# FARGANSTOWN SOCIAL HOUSING

## Ecological Appraisal

MDC0641
Farganstown Social Housing
- Ecological Appraisal
A03
6th October 2020

rpsgroup.com

## Document status

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## Approval for issue

Cormac Woods  6 October 2020



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# 1 INTRODUCTION

## 1.1 Purpose and Scope

RPS was commissioned by Meath County Council (MCC) to undertake an Ecological Appraisal of a proposed residential development, and associated works, at Farganstown, Navan, Co. Meath (hereafter 'the proposed development')

To undertake an assessment of the potential ecological impact of the proposed development, a desk study, habitat survey, bird survey, and a protected species assessment were carried out.

This report pertains to these results only; recommendations included within this report are the professional opinion of an experienced ecologist and therefore the view of RPS. The surveys and desk based assessment undertaken as part of this review and subsequent report including the Ecological Appraisal Notes are prepared in accordance with the relevant legislation, policy, and guidelines outlined in **Section 1.2**.

## 1.2 Legislation, Policy and Guidelines

The assessment of the likely significant impacts of the proposed development on ecological features has taken account of the following policy documents and legislation, where relevant:

- EU Birds Directive 2009/147/EEC;
- EU Habitats Directive 92/43/EEC (as amended);
- EU Water Framework Directive (WFD) 2000/60/EC;
- European Communities (EC) (Birds and Natural Habitats) Regulations 2011 (as amended);
- Planning and Development Act 2010 (as amended);
- Meath County Development Plan 2013-2019;
- Wildlife Acts 1976 and Wildlife (Amendment) Act (2000) (as amended);
- Flora (Protection) Order, 2015.
- National Biodiversity Action Plan 2017-2021; and
- Meath Biodiversity Action Plan 2015-2020

The surveys and impact assessment have been carried out in accordance with 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 Preliminary Ecological Assessment (CIEEM, 2017);
- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2019, version 1.1);
- Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) (EPA, 2017)
- Guidelines for the Assessment of Ecological Impacts of National Road Schemes Rev. 2. (NRA, 2009b);
- Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018);
- 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); and
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016).

The assessment was carried out in two stages, initially through a desktop study, followed by field surveys in order to identify, describe and map areas of known or potential ecological value.

# 2 PROPOSED DEVELOPMENT

The proposed development consists of the construction of 84 social housing units, including the provision of car park spaces, new entrances onto a consented, but yet to be constructed, Local Distributor Road (LDR) 6 (R153 to Boyne Road), landscaping, lighting, and all associated development works. The proposed development is located north of Old Road, Farganstown, Navan, Co. Meath, and measures c. 1.7 hectares. The proposed development is bounded by agricultural land and small watercourses to the south and east, and a new road development (under construction) to the north and east (hereafter 'the proposed development site') (Error! Reference source not found.).

The proposed development is dependent on the construction of the Local Infrastructure Housing Activation Fund (LIHAF) LDR6, linking the R153 with the Boyne Road. If this distributor road is not constructed, the proposed development will not be possible, due to the landlocked nature of the proposed development site, for both access and services (e.g. foul water system).

## 2.1 Project Description

The main infrastructural elements to be included in the proposed development comprise the following:

- construction of 84 units comprising 34 no. one-bedroom apartments, 38 no. two-bedroom apartments, 2 no. three-bedroom houses, 6 no. three-bedroom houses and 4 no. four-bedroom houses;
- provision of 131 no. car park spaces;
- internal roads and hardstanding;
- the construction of 1 no. new vehicular entrance onto a consented LDR6;
- landscaping, including planting;
- 0.34 ha open space;
- watercourse exclusion wall (sheet piling c. 1 m from watercourse bank);
- lighting; and
- all associated development works.

### 2.1.1 Surface Water and Foul Water Management

#### 2.1.1.1 Existing

The existing surface water drainage within the proposed development site consists of green field run-off from agricultural (arable) land into two unnamed watercourses. These watercourses flow into the River Boyne, west of the proposed development site.

There is no existing foul water management within the proposed development site.

#### 2.1.1.2 Proposed

The proposed development will incorporate a surface water management system which has been designed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS, 2005) approach using Sustainable Drainage Systems (SuDS) techniques. This system, detailed in **Appendix A,** will include:

- surface water drainage piping and gullies within the hardstanding;
- class 1 bypass oil interceptor;
- use permeable paving (roof drainage to private driveways);
- green roofing on the flat roof apartments;
- underground surface water attenuation tanks (Stormtech®, or similar, attenuation);

- flow control device (hydro-break) to greenfield rates; and
- precast outfall to unnamed stream at the north west of the proposed development site. The installation of the outfall will be completed without the need for instream works or pouring od concrete within 5 m of the watercourse.

From the surface water outfall at the proposed development, the route of the unnamed stream is undetermined; however, it is assumed that the unnamed stream confluences with the River Boyne downstream of the proposed development site.

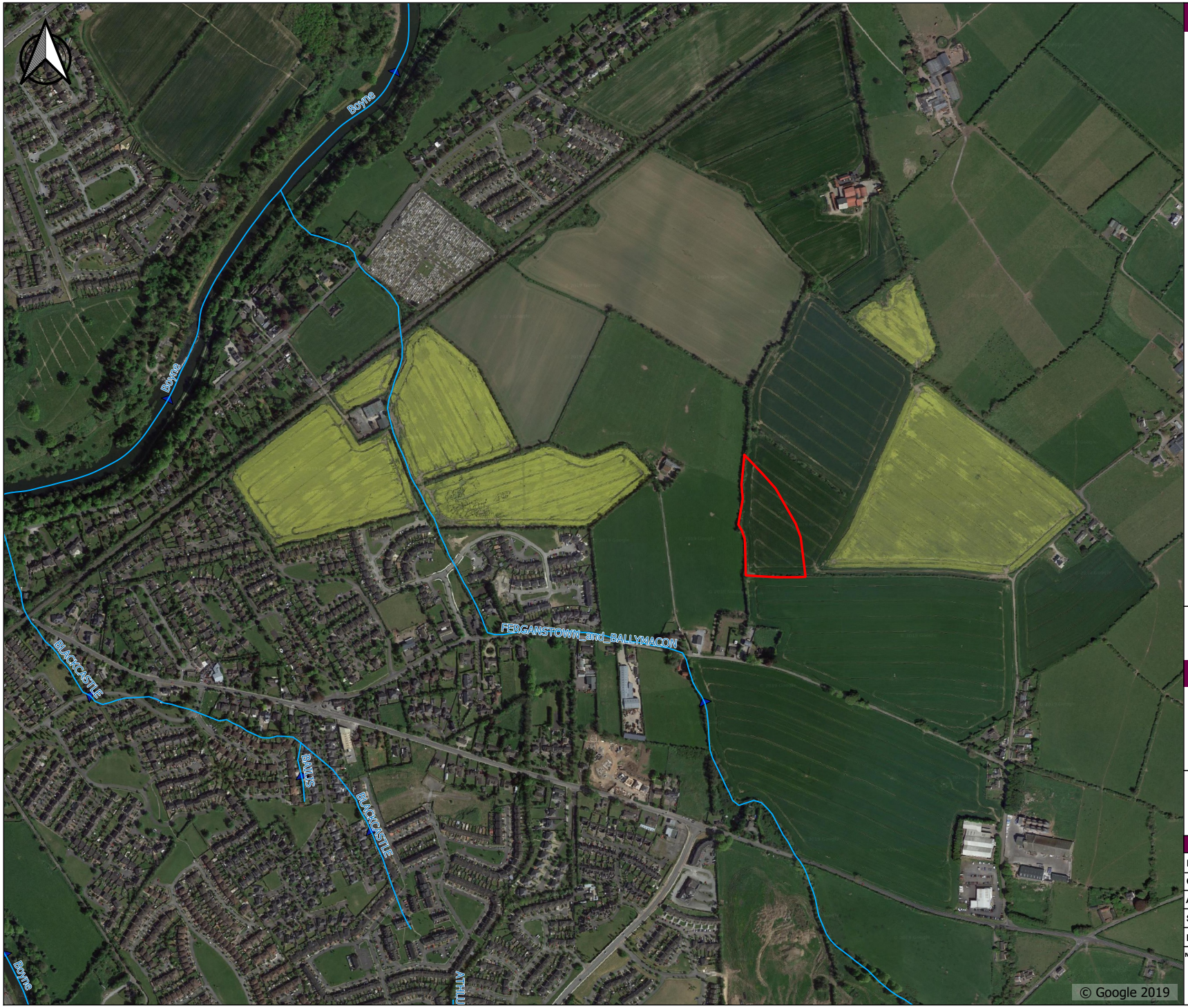
The proposed foul water management incorporates both temporary and permanent measures (see Error! R eference source not found.), accounting for the completion of an adjacent consented distributor road (LDR6), which will contain foul water services. There will be a temporary foul water holding tank (with duty and standby pumps) to pump foul water via a temporary rising main, until the gravity trunk sewer is operational. When the LDR6 is operational, there will be a rising main and a gravity main. When the permanent connection to the trunk sewer is established, the temporary foul water holding tank will become obsolete and infilled with concrete.

### 2.1.2 Construction Programme/Phasing

The is no phasing of the construction of the proposed development; however, the construction of the proposed development will dependant on the completion of the Local Infrastructure Housing Activation Fund (LIHAF) distributor road linking the R153 to the Boyne Road. If this distributor road is not constructed, the proposed development will not be possible, due to the landlocked nature of the proposed development site, for both access and services (e.g. foul water system).

### 2.1.3 Habitat Removal and Alteration

The proposed development is located on agricultural (arable) land. No alteration of semi-natural habitats, including culverting of watercourses or removal of hedgerows will take place. Landscaping, including planting of grassed areas and establishment of appropriately sized trees, will take place after construction of the proposed development. Sheet-piling to c. 1 m of the watercourse bank will cause temporary vibration and disturbance to the aquatic environment, and associated biodiversity, during construction.

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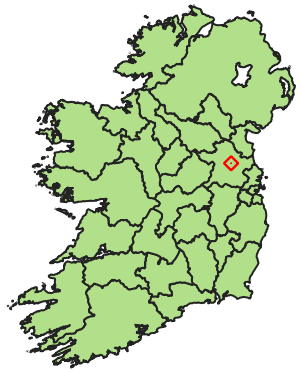

Site Boundary

River Water Bodies

Client

comhairle chontae na mí
meath county council

Project **Farganstown Social Housing**

Title

# Figure 2-1: Site Location

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**Issue Details**

| | | | |
|---|---|---|---|
| **Drawn:** | JMM | **Project:** | MDC0641 |
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# 3 METHODOLOGY

## 3.1 Zone(s) of Influence and Study Area

The 'zone of influence' (ZoI) for a project (or 'spatial extent of the impact' as described in Annex III(3) of the EIA Directive) is the area over which ecological features may be subject to significant impacts as a result of the proposed project and associated activities.

The ZoI will vary for different ecological features depending on their sensitivity to an environmental change. It is therefore appropriate to identify different ZoI for different features. The features affected could include habitats, species, and the processes on which they depend. ZoI are specified for different features, and types of potential impact.

The ZoI for terrestrial habitats is limited to the footprint of the proposed development, with groundwater movement and levels considered in relation to groundwater dependent terrestrial habitats outside of the footprint of the development.

Hydrological linkages between a proposed development and aquatic habitats/species can occur over significant distances; however, the significance of the impact will be site specific depending on the receiving water environment and nature of the potential impact. A conservative approach has been adopted assuming that the ZoI includes all areas downstream of the proposed development, which are within the same water catchment, in addition to the immediate and adjacent lands to which the proposed development will occur.

The ZoI for significant impacts to breeding birds is considered to extend no more than 100m from the proposed development to take account of disturbance during construction.

The ZoI for mammals such as bats, badgers and otters may extend over larger distances due to the fact that they can commute and forage many kilometers from their breeding sites.

## 3.2 Desk Study

A desk study was completed to assess the potential for all species of conservation interest to occur within the ZoI of the proposed development.

This included a review of existing statutory sites of nature conservation interest, including:

- Special Areas of Conservation (SACs);
- Special Protection Areas (SPAs);
- Natural Heritage Areas (NHAs);
- proposed Natural Heritage Areas (pNHAs);
- RAMSAR Sites; and
- Nature Reserves and National Parks

Sources of information that were used to inform the assessment included:

- NPWS online maps and data, site synopsis and conservation objectives www.npws.ie;
- National Biodiversity Data Centre (NBDC) online maps and data www.biodiversityireland.ie;
- Environmental Protection Agency (EPA) Maps https://gis.epa.ie/EPAMaps/
- EPA Catchments Website – for the River Basin Management Planning www.catchments.ie
- Geological Survey of Ireland online mapping www.gsi.ie;
- Information on the conservation status of birds in Ireland (Colhoun & Cummins, 2013);
- OSI Map Viewer www.osi.ie;

- Meath County Development Plan 2013-2019;
- Meath Biodiversity Action Plan 2015-2020;
- County Meath Heritage Plan 2015-2020.

## 3.3 Ecological Appraisal

The ecological appraisal consisted of three components: a habitat survey (Fossitt, 2000), a breeding bird assessment, and a scoping survey for protected species and other species of conservation concern which could be present within the ZoI of the proposed development.

### 3.3.1 Habitats and Flora

The Habitat surveys followed the best practice guidance by the Heritage Council (Smith et al, 2011) using the Fossitt (2000) habitat classification system.

Habitat surveys were carried out in early September to record dominant species, indicator species for different habitat types or conditions, rare or declining species identified on relevant Red Lists and invasive species (as listed in the Third Schedule of the EC Birds and Natural Habitats Regulations 2011). The information gained from the survey was used to describe habitat features.

