

Inch River, Castletown, Co. Wexford

Biodiversity Action Plan

**Report Prepared for the Ahare Kilgorman Biodiversity Group
with funding from the LAWPRO CWDF Grant 2022**



INTERIM REPORT

12th December 2022



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Table of Contents

1. INTRODUCTION	3
1.1 Background.....	3
2. METHODOLOGY	4
2.1 Desktop Research.....	4
2.2 Field Surveys.....	5
2.3 Relevant Legislation.....	5
2.3.1 Nature Conservation Designations.....	5
2.3.2 Bats.....	6
2.3.3 Badgers.....	7
2.3.4 Otter.....	8
2.3.5 Kingfisher.....	8
2.3.6 Invasive Species.....	9
3. RESULTS – DESKTOP RESEARCH	13
3.1 Underlying Geology & Soils.....	13
3.2 Inch River.....	14
3.3 Nature Conservation Designations.....	15
3.4 Land Use Change within the Study Area.....	16
3.5 Inch River – Water Quality.....	19
3.6 Biodiversity Records.....	22
3.7 Wetlands of County Wexford.....	23
3.8 Flora of Wexford.....	23
3.9 Bats in the Inch River Catchment.....	23
4. RESULTS – FIELD SURVEYS	24
5. RECOMMENDATIONS FOR BIODIVERSITY ENHANCEMENT	24
6. REFERENCES	25
7. APPENDICES	26
7.1 Appendix 1 – Site Synopsis for Kilgorman River Marsh pNHA 001834.....	27
7.2 Appendix 2 – Site Synopsis for Kilpatrick Sandhills pNHA (Site Code: 001742).....	28
7.3 Appendix 3 – Records held by the National Biodiversity Data Centre.....	30
7.4 Appendix 4 – Vascular Plant Species recorded by Paul Green from within the Ahare Kilgorman study area.....	37

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1. INTRODUCTION

1.1 Background

Faith Wilson Ecological Consultant was commissioned by the Ahare Kilgorman Biodiversity Group to prepare a biodiversity action plan for the Inch River, which flows through Castletown Village in Co. Wexford as shown on **Figure 1** below. The Ahare Kilgorman Biodiversity Group successfully received funding for the study from the LAWPRO CWDF Grant 2022. The proposed study area is shown on **Figure 2** below and is located between Castletown Bridge and the estuary of the river at Kilgorman Beach.

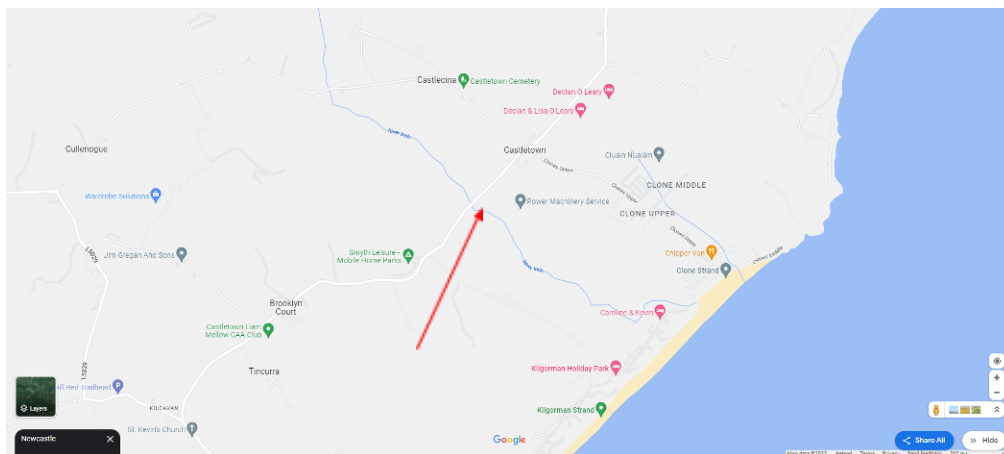


Figure 1. Inch River, Castletown, Co. Wexford.

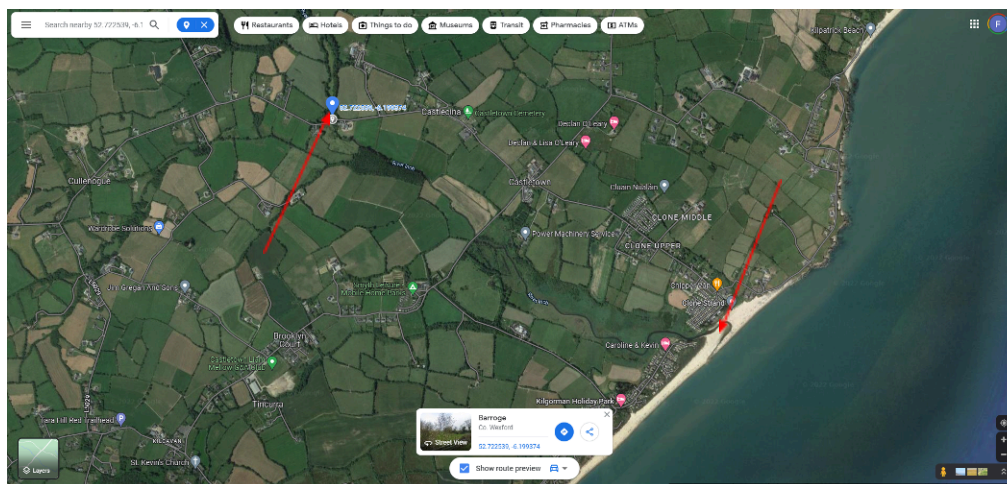


Figure 2. Proposed study area (located between the Castletown Bridge and the sea at Kilgorman Beach – indicated by the red arrows).

2. METHODOLOGY

2.1 Desktop Research

A desk study was carried out to collate the available information on the ecological environment of the Inch River near Castletown Village. The National Parks and Wildlife Service (NPWS) of the Department of Housing, Local Government and Heritage (DHLGH) database of designated conservation areas and NPWS records of rare and protected plant species was checked. Records held by the National Biodiversity Data Centre for within the study area as shown on **Figure 3** below were sought.

Information on protected species of fauna and flora listed for protection under Annex II of the EU Habitats Directive (92/43/EEC), Annex I of the Birds Directive (79/409/EEC) and the Wildlife (Amendment) Act (2000) was also sought from NPWS and other published sources. Recent, high resolution, colour aerial photographs were also used to identify and map habitats.

Various ecological surveys conducted in the vicinity of the village as part of other developments and projects were also reviewed to see if any of the ecological information related to this area. These included a study completed by Dr Paul Johnston on flooding on the Inch River.

Consultations with Michael O'Donnell (re. moths and birds), Dr. Fran Igoe (Regional Coordinator for the South East Region and South West Region with the Local Authority Waters Programme (LAWPRO)) re. fisheries and electro fishing surveys, Paul Green (Botanist and author of the Flora of County Wexford) and Alan Poole of the Wexford Bat Group were also made.

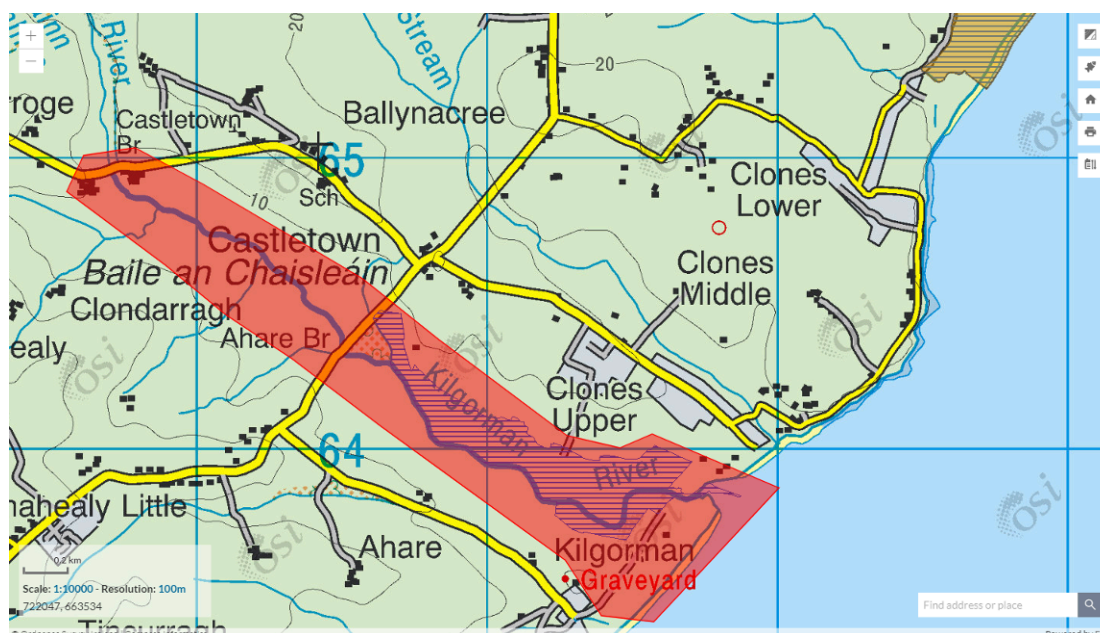


Figure 3. Inch River Study Area - shown in red (Source: National Biodiversity Data Centre).

Consideration was also given to other flora and fauna as defined under the following legislative instruments and red data books:

- species protected under the **Wildlife Act (1976 (amended 2000))**, such as bats, badger, pine marten and common frog,
- plant species listed under the **Flora (Protection) Order (2022)**,
- vascular plant species listed in the **Irish Red List for Vascular Plants**¹.
- bird species listed under the **'Birds of Conservation Concern in Ireland'** document²,
- mammals listed in the **Irish Red List for Terrestrial Mammals**³,
- amphibians and reptiles listed in the **Irish Red List for Amphibians, Reptiles & Freshwater Fish**⁴,
- invasive species listed under Schedule 3 of the **'Birds and Natural Habitats Regulations 2011'** and the **EU Regulation on Invasive Alien Species (EU Regulation 1143/2014)**⁵.

2.2 Field Surveys

The flora and habitats along the Inch River were surveyed on the 12th July and 17th September 2022 using the Phase 1 habitat survey methodology (JNCC, 1993) and Best Practice Guidance for Habitat Survey and Mapping (Smith *et al.*, 2011) to map the vegetation communities and habitats present. These are described using Fossitt (2000)⁶. Plant identification follows Parnell *et al* (2012)⁷, and species nomenclature follows Scannell & Synnott (1987)⁸.

2.3 Relevant Legislation

2.3.1 Nature Conservation Designations

International Conservation Designations

Special Areas of Conservation (SACs) are habitats of international significance that have been identified by NPWS and submitted for designation to the EU. SAC is a statutory designation, which has a legal basis under the EU Habitats Directive (92/43/EEC) as transposed into Irish law through the European Communities (Natural Habitats) Regulations, 1997, which were amended in 1998, 2005 and 2011. The European Communities (Birds and Natural Habitats) Regulations 2011 consolidate the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats)(Control of Recreational

¹ Wyse Jackson, M., FitzPatrick, Ú., Cole, E., Jebb, M., McFerran, D., Sheehy Skeffington, M. & Wright, M. (2016). Ireland Red List No. 10: Vascular Plants. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Ireland.

² Gilbert G, Stanbury A and Lewis L.J. 2021. Birds of Conservation Concern in Ireland 2020 –2026. Irish Birds 43, 1-22..

³ Marnell, F., Looney, D. & Lawton, C. (2019). Ireland Red List No. 12: Terrestrial Mammals. National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Dublin, Ireland.

⁴ King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., Fitzpatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. & Cassidy, D. (2011). Ireland Red List No. 5: Amphibians, Reptiles & Freshwater Fish. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Ireland.

⁵ S.I. No. 477 of 2011. The European Communities (Birds and Natural Habitats) Regulations 2011. Irish Government, Government Publications Office, Molesworth Street, Dublin 2.

⁶ Fossitt, J. (2000) A Guide to Habitats in Ireland. The Heritage Council, Ireland.

⁷ Parnell, J. and Curtis, T. (2012). An Irish flora (8th edn). Cork University Press.

⁸ Scannell, M. and D. Synnott (1987). Census Catalogue of the Flora of Ireland - Clár de Phlandaí na hÉireann. Stationery Office Dublin, Dublin.

Activities) Regulations 2010, as well as addressing transposition failures identified in the Court of Justice of the European Union (CJEU) judgements.

A Special Protection Area (SPA) is a statutory designation, which has a legal basis under the EU Birds Directive (79/409/EEC). The primary objective of SPAs is to maintain or enhance the favourable conservation status of the birds for which the SPAs have been designated.

