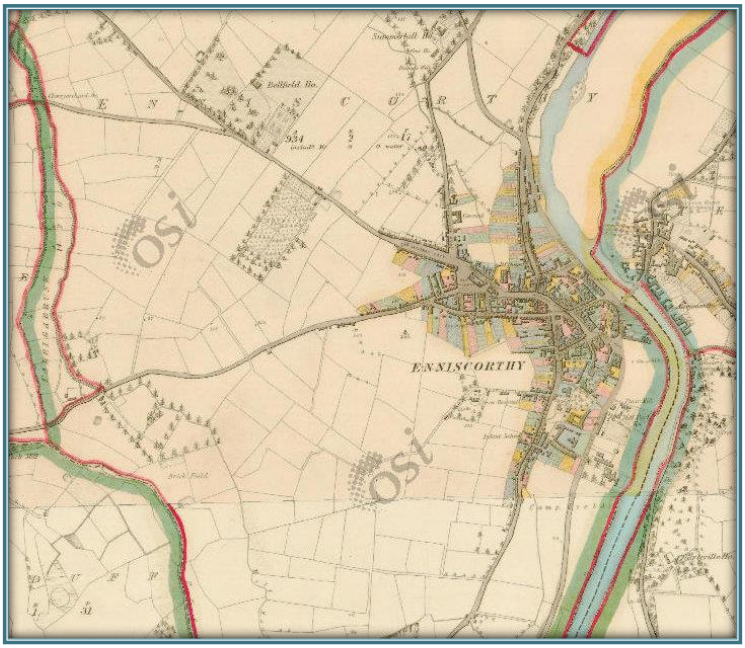
Whitehill
Environmental

Noreen McLoughlin, MSc

Environmental Consultant

Whitehill
Edgeworthstown
Co. Longford
& (087) 4127248 / (043) 6672775
✉ noreen.mcloughlin@gmail.com

Ecological Impact Assessment (EcoIA) of a Proposed Housing Development (SHD) at Enniscorthy Rural, Enniscorthy, Co. Wexford.



Torca Developments Ltd
c/o McGill Planning Ltd
22 Wicklow Street
Dublin 2

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1. INTRODUCTION

1.1 THE AIM OF THE REPORT

This Ecological Impact Assessment (EcoIA) addresses the potential impacts of a proposed development that may occur in the future on the ecology and biodiversity of a site and its surrounding environs at Enniscorthy Rural, Enniscorthy, Co, Wexford.

This EcIA has been undertaken in accordance with the guidelines issued by the Environmental Protection Agency (EPA) and the Chartered Institute of Ecology and Environmental Management (CIEEM).

It follows a standard approach based upon the description of the existing baseline conditions within the application site. An evaluation of the likely habitats and species currently present within the application site is also given, along with the identification of the potential ecological impacts arising from the construction and operation of the proposed development. An assessment of the likely significance of the identified impacts on valued ecological receptors (VERs), both within and close to the application site is also made. Where a significant negative impact has been identified, then suitable remedial mitigation measures are provided in order to prevent, reduce or offset the impact.

1.2 LEGISLATIVE AND POLICY CONTEXT

Legislative Context

The Irish Wildlife Act 1976 (and its amendment of 2000) provides protection to most wild birds and animals. Interference with such species can only occur under licence. Under the act it is an offence to "wilfully interfere with or destroy the breeding place or resting place of any protected wild animal". The basic designation for wildlife is the Natural Heritage Area (NHA). This is an area considered important for the habitats present or which holds species of plants and animals whose habitat needs protection. Under the Wildlife Amendment Act (2000) NHAs are legally protected from damage. NHAs are not part of the Natura 2000 network and so the Appropriate Assessment process does not apply to them.

The Flora Protection Order 1999 provides statutory protection in Ireland to a number of rare plant species from being wilfully cut, picked, uprooted or damaged. It is also illegal under this order to alter, damage or interfere with their habitats.

The Birds Directive (Council Directive2009/147/EC) recognises that certain species of birds should be subject to special conservation measures concerning their habitats. The Directive

requires that Member States take measures to classify the most suitable areas as Special Protection Areas (SPAs) for the conservation of bird species listed in Annex 1 of the Directive. SPAs are selected for bird species (listed in Annex I of the Birds Directive), that are regularly occurring populations of migratory bird species and the SPA areas are of international importance for these migratory birds.

The EU Habitats Directive (92/43/EEC) requires that Member States designate and ensure that particular protection is given to sites (Special Areas of Conservation) which are made up of or support particular habitats and species listed in annexes to this Directive.

The Water Framework Directive (WFD) (2000/60/EC), which came into force in December 2000, establishes a framework for community action in the field of water policy. The overall sim of the WFD is the eventual achievement of good status in all waterbodies. The WFD was transposed into Irish law by the European Communities (Water Policy) Regulations 2003 (S.I. 722 of 2003). The WFD rationalises and updates existing legislation and provides for water management on the basis of River Basin Districts (RBDs). RBDs are essentially administrative areas for coordinated water management and are comprised of multiple river basins (or catchments), with cross-border basins (i.e. those covering the territory of more than one Member State) assigned to an international RBD.

Planning Policies

National

Nationally, the Government's commitment to sustainable development is set out in a number of documents including the National Planning Framework and the National Development Plan 2018 – 2027.

Regional

The South-East Regional Planning Guidelines provide a planning framework covering the counties of Carlow, Kilkenny, the southern part of County Tipperary, Waterford (City and County) and Wexford for the period 2010-2022. These guidelines contain a number of policies relevant to ecology and nature conservation. These guidelines are summarised in Table 1.

Reference	Objective / Policy
PPO 8.6	Planning Authorities should provide for the following biodiversity objectives through County and City Development Plans and Local Area Plans: • Protect natural heritage sites designated or proposed for designation in National and European legislation, and in other relevant International Conventions, Agreements and Processes (e.g. Ramsar sites, Special Protection Areas, Special Areas of Conservation, Natural Heritage Areas, statutory nature reserves). • Ensure that development does not have a significant adverse impact, incapable of satisfactory mitigation, on plant, animal and bird species and habitats protected by law and that developments affecting Natura 2000 sites are assessed in compliance with Article 6 of the Habitats Directive. • Encourage and promote sustainable access where appropriate to natural heritage, geological and geomorphological systems, sites and features. • Implement the actions as set out in the National Biodiversity Plan and Ireland's Strategy for Plant Conservation. • Maintenance and restoration of water quality in areas listed on the Register of Protected Areas under the water Framework Directive including Freshwater Pearl Mussel Catchments. • Protection of Fisheries and Shellfisheries. • Support the application of Habitat Mapping in the region and integrate this information into land use policies and planning. • Identify and protect sites of local biodiversity interest that act as ecological corridors linking sites of conservation importance. • Adopt and implement Biodiversity Action Plans at local level. • Initiate local campaigns for biodiversity promotion such as native tree planting schemes, creation of wildlife corridors and wetlands creation across the region. • Protect geological sites of national and international interest.
PPO 8.7	It is an objective of the Regional Authority to encourage and support a co-ordinated approach for protection and enhancement of the region's flood plains, wetlands and watercourses for their biodiversity and flood protection values.
PPO 8.18	Local authorities should include policies in their development plans to: • Protect and enhance the natural heritage and landscape character of river and stream corridors and valleys to maintain them free from inappropriate development and to provide public access where feasible and appropriate. • Preserve and improve access where environmentally appropriate for the public to riverside, lakeside, upland and other areas that have traditionally been used for outdoor recreation. • Promote the development of 'Greenways' along former railway alignments and along canals and rivers where environmentally appropriate. • Maintain and promote access (including public walkways) to beaches and the seashore where environmentally appropriate as an essential component of recreational and tourist amenity. • Investigate and promote, where environmentally appropriate, the leisure and amenity potential of the inland waterways of the region particularly in line with the tourism industry. • Co-operate with other regions to develop the heritage and amenity potential of inland waterways as a common objective.

Table 1 – Regional Policies Relevant to Ecology and Nature Conservation

Local

Planning policy at the local level is provided by the Wexford County Development Plan 2013–2019. This plan contains a number of objectives and policies relevant to ecology, biodiversity, nature conservation and green infrastructure. These are summarised in Table 2. The next Wexford County Development Plan 2021 – 2027 is currently in draft form and is out for public consultation.

Reference	Objective / Policy
Objective NH01	To conserve and protect the integrit of sites designated for their habitats / wildlife or geological / geomorphological importance and prohibit development which would damage or threaten the integrity of these sites, including SACs, cSACs, SPAs, NHAs, pNHAs, Nature Reserves and Refuges for Fauna.
Objective NH03	To ensure that any plan or project and any associated works, individually or in combination with other plans or projects, are subject to Appropriate Assessment Screening to ensure there are no likely significant effects on the integrity (defined by the structure and function) of any Natura 2000 site(s) and that the requirements of Article 6(3) and 6(4) of the EU Habitats Directive are fully satisfied. Where the plan/project is likely to have a significant effect on a Natura 2000 site it shall be subject to Appropriate Assessment. The plan/project will proceed only after it has been ascertained that it will not adversely affect the integrity of the site or where in the absence of alternative solutions, the plan/project is deemed imperative for reasons of overriding public interest, all in accordance with the provisions of article 6(3) and 6(4) of the EU Habitats Directive.
Objective NH04	To ensure the protection and conservation of areas, sites and species and ecological networks/corridors of local biodiversity value outside the designated sites throughout the county.
Objective NH05	To ensure that traditional field boundaries, ponds or small woods which provide important ecological networks are protected. Where such features exist on land which is to be developed the applicant should demonstrate that the design of the development has resulted in the retention of these features insofar as is possible and that the existing biodiversity value of the site has been protected and enhanced.
Objective NH06	To protect individual or groups of trees and woodlands of particular amenity and nature conservation value and make Tree Preservation Orders where appropriate.
Objective NH07	To protect woodlands and hedgerows from damage and/or degradation and work to prevent the disruption of the connectivity of

	the woodlands and hedgerows of the county.
Objective NH08	To ensure, where appropriate, applications for development include proposals for native planting and leave a suitable ecological buffer zone between the development works and areas or features of ecological importance. Where hedgerows are required to be removed, the applicant/developer will be required to reinstate the hedgerows with a suitable replacement of native species to the satisfaction of the Council.
Objective NH09	To work with local communities, groups, landowners, National Parks and Wildlife Service and other relevant parties to identify, protect, manage and, where appropriate, enhance and promote sites of local biodiversity value
Objective NH10	To implement the actions identified in the Draft County Wexford Biodiversity Action Plan 2012-2017, or any subsequent plan, in partnership with all relevant parties and stakeholders.
Objective NH11	To complete the mapping of ecological networks/corridors of local biodiversity value outside of designated sites and afford appropriate protection to areas of ecological importance as required.
Objective GI01	To ensure the protection, enhancement and maintenance of the natural environment and recognise the economic, social, environmental and physical value of green spaces through the integration of Green Infrastructure planning and development in the planning process.
Objective GI04	To ensure the principles of Green Infrastructure and the County Green Infrastructure Strategy are used to inform the development management process in terms of design and layout of new residential schemes, business and industrial developments and other relevant projects, for example, through the integration of Sustainable Drainage Systems (SuDS) into the overall site concept and layout.
Objective GI05	To require new developments to contribute to the protection and enhancement of existing Green Infrastructure, and the provision of new Green Infrastructure where appropriate, in an integrated and coherent manner. Such development shall be in compliance with all other planning and environmental criteria and the development management standards contained in Chapter 18.
Objective GI06	To require proposals for medium to high-density residential schemes to have regard to the recommendations of the 'Green City Guidelines' (UCD Urban Institute of Ireland, 2008) when designing such schemes and to demonstrate this in the planning application.

Objective GI07	To require proposals for significant development to submit a Green Infrastructure Plan as part of the planning application.

Table 2 – Local Policies Relevant to Ecology and Nature Conservation

Heritage Plans

Ireland's National Biodiversity Plan identifies actions that need to be taken in order to understand and protect biodiversity in Ireland. It states that biodiversity and ecosystems in Ireland should be conserved and restored, to deliver benefits that are essential to all sectors of society and that Ireland should contribute to the efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally.

The Wexford Biodiversity Action Plan 2013-2018 identifies a number of objectives and policies in order to protect the natural heritage and biodiversity of Co. Wexford.

2. METHODOLOGY

2.1 STATEMENT OF COMPETENCY

This ecological assessment report was carried out by Noreen McLoughlin. Noreen is the owner and main ecologist at Whitehill Environmental. Noreen holds a BA (Hons) in Natural Science (Mod) Zoology and an MSc in freshwater ecology (TCD, Dublin). She has been a full member of the CIEEM (Chartered Institute of Ecology and Environmental Management) for over 15 years.

2.2 STUDY AREA

The study area encompasses all the land within the area defined in the plan submitted for planning consent, i.e., the proposed application site. In addition, important ecological habitats and receptors within the zone of influence of the proposed development were also studied.

