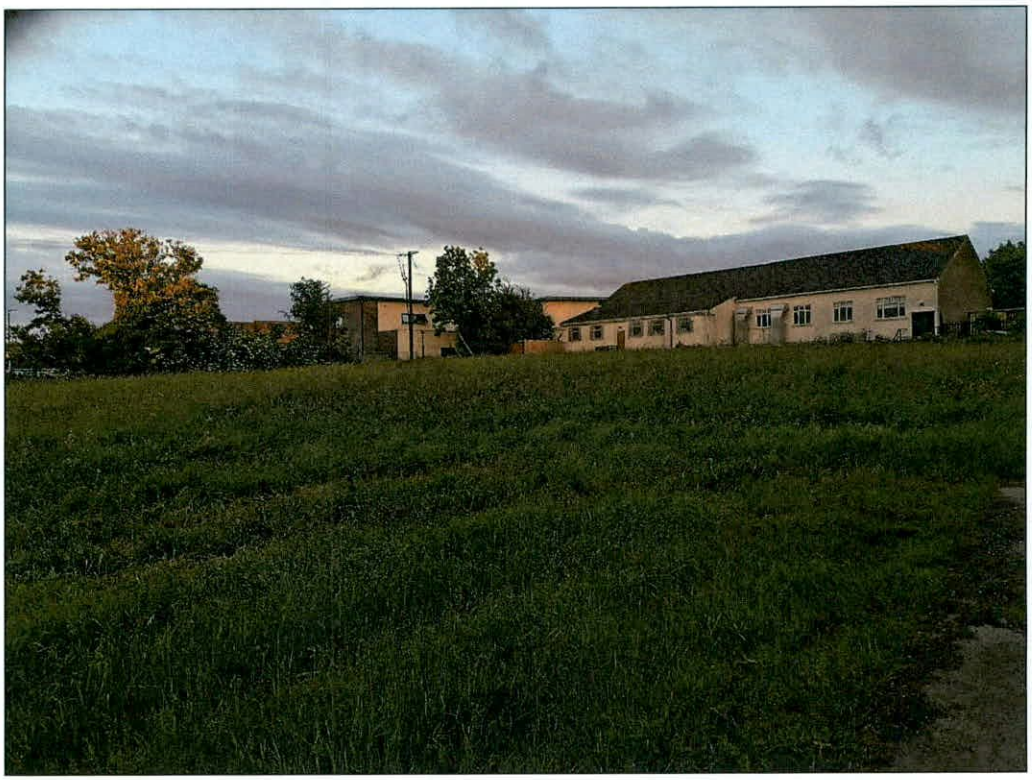
Newcastle, Co. Dublin

Ecological Impact Assessment Report



FINAL REPORT

5th May 2022

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1. INTRODUCTION

1.1 Background

This report has been prepared by Faith Wilson (an independent ecological consultant and licensed bat specialist). This ecological impact assessment report was prepared for Deane & Deane Ltd. as part of a planning application to South Dublin County Council for a proposed housing development at Newcastle Village, Co. Dublin. The lands proposed for development are located within the red line boundary as shown on **Figure 1.1** below.

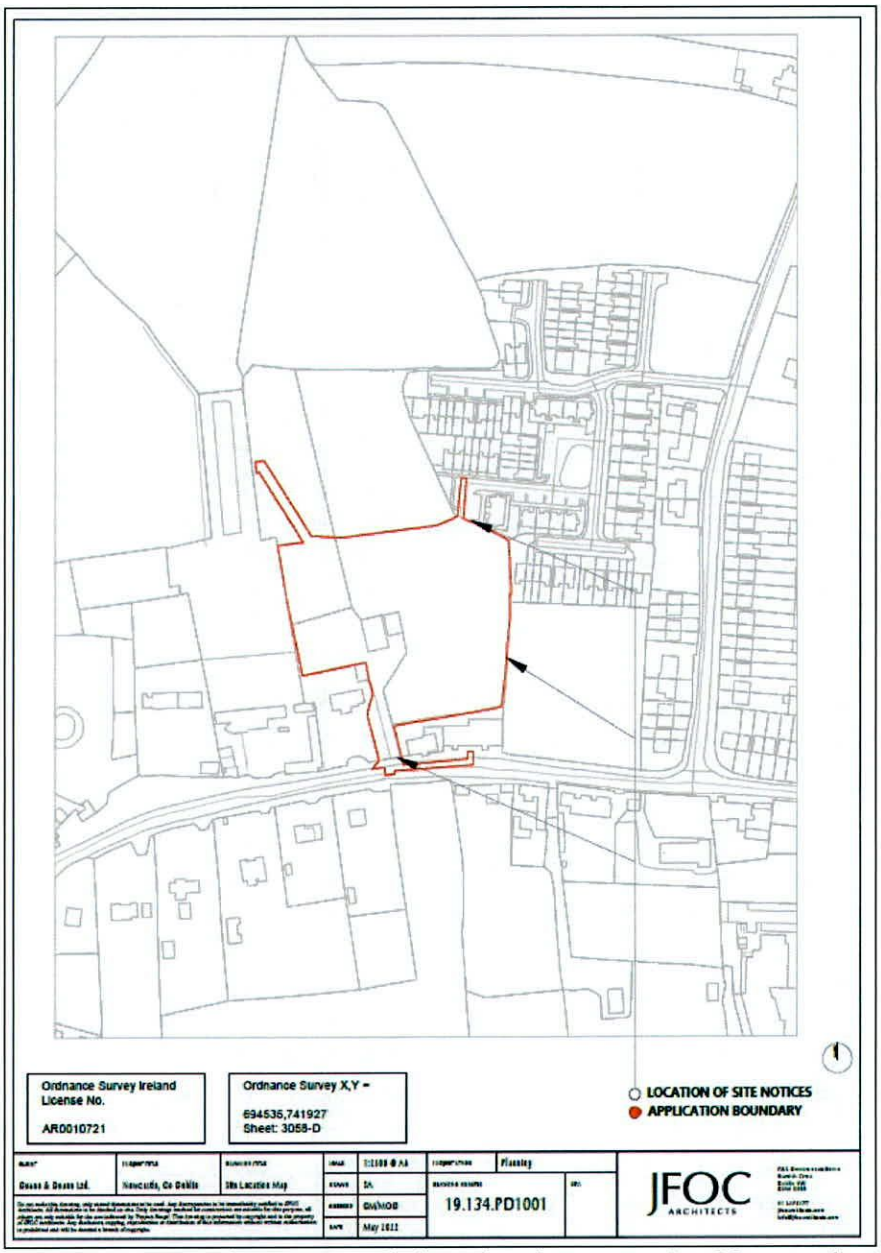

Figure 1.1 Lands proposed for development in Newcastle Village as indicated by the red line boundary.