National Conservation Designations

Proposed NHAs are habitats or sites of interest to wildlife that have been identified by NPWS. These sites become NHAs once they have been formally advertised and land owners have been notified of their designation. NHAs are protected under the Wildlife (Amendment) Act, 2000, from the date they are formally proposed. NHA is a statutory designation according to the Wildlife (Amendment) Act, 2000.

2.3.2 Bats

Eleven species of bats occur in Ireland and all are protected under both national and international law. Nine species are resident and have confirmed breeding populations while two species are deemed to be vagrants as set out in **Table 1** below.

Table 1. Legal protection and status of the Irish bat fauna.

Common and scientific name	Wildlife Act 1976 & Wildlife (Amendment) Acts 2000 & 2010	Irish Red List status	Habitats Directive	Bern & Bonn Conventions
Common pipistrelle <i>Pipistrellus pipistrellus</i>	Yes	Least Concern	Annex IV	Appendix II
Soprano pipistrelle <i>P. pygmaeus</i>	Yes	Least Concern	Annex IV	Appendix II
Nathusius' pipistrelle <i>P. nathusii</i>	Yes	Not referenced	Annex IV	Appendix II
Leisler's bat <i>Nyctalus leisleri</i>	Yes	Near Threatened	Annex IV	Appendix II
Brown long-eared bat <i>Plecotus auritus</i>	Yes	Least Concern	Annex IV	Appendix II
Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Yes	Least Concern	Annex II Annex IV	Appendix II
Greater horseshoe bat <i>Rhinolophus ferruginous</i>		Data Deficient	Annex II Annex IV	Appendix II
Daubenton's bat <i>Myotis daubentonii</i>	Yes	Least Concern	Annex IV	Appendix II
Natterer's bat <i>M. nattereri</i>	Yes	Least Concern	Annex IV	Appendix II
Whiskered bat <i>M. mystacinus</i>	Yes	Least Concern	Annex IV	Appendix II
Brandt's bat <i>M. brandtii</i>	Yes	Data Deficient	Annex IV	Appendix II

Wildlife Act 1976

In the Republic, under Schedule 5 of the Wildlife Act 1976, all bats and their roosts are protected by law. It is unlawful to disturb either without the appropriate licence. The Act was amended in 2000.

Bern and Bonn Convention

Ireland has also ratified two international conventions, which afford protection to bats amongst other fauna. These are known as the 'Bern' and 'Bonn' Conventions. The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), exists to conserve all species and their habitats, including bats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries, which covers certain species of bat.

EU Habitats Directive

All bat species are given strict protection under Annex IV of the EU Habitats Directive, whilst the lesser horseshoe bat (*Rhinolophus hipposideros*) and greater horseshoe bat (*Rhinolophus ferrumequinum*) are given further protection under Annex II of the EU Habitats Directive. Both are listed as a species of community interest that is in need of strict protection and for which E.U. nations must designate Special Areas of Conservation (SACs). The latter is only known from a single site and no breeding populations have been recorded to date. The former is a species of the western seaboard of Ireland and has not yet been recorded on the east coast.

Eurobats

This is a Europe-wide (and neighbouring jurisdictions including North Africa and the Middle East) agreement that originates from efforts to apply the Bonn Convention to the protection of bats within areas to which they may migrate from their European summer or winter sites. There are 33 parties (including Ireland) that have entered into a UN forum to protect the 52 species of bat (based on current knowledge) of Europe.

Threats to Irish bats:

The principal pressures on Irish bat species have been identified as follows:

- urbanized areas (e.g. light pollution);
- bridge/viaduct repairs;
- pesticides usage;
- removal of hedges, scrub, forestry;
- water pollution;
- other pollution and human impacts (e.g. renovation of dwellings with roosts);
- infillings of ditches, dykes, ponds, pools and marshes;
- management of aquatic and bank vegetation for drainage purposes;
- abandonment of pastoral systems;
- speleology and vandalism;
- communication routes: roads; and
- inappropriate forestry management.

2.3.3 Badgers

Badgers (*Meles meles*) are common and widespread in Ireland, and are found in all lowland habitats where the soil is dry and not subject to flooding (Hayden and Harrington, 2000). Badgers are social animals that live in complex underground

tunnel systems called setts. Badger territories may vary in size from about 60-200 ha (Smal, 1995).

Badgers and their setts are protected legally under the provisions of the Wildlife Act, 1976, and the Wildlife Amendment Act, 2000. It is an offence to intentionally kill or injure a protected species or to wilfully interfere with or destroy the breeding site or resting place of a protected wild animal.

2.3.4 Otter

The otter (*Lutra lutra*) is a legally protected species under the EU Habitats Directive (where it is listed under Annex II) and is found throughout Ireland (Hayden and Harrington, 2000). The otter is listed as internationally important in the Irish Red Data book (Whilde, 1993), is classified as 'near threatened' in Ireland (Marnell, et al. 2009), on a European scale (Temple & Terry, 2007) and on a global scale by the IUCN (2009). It is listed as a strictly protected species under Appendix II of the Bern convention (Council of Europe, 1979). Because it is listed in Appendix 1 of CITES (1979), trade in otter specimens is permitted only in exceptional circumstances.

Annexes II and IV of the E.U. Habitats Directive (92/43/EEC) list the otter as a species of community interest that is in need of strict protection and for which E.U. nations must designate Special Areas of Conservation (SACs). The E.U. Habitats Directive was transposed into Irish law in the European Union (Natural Habitats) Regulations, (SI 94/1997) and 40 candidate SACs have been designated for the otter in Ireland (NPWS (2008)⁹). A Species Action Plan and a Threat Response Plan has been prepared for the otter by NPWS (2008 & 2009)¹⁰.

Otters tend to occupy linear territories along watercourses and are rarely found far away from water. There have been a number of national surveys of otters in Ireland¹¹¹² which have been conducted for National Parks and Wildlife Service.

(Bailey (2006)) surveyed 35 sites within the Eastern River Basin District, of which 22 (62.9%) recorded the presence of otter, the lowest rate in the country. A more recent survey conducted in 2010 (Reid *et al.* (2013)) surveyed 65 sites within the Eastern River Basin District, of which 34 (52.3%) recorded the presence of otter.

2.3.5 Kingfisher

The kingfisher (*Alcedo atthis*) is a species listed under Annex I of the EU Birds Directive for which EU nations must designate Special Protection Areas (for birds) (SPAs). Searches for suitable locations, signs or evidence of nesting kingfisher along the river were made.

⁹ NPWS (2008). The status of EU protected species and habitat in Ireland. NPWS, Dublin.

¹⁰ NPWS (2009). Threat Response Plan: Otter (2009-2011). National Parks & Wildlife Service, Department of the Environment, Heritage & Local Government, Dublin.

¹¹ Bailey, M & Rochford, J., (2006). Otter survey of Ireland 2004/2005. Irish Wildlife Manual, No 23. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin.

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

2.3.6 Invasive Species

The Birds and Habitats Regulations (2011) which were signed on 21st September 2011 by the then Minister for Arts, Heritage and the Gaeltacht Jimmy Deenihan, included new legislation on invasive and non-native species in Sections 49 and 50.

Since then the EU Regulation on Invasive Alien Species (EU Regulation 1143/2014) also came into force on the 3rd August 2016.

The plant and animal species to which the Birds and Habitats Regulations (2011) apply are presented in Schedule Three. Part 1 details the plants species, while Part 3 outlines those animal or plant vector materials and are presented below.

Third Schedule: Part 1 Plants

Non-native species subject to restrictions under Regulations 49 and 50.

First column	Second column	Third column
Common name	Scientific name	Geographical application
American skunk-cabbage	<i>Lysichiton americanus</i>	Throughout the State
A red alga	<i>Grateloupia doryphora</i>	Throughout the State
Brazilian giant-rhubarb	<i>Gunnera manicata</i>	Throughout the State
Broad-leaved rush	<i>Juncus planifolius</i>	Throughout the State
Cape pondweed	<i>Aponogeton distachyos</i>	Throughout the State
Cord-grasses	<i>Spartina</i> (all species and hybrids)	Throughout the State
Curly waterweed	<i>Lagarosiphon major</i>	Throughout the State
Dwarf eel-grass	<i>Zostera japonica</i>	Throughout the State
Fanwort	<i>Cabomba caroliniana</i>	Throughout the State
Floating pennywort	<i>Hydrocotyle ranunculoides</i>	Throughout the State
Fringed water-lily	<i>Nymphoides peltata</i>	Throughout the State
Giant hogweed	<i>Heracleum mantegazzianum</i>	Throughout the State
Giant knotweed	<i>Fallopia sachalinensis</i>	Throughout the State
Giant-rhubarb	<i>Gunnera tinctoria</i>	Throughout the State
Giant salvinia	<i>Salvinia molesta</i>	Throughout the State
Himalayan balsam	<i>Impatiens glandulifera</i>	Throughout the State
Himalayan knotweed	<i>Persicaria wallichii</i>	Throughout the State
Hottentot-fig	<i>Carpobrotus edulis</i>	Throughout the State
Japanese knotweed	<i>Fallopia japonica</i>	Throughout the State
Large-flowered waterweed	<i>Egeria densa</i>	Throughout the State
Mile-a-minute weed	<i>Persicaria perfoliata</i>	Throughout the State
New Zealand pigmyweed	<i>Crassula helmsii</i>	Throughout the State
Parrot's feather	<i>Myriophyllum aquaticum</i>	Throughout the State
Rhododendron	<i>Rhododendron ponticum</i>	Throughout the State
Salmonberry	<i>Rubus spectabilis</i>	Throughout the State
Sea-buckthorn	<i>Hippophae rhamnoides</i>	Throughout the State
Spanish bluebell	<i>Hyacinthoides hispanica</i>	Throughout the State
Three-cornered leek	<i>Allium triquetrum</i>	Throughout the State
Wakame	<i>Undaria pinnatifida</i>	Throughout the State
Water chestnut	<i>Trapa natans</i>	Throughout the State

First column	Second column	Third column
Common name	Scientific name	Geographical application
Water fern	<i>Azolla filiculoides</i>	Throughout the State
Water lettuce	<i>Pistia stratiotes</i>	Throughout the State
Water-primrose	<i>Ludwigia</i> (all species)	Throughout the State
Waterweeds	<i>Elodea</i> (all species)	Throughout the State
Wireweed	<i>Sargassum muticum</i>	Throughout the State

EU Regulation 1143/2014 on Invasive Alien Species

On 14 July 2016 the European Commission published Commission Implementing Regulation 2016/1141 which set out an initial list of 37 species to which the EU Invasive Alien Species Regulation 1143/2014 applies. The associated restrictions and obligations came into force on 3rd August 2016.

Three distinct types of measures are envisaged under the Directive, which follow an internationally agreed hierarchical approach to combatting IAS:

- Prevention: a number of robust measures aimed at preventing IAS of Union concern from entering the EU, either intentionally or unintentionally.
- Early detection and rapid eradication: Member States must put in place a surveillance system to detect the presence of IAS of Union concern as early as possible and take rapid eradication measures to prevent them from establishing.
- Management: some IAS of Union concern are already well-established in certain Member States and concerted management action is needed so that they do not spread any further and to minimize the harm they cause.

Plant species listed on the directive include:

- American skunk cabbage *Lysichiton americanus*
- Asiatic tearthumb *Persicaria perfoliata* (*Polygonum perfoliatum*)
- Curly waterweed *Lagarosiphon major*
- Eastern Baccharis *Baccharis halimifolia*
- Floating pennywort *Hydrocotyle ranunculoides*
- Floating primrose willow *Ludwigia peploides*
- Green cabomba *Cabomba caroliniana*
- Kudzu vine *Pueraria lobata*
- Parrot's feather *Myriophyllum aquaticum*
- Persian hogweed *Heracleum persicum*
- Sosnowski's hogweed *Heracleum sosnowskyi*

- Water hyacinth *Eichhornia crassipes*
- Water primrose *Ludwigia grandiflora*
- Whitetop weed *Parthenium hysterophorus*

Animal species listed on the directive include:

- Amur sleeper *Perccottus glenii*
- Asian hornet *Vespa velutina*
- Chinese mitten crab *Eriocheir sinensis*
- Coypu *Myocastor coypus*
- Fox squirrel *Sciurus niger*
- Grey squirrel *Sciurus carolinensis*
- Indian house crow *Corvus splendens*
- Marbled crayfish *Procambarus* spp.
- Muntjac deer *Muntiacus reevesii*
- North american bullfrog *Lithobates (Rana) catesbeianus*
- Pallas's squirrel *Callosciurus erythraeus*
- Raccoon *Procyon lotor*
- Red swamp crayfish *Procambarus clarkii*
- Red-eared terrapin/slider *Trachemys scripta elegans*
- Ruddy duck *Oxyura jamaicensis*
- Sacred ibis *Threskiornis aethiopicus*
- Siberian chipmunk *Tamias sibiricus*
- Signal crayfish *Pacifastacus leniusculus*
- Small Asian mongoose *Herpestes javanicus*
- South American coati *Nasua nasua*
- Spiny-cheek crayfish *Orconectes limosus*
- Topmouth gudgeon *Pseudorasbora parva*
- Virile crayfish *Orconectes virilis*

On 13 July 2017 the European Commission published Commission Implementing Regulation 2017/1263 which added a further 12 species to the current list of 37 species regulated under the EU Invasive Alien Species Regulation (1143/2014).

