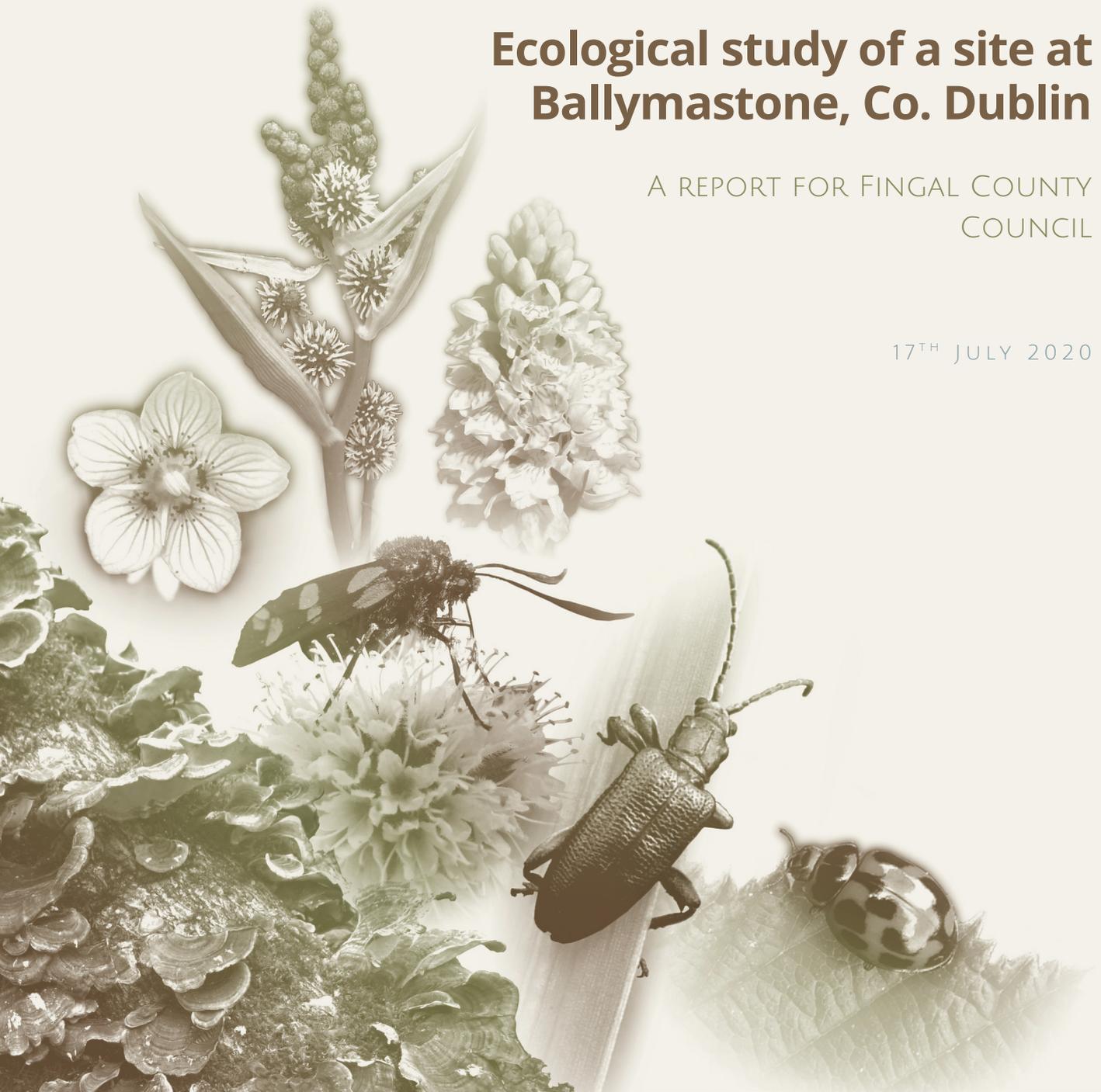


# Ecological study of a site at Ballymastone, Co. Dublin

A REPORT FOR FINGAL COUNTY  
COUNCIL

17<sup>TH</sup> JULY 2020







## DOCUMENT CONTROL SHEET

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## Executive Summary

The main aims of the current ecological study were to establish the ecological baseline for a site at Ballymastone, to determine the ecological impact of a proposed sports development, and to identify potential mitigation measures for wildlife where necessary. Results are presented for the following taxonomic groups: plants, birds and mammals, including bats.

A habitat survey recorded nine habitats present on site, comprising spoil and bare ground, recolonising bare ground (in mosaic with spoil and bare ground), amenity grassland, dry meadows and grassy verges, scrub, earth bank, hedgerows, treelines and drainage ditches (dry). A total of 91 plant taxa were recorded, none of which were rare, protected or a serious invasive species.

During the bird survey, a total of 28 bird species were recorded. Most of the species were common and widespread in Ireland and typical of the habitats present, with eighteen assessed as 'Green' and seven as 'Amber'. Two 'Red'-listed species, including Yellowhammer, were also recorded.

No Badger setts were found on the site or in the immediate surrounds of the site. A small Badger latrine was recorded just outside the site boundary. Badger footprints were recorded in two locations to the north of the site.

Three bat species were recorded during the bat surveys: common pipistrelles, soprano pipistrelles and Leisler's bats. All three species are common and widespread throughout Ireland, and represent the typical species assemblage for rural sites. No rare bat species were recorded. Bat activity within the boundary of the proposed development site was relatively low, with only occasional bat passes recorded during transect surveys. Moderate bat activity was recorded in the car park and access road just outside the eastern boundary of the site. A number of mature trees in the vicinity of the site would be suitable for roosting bats. Emergence surveys and a back-tracking survey were carried out at a number of these trees, but no roosting bats were recorded. However, it is possible that one or more of the other trees could be used by roosting bats, or that bats may be present at other times of the year.

The main potential impacts of the proposed development relate to habitat loss, with losses of hedgerows, treelines and arable habitat all regarded as potentially significant, particularly to the bird species that utilise them. Two potential impacts on bats were identified: direct impacts on tree-roosting bats during site clearance works, and indirect impacts on feeding/commuting bats due to lighting. Damage to ditches could also lead to negative effects on water quality.

Recommended mitigation measures include retention or compensatory planting of hedgerows with a similar species composition to those that will be lost, on or near the site boundary. Recreation of lost dry meadow habitat is also recommended. For bats, detailed inspections of mature trees should be carried out prior to site clearance works, and trees should be felled in a sensitive manner. Bat boxes can be provided to compensate for any roosting opportunities that are lost. Bat-sensitive lighting techniques are to be implemented throughout the site in order to avoid light-spill into important feeding/commuting areas for bats. Best-practice construction methods to protect watercourses should be implemented to ensure that no damage occurs to drainage ditches or any watercourses to which they link.

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## **1. Introduction**

### **1.1. Background to the study**

Fingal County Council (FCC) appointed BEC Consultants Ltd and NM Ecology to conduct an ecological study at a site at Ballymastone, Donabate, Co. Dublin, where development of an active recreational hub is planned. The main aims of the study were to establish the ecological baseline, determine the ecological impact of the proposed development, and to identify potential mitigation measures for wildlife where necessary. This entailed a habitat survey and a species inventory within a number of different taxonomic groups: plants, birds and mammals, including bats.

This report presents the results of the study, outlines the potential ecological impacts of the development, and proposes measures to minimise these impacts on wildlife.

### **1.2. Site context**

The study site is located in a rural setting in Donabate, County Dublin (Figure 1) and measures 6.5 ha. It currently contains some amenity grassland (sports fields), abandoned arable fields and hedgerows/treelines along field boundaries. The recently constructed Donabate Distributor Road is located on the western boundary of the site.

The existing sports facilities of St Patrick's Donabate GAA Club and St Ita's AFC are located to the south and east of the proposed development site. Donabate Golf Club is located to the south. Most land to the north and west of the proposed development site is still in arable use, although these areas are zoned for residential use as part of the Fingal Development Plan 2017 - 2023, so it is likely that they will change in the coming years.

The site is not located within a designated area – Special Area of Conservation (SAC), Special Protection Area for birds (SPA) or Natural Heritage Area (NHA). The closest designated sites are Rogerstown Estuary SAC (000208) and SPA (004015), which are located 1.2 km to the north; Malahide Estuary SAC (000205), located 1.2 km to the south-east; and Malahide Estuary SPA (004025), 1.6 km to the south.

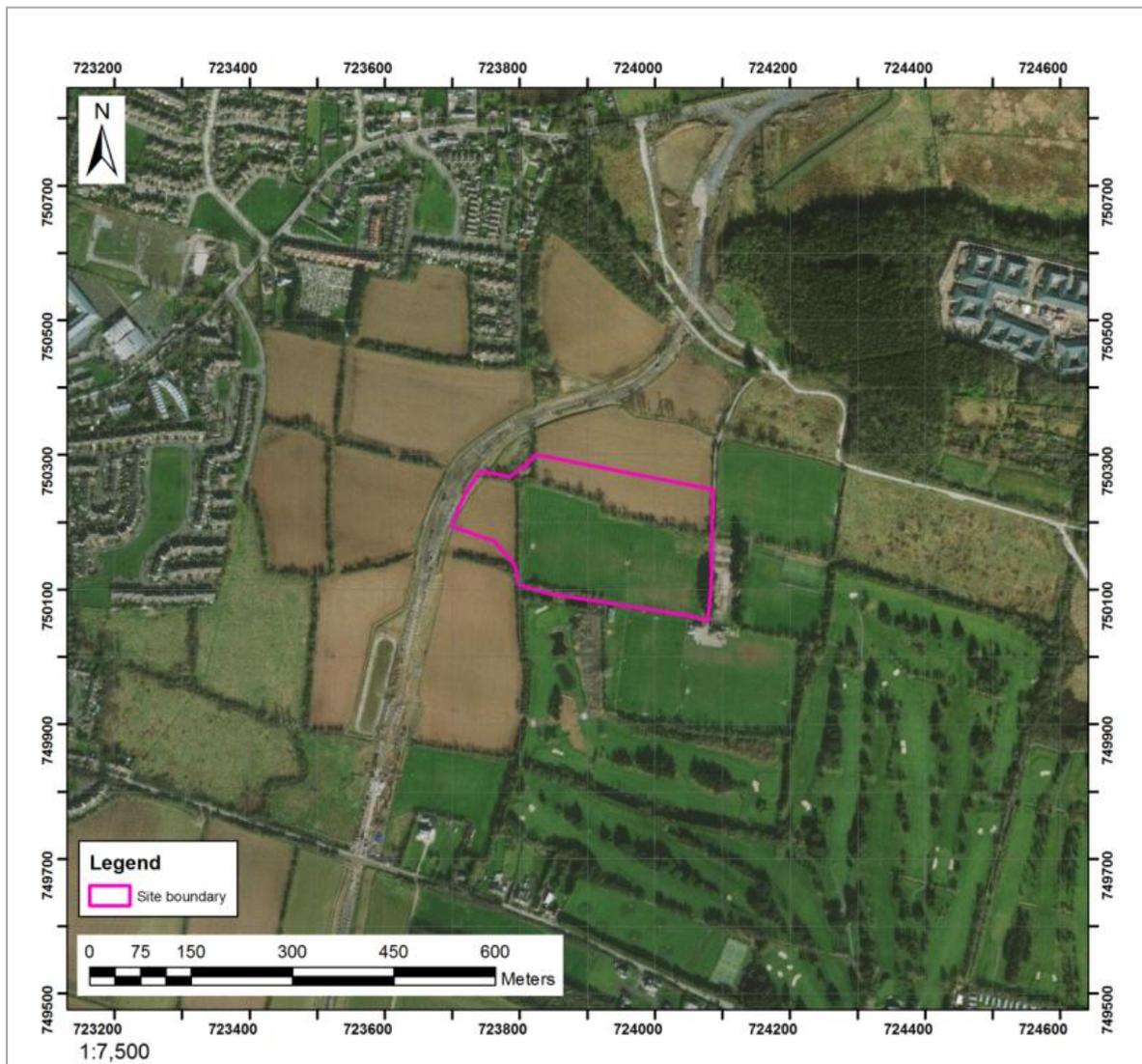
### **1.3. Description of the proposed development**