1.2 Relevant Ecological Legislation

1.2.1 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 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 (Amended) Act, 2000 and requires consultation with NPWS if any development impacts on a pNHA.

NHAs are considered to be of national importance, while SACs and SPAs are of international importance for nature conservation.

1.2.2 Bats

Eleven species of bats occur in Ireland and all are protected under both national and international law.

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 are a species of the western seaboard of Ireland and have not yet been recorded on the east coast.

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.

1.2.3 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 legally are protected 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. It is standard best practice to ensure that mitigation measures are taken to limit impacts on badgers and badger populations during developments.

1.2.4 Invasive Species

Until recently there has been no legal framework for the control or eradication of non-native invasive species in the Republic of Ireland. 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 regulations 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	*Lysichiton americanus*	Throughout the State
A red alga	*Grateloupia doryphora*	Throughout the State
Brazilian giant-rhubarb	*Gunnera manicata*	Throughout the State
Broad-leaved rush	*Juncus planifolius*	Throughout the State
Cape pondweed	*Aponogeton distachyos*	Throughout the State
Cord-grasses	*Spartina* (all species and hybrids)	Throughout the State
Curly waterweed	*Lagarosiphon major*	Throughout the State
Dwarf eel-grass	*Zostera japonica*	Throughout the State
Fanwort	*Cabomba caroliniana*	Throughout the State
Floating pennywort	*Hydrocotyle ranunculoides*	Throughout the State
Fringed water-lily	*Nymphoides peltata*	Throughout the State
Giant hogweed	*Heracleum mantegazzianum*	Throughout the State
Giant knotweed	*Fallopia sachalinensis*	Throughout the State
Giant-rhubarb	*Gunnera tinctoria*	Throughout the State
Giant salvinia	*Salvinia molesta*	Throughout the State
Himalayan balsam	*Impatiens glandulifera*	Throughout the State
Himalayan knotweed	*Persicaria wallichii*	Throughout the State
Hottentot-fig	*Carpobrotus edulis*	Throughout the State
Japanese knotweed	*Fallopia japonica*	Throughout the State
Large-flowered waterweed	*Egeria densa*	Throughout the State
Mile-a-minute weed	*Persicaria perfoliata*	Throughout the State
New Zealand pigmyweed	*Crassula helmsii*	Throughout the State
Parrot's feather	*Myriophyllum*	Throughout the State

	aquaticum	
Rhododendron	*Rhododendron ponticum*	Throughout the State
Salmonberry	*Rubus spectabilis*	Throughout the State
Sea-buckthorn	*Hippophae rhamnoides*	Throughout the State
Spanish bluebell	*Hyacinthoides hispanica*	Throughout the State
Three-cornered leek	*Allium triquetrum*	Throughout the State
Wakame	*Undaria pinnatifida*	Throughout the State
Water chestnut	*Trapa natans*	Throughout the State
Water fern	*Azolla filiculoides*	Throughout the State
Water lettuce	*Pistia stratiotes*	Throughout the State
Water-primrose	*Ludwigia* (all species)	Throughout the State
Waterweeds	*Elodea* (all species)	Throughout the State
Wireweed	*Sargassum muticum*	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 sets out an initial list of 37 species to which EU Invasive Alien Species Regulation 1143/2014 will apply. 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 until 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.

1.2.5 Survey Constraints

The habitat assessment and botanical surveys were completed during the optimum time for surveying plants (June 2021).

The bat activity surveys were conducted during the active bat survey seasons (June 2021) as shown below.

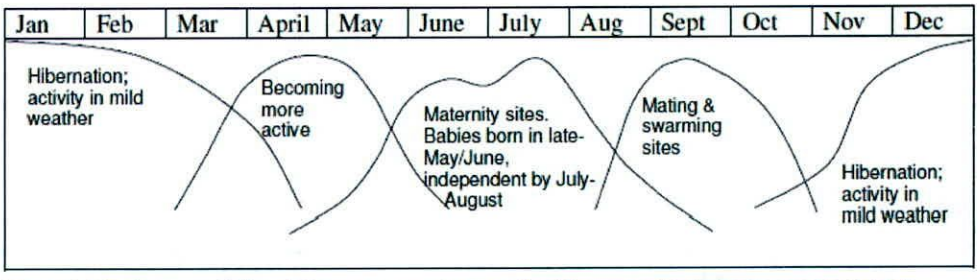

Figure 8. The bat year. Although there are species-specific differences, the bat year can be divided into the two major phases of breeding and hibernation, with other activities interspersed.

Table 5.2 within that same document is also presented below, which outlines the appropriate months for bat surveys.

Table 5.2. The applicability of survey methods. (Source: NPWS Bat Mitigation Guidelines).