2.3 DESK BASED STUDIES

The desk study involved the examination of aerial photographs, current and historical maps and plans and drawings of the site. In addition, information was collated on designated nature sites within a 15km radius of the proposed site and on protected and rare species within the 1km square of the site.

The following websites were used to access information and data:

- National Parks and Wildlife Service - aerial photographs and maps of designated sites, information on habitats and species within these sites and information on protected plant or animal species; conservation objectives, site synopses and standard data forms for relevant designated sites.
- Environmental Protection Agency (EPA)- Information pertaining to water quality, geology and licensed facilities within the area;
- National Biodiversity Data Centre (NBDC) – Information pertaining to protected plant and animal species within the study area;
- Torca Developments Ltd / McGill Planning – Details of the proposed plan, including site plans and specifications etc
- Wexford County Council – Information on planning history in the area.

2.4 FIELD BASED STUDIES

2020 Summer Surveys

A visit to the site of the proposed application in Enniscorthy was conducted on June 5th 2020, when field notes, species lists and photographs were taken. The site was surveyed in accordance with the Heritage Council's *Habitat Survey Guidelines* (Smith et al., 2010) and the Institute of Environmental Assessment's *Guidelines for Baselines Ecological Assessment* (IEA, 1995). Habitats within the application site were classified in accordance to Level 3 of *A Guide to Habitats in Ireland* (Fossit, 2000). These habitats are denoted in the text along with their habitat code, e.g., the habitat code for improved agricultural grassland is GA1. A species list was compiled and target notes were made. Mammal and bird activity was also noted. In addition, a survey of the macro-invertebrates of the river within the site was conducted using a standard 2mm hand held sweep net.

Separate mammal surveys of the site were also carried out in June 2020 by Brian Keeley of Wildlife Surveys Ireland. An otter and badger survey was undertaken on the 15th and 16th of June, when the riverbank, open ground and hedgerows were examined for large burrows, paw prints, dung pits, spraints or other evidence of mustelids. All areas of the fields were also checked for badger evidence.

For the bat survey, a Songmeter Mini(Mini) bat monitor was installed within the site on two sequential nights (15th and 16th June 2020) with a second Mini used on the 16thJune only. The Mini was placed at the small buildings within the site prior to dusk on 15thJune 2020 and then re-located to a stand of willow towards the river by 23.00 hours and finally it was moved to a mature free-standing oak at 4am until sunrise. On the second survey date (16th June 2020), a Mini was positioned at an oak tree within hedgerow within the proposed development area, while a second was positioned at a mature beech tree within the site and close to the riverbank.

The active bat survey was undertaken with an Echometer 3 heterodyne and time expansion ultrasonic detector, which is a handheld detector which has a screen for examining the received signals and a SD card for recording signals.

The survey involved a walked transect through the entire site, a riverside assessment and a walk through the more exposed lands. Observations of the relative abundance of bats within the site was made visually with the assistance of the bat detector signals. The site was again visited from 04.00 hours to 05.00 hours on the following mornings to assess for any evidence of bats returning to roosts within the trees or ruined buildings or immediately adjoining sites.

2021 Winter Surveys

Additional mammal and wintering bird survey for the site was carried out in January 2021 by Brian Keeley. The winter assessment was undertaken on 8th January 2021. The riverbank, open ground and hedgerow were all examined for evidence of any suitably large mammal burrows, paw prints, dung pits, spraints or other evidence of mustelids. All areas of the fields were also checked for badger evidence. In addition to this, the nearest bridges were examined for evidence of otters. In January 2021, the river was walked where water levels were sufficiently shallow wearing chest waders (in some stretches, the water level was high enough to prevent walking through the river).

The winter bird fauna of the site was assessed by a walked transect around all hedgerow, a walk along the river and observations within the open fields of the site using a Nikon Aculon 1- x 42 binoculars and an Opticron MM4 Travelscope. Any bird calls or birdsong noted was identified to species.

2.5 SURVEY CONSTRAINTS

There were no survey constraints associated with the assessment of habitats within the application site.

The dates were ideal for bat surveys. However, heavy rain fell at sunset on the 16th June 2020 but given a complete night of surveying on the 15thJune to dawn on the 16th June and good bat activity prior to dawn on 17th June, sufficient data is available from the site. Bat activity was even noted during continuous rain on 16th June after sunset but the handheld bat detector became increasingly waterlogged and inoperable.

The summer 2020 survey dates were outside of the optimal period for otters and badgers but this constraint was removed by re-surveying in January 2021. Access to the riverbank was therefore possible in January 2021 as the vegetation had died back sufficiently.

2.6 ASSESSMENT METHODOLOGY

Evaluation of Ecological Features

The methodologies used to determine the value of ecological resources, to characterise the impacts of the proposed scheme, and to assess the significance of impacts and any residual effects are described below. This approach is in accordance with the following guidelines and methodologies:

- *Guidelines for Ecological Impact Assessment in the United Kingdom* by the Chartered Institute of Ecology and Environmental Management (IEEM, 2006)

- *Guidelines On The Information To Be Contained In Environmental Impact* (EPA, 2002)
- *Draft Guidelines on Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA 2017)
- *Guidelines for Assessment of Ecological Impacts of National Road Schemes.* (NRA, 2009).

CIEEM suggest that to ensure a consistency of approach, ecological features are valued in accordance with their geographical frame of reference, as defined below:

- International
- National (Ireland)
- Regional (East)
- County (Wexford)
- District (Enniscorthy)
- Local/Townland (Enniscorthy Rural)

The above categories are then applied to the ecological features identified. Ecological features can be defined as:

- Designated sites (i.e., SACs, SPAs, NHAs, pNHAs, National Nature Reserves) or non-statutory locally designated sites and features.
- Non-designated sites and habitats and features of recognised biodiversity value, such as rivers and streams. The features being evaluated can be considered in the context of the site and locality and thus a more accurate assessment of the impacts in the locality can be made.

The criteria used in evaluating ecological habitats follow the NRA (2009) and CIEEM (2006). The site evaluation criteria are detailed in Table 3.

Ecological Valuation	Description
Internationally Important	• Sites designated (or qualifying for designation) as an SAC or SPA under the EU Habitats or Birds Directives. • Undesignated sites that fulfil criteria for designation as a European Site. • Features essential to maintaining the coherence of the Natura 2000 network. • Sites containing 'best examples' of the habitat types listed in

	Annex I of the Habitats Directive. • Resident or regularly occurring populations of birds listed in Annex I of the Birds Directive and species listed in Annex II and/or Annex IV of the Habitats Directive. • Ramsar Sites, World Heritage Sites or Biosphere Reserve. • Site hosting significant species populations under the Bonn Convention or Berne Convention. • Biogenetic Reserve or European Diploma Site. • Salmonid waters.
Nationally Important	• Sites or waters designated or proposed as an NHA*or Statutory Nature Reserve. • Refuge for fauna and flora protected under the Wild life Acts. • National Park. • Undesignated sites fulfilling criteria for designation as a NHA. • Statutory Nature Reserve. • Refuge for Fauna and Flora protected under the Wildlife Act. • Resident or regularly occurring populations (assessed to be important at the national level) of species protected under the Wildlife Acts and/or species listed on the relevant Red Data list). • Site containing viable areas of the habitat types listed in Annex I of the Habitats Directive.
County Importance	• Areas of Special Amenity. • Area subject to a Tree Preservation Order. • Area of High Amenity, or equivalent, designated under the County Development Plan. • Resident or regularly occurring populations (assessed to be important at the County level) of species of birds listed in Annex I of the Birds Directive, species listed in Annex II and/or IV of the Habitats Directive, species protected under the Wildlife Acts and/or species listed on the relevant Red Data list. • Site containing area(s) of the habitat types listed in Annex I of the Habitats Directive that do not fulfil criteria for valuation as of International or National Importance. • County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or local BAP. • Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness or populations of species that are uncommon within the county. • Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

Local Importance (higher value)	• Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP. • Resident or regularly occurring populations (assessed to be important at the Local level) of species of birds listed in Annex I of the Birds Directive, species listed in Annex II and/or IV of the Habitats Directive, species protected under the Wildlife Acts and/or species listed in the relevant Red Data list. • Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality. • Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
Local Importance (lower value)	• Sites containing small areas of semi-natural habitat that are of some local importance for wildlife. • Sites of features containing non-native species that are of some importance in maintaining habitat links.

Table 3 - Conservation Evaluation (after Natura Site Evaluation Scheme, NRA, 2009).

Assessment of Impacts

The assessment of potential ecological impacts has been carried out using guidelines published by the EPA and the CIEEM. They can be summarised as:

- The identification of the range of potential impacts which can reasonably be expected to occur should the proposed developments receive planning consent;
- The consideration of the systems and processes in place to avoid, reduce and mitigate the possible effects of these impacts;
- The identification of opportunities for ecological enhancement within the site.

Impacts are defined as being positive, negative or neutral. A significant impact is defined as an impact upon the integrity of a defined ecosystem and/or the conservation status of a habitat or species within a given area.

Where a potential negative impact has been identified, mitigation measures have been formulated using best practices techniques and guidance to prevent, reduce or offset the impact.

3. DEVELOPMENT DESCRIPTION

Torca Developments Ltd have indicated their intention to shortly apply to An Bord Pleanála for planning permission for a residential development on a site at Enniscorthy Rural, Enniscorthy, Co. Wexford. This proposed strategic housing development (SHD) will comprise:

A residential development of 233 no. units (53 no., 3-4 bed houses and 180 no. 1/2/3 bed duplexes/apartments). Provision of a creche. Associated car parking, bicycle parking, and open spaces/landscaping. Vehicular and pedestrian accesses provided via Carley's Bridge Road to the north west, pedestrian/cyclist access via Carley's Bridge Road to the north and Millbrook Residential Estate to the east of the site. All associated site works including boundary treatments, plant, bin stores, site services and connections to facilitate the development.

An extract from the planning drawings can be seen in Figure 1.

Wastewater

Wastewater from the application site will be directed to the Enniscorthy Wastewater Treatment plant and Irish Water have approved this connection.

Surface Water Treatment

Sweeney Consulting Engineers Limited have carried out calculations, in accordance with SUDS guidelines, to determine the volume of attenuation required for the proposed development site. It is proposed to split the stormwater drainage network for the development into two zones. There will be an attenuation system for each zone and the attenuated stormwater will discharge into the River Urrin. Stormwater runoff will be limited to the greenfield run-off rate and in addition, attenuation will be provided for a 1 in 30 year storm event, and the site will be designed to accommodate the additional waters generated in a 1 in 100 year storm event, without flooding any property within the proposed development or any neighbouring property.

Construction Management Plan

A Construction Management Plan has been prepared for this proposed development by Traynor Environmental Ltd. This plan has been reviewed and its implementation has been assessed as part of the final Natura Impact Statement and Ecological Impact Statement. The plan has taken into account the mitigation measures in this EcIA report and the NIS.

Flood Risk Assessment

A Site Specific Flood Risk Assessment for the site has been prepared by IE Consulting, in accordance with "The Planning System and Flood Risk Management Guidelines – DoEHLG-200". The primary flood risk to the proposed site can be attributed to a fluvial flood event in the

River Urrin and River Lyre adjacent to the western and south-western boundary of the site. The site is not at risk of groundwater flooding.

A detailed Digital Terrain Model (DTM) has been developed for the site. Utilising the DTM, and the predicted 1 in 100 year (1% AEP) and 1 in 1000 year (0.1% AEP) flood levels, the flood extents have been delineated over the full extent of the DTM. This analysis has determined that the south-western area of the site falls within Flood Zone 'A' and Flood Zone 'B'. The majority of the area of the site where development is proposed is located in Flood Zone 'C'.

Secondary pluvial flood risk can also be attributed to a potential surcharge of the urban drainage network and /or damage to the water supply infrastructure in the vicinity of the site. It is anticipated that any flooding due to surcharge of the foul sewer located close to the northern boundary of the site would spill out onto Carley's Bridge Road and be picked up by existing stormwater gullies located in the road. It is not anticipated that these waters would enter the boundary of the site. It is also predicted that any flooding due to a surcharge of the stormwater or foul manholes within the site would likely cause these waters to spill out onto the proposed development site and flow downhill in a southerly direction toward the River Urrin, before spilling into the river and away from the site. It is not anticipated that this would result in any ponding or flooding within the site.

Secondary flood risk can be attributed to a potential surcharge due to a blockage in the bridge located on the River Lyre adjacent to the north-western boundary of the proposed development site. In the event the bridge becomes blocked and begins to surcharge flood waters would surcharge/back up the River Lyre, overtop the bank and potentially spill out onto the surrounding land and would eventually flow in a southerly direction into the River Urrin and away from the proposed development site. Therefore, this secondary flood risk to the site is considered LOW.

