Wicklow Rathnew LAP – Draft Ministerial Direction Stage Submission - Report

Who are you:	Private Individual
Name:	Mary Byrne
Reference:	DWTRLAP-101017
Submission Made	July 14, 2025 10:12 AM

Topic

Draft Ministerial Direction to the Local Area Plan

Submission

Please see attached.

File

Ballybeg Draft Direction LAP.docx, 0.14MB

250709Layout showing DIRECTION boundary.pdf, 0.37MB

250506NIS_Ballybeg, Rathnew, Co. Wicklow_10321.pdf, 3.58MB

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14 July 2025

Draft Direction Local Area Plan

Administrative Officer

Planning Section

Wicklow County Council

Station Road

Wicklow A67 FW96

Re: Draft Direction Local Area Plan

I would like to make a submission about this draft Direction.

Myself and my sisters are the owner of the lands the subject of that part of the Direction referred to as MA 20B. This land has been zoned since 2013, and our family has spent considerable funds in applying for permission to develop the land in accordance with the zoning, which has entailed commissioning reports on natural based SUDS to manage surface water, an archaeology report, a Natura Impact report, water services report, a landscape design report, a tree survey report, a road safety report, and a DMURs compatibility assessment report.

Our first application had some fundamental flaws as a result of the Planning Authority requiring the foul sewage being by gravity, and subsequently the final levels being dictated by the consulting engineers who designed the foul sewer network, which entailed extensive earthworks that would have had a possibility of being prejudicial to the stream at the base of the site.

The subsequent application lodged last May addressed all of the issues identified in the previous refusal, principally as the overall design was fed through and developed with the consultant preparing a revised Natura Impact Statement, and the requirements of the consultant ecologist were fully incorporated in the design, and in particular in the mitigation methods and the phasing of the works that have as the principle parameter the protection of the stream that feeds into the Special Area of Conservation. The new Local Area Plan came into force a few days before the application was decided, and so it fell on the basis that these lands cannot be given permission until new population figures in the new National Planning Framework work their way through the RSES and County Development Plan.

It is appreciated that the details of an individual planning application are not fully relevant to how land is selected to be zoned, but nor should land be zoned on the basis, as given in your reason, that

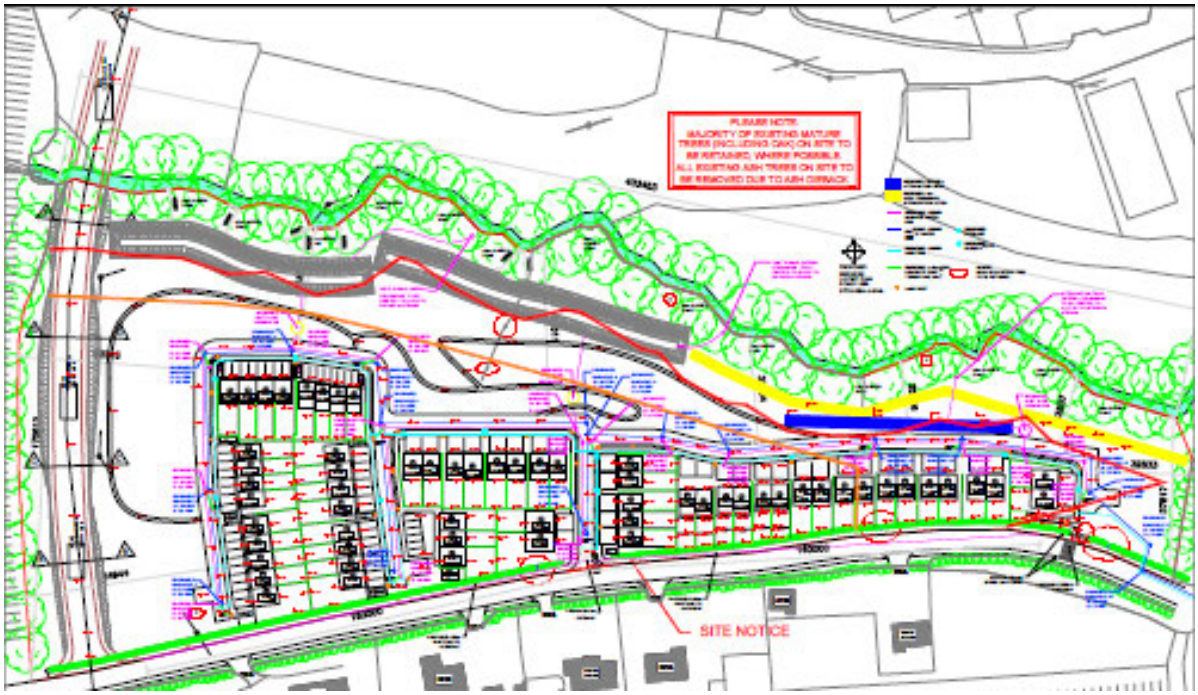
"a complete, precise and definitive finding and conclusion has not been reached that there would be no risk of adverse effects on the integrity of The Murrough SPA and The Murrough Wetlands SAC".

Development Plans do not require every field to be analysed and assessed under each planning or environmental parameter. A Plan should use common sense and obviously reject land for zoning that would clearly undermine a sensitive site or landscape. In other lands it is usual to designate land for particular purposes, but qualify such zoning with strict policies requiring evidence to be supplied at the planning application stage. This is what transpired in our application. The Planning Authority required a Natura Impact Statement be prepared as part of their assessment of the application. There was a thorough environmental inventory done of the site, as well as considerable desktop study. The NIS was positive about the ability of the site to sustain development without adversely impacting on the European Sites in The Murrough.

We would assert that 'a complete, precise and definitive finding and conclusion HAS been reached that there would not be adverse effects' on these sites. But that is not the point here. Where there is inconclusive doubt as you have expressed about these lands, then the rational and normal approach is to have strong policies and requirements in the Development Plan for an applicant to demonstrate that there will be no adverse impacts. Development Plans are not uni-polar, and have to provide for development to support the community while having strong protection for the environment.

This particular parcel of land is for the most part not sensitive. The vast majority of it is land well elevated over the stream. In fact for most of the site the development would be within the constrained area as per your DIRECTION. The portion of land to the east that was previously zoned and you wish to remove, is for the most part well elevated over the stream, and generally 25m from the watercourse.

Below (and also as an attachment) is a drawing of the subject lands showing the adopted boundaries (in red) as well as the boundaries of your direction (in brown)that demonstrates this:



The NIS prepared for residential development on this site is also attached.

The conclusion of the NIS on page 64 is:

"*It is the conclusion of this Natura Impact Statement that, subject to mitigation measures, there would be no potential for an adverse effect on European sites as a result of the proposed development and mitigation measures to be implemented. This conclusion refers to the development by itself or in combination with other developments*."

We would respectfully ask that you do not include our land, referred in your draft DIRECTION as MA20B, in your confirmed DIRECTION.

Yours sincerely

Mary Byrne

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NATURA IMPACT STATEMENT

BALLYBEG,
RATHNEW,
CO. WICKLOW

2025

REPORT NO:	PE_NIS_10321	**AUTHORS:**	Rory O'Hanlon, BSc & Paula Farrell BSc
DATE:	6th May 2025	**REVIEWED:**	Martin O'Looney, BSc.

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EXECUTIVE SUMMARY

Panther Ecology Ltd. was commissioned by Liam Kenna, on behalf of the client, to prepare a Natura Impact Statement (NIS) as part of a planning application for the proposed development. The proposed development is for the construction of 61 semi-detached and terraced dwellings, new entrance to public road, connection to all services and associate works including roads, footpaths, boundaries and boundaries treatments, open spaces and landscaping, attenuation areas and all associated site works at Ballybeg, Rathnew, Co. Wicklow.

A refusal was received on the 24th June 2024 (Planning Reference: 23/60123).

Refusal Reason vi: County Development Plan 2022-2028 Objectives CPO 17.14, CPO 17.23 and CPO 17.26

Refusal reason vii: The mitigation measures set out in the Natura Impact Statement. It is considered that the development would materially contravene zoning objective POS: Passive Open Space given extent of works in this area, would result in the loss of hedgerow and riverside vegetation contrary to objectives CPO 17.14, CPO 17.23 and CPO 17.26 of the County Development Plan 2022-2028, would impact negatively on the Biodiversity of the area, and would negatively impact on The Murrough Wetlands SAC. The development would therefore be contrary to the Habitats Directive, and to proper planning and sustainable development.

This report identified the presence of European sites within the potential zone of influence of the proposed development. The closest Natura 2000 sites, the Murrough Wetlands SAC (Site Code:002249) and the Murrough SPA (Site Code: 004186), are approximately 1.8km from the proposed site (2.1km hydrological distance). In addition, the NIS report would assess the potential impact on nearby watercourses such as the Rathnew Stream (Order 3) which provides the northern boundary of the site, and the hydrological impact on protected habitats located downstream of the proposed site. The Murrough Wetlands SAC and the Murrough SPA have been designated for a range of habitats and species that are sensitive to changes in water quality. The potential for impacts to European sites as a result of the proposed development such as potential surface water quality impacts, introduction of invasive species, habitat destruction and impacts from noise and dust were considered and the level of risk posed assessed.

During Stage 1 Screening for Appropriate Assessment, it was considered that there may be potential for an impact upon the qualifying interests / special conservation interests of the Murrough Wetlands SAC and the Murrough SPA due to a potential deterioration in water quality during the construction phase due to the in-stream works required for the installation of an outflow pipe as part of the foul water drainage network. Therefore, a Natura Impact Statement (NIS) was prepared. This NIS includes measures on water quality to ensure no significant impact on the SAC and SPA and to protect the water quality of the Rathnew Stream.

Due to the recommended control measures and standard practice during the construction phase, it is considered that there would be no significant risks to the conservation objectives of the habitats and species for which the aforementioned designated sites have been designated. It is considered that there would be no significant risk of negative impact, either alone or in combination with other plans or projects, to the integrity of the Natura 2000 network.

1.0 INTRODUCTION

Panther Ecology Ltd was commissioned by Liam Kenna, to prepare a Natura Impact Statement Report. The client is seeking planning permission for the construction of 61 semi-detached and terraced dwellings, new entrance to public road, connection to all services and associate works including roads, footpaths, boundaries and boundaries treatments, open spaces and landscaping, attenuation areas and all associated site works at Ballybeg, Rathnew, Co. Wicklow.

The screening programme shall be undertaken in accordance with the guidance outlined in "Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities" (DoEHLG, 2010) and "Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites" (EC, Nov 2001). Assessment of plans and projects significantly affecting Natura 2000 sites (November 2001) and Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive (2018). The principal aim of this study is to assess whether significant effects to European sites (the Natura 2000 network) are likely to occur as a result of this project in accordance with Article 6(3) of the Habitats Directive and the Planning and Development (Amendment) Act, 2001, as amended. This report has been prepared with regards to the European Communities (Natural Habitats) 1997 (S.I. No. 94 of 1997), and the later amendment regulations (S.I. No. 233 of 1998; S.I. No. 237 of 2005; S.I. No. 477 of 2011).

A study was undertaken by Mr Rory O'Hanlon (BSc Environmental Science and Advanced Certificate of Animal Science). This comprised a review of the proposed development, a site visit on the 2nd November 2023 to examine the ecological context of the proposed development, a desk study of the information on European sites within the potential zone of influence of the site and an analysis of the information in the context of the guidance to determine if a Natura Impact Statement is required.

The Appropriate Assessment and Natura Impact Statement shall be undertaken in accordance with the guidance outlined in "*Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities*" (DoEHLG, Dec 2010) and "*Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites*" (EC, 2021) and "*Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive*" (EC, 2018).

- DoEHLG (2010) "*Appropriate Assessment of Plans & Projects in Ireland*"
- Environment DG, European Commission (2021) "*Assessment of plans and projects significantly affecting Natura 2000 sites - Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*" Oxford Brookes University, 2001
- Department of the Environment Heritage and Local Government (DoEHLG) Circular Letter SEA 1/08 and NPWS 1/08.
- Department of the Environment Heritage and Local Government (DoEHLG) Circular letter NPWS 1/10 and PSSP 2/10

2.0 LEGISLATIVE CONTEXT

The EU Habitats Directive (92/43/EEC) on the conservation of natural habitats and of wild fauna by council directive 97/62/EC, 2006/105/EC, and Regulation EC1882/2003 of

September 2003, as transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/11), provides the framework for legal protection for habitats and species of European importance. The Natura 2000 network provides an ecological infrastructure for the protection of sites that are of particular importance for rare, endangered or vulnerable habitats and species within the EU. The Natura 2000 network in Ireland is made up of European Sites which include:

- Special Areas of Conservation (SACs)
- Special Protection Areas (SPAs)

Article 6(3) of the Habitats Directive establishes the requirement for appropriate assessment when planning new developments that might affect a Natura 2000 site. Article 6(3) of the Habitats Directive states; "*Any plan or project not directly connected with, or necessary to the management of the site, but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site, and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.*

Stage 1: Screening for Appropriate Assessment (AA)

This stage involves an initial screening assessment of the potential impacts of the project, either alone or in combination with other projects, upon a Natura 2000 site. If it can be concluded that there would be no significant impacts upon Natura 2000 sites, the assessment stops at this stage. If not, or if further assessment is required, the assessment proceeds to Stage 2.

Stage 2: Appropriate Assessment / Natura Impact Statement (NIS)

This stage assesses the impact of the project, alone or in combination with other projects or plans, on the integrity of the Natura 2000 site, with respect to the site's conservation objectives, the site's ecological structure and function and its overall integrity. The output of this stage is an NIS, which also includes any mitigation measures required to avoid, reduce or offset negative impacts of the project. If this stage determines that adverse effects on the Natura 2000 site cannot be excluded, then the plan or project should proceed to Stage 3 or be abandoned.

3.0 METHODOLOGY

Stage 1 - Screening

Screening is the first stage in the Appropriate Assessment process and is carried out to determine whether a Stage 2 Appropriate Assessment and a Natura Impact Statement (NIS) is required. Screening addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3);

1. Whether a plan or project is directly connected to or necessary for the management of the European (Natura 2000) site; and

2. Whether a plan or project, alone or in combination with other plans or projects, is likely to have significant effects on a European (Natura 2000) site, in view of its conservation objectives.

Screening should be undertaken without the inclusion of mitigation measures. If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 AA and an NIS.

The findings and conclusions of the screening process should be documented, with the necessary supporting evidence and objective criteria. This is of particular importance in the cases where the Appropriate Assessment process ends at the screening stage because the conclusion is that no significant effects are likely.

Following Stage 1 Screening, it was considered that there may be potential for an indirect impact upon the qualifying interests of a European site, therefore, the assessment progressed to Stage 2.

Stage 2 – Natura Impact Assessment

The scope of this assessment follows the appropriate assessment statement methodology as defined within the European Commission guidance document "*Assessment of plans and projects significantly affecting Natura 2000 sites"* (2001), Section 3, Part 2. Guidance from the Department of the Environment, Heritage and Local Government "*Appropriate Assessment of Plans and Projects in Ireland*" (2010) "*Assessment of plans and projects in relation to Natura 2000 sites: A Summary"* (2022) and "*Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive*" (2018), "*Appropriate Assessment Screening for Development Management*" OPR Practice Note PN01 (2021) have also been used in the preparation of this report. In accordance with this guidance, the following methodology has been used to produce this Natura Impact Statement:

Step 1**:** Information Required
Identifying the conservation objectives of the Natura 2000 site and the aspects of the project, alone or in combination with other projects or plans, which have the potential to affect those conservation objectives.

This process involves gathering information for the Natura 2000 site, including the conservation objectives of the site, factors contributing to conservation value, aspects sensitive to change and the existing baseline condition of the site. The principal source of information

used for Natura 2000 sites, their qualifying interests and conservation objectives is the National Parks and Wildlife Service (NPWS). Information is also required for the project including the size and scale of the project, the relationship (distance, connectivity etc.) of the project to the Natura 2000 site and the characteristics of existing, proposed or other projects which have the potential to affect the Natura 2000 site.

Step 2: Impact Prediction
This process predicts and identifies the likely impacts of the project on the Natura 2000 site. Potential impacts are identified as; direct and indirect; short or long-term duration; construction, operational or decommissioning; and isolated, interactive and cumulative effects.

Step 3: Conservation Objectives
Once the potential impacts of the project have been predicted and identified, it will be necessary to assess whether these impacts will adversely impact upon the integrity of the Natura 2000 site, as defined by the site's conservation objectives and status of the site. Where it cannot be demonstrated that there will be no adverse impacts upon the Natura 2000 site, mitigation measures must be proposed for the project.

Step 4: Mitigation Measures
Upon the identification of potential impacts, the project will have on the Natura 2000 site (alone or in combination with other projects or plans), mitigation measures will be proposed to eliminate, reduce or offset these negative impacts. Mitigation measures should be considered with preference to the hierarchy of preferred options outlined in the guidance document "*Assessment of plans and projects significantly affecting Natura 2000 sites"*.

3.1 METHODOLOGY BACKGROUND

This Appropriate Assessment has been carried with reference to the following guidelines:

- *Appropriate Assessment of Plans and Projects in Ireland. Guidelines for Planning Authorities*. DoEHLG, 2010.
- Circular NPWS 1/10 & PSSP 2/10 Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities
- *Managing Natura 2000 sites – The Provisions of Article 6 of The Habitats Directive 92/43/EEC.* European Commission, 2021.
- Circular L8/08 Water Services Investment and Rural Water Programmes – Protection of Natural Heritage and National Monuments 2 September 2008
- *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites. Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.* European Commission, 2002.
- Commission Notice "Managing Natura 2000 sites The provisions of Article 6 of the Habitats Directive 92/43/EEC. European Commission, 21.11.2018
- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2. Chartered Institute of Ecology and Environmental Management, Winchester.

3.2 DESKTOP RESEARCH

Desktop research was carried out to gather information on the ecology of the site and surrounding areas. The locations of the Natura 2000 sites within the zone of influence of the proposed development at Ballybeg, Rathnew, Co. Wicklow were identified from National Parks and Wildlife Service (NPWS) online map viewer. Other Natura sites within the potential zone of influence were also reviewed and considered for the potential for the project to have a negative effect.

Water quality data from the EPA was reviewed for the assessment of biological and environmental data collected on waterbodies in Ireland as per the Water Framework Directive (WFD) Monitoring Programme of River Ecology Monitoring Results (2021).

Information on the characteristics of the Natura 2000 sites within the potential zone of influence was reviewed from the conservation objectives documents, site synopses and Standard Natura 2000 data forms available on the NPWS website.

3.3 SITE SURVEY

A site characterisation assessment was undertaken on the 2nd November 2023 to examine the ecological context of the development site, by systematically walking the site and boundaries and determining the habitats present. The habitat survey was undertaken in accordance with the standard methodology outlined in Fossitt's "*A Guide to Habitats in Ireland*", a hierarchical classification scheme based upon the characteristics of vegetation present. The Fossitt system also indicates when there are potential links with Annex I habitats of the E.U. Habitats Directive (92/43/EEC). Cognisance was also taken of the Heritage Council guidelines, "*Best Practice Guidance for Habitat Survey and Mapping*", (Smith *et al.,* 2011).

Bird species and signs of fauna activity were also noted. Particular attention was given to the possible presence of habitats and/or species, which are legally protected under Irish and European legislation and to assessing any potential ecological connectivity with Natura 2000 sites or supplementary or steppingstone habitats of relevance to Natura 2000 sites.

4.0 DESCRIPTION OF PROPOSED DEVELOPMENT AND EXISTING SITE

4.1 PROPOSED DEVELOPMENT

The proposed development will be for the construction of a residential housing complex comprising a total of 61 semi-detached and terraced dwellings, new entrance to public road, connection to all services and associate works including roads, footpaths, boundaries and boundaries treatments, open spaces and landscaping, attenuation areas and all associated site works at Ballybeg, Rathnew, Co. Wicklow (ITM: 728060, 695288) as shown in the location map Figure 4.1.

The closest Natura 2000 sites, the Murrough Wetlands SAC (Site Code:002249) and the Murrough SPA (Site Code: 004186), are located approximately 1.8km from the proposed site (2.1km hydrological distance) as shown in Figure 4.2 below.

The proposed site will be accessed by the R752 Regional Road which forms the southern boundary of the site. The total area of the red line boundary is 4.43ha and the total ground floor area of the combined units is 6,330m². Water will be supplied to the development via mains. The proposed heating system will be air to water heat pumps.

Foul water from the proposed development will discharge to public mains via a new connection. Surface water will be discharged to the stream bounding the north of the site, via two natural SUDS attenuation swales for circa two thirds of the attenuated flow, and one third via an attenuation tank. Each attenuation unit will discharge separately to the stream

Construction Management Methodology

As there will be not insignificant earthworks in executing this proposal, considerable thought has been given to proposals to eliminate risks of discharging suspended solids to the Rathnew Stream. A key part of this strategy is to exploit the two proposed swales to act as interception ditches that would intercept any runoff during the earth moving phase of the project, and to ensure no other works are carried out until these are in place.

Prior to any other construction works onsite, two swales will be constructed to the west of the site. A temporary interception ditch will be constructed to the east where there is insufficient room for a swale. The purpose of the swales and ditch will be to capture and prevent sediments within surface water run-off from entering the Rathnew Stream while providing additional attenuation during soil disturbance works. The Engineers report states that "*It is intended that swales will be constructed by using the sloping topography towards the Rathnew Stream, with a small embankment constructed on the slope to create a retention area. The base of the swale will have a nominal width of 3m and a maximum depth of 0.6m during a 1 in 100 year event. With a designed freeboard of 0.15m, this gives a maximum depth of 0.75m.*" These swales will have a total length of 210m. The temporary interception ditch will be 4m in width. The swales will be incorporated within the drainage plan for the operational phase of the development to act as additional attenuation for surface water run-off to the west of the site. A shallow open rocky channel will be constructed to connect the west swale to the Rathnew Stream. The swale in the centre will discharge to an existing drainage ditch onsite. Surplus discharge from the swales will be directed to the Rathnew Stream at a rate of 3.3 l/s and 5 l/s. Surface water run-off from the eastern portion of the site will be collected via internal drains and directed to a geocell attenuation area prior to discharging to the Rathnew Stream at a rate of 4.17 l/s. All

surface water will pass through a grit and oil separator and hydrobrake prior to discharging into the Rathnew Stream. As per the accompanying Engineers Report, "*the overall peak runoff from the site across the three outfalls does not exceed the greenfield runoff rate*."