Season	Roost Type	Inspection	Bat detectors and emergence counts
Spring (Mar – May)	Building	Suitable (signs, perhaps bats)	Limited, weather dependent
	Trees	Difficult (best for signs before leaves appear)	Very limited, weather dependent
	Underground	Suitable (signs only)	Static detectors may be useful
Summer (June-August	Building	Suitable (signs and bats)	Suitable
	Trees	Difficult	Limited; use sunrise survey
	Underground	Suitable (signs only)	Rarely useful
Autumn (September	Building	Suitable (signs and bats)	Limited, weather dependent

Season	Roost Type	Inspection	Bat detectors and emergence counts
– November)	Trees	Difficult	Rather limited, weather dependent; use sunrise survey?
	Underground	Suitable (signs, perhaps bats)	Static detectors may be useful
Winter (December - February)	Building	Suitable (signs, perhaps bats))	Rarely useful
	Trees	Difficult (best for signs after leaves have gone)	Rarely useful
	Underground	Suitable (signs and bats)	Static detectors may be useful

2. METHODOLOGY

2.1 Project Description

Deane Homes Ltd. intend to apply for permission for the development of housing on lands within Newcastle Village, Co. Dublin as shown on **Figure 2.1**.

Figure 2.1. Site location within Newcastle Village (Google Maps).

The development will consist of the following as shown on **Figure 2.2**:

> 'the demolition of 2 no. sheds and the construction of 30 no. dwellings, 1 no. vehicular and pedestrian link with Main Street, Newcastle, 1 no. vehicular and pedestrian link with Glebe Square Newcastle and all associated and ancillary site development works'.

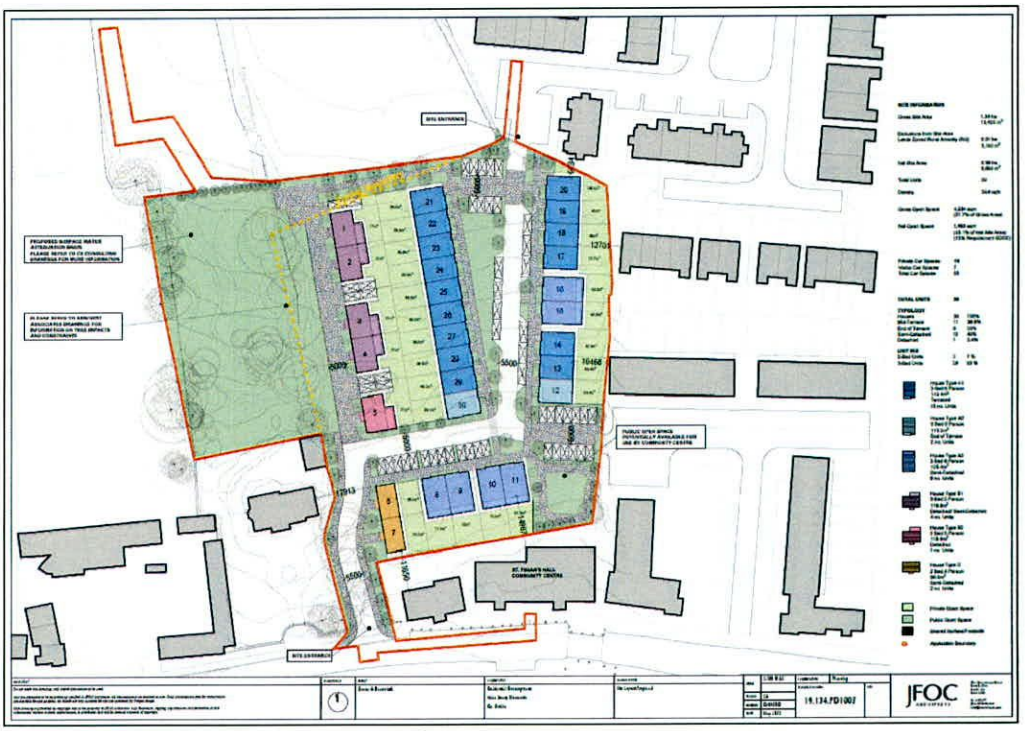

Figure 2.2. Proposed Site Development.

2.2 Guidelines

The surveys and impact assessment have been carried out with regard to the following guidelines:

- Best Practice Guidance for Habitat Survey and Mapping (Smith *et al.*, 2011);
- A Guide to Habitats in Ireland (Fossitt, 2000);
- Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (NRA, 2009a);
- Guidelines for the Assessment of Ecological Impacts of National Road Schemes Rev. 2. (NRA, 2009b);
- Guidelines for Preliminary Ecological Assessment (CIEEM, 2017);
- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018, version 1.1);
- Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn.) (Collins, 2016);
- Bat Surveys: Good Practice Guidelines (Hundt, 2012);
- Bat Mitigation Guidelines for Ireland (Kelleher & Marnell, 2006);
- Environmental Planning and Construction Guidelines Series (National Roads Authority, 2005 - 2011);
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (Inland Fisheries Ireland, 2016)
- Planning For Watercourses In The Urban Environment. A Guide to the Protection of Watercourses through the use of Buffer Zones, Sustainable Drainage Systems, Instream Rehabilitation, Climate / Flood Risk and Recreational Planning *Including one-off developments. A Guideline Developed by Inland Fisheries Ireland. (Inland Fisheries Ireland (2020)).

2.3 Desk Study & Consultation

A desk study was carried out to collate the available information on the ecological environment of the lands in Newcastle Village and wider environs in 2021. 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 were checked with regard to the location of the proposed development.

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 published sources. Recent, high resolution, colour aerial photographs were also used to identify and map potential habitats.

Previous ecological surveys of relevance to the development included a bat survey of the adjoining Oakvale House completed by Scott Cawley in 2010 and bat surveys conducted elsewhere in the environs of Newcastle Village such as the Cairn Homes SHD application and a proposed development at St. Finian's School, both of which were also reviewed.

2.4 Field Surveys

The lands at Newcastle were surveyed on the 17th and 18th June 2021 by the report author.

Habitat & Botanical Survey

The habitats within the lands were described to level three using the Heritage Council Guide to Habitats of Ireland (Fossitt (2000)). Plant species within the lands were identified using Parnell and Curtis (2012).

A particular focus of the survey was to determine if any protected species of plant under the Flora (Protection) Order (2015) or listed in the Irish Vascular Plants Red Data Book are present on the lands. A check was made for the presence of any invasive species as described above.

