, under condition no. 6 of the licence. As per Inland Fisheries Ireland recommendations, the crayfish licence sampling started at the uppermost site of the survey area to minimise the risk of transfer invasive propagules (including crayfish plague) in an upstream direction.

Hand-searching of instream refugia and sweep netting was undertaken according to Reynolds et al. (2010). Trapping of crayfish was not feasible given the small nature of the watercourses surveyed. An appraisal of white-clawed crayfish habitat at each site was conducted based on physical channel attributes, water chemistry and incidental records in mustelid spraint. Additionally, a desktop review of crayfish records within the wider survey area was undertaken.

## 2.6 Biological water quality (Q-sampling)

The  $n=4$  aquatic survey sites were assessed for biological water quality through Q-sampling on the 9<sup>th</sup> April 2022, (**Table 2.1, Figures 2.1, 2.2**). All samples were taken with a standard kick sampling hand net (250mm width, 500 $\mu$ m mesh size) from areas of riffle/glide utilising a two-minute sample, with an additional one-minute hand search of instream substrata, as per EPA methodology (Feeley et al., 2020a). Samples were elutriated and fixed in 70% ethanol for subsequent laboratory identification. Macro-invertebrate samples were converted to Q-ratings as per Toner et al. (2005). Any rare invertebrate species were identified from the NPWS Red List publications for beetles (Foster et al., 2009), mayflies (Kelly-Quinn & Regan, 2012), stoneflies (Feeley et al., 2020b) and other relevant taxa (i.e., Byrne et al., 2009; Nelson et al., 2011).

**Table 2.2** Reference categories for EPA Q-ratings (Q1 to Q5)

Q Value	WFD Status	Pollution status	Condition
Q5 or Q4-5	High status	Unpolluted	Satisfactory
Q4	Good status	Unpolluted	Satisfactory
Q3-4	Moderate status	Slightly polluted	Unsatisfactory
Q3 or Q2-3	Poor status	Moderately polluted	Unsatisfactory
Q2, Q1-2 or Q1	Bad status	Seriously polluted	Unsatisfactory

## 2.7 Aquatic ecological evaluation

The evaluation of aquatic ecological receptors contained within this report uses the geographic scale and criteria defined in the 'Guidelines for Assessment of Ecological Impacts of National Road Schemes' (NRA, 2009).

## 2.8 Biosecurity

A strict biosecurity protocol including the Check-Clean-Dry approach was adhered to during surveys for all equipment and PPE used. Disinfection of all equipment and PPE before and after use with Virkon™ was conducted to prevent the transfer of pathogens or invasive propagules between survey sites. Surveys were undertaken at sites in a downstream order to minimise the risk of upstream propagule mobilisation. Where feasible, equipment was also thoroughly dried (through UV exposure) between survey areas. Any aquatic invasive species or pathogens recorded within or adjoining the survey areas were geo-referenced.

### 3. Receiving environment

#### 3.1 Rathnew Stream catchment and survey area description

The proposed Tinakilly Demesne residential development is located 0.5km east of Rathnew, Co. Wicklow. The proposed development is bordered to the west by the Rossanna Lower Stream and to the north by the Rathnew Stream within the Vartry\_SC\_010 sub-catchment. The watercourses in the vicinity of the proposed residential development are small to medium-sized lowland depositing watercourses (FW2; Fossitt, 2000).

Land use practices in the wider survey area are dominated by non-irrigated arable land (CORINE 211) and pastures (231), comprising improved agricultural grassland (GA1; Fossitt, 2000) and arable crops (BC1). Predominantly, the watercourses flowed over areas of Lower-Middle Ordovician slate, sandstone, greywacke and conglomerate (Geological Survey of Ireland data).

Fisheries data was not available for the Rathnew Stream or Rossanna Lower Stream. However, Atlantic salmon (*Salmo salar*), brown trout and sea trout (*Salmo trutta*), European eel and lamprey (*Lampetra* sp.) are known from the wider Varty\_SC\_010 sub-catchment (Kelly et al., 2015).

#### 3.2 EPA water quality data (existing data)

The following outlines the available water quality data for the watercourses in context of the proposed project. Only recent water quality (i.e., since 2015) is summarised below.