- During dry weather conditions, two swales to the west, an interception ditch and attenuation tank to the east will be constructed between the Rathnew Stream and proposed dwellings prior to any other construction works.
- These works will not be undertaken prior to the forecast of heavy rainfall, i.e. Orange, Yellow or Red rainfall warnings issued by Met Éireann.
- A silt fence will be placed along the swales and interception ditch to capture any sediments. These will remain in place until all construction works have ceased.
- New shallow drainage channels will be constructed that connect to the Rathnew Stream from the swales and attenuation tank.
- Heavy machinery will be situated as far back as the hydraulic arm will reach at the closest point to the Rathnew Stream.
- Using the hydraulic arm, a small channel will be excavated beginning closest to the top of the bank of the Rathnew Stream, moving inland until it reaches the swales and attenuation tank. The excavation of this channel will be managed delicately by an experienced professional. Given the lie of the land here being mostly level, fallback from excavated soil is not expected to occur.
- All excavated material will be removed and placed in the upper reaches of the site in a designated area where infilling will take place. Excavated materials will not be allowed to fall into the watercourse and will not be stored or placed near the top of the bank of the Rathnew Stream.
- No other construction or soil disturbance works including the operation of any construction machinery will occur within the 10m buffer zone along the Rathnew Stream.
- After the completion of the construction of the houses, roads and earthworks, the temporary interception ditch will be infilled.

A soil infiltration rate test was carried out on the 28th March 2023 which concluded, "*We have been instructed to carry out Soil infiltration Rate tests as per BRE365 standards to show that the site at Ballybeg, Rathnew, Co. Wicklow is appropriate for soak ways for the proposed construction of the proposed development*".

The Landscape Plan created by Landscape Design & Planning Limited has been updated and will include the planting of native and non-native non-invasive species as part of the design (See Appendix C). The plan proposes to retain a majority of the existing trees and hedgerow onsite. All Ash will be removed due to Ash dieback. Tree species are; Sessile Oak (*Quercus petraea*), Common Alder (*Alnus glutinosa*), Common Birch (*Betula pendula*), Hornbeam (*Carpinus betulus* 'Fastigiata', Larch (*Larix decidua*), Mountain Ash (*Sorbus acuparia*), Common Oak (*Quercus robur*), Small leaved Lime (*Tilia cordata*) and Scots Pine (*Pinus sylvestris*). Box (*Buxus* spp.) hedging will be planted throughout with native and non-invasive ornamental shrubs planted throughout. Open space areas are also proposed with provide recreation areas for residents and be ecologically beneficial.

The arborists report which was prepared by APB Treecare Limited provides an in-depth report of the trees and hedgerows to be removed as part of the development. The proposed plan is to remove a total of 25 trees with the majority being non-native Sycamore (*Acer pseudoplatanus*),

Monterey Cyprus (*Cupressus macrocarpa*) and Ash (*Fraxinus excelsior*) with signs of Ash dieback disease. Some Oak (*Quercus* spp.) and Willow (*Salix* spp.) will also be removed as part of the proposed plans. The impact of tree removals will be lessened by the retention of roadside mature Oak trees and semi-mature Alder/Willow along the northern boundary of the site along with additional new trees planted as part of the landscape plan. Much of the existing vegetation along the boundaries are to be retained. The proposed project, including landscaping activities, for the proposed development is expected to be completed by the end of 2025.

Construction works would be confined to the proposed development footprint and would not necessitate any works within the drainage ditch to the south of the development. Ground levelling works are required. However, any excavated soil will be re-used within the site for landscaping or levelling. The natural gradient of the land will remain with stepped housing proposed at different elevations. This would not alter the natural drainage pattern of the area. During excavation works, soils would be temporarily stored onsite. Any excess soils would be used for landscaping and reinstatement works where possible or exported offsite via a licenced contractor.

The following project elements of the proposed development have been examined for relevance to possible effects on the Natura 2000 sites;

- Earthworks & Excavation
- Sediment & Hydrocarbon Runnoff
- Stormwater & Waste Water
- Disturbance to Protected Species
- Impact on Protected Habitats
- Dust and Noise
- Invasive Species

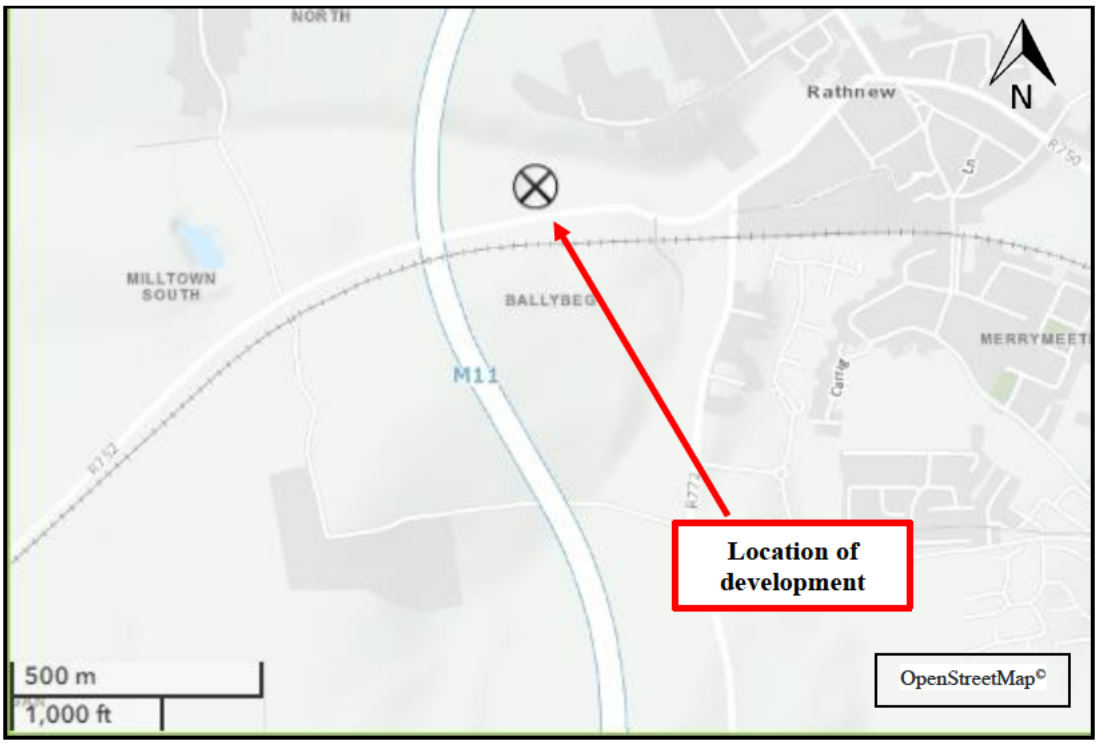

Figure 4.1: Location of Proposed Development at Ballybeg, Rathnew, Co. Wicklow

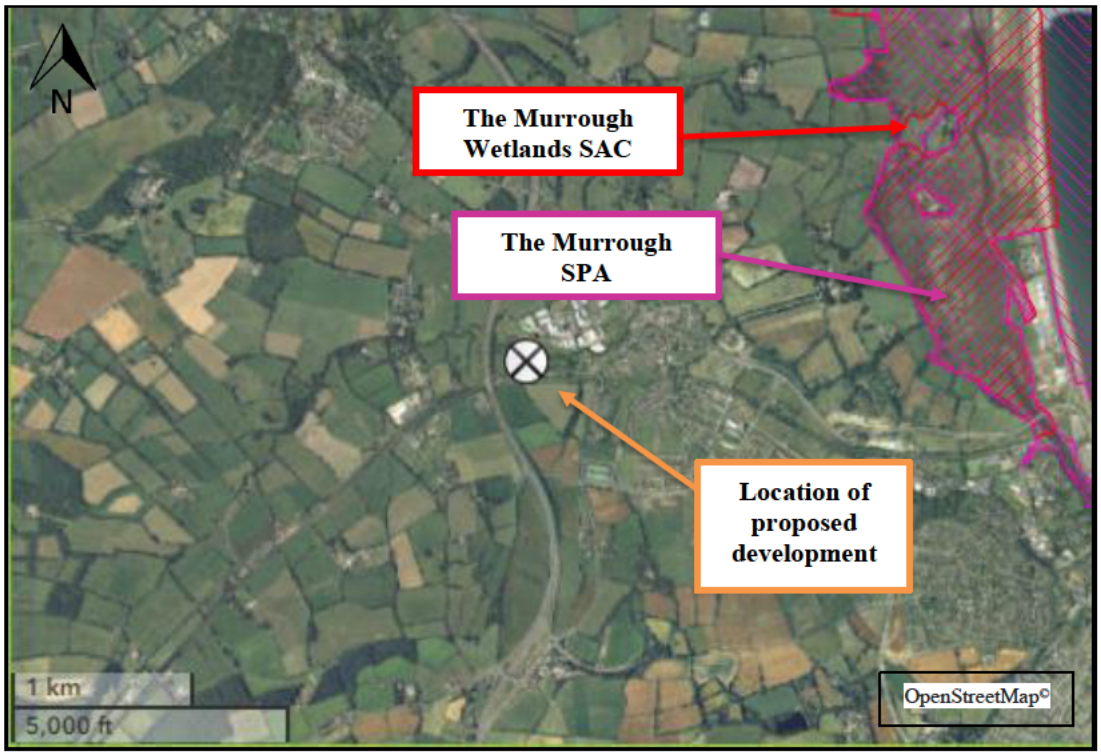

Figure 4.2: Location of Proposed Development and Natura 2000 Site

4.2 EXISTING ENVIRONMENT

The proposed development site is mainly comprised of agricultural grassland which has been used for livestock grazing. The site is bordered by treelines and hedgerows. The landscape plan proposes to retain much of the boundary vegetation, but it is proposed that some of this vegetation will be cut back. Native and non-invasive flora will be used as part of the landscape design (see Appendix C). The land within the immediate vicinity is a mix of urban and rural in nature with residential premises located south of the development, the M11 is located to the west, Rathnew town is located to the east along the R752 and expanses of agricultural land to the north.

During the site assessment the following habitats were observed. The majority of the proposed development site consists of Improved agricultural grassland (GA1) habitat. The following species were identified, it is dominated by Ryegrass (*Lolium* spp.), Clover (*Trifolium* spp.) and Meadow grasses (*Poa* spp.). Other species identified were, Creeping Buttercup (*Ranunculus repens*), Dock (*Rumex* spp.), Ribwort Plantain (*Plantago lanceolata*), Sorrel (*Rumex acetosa*), Nettle (*Urtica dioica*), Ragwort (*Jacobaea vulgaris*), Dandelion (*Taraxacum* spp.), Chickweed (*Stellaria media*), Stitchwort (*Stellaria holostea*), Rushes (*Juncus* spp.), Willowherb (*Epilobium* spp.), Yarrow (*Achillea millefolium*), Broadleaved Plantain (*Plantago major*), Hawkbit (*Leontodon* spp.) and Bittercress (*Cardamine hirsuta*). A Wet grassland (GS4), habitat was identified on the lower elevation areas of the site closer to the watercourse. Species composition is, Rushes (*Juncus* spp.), Creeping Buttercup (*Ranunculus repens*), *Ribwort Plantain (Plantago lanceolata*), Sorrel (*Rumex acetosa*), Chickweed (*Stellaria media*), Willowherb (*Epilobium* spp.), Yarrow (*Achillea millefolium*), Bird's Foot Trefoil (*Lotus corniculatus*), Meadowsweet (*Filipendula ulmaria*), Silverweed (*Potentilla anserina*), Marsh Thistle (*Cirsium palustre*), Bullrush (*Typha latifolia*), Purple Loosestrife (*Lythrum salicaria*),

Watermint (*Mentha aquatica*), Hogweed (*Heracleum sphondylium*), Devils Bit Scabious (*Succisa pratensis*), Vetch (*Vicia* spp.) and Horsetail (*Equisetum arvense*). Alder (*Alnus* spp.) and Willow (*Salix* spp.) saplings were also present. The majority of the boundary of the site is comprised of a Hedgerow (WL1)/ Treeline (WL2) habitat, including internal field boundaries. Species identified were, Willow (*Salix* spp.), Alder (*Alnus* spp.), Ash (*Fraxinus excelsior*), Oak (*Quercus* spp.), Holly (*Ilex aquifolium*), Sycamore (*Acer pseudoplatanus*), Hawthorn (*Crataegus monogyna*), Hazel (*Corylus avellana*), Yew (*Taxus baccata*), Birch (*Betula* spp.), Elder (*Sambucus nigra*), Blackthorn (*Prunus spinosa*), Cyprus (*Cupressus* spp.) and Elm (*Ulmus* spp.). The understory was comprised of, Dog-rose (*Rosa canina*), Bramble (*Rubus fructicosus*), Gorse (*Ulex europaeus*), Nettle (*Urtica dioica*), Ragwort (*Jacobaea vulgaris*), Creeping Buttercup (*Ranunculus repens*), Vetch (*Vicia* spp.), Horsetail (*Equisetum arvense*), Ivy (*Hedera hibernica*), Thistle (*Cirsium* spp.), Golden Saxifrage (*Chrysosplenium* spp.), Sedge (*Carex* spp.), St. John's Wort (*Hypericum perforatum*), Honeysuckle (*Lonicera periclymenum*), Bracken (*Pteridium aquilinum*) and Hart's Tongue (*Asplenium scolopendrium*). A watercourse, classified as a Depositing/lowland rivers (FW2) habitat was identified providing the northern boundary of the site. It was 2 – 2.5m wide, the visibility was poor at the time of the site visit, there was a high flow as it was within a period of heavy rainfall. Aquatic species identified were Watercress (*Nasturtium officinale*) and Fool's Watercress (*Helosciadium nodiflorum*). The banks on the southern site were heavily vegetated. A drainage ditch (FW4) habitat was identified in the centre of the site flowing north, this provided the boundary between two internal fields, it was 0.5m wide and had a low flow at the time of the site visit. The substrate was silt and cobble. There were no aquatic species identified. An immature woodland (WS2) habitat was identified to the north of the site, this was dominated by Alder (Alnus spp.) and Willow (Salix spp.). Other species identified were, Blackthorn (*Prunus spinosa*), Rushes (*Juncus* spp.), Clover (*Trifolium* spp.), Meadow Grasses (*Poa* spp.), Creeping Buttercup (*Ranunculus repens*), Meadowsweet (*Filipendula ulmaria*), Chickweed (*Stellaria media*), Watermint (*Mentha aquatica*), Horsetail (*Equisetum arvense*), Bramble (*Rubus fructicosus*), Ivy (*Hedera hibernica*) and Bracken (*Pteridium aquilinum*). Some of the grassland areas were transitioning to scrub, this was classified as a Scrub (WS1) habitat. Species identified were, Blackthorn (*Prunus spinosa*), Dog-rose (*Rosa canina*), Bramble (*Rubus fructicosus*), Gorse (*Ulex europaeus*), Nettle (*Urtica dioica*), Bracken (*Pteridium aquilinum*). Willow (*Salix* spp.), Hazel (*Corylus avellana*) and Oak (*Quercus* spp.) saplings were also identified. See Appendix D for Photo Log of the main habitats observed during the site assessment. The invasive third schedule Himalayan Balsam (*Impatiens glandulifera*) was identified to the north-west of the site adjacent to the watercourse.

Table 4.1: Habitats found in and adjacent to the development site.

HABITAT CLASSIFICATION HIERARCHY		
LEVEL 1	**LEVEL 2**	**LEVEL 3**
F – Freshwater	**FW**- Watercourse	**FW4** – Drainage Ditch
		FW2 – Depositing/lowland river
G – Grassland and marsh	**GA** – Improved grassland	**GA1** – Improved agricultural grassland
	GS – Semi-natural grassland	**GS4** – Wet grassland
W- Woodland and scrub	**WL**- Linear woodland/scrub	**WL2** – Treeline
		WL1 - Hedgerow
		WS1 - Scrub

HABITAT CLASSIFICATION HIERARCHY		
LEVEL 1	**LEVEL 2**	**LEVEL 3**
	WS – Scrub/transitional woodland	**WS2 –** Immature woodland

Bird species noted during the site walkover included Goldfinch (*Carduelis carduelis*), Wren (*Troglodytes troglodytes),* Jackdaw (*Corvus monedula*), Hooded Crow (*Corvus cornix*), Starling (*Sturnus vulgaris*), Blue Tit (*Cyanistes caeruleus*), Long Tailed-tit (*Aegithalos caudatus*), Robin (*Erithacus rubecula*), Woodpigeon (*Columba palumbus*), Herring Gull (*Larus argentatus*), Magpie (*Pica pica*) and Blackbird (*Turdus merula*). Starling and Herring Gull are amber listed, no species are red listed (Gilbert et al, 2021). Animal tracks were evident throughout the site and surrounding areas. However, no evidence of protected fauna species were observed within the site boundary. Fauna typical of that found throughout the rest of Ireland which would be expected to be found in the area would include; Bat species, Badger (*Meles meles*), Mink (*Mustela vison*) Otter (*Lutra lutra*), Fox (*Vulpes vulpes*), Pine Marten (*Martes martes*), Stoat (*Mustela erminea hibernica*), Rabbit (*Oryctalagus cuniculus*), Irish Hare (*Lepus timidus hibernicus*), Hedgehog (*Erinus europaeus*), Red Squirrel (*Sciurus vulgaris*), Grey Squirrel (*Sciurus carolinensis*), Wood Mouse (*Apodemus sylvaticus*), Pygmy Shrew (*Sorex minutus*) and Brown Rat (*Rattus norvegicus*).

In addition to the site walkover, flora and fauna records were reviewed on the National Biodiversity Data Centre (NBDC) website for the proposed development site and vicinity. Large White-moss (*Leucobryum glaucum*) is protected under the habitats Directive while the Killarney Fern (*Trichomanes speciosum*) is the only plant listed under the Flora (Protection) Order, 2022 (S.I. No. 235 of 2022) recorded within the 10km square (Tetrad – T29) in which the proposed development site is located. There are three endangered, vulnerable and near-threatened flora within this tetrad: Killarney Fern (*Trichomanes speciosum*), Allseed (*Radiola linoides*) and Lesser Striated Feather-moss (*Eurhynchium striatulum*). Eleven invasive plant species listed in the Third Schedule of the European Communities Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) were recorded within the 10km square (Tetrad – T29): Water Fern (*Azolla filiculoides*), American Skunk-cabbage (*Lysichiton americanus*), Canadian Waterweed (*Elodea canadensis*), Giant Hogweed (*Heracleum mantegazzianum*), Giant-rhubarb (*Gunnera tinctoria*), Indian Balsam (*Impatiens glandulifera*), Japanese Knotweed (*Fallopia japonica*), Rhododendron ponticum, Salmonberry (*Rubus spectabilis*), Spanish Bluebell (*Hyacinthoides hispanica*) and Three-cornered Garlic (*Allium triquetrum*). Protected fauna species of note recorded within the NBDC 10km square (Tetrad – T29) include the protected species for the most recent 30 years; Common Frog (*Rana temporaria*), Smooth Newt *(Lissotriton vulgaris*), European Eel (*Anguilla anguilla*), Marsh Fritillary (*Euphydryas aurinia*), Seal (*Phoca vitulina*), Lizard (*Zootoca vivipara*), Brown Long-eared Bat (*Plecotus auritus*), Daubenton's Bat (*Myotis daubentonii*), Badger (*Meles meles*), Pygmy Shrew (*Sorex minutus*), Red Squirrel (*Sciurus vulgaris*), Otter (*Lutra lutra*), Lesser Noctule (*Nyctalus leisleri*), Natterer's Bat (Myotis nattereri), Pine Marten (*Martes martes*), Pipistrelle (*Pipistrellus pipistrellus sensu lato*), Red Deer (*Cervus elaphus*), Hedgehog (*Erinaceus europaeus*) and Soprano Pipistrelle (*Pipistrellus pygmaeus*). Bird species of note include Barn Owl (*Tyto alba*), Barn Swallow (*Hirundo rustica*), Black-headed Gull (*Larus ridibundus*), Grasshopper Warbler (*Locustella naevia*), Kestrel (*Falco tinnunculus*), Common Kingfisher (*Alcedo atthis*), Linnet (*Carduelis cannabina*), Redstart (*Phoeniurus phoenicurus*), Starling (*Sturnus vulgaris*), Snipe (*Gallinago gallinago*), Swift (*Apus apus*), Eurasian Curlew (*Numenius arquata*), Teal (*Anas crecca*), Tree Sparrow (*Passer montanus*), Woodcock

(*Scolopax rusticola*), Great Cormorant (*Phalacrocorax carbo*), Herring Gull (*Larus argentatus*), House Martin (*Delichon urbicum*), House Sparrow (*Passer domesticus*), Little Egret (*Egretta garzetta*), Little Grebe (*Tachybaptus ruficollis*), Merlin (*Falco columbarius*), Mew Gull (*Larus canus*), Mute Swan (*Cygnus olor*), Northern Lapwing (*Vanellus vanellus*), Peregrine Falcon (*Falco peregrinus*), Red Kite (*Milvus milvus)*, Rock Pigeon (*Columba livia*), Sand Martin (*Riparia riparia*), Sky Lark (*Alauda arvensis*), Spotted Crake (*Porzana porzana*), Spotted Flycatcher (*Muscicapa striata*), Stock Pigeon (*Columba oenas*), Wood warbler (*Phylloscopus sibilatrix*) and Yellowhammer (*Emberiza citrinella*).

4.3 WATER ENVIRONMENT

The proposed development is located within the Vartry sub-catchment (Vartry_SC_010), which is part of the Ovoca-Vartry Catchment (ID_10). The closest mapped watercourse to the proposed development site is the Rathnew Stream (EPA Code: 10R02 - Order 3) located adjacent to the northern boundary of the proposed development outside the red line boundary. It flows for 0.2km east before being joined by the Rathnew (EPA Code: 10R26 – Order 1), the Rathnew Stream continues east for 0.4km (hydrologically) downstream before being joined by the Cronroe Stream (EPA Code: 10C68 - Order 3). The Rathnew Stream flows a further 0.4km north-east before being joined by the Rossana Lower (EPA Code: 10R19 – Order 1). The Rathnew Stream continues to flow north-east for a further 1.6km before joining the Vartry River (EPA Code: 10V01 – Order 4) at Broadlough Estuary. It flows for 3.5km east before entering the Vartry Estuary. See figure 4.3 for mapped watercourses. The Conservation Objectives document for The Murrough SAC shows that water quality is important for the function of Calcareous [7210] and Alkaline fen [7230] habitats. There is one water monitoring station on the Rathnew Stream (see table 4.2).