Fingal County Council proposes to develop a major, multi-functional sports hub on the site at Ballymastone. The proposed site plan drawing is reproduced in Appendix 3. As the plans currently stand, it will be necessary, prior to construction works, to clear all of the existing vegetation, including some of the hedgerows and mature trees.

The proposed development will include the following elements:

- A third-generation GAA-sized all-weather multi-functional sports pitch with a playing surface of 16,024 m<sup>2</sup>
- An eight-lane 400 m all-weather running track with a synthetic track surface area of 9,118 m<sup>2</sup>, set around a grass pitch / field-sports area
- 16 no. LED floodlights on 15 m poles, to light both the running track and sports pitch/s to a minimum of 500 lux

- A new access road of approximately 421 m length linking the facilities to the newly constructed Donabate Distributor Road
- 200 no. car parking spaces
- A 2.2 m-high perimeter fence surrounding the all-weather facilities
- 3 no. covered viewing stands, each 20 m x 10 m in size
- Approximately 1,900 m of surfaced paths
- Berms graded to complement the landscape setting of the facilities
- Planting of new trees and shrubs around the margins of the site



**Figure 1.** Context of study site at Ballymastone, Donabate, Co. Dublin

## **2. Methodology**

### **2.1. Flora study**

#### **2.1.1. Desk study**

No known botanical studies have previously been carried out at Ballymastone. Prior to the field study, the National Biodiversity Data Centre database was consulted to check for records of species that had been recorded for the 1 km squares in which the study area is located. The site spans two 1 km squares: O2350 and O2450. No plant species were recorded in the database for square O2350. A total of 52 plant species were recorded for square O2450. All of these were commonly found species, none were protected and none were listed as invasive species on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011).

#### **2.1.2. Field study**

The site was visited on two occasions for the flora study: 20<sup>th</sup> May and 11<sup>th</sup> June 2020. A preliminary habitat map was prepared using 2019 imagery from ESRI World Imagery, using aerial photograph interpretation to identify different habitat boundaries, digitising these boundaries and assigning a preliminary habitat classification to each polygon.

The flora study had two main components: habitat mapping to Fossitt (2000), and a species inventory. The habitat survey consisted of ground-truthing the preliminary habitat assignments and correcting these as necessary on the field map. The species inventory consisted of a zigzag walk through each of the habitats, or along linear habitats such as hedgerows, recording all species seen. A separate plant species list was compiled for each habitat.

A hedgerow survey was also undertaken on five segments of hedgerows and treelines present within the study area. The hedgerow appraisal criteria of Foulkes *et al.* (2013) were used to assess the significance (historical, ecological and landscape) and condition of the hedgerows and treelines.

### **2.2. Bird survey**

Two site visits were carried out to complete the bird survey: 20<sup>th</sup> May 2020 and 10<sup>th</sup> June 2020. The survey methodology took elements from the Countryside Bird Survey (CBS, 2012), but was limited by the small size of the site. Two pairs of parallel transects were established running west-east across the site following the existing field boundaries (Figure 2). For each survey, the transects were walked in sequence (1-4) in the morning and all bird species present along the transect, and within 50 m, were recorded by sight or song/call. Notes were made of any other species recorded after the completion of the transect survey.

### **2.3. Badger survey**

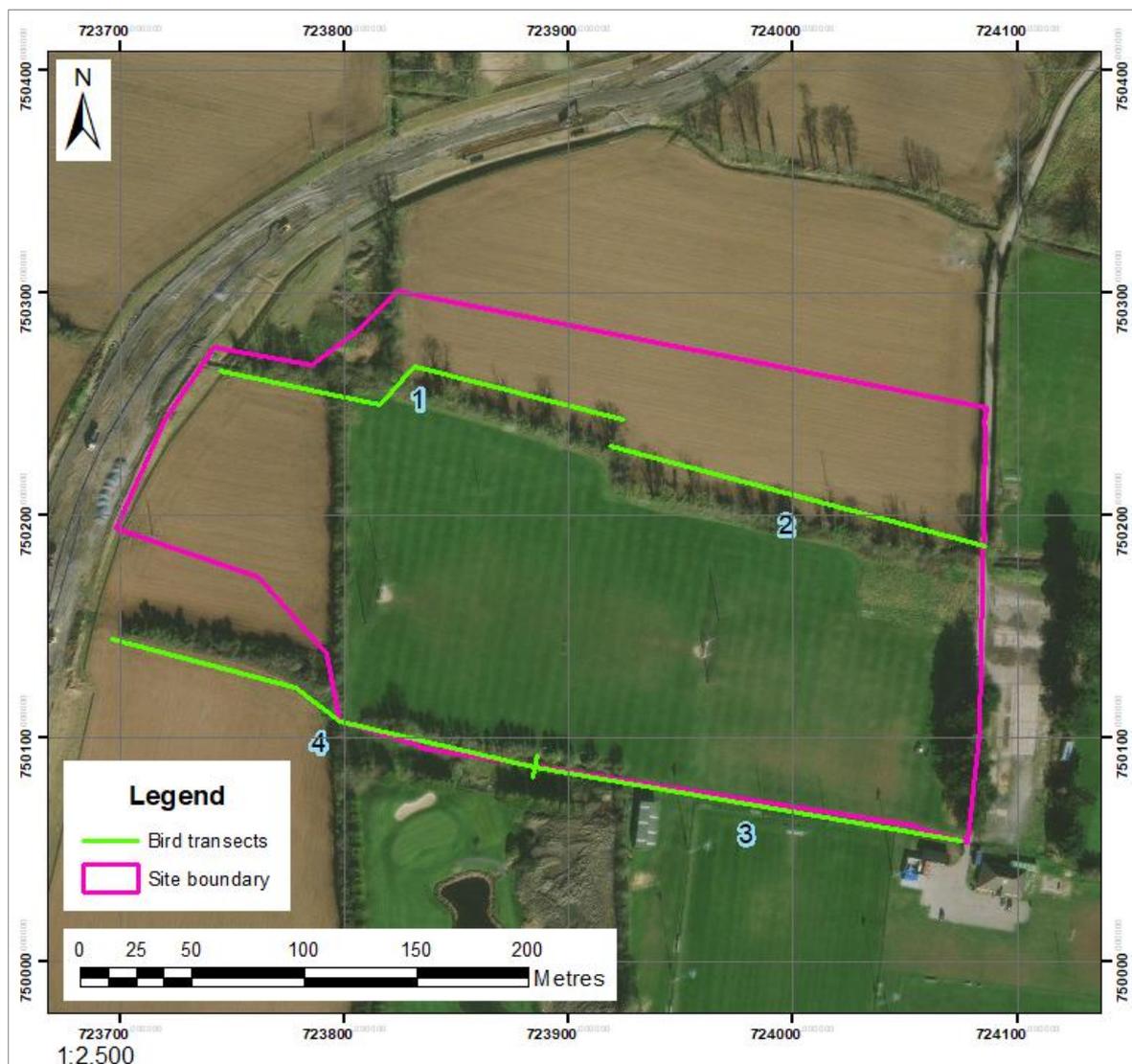
The site was searched for evidence of Badger (*Meles meles*) activity. Signs include setts, latrines, trails and footprints. The location of any sign was recorded by means of a handheld GPS for mapping and a photograph taken. A trail camera (Browning Advantage Spec-Ops) was set up along the boundary between the site and the adjacent golf course from 21<sup>st</sup> - 25<sup>th</sup> May 2020.

## 2.4. Bat survey

### 2.4.1. Conservation and legal status of bats in Ireland

Bats are relatively common and widespread throughout Ireland, particularly in areas with woodland and water. In the red list of terrestrial mammal species (Marnell *et al.*, 2019), all Irish bat species are listed as 'least concern', which means that they are "widespread and common" and "do not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened status" under the IUCN assessment criteria.

Nonetheless, in recognition of their vulnerability to development, all bats are afforded strict legal protection. Under the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) it is an offence to kill any protected animal, deliberately disturb them during breeding, rearing, hibernation or migration, or to damage / destroy a breeding site or resting place. Bats are also protected by the Wildlife Act 1976 (as amended).



**Figure 2.** Bird survey transects at Ballymastone, Donabate, Co. Dublin

### 2.4.2. Bat surveying techniques

Survey methods were developed using *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins, 2016). Preliminary ground-level roost assessments were carried out for all mature trees, using the methods in Section 6.2 of Collins (2016). This assigns a suitability rating of negligible, low, moderate or high based on the presence and size of any crevices or cavities on the trunk or limbs. An adapted summary of the guidance is presented in Table 1.

Emergence surveys were carried out on the 17<sup>th</sup> June and 6<sup>th</sup> July 2020 at some of the mature trees in the north of the site. The surveyor faced the potential roost feature and remained in place for up to one hour after sunset. After the completion of the emergence survey, transect surveys were carried out, which involved a continuous walk at a slow pace throughout the site. A dawn back-tracking survey was carried out at some of the trees on the 7<sup>th</sup> July. All surveys were undertaken using a handheld detector (Anabat Walkabout, Titley Scientific Inc).

The surveys were undertaken in June and July, which was during the peak season of bat activity, and coincided with the maternity period, i.e. the birth and raising of offspring. Weather conditions at the time of survey were ideal for bats, with warm temperatures, no winds and no rain. Flying insects were abundant at dusk.