These are:

Plant species

- Alligator weed (*Alternanthera philoxeroides*)
- Milkweed (*Asclepias syriaca*)
- Nuttall's waterweed (*Elodea nuttallii*)
- Chilean rhubarb (*Gunnera tinctoria*)
- Giant hogweed (*Heracleum mantegazzianum*)
- Himalayan balsam (*Impatiens glandulifera*)
- Japanese stiltgrass (*Microstegium vimineum*)
- Broadleaf watermilfoil (*Myriophyllum heterophyllum*)
- Crimson fountaingrass (*Pennisetum setaceum*)

Animal species

- Egyptian goose (*Alopochen aegyptiacus*)
- Raccoon dog (*Nyctereutes procyonoides*)
- Muskrat (*Ondatra zibethicus*)

The associated restrictions and obligations came into force from 2 August 2017 for all these species apart from the Raccoon dog, which came into force on 2 February 2019.

Other Invasive Species

The main guidance document that has been prepared dealing with invasive species/noxious weeds on sites is the NRA 'Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads' which was published in 2010. This document details other non-native species of note.

A detailed survey for these invasive species was conducted within the environs of the Inch River in the study area.

3. RESULTS – DESKTOP RESEARCH

3.1 Underlying Geology & Soils

The underlying geology of Castletown Village is Ordovician Dark blue-grey slate, phyllite & schist which are part of a geological rock complex known as the Maulin Formation. Upstream of this and in the vicinity of Castletown Bridge the underlying geology is that of green, red-purple, buff slate, and siltstone, which is part of the Oaklands Formation.

The lower part of the river system is underlain by Ordovician green & grey slates with thin siltstone, which is part of what is known as the Ballylane Formation and at the coast the green, red-purple, buff slate, siltstone (which is part of the Oaklands Formation) occurs again as can be seen on **Figure 4** below.

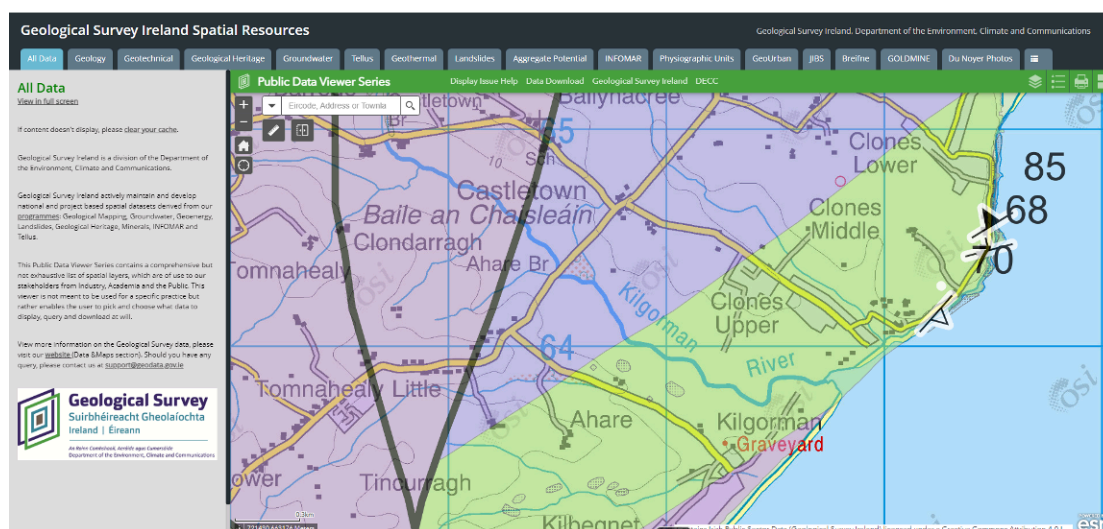


Figure 4. Geology of the study area (Source: Geological Survey of Ireland).

The slopes of the catchment within the study area are overlain by glacial till in a soil formation known as the 'Macamore soil association' which consists of a fine loamy soil over clayey calcareous Irish sea till. In the immediate environs of the river and it's floodplain the soils are alluvial in nature, with blown sand/dunes at the coast as shown on **Figure 5** below. Upstream of Castletown Bridge in the upper part of the catchment the Inch River rises on the slopes of Slievefoore and other small local hills such as Rathpierce Hill. Here the soils are a fine loamy drift with siliceous stones in a soil formation known as the 'Clonroche soil association'.

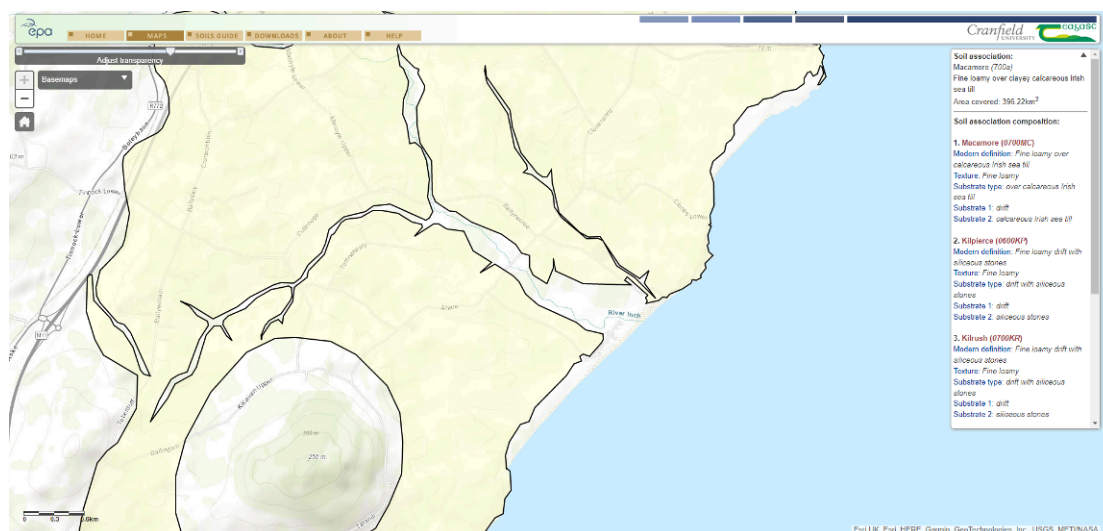


Figure 5. Soils in the vicinity of Inch River are dominated by alluvial soils and glacial till (Source: EPA).

3.2 Inch River

The Inch River is located within the Owenavorrach Catchment (011) and within the Inch Wexford Sub-Catchment (Inch[Wexford]_SC_010). The Inch River rises in the vicinity of Rathpierecehill and other local hills and flows through Kilanierin Village. The Clonlough Stream rises on the slopes of Croghankinsella Mountain through Coolgreany Village and joins the Inch River at Clonlough. A series of watercourses also join the Inch River from Tara Hill. There are many headwater streams of the Inch River as shown on **Figure 6** below. The section of the Inch river within the study area at Ahare - Kilgorman is known as the INCH (WEXFORD)_020 and extends for 39.85km within the Inch Wexford Sub-Catchment.

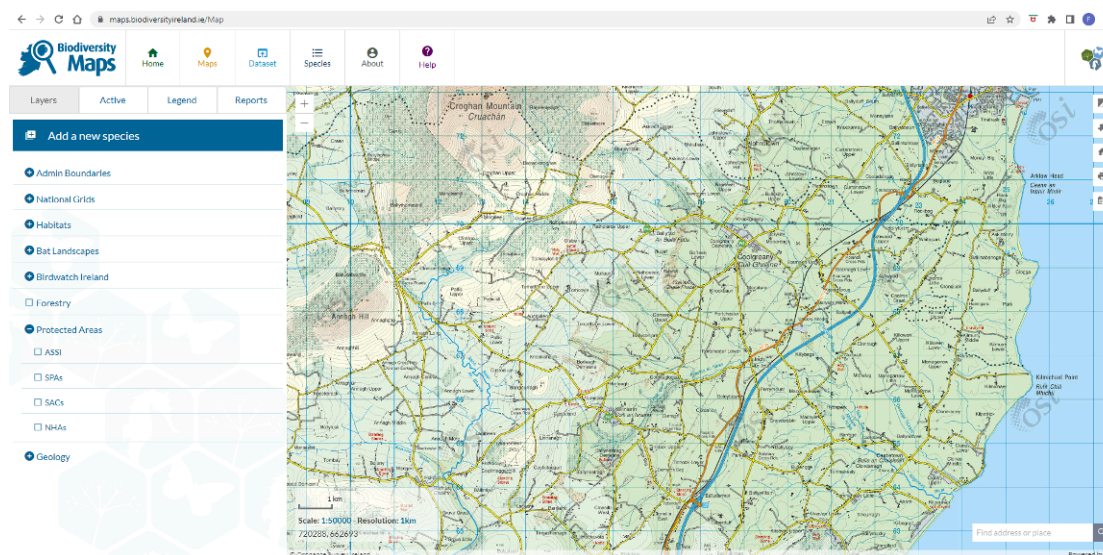


Figure 6. The Inch River.

Habitat Classification

Within the environs of the study area at Ahare Kilgorman the Inch River is best classified as a lowland depositing watercourse.

Lowland Depositing Rivers (FW2) are described by Fossitt (2000) as follows:

“This category includes watercourses, or sections of these, where fine sediments are deposited on the river bed. Depositing conditions are typical of lowland areas where gradients are low and water flow is slow and sluggish. These rivers vary in size but are usually larger and deeper than those above. In a natural state these rivers erode their banks and meander across floodplains. Because of this, most have been modified to some extent to control water flow, facilitate navigation or prevent flooding and erosion. Canalised or walled sections of rivers are included here, as are natural watercourses that have been dredged or deepened, and those with artificial earth banks. If channels have been excavated to divert water away from the main watercourse, these should be considered under canals - FW3. Tidal sections of rivers with brackish water influence are excluded (see tidal rivers - CW2). Rejuvenated sections of lowland rivers associated with rapids, waterfalls and weirs should be considered under **eroding/upland rivers - FW1** if eroding conditions predominate.

Plant and animal communities are influenced by numerous factors including substratum type, water force, nutrient status, water quality, channel size, water depth, human impact, disturbance and shade. Within a river channel there may be deep pools, backwaters, banks or mid-channel bars of gravel, sand or mud, in addition to vegetated islands and fringing reedbeds. The substratum of depositing/lowland rivers comprises mainly fine alluvial or peaty sediments. Vegetation may include floating and submerged aquatics, with fringing emergents in shallow water or overgrowing the banks. Floating aquatics can include water-lilies (*Nuphar lutea*, *Nymphaea alba*), pondweeds (*Potamogeton* spp.), water-starworts (*Callitriche* spp.) and Unbranched Bur-reed (*Sparganium emersum*). Tall emergents such as Common Club-rush (*Schoenoplectus lacustris*), Common Reed (*Phragmites australis*) and Yellow Iris (*Iris pseudacorus*) may also be present. Large areas of fringing reedbed should be considered under **reed and large sedge swamps - FS1**”.

3.3 Nature Conservation Designations

Some of the lands within the study area adjoining the Inch River on the northern bank are the subject of formal nature conservation designations as described above in **Section 2.3.1**. This area is known as the Kilgorman River Marsh pNHA (Site Code: 001834).

Further north along the coast the sand dune system at Kilpatrick is designated for nature conservation (Kilpatrick Sandhills pNHA (Site Code: 001742) and Kilpatrick Sandhills SAC (Site Code: 001742)). The locations of these sites are shown on **Figure 7** below.