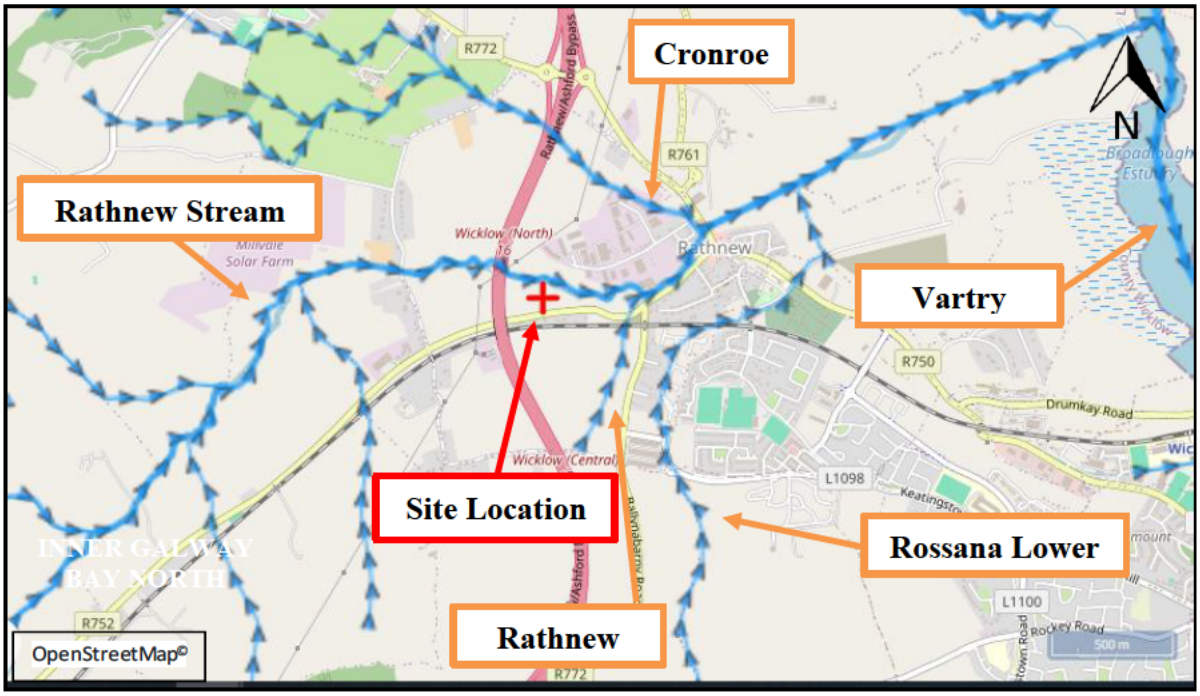

Figure 4.3: Watercourses surrounding the proposed development site

The Environmental Protection Agency (EPA) undertake surface water monitoring along the Rathnew Stream. The results for the nearest monitoring stations with available information (as

per Table 4.1) for the period 2009 – 2020 are summarised in Figure 4.4 below for indicative purposes. The Rathnew Stream is mainly achieving a water quality status of between Q3 (poor) and Q4 (good) in recent years. EPA comments on the most recent monitoring results for the Rathnew Stream are as follows "*The diversity of pollution sensitive macroinvertebrate fauna indicated a welcome improvement to good ecological conditions on the Rathnew River in July 2020 however signs of some enrichment were still evident with excessive siltation and algal growth.*"

Table 4.2: Active Monitoring Stations of the Rathnew Stream

STATION NO.	STATION LOCATION	EASTING	NORTHING	APPROX. DISTANCE FROM SITE
RS10R020600	Br in Rathnew Village	328784.91	195569.31	0.6km Downstream

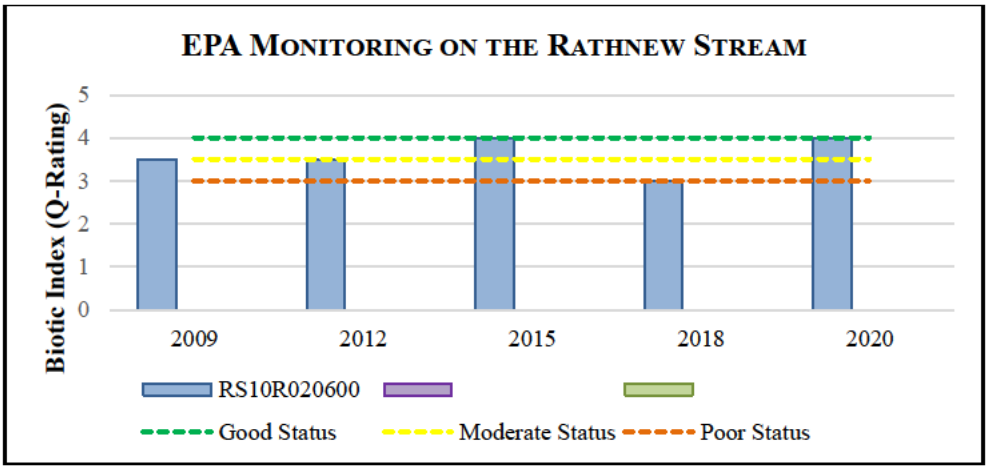

Figure 4.4: EPA Ecological Monitoring of the Rathnew Stream from 2009-2020

The water quality status of transitional and coastal waters is available on the EPA maps. The Broad Lough Estuary is located approximately 2.2km (hydrologically) downstream of the proposed development. The status of the Broad Lough is Moderate as per Transitional Water Quality WFD Status 2016-2021. The Southwestern Irish Sea – Killiney Bay is located approximately 5.7km (hydrologically) downstream of the proposed development. The status for Southwestern Irish Sea – Killiney bay is High as per Coastal Water Quality 2016-2021 See Figure 4.5 for map of watercourses surrounding the proposed development. The results for the transitional and coastal waters surrounding the proposed development site as listed in Table 4.3.

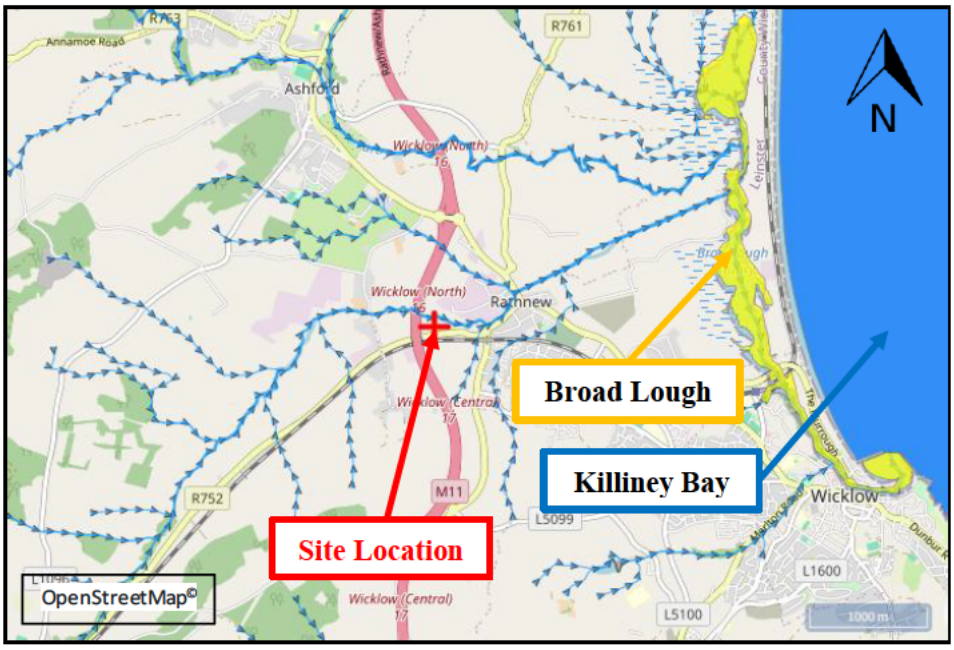

Figure 4.5: Mapped transitional and coastal waterbodies

Table 4.3: Status of transitional and coastal waterbodies

NAME	ID	TYPE	STATUS	APPROX. DISTANCE
Broad Lough	IE_EA_130_0100	Transitional	At Risk	2.2km Downstream
Killiney Bay	IE_WE_100_0000	Coastal	Not at Risk	5.7km Downstream

According to the Preliminary Flood Risk Assessment (PFRA) Mapping tool by the OPW, the northern boundary of the site as partially within an area of fluvial or pluvial flooding, indicative of 10% AEP (10-yr) event, 1% AEP (100-yr) event or 0.1% AEP (1000-yr) event. However, it should be noted that this map is based on broad-scale simple analysis and may not be accurate for a specific location. There is no history of flooding at the proposed site. The northern site boundary is proposed to be maintained as open green space; this would ensure the natural drainage pattern of the area would not be altered. In addition, the proposed green space is on a lower elevation to the rest of the site, this would provide additional flood protection.

5.0 EUROPEAN SITES (NATURA 2000 SITES) WITHIN ZONE OF INFLUENCE

In assessing the zone of influence of this project upon European sites, the following factors must be considered:

- Potential impacts arising from the project,
- The location and nature of European sites,
- Pathways between the development and European sites.

The project impact sources, environmental pathways and protected site characteristics were screened to identify European sites potentially within the zone of influence of the project.

Three Special Protection Area (SPA) sites occur within the potential zone of influence of the proposed development. Eight Special Area of Conservation (SAC) sites occur within the potential zone of influence of the proposed development site and are shown in the following table:

Table 5.1: Special Areas of Conservation and Special Protection Area potentially within the zone of influence

SITE NAME	DESIGNATION	SITE CODE	DISTANCE TO PROPOSED SITE
The Murrough Wetlands	SAC	002249	1.8km NE
The Murrough	SPA	004186	1.8km NE
Wicklow Head	SPA	004127	5.2km SE
Deputy's Pass Nature Reserve	SAC	000717	6.1km SW
Wicklow Reef	SAC	002247	6.8km SE
Magherabeg Dunes	SAC	001766	8.1km SE
Vale of Clara (Rathdrum Wood)	SAC	000733	8.7km SW
Buckroney-Brittas Dunes and Fen	SAC	000729	10.9km S
Wicklow Mountains	SAC	002122	11.6km W
Carriggower Bog	SAC	000716	13km NW
Wicklow Mountains	SPA	004040	13.3km W

Maps detailing European sites within the zone of influence of the proposed site are included as Appendix C below. For this assessment, the sites considered to be within the zone of influence of the proposed development site are the Murrough Wetlands SAC (Site Code: 002249) and The Murrough SPA (Site Code: 004186) due their proximity to the proposed development and hydrological connection.

The proposed site is located 5.2km from Wicklow Head SPA (Site Code: 004127) and lacks a direct hydrological connection. The proposed site does not contain cliff or coastal habitats associated with species for which Wicklow Head SPA has been designated. Therefore, given the distance from the site, the lack of a direct hydrological connection and lack of habitats associated with the designated site, Wicklow Head SPA has been screened out.

The proposed site is located within 6.1km from the Deputy's Pass Nature Reserve SAC (Site Code: 000717) with no direct hydrological connection. The proposed development is positioned within the Vartry sub catchment (Vartry_SC_010) while the Deputy's Pass Nature Reserve is located within a separate sub catchment (the Redcross_SC_010). The site does not contain woodlands with links to the annexed Old Sessile Oak Woodlands [91A0] for which this SAC was designated. Due to the distance from the site development and lack of suitable habitats, Deputy's Pass Nature Reserve SAC has been screened out.

The Wicklow Reef SAC (Side Code: 002247) is located approximately 6.8km from the proposed development. The habitat, Reef [1170] for which the Wicklow Reef SAC has been designated is not found within the proposed development. No direct hydrological connected is found between the two sites. Therefore, given the distance, lack of direct hydrological connection and absence of associated habitats, the Wicklow Reef SAC has been screened out.

The proposed development is located 8.1km from Magherabeg Dunes SAC (Site Code: 001766) and located within a separate sub-catchment (Vartry_SC_010). The SAC is located within the Redcross sub-catchment (Redcross_SC_010). The proposed site does not contain habitats associated with dunes for which the site was designated. Therefore, due to the lack of a direct source-pathway-receptor relationship, large distance and lack of the associated habitats present, the Magherabeg Dunes SAC has been screened out.

The Vale of Clara (Rathdrum Wood) SAC (Site Code: 000733) is located approximately 8.7km from the proposed development with the absence of a direct hydrological connection. This SAC is within a separate sub-catchment, the Avonmore sub-catchment (Avonmore_SC_020), from that of the proposed development. The proposed development does not contain any woodlands with links to Old Sessile Oak Woodlands [91A0] for which this SAC has been designated. Therefore, given the large distance, absence of direct hydrological connection and lack of associated habitats, the Vale of Clara (Rathdrum Wood) SAC has been screened out.

The proposed site is located 10.9km from Buckroney-Brittas Dunes and Fen SAC (Site Code: 000729). This SAC is located within a separate sub-catchment, the Redcross sub-catchment (Redcross_SC_010) from the proposed development. The proposed site does not contain habitats for which the site was designated. Therefore, due to the lack of a direct hydrological connection, large distance and lack of the associated habitats present, the Buckroney-Brittas Dunes and Fen SAC has been screened out.

The Wicklow Mountains SAC (Site Code: 002122) is located approximately 11.6km from the proposed development with a lack of direct hydrological connection. This SAC is within a separate sub-catchment from the proposed development. The proposed development does not contain any of the habitats associated with the SAC for which it has been designated. Given the large distance, absence of direct hydrological connection and lack of associated habitats, Wicklow Mountains SAC has been screened out.

The proposed site is located a considerable distance of 13km from Carriggower Bog SAC (Site Code: 000716). The proposed site does not contain habitats associated with Transition mires and quaking bogs [7140] for which the site was designated. Therefore, due to the lack of a direct source-pathway-receptor relationship, large distance and lack of the associated habitats present, the Carriggower Bog SAC has been screened out.

The Wicklow Mountains SPA (Site Code: 004040) is located approximately 13.3km west of the proposed development. This SAC is within separate sub-catchments, from the proposed development. The proposed development does not contain habitats associated with species for which this SAC has been designated. Therefore, given the large distance, absence of direct hydrological connection and lack of associated habitats, the Wicklow Mountains SPA has been screened out.

5.1 THE MURROUGH WETLANDS SAC (SITE CODE: 002249)

The Murrough is a coastal wetland complex which stretches for 15 km from Ballygannon to north of Wicklow town, and in parts, extends inland for up to 1 km. A shingle ridge stretches the length of the site and carries the mainline Dublin-Wexford railway. The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes).

TABLE 5.2 ANNEX I HABITATS

CODE	DESCRIPTION
1210	Annual Vegetation of Drift Lines
1220	Perennial Vegetation of Stony Banks
1330	Atlantic Salt Meadows
1410	Mediterranean Salt Meadows
7210	*Cladium* Fens*
7230	Alkaline Fens

** denotes a priority habitat*

An excerpt from the site synopsis for The Murrough Wetlands SAC (NPWS, 2014) is included below;

Vegetation such as Sea Rocket (*Cakile maritima*), Sea Sandwort (*Honkenya peploides*), Sea-holly (*Eryngium maritimum*) and Yellow Horned-poppy (*Glaucium flavum*) are found along the seaward side of the shingle bank which runs along The Murrough Wetlands SAC site drift line. The rare and legally protected Oysterplant (*Mertensia maritima*) (Flora (Protection) Order, 1999) has been recorded on the gravelly shore in the past but is now considered to be extinct from this locality. Low sand hills occur at Kilcoole, with Marram (*Ammophila arenaria*) and Lyme-grass (*Leymus arenarius*). In other areas and further inland a rich grassy sward, which is most extensive at the south of the site, has developed. Typical species include Sweet Vernal-grass (*Anthoxanthum odoratum*), Crested Dog's-tail (*Cynosurus cristatus*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Burnet Rose (Rosa pimpinellifolia) and Pyramidal Orchid (*Anacamptis pyramidalis*). A community dominated by Silverweed (Potentilla anserina) and Strawberry Clover (*Trifolium fragiferum*) occurs in some of the wetter, grassy areas. In some places, particularly at the south of the site, a gorse (*Ulex* sp.) heath has developed on the stony ridge. Saltmarsh is present within the site in two distinct areas. At the southern end of the site is found Broad Lough. This is a brackish, partly tidal lake, and has a well developed saltmarsh community which includes Saltmarsh Rush (*Juncus gerardi*), Common Saltmarsh-grass (*Puccinellia maritima*), Sea Aster (*Aster tripolium*), Sea Purslane (*Halimione portulacoides*) and Common Scurvygrass (Cochlearia officinalis). Common Reed (*Phragmites australis*) is abundant along the western shore, along with some Sea Club-rush (*Scirpus maritimus*). Saltmarsh is also present in the northern end of the site in the vicinity of The Breaches. Though this has been greatly affected by drainage in the late 1980s and early 1990s, localised Sea Couch (*Elymus pycnanthus*) still occurs. The grassland which was created and improved as a result of the drainage is now influenced by seepage and flooding of saline waters. Fen vegetation is well developed in the Murrough wetlands, with both alkaline and calcareous fen with Great Fen-sedge (*Cladium mariscus*) represented. The fens occur mostly between Five Mile Point and Six Mile Point, especially in the townland of Blackditch and also in the Leamore and Grange areas. The alkaline fen is dominated by Black Bog-rush (Schoenus nigricans), with Marsh Pennywort (*Hydrocotyle vulgaris*), Purple Moor-grass (*Molinia caerulea*), Devil's-bit

Scabious (*Succisa pratensis*), Heather (*Calluna vulgaris*), Cross-leaved heath (Erica tetralix), and a wide variety of orchids also present. The rare, Narrow-leaved Marsh-orchid (*Dactylorhiza traunsteineri*) has also been recorded here. Great Fen-sedge occurs in mosaic with several vegetational elements but chiefly with alkaline fen. Its many forms can range from pure stands of Great Fen-sedge, through to occurring as a dominant with Greater Tussock-sedge (*Carex paniculata*) and Blunt-flowered Rush (*Juncus subnodulosus*). *Cladium* fen also occurs at Blackditch within stretches of swamp woodland or fen carr dominated by Rusty Willow (*Salix cinerea subsp. oleifolia*) and Downy Birch (*Betula pubescens).* A fine wet woodland occurs at Blackditch. Downy Birch is the dominant species, with some Alder (*Alnus glutinosa*), willows (*Salix* spp.) and Ash (*Fraxinus excelsior*) also present. The ground flora of this wooded area is often quite dense. This wood also contains a rich invertebrate community with at least eight rare or notable species of fly (Order Diptera) occurring, including *Syntormon setosus*, a species unknown elsewhere in Britain or Ireland. A wide range of freshwater and brackish marsh habitats occur within the site. These vary from reed-marsh dominated by reeds and rushes (*Juncus* spp.), to those of sedges (*Carex* spp.), with other areas supporting a mixture of sedges and Yellow Iris (*Iris pseudacorus*). A wide variety of grasses and herbs are also found. These include Meadowsweet (*Filipendula ulmaria*), Silverweed and Common Spike-rush (*Eleocharis palustris*). The scarce Red Data Book species Marsh Pea (*Lathyrus palustris*) occurs in one area. The marshes merge into wet grassland in many areas. Where grazing pressure is low, a herb-rich sward occurs with species such as Ragged-Robin (*Lychnis flos-cuculi*), Cuckooflower (*Cardamine pratensis*), Meadowsweet and Heath Spotted-orchid (*Dactylorhiza maculata*) occurring. Sedges are abundant in the wetter areas. Where drains have been cut, there are many other species such as Greater Spearwort (Ranunculus lingua), Bogbean (*Menyanthes trifoliata*) and the scarce Reed Sweet-grass (Glyceria maxima). The Murrough is an important site for wintering waterfowl and breeding birds. Species listed on Annex I of the E.U. Birds Directive include Little Egret, Whooper Swan, Greenland White-fronted Goose, Golden Plover, Kingfisher and Little Tern. Average peak winter counts from 1994/95 - 1997/98 showed the site to have an important population of Brent Goose (1,318, higher than in the early 1990s), nationally important populations of Wigeon (1,518), Teal (772) and Lapwing (3,140), and regionally or locally important populations of Whooper Swan (80), Little Grebe (22), Shelduck (95), Gadwall (9), Mallard (391), Shoveler (22), Golden Plover (615), Curlew (605) and Redshank (181). Greylag Goose numbers were nationally important in the early 1990s but these numbers have dropped off. The average peak is now 213. Little Tern breed on the shingle beach near The Breaches and this is the largest colony on the east coast (approx. 50 pairs in 1993, an average of 37 pairs over the ten year period 1988-1998). Redshank, Oystercatcher, Ringed Plover and Water Rail also breed. The reedbeds at Broad Lough provide habitat for Reed Warbler and the rare Bearded Tit has bred here. Otter has been reported regularly from the Murrough. This is a Red Data Book Species, and is also listed on Annex II of the Habitats Directive. Recent farming and drainage practices and afforestation have greatly reduced the area and quality of the wetland habitats - the area between Kilcoole and Newcastle is particularly affected. In 1997 there was some levelling of the sand hills below Killoughter station. Pollution, reclamation and further drainage would adversely affect this site. A section of the wetlands at Blackditch, which includes alkaline and *Cladium* fen, has been acquired by BirdWatch Ireland and is being managed for nature conservation. This site is of importance as it is the largest coastal wetland complex on the east coast of Ireland. Although much affected by drainage, it still contains a wide range of coastal and freshwater habitats, including six listed on Annex I of the E.U. Habitats Directive, some of which contain threatened plants. Areas on the site contain a rich invertebrate fauna, including several rarities. It is an important site for both wintering and breeding birds and supports a variety of species listed on Annex I of the E.U. Birds Directive.