The Rathnew Stream rises near Glenealy, Co, Wicklow and flows in an easterly direction for approx. 11km before joining the Broad Lough estuary, 1.2km downstream of the survey area. There is a single EPA biological monitoring station on the watercourse. This site (station RS10R020600 in Rathnew) achieved **Q4 (good status)** in 2020. There is no biological water quality monitoring station on the Rossanna Lower Stream.

The Rathnew Stream and Rossanna Stream (both part of the Rathnew Stream\_010 river waterbody) was of poor WFD status and considered 'at risk' in the 2013-2018 period. This was primarily due to urban pressures and domestic wastewater, in addition to agricultural pressures (EPA, 2021).

## 4. Results

The following section summarises the data compiled from the aquatic surveys on the Rossanna Lower Stream and Rathnew Stream. The physical instream characteristics are summarised to support overall value for fish, white-clawed crayfish and macrophyte/aquatic bryophyte communities. The quality of fisheries habitat for both salmonids and lamprey at each survey site is summarised below with further detail provided in **Appendix A**. Biological water quality (Q-sample) results are also summarised for  $n=4$  riverine sampling sites and in **Appendix B**. Habitat codes are according to Fossitt (2000). Scientific names are provided at first mention only. Sites were surveyed on the 9<sup>th</sup> April 2021 during base flow conditions and dry, bright weather. An evaluation of the aquatic ecological importance of each survey site based on these aquatic surveys is provided and summarised in **Table 4.1**.

### 4.1 Aquatic survey site results

#### 4.1.1 Site S1 – Rossanna Lower Stream

Site S1 was situated on the Rossanna Lower Stream, a small 1m wide lowland depositing stream (FW2) situated upstream of the proposed site boundary. The channel was shallow, averaging between 0.1m and 0.2m deep. The stream had been historically straightened but not deepened with low bank heights of 0.3-0.5m high. The profile comprised a mixture of riffle, glide and very localised pool. The stream bed comprised mixed medium and fine gravels with localised cobble and abundant silt. The substrata were heavily bedded with moderate to heavy siltation. The gravels were visible, but the interstitial spaces were blocked with some areas fully covered with silt. The channel supported no macrophytes apart from localised fool's watercress (*Apium nodiflorum*). The riparian zone supported ash (*Fraxinus excelsior*) and hawthorn (*Crataegus monoygna*) with localised elder (*Sambucus nigra*). The understory supported abundant bramble (*Rubus fruticosus* agg.) and ivy (*Hedera hibernica*) with lesser celandine (*Ficaria verna*) and meadow buttercup (*Ranunculus acris*) near the stream margin in addition to localised iris (*Iris psuedacorus*). The channel was bordered by rough pasture. Some fly tipping of rubbish was evident in the stream.

The stream flow was low at the time of survey, and it was not suitable for salmonids. However, the site was considered of some value to brook lamprey (*Lampetra planeri*) albeit the habitat quality was reduced due to compaction of soft sediment areas, which had a high clay fraction. The stream at this site was considered of some low value to European eel which may occur locally in pools. The site was unsuitable for white-clawed crayfish due to an absence of suitable refugia and the shallow nature of the small watercourse. No otter signs were recorded in the vicinity of the survey site and suitability was low.

Biological water quality, based on Q-sampling, was calculated as **Q3-4 (moderate status) (Appendix B)**. No macro-invertebrate species of conservation value greater than 'least concern', according to national red lists, were recorded via Q-sampling.

Given the absence of good quality of salmonid habitat, the small size of channel and limited aquatic importance overall, the aquatic ecological evaluation of site S1 was of **local importance (lower value) (Table 4.1)**.