### 3.3.2 Breeding Birds

Breeding bird assessments of the proposed development site were carried out on two occasions in August 2019. The survey methodology employed was a scaled down version of the British Trust for Ornithology's (BTO) Common Bird Census (CBC) technique (Bibby *et al*., 2000; Gilbert *et al*, 1998), which aimed to capture a snap-shot of breeding bird activity within the proposed development site and immediate environs. This method required a competent observer to make monthly visits, slowly walking transects through the site, recording all birds seen or heard. Species encountered were mapped and coded using standard BTO species codes with categories of breeding evidence then assigned. No attempts were made to locate nests as the survey methods are generally sufficient to determine probable or confirmed breeding. The survey identified all bird species as Low, Medium or High Conservation Concern as per the latest Birds of Conservation Concern in Ireland listing (Colhoun and Cummins, 2013).

Survey visits were conducted during the morning to coincided with the peak bird activity period and were not made during adverse weather conditions. Transects were chosen to ensure all parts of the survey area were passed within 50 m or less. Transects were reversed between visits. Areas which were more likely to hold breeding birds, such as waterbodies and hedgerows were included along the route wherever possible. All bird species encountered within the survey area and immediate environs were recorded, including those in flight over the proposed development site.

Dedicated surveys for wintering birds was not deemed necessary due to habitat suitability and results from the desk study.

### 3.3.3 Mammals, Amphibians and Reptiles

This report was informed by a habitat and protected species survey of the proposed development site in early September 2019. Habitats were assessed for field signs and/or usage by fauna, such as well-used pathways, droppings, places of shelter and features or areas likely to be of particular value as foraging resources.

Surveys were carried out in accordance with the National Roads Authority publication '*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes'.* An assessment of features in the study area that were of potential value to bats was also made in accordance with the Bat Conservation Trust Publication '*Bat Surveys - Good Practice Guideline*s' (Bat Conservation Trust, 2012). A visual assessment of potential bat roosts (PBRs) was carried out by identifying features of most value to bats, for example, crevices, splits, holes, loose bark, hollows or cavities and thick ivy. Potential areas of value to bats for foraging or commuting were also noted, as was the presence of old or derelict buildings. No caves were noted.

## 3.4 Impact Appraisal

The overall ecological appraisal is based on the methodology provided by CIEEM (2017) and NRA (2009b). The assessment identifies sites, habitats, species and other ecological features that are of value based on factors such as legal protection, statutory or local site designations or inclusion on Red Data Book Lists or Biodiversity Action Plans.

The methodology for evaluation of the nature conservation value of ecological features affected by development (ecological receptors) is adapted from CIEEM guidelines for Ecological Impact Assessment (CIEEM, 2019). These guidelines recommend assignment of value (or potential value) to ecological receptors in accordance with the following scale:

- International;
- National;
- Regional;
- County;
- Local
- within immediate zone of influence only.

Following on from the above, potential constraints to development are identified on that basis, with recommendations for further, more detailed surveys made as appropriate, for example to fully investigate botanical value or to confirm presence / likely absence of a protected species.

In appraising any impacts, the review considers the proposed development with any recommendations made proportionate and appropriate to the site having considered the mitigation hierarchy as identified below:

- **Avoid:** Provide advice on how the development may proceed by avoiding impacts to any species or sites by either consideration of site design or identification of an alternative option.
- **Mitigate:** Where avoidance cannot be implemented, mitigation proposals are put forward to minimise impacts to species or sites as a result of the proposals. Mitigation put forward is proportionate to the site.
- **Compensate:** Where avoidance cannot be achieved any mitigation strategy will consider the requirements for site compensatory measures.
- **Enhance:** Identify appropriate and proportionate ecological enhancement.

When describing impacts on ecosystem structure and function, reference is made to the following aspects where appropriate:

- extent;
- magnitude;
- duration;
- reversibility; and
- timing and frequency.

## 3.5 Limitations

### 3.5.1 Desk based Assessment

Sources of desk study information are neither exhaustive nor necessarily easily available, and a reasoned effort was made to obtain ecological data in the public domain to inform the description of the receiving environment (baseline condition) and its assessment. Additional information, not in the public domain, is likely to exist, but could not be obtained or assessed here. This limitation is acknowledged and incorporated into the assessment.

### 3.5.2 Field Surveys

The field study was completed during over four days within the same year. Although the timing of the survey was deemed suitable (NRA, 2008) for the purposes of this ecological appraisal, this limitation is acknowledged and incorporated into the assessment.

Surveys for breeding were undertaken on two separate occasions in late summer 2019. Although the timings of the surveys were considered to have been completed within the optimal periods, variation between years and throughout the breeding season were not incorporated into the survey design. Therefore, surveys were unable to confirm breeding status or the number of territories. This limitation is acknowledged and incorporated into the assessment.

# 4 RECEIVING ENVIRONMENT

## 4.1 Site overview

The predominant landuse within the ZoI of the proposed development is agricultural (arable and pasture) land, with occasional residential developments and road infrastructure.

## 4.2 Designated Sites

The proposed development is not located within any European site designated for biodiversity conservation. There are two European sites within the ZoI of the proposed development. These consist of the River Boyne and River Blackwater SAC and SPA, located within 1km of the proposed development. This SAC and SPA are downstream of the proposed development, via unnamed watercourses which discharges into the Boyne_140 river water body. The River Boyne and River Blackwater SAC and SPA are within the same Catchment Management Unit as the proposed development.

The proposed development is not located within any nationally designated site. There are seven proposed National Heritage Areas (pNHAs) and no Natural Heritage Areas (NHAs) located within the ZOI of the proposed development. The closest of these is Boyne Woods pNHA, located 2.8km from the proposed development. All pNHAs are hydrologically connected to the proposed development via an unnamed stream which discharges into the Boyne_140 river body.

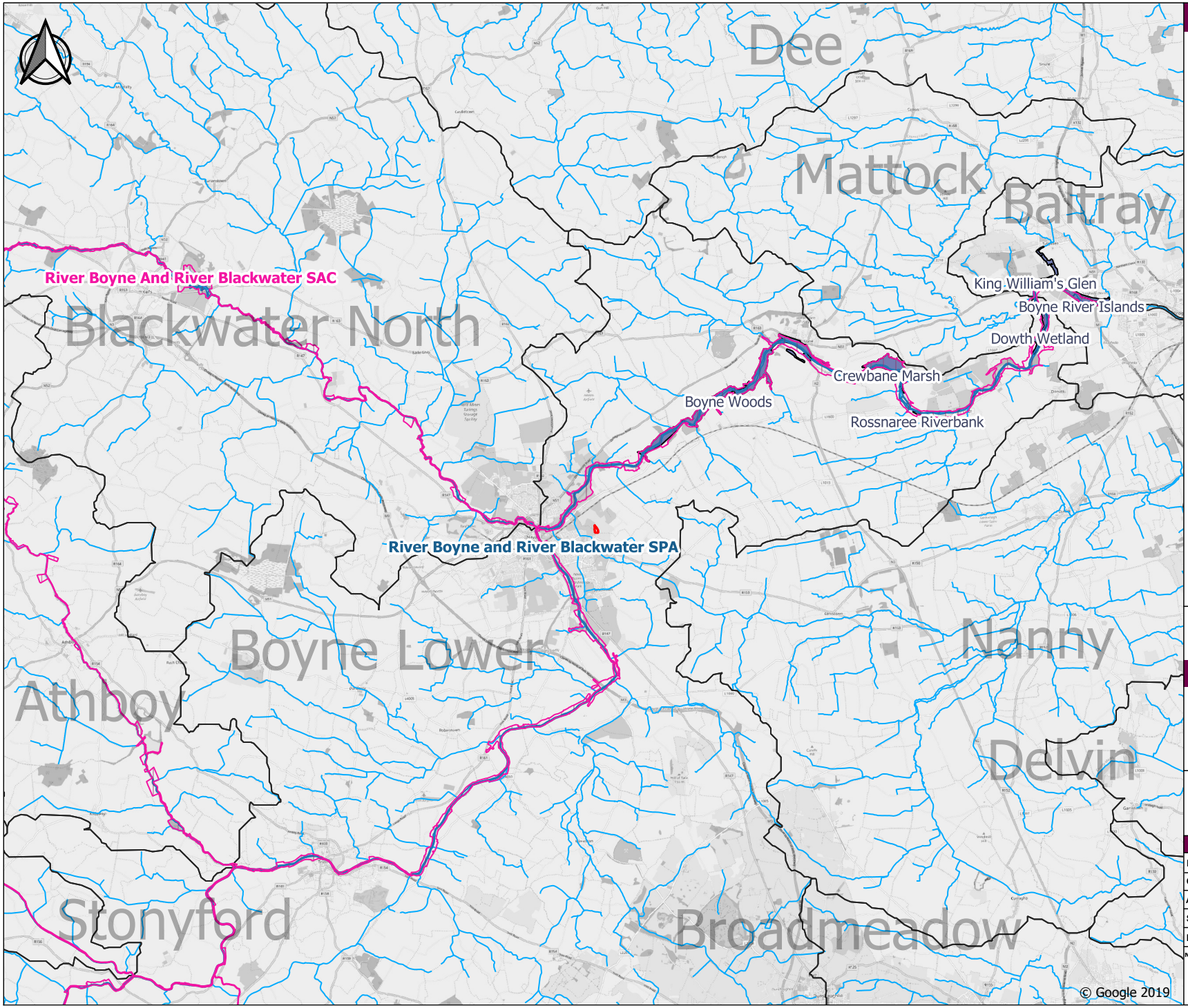
A summary of these sites is provided in **Table 4-1** and **Table 4-2** below and the location of each site is detailed in **Figure 4-1**.There were no other designated sites identified within the ZOI of the proposed development.

**Table 4-1: European Sites within the ZoI of the Proposed Development**

| Site (Code), and Distance from Proposed Development | Conservation Objectives version | Qualifying Interest(s) [code] * / Special Conservation interest(s) | Conservation Objective(s) |
|---|---|---|---|
| River Boyne and River Blackwater SAC (2299); located c. 910 m northwest of proposed development. | Generic Version 6.0, dated 21 February 2018 (NPWS, 2018a) | Alkaline fens [7230] | To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected. |
| | | Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] * | |
| | | *Lampetra fluviatilis* (River Lamprey) [1099] | |
| | | *Salmo salar* (Salmon) [1106] | |
| | | *Lutra lutra* (Otter) [1355] | |
| River Boyne and River Blackwater SPA (2299); located c. 980 m northwest of proposed development. | Generic Version 6.0, dated 21 February 2018 (NPWS, 2018b) | Kingfisher (*Alcedo atthis*) [A229] | To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. |

### Table 4-2: National Sites within the ZoI of the Proposed Development

| Site (Code), and Distance from Proposed Development | Qualifying Interest(s) [code] * / Special Conservation interest(s) |
|---|---|
| Boyne Woods pNHA (001592); located c. 2.8km northeast of proposed development. | Largely broadleaved woodland composed of a mixture of native and non-native tree species. Swamp Meadow- grass (*Poa palustris*) is a rare species listed in the Red Data Book has been recorded among freshwater marsh vegetation. The occurrence of rare grass enhances the importance of this site. |
| Slane Riverbank pNHA (001591); located 9km northeast of proposed development. | A small area along the southern bank of the River Boyne home to rare rush species |
| Crewbane Marsh pNHA (000553); located 10.1km northeast of proposed development. | A small area of freshwater marsh, which occurs on a very wet alluvial floodplain along the northern bank of the river Boyne. The south –facing valley slope above the marsh is covered by deciduous woodland dominated by Ash and Sycamore. Animal life in the wood is relatively rich with Badgers, Stoat and Red Squirrel |
| Rossnaree Riverbank pNHA (001589); located 11.3km northeast of proposed development. | A small riverbank area on the southern bank of the River Boyne home to the presence of round-fruited rush (*Juncus compressus).* |
| Dowth Wetland pNHA (001861); located 15.6km northeast of proposed development. | Wetland area along the northern bank of the River Boyne. The whole site is not heavily grazed by domestic stock and is in very good condition. A small herd of Red Deer graze within the site. This site is the best remaining example of a floodplain marsh on the River Boyne. |
| King William's Glen pNHA (001804); located 17.4km northeast of proposed development. | Steep valley side woodland overlooking the River Boyne. Dominated by a mixture of ash, pedunculate oak, beech, and sycamore, with holly, elder, hazel and hawthorn beneath. This is a well-used amenity area and there are many broad paths through this area and suffers erosion. |
| Boyne River islands pNHA (001862); location 17.6km northeast of proposed development. | A small chain of three islands covered by dense thickets of wet, Willow woodland. There are few similar examples of this type of alluvial wet woodland remaining in the country. The woodland is noted for its diversity of Willow species and for the fact that it conforms well to a type listed on Annex 1 of the EU Habitats Directive. |

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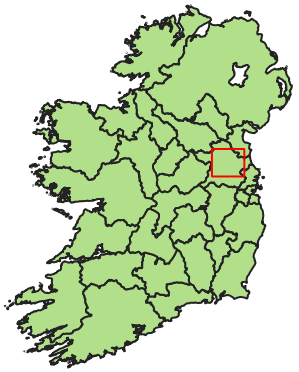

- Site Boundary
- River Water Bodies
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- proposed National Heritage Area pNHA)

Source: NPWS (August 2019)

Client: comhairle chontae na mí / meath county council

Project: **Farganstown Social Housing**

Title

Figure 4-1: Designated Sites within the ZOI of the proposed Development

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**Issue Details**

| | | | |
|---|---|---|---|
| **Drawn:** | JMM | **Project:** | MDC0641 |
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| **Date:** | 19/09/2019 | | |

## 4.3 Desk Study

Records of protected and rare flora and fauna within 5km of the proposed development were obtained from the NBDC. Only records from the last 10 years were obtained. A summary of these records is provided in Error! Reference source not found..