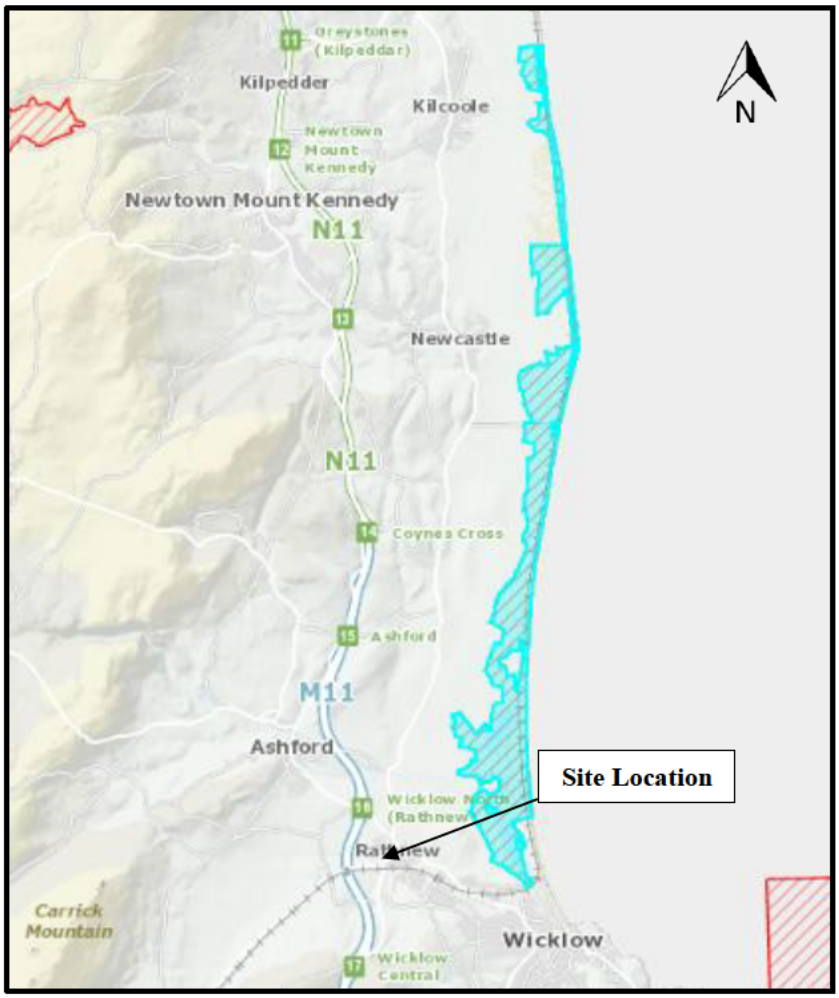

Figure 5.1: The Murrough Wetlands SAC

The Murrough Wetlands SAC Conservation Objectives

The Habitats Directive requires the Appropriate Assessment process to assess the potential impacts of the development "in view of the site's conservation objectives". Site specific conservation objectives (SSCOs) for the qualifying interests of The Murrough Wetlands SAC are provided in the Table 5.3 below, where available from the NPWS document "Conservation Objectives: The Murrough Wetlands SAC 002249" (NPWS, 2021).

TABLE 5.3 THE MURROUGH WETLANDS SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
[1210] Annual vegetation of drift lines			
Habitat area	Hectares	Stable or increasing, subject to natural processes	Habitat surveyed and mapped, giving a total estimated area of c5.2ha. The habitat is very difficult to measure in view of its dynamic nature which means that it can appear and disappear within a site from year to year. Due to natural coastal processes, range and area are dynamic and subject to change from year to year.
Habitat distribution	Occurrence	No decline	
Physical structure: functionality and sediment support	Presence/absence of physical barriers	Restore the natural circulation of sediment and organic matter, without any physical obstructions	Dunes are naturally dynamic systems that require continuous supply and circulation of sand. Accumulation of organic matter in tidal litter is essential for trapping sand and initiating dune formation. Physical barriers will affect sediment supply at these sites. Attribute and target based on Gaynor (2008), Ryle et al. (2009) and Delaney et al. (2013).
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities with typical species: sea rocket (*Cakile maritima*), sea sandwort (*Honckenya peploides*), prickly saltwort (*Salsola kali*) and orache (*Atriplex* spp.)	
Vegetation composition: native negative indicator species	Percentage	Native negative indicator species cover in any individual monitoring stop should not be more than 25%; no negative indicator species should be present in more than 60% of monitoring stops; cover of negative indicator species across the whole site should not be more than 5%	Negative indicators include species indicative of changes in nutrient status and species not considered characteristic of the habitat including scrub, nitrophilous species, *Hippophae rhamnoides* (Sea

TABLE 5.3 THE MURROUGH WETLANDS SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Vegetation composition: non-native species	Percentage	Non-native species should not be present in more than 20% of monitoring stops	buckthorn) and Rubus fruticosus (Bramble), while *Pteridium aquilinum* (Bracken) is a common invasive species in dune grassland. Nitrophilous species, or those associated with agricultural enrichment, commonly include *Senecio jacobaea* (Common ragwort), *Cirsium arvense* (Creeping thistle) and *Urtica dioica* (Nettle).
[1220] Perennial vegetation of stony banks			
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession	Habitat was surveyed and mapped to give a total estimated area of c.13ha. It is important to note that due to natural coastal processes, area and distribution are dynamic and subject to change from year to year. Attribute and target based on Martin et al. (2017).
Habitat distribution	Occurrence	No decline	
Physical structure: functionality and sediment supply	Presence/absence of physical barriers	Restore the natural circulation of sediment and organic matter, without any physical obstructions	
Physical structure: disturbance	Percentage	No more than 20% of the habitat affected by disturbance	Disturbance can include damage from heavy trampling, vehicle damage and removal of substrate.
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats, including transitional zones, subject to natural processes, including erosion and succession	

TABLE 5.3 THE MURROUGH WETLANDS SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Vegetation composition: typical species and communities	Percentage	Maintain the typical species within the range of vegetated shingle communities	Negative indicators include species indicative of changes in nutrient status and species not considered characteristic of the habitat.
Vegetation composition: negative indicator species	Percentage cover	Native negative indicator species cover in any individual monitoring stop should not be more than 25%; no negative indicator species should be present in more than 60% of monitoring stops	Non-native species indicative of changes in nutrient status and species not considered characteristic of the habitat.
Vegetation composition: non-native species	Percentage	Non-native species cover in any individual monitoring stop should not be more than 1%; non-native species should not be present in more than 20% of monitoring stops; cover of non-native species across the whole site should not be more than 1%	
[1330] Atlantic salt meadows			
Habitat area	Hectares	Area increasing, subject to natural process including erosion and succession.	Two sites were recorded including the sub-site Broad Lough (site code SMP0135) with an area of 16.57ha of Atlantic salt meadows (ASM) habitat and an area of 0.07ha of ASM was recorded within the northern boundary of the SAC at the sub-site Kilcoole (SMP0036). Thus, the total area of the habitat in the SAC is
Habitat distribution	Occurrence	No decline.	
Physical structure: hydrology,	Occurrence of human disturbance to hydrology (including impacts on creeks and pans)	No human disturbance	

TABLE 5.3 THE MURROUGH WETLANDS SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Vegetation structure: plant height	Standard deviation of median of maximum leaf height from four quadrants of a representative number of 2m x 2m monitoring plots	Standard deviation of median plant height more than 5	estimated to be 16.64ha. Habitat loss was noted by Brophy et al. (2019) due to construction of a track associated with drainage works at the Broad Lough sub-site. Due to natural coastal processes, range and area are dynamic and subject to change from year to year.
Vegetation structure: disturbed ground	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of disturbed ground less than 5%	Distribution based on data from Brophy et al. (2019) and McCorry and Ryle (2009). Atlantic salt meadows are most dominant within SAC.
Vegetation structure: zonation	Number of zones covering 1% or more of the habitat	Adequate number of zones present, depending on geographical type of saltmarsh	
Vegetation structure: transitions	Occurrence of natural transitions to semi-natural terrestrial habitats on landward margin	No loss of natural transitions	Drainage works were noted in the habitat in the sub-site Broad Lough.
Vegetation composition: typical species	Frequency of typical species within a representative number of 2m x 2m monitoring plots	Minimum of twelve typical species recorded across all plots	

TABLE 5.3 THE MURROUGH WETLANDS SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Vegetation structure: negative species	Occurrence in habitat; percentage cover of Spartina spp. within 5m radius of the centre of a representative number of monitoring stops	*Spartina* spp. have not been recorded in the habitat in this SAC and establishment should be prevented	Common cordgrass (*Spartina anglica*).
Other negative indicators	Occurrence at a representative number of 2m x 2m monitoring plots	No signs of infilling, reclamation, turf cutting or pollution or other negative indicators	Disturbance due to use of a mechanical digger and deposition of dredged materials was recorded in Broad Lough.
Indicators of local distinctiveness	Occurrence and population size	No decline in distribution or population sizes of rare, threatened, or scarce species associated with the habitat	The locally distinctive sea couch (*Elytrigia atherica*) was recorded in the habitat in the Broad Lough sub-site (SMP0135).
[1410] Mediterranean salt meadows			
Habitat area	Hectares	Area stable, increasing, subject to natural process including erosion and succession.	As part of the Saltmarsh Monitoring Project 2017- 2018, the sub-site Broad Lough (site code SMP0135) within The Murrough Wetlands SAC was surveyed and mapped, with an area of 5.17ha of Mediterranean salt meadows (MSM) habitat recorded. Due to natural coastal processes, range and area are dynamic and subject to change from year to year.
Habitat distribution	Occurrence	No decline.	

TABLE 5.3 THE MURROUGH WETLANDS SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Physical structure: hydrology	Occurrence of human disturbance to hydrology (including impacts on creeks and pans)	No human disturbance.	
Vegetation structure: disturbed ground	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of disturbed ground less than 5%	
Vegetation structure: transitions	Distribution of natural transitions to semi-natural terrestrial habitats on landward margin	No loss of natural transitions	
Vegetation composition: typical species	Frequency of typical species within a representative number of 2m x 2m monitoring plots	Minimum of six typical species recorded across all plots; minimum two typical species in more than 25% of plots (excluding *Juncus maritimus*)	
Vegetation composition: negative species	Occurrence in habitat; percentage cover of Spartina spp. within 5m radius of the centre of a representative number of monitoring stops	*Spartina* spp. have not been recorded in the habitat in this SAC and establishment should be prevented	

TABLE 5.3 THE MURROUGH WETLANDS SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Other negative indicators	Occurrence at a representative number of 2m x 2m monitoring plots	No signs of infilling, reclamation, turf-cutting or pollution or other negative indicators	Infilling of the habitat in the sub-site Broad Lough (site code SMP0135) was recorded by Brophy et al. (2019).
Indicators of local distinctiveness	Occurrence and population size	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	
Vegetation structure: negative indicator species *Spartina anglica*	Hectares	There is currently no common cordgrass (*Spartina anglica*) in this SAC. Prevent establishment of cordgrass.	
[7210] Calcareous fens with Cladium mariscus and species of the Caricion davallianae			
Habitat area	Hectares	Area stable or increasing, subject to natural processes	As part of the Wicklow Wetlands Survey this habitat was mapped with an area of c.10.2ha, with a further 21.3ha mapped in mosaic with Alkaline fens (Annex I habitat code 7230). This a minimum area estimate for the habitat in The Murrough Wetlands SAC. It is important to note that further unsurveyed areas may be present in the SAC. Although the area of fen was more extensive in the past, the SAC still contains one of the best examples of coastal fen in the country.

TABLE 5.3 THE MURROUGH WETLANDS SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Habitat distribution	Occurrence	No decline	Distribution based on Wilson et al. (2012). In this SAC, fens occur mostly between Five Mile Point and Six Mile Point, particularly in the townland of Blackditch, and have also been reported from the Leamore, Grange, Castlegrange and Killoughter areas in the SAC.
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops	Maintain soil pH and nutrient status within natural ranges	Relevant nutrients and their natural ranges are yet to be defined. Increased nutrients can lead to changes in plant and invertebrate species through competition and subsequent structural changes to micro-habitats. These nutrients favour growth of grasses rather than forbs and mosses and leads to a higher and denser sward.
Ecosystem function: peat formation	Percentage cover of peat-forming vegetation and water table levels	Maintain active peat formation, where appropriate	Water levels need to be slightly below or above the soil surface for c.90% of the time for peat formation.
Ecosystem function: hydrology groundwater levels	Water levels (centimetres); duration of levels; hydraulic gradients; water supply	Maintain, or where necessary restore, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	Fen habitats require high groundwater for most of the year. Fen groundwater levels are controlled by regional groundwater levels in the contributing catchment area (which sustain the hydraulic gradients of the fen groundwater table). Regional abstraction of groundwater may affect fen groundwater levels.

TABLE 5.3 THE MURROUGH WETLANDS SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Ecosystem function: hydrology – surface water flow	Drain density and form	Maintain, or where necessary restore, as close as possible to natural or semi-natural, drainage conditions	Drainage, either within or surrounding the fen habitat, can result in the drawdown of the groundwater table. The depth, geometry and density of drainage (hydromorphology) will indicate the scale and impact on fen hydrology. Drainage can result in loss of characteristic species and transition to drier habitats. In this SAC, some of the habitat has been damaged by drainage in the past.
Ecosystem function: water quality	Various	Maintain appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat	Fens are generally poor in nitrogen and phosphorus. Water supply should be also relatively calcium-rich.
Vegetation composition: cover of *Cladium mariscus*	Percentage cover at a representative number monitoring stops	Cover of *Cladium mariscus* at least 25%	-
Vegetation composition: typical vascular plants	Percentage cover at a representative number monitoring stops	Maintain adequate cover of typical vascular plant species	

TABLE 5.3 THE MURROUGH WETLANDS SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Vegetation composition: native negative indicator species	Percentage cover at a representative number of monitoring stops	Cover of native negative indicator species at insignificant levels	Negative indicators include species not characteristic of the habitat and species indicative of undesirable activities such as overgrazing, undergrazing, nutrient enrichment, agricultural improvement or impacts on hydrology. Native negative indicators may include *Anthoxanthum odoratum, Epilobium hirsutum, Holcus lanatus, Juncus effusus, Phragmites australis, Ranunculus repens* and *Typha latifolia*.
Vegetation composition: non-native species	Percentage cover at a representative number of monitoring stops	Cover of non-native species less than 1%	Non-native species can be invasive and have deleterious effects on native vegetation. A low target is set as non-native species can spread rapidly and are most easily dealt with when still at lower abundances.
Vegetation composition: native trees and shrubs	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of scattered native trees and shrubs less than 10%	Scrub and trees will tend to invade if fen conditions become drier.
Vegetation composition: algal cover	Percentage cover at, and in local vicinity of, a representative number of monitoring stops	Cover of algae less than 2%	Algal cover is indicative of nutrient enrichment from multiple sources.

TABLE 5.3 THE MURROUGH WETLANDS SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Vegetation structure: vegetation height	Percentage cover at a representative number of monitoring stops	At least 10% of live shoots more than 1m high	-
Physical structure: disturbed bare ground	Percentage cover at, and in local vicinity of, a representative number of monitoring stops	Cover of disturbed bare ground not more than 10%	While grazing may be appropriate in this habitat, excessive areas of disturbed bare ground may develop due to unsuitable grazing regimes. Disturbance can include hoof marks, wallows, human footprints, vehicle and machinery tracks. Excessive disturbance can result in loss of characteristic species.
Physical structure: tufa formations	Percentage cover in local vicinity of a representative number of monitoring stops	Disturbed proportion of vegetation cover where tufa is present is less than 1%	-
Indicators of local distinctiveness	Occurrence and population size	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes	This includes species on the Flora (Protection) Order, 2015 and species of flora and fauna on Red. The Annex II listed and Endangered Desmoulin's whorl snail (*Vertigo moulinsiana*) has been recorded in *Cladium* fen and associated habitats in the SAC.

TABLE 5.3 THE MURROUGH WETLANDS SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Transitional areas between fen and adjacent habitats	Hectares; distribution	Maintain/restore adequate transitional areas to support/protect the *Cladium* fen habitat and the services it provides	Fens may transition to other wetland habitats. The habitat occurs in association with alkaline fens in this SAC as well as common reed (*Phragmites australis*) beds and other swamp vegetation types, and wet woodland.
[7230] Alkaline fens			
Habitat area	Hectares	Area stable or increasing, subject to natural processes	This habitat was mapped in mosaic with Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae** with a minimum area of c.21.3ha in The Murrough Wetlands SAC. It is important to note that further unsurveyed areas may be present in the SAC. Although the area of fen was more extensive in the past, the SAC still contains one of the best examples of coastal fen in the country.
Habitat distribution	Occurrence	No decline	In this SAC, fens occur mostly between Five Mile Point and Six Mile Point, particularly in the townland of Blackditch, and have also been reported from the Leamore, Grange, Castlegrange and Killoughter areas in the SAC.

TABLE 5.3 THE MURROUGH WETLANDS SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops	Maintain soil pH and nutrient status within natural ranges	Relevant nutrients and their natural ranges are yet to be defined. However, nitrogen deposition is noted as being relevant to this habitat in NPWS (2013). Increased nutrients can lead to changes in plant and invertebrate species through competition and subsequent structural changes to micro-habitats. These nutrients favour growth of grasses rather than forbs and mosses and leads to a higher and denser sward.
Ecosystem function: peat formation	Percentage cover of peat-forming vegetation and water table levels	Maintain active peat formation, where appropriate	Water levels need to be slightly below or above the soil surface for c.90% of the time for peat formation.
Ecosystem function: hydrology – groundwater levels	Water levels (centimetres); duration of levels; hydraulic gradients; water supply	Maintain, or where necessary restore, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	Fen habitats require high groundwater for most of the year. Fen groundwater levels are controlled by regional groundwater levels in the contributing catchment area (which sustain the hydraulic gradients of the fen groundwater table). Regional abstraction of groundwater may affect fen groundwater levels.

TABLE 5.3 THE MURROUGH WETLANDS SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Ecosystem function: hydrology – surface water flow	Drain density and form	Maintain, or where necessary restore, as close as possible to natural or semi-natural, drainage conditions	Drainage, either within or surrounding the fen habitat, can result in the drawdown of the groundwater table. The depth, geometry and density of drainage (hydromorphology) will indicate the scale and impact on fen hydrology. Drainage can result in loss of characteristic species and transition to drier habitats. In this SAC, some of the habitat has been damaged by drainage in the past.
Ecosystem function: water quality	Various	Maintain appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat	Fens are generally poor in nitrogen and phosphorus. Water supply should be also relatively calcium-rich.
Vegetation composition: community diversity	Abundance of variety of vegetation communities	Maintain variety of vegetation communities, subject to natural processes	The entire diversity of alkaline fen vegetation communities present in the SAC is currently unknown.
Vegetation composition: typical brown mosses	Percentage cover at a representative number of monitoring stops	Maintain adequate cover of typical brown moss species.	
Vegetation composition: typical vascular plants	Percentage cover at a representative number of monitoring stops	Maintain adequate cover of typical vascular plant specie	

TABLE 5.3 THE MURROUGH WETLANDS SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Vegetation composition: native negative indicator species	Percentage cover at a representative number of monitoring stops	Cover of native negative indicator species at insignificant levels	Negative indicators include species not characteristic of the habitat and species indicative of undesirable activities such as overgrazing, undergrazing, nutrient enrichment, agricultural improvement or impacts on hydrology. Native negative indicators may *include Anthoxanthum odoratum, Epilobium hirsutum, Holcus lanatus, Juncus effusus, Phragmites australis* and *Ranunculus repens*.
Vegetation composition: non-native species	Percentage cover at a representative number of monitoring stops	Cover of non-native species less than 1%	Attribute and target based on O'Neill et al.. Non-native species can be invasive and have deleterious effects on native vegetation. A low target is set as non-native species can spread rapidly and are most easily dealt with when still at lower abundances.
Vegetation composition: native trees and shrubs	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of scattered native trees and shrubs less than 10%	Scrub and trees invade if habitat becomes drier.
Vegetation composition: algal cover	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of algae less than 2%	Algal cover is indicative of nutrient enrichment from multiple sources.

TABLE 5.3 THE MURROUGH WETLANDS SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Vegetation structure: vegetation height	Percentage cover at a representative number of monitoring stops	At least 50% of the live leaves/flowering shoots are more than either 5cm or 15cm above ground surface depending on community type	While grazing may be appropriate in this habitat, excessive grazing can reduce the ability of plant species to regenerate reproductively and maintain species diversity, especially if flowering shoots are cropped during the growing season.
Physical structure: disturbed bare ground	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of disturbed bare ground not more than 10%	Grazing may be appropriate in this habitat but excessive area of disturbed bare ground may develop due to unsuitable grazing regimes.
Physical structure: tufa formations	Percentage cover in local vicinity of a representative number of monitoring stops	Disturbed proportion of vegetation cover where tufa is present is less than 1%	
Indicators of local distinctiveness	Occurrence and population size	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes	This includes species on the Flora (Protection) Order, 2015 and species of flora and fauna on Red Lists. A number of rare and threatened invertebrates have been recorded in the alkaline fen and associated habitats in the SAC, including the Annex II listed and Endangered Desmoulin's whorl snail (*Vertigo moulinsiana*).

TABLE 5.3 THE MURROUGH WETLANDS SAC CONSERVATION OBJECTIVES			
ATTRIBUTE	**MEASURE**	**TARGET**	**SELECTED NOTES**
Transitional areas between fen and adjacent habitats	Hectares, distribution	Maintain/restore adequate transitional areas to support/protect the alkaline fen habitat and the services it provides	Fens may transition to other wetland habitats. It is important that the transitional areas between fens and other habitats are maintained in as natural condition as possible in order to protect the functioning of the fen. Alkaline fen occurs in association with *Cladium* fen swamp vegetation types and wet woodland in the SAC.

The Murrough Wetlands SAC Conservation Status

According to the Habitat's Directive, favourable conservation status of a habitat is achieved when:

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

According to the Habitat's Directive, favourable conservation status of a species is achieved when:

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

Table 5.4: The conservation statuses for the qualifying interests for The Murrough Wetlands SAC are outlined below.

Code	Qualifying Interest	Conservation Status*
1210	Annual Vegetation of Drift Lines	Inadequate
1220	Perennial Vegetation of Stony Banks	Inadequate
1330	Atlantic Salt Meadows	Inadequate
1410	Mediterranean Salt Meadows	Inadequate
7210	*Cladium* Fens*	Inadequate
7230	Alkaline Fens	Bad

**Sourced from the Status of EU Protected Habitats and Species in Ireland (NPWS, 2019a and 2019b)*

5.2 THE MURROUGH SPA (SITE CODE: 004186)

The Murrough SPA comprises a coastal wetland complex that stretches for 13 km from Kilcoole Station, east of Kilcoole village in the north to Wicklow town in the south and extends inland for up to 1 km in places. The site includes an area of marine water to a distance of 200m from the low water mark. A shingle ridge runs along the length of the site and carries the Dublin-Wexford railway line.