**Plate 4.1** Representative image of site S1 on the Rossanna Lower Stream, April 2022

#### 4.1.2 Site S2 – Rossanna Lower Stream

Site S2 was situated on the lower reaches of Rosanna Lower Stream upstream of its confluence with the Rathnew Stream, approx. 280m downstream of site S1. The lowland depositing watercourse (FW2) was narrow and shallow, being 0.5m to 1m wide and between 0.1m and 0.3m deep. The bank heights were 0.5m. The stream had been re-sectioned locally along the field boundary but followed a natural course near its confluence with the Rathnew Stream. The profile was glide dominated with localised riffle. Pool was also present but very localised. The substrata comprised mixed medium and fine gravels with abundant silt and sand. The substrata were heavily bedded with heavy siltation. Gravels were more bedded and more heavily silted than upstream (site S1) with a higher silt loading. The channel did not support macrophytes apart from very localised water parsnip (*Berula erecta*). The riparian zone was open on the western bank and adjoined open semi-improved pasture (GA1) while the eastern bank supported a stock-proof dense hedgerow (WL1) of grey willow (*Salix cinerea*), bramble, gorse (*Ulex europaeus*) and elder.

Although improved compared to upstream, the flows and stream size at site S2 were not considered suitable for salmonids. However, during winter flows some salmonids may enter the stream from the adjoining Rathnew Stream, that was considered a significant salmonid watercourse (see below sections). The site was considered to have good potential for brook lamprey with abundant ammocoete burial habitat present. It also some moderate quality spawning areas featuring medium and fine gravels. The stream at this site was considered of some low value to European eel which may occur locally in pools. The site was unsuitable for white-clawed crayfish due to an absence of suitable refugia and the shallow nature of the small watercourse. No otter signs were recorded in the vicinity of the survey site and suitability was low.

Biological water quality, based on Q-sampling, was calculated as **Q3-4 (moderate status) (Appendix B)**. No macro-invertebrate species of conservation value greater than 'least concern', according to national red lists, were recorded via Q-sampling.

Given the absence of good quality of salmonid habitat, small size of channel and limited aquatic importance overall, the aquatic ecological evaluation of site S2 was of **local importance (lower value) (Table 4.1)**.



**Plate 4.2** Representative image of site S2 on the Rossanna Lower Stream, April 2022

#### 4.1.3 Site S3 – Rathnew Stream

Site S3 on the Rathnew Stream was a medium sized lowland depositing watercourse (FW2) that was 3-4m wide and between 0.1m and 0.5m deep. The bank heights were 1-1.2m high. The stream had been historically straightened and deepened through agricultural lands but showed good recovery and retained a high degree of naturalness. The stream profile was dominated by deeper glide with localised riffle and pool habitat. Pool habitat was associated with overhanging willow limbs and root systems. The substrata comprised mixed small cobble, coarse and medium gravels with more localised fine gravels. Depositing littorals also supported beds of sand and silt. The substrata were partially bedded with moderate siltation (silt plumes underfoot and deposition in margins). The channel was too shaded to support macrophytes apart from very localised hemlock water dropwort (*Oenanthe crocata*). The riparian zone supported mature willow (*Salix* spp.) on the northern bank with ivy and bramble in the understories, while the southern bank supported semi-improved pasture with scattered gorse scrub (WS1).

The stream at this site was considered an excellent nursery for salmonids due to the presence of abundant well-oxygenated glide and riffle habitat (**Appendix A**). Spawning habitat was also of good



quality throughout, with mixed gravels adjoining deeper glide and pool being abundant. Holding habitat was of good quality locally but improved downstream where the frequency of deep pools increased. The site was also a very good brook lamprey nursery with both spawning areas and soft sediment ammocoete burial areas present. The stream at this location was also considered of good value for European eel given undercut banks with pool and high shading. While the Rathnew Stream had some suitability for white-clawed crayfish none were recorded present. The Rathnew Stream was considered a very good foraging area for otter with two spraint sites recorded in the vicinity of the site. These were recorded on a tyre in the channel (ITM 729084, 695802) and on grey willow limbs (ITM 729064, 695788). Salmonid remains were present in the spraint.

Biological water quality, based on Q-sampling, was calculated tentatively (due to deep glide habitat) as **Q4 (good status) (Appendix B)**. No macro-invertebrate species of conservation value greater than 'least concern', according to national red lists, were recorded via Q-sampling.

Given the Rathnew Stream had very high fisheries value (i.e. high suitability for lamprey, salmonids and European eel) in addition to supporting an otter population and **Q4 (good status)** water quality, the site was considered of **local importance (higher value) (Table 4.1)**.