**Table 1.** Bat roost suitability rating for trees, adapted from Table 4.1 of Collins (2016)

Suitability	Description of roosting habitats
Negligible	Tree has no crevices or cavities suitable for roosting bats
Low	A tree of sufficient size and age to contain potential roost features, but with only very limited roosting potential
Moderate	A tree with one or more potential roost sites, but unlikely to support a roost of high conservation status
High	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a regular basis

### 2.5. Assessment of potential impacts

Impacts were assessed in accordance with *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2019), which is the primary resource used by members of the Chartered Institute of Ecology and Environmental Management (CIEEM). Based on information collected during desktop and walkover surveys, the ecologist assigns an ecological value to each feature based on its conservation status at different geographical scales. For example, a site may be of national ecological value for a given species if it supports a significant proportion (e.g. 5%) of the total national population of that species. Potential direct, indirect or cumulative impacts on ecological features can be described in relation to their magnitude, extent, duration, reversibility and timing/frequency, as outlined in the CIEEM guidelines.

Depending on the type of impact and the sensitivities of an important ecological feature, the ecologist may determine that there would be a 'significant effect'. The following definitions are provided in the CIEEM: "A significant effect is simply an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project". "For the purpose of EclA, a 'significant

*negative effect* is an effect that undermines biodiversity conservation objectives for 'important ecological features', or for biodiversity in general.". Where significant impacts are identified, measures must be taken to avoid, minimise or compensate for impacts.

### 3. Results

#### 3.1. Flora study

Nine habitats were recorded within the study area. These habitats, together with their area or length, are listed in Table 2, and the habitat map is shown in Figure 3. A total of 91 plant taxa were recorded within the site boundary. The full plant species list by habitat is given in Appendix 1, Table A1.

**Table 2.** List of habitats recorded within Ballymastone site boundary, together with their area or length and habitat importance assessment according to criteria of CIEEM (2019). Habitat codes are according to Fossitt (2000). n/r = Not recorded.

Habitat code	Habitat name	Area (ha)	No. of species	Comment	Habitat importance
ED2	Spoil and bare ground	0.1	n/r	Species list not recorded, virtually no species present	Local (low)
ED2/ED3 (mosaic)	Spoil and bare ground / Recolonising bare ground	2.4	43		Local (high)
GA2	Amenity grassland (improved)	3.4	12	Playing pitch	Local (low)
GS2	Dry meadows and grassy verges	0.4	39		Local (high)
WS1	Scrub	0.05	n/r	Species list not recorded, habitat graded into GS2	Local (high)
BL2	Earth bank	< 0.01	11		Local (low)
<b>Linear habitats</b>					
Habitat code	Habitat name	Length (m)	No. of species	Comment	
WL1	Hedgerow	446	31		Local (high)
WL2	Treeline	603	30		Local (high)
FW4	Drainage ditch	632	8	Dry at time of survey	Local (low)

All habitats were assessed as being of local importance. Further detail was provided by describing whether the habitats were considered to be of high or low local importance. Hedgerows, treelines, scrub and dry meadows were assessed as being of high local importance, as together they form wildlife corridors on the site, contain many flowering species of value to invertebrates, and provide shelter and foraging habitat for birds and mammals. The spoil/recolonising bare ground in the former arable fields was also assessed as of high local importance because of its value as a foraging habitat for Yellowhammer (see section 3.2). All other habitats were deemed to be of low local importance. Even the area of spoil and bare ground habitat, despite its lack of vegetation, was considered to be of value, as soil is a valuable natural resource populated by a variety of invertebrates and micro-organisms.



**Figure 3.** Habitat map for study area at Ballymastone, Donabate, Co. Dublin

### 3.1.1. Description of habitats

The nine habitats recorded at the site are described in further detail here. Habitat codes and names are according to Fossitt (2000). Photographs of habitats are given in Appendix 2.

*ED2 Spoil and bare ground:* A strip of ground, approximately 1 m wide and running east-west along the full length of the treeline through the middle of the site, had recently been laid bare, and revegetation had not yet begun. Dead Gorse shrubs were seen along the cleared area so clearance is assumed to have been carried out to remove Gorse.

*ED2/ED3 Spoil and bare ground/Recolonising bare ground:* The habitat covering the second-largest extent within the study area (2.4 ha) was a mosaic of spoil and bare ground, and recolonising bare ground, on the site of a former wheat field. Wheat plants establishing from last year's seed were occasional. The other species present were typical ruderal species (colonisers of waste ground), such as Fumitory, Groundsel, Pineappleweed, Hedge Mustard,

Knotgrass, willowherbs, thistles, sow-thistles and docks. In terms of species numbers, this habitat recorded the highest number of species (43), which is not unusual for disturbed habitats. As competition increases with increasing recolonisation, particularly by grasses, many ruderal species die off, to be replaced by species more characteristic of grasslands or grassy verges.

*GA2 Amenity grassland (improved):* This habitat covered the largest area of the habitats recorded (3.4 ha). The playing pitches were classified as GA2. This habitat is typically species-poor, and this area was no exception. Twelve species were recorded, the most common being Annual meadow-grass, White clover, Daisy, Dandelion, Creeping Buttercup and Perennial Rye-grass.

*GS2 Dry meadows and grassy verges:* This habitat, the third most extensive habitat on site (0.4 ha), was mainly present as a margin along hedgerows and treelines, and more was found in a small, semi-abandoned area at the south of the site, between an area of scrub and spoil. This habitat recorded the second-highest number of species, at 39. Grasses such as False Oat-grass, Cock's-foot, Yorkshire Fog, Meadow Foxtail and Common Couch were abundant. Three species of Vetch (Common, Bush and Tufted), Ribwort Plantain, and woodland species, such as Wood Avens and False Brome, associated with the shadier conditions provided by the hedgerow, were also recorded.

*WS1 Scrub:* Small areas of scrub were recorded. One was a gradual transition from a grassy verge along a hedgerow to a more scrubby version of the same, with Brambles becoming dominant. The other was a small area of Gorse at the south of the site, adjacent to the small, semi-abandoned area of dry meadow and spoil.

*BL2 Earth banks:* A small earth bank was noted in the south-west of the site where the hedgerow petered out into a more open, unwooded area, colonised by species such as Common Nettle and False Oat-grass. In terms of vegetation there was very little difference between the earth bank and the adjacent Dry meadows and grassy verges habitat. Bittersweet was recorded here. The habitat is essentially a continuation of the hedgerow.

*WL1 Hedgerows:* Wooded field boundaries measuring less than 5 m in height and less than 4 m in width are generally assigned to WL1 Hedgerows. In some cases, individual trees may be taller than 5 m, particularly in older examples of hedgerows which are long-established or which have not been well maintained. The procedure followed for this study was to classify field boundaries, in which shorter trees such as Hawthorn, Blackthorn and Elder were the main constituent species, as WL1 Hedgerows, even if their height was sometimes above the 5 m cut-off, as in the case of long-established, unmanaged hedgerows. Field boundaries with a greater proportion of taller trees, such as Ash, Oak, Birch and Sycamore, were classified as WL2 Treelines, even if Hawthorn or Blackthorn were also present.

Hedgerows, with a total length of 446 m, occurred mostly in the south-western part of the Ballymastone study area. The main tree species present was Hawthorn. Occasional taller trees such as Ash and Sycamore were also present, but not dominant. There were no signs of management of the hedgerows, which contained many mature trees. Other shrub species present in hedgerows included Ivy, Brambles and Dog-rose. Typical species at the base of the hedgerows included Bush Vetch, Germander Speedwell, Cleavers, Hogweed, Common Nettle, as

well as more occasional occurrences of woodland species such as Wood Avens, False Brome and Soft Shield-fern. As hedgerows and grassy verges graded into each other, there were also several grass species such as False Oat-grass, Cock's-foot, Yorkshire Fog and Creeping Bent.

*WL2 Treelines:* Treelines on site measured a total of just over 600 m in length. As noted above, field boundaries were classified as treelines where taller trees, such as Ash, formed a significant proportion of the species composition. In Ballymastone, the main defining tree species present was Ash, particularly in the large treeline that runs approximately west-east through the centre of the site. Most of the Ash trees displayed extensive signs of crown die-back, with many bare branches at the top of the crown, and are likely to be suffering from Ash die-back disease (*Hymenoscyphus fraxineus*, formerly known as *Chalara fraxinea*). Structurally, the treelines were in poor condition, with many gaps (see Hedgerow Appraisal section 4.1.3). Herbaceous vegetation at the base of the treelines was relatively sparse, particularly where soil had been laid bare, presumed due to Gorse clearance. One treeline at the south of the site had several non-native trees (e.g. Leyland Cypress) and a broad treeline of mature Monterey Cypress was present along the eastern boundary of the site where a number of species not found elsewhere on the site were recorded: Tree-mallow, Wall Barley, Garlic Mustard and Cow Parsley.