TABLE 5.5: THE MURROUGH SPA		
SPECIAL CONSERVATION INTERESTS		
CODE	COMMON NAME	SCIENTIFIC NAME
A001	Red-throated Dover	*Gavia stellata*
A043	Greylag Goose	*Answer anser*
A046	Light-bellied Brent Goose	*Branta bernicla hrota*
A050	Wigeon	*Anas penelope*
A052	Teal	*Anas crecca*
A179	Black-headed Gull	*Chroicocephalus ridibundus*
A184	Herring Gull	*Larus argentatus*
A195	Little Tern	*Sterna albifrons*
A999	Wetland and Waterbirds	

An excerpt from the site synopsis for The Murrough SPA (NPWS, 2015) is included below;

Beside the shingle shore is a stony ridge supporting perennial vegetation. Driftline vegetation on the seaward side includes species such as Sea Rocket (*Cakile maritima*), Sea Sandwort (*Honkenya peploides*), Sea Holly (*Eryngium maritimum*) and Yellow-horned Poppy (*Glaucium flavum*). Low sand hills occur at Kilcoole, with Marram (*Ammophila arenaria*) and Lyme-grass (*Leymus arenarius*). In other areas and further inland a rich grassy sward, which is most extensive in the south end of the site, has developed. A community dominated by Silverweed (*Potentilla anserina*) and Strawberry Clover (*Trifolium fragiferum*) occurs in some of the wetter, grassy areas. In some places, particularly at the south of the site, a Gorse (*Ulex*) heath has developed on the stony ridge. At the southern end of the site, Broad Lough, a brackish, partly tidal lake, has a well-developed saltmarsh community. Common Reed (*Phragmites australis*) is abundant along the western shore, along with some Sea Club-rush (Scirpus maritimus). Saltmarsh is also present in the northern end of the site in the vicinity of the Breaches. An area of fen occurs at Five Mile Point. Here, Black Bog-rush (Schoenus nigricans) is dominant. Fen Sedge (*Cladium mariscus*) is present where the ground is wetter. This merges into areas dominated by Common Reed. A wide range of freshwater and brackish marsh habitats occur within the site. These vary from reed-marsh dominated by reeds and rushes (*Juncus* spp.), to those of sedges (*Carex* spp.) with other areas supporting a mixture of sedges and Yellow Iris (*Iris pseudacorus*) also occurring. The marshes merge into wet grassland in many areas and where grazing pressure is low, a herb-rich sward occurs. Sedges are abundant in the wetter areas. Where drains have been cut, there are many other species such as Greater Spearwort (*Ranunculus lingua*), Bogbean (*Menyanthes trifoliata*) and Reed Sweet-grass (*Glyceria maxima*). The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Red-throated Diver, Greylag Goose, Light-bellied Brent Goose, Wigeon, Teal, Black-headed Gull, Herring Gull and Little Tern. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds. The shingle ridge at Kilcoole is a traditional nesting area for Little Tern, and the site now supports one of the largest colonies in the country. Numbers vary between years, with 36 pairs recorded in 1995 and 106 pairs in 2006. A tern protection scheme and research programme, co-ordinated by BirdWatch Ireland and the National Parks and Wildlife Service, has been in operation since 1985. Breeding success varies from year to year, largely due to predation by foxes, crows and other species. During the winter this site is important for a number of waterbirds - all population sizes are the mean of peak counts for the 5 years, 1995/96 – 1999/2000. Light-bellied Brent Goose occurs here in internationally important numbers (859). Other species that visit here in nationally important numbers are Red-throated Diver

(32), Greylag Goose (300), Wigeon (1,209), Teal (644), Black-headed Gull (997) and Herring Gull (506). Other species that are known to occur here are Little Grebe, Grey Heron, Cormorant, Mute Swan, Whooper Swan, Greenland White-fronted Goose, Shelduck, Gadwall, Shoveler, Mallard, Golden Plover, Ringed Plover, Lapwing, Dunlin, Curlew, Greenshank and Redshank. Short-eared Owl is recorded here during the winter. Little Egret has bred locally in recent years and this site is a main feeding area, with several birds present regularly. While formerly a rare bird in Ireland, Little Egret is now well-established with most birds occurring in the south-east and south (Counties Wexford, Waterford and Cork). The Murrough is presently at the edge of the species' range. This site is one of the few sites in Ireland where Reed Warbler breeds regularly. It is considered that 1-4 pairs bred each year during the 1980s and early 1990s, with a minimum of 6 birds in song in 1993. An absence of records since 1996 may be due to under-recording. Kingfisher regularly uses the site. Sandwich Tern are recorded from the site during the autumn. The Murrough SPA is an important site for wintering waterbirds, being internationally important for Light-bellied Brent Goose and nationally important for Red-throated Diver, Greylag Goose, Wigeon, Teal, Black-headed Gull and Herring Gull. It is probably the most important site in the country for nesting Little Tern. The regular occurrence of Red-throated Diver, Little Egret, Whooper Swan, Greenland White-fronted Goose, Golden Plover, Little Tern, Sandwich Tern, Short-eared Owl and Kingfisher is of note as these species are listed on Annex I of the E.U. Birds Directive. Part of the Murrough SPA is a Wildfowl Sanctuary.

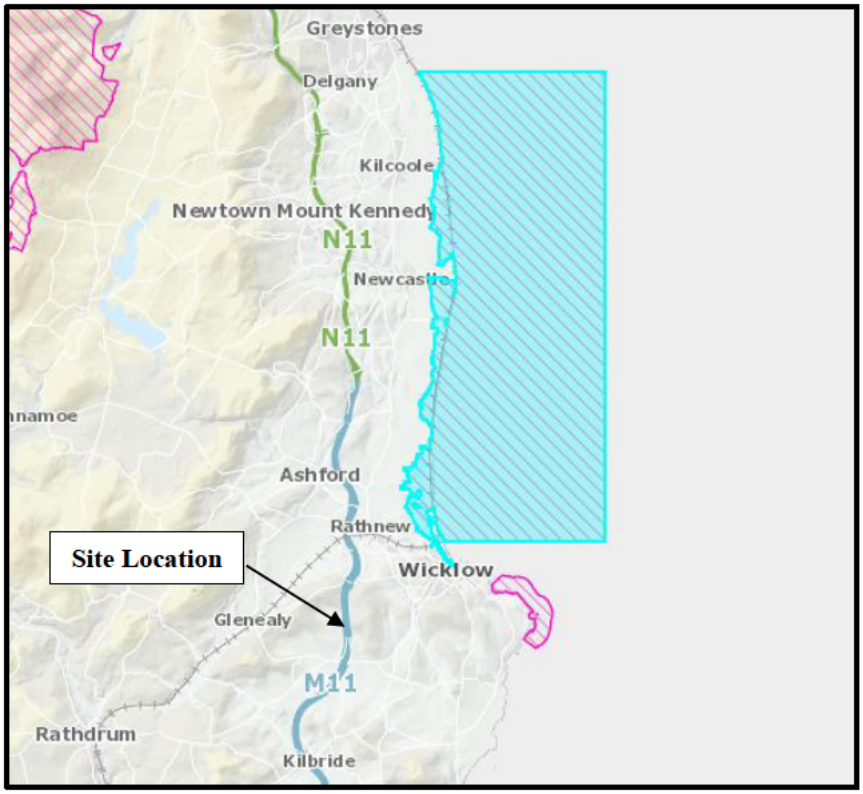

Figure 5.2: The Murrough SPA

The Murrough SPA Conservation Objectives

The Habitats Directive requires the Appropriate Assessment process to assess the potential impacts of the development "in view of the site's conservation objectives". Site specific conservation objectives (SSCOs) for the qualifying interests of The Murrough SPA 004186" (NPWS, 2022) notes that the conservation objectives for the SPA site are to maintain or restore

the favourable conservation condition of the wetland habitat at The Murrough SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

The Murrough SPA Conservation Status

According to the Habitat's Directive, favourable conservation status of a species is achieved when:

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

TABLE 5.6: CONSERVATION STATUS: THE MURROUGH SPA		
CODE	**SPECIAL CONSERVATION INTEREST**	**NATIONAL CONSERVATION STATUS***
A001	Red-throated Dover	Amber List
A043	Greylag Goose	Amber List
A046	Light-bellied Brent Goose	Amber List
A050	Wigeon	Amber List
A052	Teal	Amber List
A179	Black-headed Gull	Amber List
A184	Herring Gull	Amber List
A195	Little Tern	Amber List
A999	Wetland and Waterbirds	

** Birds of Conservation Concern in Ireland 2020-2026 (Gilbert et al, 2021) and Bird Atlas 2007 - 2011*

6.0 ASSESSMENT OF LIKELY IMPACTS

6.1 DISTURBANCE TO PROTECTED HABITATS AND SPECIES

The proposed development does not directly impinge on any part of a European site, and as such would not be expected to impact upon a protected site through destruction of habitat, fragmentation of habitat, disturbance of habitat or direct reduction in species density. The closest Natura 2000 site is the Murrough Wetlands SAC (Site Code: 002249) and the Murrough SPA (004186) located approximately 1.8km north-east of the proposed development.

It is not considered that the proposed development site would contain the habitats or species for which The Murrough Wetlands SAC and The Murrough SPA have been designated as most of the site is modified agricultural land. No areas of shingle, sandy substrate or coastal habitats exist within the site boundary therefore, the site does not contain any habitat which would have potential links to Annual vegetation of drift lines [1210] or Perennial vegetation of stony banks [1220]. The closest Annual vegetation of drift lines habitat is approximately 2.7km north-east of the proposed development site with no direct hydrological connection. The closest Perennial vegetation of stony banks habitat is also located 2.7km north-east of the site development.

The closest mapped watercourse to the proposed site is the Rathnew Stream that runs along the northern boundary of the development. The Rathnew Stream flows for 2.6km north-east where it enters the tidal waters of the Broad Lough, thus qualifying interests associated with saltwater and tidal conditions would not be present and with no impact to this habitat as a result of the proposed development. The landscape plan proposes to retain much of the boundary vegetation. The landscape plan includes the management of said boundary vegetation which will be cut back. In addition, the landscape plan will incorporate new treelines/hedgerows with the planting of native and non-invasive species as well as the establishment of public open areas (see Appendix C). The enhancement of the present natural boundary habitats ensures that the proposed development complies with Objective CPO 17.14 of the Wicklow County Development Plan 2022 -2028 which seeks for the "*support the protection and enhancement of biodiversity and ecological connectivity within the plan area*". The proposed development will also comply with Objective CPO 17.26 of the plan which seeks to protect rivers and watercourses by "*maintaining a core riparian buffer zone*" of at least 10m from the Rathnew Stream watercourse along the northern boundary for most of the construction works. According to the Inland Fisheries Ireland Planning for watercourses in the urban environment document, a buffer zone of approximately 20m is recommended for smaller watercourses (<10m) however, this may be tailored to site specifications. A buffer zone of 10m from the watercourse would provide adequate protection and will allow the Rathnew Stream to remain ecologically valuable.

While no sightings of otter, or evidence of otter (including holts, slides, spraints and tracks) were recorded during the site walkover, given that the proposed development site is located adjacent to the Rathnew Stream, it is probable otter is in the surrounding area of the proposed site. Otter have been recorded within 2.6km south-east (4.3km hydrological distance downstream) of the proposed site according to the Atlas of Mammals in Ireland 2010-2015 (O'Nolan, 2014) in Broad lough estuary. The proposed development site is predominantly comprised of agricultural grassland land which can be considered as modified, species poor and of lower value to foraging otters.

The potential disturbance on protected species due to noise would not be considered significant, given the peri-urban nature of the area, wildlife in the area would be accustomed to noise

generated from residential/agricultural activities and traffic. While there would be increased noise emissions during the construction phase, these would not be considered to pose a significant risk owing to the transient nature of construction works, the construction timeframe and the scale of the development with the total footprint of the proposed project is 4.43ha.

It is therefore considered that the proposed development would not result in any significant risk to the protected habitats and species of The Murrough Wetlands SAC and The Murrough SPA SAC due to habitat fragmentation or loss, disturbance or reduction in species density.

6.2 INVASIVE SPECIES

Under Regulation 49(2) of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) as amended 2015, save in accordance with a licence granted under paragraph (7), any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place specified in relation to any plant which is included in Part 1 of the Third Schedule shall be guilty of an offence. Materials containing invasive species such as Japanese Knotweed are considered "controlled waste", and, as such, there are legal restrictions on their handling and disposal. Under Regulation 49(7) of the European Communities (Birds and Natural Habitats) Regulations 2011, it is a legal requirement to obtain a license to move "vector materials" listed in the Third Schedule, Part 3.

Table 6.1: National Biodiversity Data Centre records of high impact invasive species within a 10km square (Tetrad-T29) of the proposed development.

INVASIVE FLORA SPECIES	
Water Fern (*Azolla filiculoides*)	American Skunk-cabbage (*Lysichiton americanus*)
Three-cornered Garlic (*Allium triquetrum*)	Giant Hogweed (*Heracleum mantegazzianum*)
Giant-rhubarb (*Gunnera tinctoria*)	Indian Balsam (*Impatiens glandulifera*)
Japanese Knotweed (*Fallopia japonica*)	Rhododendron ponticum
Salmonberry (*Rubus spectabilis*)	Spanish Bluebell (*Hyacinthoides hispanica*)

The spread of invasive plant and animal species can negatively impact on the conservation objectives of certain Annex I habitats and species designated within SACs. Indian Balsam (*Impatiens glandulifera*) was identified at the northern boundary of the site during the site assessment. The risk of invasive species being introduced onto the site during the operational phase of the project is considered to be low, with no import of materials with the potential to contain invasive flora species. Any topsoil will be thoroughly checked and screened before being imported into the site. The landscape plan will use native and ornamental non-invasive flora in its design. The landscape plan indicates that existing vegetation along the boundaries will be retained but will be cut back with the addition of new trees/hedgerows. However, with the identification of this species on-site, measures must be taken to ensure that there would be no significant risk to protected habitats and species as a result of invasive species from the site.

6.3 POTENTIAL IMPACTS ON WATER QUALITY

The proposed development is located within the Vartry sub-catchment (Vartry_SC_010), which is part of the Ovoca-Vartry Catchment (ID_10). The closest mapped watercourse to the proposed development site is the Rathnew Stream (EPA Code: 10R02 - Order 3) located along the northern boundary of the proposed development outside the red line boundary. No construction works will take place within the Rathnew Stream. Minor soil disturbance works will be carried out within the riparian zone of the stream.

With regard to the completed development, storm water, comprised of rainwater run-off from roof and hard surface areas, will be collected via a network of internal drains and will be directed to a series of SuDS features which includes swales and an attenuation tank located within the site boundary (see Appendix C). Surplus surface water run-off will discharge to the Rathnew Stream via a small open rocky channel from the swales and attenuation tank. The rocky channel in addition to a hydrobrake will control the flow of water entering the watercourse. The estimated surface water run-off will not exceed greenfield run-off rates. Onsite attenuation and a petrol interceptor will ensure only clean water enters the watercourse. Therefore, run-off from the proposed development during the operational phase will not have a significant impact on the nearby watercourses. The change from agricultural grassland to the areas of hardcore area will not significantly alter the infiltration capacity of the soil with runoff being directed to the drainage system. Waste water from the proposed development will be discharged to the public foul line via a new connection into the Wicklow Waste Water Treatment Plant (D0012-01) which is compliant with the ELV's set in the Wastewater Discharge Licence. The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status (Irish Water, 2020). Wicklow Waste Water Treatment Plant WWTP currently has available capacity (Irish water Capacity Registers, 2023).

During the construction phase of the development, the risk of water quality deterioration as a result of uncured concrete would be reduced, given that precast concrete / blockwork would be used where possible and surplus concrete would be returned to the batching plant..

During the construction phase of projects, a deterioration in water quality can arise through the release of suspended solids during soil disturbance works and the release of hydrocarbons (fuels and oils). Given the scale of the proposed development, the duration of the construction works and the limited construction plant and equipment required, the risk of water quality deterioration as a result of hydrocarbon spillage would be considered low. Minor soil works will be required along the banks of the Rathnew Stream for the construction of small open rocky drainage channels as part of the drainage network. These will be the only works proposed within the 10m buffer zone. Soil disturbance works will also be undertaken for the construction of roads, pathways and on elevated areas for the construction of the proposed dwellings These soil disturbance works have the potential to cause a deterioration in water quality via the release of suspended solids entrained in surface water run-off during the construction phase of the project. It is therefore considered that control measures would need to be implemented during the construction phase of the development to ensure there are no potential adverse impacts upon the SAC and SPA. A deterioration in water quality has the potential to have an adverse impact upon the qualifying interests of the Murrough Wetlands SAC and the Murrough SPA particularly qualifying interests which have conservation objectives relating to water quality, such as coastal and wetland birds and their source of prey.

6.4 SCREENING CONCLUSION

In order for an effect to occur, there must be a pathway between the source and the receptor (the SAC/SPA). Where a pathway does not exist, an impact cannot occur.

The proposed development site has a direct hydrological connection to the Murrough Wetlands SAC (Site Code: 002249) and the Murrough SPA (004186) via the Rathnew Stream located along the northern boundary. As detailed above, it is considered that the proposed development would not result in any significant risk to the protected habitats and species of the Murrough Wetlands SAC and the Murrough SPA due to habitat fragmentation or loss, disturbance, reduction in species density or species diversity.

However, the assessment has determined that during construction works, the proposed development has the potential to impact upon the qualifying interests / special conservation interests of the Murrough Wetlands SAC and the Murrough SPA due to a potential deterioration in water quality. In addition, the invasive third schedule invasive species Himalayan Balsam was identified on the northern boundary of the site. Therefore, a Natura Impact Statement is required.

7.0 ASSESSMENT OF LIKELY EFFECTS: STAGE 2 APPORPRIATE ASSESSMENT

Describe the significant effects, if any, on the relevant European site which have occurred, which are occurring or which can reasonably be expected to occur as a result of the project or plan (alone or in combination).

The proposed development has the potential to impact upon the qualifying interests of the Murrough Wetlands SAC and the Murrough SPA due to a potential deterioration in water quality during the construction phase.

During construction works, there is potential for water quality deterioration through the release of suspended solids during soil disturbance works. Suspended solids could become entrained in surface water run-off and could affect aquatic qualifying interests / special conservation interests through deposition. Nutrients can be bound in suspended solids, therefore, a significant increase in suspended solids can result in excessive eutrophication, leading to the deoxygenation of waters and subsequent asphyxia of aquatic species. An increase in sediments has the potential to impact upon fish species by damaging gravel beds required for spawning, smothering fish eggs and in extreme cases, by interfering with the gills of fish. An increase in suspended solids also has the potential to reduce water clarity, which can impact the light penetration of water and may also affect certain behaviours of aquatic fauna such as foraging success.

Runoff entering a watercourse has the potential to cause an impact on water quality and lead to eutrophication. A potential source of chemical contamination would be from the release of hydrocarbons (oils, fuels) from construction plant, equipment. Hydrocarbons can affect water quality, potentially resulting in toxic conditions for aquatic flora and fauna. Oil films on the water surface can disrupt oxygen diffusion from the atmosphere, resulting in de-oxygen of waters.

Another potential source of contamination would be the release of uncured concrete. In the event of uncured concrete entering a waterbody, the pH would be altered locally, potentially leading to the death of aquatic flora and fauna and an alteration to the waterbody substrate.

The tables below briefly outline the occurrence of the qualifying interests of the Murrough Wetlands SAC and the Murrough SPA in relation to the proposed development site, taking cognisance of the NPWS "*Conservation Objectives: Murrough Wetlands SAC (Site Code: 002249*" and "*Conservation Objectives: Murrough SPA (004186)"* in addition to Volumes 1, 2 and 3 of the 2019 NPWS Reports, *"The Status of EU Protected Habitats and Species in Ireland*". The following tables also outline which of the qualifying interests and special conservation interests may be impacted upon by a potential deterioration in water quality and spread of invasive species from the proposed development.