**Plate 4.3** Representative image of site S3 on the Rathnew Stream, April 2022

#### 4.1.4 Site S4 - Rathnew Stream

Site S4 on the Rathnew Stream was situated along the north-eastern boundary of the study area, approx. 0.35km downstream of site S3. The Rathnew Stream at this location was a lowland depositing watercourse (FW2) that had been historically deepened but retained a sinuous profile with a well-defined thalweg. The stream was 3.5m-4m wide and between 0.2m and 1.1m deep, being variable due to the mixed profile comprising equal proportions of riffle, pool and glide. The bank heights were between 2m and 2.5m high, exemplifying historical deepening relative to channel width. Pool habitat

was more frequent than upstream due to willow root systems and large woody debris that encouraged erosion on meanders and pool formation. The channel bed supported mixed small cobble, coarse, medium and fine gravels with localised boulder. Depositing littorals supported soft sand and silt (near pools). The substrata were predominantly loose with light to moderate siltation only. The channel supported no macrophytes apart from hemlock water dropwort that was present where light permitted growth in open shallow glide areas. The muddy loam banks supported the liverwort species *Conocephalum conicum* and *Pellia endiviifolia*. The riparian areas supported abundant mature willow (*Salix* spp.) with more occasional alder (*Alnus glutinosa*). The understories supported dense bramble with occasional gorse. The channel was bordered by improved grassland (GA1).

The Rathnew Stream at site S4 was considered a very good quality nursery for salmonids due to the presence of fast-moving glide and riffle with mixed cobbles and gravels (**Appendix A**). It was also a very good spawning area due to mixed gravels adjoining pool. A 0+ Atlantic salmon fry was recorded in a Q-sample confirming the presence of the species within the watercourse (**Plate 4.5**). Holding habitat was of excellent quality due to abundant deep pools with overhanging trees providing cover. The site was also a very good brook lamprey nursery with both spawning areas and ammocoete burial areas present. The channel was also considered of very good value for European eel given undercut banks with deep pool and high shading from overhanging trees. While the Rathnew Stream had some suitability for white-clawed crayfish none were recorded present. The Rathnew Stream was also considered a very good foraging area for otter with a spraint site recorded on a willow limb (ITM 729281, 695914) and a couch site recorded on a moss-covered willow limb (ITM 729278, 695902) in the vicinity of the site (**Plate 4.6**). Salmonid remains were present in the spraint.

Biological water quality, based on Q-sampling, was calculated tentatively (due to deep glide habitat) as **Q4 (good status)** (**Appendix B**). No macro-invertebrate species of conservation value greater than 'least concern', according to national red lists, were recorded via Q-sampling.

Given the Rathnew Stream had very high fisheries value (i.e. high suitability for lamprey, salmonids and European eel) in addition to supporting an otter population and **Q4 (good status)** water quality, the site was considered of **local importance (higher value)** (**Table 4.1**).



**Plate 4.4** Representative image of site S4 on the Rathnew Stream, April 2022



**Plate 4.5** 0+ Atlantic salmon fry recorded in Q-sample, April 2022 (released back to the Rathnew Stream)



**Plate 4.6** Otter couch on willow limb with very frequently used spraint site

## 4.2 Biological Water Quality

No rare or protected macro-invertebrate species (according to national red lists) were recorded in the biological water quality samples taken from  $n=4$  survey sites sampled for macro-invertebrates on the Rossanna Lower Stream and Rathnew Stream.

Based on a combined assessment of stream condition and also on review of the taxonomic composition of the samples relative to the EPA groups (ranging from clean water indicators to pollution indicators) Q-ratings were determined (as per Toner et al., 2005). Following this approach, the samples collected from the Rossanna Lower Stream achieved **Q3-4 (moderate status)**. The bed of the Rossanna Lower Stream suffered from moderate to heavy siltation at the time of survey. The channel had also been historically realigned and bordered semi-improved grassland that contributed enrichment and siltation pressures (i.e. riparian areas were open along the field boundary with no buffer). Upstream of the study area, suburbanisation pressures (i.e. storm drainage) were evidently impacting the stream. These pressures were reflected in the macro-invertebrate composition that supported only small numbers of clean water indicator mayflies including *Rhithrogena semicolorata* (EPA group A) and *Alainites muticus* (EPA group B) with a dominance of more pollution tolerant group C taxa. The Rossanna Lower Stream also supported the pollution indicator species *Asellus aquaticus* in small numbers. The condition of the stream coupled with the macro-invertebrate composition indicated both sites on the Rossanna Lower Stream were not achieving target **Q4 (good status)** biological water quality and, therefore, did not meet the good status requirements (i.e.,  $\geq Q4$  or EQR equivalent of 0.8) of the Water Framework Directive (2000/60/EC) and the European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019 (S.I. No. 77/2019) (**Appendix B**).