Mammal Surveys

Bat Survey

The bat survey consisted of several elements - a desktop review and consultation with Bat Conservation Ireland, an inspection of trees within the site for their potential to support roosting bats, an inspection of the buildings due for demolition and a bat detector activity survey of the property.

The aims of the surveys were to:

- To determine the use of the mature trees and other habitats in the site as feeding and commuting areas;
- Identify roosting sites in buildings or trees surrounding the site.

- Identify species of bats utilising the site for foraging or commuting purposes.

Desktop Research
The Bat Conservation Ireland database was examined for records of bats from the Newcastle Village area.

Building Inspection
The bat surveys were carried out by Faith Wilson, a licensed bat specialist and consisted of an external and internal inspection of a farm barn and stable building.

Bat activity is usually detected by the following signs (though direct observations are also occasionally made):

- bat droppings (these will accumulate under an established roost or under access points);
- insect remains (under feeding perches);
- oil (from fur) and urine stains;
- scratch marks; and
- bat corpses.

The nature and type of habitats present are also indicative of the species likely to be present.

Tree Survey
Trees within the site were assessed for their potential use by bats by completing a preliminary ground level roost assessment using the following standard criteria, which were created by bat specialists from Bat Conservation Ireland for use in the assessments of tree roosts on large infrastructural projects and are summarised in NRA (2006):

- Presence or absence of bat droppings (these can be hard to find amongst leaf litter or may be washed away following periods of wet weather),
- Bat droppings may also be seen as a black streak beneath holes, cracks, branches, etc.,
- Presence or absence of smooth edges with dark marks at potential entrances to roosts,
- Presence or absence of urine stains at potential entrances to roosts,
- Presence of natural cracks and rot holes in the trunk or boughs of the tree,
- Hollow trees,
- Presence or absence of creepers such as ivy or honeysuckle on trees (ivy clad trees are often used by bat species such as pipistrelles as roosts),
- Presence or absence of loose bark such as that of sycamore, or flaky bark on coniferous species such as cedars, cypress and Scot's pine,
- Presence or absence of bracket fungi which may indicate a rotten or potentially hollow centre to the tree,
- Known bat roosts previously identified,
- Trees with storm or machinery damage or broken boughs,

- Clutter level - where the branches and trunk are easily accessible, this is considered a better tree for bat roosts,
- Adjoining habitat - if there are a variety of feeding opportunities for bats, this increases the potential of a tree as a bat roost,
- Adjoining potential roosts / known roosts. This raises the likelihood of a tree being of benefit as bats may move roosts if the roost becomes too hot or cold during roosting and a nearby alternative roost is highly desirable.

A review of the tree survey conducted by Felim Sheridan of Arborist Associates (2021) was also completed. The arboricultural features described in the Bat Tree Habitat Key (Andrews, 2013) also informed the survey.

Detector Survey

In accordance with best practice as described in the 'Guidelines for the Treatment of Bats During the Construction of National Road Schemes' (NRA 2006) and 'Bat Mitigation Guidelines for Ireland' (Kelleher 2006), a bat activity survey of the general environs of the site was conducted during the active bat season. This survey assisted in determining if any bat roosts are present in any of the buildings, what bat species occur within the site and how bats are using the site for foraging or commuting purposes.

A bat detector survey was carried out at dusk on 18th June 2021 and pre-dawn on the 19th June 2021 using several types of bat detectors - two Batbox Duet Heterodyne/Frequency Division detectors, a Pettersson D100 Heterodyne detector and an Echometer Touch Pro. A Song Meter 2 Mini monitor was also utilised overnight to determine the level of bat activity in and around the farm buildings on the site between the 18th and 19th June 2021. Signals recorded on the SM Mini were stored on SDHC cards and transferred to a laptop and desktop for analysis. Signals were identified with Kaleidoscope Pro and included a manual verification of all calls.

The emergence of bats in the general area of the site at dusk was monitored and a walkover survey of the lands was conducted. Activity at dawn when bats return to roosts was also monitored.

Bat activity is predominantly bi-modal, with bats taking advantage of increased insect numbers on the wing during the periods after dusk and before dawn, (there is usually a lull in activity in the middle of the night). While this holds true for 'hawking' species (bats that capture prey in the open air), 'gleaning' species such as brown long-eared (*Plecotus auritus*), Natterer's (*Myotis nattereri*) and Whiskered/Brandt's bats (*Myotis mystacinus/brandtii*) remain active throughout the night, as prey is available on foliage for longer periods.

The results of the bat survey are presented in the standalone Bat Survey Report which accompanies the planning application.

Badger Survey

A badger survey was undertaken within the lands by searching for signs of badger activity. These include setts, old bedding material, feeding signs,

latrines, badger tracks or paw prints, badger paths and badger hair caught on vegetation or fences. The survey was carried out by Faith Wilson, an experienced mammal specialist in accordance with best practice as described in the 'Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes' (NRA 2009) and 'Guidelines for the treatment of badgers prior to the construction of National Road Schemes' (NRA 2005).

Breeding Birds

The breeding bird season was well underway in 2021 and birds were recorded during the course of the site visits.

3. RESULTS

3.1 Nature Conservation Designations

The lands at Newcastle are not currently designated for any nature conservation purposes under national or international legislation.

There are four Special Areas of Conservation (SAC) within the zone of influence of the site. These are:

- Red Bog SAC (Site Code: 000397),
- Glenasmole Valley SAC (Site Code: 001209),
- Rye Water Valley/Carton SAC (Site Code: 001398) and the
- Wicklow Mountains SAC (Site Code: 002122).

There are two Special Protection Areas (for birds) (SPA) within a 15km radius of the site. These are:

- Poulaphouca Reservoir SPA (Site Code: 004063) and the
- Wicklow Mountains SPA (Site Code: 004040).

The location of these sites are illustrated on **Figure 3.1** below.