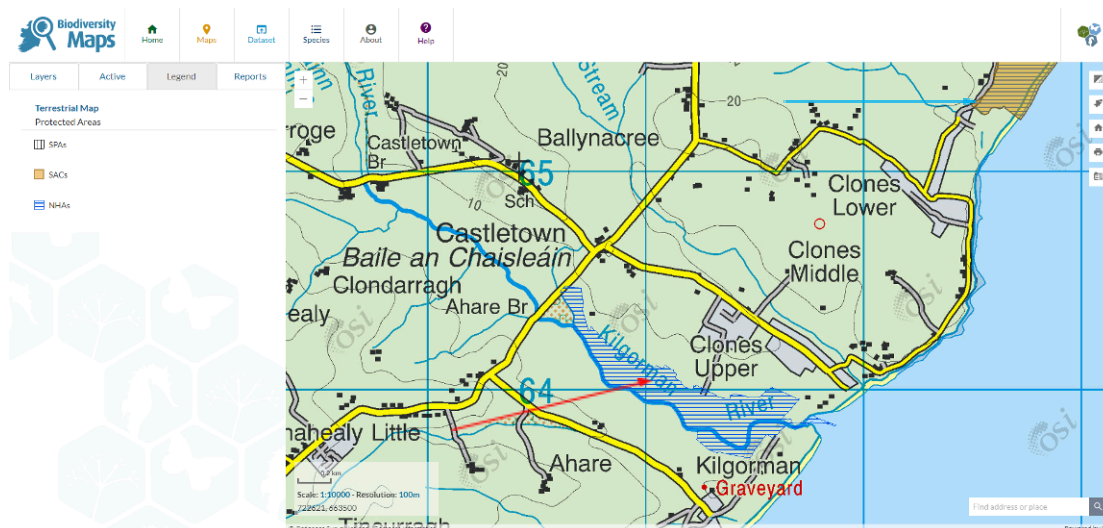


Figure 7. The Kilgorman Marsh pNHA is an area legally designated for nature conservation within the environs of the Inch River at Ahare Kilgorman (indicated by the red arrow). The Kilpatrick Sandhills pNHA/SAC further north along the coast is indicated by the blue arrow.

The site synopsis, which is a document that summarises the conservation interest of these designated sites is presented in **Appendix 1** and **2**.

3.4 Land Use Change within the Study Area

A review of historic mapping for the environs of the Inch River in the Ahare Kilgorman area was completed. The first edition Ordnance Survey Ireland 6" series map shows a network of small fields (particularly to the north of the river at Clones Upper and to the south west of the river at Clondarragh Ahare) as shown on **Figure 8** and **Figure 9** below.

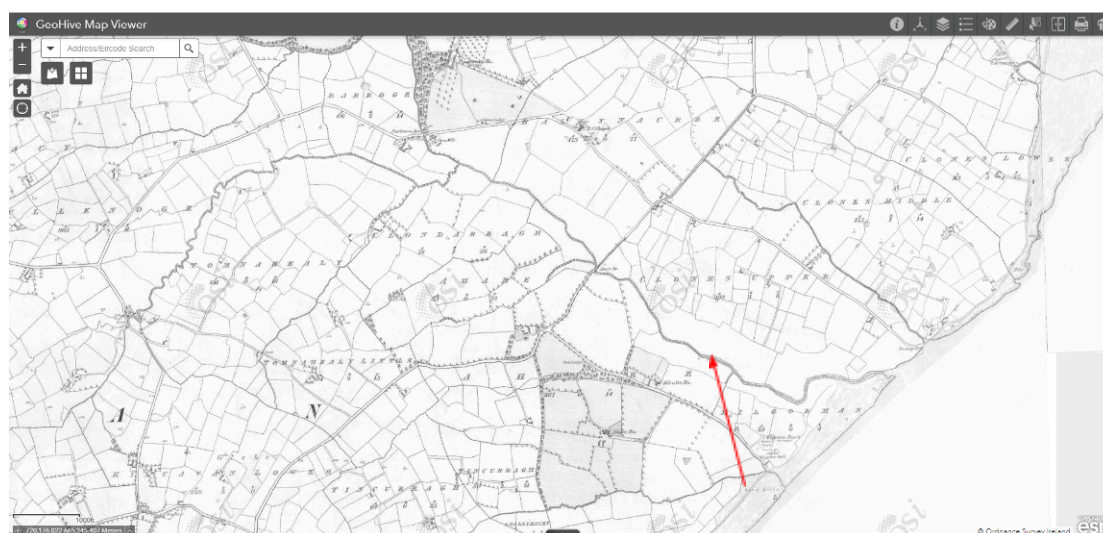


Figure 8. The Inch River at Ahare Kilgorman in the mid-1800s (OSI First Edition 6" Map Series).

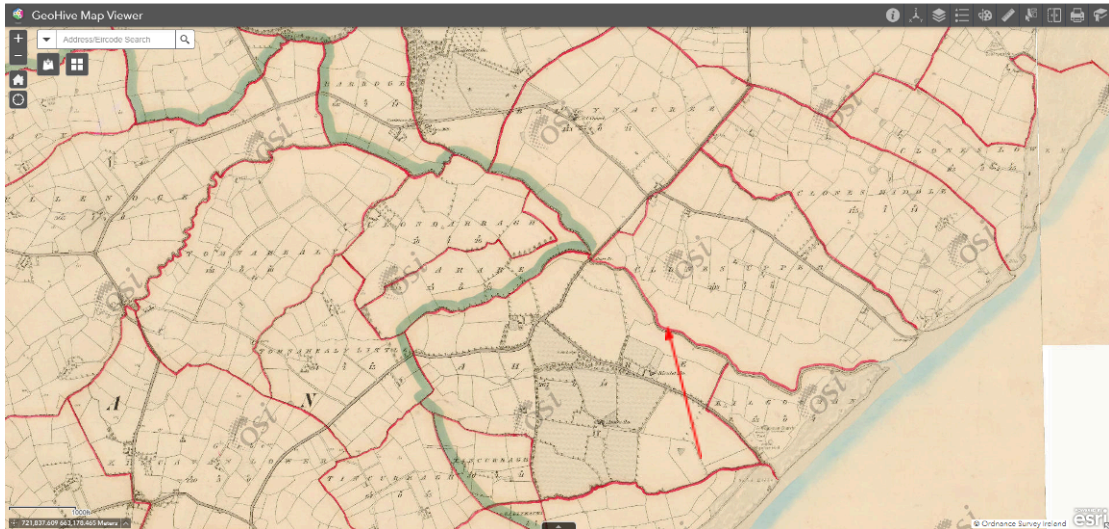


Figure 9. The Inch River at Ahare Kilgorman in the mid-1800s (OSI First Edition 6" Map Series - colour).

By the early 1900s very little had changed in the area in terms of intensive land use and the wetland habitat on the north side of the river can be clearly seen as seen on the last 6" edition mapping (**Figure 10**).

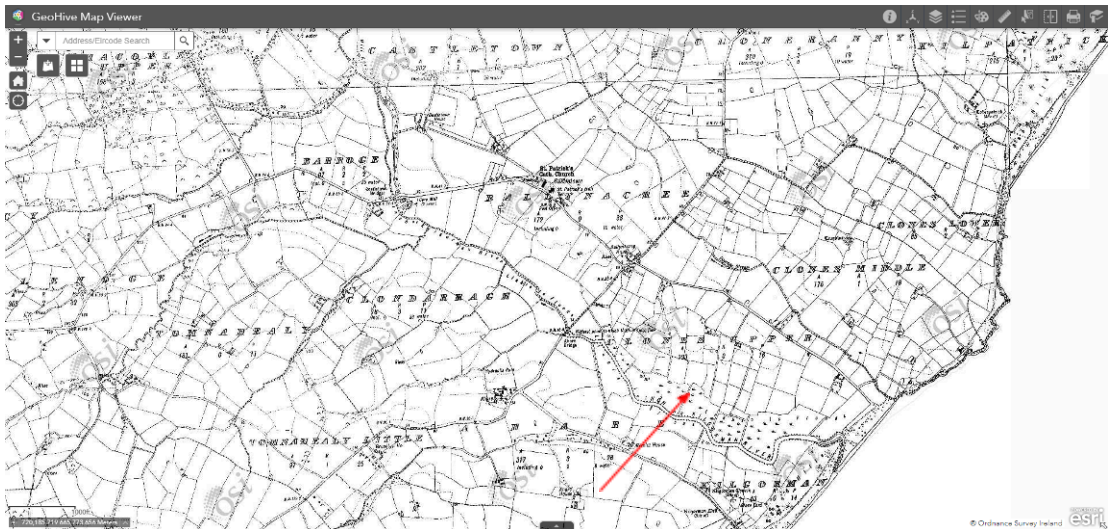


Figure 10. The OSI Last Edition 6" Map Series.

By the time the 25" maps were produced (**Figure 11** and **12**) the surrounding lands remained relatively unchanged. The extent of the lands subject to flooding are clearly shown.

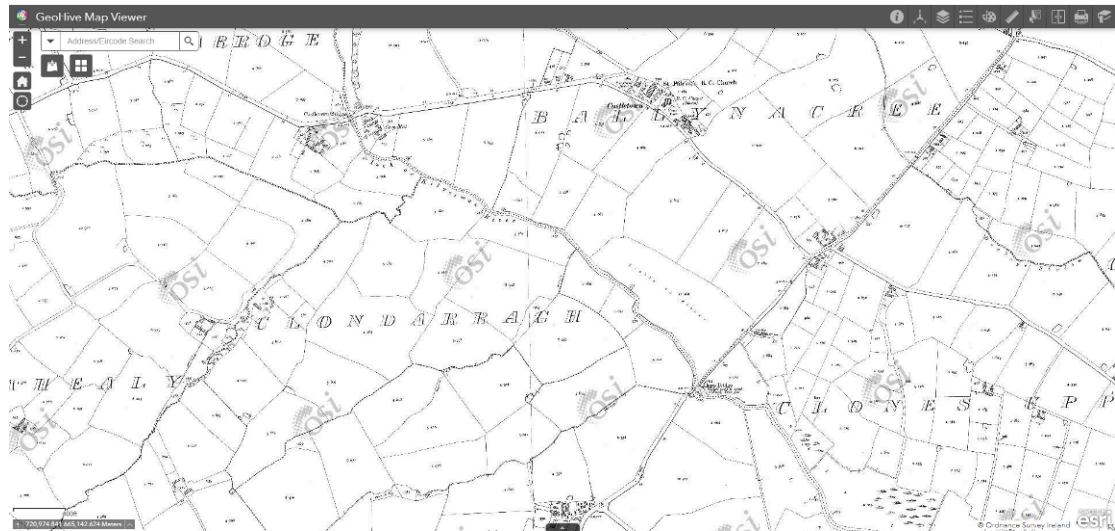


Figure 11. The Inch River between Castletown Bridge and Ahare Bridge (OSI 25" Map Series).

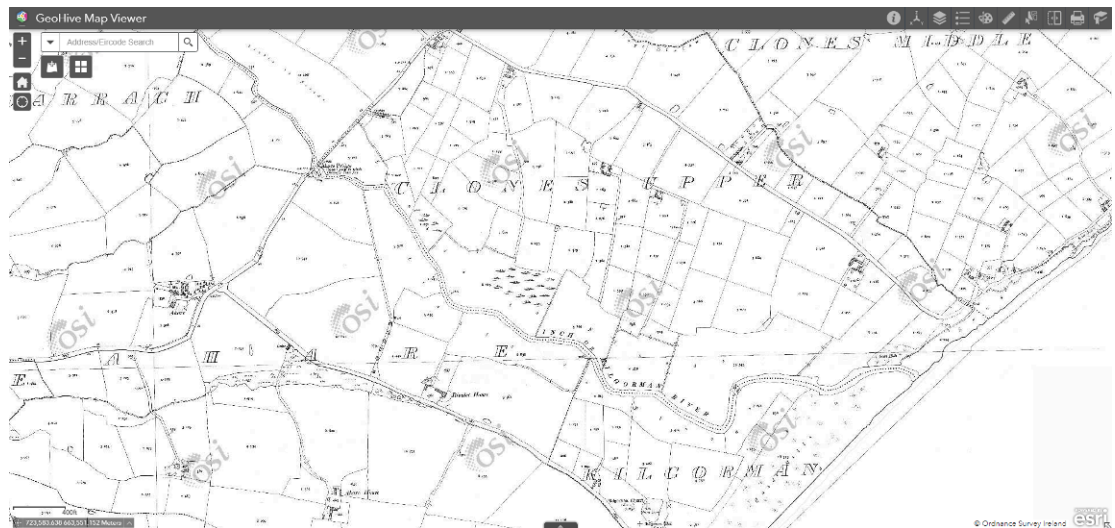


Figure 12. The Inch River from Ahare Bridge downstream (OSI 25" Map Series).

In more recent imagery there has been removal of hedgerows and field boundaries within the landscape, drainage and afforestation, coupled with intensive agricultural land use and the development of holiday homes/mobile homes and an increase in rural housing as can be seen on **Figures 13 and 14** below.