**Table 4-3: NBDC Protected and Rare Species Records within 5km from proposed development**

| Species Name | Legislative Protection* | Red List Status | Record Count | Date of Last Record | Habitat Preferences (Birds[1]; All Remaining[2]) |
|---|---|---|---|---|---|
| ***Birds*** | | | | | |
| Barn Owl (*Tyto alba*) | | Red Listed | 9 | 31/12/2011 | Scarce resident mainly in central and southern Ireland. Breeds in ruined buildings, such as castles and to a lesser extent in outbuildings (barns/sheds). |
| Black-headed Gull *(Larus ridibundus)* | ✓d | Red Listed | 18 | 31/12/2011 | Resident along all Irish coasts, wintering inland also. Breading nests on the ground in wetland areas, i.e. bogs, marshes, man-made lakes. Widespread across agricultural fields, and urban areas. |
| Common Coot (*Fulica atra)* | ✓d | Amber Listed | 8 | 31/12/2011 | Resident at ponds and lakes throughout Ireland. Wintering in lakes, coastal estuaries and river systems |
| Common Kestrel (*Falco tinnunculus)* | | Amber Listed | 19 | 31/12/2011 | Widespread resident throughout Ireland. Nests in trees, buildings or in cracks in cliffs. Will use old crow's nests. Found in wide variety of open habitats including coasts, moor land, farmland, wetlands, roadside verges and town parks |
| Common Kingfisher (*Alcedo atthis)* | ✓a,d | Amber Listed | 26 | 31/12/2011 | Resident on Irish streams, rivers and canals. Wintering in lakes and coasts during extended poor weather |
| Common Linnet (*Carduelis cannabina)* | | Amber Listed | 21 | 31/12/2011 | Widespread resident throughout Ireland. Breed in a variety of habitats, including rough grassland, uplands and in coastal areas with gorse. |
| Common Redshank (*Tringa totanus)* | ✓d | Red Listed | 1 | 31/12/2011 | Resident and visitor populations. A common wader of wetlands throughout the country, though mainly coastal estuaries in winter. Nests in grassy tussock, in wet, marshy areas and occasionally heather. Breeds mainly in midlands. |
| Common Sandpiper (*Actitis hypoleucos)* | | Amber Listed | 6 | 24/04/2010 | Summer migrant to Irish coats. Nests on the ground amongst stones and low vegetation, usually very close to water - often on river or lakeside beach. Inland lakes and sea coast, mainly in northern and western counties. Small numbers winter in Ireland, mainly along the southern coast. |
| Common Snipe (*Gallinago gallinago)* | | Amber Listed | 10 | 31/12/2011 | Summer and winter visitor to Ireland. They forage across a variety of wetland and damp habitats. Nests on the ground, usually concealed in a grassy tussock, in or near wet or boggy terrain |
| Common Starling (*Sturnus vulgaris)* | | Amber Listed | 35 | 31/12/2011 | Widespread garden bird, Irish resident. Foraging in grassland in parks, gardens and farmland, and trees. Also found in urban environments as well as woodland and farmland |
| Common Swift (*Apus apus)* | | Amber Listed | 19 | 31/12/2011 | Common summer visitor throughout Ireland. Nests in small recesses in buildings, both occupied and derelict. Less frequently in holes in trees or caves in uplands or coastal areas. |
| Dunlin (*Calidris alpina)* | ✓d | Red Listed | 1 | 31/12/2011 | Summer and winter visitor to coastal areas, tidal mudflats and estuaries are preferred. Breeding in machair habitats |
| Eurasian Curlew (*Numenius arquata)* | ✓d | Red Listed | 10 | 31/12/2011 | Winter visitor to Irish wetlands. Breeding throughout ireland in floodplains, boglands, meadows, rough pasture and heather |
| Eurasian Sparrowhawk (*Accipiter nisus)* | | Amber Listed | 20 | 31/12/2011 | Widespread in woodland, farmland with woods, larger parks and gardens. Nests in trees. Breeds throughout Ireland and ventures into urban gardens |
| Eurasian Teal (*Anas crecca)* | ✓d | Amber Listed | 2 | 31/12/2011 | Resident & winter migrant. Wetland preferences in covered freshwater lakes, pools and small upland streams away from the coast. Wintering in coastal lagoons and estuaries and inland marshes, lakes, ponds and turloughs |

[1] Available online at https://birdwatchireland.ie/irelands-birds/list-of-irelands-birds/. Accessed September 2019

[2] Available online at https://species.biodiversityireland.ie/. Accessed September 2019

| Species Name | Legislative Protection* | Red List Status | Record Count | Date of Last Record | Habitat Preferences (Birds[1]; All Remaining[2]) |
|---|---|---|---|---|---|
| Eurasian Tree Sparrow (*Passer montanus)* | | Amber Listed | 10 | 31/12/2011 | Local resident in the east of Ireland, scarce along the south and west coasts. Largely associated with cereal production. Nests in cavity in building, especially under eaves or holes formed by missing brickwork |
| Eurasian Woodcock (*Scolopax rusticola)* | | Red Listed | 7 | 31/12/2011 | Resident & winter visitor to Ireland. Habitat preferences include woodland and areas of dead leaves and low vegetation, scrub and some open areas (bracken and heather-covered hills) |
| European Golden Plover *(Pluvialis apricaria)* | ✓a,d | Red Listed | 5 | 31/12/2011 | Widespread distribution during wintering in coastal and inland habitats. Summer populations restricted to uplands in NW Ireland with heather moors, blanket bogs, and acidic grasslands. |
| European Robin (*Erithacus rubecula)* | | Amber Listed | 39 | 31/12/2011 | Widespread garden bird, Irish resident. Breeds throughout Ireland nesting in well-concealed areas in a bank, ivy or cavity in tree or wall. |
| Great Black-backed Gull (*Larus marinus*) | | Amber Listed | 4 | 31/12/2011 | Resident along all Irish coasts. Breeds on the ground in colonies all around the coast of Ireland. Most colonies are on well-vegetated off-shore islands, or in other areas difficult of access |
| Great Cormorant (*Phalacrocorax carbo)* | ✓d | Amber Listed | 11 | 31/12/2011 | Irish resident either at sea or on inland lakes and rivers. Breeds in colonies mainly around the coast of Ireland, with some birds breeding inland. |
| Grey Heron (*Ardea cinerea)* | ✓d | | 29 | 07/11/2017 | Common resident at wetlands, estuaries and along rivers throughout Ireland |
| Grey Partridge (*Perdix perdix)* | | Red Listed | 4 | 31/12/2011 | Resident in lowland farmland in County Offaly. Small numbers in Meath, Kildare and Cork. |
| Hen Harrier *(Circus cyaneus)* | ✓a,d | Amber Listed | 3 | 31/12/2011 | Winter visitor to low-lying countryside along the coast. Breeding in upland areas and bogs confined to heather moorland and young forestry plantations. |
| Herring Gull (*Larus argentatus)* | ✓d | Red Listed | 11 | 31/12/2011 | Resident along all Irish coasts, breeding inland also. Widespread distribution |
| Lesser Black-backed Gull (*Larus fuscus)* | ✓d | Amber Listed | 1 | 31/12/2011 | Summer populations are distributed across the Irish coastline including off shore islands, islands in inland lakes, sand dunes and coastal cliffs. Winter visitors to more inland lakes |
| Little Egret (*Egretta garzetta)* | ✓a | | 4 | 13/12/2017 | Resident along coasts and rivers throughout Ireland. A variety of wetland habitats are used including shallow lakes, riverbanks, lagoons, coastal estuaries and rocky shoreline. |
| Little Grebe (*Tachybaptus ruficollis)* | ✓d | Amber Listed | 15 | 31/12/2011 | Resident on vegetated ponds and lakes throughout Ireland. Wintering habitat extends to include ephemeral wetlands and are often encountered on sheltered coasts, estuaries and coastal lakes and lagoons. |
| Mallard (*Anas platyrhynchos)* | ✓d | | 49 | 31/12/2011 | Resident across all wetland habitats in Ireland. |
| Meadow Pipit (*Anthus pratensis)* | | Red Listed | 21 | 31/12/2011 | One of the commonest bird species in Ireland, favouring rough pastures and uplands. Breeds in bogs, uplands and areas of scrub and pasture. Winters in lowland areas |
| Mistle Thrush (*Turdus viscivorus)* | | Amber Listed | 24 | 31/12/2011 | Widespread garden bird, Irish resident. Breeds mainly in hedgerows and gardens. Nest in trees, bushes, ivy, brambles and sometimes conifers |
| Mute Swan (*Cygnus olor)* | | Amber Listed | 20 | 31/12/2011 | Resident at wetlands throughout Ireland. |
| Northern Lapwing (*Vanellus vanellus)* | ✓d | Red Listed | 12 | 31/12/2011 | Irish resident and summer visitor across wetlands, pasture and rough land adjacent to bogs. Breed on open farmland, and bare fields. |
| Peregrine Falcon (*Falco peregrinus)* | ✓a,d | | 1 | 31/12/2011 | Widespread resident in Ireland favouring coastal sites and cities with high vantage points |
| Sand Martin (*Riparia riparia)* | | Amber Listed | 26 | 31/12/2011 | Widespread summer visitor throughout Ireland. Breed in burrows dug into river banks or quarries |
| Short-eared Owl (*Asio flammeus)* | | Amber Listed | 1 | 31/12/2011 | A scarce winter visitor throughout Ireland and rare breeding species in upland locations, mainly in the south and east. Favours uplands and coastal lowlands. |
| Sky Lark (*Alauda arvensis)* | | Amber Listed | 22 | 31/12/2011 | Common resident throughout Ireland in uplands and areas of farmland, especially cereal. Breeds in a variety of habitats including cultivated areas, ungrazed grasslands and upland heaths. Winters in flocks on stubble fields, grasslands and coastal areas. |
| Spotted Flycatcher (*Muscicapa striata)* | | Amber Listed | 15 | 31/12/2011 | A widespread summer visitor to broadleaf woodlands, well-vegetated hedgerows, parks and gardens. |

| Species Name | Legislative Protection* | Red List Status | Record Count | Date of Last Record | Habitat Preferences (Birds[1]; All Remaining[2]) |
|---|---|---|---|---|---|
| Stonechat (*Saxicola torquata)* | | Amber Listed | 5 | 31/12/2011 | Widespread resident in scrubland throughout Ireland, mainly near the coast. Scarce in the midlands. Favours Gorse and upland bracken. |
| Whooper Swan (*Cygnus cygnus)* | ✓a,d | Amber Listed | 4 | 31/12/2011 | Winter visitor to wetlands and nearby open farmland throughout Ireland. Breeding in open shallow water, by coastal inlets, estuaries and rivers. |
| Yellowhammer (*Emberiza citrinella)* | | Red Listed | 25 | 24/07/2015 | Declining resident mainly in the east and south of Ireland. Strongly linked with the cultivation of cereals. |
| ***Mammals*** | | | | | |
| Brown Long-eared Bat (*Plecotus auritus)* | ✓c,e | | 1 | 02/10/2011 | Prefers to forage in parkland, open deciduous and coniferous woodland, orchards and gardens. They are frequently found in older buildings, in lofts, barns, stables etc. Usually, they cluster along the ridge beam or next to a chimney. The species also makes use of trees as summer roosts and colonise bat boxes readily. |
| Lesser Noctule (*Nyctalus leisleri)* | ✓c,e | | 17 | 18/05/2011 | Woodland species but it is also to be found in parkland, along treelines, pasture and riparian habitats, over lakes, beaches and dunes and above streetlights in urban areas. Not as dependent on linear features like hedgerows as our other bat species. |
| Natterer's Bat (*Myotis nattereri)* | ✓c,e | | 2 | 02/10/2011 | Found in woodlands (deciduous and coniferous), along tree lines and hedgerows, in pasture and over water including white water rapids where it hunts higher than Daubenton's Bat. Hibernation in underground sites such as caves, sub-terrains, mines and tunnels where it crawls into cracks and crevices as well as hanging in the open. Summer roost sites are usually in very old stone built buildings, trees or bat or bird boxes and individual animals are sometimes encountered beneath stone bridges. |
| Common Pipistrelle (*Pipistrellus sensu lato)* | ✓c,e | | 14 | 02/10/2011 | Highly adaptable species foraging along linear landscape features such as hedgerows and tree lines as well as within woodland and parkland. Roosting in old and modern structures in addition to trees and bat boxes. |
| Soprano Pipistrelle (*Pipistrellus pygmaeus)* | ✓c,e | | 23 | 02/10/2011 | As with the Common Pipistrelle, the Soprano forages along linear landscape features such as hedgerows and tree lines as well as within woodland. Notable preference for riparian habitats and has adapted to modern dwellings. The species is loyal to its roost site and returns year after year. |
| Daubenton's Bat (*Myotis daubentonii)* | ✓c,e | | 144 | 23/08/2013 | Calm, slow-moving water is chosen by Daubenton's Bat as it makes it easier for it to locate insects on the surface. Sometimes forages in woodland, away from water. Habitats include but are not necessarily limited to; Semi-natural woodland, Highly modified non-native woodland, Building and artificial surfaces, Lakes and Ponds, Watercourses. |
| Eurasian Badger (*Meles meles)* | ✓e | | 29 | 23/02/2012 | Varied habitats including grassland, woodland and Bog often near hedgerows or treelines and streams. |
| Eurasian Pygmy Shrew (*Sorex minutus)* | ✓e | | 4 | 30/11/2014 | Prefers relatively damp areas with dense vegetation at ground level, and it occurs in a wide variety of habitats including swamps, grasslands, heaths, sand dunes, woodland edge, rocky areas, shrubland, and montane forests. It feeds on invertebrates. |
| Eurasian Red Squirrel (*Sciurus vulgaris)* | ✓e | Near Threatened | 3 | 19/05/2016 | Conifer-dominated woodland with a mixture of age classes and species together with some berry-bearing shrubs to ensure a continuous food supply. |
| European Otter (*Lutra lutra)* | ✓b,e | Near Threatened | 6 | 14/06/2015 | Lakes and Ponds, watercourses, riparian woodland, estuaries, sea inlets and bays, saltmarshes, swamps |
| West European Hedgehog (*Erinaceus europaeus)* | ✓e | | 5 | 08/09/2013 | Irish resident in all lowland habitats where there is sufficient food to eat and ground cover for nesting, and commonest where grassland abuts mixed woodland and scrub. It appears to avoid coniferous woodland, blanket bog and other wet areas. |
| ***Amphibians & Fish*** | | | | | |
| Common Frog (*Rana temporaria*) | ✓e | | 17 | 13/08/2018 | Native to Ireland. Uses a broad habitat range including lakes and ponds , grassland and marsh, wet heath, peatlands, woodland and scrub, dune slacks, machair, and riparian habitats. |
| Smooth Newt (*Lissotriton vulgaris)* | ✓e | | 3 | 15/09/2012 | Native to Ireland. Like the common frog, smooth newts may colonise garden ponds during the breeding season. Outside of the breeding season, newts come onto land and are often |

| Species Name | Legislative Protection* | Red List Status | Record Count | Date of Last Record | Habitat Preferences (Birds[1]; All Remaining[2]) |
|---|---|---|---|---|---|
| | | | | | found in damp places, frequently underneath logs and debris in the summer months. |
| European Eel (*Anguilla anguilla)* | | Critically Endangered | 1 | 22/07/2009 | Congregate in estuaries as glass eel, before metamorphosing into elvers and moving upstream. They spend most of their lifespan (6 to 20 years) in freshwater. When the time comes for them to spawn, they then return downriver to swim back to the Sargasso Sea where their lives began. |

* a = Annex I Birds Directive, b = Annex II Habitats Directive, c = Annex IV Habitats Directive, d = Special Conservation Interest bird species (within SPA), e = Wildlife Act (excluding birds)

## 4.4 Habitats

Habitats detailed during the field study within the ZoI of the proposed development site and wider ZoI are illustrated in **Figure 4-2**; which includes the relevant habitat codes from Fossitt (2000). A summary of each habitat is provided within this section.