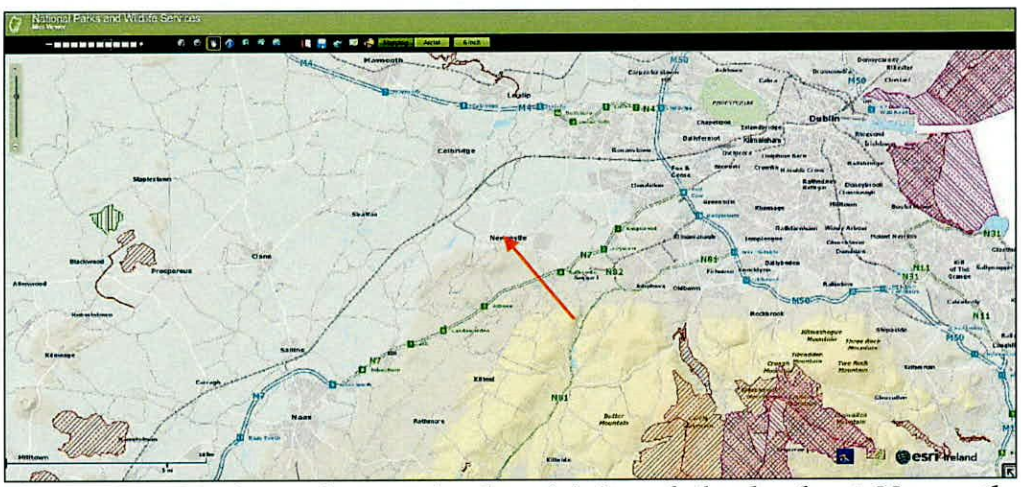

Figure 3.1. Designated areas in the vicinity of the lands at Newcastle (Source: National Parks and Wildlife Service).

3.2 Rare, Scarce and Threatened Flora

There are historic records of red hemp nettle (*Galeopsis angustifolia*) and opposite leaved pondweed (*Groenlandia densa*) from the 10km square in which the development is proposed (N92). There is no suitable habitat for either of these species on the site and they were not found during the site visit.

3.3 Habitats

The lands consist of two fields of what was formerly agricultural grassland (GA1 in Fossitt 2000) which is no longer grazed. As a result the sward is dominated by Cock's-foot grass (*Dactylis glomerata*), False oat-grass (*Arrhenatherum elatius*), Hogweed (*Heracleum sphondylium*), Sweet vernal grass (*Anthoxanthum odoratum*), Crested dog's-tail (*Cynosurus cristatus*), Meadow

foxtail (*Alopecurus pratensis*), Perennial rye-grass (*Lolium perenne*), Yorkshire fog (*Holcus lanatus*), Creeping bent grass (*Agrostis stolonifera*), Creeping buttercup (*Ranunculus repens*), Meadow buttercup (*Ranunculus acris*), White clover (*Trifolium repens*), Dandelion (*Taraxacum* agg.), Ribwort plantain (*Plantago lanceolata*), Mouse ear chickweed (*Cerastium glomeratum*), Spear thistle (*Cirsium vulgare*), Red fescue (*Festuca rubra*), with occasional Ragwort (*Senecio jacaobaea*) and docks (*Rumex* sp.).

Grassland dominates the site.

The shared boundary with Oakvale House to the west along the driveway accessing the site consists of Sycamore (*Acer pseudoplatanus*) and Ash (*Fraxinus excelsior*) and a previously planted treeline of Leyland cypress (*x Cupressocyparis leylandii*) (identified as trees 1139 - 1147 in the arborists report) with some Elder and Bramble.

Near the entrance to Oakvale House, which consists of a block wall, is an area of gravel which is regularly weed killed and supports Mallow (*Malva* sp.), Groundsel (*Senecio vulgaris*), Broad-leaved willowherb (*Epilobium montanum*), Black medick (*Medicago lupulina*), Dandelion (*Taraxacum* agg.), Pineapple weed (*Matricaria discoidea*), Wavy bitter-cress (*Cardamine flexuosa*), Hairy bitter-cress (*Cardamine hirsuta*), Germander speedwell (*Veronica chamaedrys*), and Spurge (*Euphorbia* sp.).

Existing access to the site from the main street in the village.

Area of gravel near entrance to Oakvale House.

Beyond this is a small group of immature Sycamore (*Acer pseudoplatanus*) (tree group no. 3 in the arborists report) adjoining the barn.

Extending north from the barn (hedge no. 2 in the arborists report) is a treeline (WL2) of Ash (*Fraxinus excelsior*) and a magnificent mature Sycamore

(*Acer pseudoplatanus*) with an understorey of Elder (*Sambuccus nigra*), Hawthorn (*Crataegus monogyna*), Cherry laurel (*Prunus laurocerasus*), Blackthorn (*Prunus spinosa*), Bramble (*Rubus fruticosus* agg.). At the base of this treeline are clusters of bramble (*Rubus fruticosus* agg.), Cleavers (*Galium aparine*), Hogweed (*Heracleum sphondylium*), Elder (*Sambucus nigra*), Sycamore (*Acer pseudoplatanus*) seedlings, Docks (*Rumex* sp.) and Nettle (*Urtica dioica*).

The treeline (WL2) along the western boundary of the site adjoining the Glebe House is dominated by mature Sycamore (*Acer pseudoplatanus*), Horse Chestnut (*Aesculus hippocastanum*), Holm Oak (*Quercus ilex*), Norway Maple (*Acer platanoides*), Wild Cherry (*Prunus avium*) and Ash (*Fraxinus excelsior*) which is showing signs of ash die back. Other species recorded include Cherry laurel (*Prunus laurocerasus*), Elder (*Sambucus nigra*), and Leyland cypress (*x Cupressocyparis leylandii*). At the base of this treeline the vegetation is coarse with Bush vetch (*Vicia sepium*), Nettle, dense Bramble and Hogweed and there is an open drainage ditch (FW4) here.