The finished floor levels of the proposed houses shall be constructed to a minimum level of 8.65m OD, which is 1.15m above the peak 1 in 1000 year (0.1% AEP)flood level of 7.50m OD in the River Lyre at the proposed site entrance. This shall mitigate any residual risk associated with potential future climate change.

The access road and footpath located in the western area of the site shall be raised to a minimum level of 9.35m OD at the entrance to the site, which is 1.85m above the 1 in 1000 year flood level in this location. The access road and footpath located in the southern area of the site shall be raised to a minimum level of 7.50m OD, which is 1.56m above the 1 in 1000 year

flood level of 5.94m ODin this location. This shall mitigate any residual risk associated with potential future climate change.

Flood storage compensation shall be provided in the proposed green open space area to account for flood waters that may be displaced as a result of raising the grounds in the southern area of the proposed development site above the 1 in 1000 year flood level.

There are existing foul and stormwater pipes located within the site as well as an existing field drainage channel that traverses the site. It is proposed to divert the existing foul and stormwater pipes and pipe the field drainage channel so that all pipes are located within the proposed roads. In the event any of the diverted drainage was to surcharge any potential flood waters would spill onto the proposed road. These waters would be collected by the proposed road gullies within the site or continue to flow along the road to the south-western area of the site and spill into the proposed green open space in the south-western area of the site. Overall, the potential flood risk posed to the site is considered to be low.

In consideration of implementation of the recommendations of this SSFRA the flood risk to and from the proposed development site is considered to be low. Development of the site is not expected to result in an adverse impact to the hydrological regime of the area or increase flood risk elsewhere.

Landscape Plan

A comprehensive landscape plan and a Biodiversity Action Plan has been prepared for the proposed development by Landscape Design Services. The plan has been reviewed as part of this EcIA and the NIS. The plan contains recommendations for the inclusions of a large number of native Irish species, along with the creation of a number of natural habitats on the site. Where possible, natural features have been included for the attenuation of surface water. In addition, existing ecological features of the site have been incorporated. It should be noted that a minimum riparian buffer zone of 15m has been retained along the banks of the river, where no infrastructure or hard landscaping will take place. This is in accordance with IFI guidelines (*Planning for Watercourse in the Urban Environment. IFI, 2020).*

Figure 1 – Extract from Planning Drawing (as prepared by BDA Architecture)

4. RECEIVING ENVIRONMENT

This section provides an overview of the existing ecological conditions within the site and the surrounding environment.

4.1 SITE LOCATION & GENERAL DESCRIPTION

The site in question is located on the outskirts of Enniscorthy town, approximately 1.1km south-west of the town centre. Access to the site will be via a local, third class road, known locally as Carley's Bridge Road. The predominant land-uses around the site consist of agriculture and the extended urban fabric of Enniscorthy (mostly residential areas). The dominant habitats surrounding the site include improved agricultural grassland, buildings and artificial surfaces, amenity grasslands, mixed woodlands, hedgerows and treelines. The River Urrin and its riparian habitats are also adjacent to the application site. Site location maps can be seen in Figures 2 and 3.

Under the Enniscorthy Town and Environs Development Plan 2008 – 2014 (as extended to 2019), the majority of lands subject to this application are zoned R1, i.e., new residential / low medium density. The remainder, i.e., those extending along the Urrin River, have been zoned as G5, i.e., for local space and amenity.

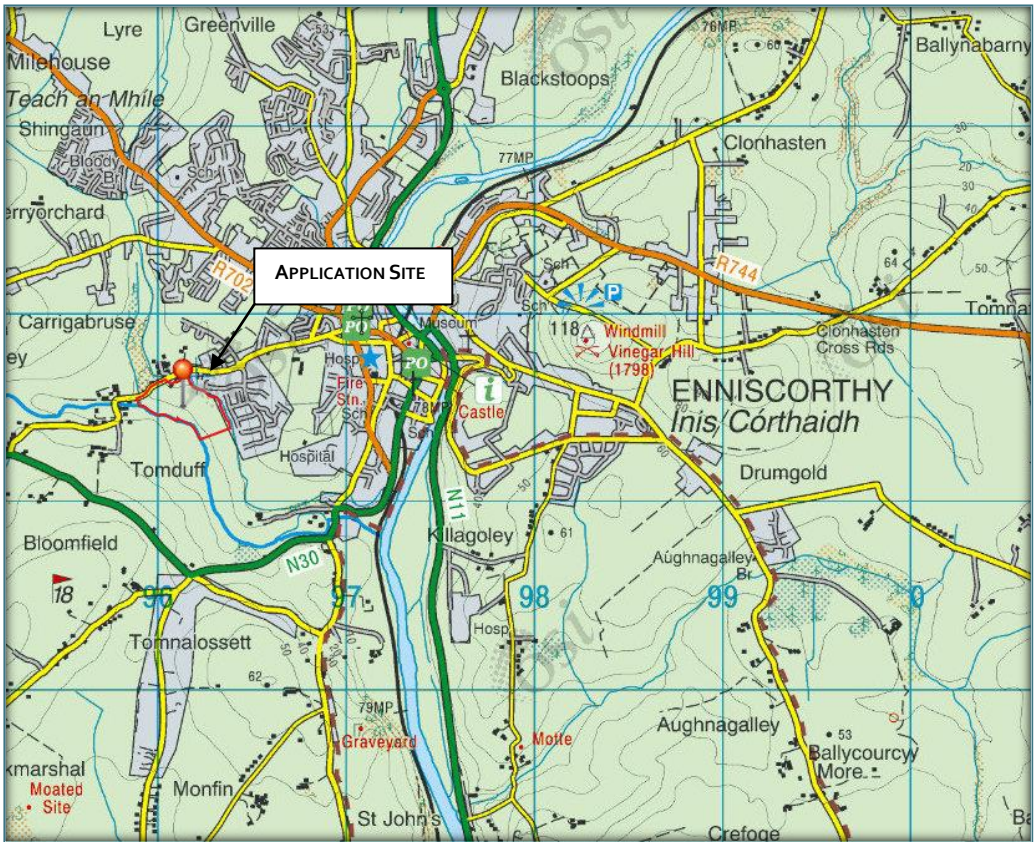


Figure 2 – Site Location Map

Figure 3 – Site Location Map. Application Site is Outlined in Red.

Habitats and Land-Use Surrounding the Site

The main habitats surrounding the site were assessed using aerial photographs and classified in accordance with Fossit (2000). The sub-urban fabric of Enniscorthy lies to the north-east and east of the site. These areas consist of buildings and artificial surfaces (BL3), along with amenity grasslands (GA2), flower beds and borders (BC4) and scattered trees and parklands (WD5). To the north-west, west and south of the application site, agriculture is the dominant land use and improved agricultural grassland (GA1) is the dominant habitat. Other habitats represented locally include treelines (WL2), hedgerows (WL1) and small areas of mixed broadleaved woodlands (WD1). There are also numerous watercourses surrounding and within the site, including the Urrin River and its tributaries.

An overview of the local habitats surrounding the application site can be seen in the aerial photograph in Figure 4.

Figure 4 – Aerial Photograph Showing Habitats Surrounding the Application Site. Local Watercourses are Highlighted in Blue.

4.2 DESIGNATED SITES

Natura 2000 Sites

The proposed application site is not within or immediately adjacent to any site that has been designated as a Special Area of Conservation (SAC) or a Special Protection Area (SPA) under the EU Habitats or EU Birds Directive.

There are three Natura 2000 sites within 15km of this proposed development. These sites are summarised in Table 4. The location of the application site in relation to these designated areas is shown in Figure 5 and a full synopsis of these sites can be read online on the website of the National Parks and Wildlife Service (www.npws.ie).

Site Name & Code	Distance from Site	Qualifying Interests
Slaney River Valley SAC 000781	977m south-east / 1.4km downstream via Urrin River	• Estuaries • Mudflats and sandflats not covered by seawater at low tide • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) • Mediterranean salt meadows (Juncetalia maritimi) • Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation • Old sessile oak woods with Ilex and *Blechnum* in the British Isles • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) • Freshwater Pearl Mussel *(Margaritifera margaritifera)* • Sea Lamprey *(Petromyzon marinus)* • Brook Lamprey *(Lampetra planeri)* • River Lamprey *(Lampetra fluviatilis)* • Twaite Shad *(Alosa fallax fallax)* • Salmon *(Salmo salar)* • Otter *(Lutra lutra)* • Common Seal *(Phoca vitulina)*
Wexford Harbour and Slobs SPA 004076	1km south-east / 1.4km downstream via Urrin River	• Little Grebe *(Tachybaptus ruficollis)* • Great Crested Grebe *(Podiceps cristatus)* • Cormorant *(Phalacrocorax carbo)* • Grey Heron *(Ardea cinerea)* • Bewick's Swan *(Cygnus columbianus bewickii)* • Whooper Swan *(Cygnus cygnus)* • Light-bellied Brent Goose *(Branta*

		bernicla hrota) • Shelduck *(Tadorna tadorna)* • Wigeon *(Anas penelope)* • Teal *(Anas crecca)* • Mallard *(Anas platyrhynchos)* • Pintail *(Anas acuta)* • Scaup *(Aythya marila)* • Goldeneye *(Bucephala clangula)* • Red-breasted Merganser *(Mergus serrator)* • Hen Harrier *(Circus cyaneus)* • Coot *(Fulica atra)* • Oystercatcher *(Haematopus ostralegus)* • Golden Plover *(Pluvialis apricaria)* • Grey Plover *(Pluvialis squatarola)* • Lapwing *(Vanellus vanellus)* • Knot *(Calidris canutus)* • Sanderling *(Calidris alba)* • Dunlin *(Calidris alpina)* • Black-tailed Godwit *(Limosa limosa)* • Bar-tailed Godwit *(Limosa lapponica)* • Curlew *(Numenius arquata)* • Redshank *(Tringa totanus)* • Black-headed Gull *(Chroicocephalus ridibundus)* • Lesser Black-backed Gull *(Larus fuscus)* • Little Tern *(Sterna albifrons)* • Greenland White-fronted Goose *(Anser albifrons flavirostris)* • Wetland and Waterbirds
Blackstairs Mountains SAC 000770	13.3km north-west	• Northern Atlantic wet heaths with *Erica tetralix* • European dry heaths

Table 4 – Natura 2000 Sites of Relevance to the Proposed Development

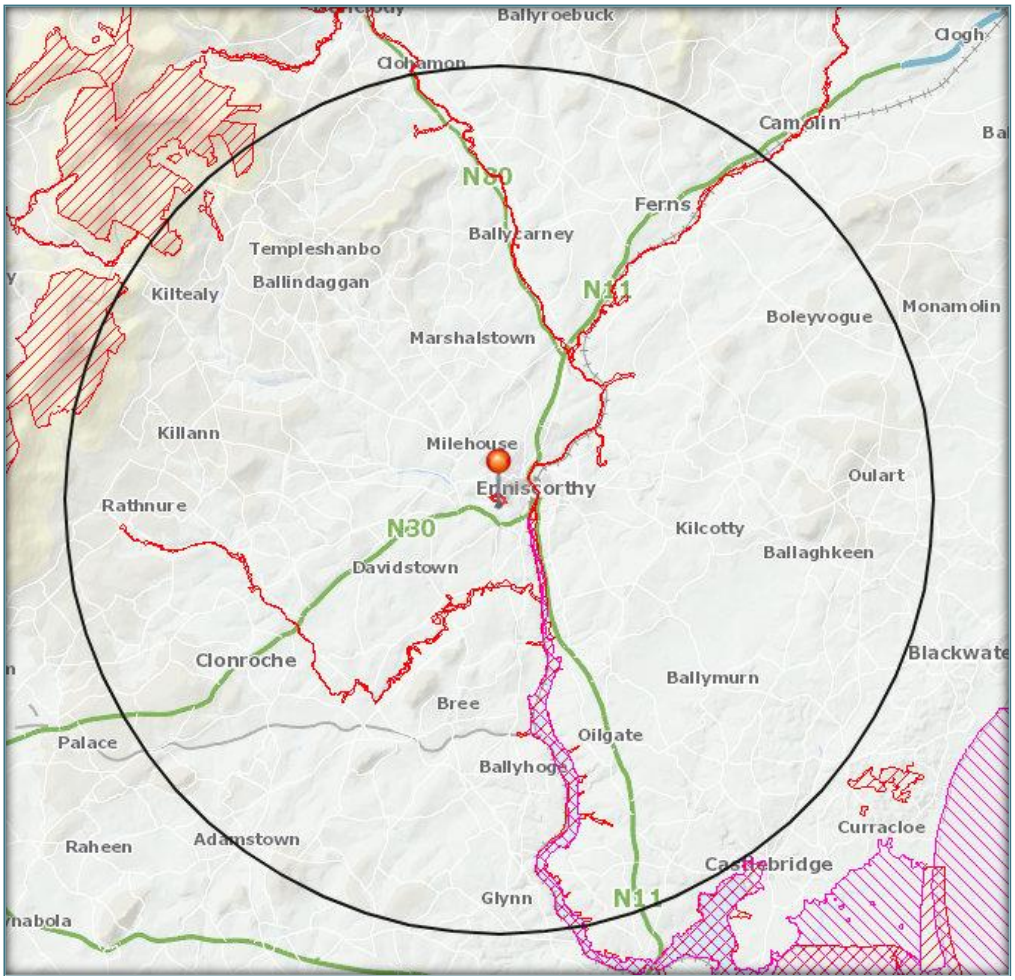


Figure 5 – Designated Sites within 15km of the Application Site (Pinned).