TABLE 7.1 THE MURROUGH WETLANDS SAC POTENTIAL IMPACTS		
QUALIFYING INTEREST	**OCCURRENCE / ASSESSMENT**	**POTENTIAL IMPACT**
[1210] Annual vegetation of drift lines	The proposed development is located outside the current known distribution, current range and favourable reference range of these qualifying interests (NPWS, 2019b). This habitat occurs on sandy or shingle substrate at the upper part of the strand around the high tide mark. It is typically species poor, fragmented and usually does not occupy large areas because of its narrow, linear nature. The nearest examples of these qualifying interests are located 2.7km north-east of the proposed development (NPWS, 2013). Annual vegetation of drift is a high tide coastal habitat, therefore a potential deterioration in water quality during construction works would not be anticipated to have a significant adverse impact upon this qualifying interest. In addition, invasive species is not listed as a potential threat to this habitat.	No
[1220] Perennial vegetation of stony bank	Perennial vegetation of stony bank is a high tide coastal habitat that occurs along the coast where shingle has accumulated to form elevated ridges or banks above the high tide mark. The proposed development is located outside the current known distribution, current range and favourable reference range of these qualifying interests (NPWS, 2019b). The nearest examples of these qualifying interests are located approximately 2.7km north-east of the development site (NPWS, 2013). Given the distance and lack of direct hydrological connection, it is not anticipated that the development would have the potential to negatively impact upon this qualifying interest. Spread of Invasive species is listed as a potential threat to this habitat.	Yes
[1330] Atlantic Salt Meadows (*Glauco-Puccinellietalia maritimae*)	Atlantic Salt Meadows occupy the widest part of the saltmarsh gradient with several distinctive zones due to elevation and frequent submergence. The proposed development is located outside the current known distribution, current range and favourable reference range of these qualifying interests (NPWS, 2019b). The nearest examples of these qualifying interests are located approximately 2km east (2.4km hydrologically downstream) of the development site (NPWS, 2013). Water quality is not listed within the Conservation Objectives report however, given the distance and lack of water quality attributes, it is not anticipated that the development would have the potential to negatively impact upon these qualifying interests. Spread of Invasive species is listed as a potential threat to this habitat.	Yes
[1410] Mediterranean salt meadows (*Juncetalia maritimi*)	This habitat is occupies the upper zone of saltmarshes and generally occur adjacent to the boundary of terrestrial habitats. The proposed development is located outside the current known distribution and favourable reference range of these qualifying interests (NPWS, 2019b). The nearest examples of these qualifying interests are located approximately 2km east (2.4km hydrologically downstream) of the development site (NPWS, 2013). Water quality is not listed as a conservation objective for this qualifying interest , therefore a potential deterioration in water quality during construction works would not be anticipated to have a significant adverse impact upon this qualifying interest. Spread of Invasive species is listed as a potential threat to this habitat.	Yes

TABLE 7.1 THE MURROUGH WETLANDS SAC POTENTIAL IMPACTS		
QUALIFYING INTEREST	**OCCURRENCE / ASSESSMENT**	**POTENTIAL IMPACT**
[7210] Calcareous fens and Cladium mariscus and species of the davallinae	The development is located outside the current known distribution and favourable reference range of these qualifying interests (NPWS, 2019b). The nearest examples of these qualifying interests are located approximately 7.5km north-east (9km hydrologically upstream) of the development site (NPWS, 2013). The Conservation Objectives for this qualifying interest include water quality attributes. Therefore, there is potential for the proposed development to have an impact upon this qualifying interest due to a potential deterioration in water quality during construction works. Invasive species is not listed as a potential threat to this habitat.	Yes
[7230] Alkaline fens	The development is located outside the current known distribution, but within the current range and favourable reference range of these qualifying interests (NPWS, 2019b). The nearest examples of these qualifying interests are located approximately 7.6km (9.1km hydrologically upstream) north-east of the development site (NPWS, 2013). The Conservation Objectives for this qualifying interest include water quality attributes. Therefore, there is potential for the proposed development to have an impact upon this qualifying interest due to a potential deterioration in water quality during construction works. Invasive species is not listed as a potential threat to this habitat.	Yes

TABLE 7.2 THE MURROUGH SPA POTENTIAL IMPACTS		
QUALIFYING INTEREST	**OCCURRENCE / ASSESSMENT**	**POTENTIAL IMPACT**
[A001] Red-throated Diver (*Gavia stellata)*	Wintering species found along Irish coastal habitats from September to December. Diet consists of small fish, sprats, sand eels, codling, flatfish, fish spawn, frogs, shrimp, water invertebrates and annelids. A deterioration in water quality would have an impact on this species.	Yes
[A043] Greylag Goose (*Answer answer*)	Wintering migrant to Ireland shows a preference for estuaries and in most recent years, arable farmland. Feeds mostly on cereal stubble and grassland in wintering areas and roots of rushes and sedges is estuaries. A deterioration in water quality would have an impact on this species.	
[A046] Light-bellied Brent Goose (*Branta bernicla hrota*)	Wintering species mostly found on coastal estuaries. During the winter, it feeds mostly on eel-grass, which grows on muddy estuaries, and also on grasslands, usually when coastal supplies have been depleted at estuarine sites. A deterioration in water quality would have an impact on this species.	
[A050] Wigeon (*Anas Penelope*)	Wintering species shows a preference for coastal saltmarshes, freshwater, brackish and saline lagoons, flooded grasslands, estuaries, intertidal mudflats and other sheltered marine habitats. Its diet is leaves, seeds, stems and root bulbs of pond weeds and fine grasses. A deterioration in water quality would have an impact on this species.	
[A052] Teal (*Anas crecca*)	Wintering species along the coast on saline or brackish lagoons with abundant submergent vegetation, saltmarshes, tidal creeks, intertidal mudflats, river deltas, estuarine waters and sheltered coastal bays with a preference for marshes with mud flats. Its diet is seeds of aquatic plants, grasses, sedges and agricultural grain. A deterioration in water quality would have an impact on this species.	
[A179] Black-headed Gull (*Chroicocephalus ridibundus*)	Wintering species is most common in coastal habitats and tidal inshore waters, showing a preference for inlets or estuaries with sandy or muddy beaches, and generally avoiding rocky or exposed coastlines. It may also occur inland during this season, frequenting ploughed fields, moist grasslands, urban parks, sewage farms, refuse tips, reservoirs, ponds and ornamental waters. Its diet consists predominantly of aquatic and terrestrial insects, earthworms and marine invertebrates (e.g. molluscs, crustaceans and marine worms) although it may also take fish (usually dead or sick), rodents, and agricultural grain. During the non-breeding season, the species may rely heavily on artificial food sources provided by man, especially in Western Europe and often scavenges from refuse tips during this period. A deterioration in water quality would have an impact on this species.	
[A184] Herring Gull (*Larus argentatus*)	Resident species along Irish coasts. Predator and scavenger feeding along the coasts, follows fishing oats and known to frequent landfill sites. A deterioration in water quality would have an impact on this species.	
[A195] Little Tern (*Sterna albifrons*)	Rare summer visitor from April to August and sows a preference for shingle or sandy beaches to the east and west coastal habitats of Ireland. Feeds mostly on marine fish. A deterioration in water quality would have an impact on this species.	
[999] Wetland and waterbirds	Visiting and resident species found within the habitats for which The Murrough SPA has been designated that feed on a variety of marine and terrestrial prey. A deterioration in water quality would have an impact on this species.	

The Murrough Wetlands SAC and The Murrough SPA Conservation Objectives

The relevant site-specific conservation objectives for the qualifying interests which have been identified as being potentially impacted upon by the development are outlined below.

Calcareous fens and *Cladium mariscus* and species of the *davallinae*
The maintenance of appropriate water quality, particularly pH and nutrient levels to support the natural structure and functioning of the habitat. Water supply should be calcium rich.

Alkaline Fens
The maintenance of appropriate water quality, particularly pH and nutrient levels to support the natural structure and functioning of the habitat. Water supply should be calcium rich.

Red-throated Diver (*Gavia stellata)*
To maintain or restore the favourable conservation condition of the wetland habitat at The Murrough SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

Greylag Goose (*Answer answer*)
To maintain or restore the favourable conservation condition of the wetland habitat at The Murrough SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

Light-bellied Brent Goose (*Branta bernicla hrota*)
To maintain or restore the favourable conservation condition of the wetland habitat at The Murrough SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

Wigeon (*Anas Penelope*)
To maintain or restore the favourable conservation condition of the wetland habitat at The Murrough SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

Teal (*Anas crecca*)
To maintain or restore the favourable conservation condition of the wetland habitat at The Murrough SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

Black-headed Gull (*Chroicocephalus ridibundus*)
To maintain or restore the favourable conservation condition of the wetland habitat at The Murrough SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

Herring Gull (*Larus argentatus*)
To maintain or restore the favourable conservation condition of the wetland habitat at The Murrough SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

Little Tern (*Sterna albifrons*)
To maintain or restore the favourable conservation condition of the wetland habitat at The Murrough SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

Wetland and waterbirds
To maintain or restore the favourable conservation condition of the wetland habitat at The Murrough SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

8.0 MITIGATION MEASURES

This assessment has determined that the proposed development has the potential to impact upon the Murrough Wetlands SAC and the Murrough SPA due to a potential deterioration in water quality during the construction phase.

As discussed in Section 7.0, it is considered that the proposed development has the potential to impact upon the following qualifying interests of the Murrough Wetlands SAC and the Murrough SPA:

- [1220] Perennial vegetation of stony bank
- [1330] Atlantic Salt Meadows (Glauco-Puccinellietalia maritimae)
- [1410] Mediterranean salt meadows (Juncetalia maritimi)
- [7210] Calcareous fens and Cladium mariscus and species of the davallinae
- [7230] Alkaline fens
- [A001] Red-throated Diver (*Gavia stellata)*
- [A043] Greylag Goose (*Answer answer*)
- [A046] Light-bellied Brent Goose (*Branta bernicla hrota*)
- [A050] Wigeon (*Anas Penelope*)
- [A052] Teal (*Anas crecca*)
- [A179] Black-headed Gull (*Chroicocephalus ridibundus*)
- [A184] Herring Gull (*Larus argentatus*)
- [A195] Little Tern (*Sterna albifrons*
- [999] Wetland and waterbirds

8.1 MITIGATION MEASURES

Measures that will be implemented to ensure that there will be no adverse effect to the listed habitats or species, as listed above, of the Murrough Wetlands SAC and the Murrough SPA, due to a potential deterioration in water quality or spread of invasive species:

8.1.1 Mitigation measures prior to commencement of the proposed Development

- Construction works will not be undertaken during periods of heavy rainfall, high river flows or orange/yellow/red rainfall warnings issued by Met Eireann;
- A toolbox talk will be given at the proposed works area by the site contractor to all relevant personnel on the monitoring and mitigation measure requirements to be implemented prior to commencement of the construction works;
- The contractor will maintain effective communication through the toolbox talk with the operating foremen to ensure there will be no risk of water pollution and all measures are enacted during the proposed works;
- The contractor will effectively communicate the tasks to be completed prior to commencement of the proposed works through the toolbox talk;
- Records of all visual inspections to be kept on file and available for review by relevant authorities;
- No proposed works or excavations will be undertaken within the Rathnew Stream watercourse.

- A 10m buffer zone will be maintained from the top of the bank of the Rathnew Stream. The only works to be undertaken within the 10m buffer zone will be for the construction of small drainage channels connecting to the proposed swales and attenuation tank. No other construction works or construction machinery will be operated within this buffer zone. No other vegetation within this 10m buffer zone will be removed.

8.1.2 Water quality Measures during the construction Phase

- Prior to the undertaking of any construction works, two swales with a width of 3m will be constructed to the north-west of the site between the proposed dwellings and Rathnew stream.
- A temporary interception ditch and attenuation tank will also be constructed to the eastern portion of the site.
- Three small channels will be constructed from the top of the bank of the Rathnew Stream, linking the swales and attenuation tank.
- Heavy machinery will maintain sufficient distance from the top of the bank of the Rathnew stream, allowing only the hydraulic arm to operate closest to the watercourse.
- To create the small channels, the operator will begin at the closest point to the Rathnew Stream where the hydraulic arm will scrape back soil inwards, creating a small channel until the swales and attenuation tank have been reached.
- There will be no construction works within the Rathnew Stream.
- Silt fencing will be placed along the north side of the swales to further prevent suspended solids from entering the watercourse. Silt fencing will be extended to the eastern portion of the site in line with the proposed swales and along the interception ditch. Silt fencing will remain in place for the duration of the construction and soil disturbance works.
- Where required, additional silt fencing will be placed along any potential area where debris or sediment could enter the Rathnew Stream and any drainage ditches (See Appendix D for Silt Fencing Specifications).
- Once the proposed swales, small drainage channels, interception ditch, attenuation tank and silt fencing are in place, all other construction works such as the construction of the roads and associated infrastructure will commence.
- The construction works contractor will adhere to standard construction best practice, taking cognisance of the Construction Industry Research and Information Association (CIRIA) guidelines "*Control of Water Pollution from Construction Sites; guidance for consultants and contractors*" 2001 and "*Control of Water Pollution from Construction Sites – Guide to Good Practice*", 2002;
- During construction works, cognisance will be taken of the 2016 guidelines published Inland Fisheries Ireland, "*Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters*";
- Daily visual inspections will be undertaken to ensure no silt-laden surface water runoff leaves the site, with the potential to either join with any adjacent surface water drainage systems within the vicinity or travel along the road network;

- Excavations and earth-moving activities will be planned outside periods of heavy rainfall, to limit the potential for suspended solids to become entrained within surface water run-off;
- Where possible, spoil will be covered or alternatively, graded to avoid ponding or water saturation;
- Silt fencing will be placed around spoil areas until such time as the excavated soil has been used in landscaping / re-instatement works;
- Where possible, surface water run-off would be diverted from areas of bare / exposed ground;
- Sandbags can be placed at the base of any steep gradient to slow the flow of any runoff and prevent it entering a drainage ditch or the Rathnew Stream;
- Manhole covers and stormwater gullies will be protected by silt blankets and additional measures such as sandbags to be incorporated on steeper gradients if required
- Should water be encountered during excavation works, water will be pumped to a silt control feature, such as an appropriately sized lagoon / tank / tanker used for settlement;
- This lagoon / tank must have adequate capacity and water must be filtered before discharging. Water must not be directly discharged to a drainage ditch or to the Rathnew Stream;
- The tank / tanker will be located away from any steep sloping ground;
- The use of pre-cast concrete where possible;
- All plant machinery will be monitored daily for leaks by the operators and contractor;
- All plant machinery and equipment will be maintained in good working order and will be visually inspected every day;
- All small plants such as generators and pumps will be stood in drip trays capable of holding 110% of their tank contents;
- Spill kits, adequately stocked with spill clean-up materials such as booms and absorbent pads, would be readily available at the proposed development area;
- The contractor will ensure the relevant site personnel are trained in spillage control;
- Materials such as hydrocarbons will be stored in designated areas on hardstanding away from a watercourse. Chemicals / fuels / generators at storage areas will be either bunded or set on appropriately sized drip trays which are regularly checked (at least daily) and emptied appropriately when required;
- The construction works contractor will ensure the relevant site personnel are trained in spillage control;
- In the unlikely event of a hydrocarbon spillage, contaminated spill clean-up material will be properly disposed of to an authorised waste contractor;
- Fuels / oils will be handled and stored with care to avoid spillage or leakage;
- In the unlikely event of a suspected deterioration in water quality within the Rathnew Stream due to construction works at the development site, works will immediately cease, an investigation into the cause undertaken and the relevant NPWS and Inland Fisheries Ireland personnel informed.

- Should a protected fauna species such as Otter (*Lutra lutra*) or Badger (*Meles meles*) be found during the construction phase of the project, an officer of the NPWS will be notified prior to the resumption of construction works;

In addition to the above measures, the construction works contractor would take cognisance of the following guidelines:

- CIRIA, 2001: *Control of Water Pollution from Construction Sites; guidance for consultants and contractors*;
- CIRIA, 2002: *Control of Water Pollution from Construction Sites – Guide to Good Practice*;
- IFI, 2016: *Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters*.

8.1.3 Water Quality Measures Post Construction Phase

- All silt fencing and construction related materials will be removed from the site.
- Any wastes will be disposed of at a licensed waste facility.
- The swale drainage constructed during the construction phase will remain and will become part of the operational phase drainage plans.
- The contractor will ensure all machinery and equipment has been taken from the construction area and that no materials associated with the proposed works remain.

8.1.4 Invasive Species

During construction works, there is potential for invasive species to be introduced to the site through the movement of materials, such as soil and stone, and the arrival of construction plant and equipment from an area with invasive species. In addition, Indian Balsam (*Impatiens glandulifera*) was identified on the northern boundary of the site, adjacent to the Rathnew Stream, this poses a risk of further spread both within the site and downstream during the construction and operation of the development. During the construction phase, ground-disturbing activities could potentially spread the Indian Balsam seeds, facilitating its proliferation within the site. In addition, excavated soil and construction materials could inadvertently carry seeds if they are not properly managed.

In the operational phase of the project, the increased human activity could potentially facilitate further spread of the Indian Balsam seeds, as they can attach to clothing and equipment. Furthermore, the alteration of the landscape could potentially result in conditions that are even more favourable for the growth of this invasive species.

The following controls for the prevention / treatment of invasive flora species would be implemented throughout the construction phase of the development:

- Regular site inspections would be undertaken to ensure that no growth of invasive species has taken place;
- The construction works contractor would ensure that all equipment and plant is inspected for the presence of invasive species and thoroughly washed prior to arriving to, and leaving from, the development site;

- All relevant construction personnel would be trained in invasive flora species (main species of concern) identification and control measures;
- Any additional topsoil will come from a certified source that can provide details on the soil type and screening process undertaken. Any soils excavated during construction works would be stockpiled and re-used for site levelling and site landscaping within the red line boundary;
- Construction activities should be carefully planned and managed to avoid disturbing areas where Indian Balsam is present. If the plant needs to be removed, this should be done before it sets seed (typically between June and October) and all plant material should be disposed of at a licensed waste facility to prevent further spread. Soil and construction materials should be inspected for seeds or plant fragments before being brought onto the site.
- Regular monitoring should be carried out during and after construction to detect any new growth of Indian Balsam or other invasive species. If new growth is detected, it should be controlled as soon as possible, using appropriate methods such as pulling or spraying with a suitable herbicide.
- After removal of the invasive species, the affected areas should be rehabilitated with appropriate native vegetation to prevent the re-establishment of Indian Balsam and to support local biodiversity.
- Given the persistent nature of invasive species, a long-term management plan should be in place. This plan should include regular monitoring and control measures to ensure that any new growth of invasive species is detected and dealt with promptly.

After the implementation of all proposed mitigation and monitoring measures, the residual effects from the invasive Indian Balsam on the development site are expected to be minor. A robust management strategy should significantly control and reduce the population of this invasive species. However, it is possible that isolated populations may persist. This remaining population could mildly impact local biodiversity by competing with native species for resources. Additionally, there is a risk of reinfestation from outside the site, given that the seeds of Indian Balsam can be dispersed by wind, water, or inadvertent human activity. Despite these potential challenges, effective biosecurity measures and education should limit this risk. Finally, while habitats should recover following the removal of invasive species and the reinstatement of native vegetation.

It is therefore considered that due to the proposed mitigation measures, there would be no adverse effect to water quality and the protected habitats and species of the Murrough Wetlands SAC and the Murrough SPA during the construction phase of the proposed development.

9.0 IN COMBINATION EFFECTS

The following plans and projects were reviewed and considered for in-combination effects with the proposed development:

- Wicklow County Development Plan 2022-2028;
- Proposed and permitted developments in the area available on Wicklow County Council planning system.

The proposed development is located approximately 600m south-west of the town of Rathnew (centre) via the R752 regional road. The proposed development is also located adjacent to the M11. The M11 provides a link from Rathnew to surrounding towns and is the main route from Rathnew to Dublin. According to the Wicklow County Development Plan 2022-2028, the town of Rathnew is listed as a Large Growth Town with an economic function as a main attraction for major investment. The following plans and projects were reviewed and considered for in-combination effects with the proposed development.

Table 9.1: Recent planning applications close to the proposed site

APPLICATION NO.	DEVELOPMENT TYPE	OUTCOME	APPROXIMATE DISTANCE
21558	10,133 sqm of light industrial /warehouse units in six blocks, with all associated infrastructure and site works. The blocks range in area from 513 sqm to 3490 sqm, subdivided into units from 218 sqm to 595 sqm and are 9.3m high. This application is for a permission of 10 years duration.	Granted – Conditional	110m N
181217	Amendments to a partly constructed residential scheme. The proposed development will consist of amendment to the permitted (unconstructed) blocks 1, 18, 19, 20, 24, 26 and unit 65 located along the north eastern site boundary as permitted under Reg Ref 06/6163, 12/6534 and 17/1018. Units to be omitted from the approved scheme due to boundary conditions include units 1 2 and 3 (block 1), unit 65 (detached), unit 66 (within block 24) and unit 94 (within block 26). The proposed development includes a revised block 18, 19 and 20 and will provide for 7 no 2 bed houses (total GFA: c554 sqm). The proposed development also includes 14 no car parking spaces, landscaping, shared open space, associated site layout amendment works and site services. The site forms part of a permitted development of 154 no dwellings and a childcare facility. Under this application, the total unit number will be reduced to 145 no units. A live application on the site, Reg Ref 18/558, if granted, will reduce the housing units further to an overall total of 144 no units.	Granted – Conditional	220m SE
1853	Ten year permission for 16498 sqm mixed development comprising of one crèche building, one neighbourhood centre building, one nursing home building and four office buildings on 12.06 acres / 48809 sqm site, all together with all infrastructure works to service this development, including car and cycle parking, connection for foul drainage and local water supply, landscaping road and ancillary site works.	Granted – Conditional	340m S

APPLICATION NO.	DEVELOPMENT TYPE	OUTCOME	APPROXIMATE DISTANCE
16459	To construct 45 housing units consisting of; 10 one-bedroom apartments, 8 two bedroom houses, 24 three bedroom houses, 2 four bedroom houses, 1 four bedroom bungalow for people with disabilities. The development will be accessed from Hazelbrook, with connections to existing public services, water supply, foul & surface water disposal systems, diverted stream, culvert, landscaping, bin stores & all associated site works.	Granted – Conditional	450m SE
2237	Permission for a housing development of 93 dwelling units consisting of 18 duplex units, 44 semi-detached dwellings, 25 terraced dwellings, 4 apartments, 2 detached dwellings, and a creche, with connection to services and all associated works including roads, footpaths, boundaries and boundary treatments, public lighting, open spaces and landscaping, attenuation system and new entrance from Saunders Lane Road, and relocation of attenuation system previously granted under ref. no 18/50 to be located on these lands.	Granted – Conditional	770m SE
221269	Development of an Enterprise Park comprising a total of 42 industrial/warehouse/distribution units, each with two-storey office element together with roads, paving, car parking, open spaces, landscaping, public lighting and provision of all services associated with the development. The permission sought is for a 10 year duration.	Granted – Conditional	930m S
20927	Permission for the proposed amendments to previous permission ref no. 18/50 as amended under PRR 19/364 to facilitate the provision of an additional dwelling unit, the total no. of residential units will be 96 together with all associated site works including connection to services.	Granted – Conditional	940m SE
161133	Housing development consisting of 50 two storey dwellings and one single storey creche facility all with connection to services and associated works including drainage, roads, footpaths, public lighting, open spaces, landscaping and boundary treatments and associated works.	Granted – Conditional	1.05km SE
21187	Permission for phase 2 of a 2-phase development and will consist of: (A) The construction of 66 no. dwellings comprising 1 no. 3 bedroom bungalow, 18 no. 2 bedroom 2 storey houses, 44 no. 3 bedroom 2 storey	Granted – Conditional	1.2km SE

APPLICATION NO.	DEVELOPMENT TYPE	OUTCOME	APPROXIMATE DISTANCE
	houses, 3 no. 1 bedroom apartments in 1 no. 3 storey building; (B) All ancillary development works including footpaths, landscaping boundary treatments, public, private and communal open space areas (including balcony or terrace), car parking (112 no spaces) and bicycle parking, single storey ESB substations, regrading/re-profiling of site where required and all ancillary site development/construction works (including diversion of existing services and all new site services connections); (C) Vehicular access from the existing Broomhall roundabout, via upgraded vehicular access route along the western side of development with pedestrian access to eastern boundary and to the north; the proposed development will allow for all roads, services and landscaping for Phase 1 and Phase 2 sites.		
211119	Proposal is for Phase 1 of a 2-phase development and will consist of ; - A) The construction of 84 no. dwellings (and 2 storey creche c.301 sqm) comprising 1. no. 3 bedroom bungalow, 8 no. 2 bedroom houses, 61 no. 3 bedroom houses, 7 no. 3 bedroom 'Courtyard' dwellings (all 2 storey), and 1 no. part 2 storey/3 storey 4 bedroom 'Courtyard' dwelling, 6 no. 1 bedroom apartments in 2 no. 3 storey buildings; B) All ancillary development works include footpaths, landscaping boundary treatments, public, private and communal open space areas (including balcony or terrace), car parking (170 no. spaces) and bicycle parking, single storey ESB substations, regrading/re-profiling of site where required and all ancillary site development /construction works (including diversion of existing services and all new site services connections); C) Vehicular access from the existing Broomhall roundabout , via upgraded vehicular access route along the western side of development with pedestrian access to eastern boundary and to the north; the proposed development will allow for all roads, services and landscaping for Phase 1 and Phase 2 sites.	Granted – Conditional	1.3km SE

Potential in-combination effects are discussed under the following headings.