At the southern end of the lands adjoining the garden of Oakvale House there is Crab apple (*Malus sylvestris*), Sycamore (*Acer pseudoplatanus*), Weeping ash, *Chamaecyparis*, Beech (*Fagus sylvatica*), Wild cherry (*Prunus avium*), Himalayan honeysuckle (*Lonicera nitida*), Cherry laurel (*Prunus laurocerasus*) and various overgrown shrubs are found in the garden of the house including; Firethorns (*Pyracantha sp.*), Elder (*Sambucus nigra*), Viburnum (*Viburnum davidii*), Contoneaster (*Contoneaster sp.*), Japanese barberry (*Berberis thunbergii*), Viburnum (*Viburnum davidii*), Weigela (*Weigela sp.*), Redclaws (*Escallonia sp.*), Blue Lawson Cypress (*Chamaecyparis lawsoniana*), 'Pembury Blue' and Japanese Laurel (*Aucuba japonica*). There are also the remains of an orchard with Apple (*Malus domestica*) and Pear (*Pyrus communis*) trees.

A post and rail fence is found to the rear of the premises along the main street and a block wall forms the boundary with the housing development to the east - occasional Bramble (*Rubus fruticosus* agg.) and Elder (*Sambucus nigra*) is found here with some Ash (*Fraxinus excelsior*), and a remnant hedge of Hazel (*Corylus avellana*), Bramble (*Rubus fruticosus* agg.) and Poplar (*Populus* sp.).

There are no watercourses within the site. The drainage ditch (FW4) along the boundary with Glebe House would ultimately drain to the River Liffey. There is a large artificial pond (FL8) in the Glebe lands to the west of the site.

Mature treelines in the west of the site.

Giant hogweed to the north of the site.

3.4 Invasive Species

Giant hogweed (*Heracleum mantegazzianum*) was recorded in the lands adjoining the site to the north. This is a species listed under the Birds and Natural Habitats Regulations 2011 requiring control and eradication and can cause phyto-dermatitis on exposed skin so care should be taken in the vicinity

of this plant. A management plan to ensure that this species is not spread during the works is required.

3.5 Bats

A detailed bat survey was completed and the results of same are presented in the bat survey report, which accompanies the application.

3.6 Other Mammals

The lands provide a rich habitat for a range of mammal species, which while common and ubiquitous in the wider countryside rapidly disappear following urbanisation of the landscape. Species which were either directly observed (or their signs were noted) from the lands include:

- Red fox (*Vulpes vulpes*)
- Rabbit (*Oryctolagus cuniculus*)
- Brown Rat (*Rattus norvegicus*)
- House Mouse (*Mus musculus*)
- Field Mouse (*Apodemus sylvaticus*)
- Hedgehog (*Erinaceous europaeus*)

There was no evidence of badger (*Meles meles*) utilising the lands.

3.7 Amphibians

The pond in Glebe House and drainage ditches in the general environs of the lands are likely to support breeding frogs (*Rana temporaria*).

3.8 Birds

A good diversity of bird species were recorded utilising the site. Swallows and Jackdaw are nesting within the barn and species typical of gardens and the wider countryside nest in the hedgerows and treelines within the site. These include;

These include blackbird (*Turdus merula*), wren (*Troglodytes troglodytes*), robin (*Erithacus rubecula*), dunnock (*Prunella modularis*), chaffinch (*Fringilla coelebs*), greenfinch (*Carduelis chloris*), song thrush (*Turdus philomelos*), and mistle thrush (*Turdus viscivorus*).

Other species recorded include; great tit (*Parus major*), coal tit (*Parus ater*), blue tit (*Cyanistes caeruleus*), long tailed tit (*Aegithalos caudatus*), goldcrest (*Regulus regulus*), rook (*Corvus frugilegus*), jackdaw (*Corvus monedula*), pied wagtail (*Motacilla alba yarrellii*), hooded crow (*Corvus cornix*) and magpie (*Pica pica*).

Observed birds of prey include sparrowhawk (*Accipiter nisus*) and buzzard (*Buteo buteo*) while kestrel (*Falco tinnunculus*) may also hunt over the fields to the north.

3.9 Fisheries and Watercourses

The lands at Newcastle are located within the Liffey and Dublin Bay Catchment (09) and Liffey Sub catchment (Liffey_SC_090). There are no watercourses on site as can be seen on **Figure 3.2** below, but the lands would ultimately drain to the River Liffey. There is therefore a remote hydrological link to the Natura 2000 sites downstream within Dublin Bay but by virtue of their distance from same any significant ecological impacts on same are deemed unlikely.

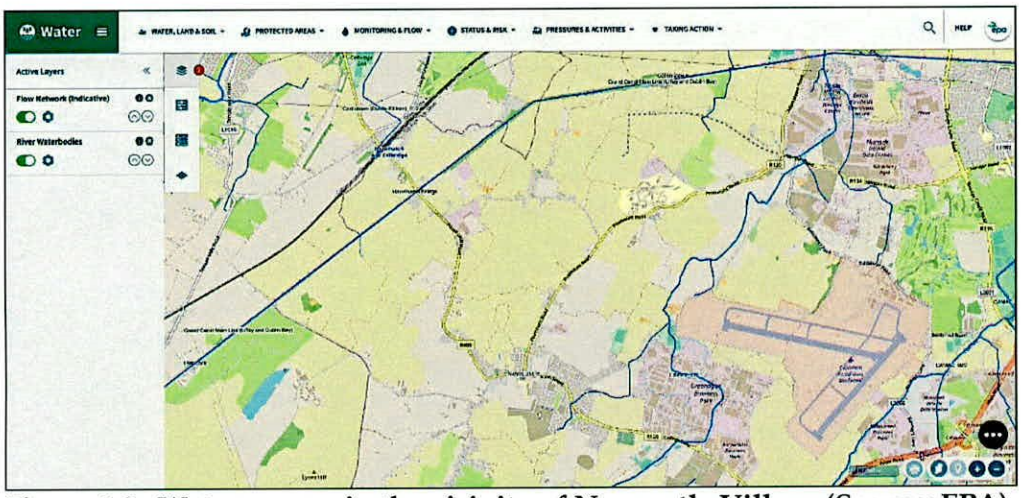

Figure 3.2. Watercourses in the vicinity of Newcastle Village (Source: EPA).