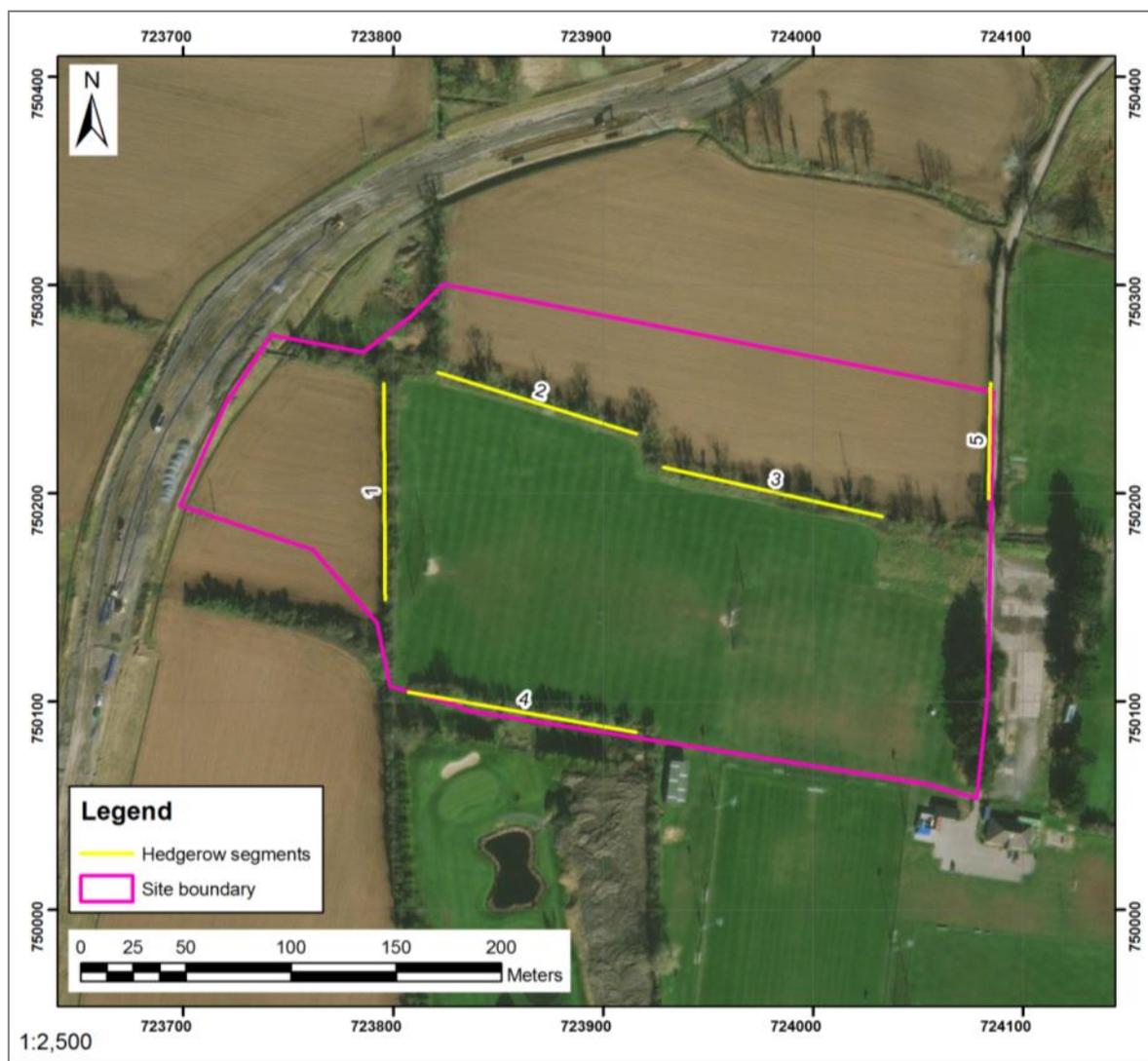
*FW4 Drainage ditch:* A total of 632 m of this habitat was recorded. All ditches on site were dry at the time of survey. However, as conditions had been very dry prior to surveys, and there is no specific habitat code for dry ditches under Fossitt (2000), all ditches were mapped as FW4 to allow for the possibility of water being present during wetter periods. All ditches were associated with hedgerows or treelines and most species recorded within them were found to be associated with the linear woodland features rather than with the ditch itself. In some cases, however, Great Willowherb was abundant within ditches, and this species is characteristic of wet ditches.

### **3.1.2. Invasive plant species**

No invasive plant species listed on the Third Schedule of S.I. 477/2011 were recorded on site during the plant surveys. Due to a delay in commencement of surveys due to COVID-19 restrictions, the survey was carried out outside the optimal time for recording Three-cornered Leek (April), a Third Schedule species. However, remnants of the plant would be expected still to be visible in May when the first survey was conducted, so it is considered highly unlikely that the plant is present on site.

### **3.1.3. Hedgerow Appraisal**

Five segments of hedgerow or treeline were evaluated in terms of their historical/cultural significance, and in terms of their condition, with reference to the Hedgerow Appraisal guidance of Foulkes *et al.* (2013). Figure 4 shows the locations of the five segments assessed.



**Figure 4.** Hedgerow segments assessed at Ballymastone, Donabate, Co. Dublin

### Significance

All hedgerow segments evaluated were present on field boundaries that were depicted on the first edition Ordnance Survey maps (ca. 1840). Segment 1 is located along a townland boundary, while the other four segments are located along old field boundaries.

Segment 1 was evaluated as being of High Significance (Heritage hedgerow), mainly by virtue of being a townland boundary, but also due to its association with a deep ditch (> 1 m deep), reasonable diversity of woody species, and contiguity with other semi-natural habitats, such as other hedgerows and semi-natural grassland. As such, *it is considered to be a high priority for retention, both for cultural and ecological reasons.*

Segment 4 was evaluated as Significant, partly due to its association with a moderately deep ditch (0.5 – 1 m deep), but also because it has good woody species diversity, and again it scored well in terms of contiguity with more than one semi-natural habitat, including other hedgerows, scrub and semi-natural grassland.

Segments 2 and 3 were evaluated as Moderately significant. While they scored well on structure (being associated with a moderately deep ditch), they scored poorly in terms of habitat connectivity, as they only form a single link with other semi-natural habitats (other hedgerows).

Segment 5 was evaluated as being of Low significance. This hedgerow is not associated with a ditch, has a low diversity of woody species, lacks the mature trees of the other segments, and lacks connectivity with other semi-natural habitats apart from hedgerows.

Full details of the hedgerow significance appraisal results are given in Table 3.

**Table 3.** Hedgerow significance in a Historical/Cultural/Landscape context. Numbers in parentheses, e.g. (3), represent scores out of 4, according to Foulkes *et al.* (2013).

	<b>Segment 1 WL1</b>	<b>Segment 2 WL2</b>	<b>Segment 3 WL2</b>	<b>Segment 4 WL1</b>	<b>Segment 5 WL1</b>
<b>Length (m)</b>	104	99	107	110	55
<b>Historical</b>	Townland boundary (4)	Boundary on 1 <sup>st</sup> edition OS (3)			
<b>Woody species diversity</b>	7 spp. (1)	7 spp. (1)	6 spp. (1)	8 spp. (2)	4 spp. (0)
<b>Ground flora spp. from list</b>	0	0	0	0	0
<b>Structure, construction &amp; assoc. feat.</b>	Bank > 1m Dry ditch (3)	Bank 0.5-1m Dry ditch (2)	Bank 0.5-1m Dry ditch (2)	Bank 0.5-1m Dry ditch (2)	None (0)
<b>Habitat connectivity</b>	Multiple links with semi-nat. habitats (2)	Single link with semi-nat. habitat (1)	Single link with semi-nat. habitat (1)	Multiple links with semi-nat. habitats (2)	Single link with semi-nat. habitat (1)
<b>Landscape</b>	Mature hedgerow trees (2)	None (0)			
<b>Other factors</b>	-	-	-	-	-
<b>Score</b>	12	9	9	11	4
<b>Evaluation of Significance</b>	<i>Highly significant</i>	<i>Moderately significant</i>	<i>Moderately significant</i>	<i>Significant</i>	<i>Low significance</i>

### *Condition*

Segments 1 and 5 both achieved high scores overall for condition, and were evaluated as being in “Very Good” condition. Density of both was generally good, with few gaps along their lengths.

Segment 4 was evaluated as being in “Good condition”. While it had a number of factors in its favour, including good height (>4 m), width (2-3 m) and a 2 m-margin of semi-natural habitat on both sides, it fell short in other respects, including the presence of a number of gaps between the constituent trees, and some degradation of the bank.

Segments 2 and 3, in contrast, scored poorly, and were evaluated as being in “Poor” condition. This is due to a number of factors, but primarily to the gappiness of the treelines, the poor condition of the bank along which the trees are growing, and the high proportion of Ivy in the canopy (>25%). The clearance of vegetation from one side of these treelines, right up to the base of the trees, is another factor leading to a poor evaluation.

Full details of the hedgerow condition appraisal results are shown in Table 4.

**Table 4.** Hedgerow condition. Numbers in parentheses, e.g. (2), represent scores out of 3, according to Foulkes *et al.* (2013).

	Segment 1 WL1	Segment 2 WL2	Segment 3 WL2	Segment 4 WL1	Segment 5 WL1
<b>Length (m)</b>	104	99	107	110	55
<b>Structural</b>					
<i>Height</i>	>4m (3)	>4m (3)	>4m (3)	>4m (3)	2.5-4m (2)
<i>Width</i>	>3m (3)	2-3m (2)	2-3m (2)	2-3m (2)	1-2m (1)
<i>Profile</i>	Overgrown (3)	Losing base structure (1)	Losing base structure (1)	Overgrown (3)	Straight-sided (2)
<i>Basal density</i>	Semi-opaque (2)	Semi-transparent (1)	Semi-transparent (1)	Semi-transparent (1)	Opaque (3)
<b>Continuity</b>					
<i>%gaps</i>	<5% (2)	5-10% (1)	5-10% (1)	5-10% (1)	Continuous (3)
<i>Specific gaps</i>	Individual gap <5m (1)	Individual gap <5m (barely) (1)	Individual gap <5m (barely) (1)	Individual gap <5m (1)	No gaps (3)
<b>Negative indicators/ degradation</b>					
<i>Bank/Wall</i>	Minor degradation (2)	>20% of length of hedge bank degraded (0)	>20% of length of hedge bank degraded (0)	>20% of length of hedge bank degraded (0)	No degradation (3)
<i>%canopy dominated by Ivy</i>	<25% (1)	>25% (0)	>25% (0)	>25% (0)	>25% (0)
<i>Unfavourable spp. composition</i>	<10% (1)	<10% (1)	<10% (1)	<10% (1)	<10% (1)
<i>Evidence of herbicide use</i>	None (1)	None (1)	None (1)	None (1)	None (1)
<i>Noxious weeds</i>	Present (0)	Present (0)	Present (0)	Present (0)	None (1)
<i>Alien invasive spp.</i>	None (1)	None (1)	None (1)	None (1)	None (1)
<i>Ploughing up to base of hedge</i>	Yes (0)	Yes (0)	Yes (0)	None (1)	None (1)
<i>Grassy margin 2m or more</i>	Yes: One side only (2)	Yes: One side only (2)	Yes: One side only (2)	Yes: Both sides (3)	No: 1m on one side only (1)
<b>Condition</b>					
<i>Score</i>	22	14	14	18	23
<b>Evaluation</b>	<i>Very good</i>	<i>Poor</i>	<i>Poor</i>	<i>Good</i>	<i>Very good</i>

### Summary of assessment

Combining the assessment of significance and condition of the hedgerows assessed (Table 5), segment 1 is the priority in terms of retention, with minimal intervention required to improve its condition.

Segment 4 is also seen as having value as a hedgerow habitat, and condition is reasonably good, although filling in a number of gaps with species such as Hawthorn would benefit the integrity and habitat value of the hedgerow.

Segments 2 and 3, while being of moderate significance and containing a high number of mature trees that individually provide habitat to a number of animals (including potentially bats), are in poor condition, showing poor crown development (likely a result of Ash die-back disease) and many gaps between the constituent trees. Habitat value could be improved by underplanting gaps with suitable species such as Hawthorn or Blackthorn.

Segment 5 is in good condition, but is of low significance in terms of biodiversity and cultural value. Its lack of connectivity with other semi-natural habitats means that it is only likely to be of local benefit to wildlife.