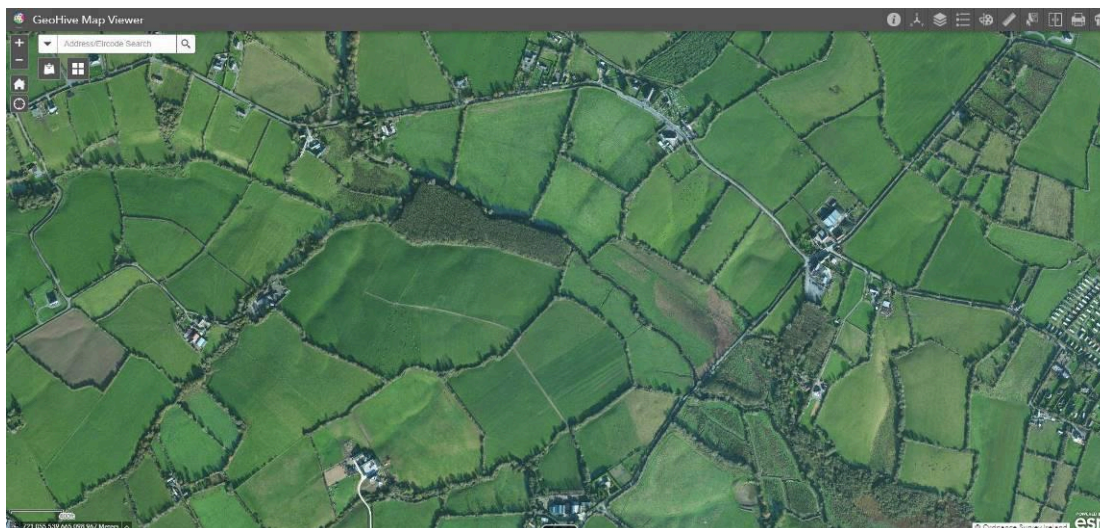


Figure 13. Current aerial imagery of the study area between Castletown Bridge and Ahare Bridge.

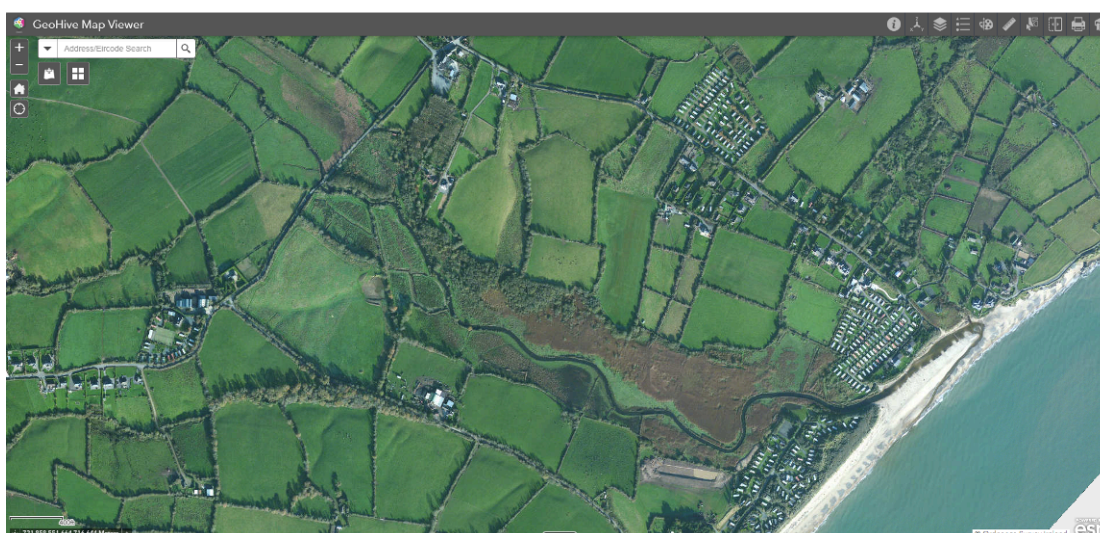


Figure 14. Current aerial imagery of the study area downstream of Ahare Bridge.

3.5 Inch River – Water Quality

Water quality in the Inch River is monitored as part of Ireland's reporting obligations under the Water Framework Directive. Samples are taken at a number of standard sampling locations as shown on **Figure 14** below. These include the Castletown and Ahare Bridges.

During the 2010 – 2015 monitoring period water quality in the Inch river was assessed as 'Moderate' and retained this status during the 2013 – 2018 period but was assessed as being 'At Risk' during the 2nd cycle of the Water Framework Directive. Water quality has improved during the 2016 – 2021 period and the river is now assessed as 'Good'. The status of the Inch River within the Ahare – Kilgorman study area remains 'At Risk' during the 3rd cycle of the Water Framework Directive. These are shown on **Figures 15 to 19** below.

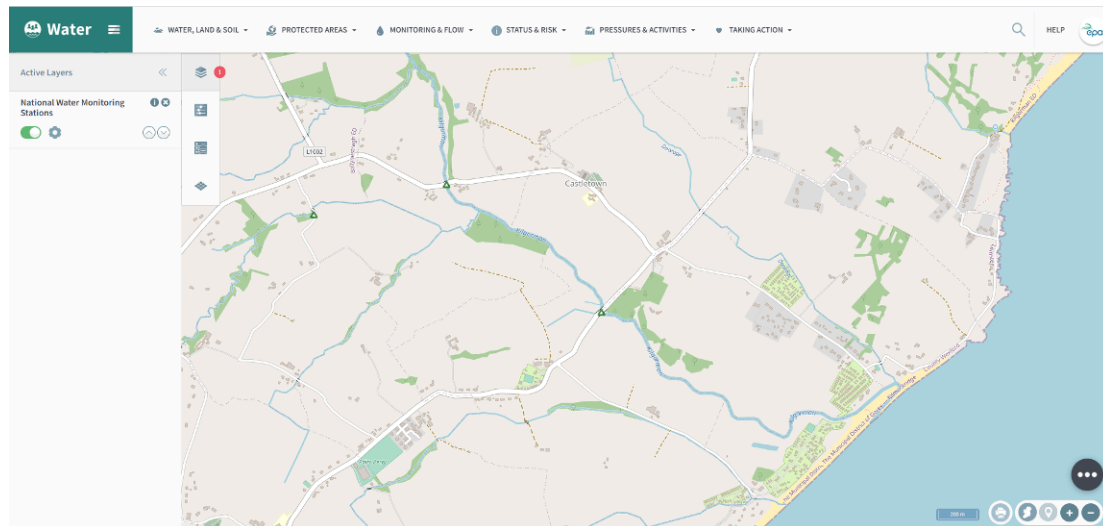


Figure 14. Water sampling locations on the Inch River within the Ahare Kilgorman study area (Source: www.catchments.ie).

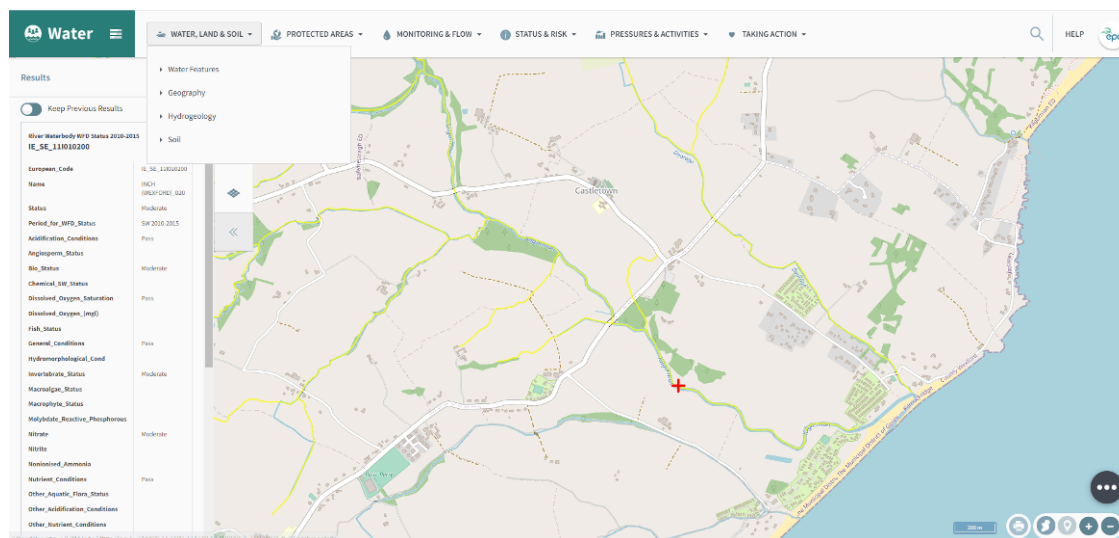


Figure 15. The Inch River within the Ahare Kilgorman study area was assessed as 'Moderate' status during the 2010 - 2015 round of the Water Framework Directive (Source: www.catchments.ie).

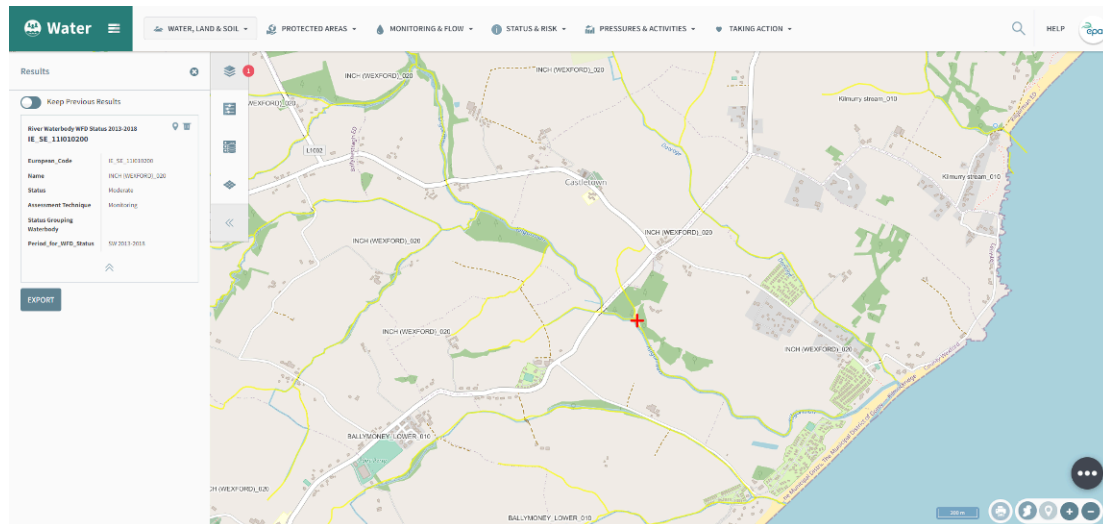


Figure 16. The Inch River within the Ahare Kilgorman study area was assessed as 'Moderate' status during the 2013 - 2018 monitoring period (Source: www.catchments.ie).

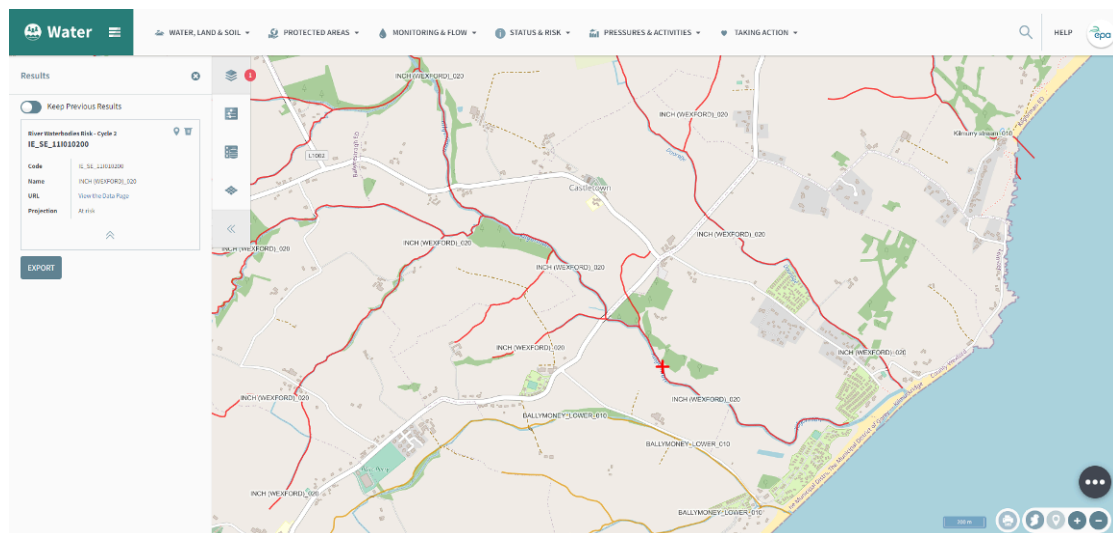


Figure 17. The status of the Inch River within the Ahare Kilgorman study area was assessed as being 'At Risk' during the 2nd cycle of the Water Framework Directive (Source: www.catchments.ie).