SACs – Red Hatching, SPAs – Pink Hatching.

The generic conservation objectives of the SACs are:

To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.

The generic conservation objectives of the SPAs are:

To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.

The favourable conservation status of a habitat is achieved when:

- Its natural range and area it covers within that range is 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;
- The conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- The 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;
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future;
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

An Appropriate Assessment as required under Article 6(3) of the EU Habitats Directive has been prepared in relation to this proposed application at Enniscorthy Rural. It was determined that due to hydrological connectivity, that potential impacts upon European sites could not be ruled out. Therefore, a Stage 2 Appropriate Assessment (Natura Impact Statement) for this proposed development site has been carried out.

Nationally Important Sites

The application site is not within or immediately adjacent to any nationally designated site, such as a Natural Heritage Area or a proposed Natural Heritage Area. It is within 15km of five sites that have been designated as proposed Natural Heritage Areas. These are summarised in Table 5 and a map showing their locations relative to the application site is shown in Figure 6.

Site Name	Distance from Proposed Development	Connectivity
Slaney River Valley pNHA 000781	911m east and 1.4km downstream	Yes – via the Urrin River
Ballynabarbey Woods pNHA 000746	3.5km north-east	No
Killoughrum Forest pNHA 000765	4.9km north-west	Yes, but this pNHA is upstream of the application site so impacts will not occur
Blackstairs Mountains SAC 000770	13.1km north-west	No
Clone Fox Covert pNHA 000755	7.8km north-west	No

Table 5 – Nationally Important Sites within 15km of the Proposed Development

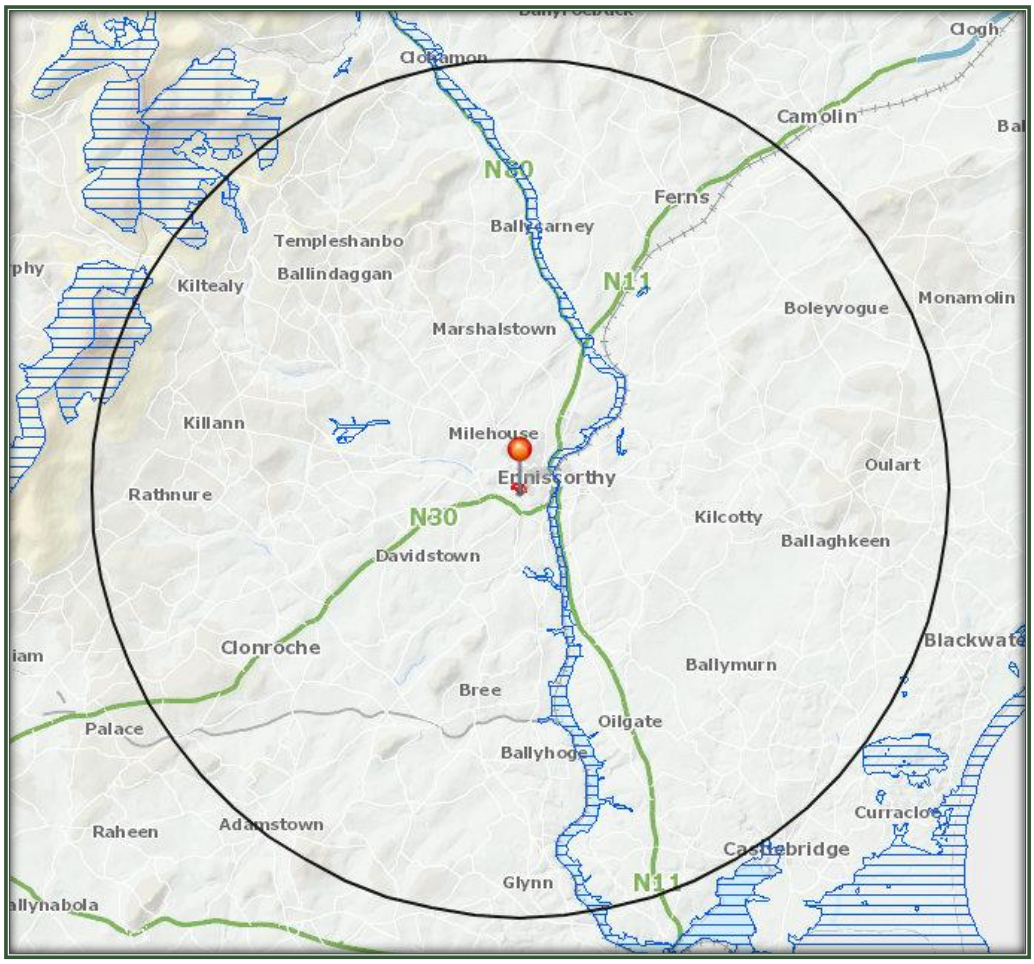


Figure 6 – The Proposed Application Site in Enniscorthy in Relation to proposed Natural Heritage Areas (Blue Cross Hatching)

4.3 GEOLOGY

An examination of the information relating to the geology of the site on the Geological Survey of Ireland Spatial Resources application revealed that the bedrock of the site is within the Campile Formation and it is described as "rhyolitic volcanics, gresy and brown slates". The main soil type is till derived from Lower Palaeozoic shales, whilst the subsoil consists of shale till from the Lower Paleozoic. The nature of the geology of the site is important as it will determined the habitats within the site, particular any semi-natural grassland habitats that are present.

4.4 FLORA

Habitats within the Study Area

Overview

No part of the site lies within any area that is designated for nature conservation purposes. The habitats within the site range from low – high biodiversity value. The natural habitats within the application site include areas of improved agricultural grasslands (GA1), dry meadows and grassy verges (GS2), hedgerows (WL1), treelines (WL2), drainage ditches (FW4) and depositing lowland river (FW2). These habitats are described in greater detail below whilst a habitat map is illustrated in Figure 8. A full list of the plant species recorded from the study area is shown in Appendix I and photos of the site can be seen in Appendix II.

Description

The application site consists of two relatively well drained fields that are separated by a hedgerow. The site slopes steeply down towards the River Urrin, which flows along the western boundary of the site. The site is bounded to the north by the Carley's Bridge road, to the east by the rear gardens of the Millbrook Estate, and to the south by a small area of deciduous woodland.

The dominant habitat within the application is improved agricultural grassland (GA1). The species here are typical for this type of habitat – grasses are dominant and they include meadow grasses *Poa* sp. and rye grasses *Lolium* sp. Broadleaved species include meadow buttercup *Ranunculus acris*, creeping buttercup *Ranunculus repens*, spear thistle *Cirsium vulgare,* white clover *Trifolium repens* and red clover *Trifolium pratense*. Certain areas of the field are less improved and are more akin to a dry calcareous and neutral grassland habitat (GS1). Species noted in these areas include black medick *Medicago lupulina* and ragwort *Jacobaea vulgaris.*

There is a poorly drained hollow in the north-western section of the site, and this area has been colonised by grey willow *Salix cinerea* and compact rush *Juncus conglomeratus.* For the purpose of the habitat classification, this was categorised as scrub WS1.

In the western portion of the field, and at the bottom of the slope near to the river, the land is more poorly drained and this is indicated by the presence of rushes (*Juncus* sp), meadowsweet *Filipendula ulmaria* and horsetail *Equisetum* sp.

There are a number of watercourses on the site, including drainage ditches (FW4) along the external and internal site boundaries. The River Urrin forms the western boundary of the application site, and this is a depositing lowland river (FW2). The river at this location is approximately 8m wide and on the day of surveying it was relatively shallow and with a

moderate flow. Rain levels were significantly lower than normal in the proceeding months; therefore, discharge to this river is likely to be much reduced compared to normal levels. The clarity of the water in the river was relatively high on the day, and instream species were noted, including water crowfoot *Ranunculus penicillatus.* Bankside species included water dropwort *Oenanthe lachenalia,* water mint *Mentha aquatica* and Indian balsam *Impatiens glandulifera*. An extensive collection of household rubbish was noted in the river, likely to have been washed down during the heavy rain of early spring.

The boundaries of the site to the north, east and south consist of a mosaic of hedgerows (WL1) and treelines (WL2). Fossit defines the treeline (WL2) as a narrow row or single line of trees that is greater that 5m in height that typically occurs along field or property boundaries, whilst a hedgerow (WL1) is described as a linear feature less than 5m in height. Often, these habitats grade into and out of each other along liner boundaries, making it difficult to map accurately or clearly on a habitat map. Overall, treelines and hedgerows are an important feature of the application site and they occur along the majority of site boundaries, as well as along the internal site boundaries.

The boundaries within the site are generally well developed and structured and they have been assessed in detail as part of the accompanying arboricultural assessment that has been prepared for the site. The dominant species in these boundaries include sessile oak *Quercus petraea,* ash *Fraxinus excelsior,* beech *Fagus sylvatica*, hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa.* These hedgerows and treelines are associated with grassy verge habitats (dry meadows and grassy verges - GS2) and the common species along these verges are typical for agricultural verges. They include nettles *Urtica dioca*, common hogweed *Heracleum sphondylium* and Yorkshire fog *Holcus lanatus*.

When assessing the site, all boundaries were numbered and described. The most important boundaries to this assessment are described in greater detail below and their location is shown in Figure 7.

Boundary 1: This boundary forms the perimeter of the site along Carley's Bridge road and it also extends behind the farm buildings and houses in the north of the site. This boundary is dominated by a hedgerow with occasional small ash trees. Hawthorn, blackthorn and brambles *Rubus fruticosus* are all common, whilst dog rose *Rosa canina* and gorse *Ulex europaeus* are also frequent throughout it. Willow *Salix* sp. is also present. The group of trees near to the buildings include mature specimens of sessile oak, beech, sycamore *Acer pseudoplantatus*, ash and elder *Sambucus nigra.* Verging species along this boundary include nettles, male fern *Dryopteris filix-mas* and cow parsley *Anthriscus Sylvestris.*

Boundary 2: This boundary occurs along the eastern site perimeter, and it forms the rear boundary of the houses in the Millbrook Estate. It was classed as a hedgerow initially although it matures to a treeline towards the southern portion of the site. Species noted in this boundary included hawthorn, blackthorn, gorse, willow and elder, with occasional immature oak and ash. In certain mid-sections of the site, this boundary is gappy and poorly structured. In the southern section of this boundary, trees are dominant and species include oak, ash, willow and elder.

Boundary 3: This is the internal boundary feature within the site, and it has been classed as a hedgerow with some notable mature oak trees that have been classed as having high landscape value. There is a drain associated with this boundary and in the upper section of the field on the day of the survey this drain was dry and filled in with brambles. Gorse and willow are the most common species along this boundary.

Boundary 4: This boundary forms the southern perimeter of the application site, and it is a treeline with good structure. Ash is the dominant species, and elder, alder *Alnus glutinosa* and blackthorn are also common. It occurs in association with a drain.

Boundary 5: Boundary 5 extends along the banks of the Urrin River. It is a dense treeline in some parts, particularly in the southern corner of the site. It occurs on a moderately steep slope down to the river, which is at a much lower level to the ground level of the site. There is a dense thicket of vegetation at in the south-western corner of the site, where willows, alder, brambles and sycamore are all common. Of particular note here was the presence of the invasive species Indian balsam *Impatiens glandulifera*, which seems to be spreading prolifically along the entire river edge. Mature oak were also noted along the banks here. Beyond the mid-section of the site and to the north of the site, the treeline along the riverbank thins out considerably and the bank becomes fairly open and unshaded. Alder is the dominant tree along this section of the river. Balsam was noted also in this area.

Figure 7 – Boundaries Within the Study Area

Arboricultural Assessment

In addition to the ecological and biodiversity assessment of the trees and hedgerows within the application site, a separate arboricultural assessment was undertaken by Independent Tree Surveys. The report prepared undertook an assessment of the quality and value of the trees within the site, along with an assessment of the impact of the proposed development upon the tree population in and around the site.

The survey identified 41 individual trees within the application site. These trees were classified into four different tree condition categories. These categories and the proportions of trees within the application site falling into these categories are listed below.