### 4.4.1 GS1 Dry Calcareous and Neutral Grassland

The proposed development site is bordered to the north and east by a c. 30 m wide strip of neutral grassland containing remanence species of previous use as BS1 Arable Crop. This strip of habitat has been demarked for a consented road construction project. The grassland is dominated by wheat *(Triticum aestivum)* and contains a sword c. 50cm in height with an abundance of great willowherb *Epilobium hirsutum,* fescue *Festuca* spp., annual meadowgrass *Poa aunnua,* frequent clover *Trifolium* spp., occasional curled dock *Rumex crispus,* spear thistle *Cirsium vulgare,* colt's-foot *Tussilago farfara,* ragwort *Senecio jacobaea,* redshank *Persicaria maculosa.* Smooth sow-thistle *Sonchus oleraceus* was rarely noted.

### 4.4.2 WL1 Hedgerow

The proposed development site is bordered to the south and west by a continuous unmanaged hedgerow habitat. The habitat occupies both sides of a small stream and is c. 6-8 m in height with mature trees reaching c. 10 m in height. The overstorey contains an abundance of ash *Fraxinus excelsior*, elder *Sambucus nigra,* and ivy *Hedera helix,* frequent hawthorn *Crataegus monogyna,* occasional holly *Ilex aquifolium* and grey willow *Salix cinerea,* and rare occurrences of alder *Alnus incana,* English elm *Ulmus procera,* and beech *Fagus sylvatica.* The understorey is dominated by bramble *Rubus fructicosus* agg. and common nettle *Urtica dioica,* frequent redshank *Persicaria maculosa* and great willowherb *Epilobium hirsutum,* occasional dog-rose *Rosa canina,* hart's-tongue *Asplenium scolopendrium,* and silverweed *Potentilla anserina,* and rare occurrences of herb-robert *Geranium robertianum,* wild privet *Ligustrum vulgare,* bush vetch *Vicia sepium,* and prickly sow-thistle *Sonchus asper.*

### 4.4.3 BC1 Arable Crops

The footprint of the proposed development in within cultivated lands. Potato is currently planted in the majority of the field, and a small area of disturbed bare soil was recorded near the field entrance. Adjacent fields are planted with either potatoes or wheat and are bounded by hedgerows.

### 4.4.4 GA1 Improved Agricultural Grassland

The proposed development site is partially bordered to the east by a small agricultural grassland bounded by a hedgerow and a watercourse. This grassland is actively managed, showing signs of fertilised use and grazed.

### 4.4.5 FW2 Depositing/Lowland rivers / FW4 Drainage Ditch

The proposed development site is bordered to the south and west by a small first order stream delineated around the arable crop field, and as such is comparable to a drainage ditch, although the water flow is indicative of a watercourse. For classification purposes, there is no satisfactory single habitat type and as such the watercourse are classified as a mosaic of two habiatts based on their characteristics. Depth is c. 10 cm and width is c. 1 m. Water is slow moving on the southern boundary of the proposed development with boulder

and cobble substrate, and near stagnant at the western boundary with muddy substrate. The habitat is highly shaded with dense overhanging vegetation, resulting in little instream vegetation.

## 4.5 Protected Flora/Species of Conservation Concern

No rare or protected flora are noted from the NBDC database (**Error! Reference source not found.**) for the f ootprint of the proposed development. No rare or protected flora were noted from field surveys, nor would they be likely expected based on the habitat requirements.

## 4.6 Invasive Plants and Animals

Two invasive alien plant species and one invasive animal species, scheduled to the European Communities (Bird and Natural Habitat Regulations) 2011, were returned from the data search (**Table 4-4**). Himalayan balsam (*Impatiens glandulifera)* was recorded c. 1.4 km west and upstream of the proposed development, on the River Boyne. There are several records of Japanese knotweed (*Fallopia japonica)* further west in the centre of Navan, where the Blackwater River meets with the Boyne River, as well as along the main channel of the Boyne River adjacent to the R147. Through profession experience, both Himalayan balsam and Japanese knotweed is known to be well established along sections of the banks to the River Boyne, between Slane and Navan.

One invasive alien animal species, scheduled to the European Communities (Bird and Natural Habitat Regulations) 2011, was returned from the data search (**Table 4-4**): Eastern Grey Squirrel (*Sciurus carolinensis)*. Through profession experience, Eastern grey squirrels are common throughout Meath and surrounding counties.

No scheduled invasive alien plants or animals were noted during the field survey of the proposed development site.

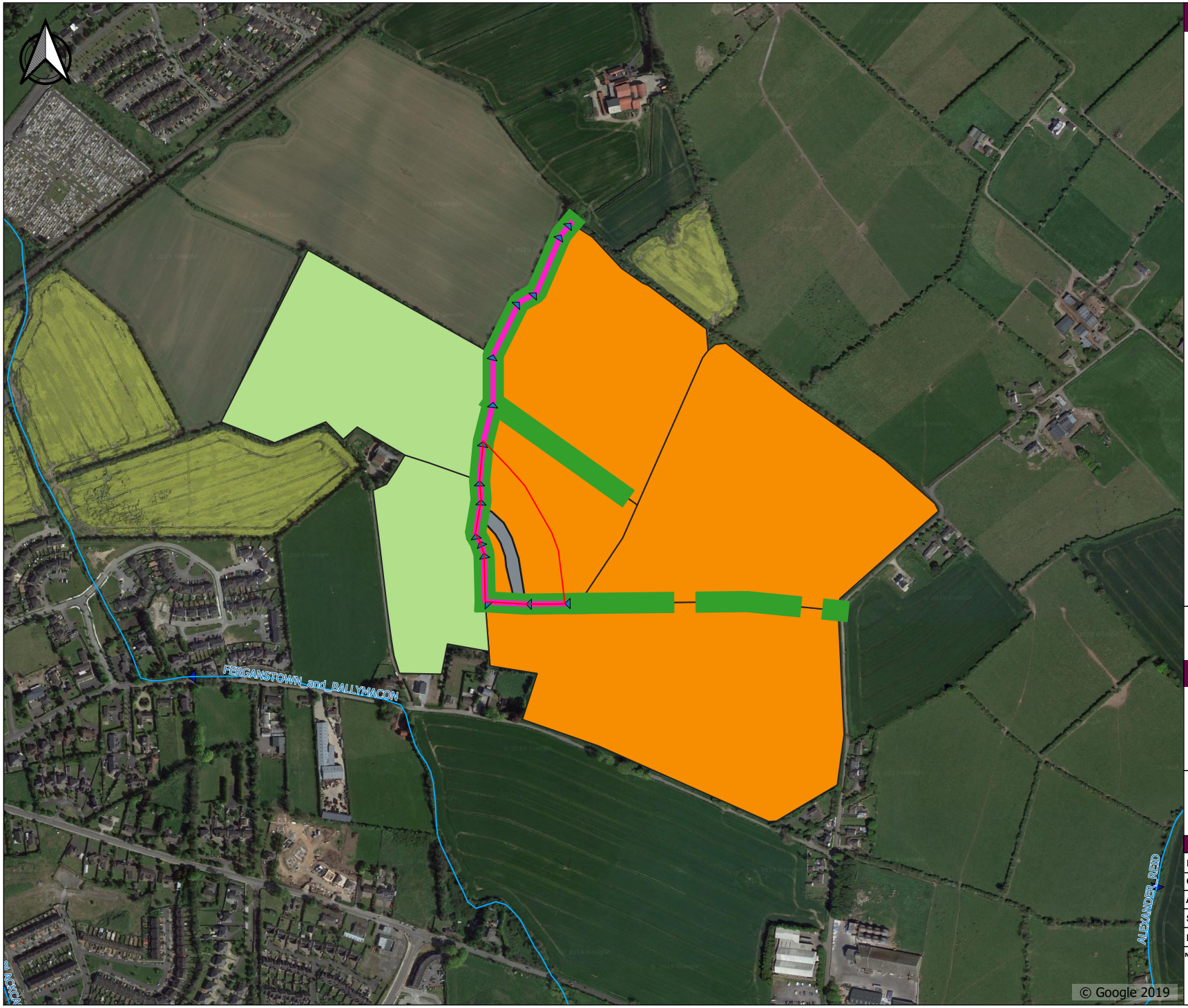
**Table 4-4: NBDC Invasive Plants and Species Records within 5km from proposed development**

| Species Name | Record Count | Date of Last Record |
|---|---|---|
| Himalayan Balsam (*Impatiens glandulifera)* | 8 | 11/05/2017 |
| Japanese Knotweed (*Fallopia japonica)* | 10 | 09/09/2017 |
| Eastern Grey Squirrel *(Sciurus carolinensis)* | 16 | 18/12/2017 |

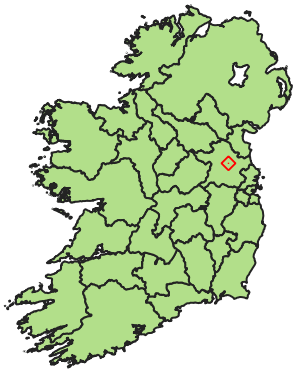
## 4.7 Mammals

### 4.7.1 Badger

The desk study returned several records of Badger *Meles* throughout the wider area of the proposed development. Badger are legally protected under the Wildlife Act (as amended). Evidence of badger activity around the proposed development was present along the western hedgerow bordered the site. One potential badger sett entrance was identified with recent use and was determined to most likely be an outlier set. Additional badger evidence included badger hair caught in the adjacent barbed wire fence and several trails adjacent to the watercourse.




## Legend



Site Boundary

River Water Bodies

### Habitats

FW2/FW4

WL1

BC1

GA1

GS1

Client

comhairle chontae na mí
meath county council

Project **Farganstown Social Housing**

Title

# Figure 4.2: Habitat map

RPS | Consulting UK & Ireland
West Pier Business Campus
Dun Laoghaire
Co. Dublin
Tel: +353 1 488 2900

**Issue Details**

| | | | |
|---|---|---|---|
| **Drawn:** | JMM | **Project:** | MDC0641 |
| **Checked:** | KWB | **File Ref:** | MDC0641QG0004A01 |
| **Approved:** | TR | | |
| **Scale:** | 1:7,500 @ A4 | **Projection:** | IRENET95 / ITM |
| **Date:** | 20/09/2019 | | |

### 4.7.2 Bats

The desk study returned several records of Brown Long-eared Bat *Plecotus auratus,* Lesser Noctule *Nyctalus leisleri,* Natterer's Bat *Myotis nattereri,* Common Pipistrelle *Pipistrellus sensu lato,* Soprano Pipistrelle *Pipistrellus pygmaeus, Daubenton's Bat Myotis daubentonii* throughout the wider area of the proposed development.

The preliminary ground level roost assessments did not identify any features suitable for roosting bats within the footprint of the proposed development (**Figure 5.3**.). The adjacent hedgerows were deemed to contain only features considered to be of low suitability for roosting bats.

A suitability index developed by Bat Conservation Ireland (Lundy *et al*., 2011) identifies the proposed development site within a moderate suitability quintile (35.89) for all bat species combined (**Table 4-5).** The highest suitability index scores were recorded for Leisler's bat, common pipistrelle, soprano pipistrelle, and brown long-eared bat.

**Table 4-5 Suitability Index for Different Bat Species (as per Lundy et al., 2011)**

| Scientific name (Common Name) | Suitability index |
|---|---|
| *Nyctalus leisleri* (Leisler's bat) | 51 |
| *Pipistrellus* (common pipistrelle) | 51 |
| *Pipistrellus pygmaeus* (soprano pipistrelle) | 45 |
| *Plecotus auratus* (brown long-eared bat) | 46 |
| *Myotis nattereri* (Natterer's bat) | 41 |
| *Myotis daubentonii* (Daubenton's bat) | 40 |
| *Myotis mystacinus* (whiskered bat) | 32 |
| *Pipistrellus nathusii* (Nathusius' pipistrelle) | 17 |
| *Rhinolophus hipposideros* (lesser horseshoe bat) | 0 |
| **All Bats** | **35.89** |

All hedgerows and surrounding landscape were assessed for bat commuting and foraging suitability. Adjacent and nearby hedgerows were largely unmanaged with a mixture of tree ages, and as such were deemed to provide low-moderate suitability to commuting and foraging bats.