9.1 HABITAT LOSS / FRAGMENTATION

As discussed, the proposed development does not directly impinge on any part of a European site, and as such would not be expected to have any in-situ effects upon a protected site through loss or destruction of habitat or fragmentation of habitat. With regards ex-situ effects, it is not considered that the proposed development site would contain the habitats or species for which the Murrough Wetlands SAC and the Murrough SPA have been designated. The proposed development aims to retain much of the boundary vegetation and enhance with the additional planting of native and non-native non-invasive species within the landscape design.

The surrounding land-use of the proposed development site is mainly rural with agricultural land in the immediate vicinity and urban/industrial land to the north which can be considered modified and of lower biodiversity value. Developments were identified on the Wicklow County Councils planning site within the vicinity of the applicants proposed site are mostly residential that were all granted subject to conditions. Should future planning applications be submitted for the area, it is likely that they would also be located within the limit of Rathnew on land identified for commercial/residential use. Therefore, it is unlikely that future proposed developments would result in the loss or fragmentation of designated habitats of the Murrough Wetlands SAC and the Murrough SPA. Therefore, no in-combination effects on habitat loss / fragmentation are anticipated.

9.2 DISTURBANCE TO SPECIES

Disturbance to species may arise through noise emissions and human activity. The main in-combination noise and human activity effects would be from any residential, industrial, agricultural activities and traffic along the R752) Regional Road to the south. The Murrough Wetlands SAC and the Murrough SPA are located approximately 1.8km from the proposed development. The Rathnew Stream watercourse runs along the northern boundary of the site. Fauna within the SAC and SPA and the general area around the proposed development site would be accustomed to human, coastal, vehicular and agricultural noise.

Given the nature of the proposed development there will be no additional cumulative noise impacts, or other disturbance effects due to human activity, which would pose an adverse effect to designated sites or species. It is not anticipated that there would be any significant impact to protected species as a result of light spill as lighting will be angled away from treelines and hedgerows along the Rathnew Stream watercourse.

The proposed development will include the additional planting of native and non-native non-invasive species throughout the proposed development site (See landscape plan by Landscape Design & Planning Ltd.). This will provide connectivity to surrounding treelines and hedgerow features. Removal of any trees along the site boundary would not be undertaken during the bird nesting season (1st of March - 31st of August). Should tree removal works be required during the bird nesting season, the sections would be inspected for the presence of breeding birds by a qualified ecologist prior to any clearance works taking place. Where nests are identified, the ecologist would determine if a licence from the National Parks and Wildlife Services (NPWS) is required, or if it is possible to establish a suitable buffer zone around the active nest, with removal works rescheduled until chicks have fledged.

During site works waste material (consisting of materials used in the construction and excavation would be removed to a licenced waste facility. Any excess material would be

exported off site via a licenced contractor to a licenced waste facility. Therefore, owing to the surrounding rural/agricultural/urban land use it is considered that the proposed development will not significantly increase cumulative noise impacts, or other disturbance effects due to human activity, which would pose an adverse risk to designated sites or species and habitats within the Murrough Wetlands SAC and the Murrough SPA.

9.3 AIR QUALITY

From mapping websites, including the EPA's Envision mapping system, there are commercial activities within Rathnew town however there are no industrial enterprises located within the vicinity of the proposed development site. The nearest EPA licenced site is located approximately 2.6km east from the proposed development site. These facilities are obliged to operate their site in compliance with their IE / IPC licences, and therefore would be obliged to ensure air emissions are in compliance with any emission limit values outlined within their EPA licences. The proposed heating system is air to water. Air emissions would be primarily non-local, through the use of the electricity supply for heating and appliances. This would be typical of residential and therefore relatively low impact in-and-of-itself. In-combination residential impacts would be controlled by national energy policies, grant schemes and motor fuel emission targets. It is considered that there would be no cumulative air quality impacts which would pose an adverse effect to designated sites.

9.4 DETERIORATION IN WATER QUALITY

Given the construction footprint would be small in scale and the limited construction plant and equipment required, the risk of the proposed development impacting significantly upon water quality would be greatly reduced. Continued implementation of the Water Framework Directive would result in achieving, or maintaining, improvements to water quality in the Ovaca-Vartry Catchment. Developments such as this proposed development could act in combination with existing environmental pressures on the Ovaca-Vartry Catchment, including agriculture, anthropogenic, domestic and urban wastewater, urban run-off, industry and forestry. During the operational phase, surface water will be directed to the proposed drainage network consisting of a drainage network directed to swales and an attenuation tank within the site boundary. Therefore, run-off from the proposed development will not have a significant impact on the nearby watercourses such as the Rathnew Stream. Waste water from the proposed development will be discharged to the public foul line via a new connection into the Wicklow Waste Water Treatment Plant (D0012-01) which is compliant with the ELV's set in the Wastewater Discharge Licence. The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status (Irish Water, 2020). Wicklow Waste Water Treatment Plant WWTP currently has available capacity (Irish water Capacity Registers, 2023). Therefore, it is considered that there would be no significant cumulative impacts upon water quality which could pose a risk to The Murrough Wetlands SAC and The Murrough SPA.

Construction phase mitigation measures will be put in place to protect the Rathnew Stream watercourse during construction works, these measures will include silt control features such as silt fences that will prevent a significant impact on the drainage network and watercourse. This will limit any adverse effect on the water quality of the Murrough Wetlands SAC and the Murrough SPA.

10.0 CONCLUSION

It is not anticipated that the proposed development, subject to recommended mitigation measures, by itself or in combination with other developments, would impact negatively upon the Natura 2000 network during the site preparation or operational phases of the project.

The proposed development site is located upstream of the Murrough Wetlands SAC (Site Code: 002249) and the Murrough SPA (004186). It is considered that there would be no potential risk of an adverse effect upon the qualifying interests / special conservation interests of the Murrough Wetlands SAC and the Murrough SPA due to the proposed mitigation measures to be employed.

Protecting surface water quality within the Rathnew Stream is considered a significant objective of this proposed development. The early stages of construction phase and their potential risks have been assessed and adequately mitigated against to prevent any deterioration in water quality. A 10m buffer zone will be maintained along the Rathnew stream where no vegetation will be removed (except to treat Indian Balsam) and no construction works (except works to construct two small channels) will be undertaken.

It is the conclusion of this Natura Impact Statement that, subject to mitigation measures, there would be no potential for an adverse effect on European sites as a result of the proposed development and mitigation measures to be implemented. This conclusion refers to the development by itself or in combination with other developments.

The proposed heating system will be air to water. In-combination residential impacts would be controlled by national energy policies, grant schemes and motor fuel emission targets. During construction works the potential impact on air quality would not be significant due to the small scale of the residential development and duration of the works. It is considered that there would be no cumulative air quality impacts which would pose a significant risk to designated sites.

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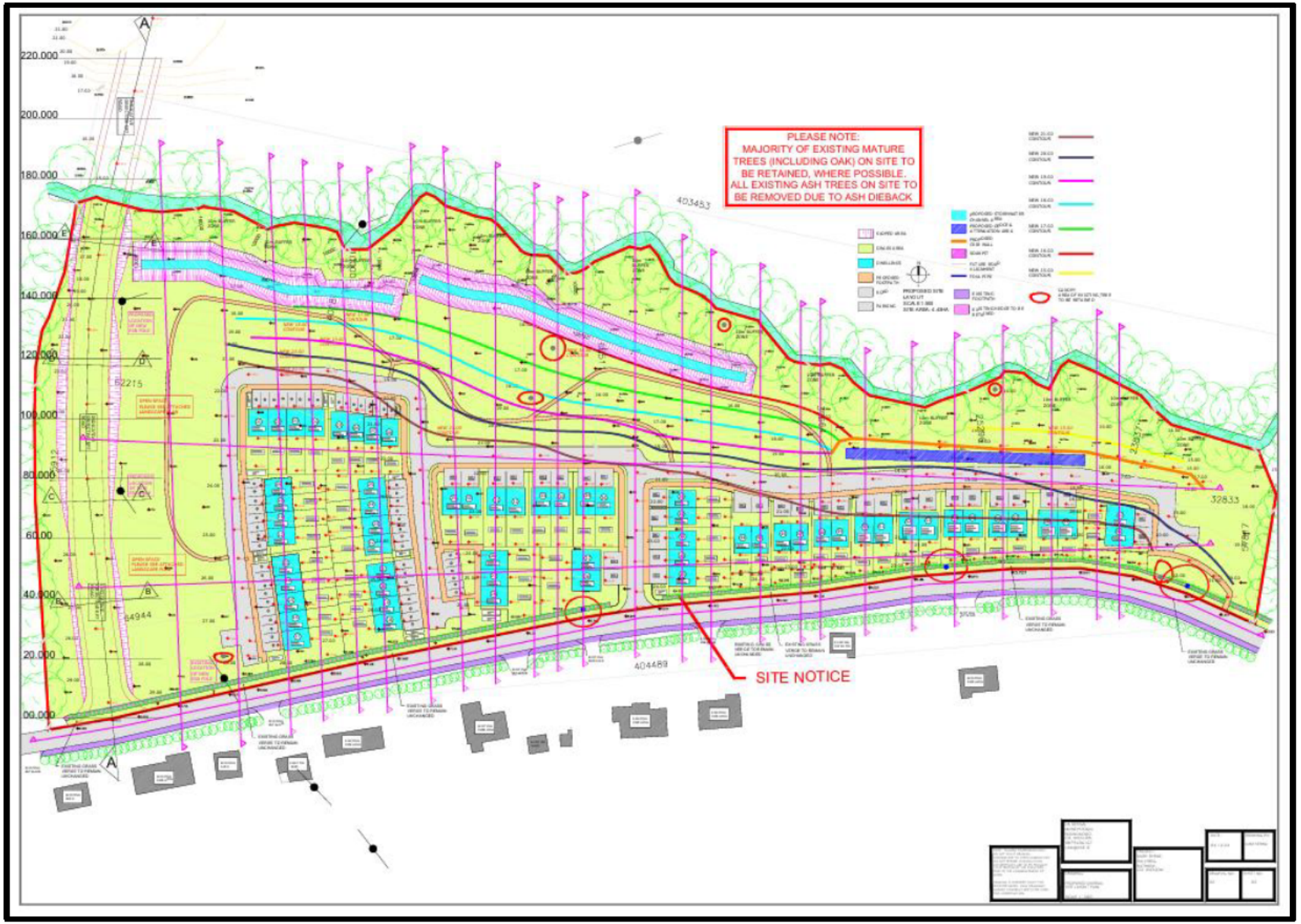
APPENDIX A

PROPOSED SITE LAYOUT & LANDSCAPE PLANS


PLEASE NOTE:
MAJORITY OF EXISTING MATURE TREES (INCLUDING OAK) ON SITE TO BE RETAINED, WHERE POSSIBLE.
ALL EXISTING ASH TREES ON SITE TO BE REMOVED DUE TO ASH DIEBACK
SITE NOTICE
403453
404489
62215
64944
32833
220.000
200.000
180.000
160.000
140.000
120.000
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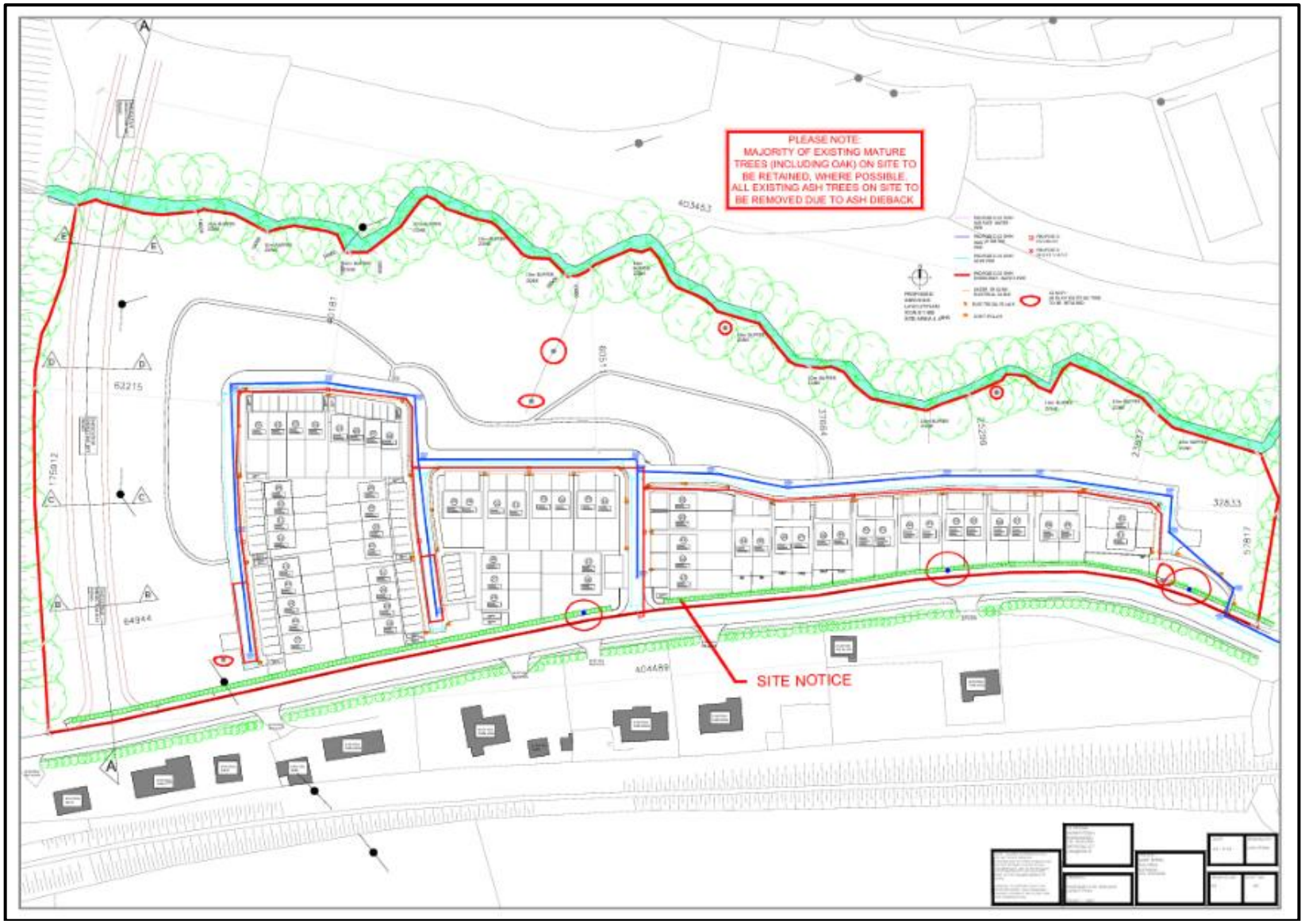
PLEASE NOTE:
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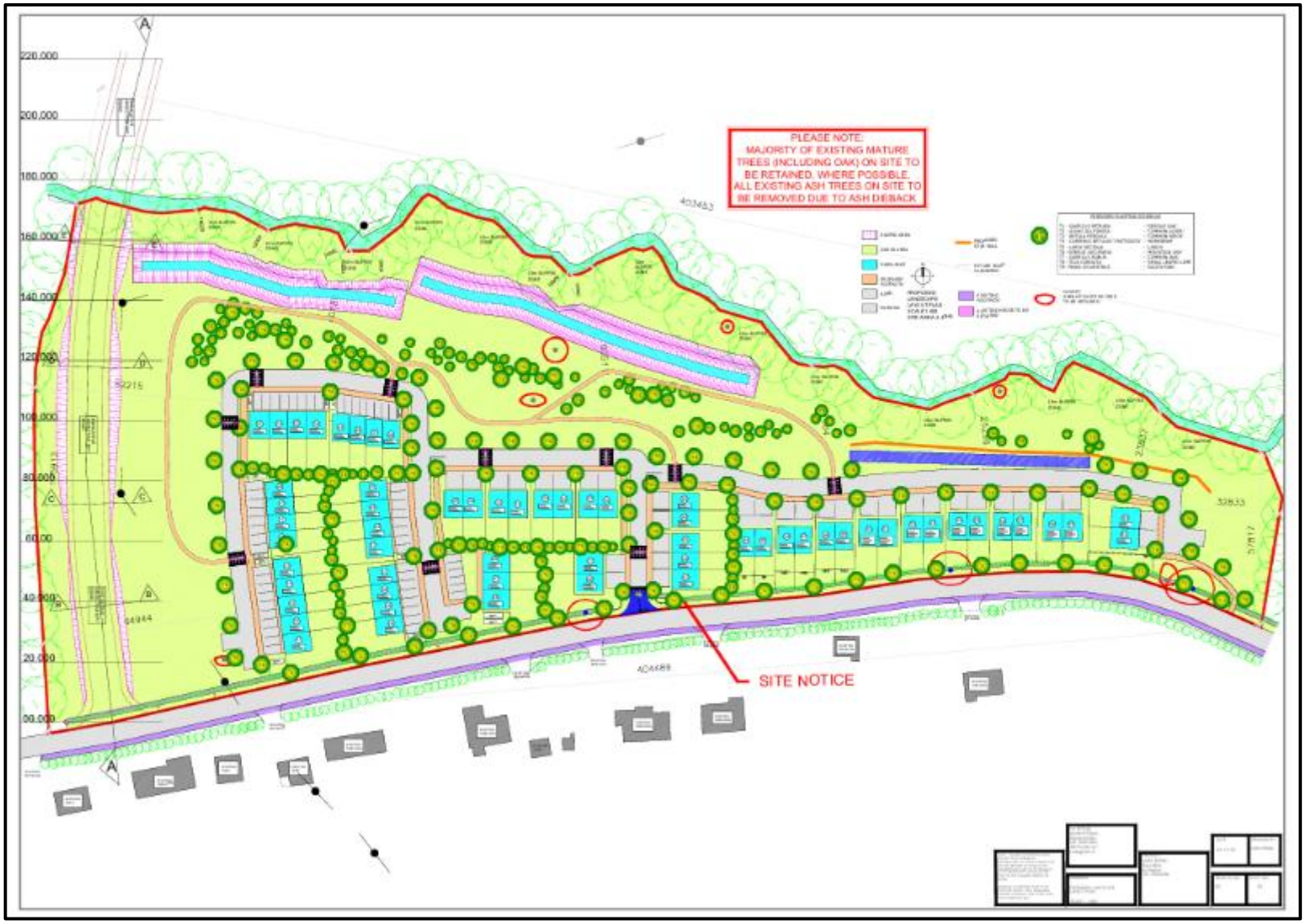
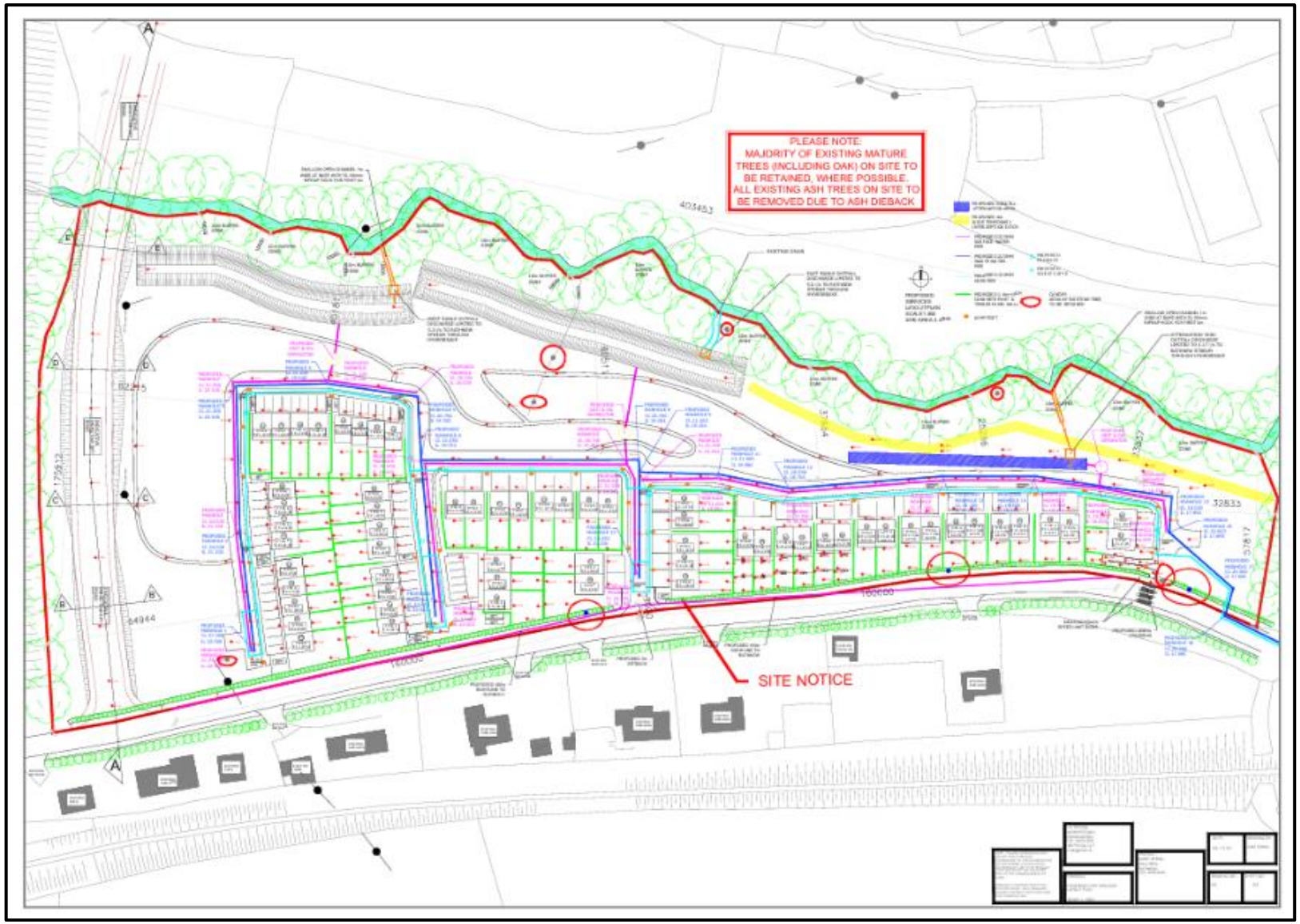
SITE NOTICE