**Table 5.** Summary of hedgerow assessment in terms of significance and condition

	<b>Segment 1 WL1</b>	<b>Segment 2 WL2</b>	<b>Segment 3 WL2</b>	<b>Segment 4 WL1</b>	<b>Segment 5 WL1</b>
Significance	Highly significant	Moderately significant	Moderately significant	Significant	Low significance
Condition	Very good	Poor	Poor	Good	Very good
<i>Priority</i>	<i>1</i>	<i>3</i>	<i>3</i>	<i>2</i>	<i>4</i>

### 3.2. Bird survey

A total of 28 bird species were recorded in the course of the two transect-based site visits (Table 6). Most of the species are common and widespread in Ireland and typical of the habitats present. Of the recorded species, 18 have been assessed as 'Green', seven as 'Amber' and two as 'Red' on the Birds of Conservation Concern in Ireland 2014-2019 list (Colhoun & Cummins, 2013). The criterion by which Yellowhammer was assigned 'Red' status was its breeding population declining by more than 50% in 25 years (Colhoun & Cummins, 2013).

Not visible as part of the transect survey was the water hazard in the adjacent Donabate Golf Club. Over the course of the two site visits, a Grey Heron, Moorhen and a Little Grebe with two chicks were recorded in the water hazard.

The focus of the bird activity was the hedgerows, with some species such as Blackbird, Starling and Wood Pigeon also feeding out on the pitches, while the Yellowhammer were foraging on the arable fields. Swallows and House Martin were feeding predominantly over the adjacent golf course, but also making use of the pitches and hedgerows.

Many of the species observed were possible, probable or confirmed breeders (Appendix 1, Table A2). Evidence of confirmed breeding includes presence of young and adults carrying food, while probable breeding includes a pair present in suitable nesting habitat.

Buzzards were observed hunting to the north of the site and seen carrying food into the woodland located approximately 350 m away, which suggests that is where they are nesting with young.

**Table 6.** Bird species recorded at Ballymastone, Donabate, Co. Dublin on 20<sup>th</sup> May and 10<sup>th</sup> June 2020, with Birds of Conservation Concern in Ireland status (BOCCI) after Colhoun & Cummins (2013).

Common name	Transect 1		Transect 2		Transect 3		Transect 4		BOCCI
	20-May	10-Jun	20-May	10-Jun	20-May	10-Jun	20-May	10-Jun	
Blackbird	4	2	-	3	4	3	2	5	Green
Blackcap	-	-	-	-	-	-	2	1	Green
Blue Tit	1	4	1	2	-	-	-	1	Green
Bullfinch	-	2	-	-	-	-	-	-	Green
Buzzard	-	-	-	-	1f	1	-	-	Green
Chaffinch	-	-	-	-	3	1	1	2	Green
Coal Tit	-	2	-	-	-	5	-	-	Green
Dunnock	1	-	1	-	1	-	2	-	Green
Goldcrest	-	1	-	-	-	-	-	1	Amber
Goldfinch	-	-	-	2	-	-	-	3	Green
Great Tit	-	1	1	1	1	-	1	-	Green
Greenfinch	-	-	-	1	-	-	-	-	Amber
Herring Gull	-	1f	-	-	1f	-	1f	-	Red
Hooded Crow	-	1f	-	-	-	-	-	-	Green
House Martin	-	-	-	-	-	-	-	1	Amber
Jackdaw	-	-	-	-	-	-	1	-	Green
Linnet	-	-	-	-	-	1	-	-	Amber
Magpie	-	-	-	-	-	-	1	1	Green
Mallard	1f	-	-	-	-	-	1f	-	Green
Pied Wagtail	-	-	-	-	2	-	-	-	Green
Robin	2	1	1	-	1	-	-	1	Amber
Rook	-	-	-	-	2f	1f	2f	-	Green
Song Thrush	1	-	-	-	-	1	1	1	Green
Starling	32	-	24	-	18	-	14	31	Amber
Swallow	-	1	-	-	-	1	1	5	Amber
Wood Pigeon	1	1	2	4	1	7	4	2	Green
Wren	2	5	1	3	-	1	2	1	Green
Yellowhammer	-	-	-	1	-	-	-	2	Red

f = flying over

### 3.3. Badger survey

No Badger setts were found on the site or in the immediate surrounds of the site. There were a number of Rabbit burrows present, most notably in an area of vegetated spoil in the south of the site adjacent to the golf course. Rabbits (*Oryctolagus cuniculus*) were frequently seen in the course of the survey.

A small Badger latrine was recorded within the southern hedgerow between the road and the playing field, just outside the site boundary (Appendix 2, Plate 3). Badger footprints were recorded in two locations to the north of the site where access under the new road fence was possible (Appendix 2, Plate 4). The locations of these signs of Badger activity are illustrated in Figure 5).

No evidence of Badger activity was recorded on the trail camera, with the only mammal recorded being Rabbit. A local resident made reference to the presence of Fox (*Vulpes vulpes*),

Pine Marten (*Martes martes*) and Stoat (*Mustela erminea hibernica*) in the area of woodland to the north, with the latter two species being protected under the Wildlife Act 1976 (as amended). Pine Marten are principally a species of large deciduous woodland, though they may use smaller areas of woodland and scrub, but have large ranges (up to 25 km<sup>2</sup>) and so may use treelines and hedgerows to move through the landscape. Stoat may use the site for hunting Rabbits, which is their main prey species (Sleeman, 1992).

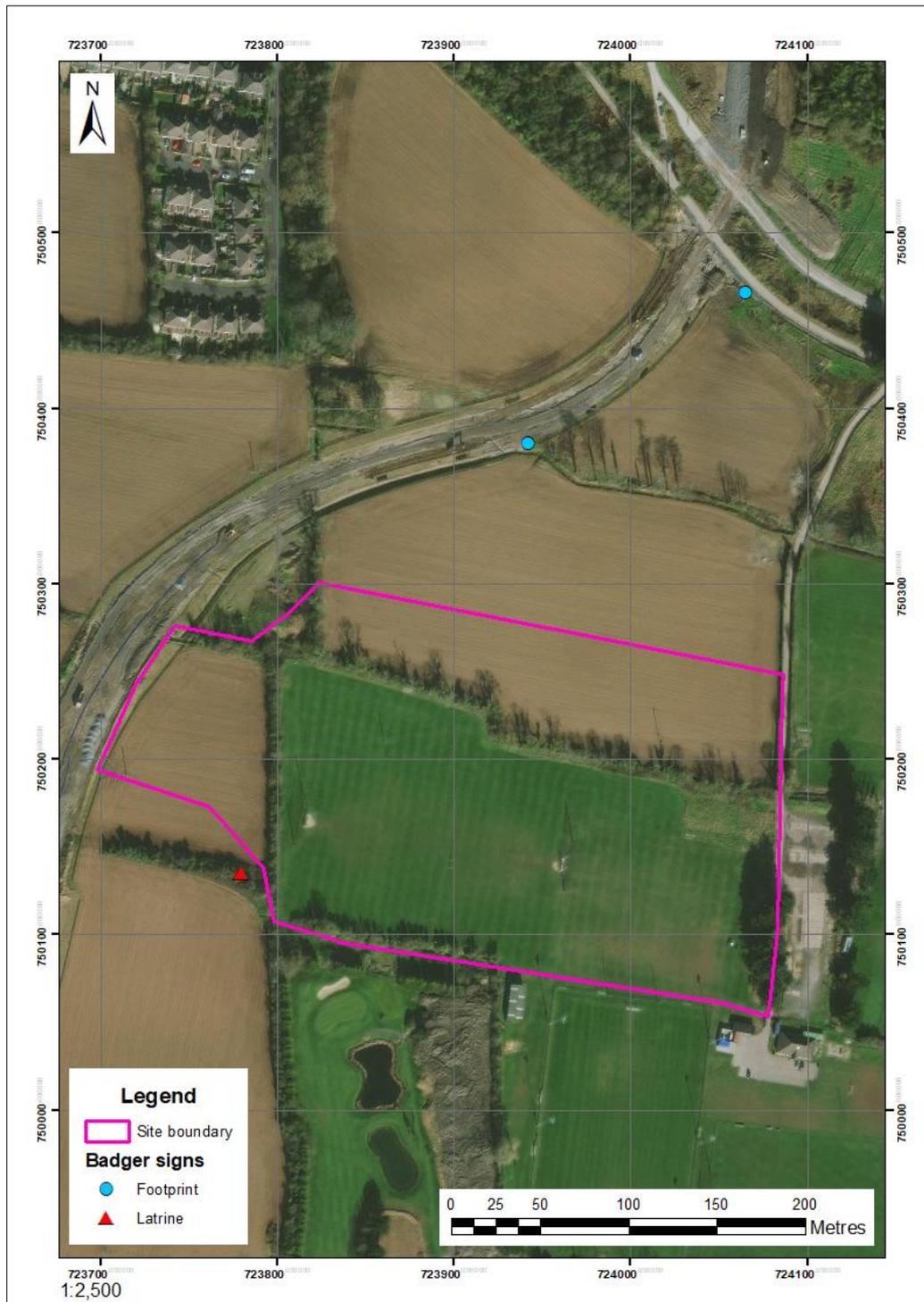


Figure 5. Location of Badger signs at Ballymastone, Donabate, Co. Dublin

### 3.4. Bat survey

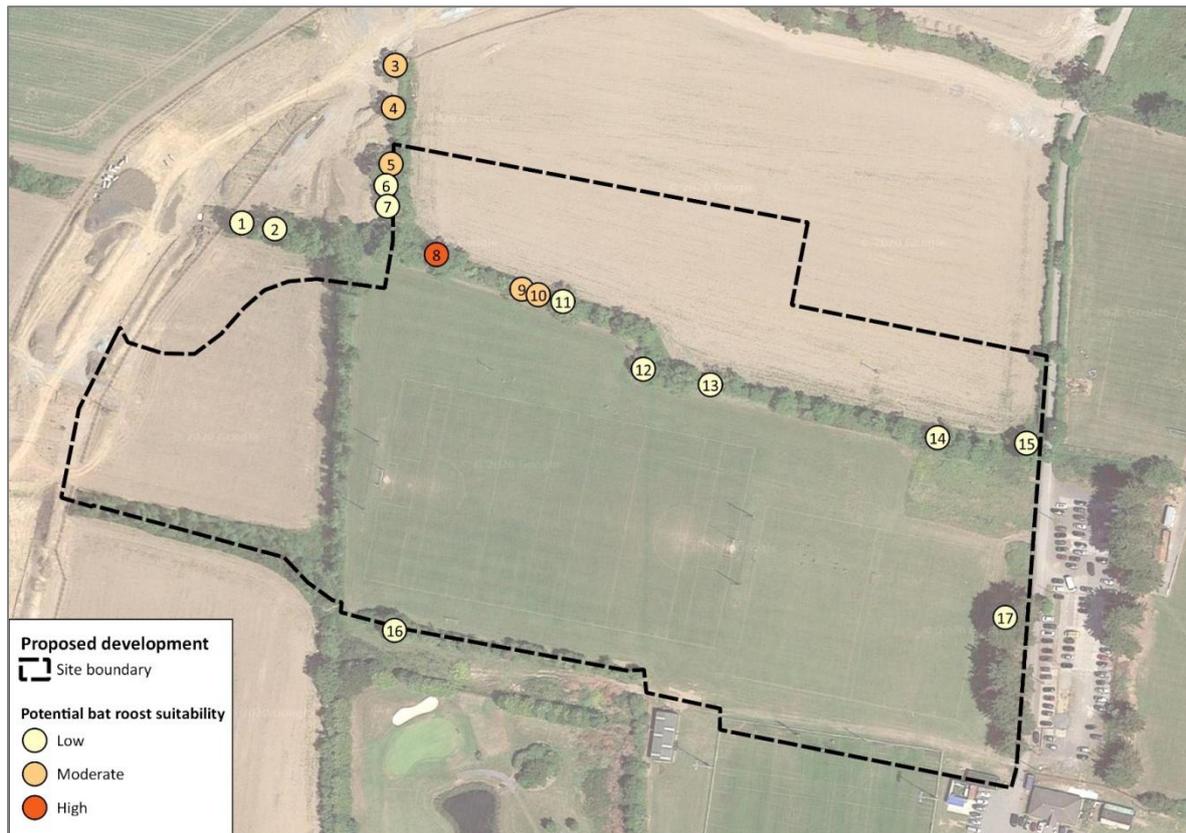
#### 3.4.1. Preliminary roost inspection