4. ASSESSMENT OF ECOLOGICAL SIGNIFICANCE

The habitats and the species they support within the lands proposed for development at Newcastle are of high local biodiversity importance within the general environs of the village. The treelines and hedgerows and associated drainage ditch all form important green corridors and linkages through the lands for wildlife.

The Newcastle lands are used by a variety of fauna and provide a locally important habitat for rabbits, foxes and a variety of birds in terms of cover for hunting and foraging as well as breeding habitat.

The Newcastle lands are used by five species of bat - Soprano pipistrelle, Common Pipistrelle, Nathusius pipistrelle, Leisler's bat and a *Myotis* species for foraging purposes. The lands adjoin a confirmed maternity roost in Oakvale House of Soprano pipistrelle bats and the treelines within same provide an important commuting route for bats from this roost.

The ecological importance of the habitats within the site was assessed using the criteria listed in the *Guidelines for Assessment of Ecological Impacts of National Roads Schemes* (NRA, 2009) and the *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2019).

Criteria used to evaluate habitats and sites include site designation, presence of rare and/ or protected species, local rarity, habitat functional role, naturalness, habitat diversity, size of habitat or species population and rich assemblages of plants and animals. The importance of an ecological feature is considered within a defined geographical context as shown within **Table 1** below.

Under this ecological evaluation scheme habitats are rated as being of either:

- International ecological importance
- National ecological importance
- County ecological importance
- Local (higher value) ecological importance
- Local (lower value) ecological importance

Table 1. Evaluation of sites for flora and fauna in Environmental Impact Assessment (NRA, 2006 (revised 2009)).

Rating	Importance of Ecological Sites
A	**Internationally important** Sites designated (or qualifying for designation) as SAC* or SPA* under the EU Habitats or Birds Directives. Undesignated sites containing good examples of Annex I priority habitats under the EU Habitats Directive.
B	**Nationally important** Sites or waters designated or proposed as an NHA* or statutory Nature Reserves. Undesignated sites containing good examples of Annex I habitats (under EU Habitats Directive). Undesignated sites containing significant numbers of resident or regularly occurring populations of Annex II species under the EU Habitats Directive or Annex I species under the EU Birds Directive or species protected under the Wildlife (Amendment) Act 2000.
C+	**County value** Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or significant populations of species which are Sites containing resident or regularly occurring populations of Annex II species under the EU Habitats Directive or Annex I species under the EU Birds Directive.
C	**High value, locally important** Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or significant populations of locally rare species. Sites containing any resident or regularly occurring populations of Annex II species under the EU Habitats Directive or Annex I species under the EU Birds Directive.
D	**Moderate value, locally important** Sites containing some semi-natural habitat or locally important for wildlife.

Rating	Importance of Ecological Sites
E	**Low value, locally important** Artificial or highly modified habitats with low species diversity and low wildlife value.
F	**Unknown Value** Sites of possible ecological value which require further investigation at the optimum season to establish importance.

(*SAC = Special Area of Conservation, SPA= Special Protection Area, NHA= Natural Heritage Area)

The habitats within the lands at Newcastle are assessed as being of High Value, Local Importance (C site) - principally because of their importance for bats.

5. ECOLOGICAL IMPACTS

A number of impacts on the local biodiversity, habitats and species associated with the lands at Newcastle arise from their development and future use as housing.

The main potential impacts arising from the proposed development of the lands at Newcastle during the construction period are assessed as follows:

- Direct loss of habitats within the red line boundary of the site.
- Potential damage to retained habitats within the site from the construction works.
- Potential for the spread of invasive species if biosecurity measures are not implemented.
- Potential for disturbance to bats and other fauna from lighting including loss of hunting habitat and barriers to the movement of bats through the site.
- Potential for disturbance to bats and other fauna from fragmentation of habitat.
- Potential impacts on habitat and water quality in drainage ditches within the site.
- Potential impacts on breeding birds within the site if vegetation removal occurs during the bird breeding season.
- Potential impacts on breeding birds through removal of tree and hedgerow vegetation used for nesting and feeding purposes.
- Permanent loss of feeding habitat in grassland areas with subsequent impacts for breeding birds.
- Permanent loss of grassland vegetation within the site with subsequent impacts on biodiversity within same.
- Potential impacts on trees arising from the design and construction of the water attenuation area.

Potential impacts during the operational phase of the development include the following:

- Potential disturbance to bats and other fauna from lighting.
- Potential sanitisation of retained hedgerow vegetation through removal of vegetation, trampling pressure, dumping of garden waste, rubbish and other items, etc.
- Disturbance to breeding birds through increased public use.
- Inappropriate mowing regime of grassland areas and park margins.

The following mitigation measures are recommended to avoid/reduce these impacts in the development of these lands.

6. MITIGATION MEASURES

6.1 Mitigation by Avoidance

The principal mitigation that should be considered in any development is avoidance of impact. Direct impacts on the trees along the western boundary of the site have been avoided and although these trees are outside the ownership of the project mitigation measures to avoid potential impacts on them are set out below.

6.2 Sediment Control

Sediment control practices are used on building sites to prevent sand, soil, cement and other building materials from reaching streams and ditches. Even a small amount of pollution from a site can cause significant environmental damage by killing aquatic life, silting up streams and blocking storm water pipes. Storm water can contain many pollutants which can enter our local drainage ditches, streams, rivers and marine systems, causing harm to native animals, plants, fish breeding habitats and recreational areas.

Soil erosion, sediment and litter from building sites can be major sources of storm water pollution, and can cause:

- significant harm to the environment
- weed infestation of waterways caused by sediment settling in watercourses and ditches and transporting nutrients
- loss of valuable topsoil
- significant public safety problems when washed onto roads and intersections
- blocked drains creating flooding and increased maintenance costs
- damage to recreational and commercial fishing downstream.