The Rathnew Stream, while suffering from some siltation and enrichment pressures, had a much-improved riverbed quality from that observed on the Rossanna Lower Stream. The river, despite being historically deepened, showed very good recovery. The overhanging trees and large woody debris present strongly benefited the river ecology by providing shading and improving local flow velocities and channel heterogeneity. This was reflected in the **Q4 (good status)** water quality recorded at the site. therefore, both sites on the Rathnew Stream met the good status requirements (i.e.,  $\geq Q4$  or EQR equivalent of 0.8) of the Water Framework Directive (2000/60/EC) and the European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019 (S.I. No. 77/2019) (**Appendix B**). The invertebrate community supported high numbers of clean water indicator mayflies including *Rhithrogena semicolorata* (EPA group A) and *Alainites muticus* (EPA group B). The Rathnew Stream also supported the cased caddis species *Sericostoma personatum* and *Odontocerum albicorne* (both EPA group B clean water indicators).

### 4.3 Aquatic ecological evaluation

An aquatic ecological evaluation of  $n=4$  survey sites was based on the results of the aquatic and fisheries appraisals and are summarised in **Table 4.1**.

No rare or protected macro-invertebrate species (according to national red lists) were recorded in the biological water quality samples collected from a total of  $n=4$  sites.

No rare macrophytes or rare aquatic bryophytes were recorded during the survey. No examples of the Annex I habitats 'Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation and aquatic mosses [3260]' were recorded at the  $n=4$  survey sites.

The Rossanna Lower Stream at sites S1 and S2 was evaluated as **local importance (lower value)** in terms of aquatic ecology, primarily due to the absence of aquatic species/habitats of high conservation value or Q4 (good status) water quality. The downstream-connecting Rathnew Stream was evaluated as **local importance (higher value)** at sites S3 and S4 primarily due to the high suitability and or confirmed presence fish of conservation value (salmonids, lamprey and European eel), in addition to utilisation by otter and **Q4 (good status)** biological water quality.

**Table 4.1** Aquatic ecological evaluation summary of the aquatic survey sites according to NRA (2009) criteria

Site no.	Watercourse	EPA code	Evaluation of importance	Rationale summary
S1	Rossanna Lower Stream	10R19	Local importance (lower value)	Poor quality salmonid habitat, moderate lamprey & European eel habitat; no suitability for white-clawed crayfish, none recorded; poor suitability for otter, no signs recorded; <b>Q3-4 (moderate status)</b> water quality; no aquatic species or habitats of high conservation value
S2	Rossanna Lower Stream	10R19	Local importance (lower value)	Poor quality salmonid habitat, moderate lamprey & European eel habitat; no suitability for white-clawed crayfish, none recorded; poor suitability for otter, no signs recorded; <b>Q3-4 (moderate status)</b> water quality; no aquatic species or habitats of high conservation value
S3	Rathnew Stream	10R02	<b>Local importance (higher value)</b>	Excellent quality salmonid nursery habitat with good quality spawning and good holding habitat; good quality <i>Lampetra</i> sp. nursery & spawning habitat; good-quality European eel habitat; good suitability for white-clawed crayfish but none recorded; otter signs recorded at the site; <b>Q4 (good status)</b> water quality; no other recorded aquatic species or habitats of high conservation value
S4	Rathnew Stream	10R02	<b>Local importance (higher value)</b>	Good quality salmonid nursery & spawning habitat with good quality holding habitat (0+ Atlantic salmon fry recorded via kick sampling); good quality <i>Lampetra</i> sp. nursery & spawning habitat; good quality European eel habitat; good suitability for white-clawed crayfish but none recorded; otter signs recorded at the site; <b>Q4 (good status)</b> water quality; no other recorded aquatic species or habitats of high conservation value