The hedgerows in the north and west of the site support a number of mature ash trees, many of which have crevices or cavities that would be suitable for roosting bats. In total, potential roost features were identified in sixteen ash trees, of which one had high suitability, five had moderate suitability, and ten had low suitability. A cluster of eighteen Monterey Cypress trees in the south-east of the site was also considered to have low suitability. A list of these trees is provided in Table 7, and their locations are shown in Figure 6.

**Table 7.** Bat roost suitability of trees in the vicinity of the proposed development site

Label	Species	Suitability	Description
1	Ash	Low	Large stump cut at approx. 5m, may be rotting. Dense ivy
2	Ash	Low	Some wounds in trunk and limbs. Dense ivy
3	Ash	Moderate	Lower limbs have several wounds and knotholes
4	Ash	Moderate	Lower limbs have several wounds and knotholes
5	Ash	Moderate	Lower limb on W side has a large wound and rotten section
6	Ash	Low	Lower limb rotten at end
7	Ash	Low	Lower limb rotten at end
8	Ash	High	Large wound on NE side and rotten core, also some smaller wounds on lower limbs
9	Ash	Moderate	Dead but still standing. Numerous wounds and rotten sections
10	Ash	Moderate	Tree is partially dead, with some small wounds on dead limbs
11	Ash	Low	Tree is partially dead, with some small wounds on dead limbs
12	Ash	Low	Some lower limbs have small wounds
13	Ash	Low	Large stump cut at 5m, one rotten limb
14	Ash	Low	Lower limb is dead and rotten, and large knothole
15	Ash	Low	One lower limb has small crevices. Dense ivy
16	Ash	Low	Triple stemmed, southernmost has some small crevices
17	Monterey Cypress	Low	Group of 18 no. Cypress trees, with pleated trunks and some rotten sections where limbs have been removed

There are no built structures within the boundary of the proposed development site. There is a small clubhouse/changing facility for St Patrick's Donabate GAA Club just outside the south-eastern corner of the site. It is a single-storey structure with a pitched roof of concrete tiles, and plastic soffit/fascia panels. It is considered to have low suitability for roosting bats.



**Figure 6.** Bat roost suitability of trees in the vicinity of the proposed development site

It is important to note that the suitability ratings discussed above do not indicate that bats are actively roosting at the site; they only give an indication of the possibility that bats *could* use them as roosting sites. In practice, it is likely that bats would only roost in no more than 1 – 2 of the trees, and it is possible that no roosts may be present. The only way to confirm the presence or absence of a roost is from an emergence/re-entry bat survey, or by inspecting potential roost features at height (e.g. in an elevated working platform) using an endoscope. This is typically undertaken at the pre-construction stage of a development project.

### **3.4.2. First emergence survey (17<sup>th</sup> June)**

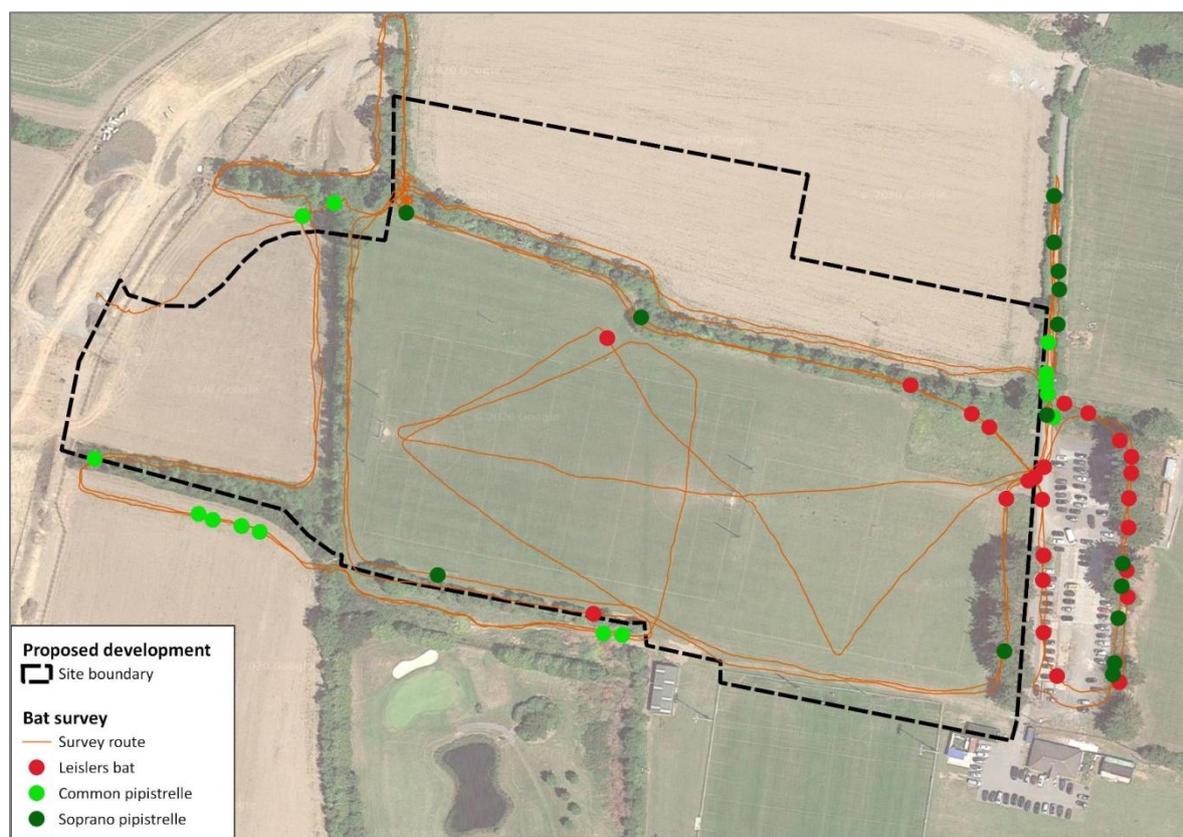
The focus of the first emergence survey was tree #8, which has high suitability for roosting bats. The surveyor was positioned facing the large wound on the north-eastern side of the tree, in the likely flight path of emerging bats. The survey commenced at sunset (21:55) and lasted for one hour. No bats were observed emerging from the tree.

Some other bats were recorded feeding along the adjacent hedgerow or commuting past the site. Most were common pipistrelles or Leisler's bats, and a small number of soprano pipistrelles were also recorded. The first bat was recorded at 22:22, which is 27 minutes after sunset. Activity was relatively high for a ten-minute period, but then decreased to approximately one pass per minute for the remainder of the emergence survey.

### **3.4.3. First transect survey (17<sup>th</sup> June)**

A transect survey was carried out immediately after the emergence survey. This involved a walked transect around the site and its immediate surroundings, covering both sides of every

hedgerow, and also some of the open areas in the centre of the site. It took approximately 35 minutes to complete the full route, and it was repeated on two occasions. Figure 7 shows the survey route and all bats encountered.



**Figure 7.** Results of the first transect survey (17<sup>th</sup> June 2020)

Most bat activity was recorded just outside the eastern boundary of the proposed development site. Leisler's bats were active above the car park, feeding at approximately 10 m above ground level around the tops of trees. Several soprano pipistrelles and common pipistrelles were recorded feeding along the main access road leading into the site, typically at approximately 2 – 3 m above ground level along the sides of hedgerows.

Bat activity was relatively low in the remainder of the site, with occasional records of soprano pipistrelles, common pipistrelles and Leisler's bats. All bats were recorded in close proximity to the trees and hedgerows, none were recorded over the amenity grassland in the centre of the site.

Some of the western portion of the site was illuminated by streetlights along the new Donabate Distributor Road, but the effect was rather localised. There was no artificial light in any other part of the site.