### 4.7.3 Other Mammals

The desk study returned several records of Eurasian pygmy shrew *Sorex minutus*, Eurasian red squirrel *Sciurus vulgaris*, European otter *Lutra*, and European hedgehog *Erinaceus europaeus* throughout the wider area of the proposed development.

No evidence of otter activity was recorded during the field survey. There was no discernible evidence of holts, resting sites (couchés), trials and sprainting. In additional the watercourse was shallow and slow moving and provide little potential for food resources.

No evidence of red squirrel was recorded during the field survey, nor is the habitat deemed appropriate for this species.

No evidence of hedgehog and pygmy shrew was noted in field survey, however there is potential for hedgehog and pygmy shrew to occur within the Zol of the proposed development, particularly within the adjacent hedgerows.

## 4.8 Amphibians and Reptiles

The desk study returned several records of common frog *Rana temporaria*, smooth newt *Lissotriton vulgaris*. No evidence of frog or newt was recorded during the field survey. The habitat is not deemed appropriate for the presence of newt however the slow-moving watercourse may provide suitable conditions for frog spawn.

## 4.9 Invertebrates

The desk study returned no records of protected or rare invertebrates. Two butterfly species were identified during the field survey: the speckled wood (*Pararge aegeria)* and painted lady *(Cynthia cardui).* These species were recorded occupying grassland habitats within the Zol of the proposed development.

## 4.10 Birds

Two surveys in August 2019 (**Table 4.6**) were completed during favourable conditions to coincide with the peak bird activity period (Error! Reference source not found.).

**Table 4-6. Breeding Bird Survey Dates, Timing and Weather Conditions**

| Date | Start Time | End Time | Cloud cover (in eights) | Wind | Visibility | Precipitation |
|---|---|---|---|---|---|---|
| 20.08.2019 | 08:40 | 11:30 | 2/8 – 4/8 | Light breeze | 4km | None |
| 29.08.2019 | 06:40 | 09:20 | 2/8 – 4/8 | Light breeze | 4km | None |

A total of 24 bird species were recorded within the survey area, including 7 species of conservation concern (see **Table 4-7**)**.** Two of the seven red and amber listed species (Colhoun and Cummins, 2013) were considered to be "probable" or “confirmed” breeders within the site; namely Yellowhammer and Robin. Linnet was classified as a “possible” breeder with the remaining red and amber listed species classed as “non-breeders”.

**Table 4-7 Birds, no. of Individuals, Status and Highest Breeding Evidence.**

| Species | BTO Code | No. of Individuals | | Highest breeding evidence + | Conservation status* |
|---|---|---|---|---|---|
| | | Visit 1 | Visit 2 | | |
| Blackbird | B. | 5 | 8 | Br - FL | |
| Blue tit | BT | 22 | 8 | Br - FL | |
| Buzzard | BZ | 2 | 0 | N - F | |
| Chaffinch | CH | 8 | 10 | Br - FL | |
| Coaltit | CT | 1 | 0 | Po - S | |
| Dunnock | D. | 4 | 4 | Pr - P | |
| Goldfinch | GO | 4 | 4 | Br - FL | |
| Goldcrest | GC | 0 | 1 | N - M | Amber |
| Great tit | GT | 8 | 7 | Br - FL | |
| Hooded crow | HC | 1 | 2 | N - F | |
| House Martin | HM | 70 | 8 | N - F | Amber |
| Jackdaw | JD | 45 | 17 | N - F | |
| Linnet | LI | 0 | 2 | Po - H | Amber |
| Longtailed Tit | LT | 2 | 0 | N - F | |
| Robin | R. | 3 | 3 | Br - FL | Amber |
| Rook | RO | 38 | 12 | N - F | |
| Song Thrush | ST | 1 | 1 | Po - S | |
| Sparrowhawk | SH | 0 | 1 | N - F | |
| Starling | SG | 0 | 11 | N - F | Amber |
| Swallow | SL | 40 | 14 | N - F | Amber |
| Willow warbler | WW | 6 | 3 | N - M | |
| Woodpigeon | WP | 7 | 34 | Br - FL | |
| Wren | WR | 3 | 4 | Pr - P | |
| Yellowhammer | Y | 2 | 3 | Pr - A | Red |

**+Non-breeder (N)**: Flying over (F). **Possible breeder (Po)**: Observed in suitable nesting habitat (H); Singing male (S). **Probable breeder (Pr)**: Pair in suitable nesting habitat (P); Permanent territory (T); Agitated behaviour (A). **Confirmed breeder (Br)**: Recently fledged young or downy young (FL); Adults entering or leaving nest-site indicating occupied nest (ON); Adult carrying faecal sac or food for young (FF); Nest with young seen or heard (NY).
*Birds of Conservation Concern in Ireland 2014-2019 (Colhoun and Cummins, 2013)

## 4.11 Aquatic Environment

The desk study returned one record of European Eel (*Anguilla anguilla*) within the River Boyne approximately 2.4km north west of the proposed development. No evidence of European Eel was recorded during the field survey, nor is the habitat deemed appropriate for these species.

Two unnamed watercourses were identified during the field survey of the proposed development site. A small, unnamed stream, flowing east to west, runs along the southern boundary of the proposed development site. This stream confluences into a similar unnamed stream flowing south to north along the western boundary of the proposed development site. The path of this stream, after leaving the proposed development site, is undetermined; however, it is assumed to confluence with the River Boyne downstream.

Analysis of the EPA online mapper[3] identified the Farganstown and Ballymacon first order stream (IE_EA_07B041900), located c. 175 m to the southwest of the proposed development, and the River Boyne (IE_EA_07B042010), located c. 980 m north west of the proposed development. The River Boyne is designated as both a SAC and SPA (see **Section** Error! Reference source not found.) and provide c onnectivity to downstream pNHAs: Boyne Woods, pNHA Slane Riverbank pNHA, Crewbane Marsh pNHA, Rossnaree Riverbank pNHA, Dowth Wetland pNHA, King William's Glen, and Boyne River islands pNHA.

This Farganstown and Ballymacon steam is hydrologically connected to the proposed development via overland run-off and drainage ditches. There is no water quality monitoring of this stream, which flows northwest of the proposed development and into the River Boyne.

An EPA monitoring station (StationID RS07B041900), located c. 1.25 km downstream of the proposed development, indicates a water quality status of 'moderate' in 2003 (the most recent data). There is no river waterbody status (2010-2015) for the River Boyne at the nearest hydrological connectivity to the proposed development; however, the c. 1.25 km downstream river waterbody status (2010-2015) for the River Boyne (BOYNE_150) is considered 'moderate'. The most recent assessment of the River Boyne waterbody status (2010-2015) is summarised as follows:

"*Three of the thirteen stations on the Boyne were in satisfactory condition when assessed in 2015. Two of the sites had improved in ecological quality; Inchamore Br. (0800) improved to high ecological status after a decline in 2012 and Obelisk Br. (2200) went from moderate to good condition, however a large stand of Himalayan balsam was recorded at the site. Site 1000 (Derrinydaly Br.) remains in good condition. Sites 2010 (d/s Broadboyne Br.) and 2100 (Slane Br.) both deteriorated from good to moderate ecological condition. The remaining sites (0200, 0300, 0600, 0900, 1200, 1400, 1500, 1700) all remained unchanged at moderate ecological condition. Ashfield Br. (0600) had high levels of peat siltation*." (EPA, 2019).

The water quality of the transitional Boyne Estuary, located c. 16 km downstream of the proposed development, is of intermediate status (most recent results from 2010-2012). The downstream coastal waterbody (Boyne Estuary Plume Zone) status is good (most recent results from 2010-2015).

The proposed development is within the Trim groundwater body (IE_EA_G_002), which is classified as being of 'good' status, for the period 2010-2015. This groundwater body adjoins both the River Boyne And River Blackwater SAC and the River Boyne And River Blackwater SPA and underlies the following pNHAs: Boyne Woods, pNHA Slane Riverbank pNHA, Crewbane Marsh pNHA, Rossnaree Riverbank pNHA, and Dowth Wetland pNHA, The Wilkinstown groundwater body (IE_EA_G_010) underlies King Williams Glen pNHA and the Drogheda groundwater body (IE_EA_G_025) and underlies Boyne River Islands pNHA. Both groundwater bodies are also classified as being of 'good' status, for the period 2010-2015.

The flood risk management plan for the Boyne (OPW, 2018) includes the flood risk probability within the proposed development site. The proposed development site is not within any historically recorded flood event, and it does not intersect any area associated with low, medium or high flood probability (OPW, 2018). Furthermore, the proposed development site has an annual exceedance probability of less than 0.1%[4].

[3] https://gis.epa.ie/EPAMaps/

[4] Available online at: http://www.floodinfo.ie/map/floodmaps/. Accessed September 2019.

# 5 VALUATION

## 5.1 Significant Ecological Features

Significant ecological features are considered to be those valued at 'Local Importance (Higher Value)' or higher as per NRA (2009a) definitions. Ecological features valued at Local Importance (Lower Value), negligible value, , or which were considered not to be impacted by the proposed development were not considered significant features and were not carried forward for mitigation assessment. **Table 5.1** summarises all significant ecological features identified within the ZoI of potentially significant impacts.

**Table 5-1: Summary Valuation of Significant Ecological Features**

| | Ecological Features | Highest Ecological Valuation within ZoI of Proposed Development | Requires Mitigation |
|---|---|---|---|
| **Designated Sites** | European sites (SPAs and SACs) | International | **Yes** |
| | National sites (NHA/pNHA) | National | **Yes** |
| **Habitats and Flora** | GS1 Dry Calcareous and Neutral Grassland | Local (Lower) | No |
| | WL1 Hedgerow | Local (Lower) | No |
| | BC1 Arable Crops | Local (Lower) | No |
| | GA1 Improved Agricultural Grassland | Local (Lower) | No |
| | FW2 Depositing /Lowland River/ FW4 Drainage Ditch | Local (Lower) | **Yes** (due connectivity to European and National Sites) |
| | Invasive Alien Plant Species | Local (Lower) | **Yes** (due to potential spread during construction) |
| **Fauna** | Invasive alien animals | Local (Lower) | No |
| | Bats (roosting) | Local (Higher) | No |
| | Bats (commuting and foraging) | Local (Higher) | **Yes** |
| | Badger | Local (Higher) | **Yes** |
| | Otter (no evidence but presumed to forage downstream) | Local (Higher) | **Yes** |
| | Breeding birds (including those of medium or high conservation concern) | Local (Higher) | **Yes** |
| | Wintering birds | Local (Lower) | No |
| | Hedgehog and pygmy shrew (presumed present*) | Local (Lower) | No |
| | Red squirrel | Local (Lower) | No |
| | Common frog | Local (Lower) | No |
| | Smooth newt | Local (Lower) | No |
| | Fish (including lamprey, Atlantic salmon, trout, European eel) | Local (Lower) | **Yes** (due connectivity to European and National Sites) |
| | Butterflies | Local (lower) | No |
| | Other Invertebrates | Local (lower) | No |

# 6 MITIGATION AND ENHANCEMENT

The following sections set out measures required to protect and eliminate the potential for significant impact to biodiversity. These must be carried out together with any relevant guidance documents and legislative requirements.

## 6.1 Roles and Responsibilities

Meath County Council and/or any Contractor appointed by MCC shall appoint a suitably qualified person, or persons, to the roles of Environmental Clerk of Works (EnCoW) and Ecologist/Invasive Species Specialist to monitor the construction works. The EnCoW shall work closely with the MCC/Contractor's site supervisors to monitor activities and ensure that all relevant environmental legislation is complied with and that the requirements of a detailed C Construction and Environmental Management Plan (CEMP) are implemented. The EnCoW will have the authority to review method statements, oversee works and instruct action, as appropriate, including the authority to require the temporary cessation of works, where necessary.

The EnCoW/Ecologist/Invasive Species Specialist shall be familiar with and carry out the following duties:

- Be familiar with the contract documents and in particular be aware of all Environmental Commitments, Controls and Mitigation Measures;
- Be familiar with all relevant environmental legislation and ensure compliance with same;
- Liaise with all site management as required including the Employer's Site Representative Staff and establish and maintain close working relationship with the Employer's Site Representative;
- Undertake routine site inspections and monitoring of mitigation measures, in accordance with the Method Statement (MS) and other guidance documents and based on professional judgement;
- Conduct site specific environmental awareness training, as required;
- Investigate and report on any environmental incidents and ensure that appropriate action is taken;
- Complete environmental checklists;
- Undertake environmental monitoring requirements as required by approvals, licenses and permits;
- Prepare Environmental Operating Plan and ensure same is updated on a regular scheduled basis.
- Liaise and meet on site with the environmental statutory bodies, as required;
- Provide toolbox talks at project inception and during the project, as required;
- Be present to monitor works in sensitive areas; e.g. works in proximity to or potentially supporting connectivity with watercourses or waterbodies; and
- Maintain a register indicating whether all mitigation measures have been carried out satisfactorily.

In addition, the Ecologist and Invasive Species Specialist shall:

- Be suitable qualified and experienced, with Chartership and/or full membership of an appropriate professional body, e.g. the Chartered institute of Ecology and Environmental Management (CIEEM);

All other personnel shall:

- Be aware of all Environmental Commitments, Controls and Mitigation Measures;
- Implement the Health and Safety and Environmental Protection Measures and Controls on site;
- Express their duty of care to do all that is reasonable and practicable to minimise the risk of environmental harm;
- Comply with the relevant Acts, Regulations, Codes of Practice and Standards and the approvals or limits imposed by such Acts, permits and approvals;

- Follow the instructions of the Contractor's Management Staff and the EnCoW/Ecologist/Invasive Species Specialist in relation to environmental requirements;
- Promptly report to management any risks of non-conformances and/or breaches of the plans, procedures or systems; and
- Participate in awareness training as directed by management.