\* **Conservation value:** Atlantic salmon (*Salmo salar*), sea lamprey (*Petromyzon marinus*), brook lamprey (*Lampetra planeri*), river lamprey (*Lampetra fluviatilis*), white-clawed crayfish (*Austropotamobius pallipes*) and otter (*Lutra lutra*) are listed under Annex II of the Habitats Directive [92/42/EEC]. Atlantic salmon, river lamprey and white-clawed crayfish are also listed under Annex V of the Habitats Directive [92/42/EEC]. European eel are 'critically endangered' according to most recent ICUN red list (Pike et al., 2020) and listed as 'critically engendered' in Ireland (King et al., 2011).

## 5. Discussion

The Rossanna Lower Stream at sites S1 and S2 was evaluated as **local importance (lower value)** in terms of aquatic ecology. This was primarily due to the absence of aquatic species/habitats of high conservation value but also failure of the sites to achieve target Q4 (good status) biological water quality (see **section 5.2** below). Whilst the sites were not considered suitable for salmonids due to low flows and evident siltation pressures, there was, however, some moderate to good suitability for lamprey (*Lampetra* sp.), particularly in terms of soft sediment larval (ammocoete) habitat (**Appendix A**). Overall historical straightening, siltation, enrichment pressures and the clearance of mature trees on the northern and western banks of the stream reduced its ecological value.

The downstream-connecting Rathnew Stream was evaluated as **local importance (higher value)** at sites S3 and S4 given the high suitability for fish of conservation value, namely salmonids (including Atlantic salmon; **Plate 4.5**), lamprey and European eel. The site was also utilised by Annex II otter and achieved Q4 (good status) biological water quality. Site 3 provided excellent quality salmonid nursery habitat with good quality spawning and good holding habitat, in addition to good quality *Lampetra* sp. nursery & spawning habitat (**Appendix A**). There was also good potential for Red-listed (King et al., 2011) European eel in localised deeper pool areas.

Whilst there was some physical suitability in the Rathnew Stream for Annex II white-clawed crayfish, none were recorded during targeted surveys and there are no records for the species in the wider Vartry River catchment (NPWS & NBDC data). The presence of a mature riparian zone with overhanging willow, woody debris and a recovering channel profile (despite historical deepening) on the Rathnew Stream were important features supporting the high ecological value of the river.

## 6. Recommendation

Considering the importance of the Rathnew Stream as a salmonid bearing watercourse with connectivity to Broad Lough an important sea trout estuarine habitat, it is vitally important to preserve the fisheries value of the watercourse. Several high-level recommendations are presented below but do not represent the full suite of measures that would need to be applied to protect watercourses. During the construction phase a CEMP should be formulated to ensure the protection of watercourses in consultation with IFI and the NPWS. This would include control of pollutants at source and monitoring discharges to the adjoining Rossanna and connecting Rathnew Streams. The riparian zone of both watercourses should be strictly protected with a minimum buffer of 15m from the development. This would also help protect identified otter foraging and or resting and breeding habitat. No storm water discharges should be made directly to the Rathnew Stream and rather only to the adjoining Rossanna Lower Stream given its lower ecological value. A drainage plan for the operational phase of the development should be developed with regular maintenance of the drainage system to prevent impacts from storm water pollution to the river system. Consideration of open swale systems and or natural wetland attenuation for storm drainage prior to discharge to the Rossanna Stream are extremely important to curb the threat of stormwater pollution which is one of the primary threats to catchments subject to suburbanisation pressures.