### 3.5. Second emergence survey (6<sup>th</sup> July)

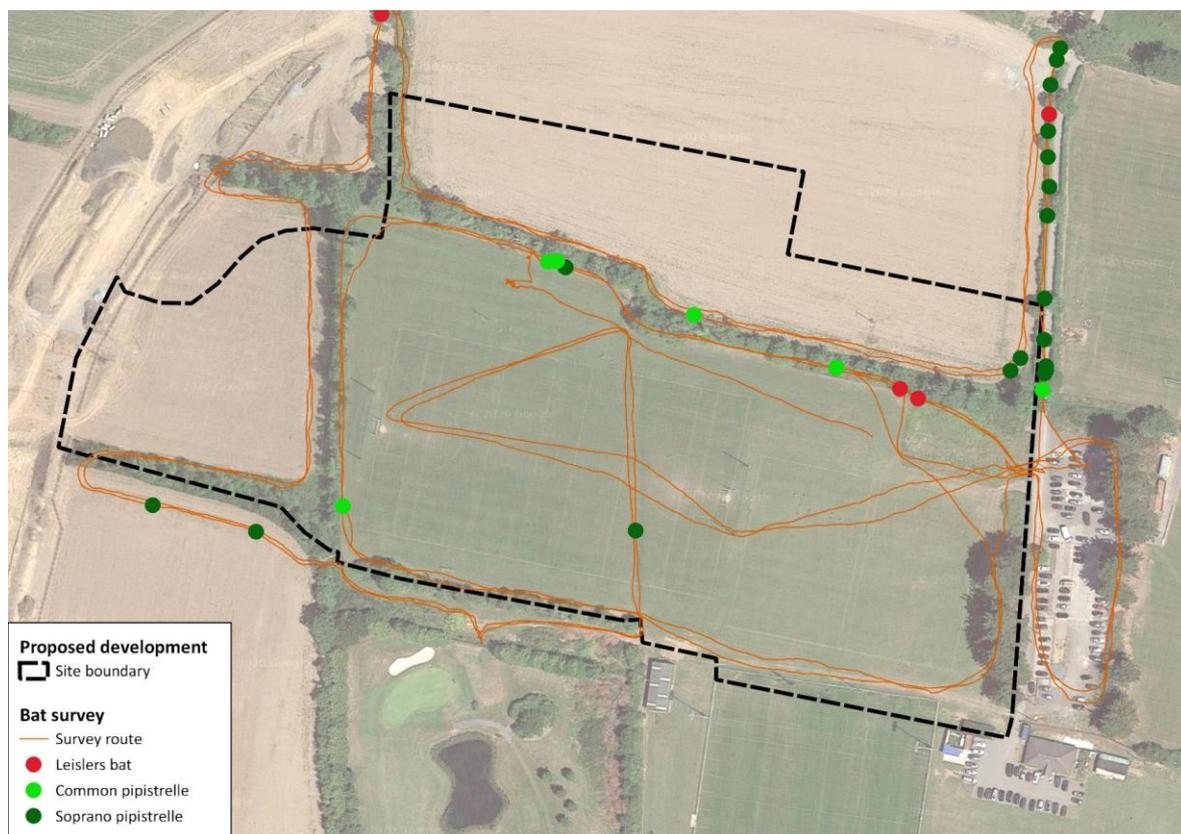
The focus of the second emergence survey was trees #9 - 11, all of which have moderate suitability for roosting bats. The surveyor was positioned on the southern side of the trees, with good views of all potential roosting sites. The survey commenced at sunset (21:53) and lasted

for thirty minutes, by which time all common species were active. No bats were observed emerging from any of the trees.

Leisler's bats were detected overhead after sunset, feeding at a height of approximately 20 – 30 m above ground level. Some soprano pipistrelles and common pipistrelles approached from the north-east and flew away to the west. The first bat was recorded at 22:18, which is 21 minutes after sunset.

### 3.6. Second transect survey (6<sup>th</sup> July)

The transect survey commenced immediately after the emergence survey. As before, it took approximately 35 minutes to complete the full route, and it was repeated on two occasions. Figure 8 shows the survey route and all bats encountered.



**Figure 8.** Results of the second transect survey (6<sup>th</sup> July 2020)

Most bat activity was recorded just outside the eastern boundary of the proposed development site. Several soprano pipistrelles were recorded feeding along the main access road leading into the site, typically at approximately 2 – 3 m above ground level along the sides of hedgerows. However, unlike the previous survey, there was no Leisler's bat activity above the car park.

Bat activity was relatively low in the remainder of the site, with occasional records of soprano pipistrelles, common pipistrelles and Leisler's bats. All but one of the bats were recorded in close proximity to the trees and hedgerows; a single soprano pipistrelle was recorded over the amenity grassland in the centre of the site.

### 3.7. Dawn back-tracking survey (7<sup>th</sup> July)

The aim of the survey was to search for bats returning to their roosts at dawn, and to attempt to follow them towards potential roosting sites. This is known as a back-tracking survey, as per Section 8.4 of Collins (2016).

The focus of the survey was trees #9 - 11, all of which have moderate suitability for roosting bats. However, the surveyor was mobile, and was prepared to follow bats west towards trees #1 - 8, or east towards trees #12 and 13.

Sunrise was at 05:07, and the survey commenced at 04:00. Some Leisler's bats were observed at 04:23 and 04:35 - 04:38; all were feeding above the site at heights of 20 - 30 m. A single common pipistrelle bat was detected feeding along the hedgerow at a height of approximately 3 - 4 m, and was followed briefly by the surveyor, but it flew away rapidly to the south. No bats were observed entering any of the trees. The last bat was recorded at 04:38, which was 29 minutes before sunrise.

#### 3.7.1. Conclusions

Three bat species were recorded during the surveys: common pipistrelle, soprano pipistrelle and Leisler's bat. All three species are common and widespread throughout Ireland, and represent the typical species assemblage for rural sites. No rare bat species were recorded.

A number of mature trees in the vicinity of the site have crevices or cavities that would be suitable for roosting bats. Emergence and back-tracking surveys were carried out at a number of trees, but no roosting bats were recorded. Nonetheless, it is possible that some of the other trees in the site could be used by roosting bats, or that bats may be present at other times of the year (e.g. as a winter hibernation roost).

Bat activity within the boundary of the proposed development site was relatively low, with only occasional bat passes during the transect surveys. Moderate bat activity was recorded just outside the eastern boundary of the site, along the access road and above the car park.

Overall, considering that no bat roosts have yet been recorded at the site, that only common species are present, and that bat activity is relatively low, the site and its immediate surroundings are considered to be of no more than *Local importance* for bats.

### 3.8. Invertebrates

While an invertebrate survey did not form part of the scope of the project, the site had a high level of invertebrate activity, particularly along the northern treeline and the area of scrub and semi-natural grassland along the boundary with the golf course. Orange Tip (*Anthocharis cardamines*) and Speckled Wood (*Pararge aegeria*) butterflies, Variable Damselfly (*Coenagrion pulchellum*), bees and abundant hoverflies including Marmalade Hoverfly (*Episyrphus balteatus*) were all recorded in the course of the survey. On the second bird survey visit, hundreds of 7-spot Ladybirds (*Coccinella septempunctata*) were recorded on the stretch of nettles along the northern side of the northern treeline, and also on nettles on the mounds of revegetated spoil along the boundary with the golf course. The damselflies and some of the hoverfly species are likely to use the water hazard on the golf course for breeding, with adults foraging around the scrub, hedgerows and semi-natural grassland.

## **4. Potential ecological impacts of the proposed development**

The following describes the potential impacts related to the construction and operation of the proposed recreational hub, without the implementation of mitigation measures.

### **4.1. Habitat loss**

The main ecological impact of the proposed development will be habitat loss, particularly loss of hedgerows and treelines, which are used by birds, bats and other mammals, and invertebrates. A number of the mature trees within the site boundary are considered to be suitable for roosting bats, and it is understood that most of these trees will be felled during site clearance works. There is no indication at this stage that any of these trees supports a bat roost, but it is possible that one or more roosts could be present. If any bats were roosting in these trees at the time of felling, they could be killed or significantly disturbed. This would constitute an offence under the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended), and could have a significant ecological impact.

The proposed development will involve the clearance of most of the existing vegetation within the planning boundary. This will reduce its suitability for feeding and commuting bats. However, considering that bat activity levels within the proposed development site were relatively low, and that there are other similar habitats in the surrounding area, the loss of habitat within the proposed development site will not have a significant impact on feeding/commuting bats. It is also noted that the current proposals indicate the planting of some trees and shrubs west of the running track as part of the landscaping scheme for the development; this may partially compensate for the hedgerows/treelines removed during site clearance works.

There will be a loss of small areas of scrub and dry meadow, which are of benefit to wildlife, including invertebrates. The area of scrub in the south of the site, which is adjacent to a hedgerow, drainage ditch and semi-natural grassland, was found to be high in biodiversity (birds and invertebrates, in particular) during the survey. This area does not appear to be within the area subject to planning and it is understood that the hedgerow that runs along it is to be protected. This is important to retain the microclimate of the scrub/grassland habitat and to maintain its biodiversity value.

The fields currently classed as spoil and bare ground/recolonising bare ground will be lost in the construction of the proposed development. While these habitats are usually only of local importance to wildlife, the fact that they were once arable fields is significant, as this habitat at Ballymastone was found to be used by Yellowhammer, a red-listed bird of arable fields. The record of Yellowhammer made during the current survey was of a singing male, which therefore may possibly be breeding in the area. The loss of arable farming in the area will reduce the area suitable for foraging adult Yellowhammer, while the loss of hedgerows will impact on nesting opportunities.

The amenity grassland of the playing pitch is a habitat of low biodiversity value, but does provide feeding for a range of bird species including Wood Pigeon, Starling and Blackbird. This habitat will be replaced by an artificial turf sports pitch and running track.

No rare or protected plant species were recorded on site, so impacts of the proposed development on vegetation diversity are expected to be minor.

#### **4.2. Disturbance**

Disturbance will cause an impact to birds, bats and other mammals, particularly during construction works, and at a low, but constant level once the recreational hub is operational. Numbers of Rabbits are likely to decrease once construction begins. Rabbits are a major prey item for Buzzard (Graham *et al.*, 1995). A Buzzard was recorded flying over the site during the bird surveys.

Levels of Badger activity within the site appear low and there are no Badger setts present. Badgers will continue to be able to traverse the landscape while foraging, and while the new development will reduce the area available, the surrounding fields and woodland provide sufficient area. For this reason, the effect of the proposed development on Badgers will be minor.

The proposed development will involve the installation of floodlighting around the sports pitches and running track, and a range of other lighting along roads and pedestrian paths. Bats are nocturnal animals, and typically avoid brightly-lit areas. When the lights are active they will displace bats from the site, and potentially also from the immediate surroundings. This could have a slight to moderate impact on local bat populations, depending on the intensity and extent of light spill.

#### **4.3. Water quality**

The dry ditches may become wet later in the year. Wet ditches are susceptible to damage from construction, and impacts such as siltation, bank degradation and deposition of construction rubble all serve to decrease the habitat value and condition.

### **5. Proposed mitigation measures**

#### **5.1. General measures**

Hedgerows and treelines are the main habitats of ecological value on site. It is strongly recommended to retain on site as many of these linear habitats as possible, as they form corridors for wildlife to move through the area, as well as nesting, roosting and feeding opportunities for birds and bats. In particular, the hedgerow that runs along the townland boundary at the west of the site (Segment 1) has cultural as well as biological significance, and every effort should be made to retain it. As well as retaining the trees and shrubs themselves, it is important that the root zones of the trees be protected during construction, as damage to root zones from construction operations can cause the condition of the hedgerow to deteriorate, even if the trees and shrubs themselves are left *in situ*. The connectivity of any retained hedgerows or treelines with the wider landscape should be maintained by planting new hedgerows based on native species such as Hawthorn and Blackthorn.

Should retention of hedgerows and treelines not be possible, as appears likely under the current plans, compensatory planting of hedgerows should be carried out along the boundary of the site to maintain habitat connectivity, in addition to the plantings west of the running track that are indicated on the proposed site plan.

***It is strongly recommended that local species, such as those currently present, be used as the constituent species of replacement hedgerows.*** Species such as Hawthorn, Blackthorn, Dog-rose and Elder have the advantage of being suitable for the climate and soil, have high biodiversity value and also display attractive variation throughout the seasons, with blossoms and berries providing significant amenity and wildlife value. They can also provide effective screening if densely planted. Hazel would also be suitable. Ash is locally common but is no longer favoured for planting by agencies such as the Forest Service, Coillte and Transport Infrastructure Ireland, due to the prevalence of Ash die-back disease in Ireland, which has particularly severe effects on seedlings and poles of the species (Forest Service, 2017).