- Category A: Trees of high value and quality – 3 trees
- Category B: Trees of moderate value and quality – 27 trees and one group of trees
- Category C: Trees of low quality and value – 9 trees, 2 groups of trees, 3 hedges
- Category U: Trees of very low value which should be removed – 2 trees

It should be understood, that whilst a tree may be of low value arboriculturally, its value in an ecological and biodiversity context can by high, as trees of poor condition can provide value to nesting birds, roosting bats as well as a wide range of invertebrates. They also form important

ecological networks and ecological commuting corridors between areas of high biodiversity value.

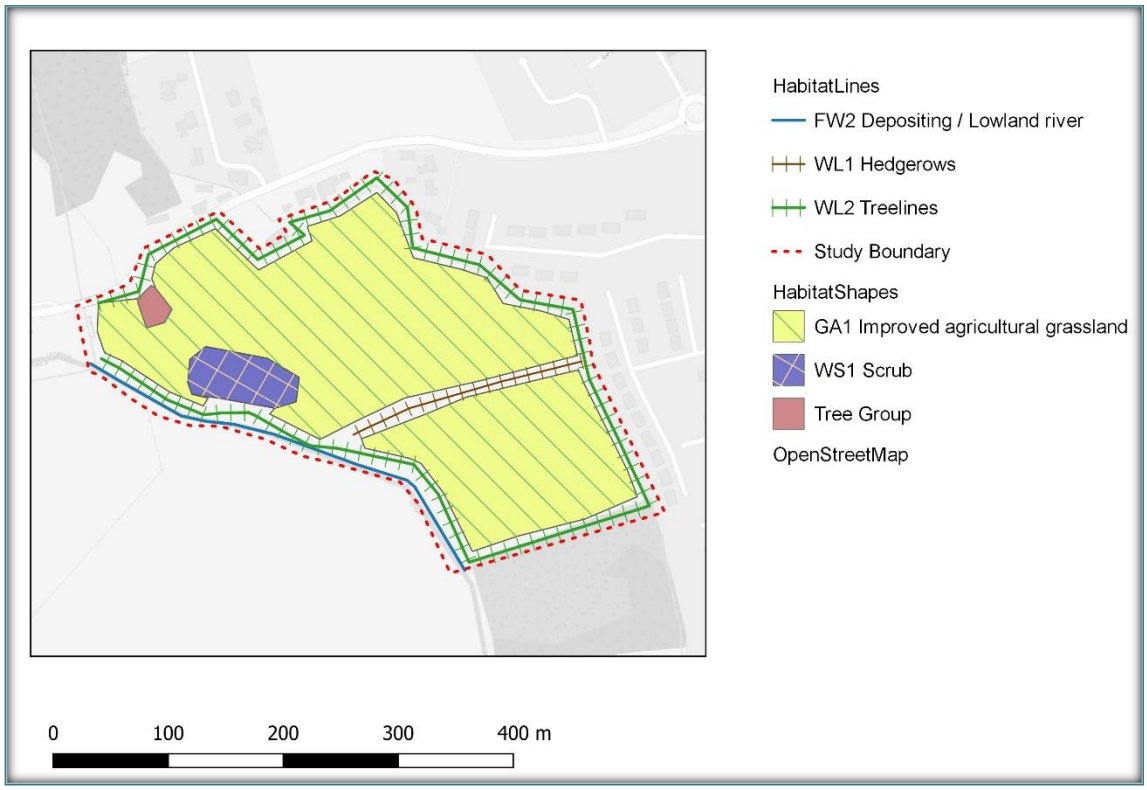


Figure 8 – Habitat Map showing the Extent of Dominant Habitat Features within the Study Area

Rare and Protected Plant Species

An examination of the website of the National Parks and Wildlife, the National Biodiversity Data Centre and the Online Atlas of Vascular Plants for Ireland revealed that there are no records for any plant species protected under the Flora Protection Order from within the 10km square (S93) of the proposed application sites.

Invasive Species

Records for the presence of Japanese knotweed *Fallopia japonica* and Indian balsam *Impatiens glandulifera* exist for the Enniscorthy Rural townland. These are high impact invasive species. They spread rapidly and easily and have a significant negative impact upon native flora and local biodiversity. These species are both listed under Schedule Three of the Birds and Habitats Regulations 2011.

During the site walkover, no incidences of Japanese knotweed were noted. However, Indian balsam was noted as occurring extensively along the riparian edge of the River Urrin, most notability in the south-western corner. It is also extending into the lower section of the drain that bisects the site.

4.5 FAUNA

Protected Mammals

Records from the National Biodiversity Data Centre reveal the presence of the following protected terrestrial mammals from within the 10km square (S93) of this proposed application site:

- Badger *Meles meles**
- European Hedgehog *Erinaceus europaeus**
- Otter *Lutra lutra*
- Pine Marten *Martes martes*
- Pygmy shrew *Sorex minutes*
- Red squirrel *Sciurus vulgaris*
- Pipistrelle *Pipistrellus pipistrellus sensu lato*
- Lesser Noctule *Nyctalus leisleri*
- Soprano *Pipistrelle Pipistrellus pygmaeus*
- Brown long-eared bat *Plecotus auratus**

- Daubenton's bat *Myotis daubentoniid*
- Whiskered bat *Myotis mystacinus**

** Indicates that this species has been recorded from the relevant 1km² of this application site, i.e., S9539 and S9639*

All these species are protected under the Irish Wildlife Acts. In addition, the otter *Lutra lutra* is protected under Annex II of the European Habitats Directive.

The summer and winter mammal surveys undertaken by Brian Keely of Wildlife Surveys Ireland determined that no otter holts were noted along the riverbank, within open ground or in the hedgerows. One partial spraint was discovered on a rock in the river, but it is possible that this is a mink spraint as the size of the spraint fragment was very small. The spraint was dried and several days to weeks old and it did not have a strong odour. No otter prints were noted in mud or sand along the riverbank. No otters or badgers were seen or heard during the nighttime survey work and there are no badger setts on the site.

Bats

A single soprano pipistrelle was seen to return to the upper branches of a mature oak that lies to the south of the access road into the housing development proposed within the site. This tree has a very high roost potential and it may serve as a roost site for other species on other occasions. It was noted that this would be a suitable tree for Leisler's bats amongst others.

The species of bats noted within the site (roosting and/or feeding) included:

- Common pipistrelle *Pipistrellus pipistrellus*
- Soprano pipistrelle *Pipistrellus pygmaeus*
- Leisler's bat *Nyctalus leisleri*
- Daubenton's bat *Myotis daubentonii*

Three species of bat were seen to enter and depart the site at times that indicate nearby roost sites. Common pipistrelles were seen to enter the site from housing on the eastern edge of the site and leave at a similar location and are within a house or shed in this area. The final bat seen on 17thJune 2020, a Leisler's bat, flew almost directly north from the site from close to the southern edge at the river having fed around a beech tree within the site and over the pasture itself.

Daubenton's bat was recorded by the static monitors feeding along the river and along the willow scrub.

There are no tree roosts within the trees that will be removed. One tree roost was noted in the oak tree that is free-standing close to the perimeter of the site. There are no building roosts within the site based on the activity survey and on an absence of any other bat signs on or around the buildings (e.g. droppings or staining).

Birds

Species Returned from Desk Study

A study of records of the NBDC for bird species within 2km of the proposed development site returned records for 65 species of birds. This included 16 species included on the amber list and 6 species included on the red list of species of Birds of Conservation Concern in Ireland 2014-2019 (Colhoun and Cummins, 2014). Red-listed species are those of highest conservation priority, being globally threatened, declining rapidly in abundance or range, or having undergone historic declines from which they have not recently recovered. Amber-listed species have an unfavourable status in Europe, have moderately declined in abundance or range, have a very small population size, have a localised distribution, or occur in internationally important numbers (Colhoun and Cummins, 2014).

The subject lands contain suitable foraging, nesting and aquatic habitats. Red and amber listed species associated with these habitats and returned from the desk study include:

Amber Listed Species

- Barn Swallow (*Hirundo rustica*)
- Common Kestrel (*Falco tinnunculus*)
- Common Kingfisher (*Alcedo atthis*)
- Common Starling (*Sturnus vulgaris*)
- Common Swift (*Apus apus*)
- Eurasian Teal (*Anas crecca*)
- Eurasian Wigeon (*Anas penelope*)
- Great Cormorant (*Phalacrocorax carbo*)
- House Martin (*Delichon urbicum*)
- House Sparrow (*Passer domesticus*)
- Lesser Black-backed Gull (*Larus fuscus*)
- Eurasian Woodcock (*Scolopax rusticola*)
- Mute Swan (*Cygnus olor*)
- Sand Martin (*Riparia riparia)*
- Spotted Flycatcher (*Muscicapa striata*)
- Stock Pigeon (*Columba oenas*)

Red Listed Species

- Black-headed Gull (Larus ridibundus)
- Common Redshank (Tringa totanus)
- European Golden Plover (*Pluvialis apricaria*)
- Herring Gull (*Larus argentatus*)
- Northern Lapwing *(Vanellus vanellus*)
- Yellowhammer (*Emberiza citrinella*)

Field Survey Results – Summer 2020

During the field survey, the following species were observed or heard:

- Chaffinch *Fringilla coelebs*
- Blackbird *Turdus merula*
- Blue tit *Cyanistes caeruleus*
- Great tit *Parus major*
- Jackdaw *Corvus monedula*
- Magpie *Pica pica*
- Pigeon *Columba livia domestica*
- Robin *Erithacus rubecula*
- Swallow *Hirundo rustica*
- Hooded crow *Corvus cornix*
- Rook *Corvus frugilegus*
- Sparrow *Passer domesticus*
- Common gull *Larus canus*
- Starling *Sturnus vulgaris*
- Willow warber *Phylloscopus trochilus*
- Reed bunting *Emberiza schoeniclus*

Field Survey Results – Winter 2021

During the field survey in January 2021, the following species were observed or heard:

- Sparrowhawk *Accipiter nisus*
- Buzzard *Buteo buteo*
- Rook *Corvus frugilegus*
- Hooded crow *Corvus cornix*
- Magpie *Pica pica*
- Woodpigeon *Columba palumbus*
- Cormorant *Phalacrocorax carbo*

- Blue tit *Cyanistes caeruleus*
- Wren *Troglodytes troglodytes*
- Chaffinch *Fringilla coelebs*
- Greenfinch *Carduelis chloris*
- Bullfinch *Pyrrhula pyrrhula*
- Goldfinch *Carduelis carduelis*
- Great tit *Parus major*
- Coal tit *Periparus ater*
- Robin *Erithacus rubecula*
- Blackbird *Turdus merula*
- Mistle thrush *Turdus viscivorus*
- Pied wagtail *Motacilla alba yarrellii*
- House sparrow *Passer domesticus*
- Pheasant *Phasianus colchicus*
- Snipe *Gallinago gallinago*
- Black headed gull *Chroicocephalus ridibundus*
- Herring gull *Larus argentatus*
- Goldcrest *Regulus regulus*
- Lapwing (flyover) *Vanellus vanellus*
- Redwing *Turdus iliacus*
- Starling *Sturnus vulgaris*
- Grey heron *Ardea cinerea*
- Dunnock *Prunella modularis*

A possible egret was noted briefly in neighbouring lands but there was insufficient view to confirm identification. The most probable identification was Little Egret (*Egretta garzetta*) with Great White Egret a lesser possibility (*Ardea alba*). Both of these species are Annex 1 under the Birds Directive. If this were a cattle egret (*Bubulcus ibis*), this is not an Annex 1 species (both cattle egret and Great White Egret were noted in Wexford in January 2021 (http://www.irishbirding.com/birds/web?task=BasicBirdSightingSearch&offset=50&county_id=31&orderby=latestfirst). The presence of one individual in neighbouring lands in the winter period does not indicate breeding of this species and there are limited suitable trees or associated habitat for this purpose.

Amphibians, Reptiles and Invertebrates

Although none were noted on the day of the survey, the drains / watercourses in the site would provide some suitable habitat for the common frog *Rana temporaria.* Smooth newts *Lissotriton vulgaris* and viviparous lizards *Lacerta vivipara* were not noted and are unlikely to occur within the site.

Weather conditions were still and dry on the day of the survey and consequently there were a range of invertebrates recorded on the wing during the survey including butterflies, dragonflies and bees. Species noted were:

- *Bombus terrestris*
- *Bombus lucorum*
- *Bombus lapidaries*
- *Bombus pascuorum*
- Meadow brown butterfly *Maniola jurtina*
- Small white butterfly *Pieris rapae*
- Ringlet butterfly Aphantopus hyperantus
- Small tortoisehell *Aglais urticae*
- Brown hawker dragonfly *Aeshna grandis*

Fisheries

Information on the fisheries of Urrin River upstream of Enniscorthy was obtained from the Inland Fisheries Ireland Water Framework Directive (WFD) mapping application. This interactive facility highlights the location of the WFD monitoring sites for fish in Ireland. The closest WFD monitoring point to the application site is on the Urrin River at Buck's Bridge, which is approximately 12km upstream of the application site. The last survey year was 2014. Species present in the Urrin River at this site include brown trout, European eel and salmon. Overall, species richness scored 3 and the WFD fish ecological status was described as good. All lamprey species and salmon are protected under the EU Habitats Directive.