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## 8. Appendix A – fisheries habitat

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**Table 8.1** Life Cycle Unit scores for salmonid habitat at the  $n=4$  survey sites (lower scores = superior habitat)

Site	Watercourse	Spawning	Nursery	Holding	Total score	Salmonid habitat value	Salmonids recorded
S1	Rossanna Lower Stream	4	4	4	<b>12</b>	Poor	Not observed
S2	Rossanna Lower Stream	4	4	4	<b>12</b>	Poor	No observed
S3	Rathnew Stream	1	1	2	<b>4</b>	Excellent	Yes, seen present
S4	Rathnew Stream	2	2	1	<b>5</b>	Excellent	Yes, seen present; 0+ Atlantic salmon recorded via kick sampling

**Table 8.2** Lamprey Habitat Quality Index (LHQI) scores for lamprey habitat at the  $n=4$  survey sites (lower scores = superior habitat)

Site	Watercourse	Spawning	Nursery	Total score	Lamprey habitat value	Lamprey recorded
S1	Rossanna Lower Stream	3	3	<b>6</b>	Moderate	Not recorded but some low suitability
S2	Rossanna Lower Stream	3	2	<b>5</b>	Good	Good nursery habitat in soft sediment deposits
S3	Rathnew Stream	2	2	<b>4</b>	Good	Not observed but good suitability
S4	Rathnew Stream	2	2	<b>4</b>	Good	Not observed but good suitability

## 9. Appendix B – Q-sample results (biological water quality)

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**Table 8.1** Macro-invertebrate Q-sampling results for aquatic survey sites S1, S2, S3 & S4

Group	Family	Species	Rossanna Lower Stream		Rathnew Stream		EPA group
			S1	S2	S3	S4	
Ephemeroptera	Heptageniidae	<i>Rhithrogena semicolorata</i>	3	4	39	44	A
Ephemeroptera	Baetidae	<i>Alainites muticus</i>	1	2	18	12	B
Trichoptera	Limnephilidae	<i>Potamophylax cingulatus</i>	2				B
Trichoptera	Limnephilidae	<i>Limnephilus</i> sp.		1		1	B
Trichoptera	Odontoceridae	<i>Odontocerum albicorne</i>			1		B
Trichoptera	Sericostomatidae	<i>Sericostoma personatum</i>	5	10	1	1	B
Ephemeroptera	Baetidae	<i>Baetis rhodani</i>	26	35	19	11	C
Ephemeroptera	Ephemerellidae	<i>Serratella ignita</i>	1	1	2	4	C
Trichoptera	Hydropsychidae	<i>Hydropsyche instabilis</i>	4	2	6	17	C
Trichoptera	Hydropsychidae	<i>Hydropsyche siltalai</i>	2	1		6	C
Trichoptera	Polycentropodidae	<i>Plectrocnemia conspersa</i>		1			C
Trichoptera	Psychomyiidae	<i>Metalype fragilis</i>			1		C
Trichoptera	Rhyacophilidae	<i>Rhyacophila dorsalis</i>				1	C
Mollusca	Lymnaeidae	<i>Radix baltica</i>	1				C
Coleoptera	Elmidae	<i>Limnius volckmari larva</i>			4	4	C
Coleoptera	Hydraenidae	<i>Hydraena gracilis</i>				1	C
Diptera	Chironomidae	Non- <i>Chironomus</i> spp.	34	7	3	5	C
Diptera	Pediciidae	<i>Dicranota</i> sp.	8		12	40	C
Diptera	Pediciidae	<i>Pedicia</i> sp.	3	2			C
Crustacea	Gammaridae	<i>Gammarus duebeni</i>	11	36	5	8	C
Arachnida	Hydrachnidiae	Unidentified species	3			1	C
Mollusca	Tateidae	<i>Potamopyrgus antipodarum</i>	36	48	13	5	D
Hirudinidae	Erpobdellidae	<i>Erpobdella</i> sp.	2				D
Crustacea	Asellidae	<i>Asellus aquaticus</i>	4	2			D

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Group	Family	Species	Rossanna Lower Stream		Rathnew Stream		EPA group
			S1	S2	S3	S4	
Diptera	Chironomidae	<i>Chironomus spp.</i>	3				E
Nematomorpha	Gordiidae	Unidentified species	1			1	n/a
Annelidae	Oligochaeta	Unidentified species	7	1			n/a
Abundance			157	153	124	162	
Q-rating			Q3-4	Q3-4	Q4	Q4	
WFD status			Mod	Mod	Good	Good	

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