## 6.2 Environmental Commitments

The appointed contractor will be responsible for preparing and maintaining the Environmental Policy and the Environmental Commitments for the proposed project during its construction phase. The policy will be appropriate to the project and will comply with legal requirements and provide a framework for environmental objectives and associated targets. Environmental commitments associated with the project will be communicated to all site staff as part of site inductions and ongoing toolbox talks.

## 6.3 Biodiversity Management

In order to comply with relevant guidance (e.g. NRA 2005, 2006, 2008) and legal requirements (e.g. Wildlife Act 1976 (as amended), EU Habitats Directive, and EU Birds Directive), a pre-construction and during construction protected biodiversity (protected flora and fauna, and their habitats) measures shall be implemented.

### 6.3.1 Pre-construction

Prior to commencement of construction, MCC and/or any Contractor appointed by MCC, must ensure that:

- A pre-construction biodiversity walkover survey (carried out by a suitable qualified ecologist in the optimal season (see NRA, 2008) shall be carried out no more than 10-12 months in advance of construction activities;
  - Any measures identified during the pre-construction biodiversity walkover survey (e.g. root protection areas for tree, standoff areas from badger setts, and requirements for derogation licences) shall be fully implemented pre-construction.
- No clearance or removal of vegetation shall occur during the bird breeding season (1st March to 31st August, inclusive). If clearance of vegetation is required within the bird nesting season, consultation with a suitable qualified ecologist is required, and a licence from the Wildlife Licencing Unit of the National Parks and Wildlife Service (Department of Culture, Heritage and the Gaeltacht), may be required.

### 6.3.2 Construction Stage

During construction, MCC and/or any Contractor appointed by MCC, must ensure that:

- Any measures implemented as a result of the pre-construction biodiversity walkover survey (e.g. root protection areas for tree, standoff areas from badger setts, requirements for derogation licences) shall be fully maintained during construction;
- No clearance or removal of vegetation shall occur during the bird breeding season (1st March to 31st August, inclusive). If clearance of vegetation is required within the bird nesting season, consultation with a suitable qualified ecologist is required, and a licence from the Wildlife Licencing Unit of the National Parks and Wildlife Service (Department of Culture, Heritage and the Gaeltacht), may be required.
- If protect flora and/or fauna are encountered during the construction, works will immediately be stopped, and the site manager will be informed. A suitable qualified ecologist will be contacted to provide advice on how to proceed.

## 6.4 Surface Water and Soil Management

The construction works shall be undertaken within a framework of environmental protection practices defined and co-ordinated via a detailed CEMP. The CEMP shall provide measures that meet legislative requirements, and key regulatory guidance that define working practices during construction, most notably the CIRIA guidance for the *Control of Water Pollution from Construction Sites* (CIRIA, 2001).

Two unnamed watercourses have been identified adjoining the southern and western boundary of the proposed development. It is reiterated here that no in-stream work shall take during the construction of the proposed development.

### 6.4.1 Pre-Construction

#### 6.4.1.1 Establish Silt Fencing

Pre-construction, MCC and/or any Contractor appointed by MCC, must ensure that:

- All silt fencing is to a specification equivalent to Hytex Terrastop™ premium standard (e.g. 180 µm; 45 l/m$^2$/sec);
- Installation of a single layer of silt fencing, along the entire stretch of the unnamed watercourses (to include required overlaps) adjoining the southern and western boundaries of the proposed development;
- Site fencing will be installed following the manufacturers' specifications;
- All silt fencing will have regard for the following criteria (Caraco, 2002), where:
  - The slope and contributing length of slope/works area will be
    - For 5% to 10% slopes: No more than 15 m;
    - For 10% to 20% slopes: No more than 7.5 m; and,
    - For > 20% slopes: No more than 6 m.
  - Silt fencing must be aligned parallel to the slope contours;
  - Silt fencing edges must be curved uphill, preventing flow from bypassing the fence;
  - The contributing length of the works areas must not be greater than 30 m;
  - Spacing between posts must not be greater than 2.5 m;
  - Silt fencing must not receive concentrated flow without reinforcement;
  - Silt fencing must not be installed below an outlet pipe or weir;
  - Silt fencing must not be installed upslope of the works area; and,
  - Silt fencing installation must consider construction traffic requirements.
- The proposed layout and final installation of all silt fencing will be approved by the EnCoW/Ecologist.

### 6.4.2 Construction Stage

#### 6.4.2.1 Maintaining Silt Fencing

During construction, MCC and/or any Contractor appointed by MCC, must ensure that:

- Staff respond to recommendations of the Ecologist, regarding repairs or improvements to silt fencing;
- Inspection of silt fences immediately after each rainfall event and at least daily during prolonged rainfall, is carried out;

- Correction of any deficiencies is completed immediately (following manufacturers' specifications), if necessary, replacing ineffective silt fencing;
- Removal sediment deposits is completed when the accumulation reaches one third of the height of the exposed fence (in a manner compliant with waste legislation, and without causing a siltation risk); and
- A decommissioning procedure for the silt fencing removal will include disposal of any excess sediment in accordance with relevant waste legislation and ensuring no siltation risk to watercourses.

#### 6.4.2.2 Materials Management

During construction, MCC and/or any Contractor appointed by MCC, must ensure that:

- Topsoil shall be:
  - stripped to an average depth of 300mm over the whole site area bounded by the temporary fencing;
  - maintained in a tidy condition, separate from general spoil, with side slopes not steeper than 1 in 3;
  - maintained in good condition keeping weeds under control and preventing vermin infestation.
- Stockpiling of construction materials shall be strictly prohibited within 5 m of any watercourse or water-laden channel, and appropriate management of excess material stockpiles will be enforced, to prevent siltation of watercourses;
- Excavations shall be left open for minimal periods to avoid acting as a conduit for surface water flows;
- All ready-mixed concrete shall be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline waste waters or contaminated storm water to the underlying subsoil. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility offsite;
- Concrete shall be contained and managed appropriately to prevent pollution of watercourses. Concrete pouring will be prevented during periods of heavy rainfall, and quick setting mixes will be used;
- Waste materials shall be stored in designated areas that are isolated from surface water drains. Skips will be closed or covered to prevent materials being blown or washed away and to reduce the likelihood of contaminated water leakage;
- Temporary construction compounds shall not be located within 20 m of watercourses, or where it is likely that groundwater will be encountered;
- No harmful materials shall be deposited into nearby watercourses, including drainage ditches/pipes, on or adjacent to the site; and
- Any dewatering of standing water within the proposed development site (e.g. water accumulated in excavations) shall require a Dewatering Plan to be incorporated. The Dewatering Plan will be agreed with the EnCoW/Ecologist before implementation, and include a commitment to dewatering, following suitable attenuation, at a rate equivalent to greenfield run-off (to be established).

#### 6.4.2.3 Hydrocarbon Management

During construction, MCC and/or any Contractor appointed by MCC, must ensure that:

- Protection measures shall be put in place to ensure that all hydrocarbons used during the Construction are appropriately handled, stored and disposed of in accordance with recognised standards. These measures will include:
  - Hazardous materials including diesel, fuel oils, solvents, paints and/or lubricants stored on site will be stored within suitably designed bunded areas with a bund volume of 110% of the capacity of the largest tank/container.

- Re-fuelling of plant will not occur within 50 m of any watercourse or surface water/groundwater feature. Drip trays will be used and spill kits will be kept available;
- Machinery used on site will be regularly inspected to ensure there is no leakage from them and to ensure the machinery will not cause contamination of watercourses;
- Where required, fuel will be transported in a mobile, double skinned tank and a spill tray will be used when refuelling (if taking place outside a compound area);
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or re-cycling;
- Only emergency breakdown maintenance will be carried out on site. Emergency procedures and spillage kits will be readily available at strategic site locations and construction staff will be familiar with emergency procedures; and
- Any spillage of fuels, lubricants of hydraulic oils will be immediately contained, with an appropriate emergent response put in place. Any contaminated soil will be removed from the site and properly disposed of.

## 6.5 Designated Sites

There is no direct impact on the River Boyne and River Blackwater SAC and River Boyne and River Blackwater SPA. Hydrological connection via adjacent unnamed watercourse flowing into the Farganstown and Ballymacon first order stream has been identified. No specific mitigation measures are required in respect of these European site for which the proposed development is hydrologically connected, owing to the mitigation measures detailed already outlined.

## 6.6 Habitats and Flora

### 6.6.1 Habitat Loss/Alteration

Vegetation clearance from linear features such as hedgerows to facilitate site access, sightlines or from within the excavation area must be planned and carried out outside of the bird breeding season from 1st March to 31st August.

It is understood that the south and western boundary hedgerows are not to be removed as part of the proposed development. Every effort should be made to retain all vegetation not directly impacted by the proposed development. All trees and hedgerows along the site boundary that are intended to be retained, both within and adjacent to the site boundary (where the root protection area of the tree extends into the site boundary), should be fenced off at the outset of works in the adjacent working area and for the duration of the works in that area to avoid structural damage to the trunk, branches or root systems of the trees.

Temporary fencing (post and rail) will be erected at a sufficient distance from linear features so as to enclose the Root Protection Area (RPA) of the tree. In general, the RPA covers an area equivalent to a circle with a radius 12 times the stem diameter (measured at 1.5m above ground level for single stemmed trees, or above the root flare for multi-stemmed trees).

The area within the RPA will not be used for vehicle parking or the storage of materials (including soils, oils and chemicals). The storage of hazardous materials (e.g. hydrocarbons) will not be undertaken within 10m of any retained trees, hedgerows and treelines.

If construction activities are required within the RPA, e.g. excavation work, then a qualified arborist will advise on the best methods for protecting the tree. For example, any excavation works carried out within the RPA will need to avoid damage to the protective bark covering larger roots. This may involve excavation by mini-digger and/or hand as deemed appropriate. Exposed roots will be wrapped in a hessian sacking to avoid desiccation and roots less than 2.5cm in diameter can be pruned back to a side root. The advice of a qualified arborist will be sought if larger roots that influence anchorage need to be severed. Any remedial works required to trees will be carried out by a qualified arborist.

### 6.6.2 Protected Flora

A pre-construction biodiversity walkover survey (carried out by a suitable qualified ecologist in the optimal season (see NRA, 2008) will be carried out no more than 10-12 months in advance of construction activities.

### 6.6.3 Invasive Alien Plant Species

The presence of invasive alien plant species has the potential to lead to an offence under the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011). Regulation 49 of the 2011 Regulations prohibits (unless under licence) the breeding, release, or allowing or causing the dispersal from confinement of any animal listed in the Third Schedule of the Regulations; or the planting, allowing or causing dispersal, and spreading of any plant listed in the Third Schedule.

It is an offence to plant or encourage the spread of any third schedule invasive species by moving contaminated soil from one place to another, or incorrectly handling and transporting contaminated material or plant cuttings. Persons must therefore take all reasonable steps and exercise due diligence to avoid committing an offence under the 2011 Regulations (as amended).

Scheduled invasive plants are known to grow within the zone of influence of the proposed development site. There is potential for these species to enter and spread throughout the proposed development site during construction.

**Pre-construction**

Pre-construction, MCC and/or any Contractor appointed by MCC, must ensure that:

- A pre-construction survey (carried out by a suitable qualified ecologist/invasive species specialist in the correct botanical season: e.g. April - September) shall be carried out in advance of construction activities;
- An Invasive Species Management Plan (ISMP) shall be prepared by a suitable qualified ecologist/invasive species specialist where identification of third schedule species is confirmed. The ISPM will include management protocols for dealing with occurrences of scheduled invasive species; and
- Where a scheduled invasive species is accidentally introduced or becomes established within the proposed development site during pre-construction surveys and/or the construction phase, works shall be immediately halted and an effective exclusion zone will be erected (minimum 7 m) until such time that a suitably qualified ecologist/invasive species specialist can assess the site(s), and implement the required management protocol (as set out in the ISMP).

**Construction**

During construction, MCC and/or any Contractor appointed by MCC, must ensure that:

- An Invasive Species Management Plan (ISMP) shall be prepared by a suitable qualified ecologist/invasive species specialist  subject to confirmation at any time of third schedule IAPS on site. The ISMP will include management protocols for dealing with occurrences of scheduled invasive species;
- All machinery entering the site during construction activities shall be free from contamination with scheduled invasive plants. This can be achieved through wheel wash stations for vehicles entering and exiting the proposed development site;
- The materials which are introduced to the site during the construction shall be free from scheduled invasive species, with certification of such; and
- Where a scheduled invasive species is accidentally introduced or becomes established within the proposed development site during pre-construction surveys and/or the construction phase, works shall be immediately halted and an effective exclusion zone will be erected (minimum 7 m) until such time

that a suitably qualified ecologist/invasive species specialist can assess the site(s), and implement the required management protocol (as set out in the ISMP).

## 6.7 Fauna

### 6.7.1 Badger

One potential badger sett was identified within the ZOI of the proposed development, although the hedgerow habitat will not be removed during the construction or operation of the proposed development, it is likely that the construction works would disturb the sett if active.

Notwithstanding this fact, badger(s) could establish new setts in the intervening period between site survey and commencement of construction of the proposed development. Precise mitigation measures for badger will be informed by a preconstruction badger survey prior to commencement of works to identify any setts and confirm the level of activity and breeding status of setts at that time.