4.6 AQUATIC ENVIRONMENT

Water Features and Quality

The application site is within the Slaney and Wexford Harbour Hydrometric Area and Catchment and the Urrin Sub-Catchment and Sub-Basin. The application site is adjacent to the Urrin River, which flows along the north-western boundary of the site. In addition, the River Lyre is close to the application site and its confluence with the River Urrin is in the north-western section of the site. There are also drainage ditches along the north-eastern and

southern site boundaries and in addition, there is another drainage ditch within the application site which occurs in association with the field boundary that transects the site from east to west. These drains lead to the Urrin River.

The Urrin River flows past the site in a southerly / easterly direction until its confluence with the River Slaney downstream of Enniscorthy and approximately 1.4km downstream of the application site.

The EPA have defined the ecological status of the Urrin River and its tributaries within this sub-catchment as being of moderate ecological status. Under the requirements of the Water Framework Directive (WFD) in Ireland this is unsatisfactory and good status must be reached by the end of the current cycle of the WFD. The Slaney River downstream of Enniscorthy is classed by the EPA as a transitional water body and they refer to it as the Upper Slaney Estuary. This has been classed as good ecological status and under the requirements of the Water Framework Directive this status is satisfactory and it must be maintained.

EPA Biological Water Quality

The results of the most recent Q value assessment for the upstream and downstream stations of the Urrin River are presented in Table 6.

Year	Site Name & Location	Q Value & Status
2019	Verona Bridge – 1.5km upstream	Q3-4 Moderate
2019	John's Bridge – 1.1km downstream	Q4 Good

Table 6 – Summary of the Recent EPA Results for Water Quality in the Urrin River

Bankside Q Analysis

As part of the field work for this site, a two-minute kick sample of the river was taken from a point within the application site. The sample was retained in a tray and examined on the bankside for a period of time to assess the approximate abundance of certain indicator species. The mayfly *Baetis rhodani* was the dominant organism in the sample, whilst Simuliidae (black fly larvae) were also common. Caseless caddis from the Hydropsychidae family were frequent. For the purpose of the Q assessment as defined by the EPA, these taxa are all group C organisms, which means they are relatively tolerant of organic pollution. Group A taxa are the most sensitive species, and these occurred in the sample in small to fair numbers. They were represented by mayflies from the Heptageniidae family. Group B taxa are slightly less sensitive, and they were represented by stoneflies from the Leuctridae families.

Overall, based on the relative abundance of the indicator taxa, the river at this point was assigned a Q4, i.e., good status. This status aligns with the 2019 result obtained by the EPA for John's Bridge, which is 1.1km downstream.

Aside from the biological status, there is a high amount of domestic rubbish in the river and this poses a risk to wildlife.

4.7 ECOLOGICAL EVALUATION

Summary of the Value of the Application Site

The site at Enniscorthy Rural is within 15km of three sites designated under the Natura 2000 network. It is 1.4km upstream of the Slaney River Valley SAC and the Wexford Harbour and Slobs SPA. As required under Article 6 (3) of the Habitats Directive a Stage 2 Appropriate Assessment report was prepared for the development and this was submitted as a Natura Impact Statement. This report concluded that with the implementation of mitigation measures, that the proposed development would not have any impacts upon any site designated under the Natura 2000 network.

The site is also within 15km of five sites designated as Natural Heritage Areas (NHAs and pNHAs). There are no potential impacts upon these sites arising from the proposed development. The site is hydrologically connected to the Killoughrum Forest pNHA, but it is downstream of it, therefore impacts are not likely.

Within the application site itself, the dominant habitats are improved agricultural grasslands, watercourses, hedgerows and treelines. The well-structured hedgerows and treelines are the most important ecological features on the site - these areas provide important nesting areas and safe commuting corridors for local populations of birds and small mammals, including potentially bats. Much of this habitat type has been lost locally with the urbanisation of the land surrounding the site. The watercourses are also of high ecological value, as they provide a direct link to the Urrin River, and therefore to the River Slaney.

The NRA guidelines on the Assessment of Ecological Impacts on National Road schemes (NRA, 2009) provides a rationale for the evaluation of ecological receptors within a site. Table 7 lists the habitats that have been described within the site and their associated ecological value, based on the NRA guidelines.

Habitat	Rating	Criteria
Improved Agricultural Grasslands – GA1 Dry calcareous and neutral grasslands – GS1 Dry meadows and Grassy verges – GS2 Scrub – WS1 Fragmentated Hedgerows (WL1) and Treelines (WL2)	Local Importance (Lower Value)	Limited biodiversity value although may provide some habitat opportunities for invertebrates and birds
Well Structured Hedgerow – WL1 Well Structured Treelines – WL2	Local Importance (Higher Value)	Semi-Natural Habitat that is higher in biodiversity value in a local context. Provides value for local populations of bats and birds.
Watercourses – FW2 Drainage Ditches – FW4	County - International Importance, i.e., as the Urrin River is a feature which is essential in maintaining the coherence of the Natura 2000 network.	All watercourses are at least of County Importance. In this instance, given the connectivity of the site to a Natura 2000 site, then this rating should be considered.

Table 7 – Ecological Features and their Evaluation

5. IMPACT ASSESSMENT

5.1 INTRODUCTION

The information gathered as part of the desk study and field survey for this proposed application has been used to complete an Ecological Impact Assessment (EcIA). This EcIA has been undertaken following the latest guidelines set out by CIEEM (2018) and the EPA.

The identification of potential impacts and the assessment of their significance typically requires the identification of the type and magnitude of the impacts. For example, will the impacts be short term or long term, direct, indirect or cumulative and will they occur during construction or operation. This section will establish whether the ecological impacts of the proposed development at Enniscorthy Rural are likely to occur and whether or not they are significant. These potential impacts will be examined with respect to the ecological receptors identified in the previous section.

The emphasis in EcIA is on "significant" effects, rather than all ecological effects (CIEEM, 2018). For the purpose of EcIA, a "significant effect" is an effect that either supports or undermines biodiversity conservation objectives for important ecological features for biodiversity in general. Conservation objectives may be specific (e.g., for a designated site) or broad (e.g., national / local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local.

A significant effect is an effect that if sufficiently important to require assessment and reporting so that the decision maker (i.e., Local Authority) is adequately informed of the environmental consequences of permitting the project. In broad terms, significant effects encompass impacts on structures and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution). (CIEEM, 2018).

5.2 IMPACTS UPON DESIGNATED SITES

Natura 2000 Sites

The application site is directly hydrologically connected to the Slaney River Valley SAC and the Wexford Harbour and Slobs SPA and the hydrological linkage is 1.4km. In a worst-case scenario and in the absence of mitigation, an accidental pollution event of a sufficient magnitude, either alone of in-combination with other pollution sources, could potentially affect the water quality in the Urrin River to an extent that undermines the conservation objectives of the Slaney River Valley SAC and the Wexford Harbour and Slobs SPA. A reduction in water quality in the SAC / SPA has the potential to affect the aquatic habitats and natural conditions that are required to maintain or achieve the specific attributes and targets of the qualifying interests and the conservation objectives that have been defined for these qualifying interest. Any impacts upon these Natura 2000 sites would be potentially significant at an international level.

Therefore, a Stage 2 Appropriate Assessment has been prepared for this proposed development and this has been submitted as a Natura Impact Statement. This NIS concluded that following mitigation, that the proposed development at Enniscorthy Rural will have no direct, indirect or cumulative impacts upon any site designated as a Special Area of Conservation or Special Protection Area.

Natural Heritage Areas

The proposed development site is also 1.4km upstream of the Slaney River Valley pNHA. Similar to the potential impacts upon the River Slaney SAC, impacts upon this pNHA could arise due to pollution of the River Urrin during the construction and operation of this proposed development. Any reductions in water quality could undermine the integrity of the pNHA and mitigation will need to be included to prevent or reduce these impacts. Impacts upon the pNHA would be potentially significant at an national-international level given the fact that the pNHA and SAC boundaries are overlapping.

5.3 IMPACTS WITHIN THE APPLICATION SITE

Development Phase

Should the developments at Enniscorthy Rural be allowed to proceed then the following impacts are likely to occur during the site preparation and construction of the proposed development.

- **Habitat loss and fragmentation** – All the grassland habitats within the application site will be lost to facilitate the construction of the housing development, including the houses, paths, access roads, attenuation measures, flood compensation measures and

landscaping. In addition, a proportion of the treelines and hedgerows within the application site may also be lost or fragmented. This includes approximately 163m hedgerow along Carly's Bridge Road (Boundary 1, Figure 7), as well as the removal of the upper section of the mid-site boundary (Boundary 3). This will have an impact upon the local biodiversity value of the site, whilst bird nesting habitats, potential bat roosts and ecological corridors will also be lost.

In addition, the riparian corridors of the drains within the application site will be lost whilst additional plans are included for the culverting of the drain within the site, whilst the lower portion of this drain will also be re-aligned. This will have an impact upon the overall ecological functionality of this drain.

There will be no infrastructure or hard landscaping within 15m of the Urrin River, as per IFI guidelines.

The arboricultural assessment for the site quantified the extent of tree loss within the site arising from the site clearance and development. Overall, the proposed development has been designed to try and minimise the direct loss of existing trees on the site, and the layout has been modified to allow for the retention of trees where practical. Some trees will need to be removed, however. A short line of five trees (labelled T5-T11 in the arborist's report) next to the old work yard in the northern part of the site will need to be removed, whilst tree T6 may also need to be removed if it proves impractical to retain the section of old stone wall out of which the tree is growing. The roadside hedge H1, along with tree T42 will require removal to create sightlines whilst a section of hedge H2 and tree T34 that runs through the site will also need removal.

Other mature trees and hedges around the site will be vulnerable to damage from demolition works and construction activity unless properly protected.

The proposed landscape scheme as prepared by Landscape Design Services has recognised the value of the existing biodiversity features within the site and in so far as possible, the existing hedgerows, treelines and trees of high landscape and biodiversity value, such as the existing oak tree along the proposed southern boulevard have been retained.

- **Pollution** – There are a number of drainage ditches within and adjacent to the application site, whilst the River Urrin also flows along the western site boundary. Therefore, impacts upon these aquatic receptors arising from the proposed development cannot be ruled out.

Site preparation and construction will involve the excavation of soil and the pouring of concrete for foundations and other hard surfaces. In addition, stormwater overflow from attenuation areas will be discharged into the River Urrin and this will necessitate the installation of a pipe and a headwall from the attenuation areas to the river.

Therefore, all these works have the potential to generate run-off into the water features that surround the site. If appropriate mitigation measures are not taken during the construction of the proposed development, then there is the possibility that water quality in these watercourses may be negatively impacted upon. Possible direct impacts include the pollution of the waters during construction with silt, oil, cement, hydraulic fluid etc. This may affect the habitat of protected species by reducing water quality. These substances would also have a toxic effect on the ecology of the water in general, directly affecting certain species and their food supplies. In addition, an increase in the siltation levels of local waterbodies could result in the smothering of fish eggs, an increase in the mortality rate in fishes of all ages, a reduction in the amount of food available for fish and the creation of impediments to the movement of fish. Protected species in the Urrin include salmon, eel and trout. Pollution of the water with hydrocarbons, cement and concrete during the construction phase of this proposed development could also have a significant negative effect on the fish and aquatic invertebrate populations. This could be significant on an international level, as the Urrin River leads to the Slaney River Valley SAC and the Wexford Harbour and Slobs SPA.

- **Hydrological Impacts** – A Hydrological Impact Report has been prepared for the proposed development by IE Consulting. From data gathered, a conventional source-pathway-receptor (S-P-R) model was applied to assess potential impacts on environmental receptors arising from the proposed development. Potential S-P-R links were assessed for both the construction stage (short-term) and the completed stage (long-term). On the basis of this information any activities on the site are considered to present a low to moderate risk to the underlying aquifer. This means that the surface water environment is at a higher risk of impact from pollution, e.g., from re-fuelling of construction vehicles, leakage from site equipment, wet cement and other works leading to the runoff of sediment.

- **Disturbance to local wildlife** – The removal of vegetation during the bird nesting season could result in direct mortality of these birds. In addition, during site preparation and construction, local populations of birds and mammals may be disturbed by the increase in noise, traffic and human activity. Bird nesting sites may also be lost. Overall, the loss of

the open land and any treelines/hedgerows/scrub habitats may reduce the loss of nesting, roosting and foraging areas for some bird species, including those identified as part of the summer and winter surveys.

Potential impacts on bats are likely to include the loss of potential roosting and hibernating sites due to the removal of mature trees. There will also be a loss of open habitat for foraging, whilst the ecological corridors that bats use for navigation will also be lost.