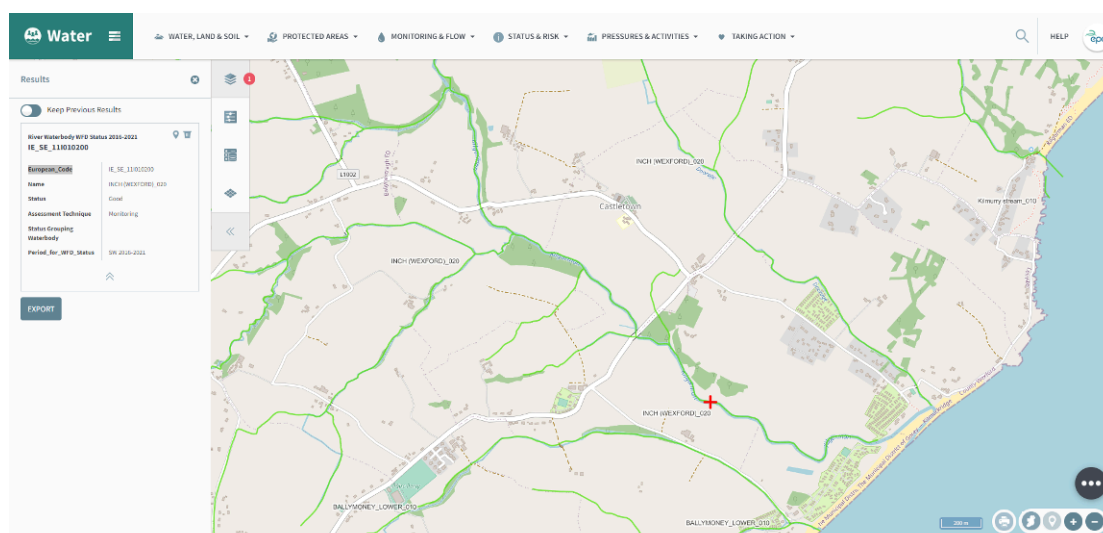


Figure 18. The Inch River within the Ahare - Kilgorman study area was assessed as 'Good' status during the 2016 - 2021 monitoring period (Source: www.catchments.ie).

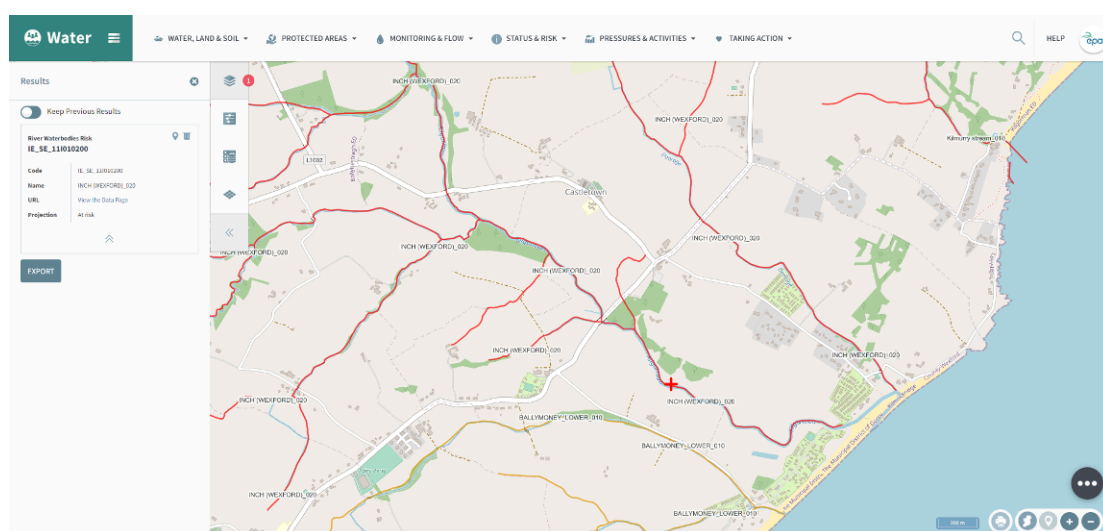


Figure 19. The status of the Inch River within the Ahare - Kilgorman study area remains 'At Risk' during the 3rd cycle of the Water Framework Directive (Source: www.catchments.ie).

The Inch River remains classified as “at risk” of failing to meet the Water Framework Directive (WFD) objective of at least “good” ecological status by 2027.

3.6 Biodiversity Records

A review of biodiversity records from within the study area held by the National Biodiversity Data Centre was completed. These are presented in **Table 1** in **Appendix 1**. They include records of:

- Birds
- Ferns
- Flowering Plants
- A shield bug and a moth, and
- Bats

3.7 Wetlands of County Wexford

The ponds which are found in the lands on the southern part of the Inch River downstream of Ahare Bridge are included within the Wetland Map of Ireland as shown on **Figure 20** below. The Kilgorman River Marsh pNHA and Kilpatrick Sandhills pNHA/SAC are also included in this dataset.

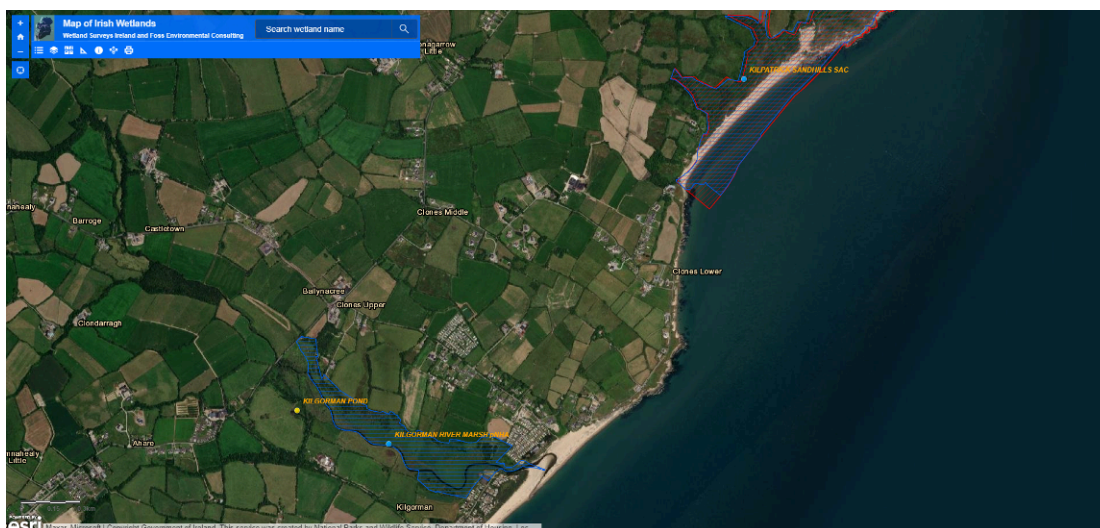


Figure 20. Wetlands noted in the vicinity of the Inch River at Ahare Kilgorman (Source: Wetland Map of Ireland).

3.8 Flora of Wexford

Paul Green who has written the 'Flora of Wexford' kindly shared his records of vascular plants from the wetland habitats and fields in and around the Inch River within the study area. He has recorded over 198 plant species here – this data is presented in **Table 1** in **Appendix 4**.

3.9 Bats in the Inch River Catchment

The National Biodiversity Data Centre has records of Daubenton's Bat (*Myotis daubentonii*) and Common Pipistrelle (*Pipistrellus pipistrellus*) from the study area.

Bats in the Inch River Catchment have been the subject of a recent detector survey, which was completed by the Wexford Bat Group on 30th August 2022 at Toss Byrne's, upstream of the study area. Here they recorded good levels of activity of Common Pipistrelle (*Pipistrellus pipistrellus*) as shown on **Figures 21** and **22** below.

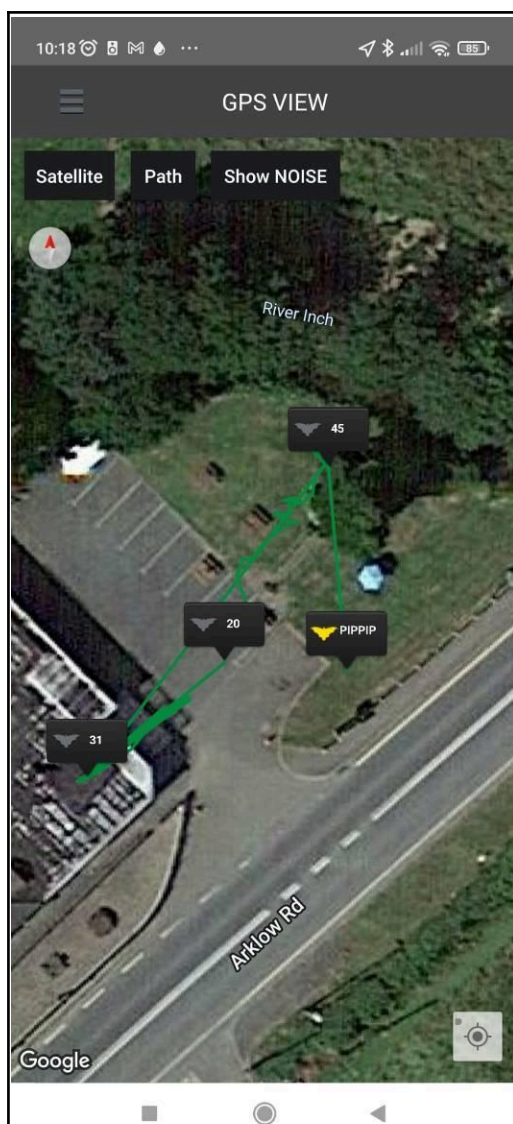


Figure 21. Bat activity recorded at Toss Byrne's Pub.

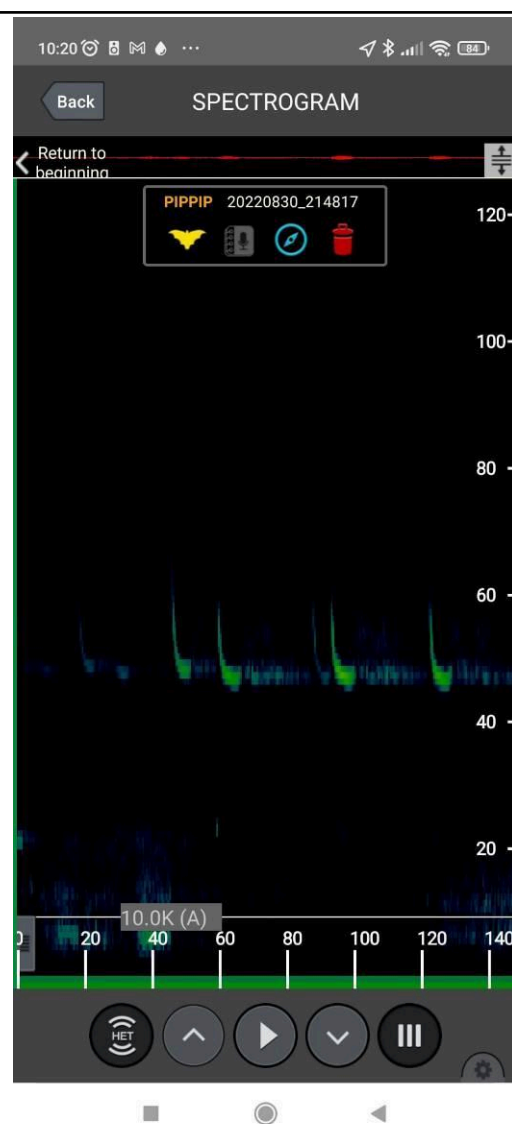


Figure 22. Sonogram of Common pipistrelle at Toss Byrne's Pub.

4. RESULTS - FIELD SURVEYS

To be completed.

5. RECOMMENDATIONS FOR BIODIVERSITY ENHANCEMENT

To be completed.

6. REFERENCES

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7. APPENDICES

7.1 Appendix 1 – Site Synopsis for Kilgorman River Marsh pNHA 001834

SITE SYNOPSIS

SITE NAME: KILGORMAN RIVER MARSH

SITE CODE: 001834

Kilgorman River Marsh is situated on the east coast near Castletown and just south of Kilmichael Point. The site comprises the lower reaches of a small river along a stretch of approximately 1.5 km before it enters the sea.

The northern banks of the river are liable to flooding and support a range of wetland habitats. There is a gradation from saltmarsh near the sea to freshwater marsh further inland. The saltmarsh is characterised by Saltmarsh Rush (*Juncus gerardi*), Slender Spike-rush (*Eleocharis uniglumis*) and Sea Arrowgrass (*Triglochin maritima*). There are reedbeds in the wetter areas, which are dominated by Common Reed (*Phragmites australis*), with occasional Grey Club-rush (*Scirpus lacustris* subsp. *tabernaemontani*).