The following measures are to be implemented:

- Prior to construction works commencing the contractor will engage the services of a suitably qualified ecologist to conduct a pre-construction badger survey of the proposed development area, including habitat features within 50m of same;
- If an active sett is encountered, mitigation measures as outlined in national *Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes* (NRA, 2005) will apply. In brief these are, but are not limited to:
  - During the breeding season (December to June inclusive) a clearly marked exclusion zone of 50m will be established around the active sett and no works should take place within this exclusion zone;
  - Outside of the breeding season (July – November inclusive) a clearly marked exclusion zone of 30m should be established around the active sett and no heavy machinery used within this exclusion zone. Lighter machinery (wheeled vehicles) should not be used within 20m of a sett entrance and light work such as digging by hand will not take place within 10m of a sett entrance;
  - Any works in and around setts must be supervised/carried out by a suitably qualified and experienced ecologist;
  - If the above detailed exclusion zones cannot be adhered to and disturbance to setts is deemed likely during construction works then the local NPWS conservation ranger will be contacted. This may require an application for a “Letter of non-opposition” from the NPWS to exclude the sett during the construction phase. If required, any further mitigation measures required will follow those outlined in the *Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes* (NRA, 2005) and will be agreed with the NPWS at the time of licence application.

### 6.7.2 Bats

Although there will be no loss potential bat roosts, disturbance to commuting/foraging routes is likely during the construction and operational phase. There will be an interference with commuting/foraging habitat for bats in the landscape due to increased lighting associated with the development.

As such, the following general mitigation applies.

- In the unlikely event that bats are found on the proposed development sites during construction works, works will immediately cease in that area and the local NPWS conservation ranger will be contacted. The bats will be removed by hand by a suitably qualified and licenced bat surveyor, under licence from the NPWS.
- The bulk of the landscaping works where appropriate, including the reinstatement of planting is should be implemented in the first growing season following grant of planning (if outside the immediate works area) or in the first season post construction. Thus, the retained or existing mature urban landscape will provide some foraging and commuting routes for bats along the watercourse. Over time, it would be hoped that this might be reinforced by the proposed new planting.

- In general, artificial light creates a barrier for commuting bats so overnight lighting should be avoided where possible during the construction phase. If any external lighting is required to facilitate night time working, security lighting in the construction areas, or for residential street lighting during the operational phase a lighting plan should be agreed to account for sensitivities of bats to lighting in the area which can disturb commuting and foraging routes. Directional lighting (i.e. lighting which is focussed on work areas and not nearby countryside) should be used to prevent overspill. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvers and shields to direct the light to the intended area only. Lighting levels should be the minimum required for health and safety requirements, and vertical light spill at light sources should be below 3m to avoid identified or potential bat flight paths. The location and design of any new or additional lighting, if required shall be cognisant of the recent BCT (2018) guidance and will be approved by the EnCoW.

### 6.7.3 Otter

There was no discernible evidence of otter activity within the footprint of the proposed development, however it is understood that Otter are present downstream and listed as a Qualifying Interest species within the River Boyne and River Blackwater SAC. If in the unlikely event that Otter are encountered during the construction, works will immediately be stopped, and the site manager will be informed. A suitable qualified ecologist will be contacted to provide advice on how to proceed.

### 6.7.4 Birds

To limit the potential impact of construction on breeding birds, any vegetation removal/trimming (including individual trees, treelines and hedgerows) will not be permitted during the breeding bird season (1st March to 31st August inclusive). If this seasonal restriction cannot be accommodated, a suitably qualified ecologist will be required to confirm presence/absence of breeding birds prior to removal/trimming and seek a derogation licence from NPWS as necessary.

### 6.7.5 Fish

There was no discernible evidence of fish activity or the provision of an adequate appropriate habitat for fish species within the footprint of the proposed development, however it is understood that European eel, Atlantic salmon, lamprey, and trout are present downstream within the River Boyne.

## 6.8 Enhancement Opportunities

The National Biodiversity Action Plan 2017-2021 (NPWS, 2017) sets out key objectives to meet Irelands obligations to protect its biodiversity and halt the degradation of ecosystem services for future generations to come. Two objectives in this plan aim to '*Mainstream biodiversity into decision-making across all sectors'* and '*Strengthen the knowledge base for conservation, management, and sustainable use of biodiversity'.* These objectives detail action to move towards no net loss of biodiversity and mainstreaming this throughout the planning process. No net loss of biodiversity in the planning and development industry follows the mitigation hierarchy to firstly avoid impacts on biodiversity, followed by actions to minimise. Compensation is treated as a last-resort under agreement with external decision-makers. Finally, if compensation within the footprint of the proposed development is not possible then biodiversity gains are offset.

Striving beyond No Net Loss of biodiversity, development can allow for enhancement opportunities. This approach to development leaves biodiversity in a better state than before and is known Biodiversity Net Gain. CIRIA, CIEEM and IEMA have developed key principles on good practice to achieve Biodiversity Net Gain (CIEEM, CIRIA, IEMA, 2016). This is completed by incorporating environmental enhancements into the design of developments and creating a net gain legacy so that stakeholders are engaged and contribute to the management of Biodiversity Net Gain going forward.

Recommended opportunities for enhancement are included as follows:

- Bat and bird boxes incorporated into built structures;
- Landscaping of residential areas to include pollinator friendly and native flora i.e. wildflower meadows on pavement and road verges;

- Setting aside space within the development site in which to create woodland, wetland, wildflower meadows or other habitats of value to wildlife in additional to creating recreational areas for the public; and

- The construction of south facing ‘bug hotels’ to create a refuge for invertebrate species.

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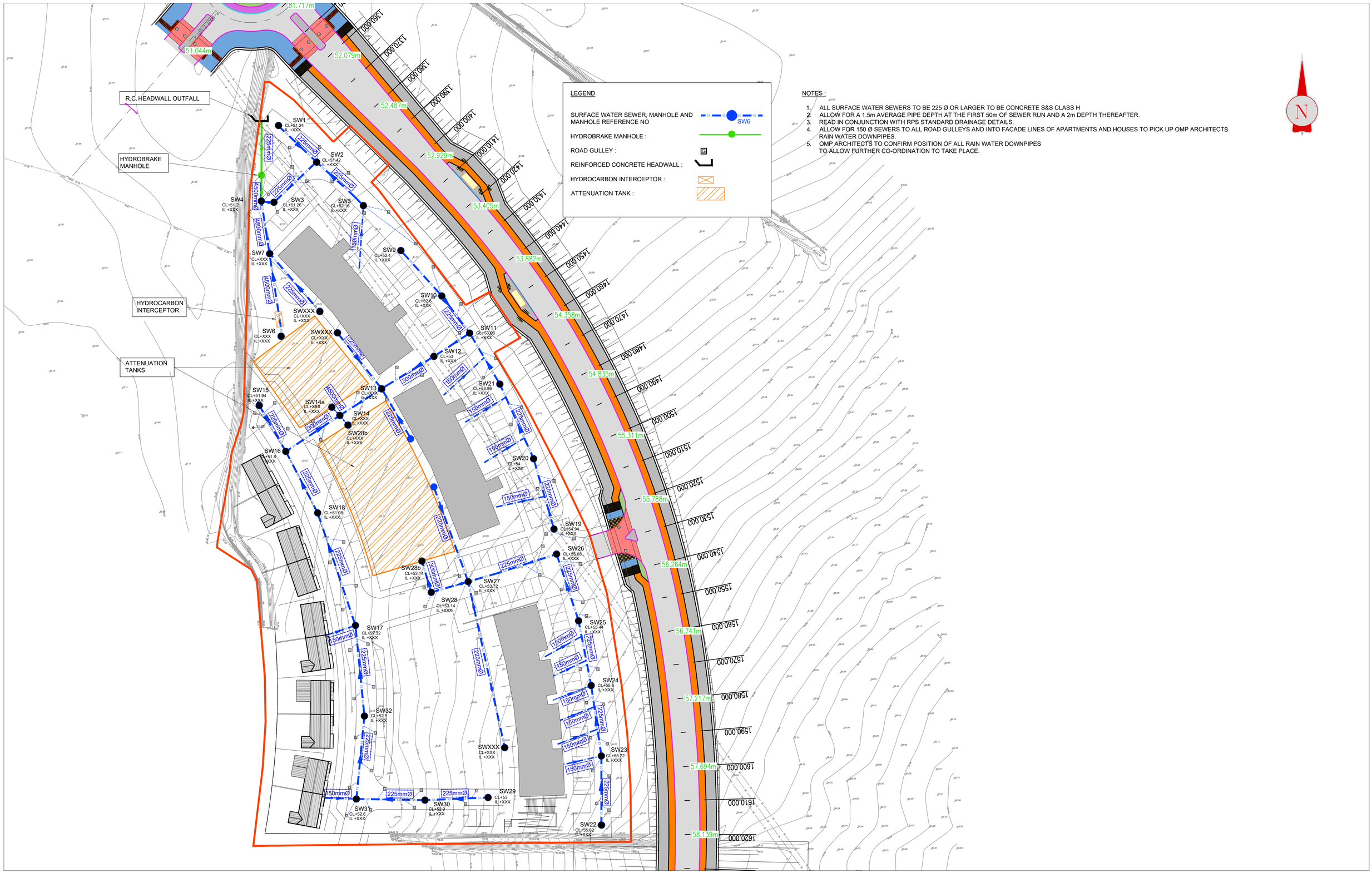
# Appendix A

## Project Drawings




R:\MDC0641 - Farganstown & Ashbourne Housing\8.0 Drawings\DG\MDC0641-RPS-00-FN-DR-C-DG1002.dwg

Architect:

comhairle chontae na mí
meath county council

mahony pike

General Notes

(i) Hard copies, dwf and pdf will form a controlled issue of the drawing. All other formats (dwg etc.) are deemed to be an uncontrolled issue and any work carried out based on these files is at the recipients own risk. RPS will not accept any responsibility for any errors from the use of these files, either by human error by the recipient, listing of the un-dimensioned measurements, compatibility with the recipients software, and any errors arising when these files are used to aid the recipients drawing production, or setting out on site.

(ii) DO NOT SCALE, use figured dimensions only.

(iii) This drawing is the property of RPS, it is a project confidential classified document. It must not be copied used or its contents divulged without prior written consent. The needs and expectations of client and RPS must be considered when working with this drawing.

(iv) Information including topographical survey, geotechnical investigation and utility detail used in the design have been provided by others.

(v) All Levels refer to Ordnance Survey Datum, Malin Head.

| Rev | Date | Drn | Chk | Amendment / Issue | App |
|---|---|---|---|---|---|
| S4 P02 | 05.10.20 | PH | CW | ISSUE FOR PLANNING | RT |
| S2 P01 | 29.03.19 | PB | CW | DRAFT ISSUE FOR COMMENT | RT |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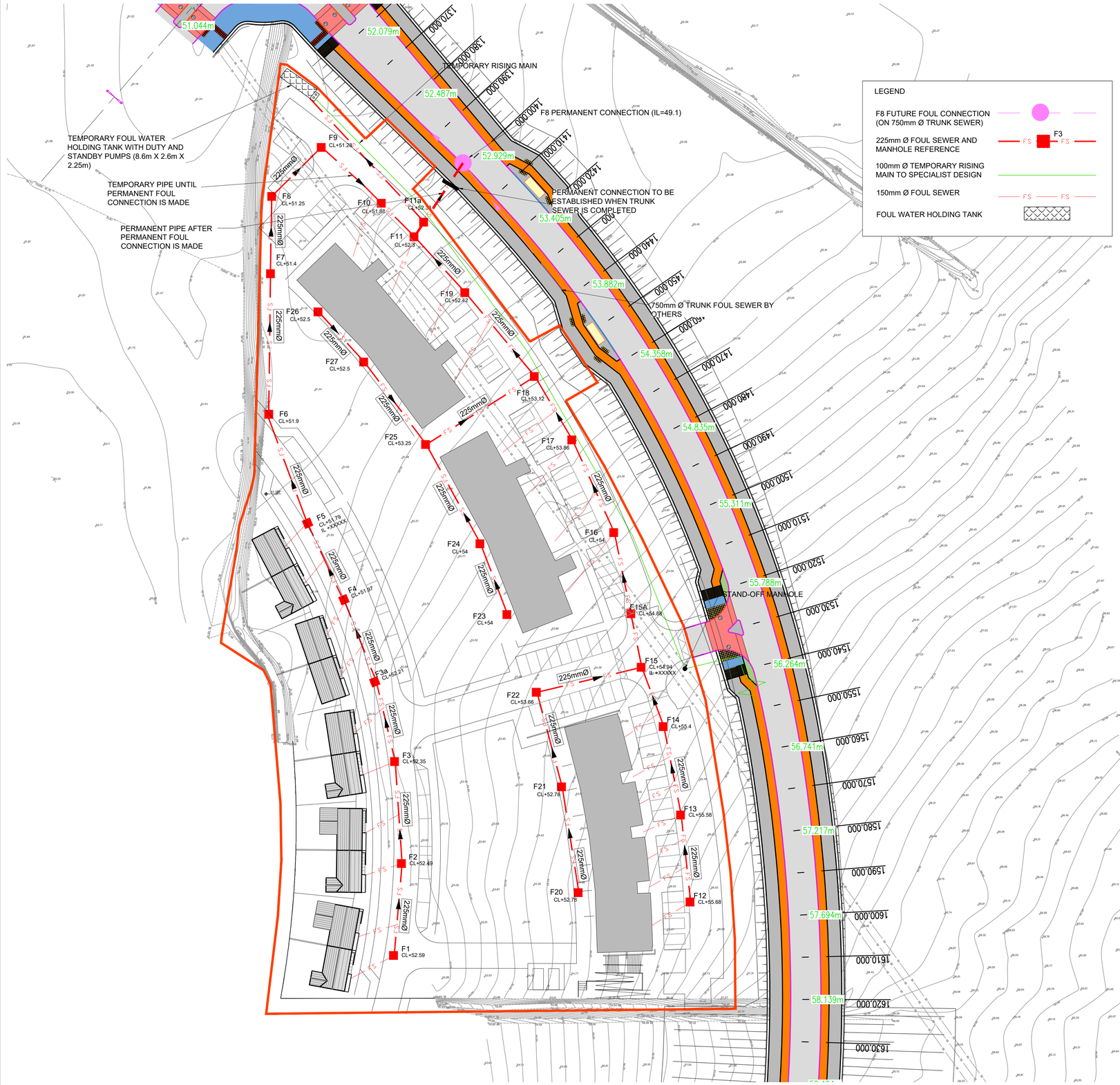
Model File Identifier

| | |
|---|---|
| Scale | 1:500 @ A1<br>1:1000@ A3 |
| Created on | 29/03/2019 |
| Sheets | 1 OF 1 |
| Project | FARGANSTOWN HOUSING |
| Title | PROPOSED SURFACE WATER DRAINAGE LAYOUT |
| File Identifier | MDC0641RPS-00-FN-DR-C-DG1002.dwg |
| Status | S4 |
| Rev | P02 |