The mammal surveys of the site determined that there are no badger setts in the site, and no evidence of badgers were noted in the summer and winter surveys. However, this does not mean that they do not commute occasionally though the site. Otters are likely to commute along the banks of the River Urrin. Without proper mitigation, impacts upon this species could include the loss and fragmentation of the commuting and territorial habitats of these species. Potential impacts upon this species could also arise during the installation of the drainage pipes and headwall from the attenuation tanks.

Operational Phase

The majority of impacts will occur during the development phase of this development. However, certain ongoing impacts on local habitats / wildlife may occur during the operation of the development.

- **Disturbance to local wildlife –** Once operational, the proposed development will facilitate many new buildings, all of which are associated with human activity. Overall, this will deter wildlife from the site.

- **Lighting –** The new residences will be associated with an increase in the level of baseline light in the area. This may affect bat species, in particular it will affect the foraging behaviour of those species that are light intolerant. If lighting is directed at a known roost emergence point, then this will affect any bat species.

- **Pollution –** In the absence of mitigation, during the operation of the site, pollution to local watercourses may occur due to run-off of silt and oil from hard surfaces.

- **Landscaping** – In general, inappropriate landscaping of the application site may inadvertently result in the introduction of non-native and invasive plant species. However, appropriate landscaping could also provide beneficial habitats for wildlife if it is done with suitable trees and shrubs that provide nesting and foraging opportunities for birds. The management of the verges for wildlife would also be beneficial for local pollinators. A comprehensive landscaping plan has been prepared for the proposed development by

Landscape Design. This plan contains provisions for the retention of existing biodiversity features, as well as the creation of new habitats and biotomes of biodiversity value within the site. The correct implementation of the plan could have significant positive impacts upon local biodiversity.

- **Cumulative Impacts** - Cumulative impacts or effects are changes in the environment that result from numerous human-induced, small-scale alterations. Cumulative impacts can be thought of as occurring through two main pathways: first; through persistent additions or losses of the same materials or resource, and second,-through the compounding effects as a result of the coming together of two or more effects (Bowers-Marriott, 1997).

  There are a number of other proposed housing developments within the Enniscorthy area. These developments combined will reduce the open spaces and habitat availability of the area, thereby cumulatively impacting on local bird and mammal populations.

6. MITIGATION AND MONITORING

6.1 MITIGATION

The primary method of mitigation for any development should be avoidance of that impact. Consideration was therefore given to avoiding any direct or indirect impacts on the sensitive ecological receptors within the site.

In order to avoid protect the existing ecological features on site and surrounding area, the following mitigation measures are recommended. It is recommended that the works are overseen by an Ecological Clerk of Works (ECoW) who should be employed for the duration of the works, including site preparation, main works on site and site clean up and landscaping. The mitigation measures outlined in this report are site specific and they have been incorporated into a Construction and Environmental Management Plan (Traynor Environmental Ltd).

General Good Practice and Protection of Terrestrial Habitats

- Site preparation and construction must be confined to the development site only and it must adhere to all the mitigation measures outlined in this EcIA and the NIS. Work areas should be kept to the minimum area required to carry out the proposed works and the area should be clearly marked out in advance of the proposed works. On foot of this EcIA and the separate NIS and the iterative process involved in the preparation of both these reports, the applicant is aware of the ecological sensitivity of the location. Upon appointment of the construction contractor, this team will also be made aware of the sensitivity of the site and the mitigation measures required to protect groundwater and surface water quality. All measures will be undertaken from initial site works until the completion of all construction works on site.

- Prior to the commencement of developments on site, the site engineer and the contractors must be made aware of the ecological sensitivity of the site and its connection to the Slaney River Valley SAC and the Wexford Harbour and Slobs. They must be made familiar with the mitigation measures outlined in this EcIA report and the NIS. It is recommended that the ECoW engages all appointed personnel in a one-day Biodiversity and Ecological Mitigation training course to highlight the importance of adhering to the mitigation measures in this EcIA and the NIS.

- In accordance with the policies and objectives of the Regional and County Development Plans, the existing green infrastructure (GI) of the site, i.e., the treelines and hedgerows, should be incorporated into the development in so far as possible. In order to prevent

damage to treelines and notable trees in the site that are to be retained, then protective barrier fencing should be erected prior to the commencement of site clearance works. This fencing should be erected just beyond the crown of the largest tree. Any natural verges or hedgerows within the site should also be fenced off prior to the commencement of works. There must be no dumping or storage of construction waste or machinery in these areas during construction. A full methodology for the protection of trees that are to be retained has been presented in the Arboricultural Method Statement.

- Where it is deemed absolutely necessary to remove trees within the treelines, then trees with no bat roost potential should be identified first prior to the removal of native trees with bat roost potential. Where it is deemed necessary to remove any tree, it must only be done outside of the bird nesting season (March – August). Trees should be soft felled where possible.

- Tree removal must only occur under guidance of a consultant arborist.

- All construction waste must be removed from site by a registered contractor to a registered site. Evidence of the movement and safe disposal of the construction waste must be retained and presented to Local Authority upon request. The applicants and construction contractors will be responsible for the safe removal of any construction waste generated on site. Removal of the construction waste should occur as soon as possible after demolition / construction works.

- All topsoil generated from site works should be stored within the application site until it is required for landscaping. It must not be stored outside the site boundaries and it must not be used for the infilling of any area outside of the site. It must be stored at appropriate locations within the site, away from the river and drainage ditches. If there is more top soil than is needed for landscaping, it must be removed from site by a registered contractor for appropriate use elsewhere. The end location of the top soil must be identified and records presented to the local authority if requested.

- A detailed landscape plan has been prepared for the site, which incorporates the creation of many habitats and biotomes, using mostly native species. The concepts presented in this landscape plan must be implemented as part of this development. The landscaping works should be overseen by a professional who can ensure the delivery of the landscape plans as described.

- Indian balsam occurs along the banks of the River Urrin in the southern section of the site and this is a listed invasive species. A treatment plan for the removal of this species should be provided and work should be initiated prior to the commencement of site works. Unlike Japanese knotweed, balsam is relatively easy and cost effective to remove. The plants have a shallow root ball and can be easily pulled out. This should be done before the plant flowers and seeds. Chemical treatment is also an option, but along watercourses this is not ideal, as it allows for the possibility of pollution of the water with herbicides.

- Water safety measures such as railings along the River Urrin should not impede the free access of mammals along the riparian verges.

Protection of Water Quality

- The overarching plan for the development allows for a maintenance of a 15m buffer zone along the River Urrin. Some works will be required in this zone during construction, namely the installation of the drainage pipes from the attenuation tanks, the associated head walls for these pipes and outlet from the existing field drain into the Urrin. The maintenance of this 15m buffer will allow for optimal ecological functioning of the River Urrin, whilst maintaining an ecological corridor for species such as the otter.

- All guidelines within the document *Inland Fisheries Ireland Requirements for the Protection of Fisheries Habitats during Construction and Development Works and River Sites* (www.fisheriesireland.ie) and the updated guidelines *entitled Guidelines on Protection of Fisheries During Construction Works in And Adjacent to Waters (2016)* should be adhered to and they include:

  - Consultation with Inland Fisheries Ireland (IFI) to ensure that the development proceeds with due regard to the provisions of the Fisheries Acts and Habitats Regulations;
  - Consultation with IFI in order to determine the correct timing of works on the site;
  - There should be no in stream works carried out within the streams without prior approval from IFI.

- IFI have also recently launched new guidelines entitled *Planning for Watercourse in the Urban Environment (IFI, 2020).* This outlines provisions for buffer zones, sustainable drainage systems and flood control. The maintenance of a 15m buffer zone as recommended by IFI has been noted and incorporated into the overall site plan.

- Efficient construction practices and sequences should be employed on site, and this will minimise soil erosion and potential pollution of local watercourses with soil and sediment.

This is especially important given the significant slope on the site that leads to the river. Unnecessary clearance of vegetation should be avoided and only areas necessary for building works should be cleared. Existing grassed embankments and vegetated areas around the perimeters of the site and along the field drains should be retained where possible. Supplemental planting and careful management of these areas will increase the biodiversity value of the site in the future. The retention of these areas will also help retain storm water run-off from the site during construction and operation. Works within the site should be avoided during periods of heavy rainfall. These measures are included in the Biodiversity Action Plan prepared by Landscape Design Services.

- It is vital that there is no deterioration in water quality in the River Urrin or its tributaries. This will protect both habitats and species that are sensitive to pollution. Therefore, strict controls of erosion, sediment generation and other pollutants associated with the construction process should be implemented, including the provision of attenuation measures, silt traps or geotextile curtains to reduce and intercept sediment release into any local watercourses. Guidelines in the following best practice documents should be adhered to:

  - Construction Industry Research and Information Association (CIRIA) (2005) *Environmental Good Practice on Site (C692)*
  - Construction Industry Research and Information Association (2001) *Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532)*
  - Construction Industry Research and Information Association (2000) *Environmental Handbook for Building and Civil Engineering Projects (C512)*
  - Environmental Protection Agency (2015) *List of Waste and Determining if Waste is Hazardous or Non-Hazardous*
  - Environment Agency *et al*. (2015) Guidance on the Classification and Assessment of Waste, Technical Guidance WM3

- The construction team must implement the following site-specific mitigation measures. These measures have been incorporated into a Construction and Environment Management Plan and they must be overseen by the ECoW.

  - Surface waters from the construction site should be managed using a system of temporary on-site attenuation features, and these should be fitted with silt barrier devices such as silt fences or silt busters.

- Silt fences and berms should be installed prior to the commencement of construction on site. These should be set back at a minimum of 10m from the River Urrin and other watercourses on the site. The silt fences should be sturdy and constructed of a suitable geotextile membrane to ensure that water can pass through, but that silt will be retained. An interceptor trench will be required in front of this interceptor fence. The silt fence must be capable of preventing particles of 425µm from passing though.
- The silt fences should be monitored daily to ensure that they remain functional throughout the construction of the proposed development. Maintenance of the fences should be carried out regularly. Fences should be inspected thoroughly after periods of heavy rainfall.
- Discharge water generated during laying on concrete should be removed off site for treatment and disposal.

- Works on the installation of the pipes from the attenuation tanks, the construction of the headwall and the piping of the mid-site drain into the Urrin will require works within the immediate buffer zone of the Urrin. Initial works will involve digging a trench to accommodate the 900m pipe. These works must not lead to an excessive run off of silt into the river. Silt barriers and fences should be used around the river banks to catch any silt that falls into the river arising the trenching and pipe laying works. The works should be carried out in dry weather. The trench must be infilled and stabilised immediately and vegetation along the route restored.
- For the installation of the headwall, the following measures have been outlined in the CEMP. These measures must be implemented in full. All works should be overseen by an environmental engineer and the ECoW
  - The timing of head wall installation will be scheduled to ensure no instream works shall be carried out during the closed season for instream works. (October 1st to June 30th). IFI will be notified prior to works taking place. The timing of works shall be in accordance with to IFI (2016) *Guidelines on the Protection of Fisheries during Construction Works in and Adjacent to Water.* Works associated with the headwall construction will be supervised by an Ecological Clerk of Works (ECoW).
  - The CEMP prepared by Traynor Environmental Ltd has described the installation of the headwall and the following methodology has been detailed.
    - Prior to installation of the headwall, a dry section will be created within the river bank using sand bags.

- Sand will be delivered to site via the agreed access into the works area. 1ton sands bags will be filled (with the use of a suitable sized excavator) at least 30m away from the watercourse. Bags will be doubled up.

- A sand bag bund will be constructed out from the river bank to create a dry working area measuring approximately 4.0m wide x 2.0m long. A double row of bags will be placed on the bed of the river, with a single row (placed centrally above the bottom rows). Care will be taken when removing wet sand bags in order to prevent potential sand entering the river.

- Any remaining surface water within the bunded area will be pumped from within the bund using a suitably sized de-watering pump to the pre-constructed settlement area described below before being discharged and entering the watercourse.

- The excavator will commence excavation works and reduce the ground to the correct formation level. A depth of 100mm of semi dry concrete will be placed and compacted underneath the headwall structure.

- A settlement area for treatment of pumped water from excavations/the bunded area will be established on site. The settlement area will consist of silt fence material surrounded by a row of sandbags. A dewatering/silt bag will be fitted at the discharge point. Alternatively silt laden waters will be tankered off site to a licenced facility.

- Precast headwall will be delivered to site, offloaded and lifted into place using the on-site excavator. Headwall to be checked for plumbness once dropped into position. The headwall will consist of reinforced pre-cast concrete and will be installed on a concrete blinding base.

- The proposed discharge pipe will be fitted with a hydro break.

- The outfall pipe to have non-return valve installed to prevent flooding of the interceptor in the event of highwater level in the river.