PLEASE NOTE:
MAJORITY OF EXISTING MATURE TREES (INCLUDING OAK) ON SITE TO BE RETAINED. WHERE POSSIBLE. ALL EXISTING ASH TREES ON SITE TO BE REMOVED DUE TO ASH DIEBACK
SITE NOTICE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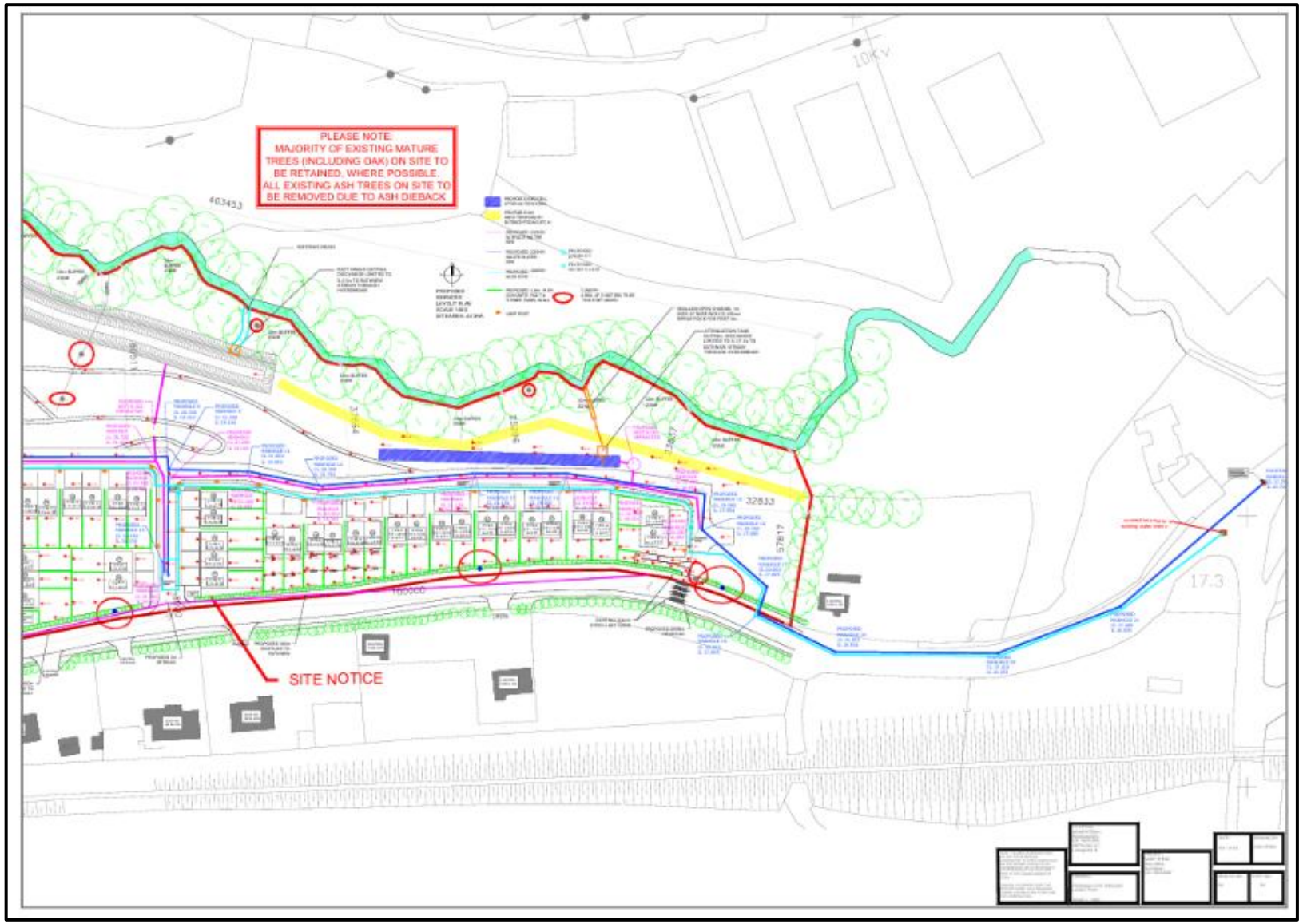
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ALL EXISTING ASH TREES ON SITE TO BE REMOVED DUE TO ASH DIEBACK
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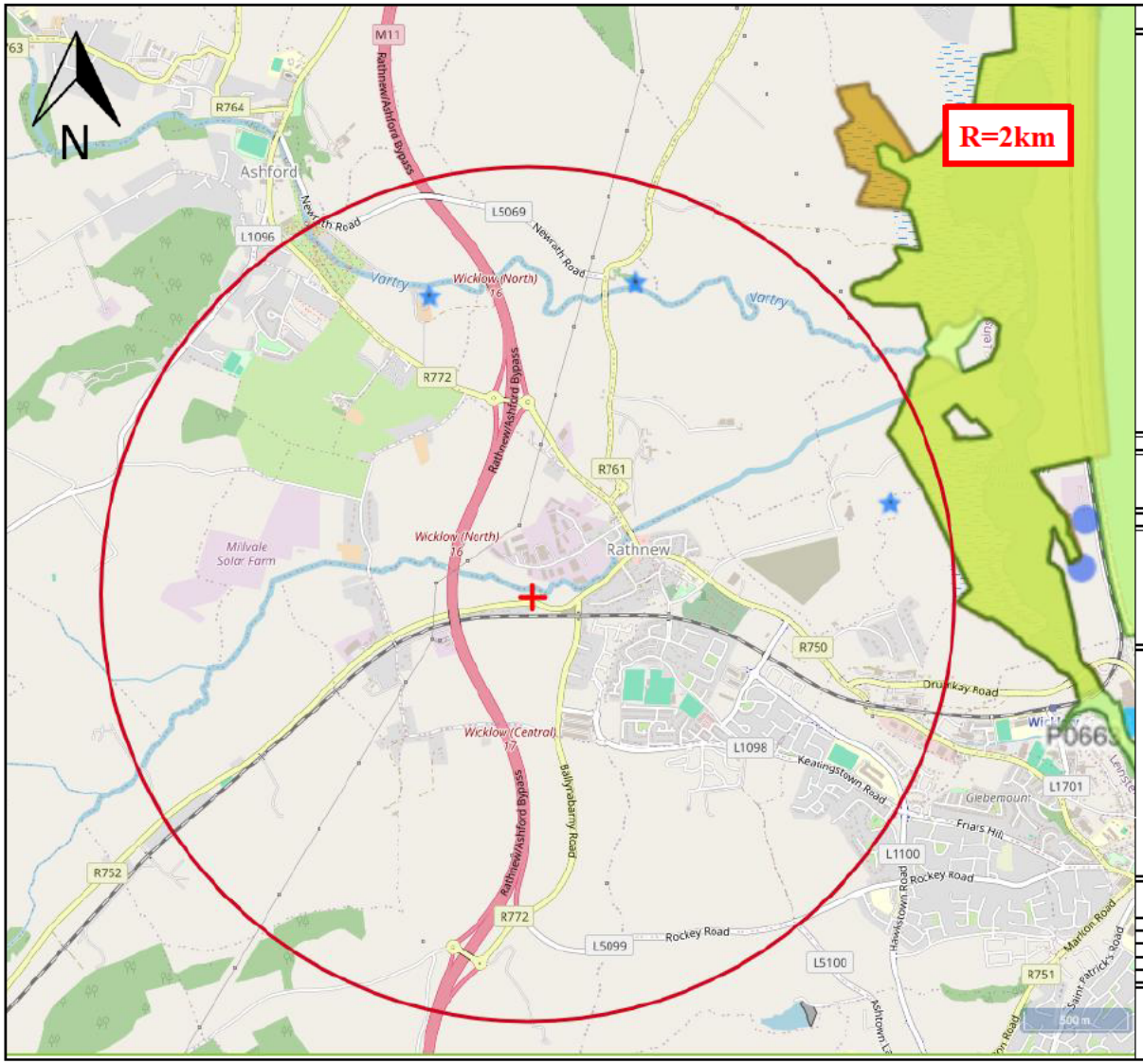
57817
17.3

APPENDIX B

PROTECTED SITE MAPS



Notes

– Location of Development

- SAC

- SPA

Project Title:

Protected Sites Map

Client Name:

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CARLOW
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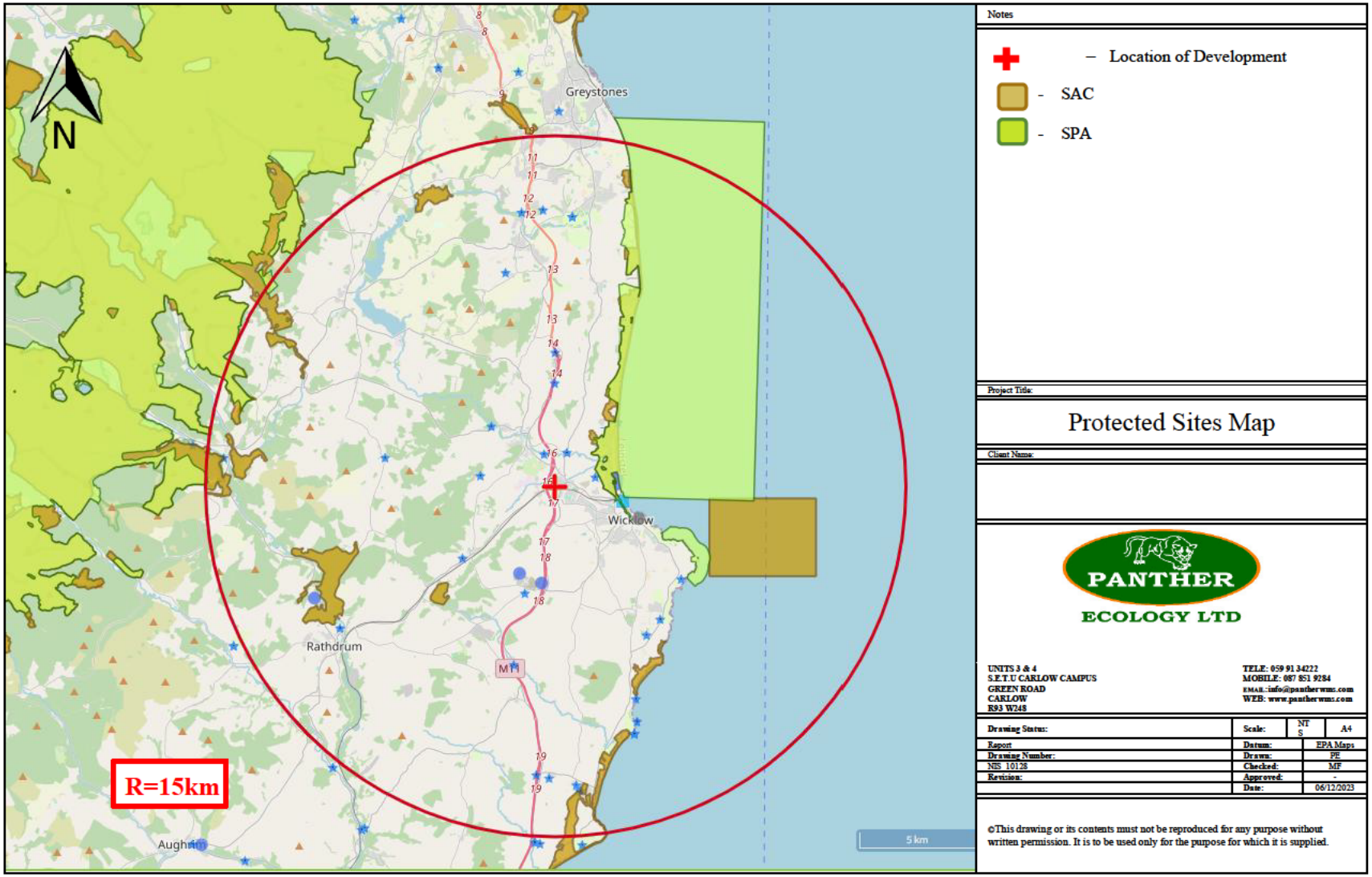
Report	Datum:	EPA Maps	
Drawing Number:	Drawn:	PE	
NIS_10128	Checked:	MF	
Revision:	Approved:	-	
	Date:	06/12/2023	


N
Greystones
Wicklow
Rathdrum
Aughrim
M11
R=15km
5 km
Notes
– Location of Development
- SAC
- SPA
Project Title:
Protected Sites Map
Client Name:
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Scale: NTS
A4
Report
Drawing Number:
NIS 10128
Revision:
Datum: EPA Maps
Drawn: PE
Checked: MF
Approved: -
Date: 06/12/2023
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APPENDIX C

PHOTO LOG

Plate 1: View of site looking North

Plate 2: Hedgerow (WL1)/Treeline (WL2) western boundary

Plate 3: Wet grassland (GS4)

Plate 4: Improved agricultural grassland (GA1)

Notes:

BALLYBEG, RATHNEW, CO. WICKLOW

APPENDIX D
PHOTO LOG

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drawing status:	REPORT	datum:	N/A
		drawn:	PE
drawing no.	rev	checked:	MF
NIS_10128	A	approved:	-
		date:	06/12/2023

Plate 5: Immature woodland (WS2)

Plate 6: Drainage ditch (FW4)

Plate 7: Scrub (WS1)

Plate 8: Depositing/lowland rivers (FW2)

Notes:

BALLYBEG, RATHNEW,
CO. WICKLOW

APPENDIX D
PHOTO LOG

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file location:		scale: N/A	A4
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		drawn:	PE
drawing no.	rev	checked:	MF
		approved:	-
		Date:	06/12/2023
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APPENDIX D

SILT FENCING SPECIFICATIONS
&
INDIAN BALSAM IDENTIFICATION

SILT FENCING SPECIFICATIONS

Silt fencing consists of porous filter fabric which detains sediment and the support posts. The fabric must be trenched-in and backfilled, and the soil compacted around it. The posts are sunk into the ground and can be either steel or wood. How much is required will be determined by the location, size and topography of the site with some sites requiring more than others. Silt fencing works by blocking runoff water and creating a pond behind it. This dissipates the energy in running water and allows for sediments to sink while the water can either pass through, percolate to ground or evaporate.

Silt fencing installation should have posts anywhere from 1m to 2m apart as the silt fencing has to withstand the force of water building up behind it. The fabric must be secured to the posts using plastic cable ties, wire twists or construction grade staples. It is important that there is no gap between the silt fencing and the ground. Trenching-in the fabric will ensure a solid anchor in the ground and ensures runoff water does not get past. Silt fencing fabric must be able to withstand all weather conditions and made of special material that's high quality, permeable, technical filter fabric and can prevent runoff from a storm event. The material used in silt fencing will determine how durable and efficient it is as stopping sediment from reaching a protected area. Material can be geotextile fabric, produced from high-tenacity polypropylene silt-film

The building contractor will determine the most appropriate type of silt fencing to use and ensure its correct installation and maintenance throughout the construction phase. Silt fencing must remain in place until there is no risk of sediments from entering a protected habitat or watercourse. Silt fences must be inspected daily and after a heavy rainfall event with repairs carried out if required. When sediment accumulation reaches one third the height of the exposed fence either remove the sediments or install a second silt fence as directed by the construction site manager/engineer.

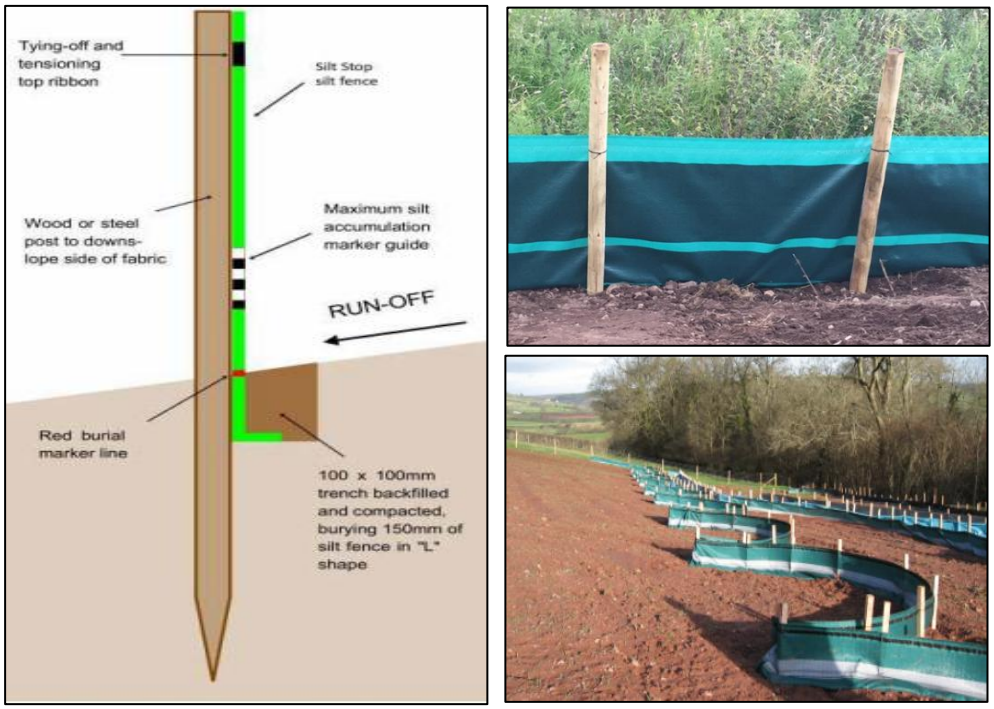
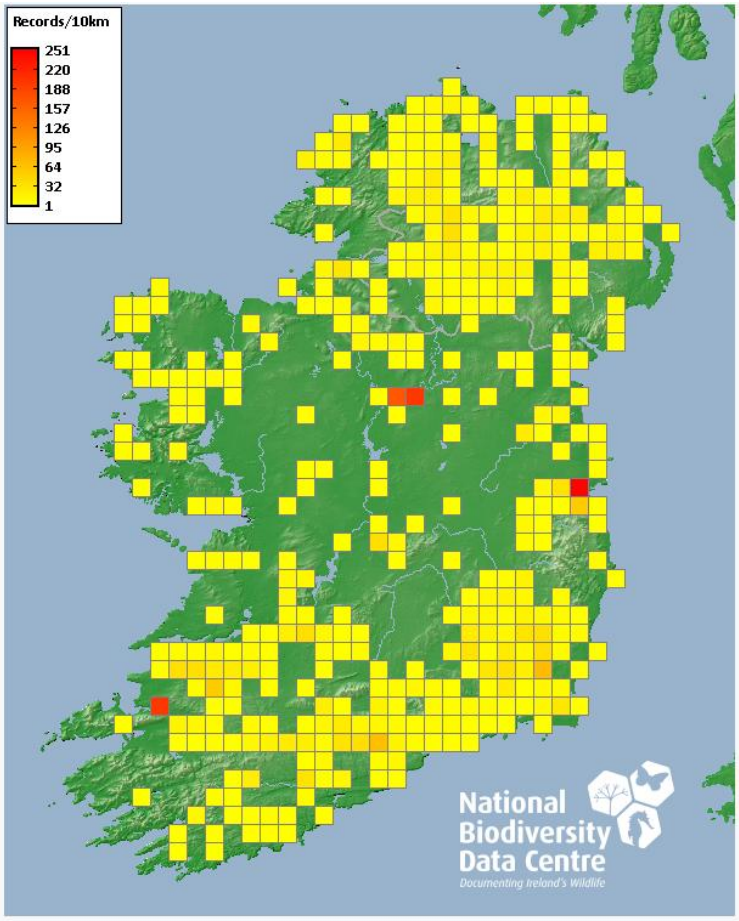


Figure Appendix D1: Example of Silt Fencing and Installation.



Citation: National Biodiversity Data Centre, Ireland, Indian Balsam (Impatiens glandulifera), image, accessed 11 August 2023, <https://maps.biodiversityireland.ie/Species/TerrestrialDistributionMapPrintSize/28772>

Indian Balsam distribution in Ireland

National Biodiversity Data Centre, Ireland, Indian Balsam (*Impatiens glandulifera*) www.biodiversityireland.ie

Plate 9: Indian Balsam (northern site boundary)

Plate 10: Explosive seed dispersal. Source: assets.gov.ie

Plate 11: Example of Indian Balsam without flower (Site boundary)

Plate 12: Indian Blasam Identification (not at site). Source: Invasive Species Ireland

APPENDIX A
PHOTO LOG

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drawing status:	REPORT	datum: N/A	
		drawn: PE	
drawing no.	rev	checked: MF	
NIS_10128	A	approved: -	
		date: 06/12/2023	

NOTE : FIGURED DIMENSIONS ONLY. DO NOT SCALE DRAWING. CONTRACTOR TO CHECK DIMENSIONS ON SITE BEFORE CONSTRUCTION. DISCREPENCES ARE TO BE BROUGHT TO ATTENTION OF THE SURVYORS PIOR TO THE COMMENCEMENT OF WORK.

DRAWING IS INTENDED SOLEY FOR PURPOSE NOTED. ONLY DRAWINGS MARKED CONTRACT ARE TO BE USED FOR CONSTRUCTION.

L/K DESIGN,
MONEYSTOWN,
ROUNDWOOD,
CO. WICKLOW.
0879636167
LIAM@KSE.IE

DRAWING:
PROPOSED SITE SERVICES LAYOUT PLAN
SCALE 1: 500

PROJECT:
MARY BYRNE,
BALLYBEG,
RATHNEW,
CO. WICKLOW

DATE:	DRAWING BY:
04.12.24	LIAM KENNA

DRAWING NO.	SHEET NO.
03	03