GENERAL NOTES :

ALL FOUL DRAINAGE IS TO COMPLY WITH IRISH WATER PUBLICATION: CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE DEC 2017

PERMISSIBLE FOUL SEWER PIPE TYPES :

-CONCRETE: CONCRETE SEWER PIPES WITH SPIGOT AND SOCKET JOINTS AND RUBBER RING FITTINGS SHALL COMPLY WITH IS EN 1916 (2002), BS 5911, PART 1 (2002 – 2010) AND IS 6 (2004) OR EQUIVALENT STANDARD, STRENGTH CLASS 120 WITH MINIMUM CRUSHING LOADS IN ACCORDANCE WITH TABLE 8 OF BS 5911-1 (2002- 2010). ALL PIPES AND FITTINGS SHALL HAVE GASKET TYPE JOINTS OF SPIGOT AND SOCKET OR REBATED FORM. (PIPE DIAMETERS 225MM AND ABOVE)

-UNPLASTICISED PVC; UPVC PIPES AND FITTINGS SHALL COMPLY WITH THE PROVISIONS IS EN 1401 2009/2012. PIPES TO BE APPLICATION AREA CODE "UD", STIFFNESS CLASS 8KN/M2 . PROVISION FOR JETTING SHALL BE BASED ON THE WRC SEWER JETTING CODE OF PRACTICE, JUNE 1997. PIPES TO BE CAPABLE OF RESISTING A MAXIMUM JETTING PUMP PRESSURE OF 2,600PSI (180 BAR) WITHOUT DAMAGE. (SEWER DIAMETERS 150MM UP TO 450MM, SERVICE CONNECTIONS OF 100MM DIAMETER);

ALLOW FOR A 1.75M AVERAGE PIPE DEPTH AT THE FIRST 50M OF SEWER RUN (FROM THE HEAD OF EACH SEWER RUN) AND A 2.25M DEPTH THEREAFTER.

THIS MARK UP IS TO BE READ IN CONJUNCTION WITH THE RPS STANDARD DRAINAGE DETAILS DRAWINGS.

ALLOW FOR 150 DIAMETER CONNECTOR SEWERS AT 1 IN 80 FALL TO APARTMENT BLOCKS AND HOUSES WITH EXTERNAL AJS LOCATED ADJACENT BUILDING FACADES

SUBFLOOR DRAINAGE TO COMPRISE 110 DIAMETER PIPES AT 1 IN 60 FALLS BY OTHERS.

IN THE PERMANENT CASE ON COMPLETION OF THE NEW DISTRIBUTER ROAD TO THE EAST FOUL WATER WILL DISCHARGE TO THE 750MM DIAMETER TRUNK SEWER THAT WILL GO IN WITH THE CONSTRUCTION OF THIS ROAD.

THE PROPOSED CONNECTION POINT IS AT MANHOLE F8 ON THIS TRUNK SEWER.

IN THE EVENT THIS HOUSING DEVELOPMENT IS COMPLETED IN ADVANCE OF THE DISTRIBUTOR ROAD THEN A FOUL WATER HOLDING TANK WILL BE PROVIDED (SIZED FOR 12 HOUR STORAGE) COMPLETE WITH DUTY AND STANDBY PUMP SETS COMPLETE WITH PUMP FAILURE ALARM, HIGH LEVEL ALARM AND LIFTING DERRIK. A RISING MAIN FROM THIS HOLDING TANK WILL PUMP FOUL WATER BACK SOUTH TOWARDS EXISTING LOCAL AUTHORITY INFRASTRUCTURE ON OLD ROAD (LOCATED JUST NORTH OF THE R153).

R:\MDC0641 - Farganstown & Ashbourne Housing\8.0 Drawings\DG\MDC0641-RPS-00-FN-DR-C-DG1003.dwg

comhairle chontae na mí
meath county council

Architect:
mahony pike

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| Rev | Date | Drn | Chk | Amendment / Issue | App |
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| S4 P02 | 05.10.20 | PH | CW | ISSUE FOR PLANNING | RT |
| S2 P01 | 29.03.19 | PB | CW | DRAFT ISSUE FOR COMMENT | RT |


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Model File Identifier

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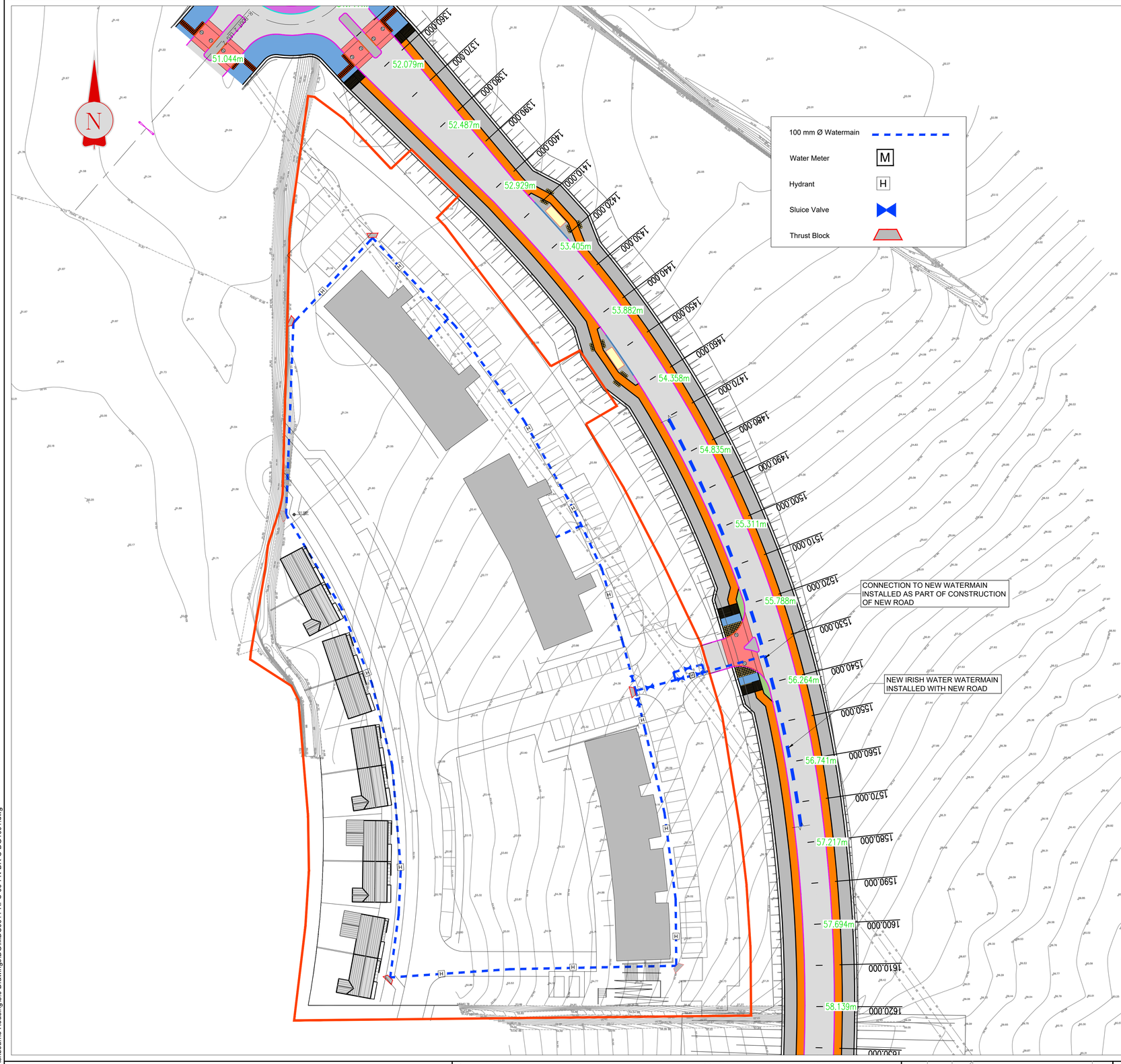
|---|---|
| Scale | 1:500 @ A1<br>1:1000 @ A3 |
| Created on | 29/03/2019 |
| Sheets | 1 OF 1 |
| Project | FARGANSTOWN HOUSING |
| Title | PROPOSED FOUL WATER DRAINAGE LAYOUT |
| File Identifier | MDC0641RPS-00-FN-DR-C-DG1003.dwg |
| Status | S4 |
| Rev | P02 |




GENERAL NOTES :

All houses to have an individual watermeter.

All apartment blocks to have individual sluice valve and watermeter.

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comhairle chontae na mí
meath county council

Architect:
mahony pike

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Model File Identifier

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|---|---|
| Scale | 1:500 @ A1<br>1:1000 @ A3 |
| Created on | 29/03/2019 |
| Sheets | 1 OF 1 |

Project: **FARGANSTOWN HOUSING**

Title: PROPOSED WATERMAIN GENERAL ARRANGEMENT

| File Identifier | Status | Rev |
|---|---|---|
| MDC0641RPS-00-FN-GE-C-DG1001.dwg | S4 | P02 |

# Appendix B

## Ecological Valuation Criteria

## Ecological Valuation Criteria

**International Importance:**

- 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation.
- Proposed Special Protection Area (pSPA).
- Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended).
- Features essential to maintaining the coherence of the Natura 2000 Network.[5]
- Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.
- Resident or regularly occurring populations (assessed to be important at the national level)[6] of the following:
    - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and / or
    - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.
- Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).
- World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972).
- Biosphere Reserve (UNESCO Man and the Biosphere Programme).
- Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).
- Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).
- Biogenetic Reserve under the Council of Europe.
- European Diploma Site under the Council of Europe.
- Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).[7]

**National Importance:**

- Site designated or proposed as a Natural Heritage Area (NHA).
- Statutory Nature Reserve.
- Refuge for Fauna and Flora protected under the Wildlife Acts.
- National Park.
- Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.

[5] See Articles 3 and 10 of the Habitats Directive.

[6] It is suggested that, in general, 1% of the national population of such species qualifies as an internationally important population. However, a smaller population may qualify as internationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

[7] Note that such waters are designated based on these waters' capabilities of supporting salmon (*Salmo salar*), trout (*Salmo trutta*), char (*Salvelinus*) and whitefish (*Coregonus*).

| Ecological Valuation Criteria |
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| • Resident or regularly occurring populations (assessed to be important at the national level)[8] of the following:<br>✓ Species protected under the Wildlife Acts; and/or<br>✓ Species listed on the relevant Red Data list.<br>Site containing 'viable areas'[9] of the habitat types listed in Annex I of the Habitats Directive |

**National Importance:**

- Site designated or proposed as a Natural Heritage Area (NHA).
- Statutory Nature Reserve.
- Refuge for Fauna and Flora protected under the Wildlife Acts.
- National Park.
- Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.
- Resident or regularly occurring populations (assessed to be important at the national level)[10] of the following:
  - ✓ Species protected under the Wildlife Acts; and/or
  - ✓ Species listed on the relevant Red Data list.
- Site containing 'viable areas'[11] of the habitat types listed in Annex I of the Habitats Directive.

[8] It is suggested that, in general, 1% of the national population of such species qualifies as a nationally important population. However, a smaller population may qualify as nationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

[9] A 'viable area' is defined as an area of a habitat that, given the particular characteristics of that habitat, was of a sufficient size and shape, such that its integrity (in terms of species composition, and ecological processes and function) would be maintained in the face of stochastic change (for example, as a result of climatic variation).

[10] It is suggested that, in general, 1% of the national population of such species qualifies as a nationally important population. However, a smaller population may qualify as nationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

[11] A 'viable area' is defined as an area of a habitat that, given the particular characteristics of that habitat, was of a sufficient size and shape, such that its integrity (in terms of species composition, and ecological processes and function) would be maintained in the face of stochastic change (for example, as a result of climatic variation).

## Ecological Valuation Criteria

**County Importance:**

- Area of Special Amenity.[12]
- Area subject to a Tree Preservation Order.
- Area of High Amenity, or equivalent, designated under the County Development Plan.
- Resident or regularly occurring populations (assessed to be important at the County level)[13] of the following:
    - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
    - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
    - Species protected under the Wildlife Acts; and/or
    - Species listed on the relevant Red Data list.
- Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
- County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local Biodiversity Action Plan (BAP) if this has been prepared.
- Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
- Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

**Local Importance (higher value):**

- Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared;
- Resident or regularly occurring populations (assessed to be important at the Local level)[14] of the following:
    - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
    - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
    - Species protected under the Wildlife Acts; and/or
    - Species listed on the relevant Red Data list.
- Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality;

[12] It should be noted that whilst areas such as Areas of Special Amenity, areas subject to a Tree Preservation Order and Areas of High Amenity are often designated on the basis of their ecological value, they may also be designated for other reasons, such as their amenity or recreational value. Therefore, it should not be automatically assumed that such sites are of County importance from an ecological perspective.

[13] It is suggested that, in general, 1% of the County population of such species qualifies as a County important population. However, a smaller population may qualify as County importance where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

[14] It is suggested that, in general, 1%of the local population of such species qualifies as a locally important population. However, a smaller population may qualify as locally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

| Ecological Valuation Criteria |
| --- |
| • Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value. |

**Local Importance (lower value):**

- Sites containing small areas of semi-natural habitat that are of some local importance for wildlife;
- Sites or features containing non-native species that are of some importance in maintaining habitat links.