As the brackish influence declines saltmarsh is replaced by a wet grassland with Creeping Bent (*Agrostis stolonifera*), Marsh Foxtail (*Alopecurus geniculatus*), Soft Rush (*Juncus effusus*) and Greater Pond-sedge (*Carex riparia*).

Further inland is a freshwater marsh which includes Bulrush (*Typha latifolia*), Water Horsetail (*Equisetum fluviatile*), Branched Bur-reed (*Sparganium erectum*) and a variety of herbaceous species such as Fool's Water-cress (*Apium nodiflorum*) and Lesser Water-parsnip (*Berula erecta*).

Further back from the river, a wet Alder (*Alnus glutinosa*) woodland has developed with a ground flora which includes Greater Tussock-sedge (*Carex paniculata*) and Water Dropwort (*Oenanthe crocata*).

The site attracts Grey Heron, Mute Swan, Sedge Warbler, and is suitable habitat for Water Rail.

Brown Trout use the river, although the water is rather turbid.

The main interest of this site is the wetland vegetation associated with the river. It is a good example of a gradation from saltmarsh to freshwater marsh.

16th February, 1995.

7.2 Appendix 2 – Site Synopsis for Kilpatrick Sandhills pNHA (Site Code: 001742)

SITE SYNOPSIS

SITE NAME: KILPATRICK SANDHILLS SAC

SITE CODE: 001742

Kilpatrick Sandhills are located about 8 km south of Arklow town, and just south of the Wicklow/Wexford county boundary. The site is comprised of a mosaic of coastal habitats but primarily a mature sand dune system which extends along 2 km of coastline.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

- [1210] Annual Vegetation of Drift Lines
- [2110] Embryonic Shifting Dunes
- [2120] Marram Dunes (White Dunes)
- [2130] Fixed Dunes (Grey Dunes)*
- [2150] Decalcified Dune Heath*

Various stages of sand dune formation can be seen at this site, from small fore dunes which are stabilized by Marram (*Ammophila arenaria*), to mature fixed dunes colonised by a species-rich sward of grasses and herbaceous plants.

Embryonic shifting fore dunes occur mainly along the middle and southern sections of the site. Species such as Marram, Sand Couch (*Elymus farctus*) and Sea Sandwort (*Honkenya peploides*) are present. The Marram dunes are dominated by Marram, with species such as Sea Spurge (*Euphorbia paralias*), Sea Bindweed (*Calystegia soldanella*) and Sea-holly (*Eryngium maritimum*) also found.

In the fixed dunes Red Fescue (*Festuca rubra*) is the dominant grass. Other species present include Lady's Bedstraw (*Galium verum*), Kidney Vetch (*Anthyllis vulneraria*), Wild Thyme (*Thymus praecox*) and Sheep's-bit (*Jasione montana*). On the older dunes, there is an abundance of legumes, including Common Bird's-foot-trefoil (*Lotus corniculatus*), White Clover (*Trifolium repens*), Hop Trefoil (*Trifolium campestre*) and Lesser Trefoil (*Trifolium dubium*).

Further inland, on the more mature grey dunes, Burnet Rose (*Rosa pimpinellifolia*) is common. The scarce species Lesser Meadow-rue (*Thalictrum minus*) occurs among the vegetation of the more mobile dunes. Dune heath occurs behind the fixed dunes in the mid and southern sections of the site. This is a very rare vegetation type in Ireland. The heathy scrub is dominated by Gorse (*Ulex europaeus*), and other species recorded in this area include Blackthorn (*Prunus spinosa*), Bracken (*Pteridium aquilinum*), Cleavers (*Galium aparine*), Common Sorrel (*Rumex acetosa*), Common Ragwort (*Senecio jacobaea*), Burnet Rose, Tormentil (*Potentilla erecta*) and Bramble.

On the landward side of the dunes, in the middle of the site, there is a low-lying marsh which is dominated by Bulrush (*Typha latifolia*), with

Branched Bur-reed (*Sparganium erectum*), Yellow Iris (*Iris pseudacorus*), Tubular Water-dropwort (*Oenanthe fistulosa*), Wild Angelica (*Angelica sylvestris*) and sedges (*Carex* spp.). To the west of the marsh is an area of wet scrub woodland. The canopy is formed of Alder (*Alnus glutinosa*) and willows (*Salix* spp.), with Bramble (*Rubus fruticosus* agg.), Honeysuckle (*Lonicera periclymenum*), Great Horsetail (*Equisetum telmateia*), Wood Dock (*Rumex sanguineus*) and Narrow Buckler-fern (*Dryopteris carthusiana*) among the ground flora.

At the northern end of the site is a rocky headland, Kilmichael Point, which affords fine views along the coastline. Rock outcrops occur where the overlying clay drift has eroded, exposing cliffs which rise in steps to about 10 m. The headland supports a species-rich coastal grassland and cliff vegetation, including the scarce species, Rock Sea-lavender (*Limonium binervosum*).

The Red Data Book species, Sea Stock (*Matthiola sinuata*), has been observed among rocky crevices here in the past, but has not been recorded recently. The species is now thought to be extinct in Ireland.

At the southern end of the site, the sand dunes and beach are used by visitors for amenity purposes. Parts of the site are also used for grazing cattle. Grazing is a critical factor in coastal systems: the correct grazing pressure maintains species-rich open swards and curtails scrub encroachment. Over-exposure to grazing and amenity usage can cause damage to dune vegetation and exacerbate dune erosion.

The site is ecologically important as a good example of a mature and fairly intact sand dune system which shows the developmental stages of dunes from fore dunes to mature grey dunes. A good diversity of habitats and species are present. Fixed dunes and dune heath are priority habitats under Annex I of the E.U. Habitats Directive.

6.11.2013

7.3 Appendix 3 - Records held by the National Biodiversity Data Centre

Table 1. Records held by the National Biodiversity Data Centre from the study area.

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
bird	Black-headed Gull (<i>Larus ridibundus</i>)	1	13/01/2018	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Blue Tit (<i>Cyanistes caeruleus</i>)	1	13/01/2018	Birds of Ireland	
bird	Chaffinch (<i>Fringilla coelebs</i>)	1	13/01/2018	Birds of Ireland	
bird	Coal Tit (<i>Periparus ater</i>)	1	13/01/2018	Birds of Ireland	
bird	Common Blackbird (<i>Turdus merula</i>)	1	13/01/2018	Birds of Ireland	
bird	Common Buzzard (<i>Buteo buteo</i>)	2	13/01/2018	Birds of Ireland	
bird	Common Moorhen (<i>Gallinula chloropus</i>)	2	18/03/2019	Birds of Ireland	
bird	Common Pheasant (<i>Phasianus colchicus</i>)	1	18/03/2019	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
bird	Common Snipe (<i>Gallinago gallinago</i>)	1	01/01/2018	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Starling (<i>Sturnus vulgaris</i>)	1	13/01/2018	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Wood Pigeon (<i>Columba palumbus</i>)	1	13/01/2018	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
bird	Eurasian Teal (<i>Anas crecca</i>)	2	18/03/2019	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern

					Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Eurasian Treecreeper (<i>Certhia familiaris</i>)	1	18/03/2019	Birds of Ireland	
bird	Eurasian Wigeon (<i>Anas penelope</i>)	1	18/03/2019	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	European Goldfinch (<i>Carduelis carduelis</i>)	1	01/01/2018	Birds of Ireland	
bird	European Greenfinch (<i>Carduelis chloris</i>)	1	13/01/2018	Birds of Ireland	
bird	European Robin (<i>Erithacus rubecula</i>)	1	13/01/2018	Birds of Ireland	
bird	Fieldfare (<i>Turdus pilaris</i>)	1	13/01/2018	Birds of Ireland	
bird	Gadwall (<i>Anas strepera</i>)	1	18/03/2019	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Great Cormorant (<i>Phalacrocorax carbo</i>)	3	18/03/2019	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Great Spotted Woodpecker (<i>Dendrocopos major</i>)	1	18/03/2019	Birds of Ireland	
bird	Grey Heron (<i>Ardea cinerea</i>)	2	01/01/2018	Birds of Ireland	
bird	Hedge Accentor (<i>Prunella modularis</i>)	1	18/03/2019	Birds of Ireland	
bird	Hooded Crow (<i>Corvus cornix</i>)	3	18/03/2019	Birds of Ireland	
bird	Lesser Redpoll (<i>Carduelis cabaret</i>)	1	01/01/2018	Birds of Ireland	
bird	Little Grebe (<i>Tachybaptus ruficollis</i>)	1	18/03/2019	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Mallard (<i>Anas platyrhynchos</i>)	2	18/03/2019	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
bird	Meadow Pipit (<i>Anthus pratensis</i>)	1	18/03/2019	Birds of Ireland	
bird	Mew Gull (<i>Larus canus</i>)	2	13/01/2018	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of

					Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Mistle Thrush (<i>Turdus viscivorus</i>)	1	18/03/2019	Birds of Ireland	
bird	Mute Swan (<i>Cygnus olor</i>)	1	18/03/2019	Birds of Ireland	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Northern Lapwing (<i>Vanellus vanellus</i>)	1	28/10/2017	Birds of Ireland	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Redwing (<i>Turdus iliacus</i>)	2	13/01/2018	Birds of Ireland	
bird	Rook (<i>Corvus frugilegus</i>)	1	13/01/2018	Birds of Ireland	
bird	Winter Wren (<i>Troglodytes troglodytes</i>)	1	13/01/2018	Birds of Ireland	
conifer	Sitka Spruce (<i>Picea sitchensis</i>)	1	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
fern	<i>Asplenium trichomanes</i> subsp. <i>quadrivalens</i>	1	10/03/2012	The Flora of County Wexford	
fern	Hart's-tongue (<i>Phyllitis scolopendrium</i>)	1	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
fern	Maidenhair Spleenwort (<i>Asplenium trichomanes</i>)	1	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
fern	<i>Polypodium vulgare</i> Ssensu lato	1	18/03/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
fern	Rustyback (<i>Ceterach officinarum</i>)	1	10/03/2012	The Flora of County Wexford	
fern	Soft Shield-fern (<i>Polystichum setiferum</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Alder (<i>Alnus glutinosa</i>)	4	18/03/2019	Vascular plants: Online Atlas of	

				Vascular Plants 2012 Onwards	
flowering plant	Alexanders (<i>Smyrniolum olusatrum</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Ash (<i>Fraxinus excelsior</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Atlantic Ivy (<i>Hedera hibernica</i>)	1	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Bramble (<i>Rubus fruticosus</i> agg.)	1	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Broad-leaved Dock (<i>Rumex obtusifolius</i>)	2	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Cleavers (<i>Galium aparine</i>)	1	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Clustered Dock (<i>Rumex conglomeratus</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Common Couch (<i>Elytrigia repens</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Common Duckweed (<i>Lemna minor</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Common Nettle (<i>Urtica dioica</i>)	1	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Common Ragwort (<i>Senecio jacobaea</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Creeping Bent (<i>Agrostis stolonifera</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Creeping Buttercup (<i>Ranunculus repens</i>)	1	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	

flowering plant	Fool's-water-cress (<i>Apium nodiflorum</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Gorse (<i>Ulex europaeus</i>)	1	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Great Willowherb (<i>Epilobium hirsutum</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Grey Sedge (<i>Carex divulsa</i> subsp. <i>divulsa</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Ground-ivy (<i>Glechoma hederacea</i>)	1	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Groundsel (<i>Senecio vulgaris</i>)	1	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Hawthorn (<i>Crataegus monogyna</i>)	2	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Hemlock Water-dropwort (<i>Oenanthe crocata</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Herb-Robert (<i>Geranium robertianum</i>)	1	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Lapsana communis subsp. <i>communis</i>	1	10/03/2012	The Flora of County Wexford	
flowering plant	Lesser Celandine (<i>Ranunculus ficaria</i>)	1	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Meadow Buttercup (<i>Ranunculus acris</i>)	2	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Meadow Vetchling (<i>Lathyrus pratensis</i>)	1	10/03/2012	The Flora of County Wexford	

flowering plant	Meadowsweet (<i>Filipendula ulmaria</i>)	2	18/03/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Pendulous Sedge (<i>Carex pendula</i>)	2	18/03/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Primrose (<i>Primula vulgaris</i>)	1	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	Purple-loosestrife (<i>Lythrum salicaria</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	<i>Ranunculus ficaria</i> subsp. <i>bulbilifer</i>	1	10/03/2012	The Flora of County Wexford	
flowering plant	Reed Canary-grass (<i>Phalaris arundinacea</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Reed Sweet-grass (<i>Glyceria maxima</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Ribwort Plantain (<i>Plantago lanceolata</i>)	1	13/01/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	<i>Rumex crispus</i> subsp. <i>crispus</i>	1	10/03/2012	The Flora of County Wexford	
flowering plant	<i>Rumex sanguineus</i>	1	10/03/2012	The Flora of County Wexford	
flowering plant	Soft-rush (<i>Juncus effusus</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Spear Thistle (<i>Cirsium vulgare</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Tall Fescue (<i>Festuca arundinacea</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Tufted Hair-grass (<i>Deschampsia cespitosa</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Upright Hedge-parsley (<i>Torilis japonica</i>)	1	10/03/2012	The Flora of County Wexford	
flowering plant	Wood Avens (<i>Geum urbanum</i>)	1	10/03/2012	The Flora of County Wexford	

horsetail	Great Horsetail (<i>Equisetum telmateia</i>)	1	10/03/2012	The Flora of County Wexford	
insect - moth	Light Brown Apple Moth (<i>Epiphyas postvittana</i>)	1	03/06/2018	Moths Ireland	
insect - true bug (Hemiptera)	Green Shieldbug (<i>Palomena prasina</i>)	1	18/03/2019	True Bugs (Heteroptera) of Ireland	
terrestrial mammal	Daubenton's Bat (<i>Myotis daubentonii</i>)	1	06/08/2008	National Bat Database of Ireland	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
terrestrial mammal	Pipistrelle (<i>Pipistrellus pipistrellus sensu lato</i>)	1	06/08/2008	National Bat Database of Ireland	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts

7.4 Appendix 4 – Vascular Plant Species recorded by Paul Green from within the Ahare Kilgorman study area.

Table 1. Vascular Plant Species recorded by Paul Green from within the Ahare Kilgorman study area.