Sediment control usually requires little effort and results in:

- Cleaner waterways and healthier aquatic life.
- Improved site conditions.
- Improved wet weather working conditions.
- Reduced wet weather construction delays.
- Reduced losses from material stockpiles.
- Fewer mud and dust problems.

Good site management in relation to sediment control during the construction phase should prevent this from occurring and possible mitigation measures for consideration are outlined below.

Minimising site disturbance:

Prevention is better than cure. Careful design and an efficient construction sequence will minimise disturbance to the site. This will save money and reduce environmental impact.

Clear only those areas necessary for building work to occur. Preserve grassed areas and vegetation where possible. This helps filter sediment from storm water run off and stops rain turning exposed soil into mud. Delay removing

vegetation or commencing earthworks until just before building activities start. Avoid building activities that involve soil disturbance during periods of expected heavy or lengthy rainfall.

Implement sediment control:
Install sediment control measures along the drainage ditch along the western site boundary using techniques such as silt fencing before commencing any excavation or earth moving. Regularly maintain them until construction is complete and the site is stabilised.

6.3 Contractor Briefing

All site contractors will be briefed regarding the biodiversity value of the western drainage ditch/treeline/ hedgerow to ensure that there are no accidental or unintentional actions conducted during the project construction that could lead to a reduction in water quality/damage to same. Such matters often arise through ignorance or by accident rather than as a result of an intentional action.

6.4 Protection Measures for Birds

Section 40 of the Wildlife Act 1976, as amended by Section 46 of the Wildlife (Amendment) Act 2000, restricts the cutting, grubbing, burning or destruction by other means of vegetation growing on uncultivated land or in hedges or ditches during the nesting and breeding season for birds and wildlife, from 1 March to 31 August.

No clearance of vegetation suitable for nesting birds within the site (shrubs, bramble tangles, etc.) will take place during this period.

Should such clearance be required during this period than the area proposed for clearance should be inspected by an ecologist to ascertain if any nesting birds are present.

6.5 Measures for Birds - Bird Boxes

Areas of retained trees and vegetation must be fenced and protected during the construction phase to ensure that they are not damaged during the works. Protective fencing will be erected in advance of any construction works commencing in order to prevent damage to these retained habitats during construction in accordance with BS 5837:2012. This will be signed off on by a qualified ecologist to ensure it has been erected properly and the vegetation has been protected before any machinery/works are allowed on site. No ground clearance, earth moving, stock-piling or machinery movement will occur within these protected areas.

6.6 Protection Measures for Bats

These are detailed in the Bat Survey report which accompanies this planning application.

6.7 Measures for Birds - Erection of Bird Boxes

A variety of artificial nesting opportunities for birds (bird boxes) will be erected on the retained trees along the western boundary of the site - this will require the permission of the adjoining landowner.

It is recommended that 15 no. bird boxes of varying design are to provide nesting opportunity for birds. These will be sited by the contractor under the supervision of a suitably qualified ecologist.

6.8 Biosecurity

Should earth or other material be brought to site this material should be screened to confirm that no invasive species such as Japanese knotweed or other species as described on http://www.invasivespeciesireland.com/ are present. All machinery and plant entering the site should be cleaned to ensure that no fragments of Japanese knotweed or seeds of other invasive species are brought on to the site in line with the Birds and Natural Habitats Regulations 2011.

6.9 Planting Proposals

The landscaping proposals for the development were developed by RMDA Landscape Architects in conjunction with the project ecologist.

Proposals for the establishment of a native hedgerow along the eastern boundary of the site were discussed. These planting proposals set out to strengthen the existing areas within the site for wildlife and biodiversity and to reinstate green infrastructure across the site post construction. They include the use of native and local plant species such as oak, hawthorn, blackthorn, holly, hazel, guelder rose and dog rose within the proposed hedgerow planting.

The species used will be native and of local origin, certified stock is available from nurseries who supply stock for the Native Woodland Scheme.

6.10 Invasive Species

It is recommended that the Giant hogweed population is resurveyed to determine it's current extent and is then removed and any regeneration of same controlled. This will require specialist input.

6.11 Tree Survey

The tree survey report is valid for 12 months only and will therefore most likely require updating. Additional measures for pruning/tree health measures may be recommended by the arborist on foot of same. The recommendations of the project arborist will be reviewed by the project ecologist to ensure that any additional pruning/tree health measures can be achieved without compromising the ecological integrity of retained trees, treelines/hedgerows and that potential roosting features for bats within the trees can be retained. Clearance of trees identified as containing potential

roosting features for bats will be done under supervision of a suitably qualified bat specialist.

6.12 Ecological Clerk of Works

An ecological clerk of works will be appointed to oversee the development and the implementation of the mitigation measures and recommendations set out in this report and to sign off on same.

6.13 Screening for Appropriate Assessment

A report for Screening for Appropriate Assessment has been completed as part of the planning process.

7. PREDICTED IMPACT OF THE PROPOSED DEVELOPMENT

When assessing the ecological impacts and effects of the development of the lands at Newcastle on biodiversity and ecology, reference was made to the following characteristics as required:

- positive or negative
- extent
- magnitude
- duration
- frequency and timing
- reversibility.

The proposed development of housing on the lands at Newcastle has been assessed from the perspective of ecology and detailed mitigation measures have been presented to reduce the impacts of the development of these lands.

No habitat designated for nature conservation purposes, or plant species protected under the Floral Protection Order 2015, will be impacted by the proposed development of the lands, which are assessed as being of High Value, Local Importance (C site) - principally because of their importance for bats.

Ultimately the development will result in the urbanisation of a previously undeveloped environment with subsequent losses for biodiversity within the site. Species which adapt readily to urban and developed environments will remain in the general area in the long term.

8. CONCLUSION

The proposed development of the lands at Newcastle for housing has been assessed from the perspective of ecology and a series of detailed mitigation measures have been presented to reduce impacts on same within the lands where possible.

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