- Biosecurity measures will be strictly adhered to throughout the proposed works. Measures will be in accordance with IFI (2010) Biosecurity Protocol for Field Survey Work. Where staff are working instream, staff footwear and PPE will be inspected on daily completion of the works and vegetation or debris removed. Footwear will be dipped in or scrubbed with a disinfectant solution (e.g. 1% solution of Virkron

Aquatic or another proprietary disinfection product) and thoroughly dried afterwards. Sand bags placed instream will not be re-used in other watercourses.

- The following pollution control measures must also be employed on site:

  - A dedicated re-fuelling location must be established on site, and this must be situated away from any watercourse on site.
  - Spill kits stations must be provided at the fuelling location for the duration of the works.
  - Staff must be provided with training on spill control and the use of spill kits.
  - All fuel storage containers must be appropriately bunded, roofed and protected from vehicle movements. These bunds will provide added protection in the event of a flood event on site.
  - All chemicals must be stored as per manufacturer's instructions. A dedicated chemical bund will be provided on site.
  - Storage of fuel, and servicing and refuelling of equipment or machinery must be at least 20m from ground clearance or rock-breaking activities.
  - The dedicated refuelling area must be underlain by concrete hard standing. All fuel and oil tank should be inspected on a regular basis for signs of spillages, leaks and damage during use. A record of these inspections must be kept, and any improvements needed be carried out immediately.
  - The risk of fuel spillages on a construction site is at its greatest when refuelling plant. Therefore, only designated trained and competent operatives should be authorised to refuel plant on site. Plant and equipment should be brought to a designated refuelling area rather than refuelling at numerous locations about the site.
  - Chemicals used on site must be returned to the site compound and secured in a lockable and sealed container overnight in proximity to the fuel storage area.
  - Drip trays must be utilised on site for all pumps situated within 20m away from ground clearance areas.
  - Procedures and contingency plans must be established on site to address cleaning up small spillages as well as dealing with an emergency incident. A stock of absorbent materials such as sand, spill granules, absorbent pads and booms must be kept on site, on plant working near the river and at the refuelling area.
  - Daily plant inspections must be completed by all plant operators on site to ensure that all plant is maintained in good working order. Where leaks are noted on these inspection sheets, the plant must be removed from operations for repairs.
  - All personnel should observe standard precautions for handling of materials as outlined in the Safety Data Sheets (SDS) for each material, including the use of PPE. Where

conditions warrant, emergency spill containment supplies should be available for immediate use.

- Best practice concrete / aggregate management measures must be employed on site. These will include:

  - A designated concrete wash out area should be set up on site; typically, this will involve washing the chutes, pumps into a designated IBC before removing the waste water off site for disposal. These procedures should be covered during a Site Safety & Environmental Induction session.
  - Best practice in bulk-liquid concrete management should be employed on site addressing pouring and handling, secure shuttering, adequate curing times etc.
  - Stockpile areas for sands and gravel must be kept to a minimum size, well away from the drains and watercourses (minimum 50m).
  - Where concrete shuttering is used, measures must be put in place to prevent against shutter failure and control storage, handling and disposal of shutter oils.
  - Activities which result in the creation of cement dust must be controlled by dampening down the areas.
  - Raw and uncured waste concrete must be disposed of by removal from the site;
  - Stockpile areas for sands and gravel will be kept to a minimum size, well away from the River Urrin or its tributaries.

- The SUDS proposals outlined for this site must be adhered to in full and only clean-surface water from the site should be discharged to the River Urrin, at the appropriate greenfield run-off rate. Silt and oil interceptors must be incorporated to ensure clean discharge and these must be serviced regularly.

- A maintenance plan should be development for the foul drainage system to prevent any impacts upon the River Urrin arising from surcharge from the foul sewer as a result of a secondary pluvial flood event.

Protection of Bats and Other Mammals

- The bat and mammal report has included a number of mitigation measures to reduce impacts from lighting schemes associated with the proposed development. These include:

  - Lighting around the buildings should be tightly controlled and ornamental lighting should be avoided entirely. Lighting should respond to a motion trigger or be switched off at night after typical active hours (e.g. 11pm to 6 am).

- Lighting should not spill on or be directed to the river or its riparian corridor (15m)
- Spotlights must not be introduced as these are hugely disruptive to most wildlife and cannot be targeted to the required area but create light pollution over a huge radius.
- Dark corridor for the movement of bats throughout the site should be maintained. Lighting should be directed downwards away from the treetops.
- All luminaires shall lack UV elements when manufactured and shall be LED.
- A warm white spectrum (ideally <2700Kelvin) shall be adopted to reduce blue light component
- Luminaires shall feature peak wavelengths higher than 550nm
- Tree crowns shall remain unilluminated especially the free-standing oak to the south of the access road (southwest corner of the proposal).
- Planting shall provide areas of darkness suitable for bats and badgers to feed and commute through the site.

- Bat boxes should be provided to compensate for the potential loss of roost sites from tree removal. 6 x 2F Schwegler bat boxes are recommended for erection along the river or alternatively, access could be provided for bats to certain elements of the buildings. All boxes should be away from illumination.

- Prior to the felling of any tree, the tree should be inspected by a bat specialist prior to felling. If bats are present, a derogation license should be obtained from NPWS and additional measures to mitigate against the loss of a roost shall be implemented.

- The hedgerow in the middle of the site will be removed (Boundary 3, Figure 7). This feature is likely to be a commuting corridor for mammals that use the site. In order to reduce the impact of the development on small mammals such as field mice, pygmy shrews and hedgehogs, two 600mm diameter wildlife tunnels have been included as compensation in this area.

- Prior to the commencement of works to install the pipe and headwall from the attenuation tank, the EcOW must ensure that no otter holts have been constructed along the river banks at the point of works or for a distance 5m either site of the headwall location.

Biodiversity Enhancement

- The landscaping of the site offers the potential for biodiversity enhancements within the site. Future landscaping of the site should adhere to the following recommendations:

    - The natural verges along the treelines and hedgerows that are to be retained should be retained and managed appropriately for the benefit of wildlife. They should not be sprayed with herbicide and a low intensity mowing or strimming regime should be incorporated. This will benefit local pollinators.

    - Only native trees and shrubs should be used in the landscaping.

    - A proportion of the grassland / parkland habitats within the site should be managed through methods that mimic traditional grassland management (low level mowing regimes). This will benefit local pollinators. Locally sourced wildflower seed would also be beneficial;

    - Where possible the importation of topsoil from outside the area should be avoided;

    - Allow some areas to go 'wild' where bramble and scrub, etc. can develop;

    - Garden plants that have the potential to become invasive must be avoided.

6.2 MONITORING

Monitoring is generally required where there may be significant residual impacts despite the implementation of the mitigation measures. The following monitoring measures are recommended:

- Any trees and bat boxes should be monitored once the development is operational.

- The overall development and maturation of the landscape plans on the site should be overseen to ensure that the biodiversity potential of the site is maximised. A landscaping / biodiversity long-term management plan for the site should be prepared.

7. RESIDUAL IMPACTS AND CONCLUSIONS

With the recommended mitigation measures, it can be concluded that the proposed development at Enniscorthy Rural, Enniscorthy, Co. Wexford will have an overall initial and temporary negative to neutral impact upon local ecological receptors. The loss of the improved grasslands habitats will have a neutral impact. The removal of the treelines, hedgerows and earth banks in the site, along with the culverting of the watercourse in the site will have a negative local impact initially. Overtime, with the implementation of the landscaping plan, these initial negative impacts will neutralise as new areas of biodiversity are allowed to develop. Following the implementation of the water protection mitigation measures outlined in this EcIA, the residual impacts of the proposed development on water quality in the River Urrin and its tributaries, and subsequently on the River Slaney SAC will be neutralised.

As per the landscaping plan that has been provided for the site, the creation of new habitats on the site will be a significant positive benefit to local ecology. With proper management of the site and its green areas, then local areas of biodiversity will be allowed to develop and flourish.

APPENDIX I – PLANT SPECIES LIST

Common Name	Scientific Name
Alder	*Alnus glutinosa*
Aquatic mint	*Mentha aquitica*
Ash	*Fraxinus excelsior*
Autumn hawkbit	*Scorzoneroides autumnalis*
Bindweed	*Calystegia sepium*
Beech	Fagus sylvatica
Black medick	*Medicago lupulina*
Blackthorn	*Prunus spinosa*
Bramble	*Rubus fruticosus agg.*
Broadleaved Dock	*Rumex obtusifolius*
Cat's ear	*Hypochaeris radicata*
Cleavers	*Galium aparine*
Cock's-foot	*Dactylis glomerata*
Common chickweed	*Stellaria media*
Common elm	*Ulmus minor*
Common hogweed	*Heracleum sphondylium*
Common ragwort	*Senecio jacobaea*
Common sedge	*Carex nigra*
Compact rush	*Juncus conglomeratus*
Cow parsley	*Anthriscus sylvestris*
Crested dog's tail	*Cynosurus cristatus*
Creeping buttercup	*Ranunculus repens*
Creeping thistle	*Cirsium arvense*
Daisy	*Bellis perennis*
Dandelion	*Taraxacum officinale*
Dog rose	*Rosa canina*
Elder	*Sambucus nigra*
Fools watercress	*Apium nodiflorum*
Germander speedwell	*Veronica chamaedrys*
Gorse	*Ulex europaeus*
Grey willow	*Salix cinerea*
Hairy bittercress	*Cardamine hirsuta*
Hart's tongue fern	*Asplenium scolopendrium*
Hawksbeard	*Crepis* sp.
Hawthorn	*Crataegus monogyna*
Hazel	*Corylus avellana*
Herb Robert	*Geranium robertianum*
Himalayan balsam	*Impatiens glandulifera*
Hogweed	*Heracleum sphondylium*
Holly	*Ilex aquifolium*
Horsetail	*Equisetum sp*
Ivy	*Hedera helix*
Male fern	*Dryopteris filix-mas*
Meadow buttercup	*Ranunculus acris*
Meadow grasses	*Poa sp.*
Meadow foxtail	*Alopecurus pratensis*
Mouse-ear	*Cerastium fontanum*
Nettle	*Urtica dioica*
Parsley Water-dropwort	*Oenanthe lachenalii*
Pendulous sedge	*Carex pendula*
Poplar	*Populus sp.*
Red clover	*Trifolium pratense*
Redshank	*Persicaria maculosa*

Ribwort plantain	*Pantago lanceolate*
Rye grasses	*Lolium asp.*
Self-heal	*Prunella vulgaris*
Sessile oak	*Quercus petraea*
Sheep's sorrell	*Rumex acetosella*
Smooth hawksbeard	*Crepis capillaris*
Soft rush	*Juncus effusus*
Spear thistle	*Cirsium vulgare*
Sun spurge	*Euphorbia helioscopia*
Sycamore	*Acer pseudoplatanus*
Timothy grass	*Phleum pratense*
Tufted vetch	*Vicia cracca*
Water crowfoot	*Ranunculus penicillatus*
White clover	*Trifolium repens*
Willow	*Salix sp.*
Willowherb	*Ebilobium sp*
Vetches	*Vicia sp*
Yorkshire fog	*Holcus lanatus*

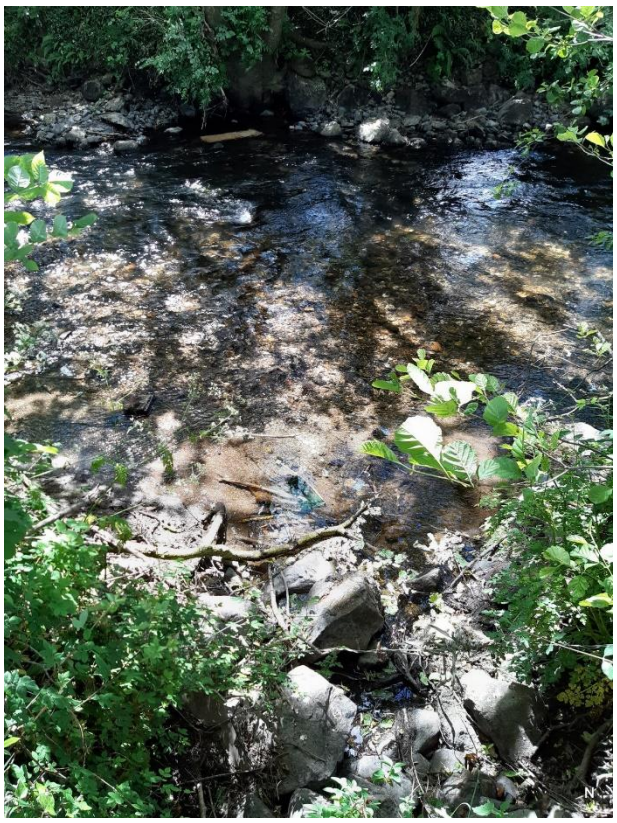
APPENDIX II – PHOTOGRAPHS

Hedgerow / Treeline Close to Carley's Road

Grassland Habitats within the Site

A Significant Oak within the Site

Balsalm Patch close to the River



The River Urrin

Mid Section Boundary in the Site

APPENDIX III – REFERENCES

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