Taxon	Vernacular
<i>Acer pseudoplatanus</i>	Sycamore
<i>Aesculus hippocastanum</i>	Horse-chestnut
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alisma plantago-aquatica</i>	Water-plantain
<i>Alliaria petiolata</i>	Garlic Mustard
<i>Allium ursinum</i>	Ramsons
<i>Alnus glutinosa</i>	Alder
<i>Alopecurus geniculatus</i>	Marsh Foxtail
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>Anemone nemorosa</i>	Wood Anemone
<i>Angelica sylvestris</i>	Wild Angelica
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Aphanes australis</i>	Slender Parsley-piert
<i>Apium nodiflorum</i>	Fool's-water-cress
<i>Aquilegia vulgaris</i>	Columbine
<i>Arrhenatherum elatius</i> var. <i>bulbosum</i>	False Oat-Grass
<i>Arum maculatum</i>	Lords-and-Ladies
<i>Asplenium ceterach</i>	Rustyback
<i>Asplenium ruta-muraria</i>	Wall-rue
<i>Asplenium scolopendrium</i>	Hart's-tongue
<i>Asplenium trichomanes</i>	Maidenhair Spleenwort
<i>Atriplex prostrata</i>	Spear-leaved Orache
<i>Avena fatua</i>	Wild-oat
<i>Bellis perennis</i>	Daisy
<i>Brachypodium sylvaticum</i>	False-brome
<i>Brassica rapa</i> subsp. <i>campestris</i>	Wild Turnip
<i>Bromus hordeaceus</i>	Soft-brome
<i>Callitriche</i> agg.	Water-starwort
<i>Callitriche obtusangula</i>	Blunt-fruited Water-starwort
<i>Callitriche stagnalis</i>	Common Water-starwort
<i>Caltha palustris</i>	Marsh-marigold
<i>Calystegia sepium</i> subsp. <i>sepium</i>	Hedge Bindweed
<i>Capsella bursa-pastoris</i>	Shepherd's-purse
<i>Cardamine flexuosa</i>	Wavy Bitter-cress
<i>Cardamine hirsuta</i>	Hairy Bitter-cress
<i>Cardamine pratensis</i>	Cuckooflower
<i>Carex divulsa</i> subsp. <i>divulsa</i>	Grey Sedge

Taxon	Vernacular
<i>Carex flacca</i>	Glaucous Sedge
<i>Carex paniculata</i>	Greater Tussock-sedge
<i>Carex pendula</i>	Pendulous Sedge
<i>Carex remota</i>	Remote Sedge
<i>Cerastium fontanum</i>	Common Mouse-ear
<i>Cerastium glomeratum</i>	Sticky Mouse-ear
<i>Chamerion angustifolium</i>	Rosebay Willowherb
<i>Chenopodium album</i>	Fat-hen
<i>Cirsium arvense</i>	Creeping Thistle
<i>Cirsium palustre</i>	Marsh Thistle
<i>Cirsium vulgare</i>	Spear Thistle
<i>Crataegus monogyna</i>	Hawthorn
<i>Crococsmia x crocosmiiiflora</i>	Montbretia (C. aurea x pottsii)
<i>Cynosurus cristatus</i>	Crested Dog's-tail
<i>Dactylis glomerata</i>	Cock's-foot
<i>Daucus carota</i> subsp. <i>carota</i>	Wild Carrot
<i>Deschampsia cespitosa</i>	Tufted Hair-grass
<i>Digitalis purpurea</i>	Foxglove
<i>Eleocharis palustris</i>	Common Spike-rush
<i>Elytrigia repens</i>	Common Couch
<i>Epilobium ciliatum</i>	American Willowherb
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Epilobium obscurum</i>	Short-fruited Willowherb
<i>Epilobium parviflorum</i>	Hoary Willowherb
<i>Equisetum arvense</i>	Field Horsetail
<i>Equisetum fluviatile</i>	Water Horsetail
<i>Equisetum telmateia</i>	Great Horsetail
<i>Fagus sylvatica</i>	Beech
<i>Fallopia japonica</i>	Japanese Knotweed
<i>Festuca rubra</i>	Red Fescue
<i>Ficaria verna</i>	Lesser Celandine
<i>Ficaria verna</i> subsp. <i>fertilis</i>	Lesser Celandine
<i>Ficaria verna</i> subsp. <i>verna</i>	Lesser Celandine
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aparine</i>	Cleavers
<i>Galium palustre</i>	Common Marsh-bedstraw
<i>Geranium dissectum</i>	Cut-leaved Crane's-bill
<i>Geranium robertianum</i>	Herb-Robert
<i>Geum urbanum</i>	Wood Avens
<i>Glechoma hederacea</i>	Ground-ivy
<i>Glyceria fluitans</i>	Floating Sweet-grass
<i>Glyceria maxima</i>	Reed Sweet-grass

Taxon	Vernacular
<i>Gnaphalium uliginosum</i>	Marsh Cudweed
<i>Hedera hibernica</i>	Atlantic Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire-fog
<i>Hypericum tetrapterum</i>	Square-stalked St John's-wort
<i>Iris pseudacorus</i>	Yellow Iris
<i>Juncus articulatus</i>	Jointed Rush
<i>Juncus bufonius</i>	Toad Rush
<i>Juncus effusus</i>	Soft-rush
<i>Lamium purpureum</i>	Red Dead-nettle
<i>Lapsana communis</i>	Nipplewort
<i>Lathyrus pratensis</i>	Meadow Vetchling
<i>Lemna minor</i>	Common Duckweed
<i>Leucanthemum vulgare</i>	Oxeye Daisy
<i>Ligustrum ovalifolium</i>	Garden Privet
<i>Lolium multiflorum</i>	Italian Rye-grass
<i>Lolium multiflorum</i>	Italian Rye-grass
<i>Lolium perenne</i>	Perennial Rye-grass
<i>Lonicera nitida</i>	Wilson's Honeysuckle
<i>Lonicera periclymenum</i>	Honeysuckle
<i>Lythrum salicaria</i>	Purple-loosestrife
<i>Malva sylvestris</i>	Common Mallow
<i>Matricaria discoidea</i>	Pineappleweed
<i>Mentha aquatica</i>	Water Mint
<i>Myosotis laxa</i>	Tufted Forget-me-not
<i>Nasturtium officinale</i>	Water-cress
<i>Oenanthe crocata</i>	Hemlock Water-dropwort
<i>Persicaria hydropiper</i>	Water-pepper
<i>Persicaria maculosa</i>	Redshank
<i>Phalaris arundinacea</i>	Reed Canary-grass
<i>Phleum pratense</i>	Timothy
<i>Phragmites australis</i>	Common Reed
<i>Pinus sylvestris</i>	Scots Pine
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa trivialis</i>	Rough Meadow-grass
<i>Polygonum arenastrum</i>	Equal-leaved Knotgrass
<i>Polygonum aviculare</i>	Knotgrass
<i>Polypodium interjectum</i>	Intermediate Polypody
<i>Polystichum setiferum</i>	Soft Shield-fern
<i>Populus x canadensis</i>	Hybrid Black-poplar
<i>Potamogeton berchtoldii</i>	Small Pondweed

Taxon	Vernacular
<i>Potamogeton natans</i>	Broad-leaved Pondweed
<i>Potamogeton polygonifolius</i>	Bog Pondweed
<i>Potentilla anserina</i>	Silverweed
<i>Potentilla reptans</i>	Creeping Cinquefoil
<i>Primula vulgaris</i>	Primrose
<i>Prunella vulgaris</i>	Selfheal
<i>Prunus domestica</i>	Wild Plum
<i>Prunus spinosa</i>	Blackthorn
<i>Pteridium aquilinum</i>	Bracken
<i>Quercus robur</i>	Pedunculate Oak
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus flammula</i>	Lesser Spearwort
<i>Ranunculus penicillatus</i> subsp. <i>penicillatus</i>	
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Ranunculus sceleratus</i>	Celery-leaved Buttercup
<i>Rosa arvensis</i>	Field-rose
<i>Rosa canina</i> agg.	Dog-rose
<i>Rubus fruticosus</i> agg.	Bramble
<i>Rubus ulmifolius</i>	Elm-leaved Bramble
<i>Rumex acetosa</i>	Common Sorrel
<i>Rumex conglomeratus</i>	Clustered Dock
<i>Rumex crispus</i>	Curled Dock
<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Rumex sanguineus</i>	Wood Dock
<i>Rumex x pratensis</i>	R. crispus x obtusifolius
<i>Sagina procumbens</i>	Procumbent Pearlwort
<i>Salix alba</i>	White Willow
<i>Salix caprea</i>	Goat Willow
<i>Salix cinerea</i> subsp. <i>oleifolia</i>	Rusty Willow
<i>Salix triandra</i>	Almond Willow
<i>Salix viminalis</i>	Osier
<i>Sambucus nigra</i>	Elder
<i>Schedonorus arundinaceus</i>	Tall Fescue
<i>Schoenoplectus tabernaemontani</i>	Grey Club-rush
<i>Scorzonoides autumnalis</i>	Autumn Hawkbit
<i>Scrophularia auriculata</i>	Water Figwort
<i>Scrophularia nodosa</i>	Common Figwort
<i>Senecio aquaticus</i>	Marsh Ragwort
<i>Senecio jacobaea</i>	Common Ragwort
<i>Senecio vulgaris</i>	Groundsel
<i>Sisymbrium officinale</i>	Hedge Mustard
<i>Smyrniolum olusatrum</i>	Alexanders
<i>Solanum dulcamara</i>	Bittersweet

Taxon	Vernacular
<i>Sonchus asper</i>	Prickly Sow-thistle
<i>Sonchus asper</i>	Prickly Sow-thistle
<i>Sonchus oleraceus</i>	Smooth Sow-thistle
<i>Sparganium emersum</i>	Unbranched Bur-reed
<i>Sparganium erectum</i>	Branched Bur-reed
<i>Sparganium erectum</i> subsp. <i>neglectum</i>	Branched Bur-reed
<i>Stachys palustris</i>	Marsh Woundwort
<i>Stachys sylvatica</i>	Hedge Woundwort
<i>Stellaria alsine</i>	Bog Stitchwort
<i>Stellaria graminea</i>	Lesser Stitchwort
<i>Stellaria holostea</i>	Greater Stitchwort
<i>Stellaria media</i>	Common Chickweed
<i>Symphoricarpos albus</i>	Snowberry
<i>Taraxacum</i> agg.	Dandelion
<i>Torilis japonica</i>	Upright Hedge-parsley
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Typha latifolia</i>	Bulrush
<i>Ulex europaeus</i>	Gorse
<i>Ulmus glabra</i>	Wych Elm
<i>Ulmus minor</i>	Small-leaved Elm (sensu Stace)
<i>Umbilicus rupestris</i>	Navelwort
<i>Urtica dioica</i>	Common Nettle
<i>Veronica beccabunga</i>	Brooklime
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Veronica persica</i>	Common Field-speedwell
<i>Veronica serpyllifolia</i>	Thyme-leaved Speedwell
<i>Vicia sativa</i> subsp. <i>segetalis</i>	Common Vetch
<i>Vicia sepium</i>	Bush Vetch