The small area of scrub in the south of the site between hedgerow Segment 4 and the golf course was found to be a high-biodiversity habitat, with invertebrates in particular very diverse here. This area of scrub should be retained for the benefit of the invertebrate community and the birds and bats that feed upon it.

To mitigate for the loss of grassland habitat, both semi-natural, dry meadow/grassy verge habitat and amenity grassland, which will be replaced with an artificial substrate, it should be possible to recreate (and maintain through the site management plan) some dry meadow and grassy verge habitat, preferably in proximity to trees and shrubs, to provide a habitat mosaic with some structural diversity. Management of the grassland should include mowing regimes that stagger mowing times or leave some areas uncut until late in the season. The details of the proposed development provided by Fingal County Council indicate that the soil excavated during the construction of the sports facilities will be used to form earthen berms adjacent to and overlooking the track and sports pitches. Part or all of these berms could be given over to semi-natural grassland, using the existing seedbank present within the excavated soil. Other areas could be developed on or adjacent to the site, again using the excavated soil. Using naturally occurring species, adapted to current conditions, would be ecologically preferable to using seed mixes of non-local provenance.

Construction activities should take into account possible negative impacts on the ditches on site. Precautions should be taken to minimise siltation and damage to banks, and all construction rubble should be disposed of in a responsible manner that does not impact negatively on the natural habitats on site.

## **5.2. Specific measures for bats**

### ***5.2.1. Felling of mature trees***

It is possible that some of the mature trees within the site could provide roosting opportunities for small numbers of bats. Based on the 2020 surveys, there is no evidence that any bat roosts will be affected, so derogation from the European Communities (Birds and Natural Habitats) Regulations 2011 will not be required. However, some surveys will be required at the pre-felling stage in order to confirm that no roosts are present, and thus to ensure that a derogation is not required.

At least one month prior to the felling of these trees, the Council should engage a bat specialist to carry out a detailed inspection of all mature trees listed in Table 7 of this report. The ecologist will inspect the trees at height using a mobile elevated working platform, ladder or ropes. Crevices or cavities will be inspected closely using an endoscope, torch or flexible mirror in

order to search for any evidence of roosting bats. If potential roost features cannot be accessed safely, or if it is not possible to inspect the trees at height for any other reason, the ecologist will carry out emergence/re-entry surveys of selected trees from ground level.

If any bat roosts are discovered during this process, the ecologist will develop a case-specific mitigation strategy, and will apply to the National Parks and Wildlife Service for a derogation licence.

If the trees do not contain a bat roost, they can be felled immediately. Trees with low suitability for bats should be felled and left on the ground overnight before removal. Trees with moderate or high suitability for bats should be felled in sections by a tree surgeon, lowered to the ground, and inspected by the ecologist. The cut sections will then be left overnight before removal.

### **5.2.2. Provision of alternative roosting opportunities**

In order to compensate for the loss of potential roosting opportunities in trees, 10 no. bat boxes in a range of designs (e.g. Schwegler woodcrete or similar) will be installed around various parts of the Ballymastone sports facilities. The Council should engage a bat specialist to select appropriate types of bat boxes, and to supervise their installation.

### **5.2.3. Bat-sensitive lighting**

A detailed lighting plan for the site has not yet been developed, as this typically occurs in the detailed-design phase. However, if 'bat-sensitive' lighting techniques are incorporated into the lighting plan, they would avoid or minimise any potential impacts of lighting on bats.

'Bat-sensitive lighting' for this development would have the following design principles:

- All lights will be fitted with directional hoods and/or luminaires to direct the light downwards onto targeted areas and to prevent unnecessary light-spill. The floodlights will be directed downwards on to the sports fields, with little or no light spill beyond the boundaries of the pitches
- Floodlights will only be active when required for sporting purposes; they will be switched off at all other times. Similarly, lights around the car park and pedestrian areas will be timed to operate during the operating hours of the facility, and will not be operational at other times. Constant, overnight lights will not be permitted
- Lighting along pedestrian paths will be of the minimum level required for safe access, and will be mounted on lighting poles of no more than 1 m height. Lights will be directed onto ground level, with no light spill above the horizontal
- No lights will be directed towards treelines / hedgerows around the boundaries of the site
- Where possible, pedestrian lighting will be fitted with motion sensors and timers in order to provide light only when it is required
- Zero-UV LEDs or low / high pressure sodium lamps will be the preferred bulb type, as they have least adverse effect on bats. Mercury, metal halide or high-UV bulbs will not be used.

These measures will apply both to temporary lighting during the construction of the proposed development, and to permanent lighting during the operation of the development. In order to ensure that these techniques are effective, and that bat mitigation measures can be balanced with public safety requirements, the developer's ecologist will liaise with the lighting contractor during the development of the lighting plan; this should be included as a condition of planning.

## **6. Residual impacts**

Even if all mitigation measures are implemented, some residual impacts will remain.

Arable habitat, lost as part of the development, will not be compensated for, and this will contribute to contraction of the range of a red-listed bird species, the Yellowhammer, which was recorded foraging on site. While other areas of arable farmland are present in the vicinity, the loss of a small area of this habitat may have a small negative effect on the population of the species locally.

No significant residual impacts will be experienced by Badger. Badgers will continue to be able to traverse the landscape while foraging, and sufficient habitat remains in the fields and woodland surrounding the proposed development.

Detailed inspections of mature trees shall be carried out prior to site clearance in order to confirm whether any bat roosts are present. If any roosts are found, a site-specific mitigation strategy will be found, and a derogation licence will be obtained. If no roosting bats are found, the trees will be felled in a sensitive manner, and left overnight before removal. Bat boxes will be provided to compensate for any roosting opportunities that are lost. As a result, there will be no significant impact on roosting bats in these trees, and no legal offence under the European Communities (Birds and Natural Habitats) Regulations 2011.

Bat-sensitive lighting techniques shall be implemented throughout the site in order to avoid light-spill into important feeding / commuting areas for bats. There may be some slight impacts on bats, but these will be localised and temporary.

The development of the proposed development site, and of the zoned land along the Donabate Distributor Road, is likely to displace small numbers of common bat species from the area. This is an inevitable consequence of developing greenfield sites. Nonetheless, the measures outlined in this report will ensure that any significant impacts are avoided, minimised or compensated, and that there will not be a legal offence.

## 7. References

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## Appendix 1 – Tables of species

**Table A1.** Plant species recorded at Ballymastone by habitat

<i>Latin name</i>	<i>Common name</i>	<i>ED2/ ED3</i>	<i>GA2</i>	<i>GS2</i>	<i>BL2</i>	<i>FW4</i>	<i>WL1</i>	<i>WL2</i>
<i>Acer pseudoplatanus</i>	Sycamore						x	x
<i>Agrostis capillaris</i>	Common bent						x	x
<i>Agrostis stolonifera</i>	Creeping bent	x		x			x	
<i>Alliaria petiolata</i>	Garlic mustard							x
<i>Alnus glutinosa</i>	Alder							x
<i>Alopecurus geniculatus</i>	Marsh foxtail		x	x				
<i>Alopecurus pratensis</i>	Meadow foxtail			x				
<i>Anagallis arvensis</i>	Scarlet pimpernel	x		x				
<i>Anisantha sterilis</i>	Barren brome						x	x
<i>Anthriscus sylvestris</i>	Cow parsley							x
<i>Arrhenatherum elatius</i>	False oat-grass	x		x			x	x
<i>Bellis perennis</i>	Daisy		x					
<i>Brachypodium sylvaticum</i>	False brome			x		x	x	
<i>Calystegia sepium</i>	Hedge bindweed	x						
<i>Capsella bursa-pastoris</i>	Shepherd's-purse	x						
<i>Cerastium fontanum</i>	Common mouse-ear		x	x				
<i>Cerastium glomeratum</i>	Sticky mouse-ear	x						
<i>Chenopodium album</i> ag.	Fat-hen	x						
<i>Cirsium arvense</i>	Creeping thistle	x		x			x	x
<i>Cirsium vulgare</i>	Spear thistle	x		x	x			x
<i>Crataegus monogyna</i>	Hawthorn						x	x
<i>Crepis biennis</i>	Rough hawk's-beard	x						
<i>Cupressus macrocarpa</i>	Monterey cypress							x
<i>Dactylis glomerata</i>	Cock's-foot			x	x			x
<i>Elytrigia repens</i>	Common couch	x		x				
<i>Epilobium hirsutum</i>	Great willowherb	x		x		x	x	
<i>Epilobium parviflorum</i>	Hoary willowherb	x						
<i>Epilobium tetragonum</i>	Square-stalked willowherb	x						
<i>Euphorbia peplus</i>	Petty spurge	x						
<i>Fraxinus excelsior</i>	Ash						x	x
<i>Fumaria species</i>	Fumitory	x						
<i>Galium aparine</i>	Cleavers	x		x	x	x	x	x
<i>Geranium dissectum</i>	Cut-leaved cranesbill	x		x				
<i>Geum urbanum</i>	Wood-avens			x				
<i>Hedera helix</i>	Ivy					x	x	x
<i>Heracleum sphondylium</i>	Common hogweed			x			x	x
<i>Holcus lanatus</i>	Yorkshire-fog	x	x	x			x	
<i>Hordeum murinum</i>	Wall barley							x

<i>Latin name</i>	<i>Common name</i>	<i>ED2/ ED3</i>	<i>GA2</i>	<i>GS2</i>	<i>BL2</i>	<i>FW4</i>	<i>WL1</i>	<i>WL2</i>
<i>Hypochaeris radicata</i>	Cat's-ear	x						
<i>Lactuca serriola</i>	Prickly lettuce	x						
<i>Lapsana communis</i>	Nipplewort	x						
<i>Lathyrus pratensis</i>	Meadow vetchling			x				
<i>Lavatera arborea</i>	Tree-mallow							x
<i>Ligustrum vulgare</i>	Wild privet						x	x
<i>Lolium perenne</i>	Perennial rye-grass		x	x	x			
<i>Lotus corniculatus</i>	Common bird's-foot-trefoil			x				
<i>Matricaria discoidea</i>	Pineappleweed	x						
<i>Medicago lupulina</i>	Black medick						x	
<i>Myosotis discolor</i>	Changing forget-me-not						x	
<i>Papaver rhoeas</i>	Common poppy	x						
<i>Phyllitis scolopendrium</i>	Hart's-tongue					x	x	
<i>Plantago lanceolata</i>	Ribwort plantain			x	x			
<i>Plantago major</i>	Greater plantain	x	x					
<i>Poa annua</i>	Annual meadow-grass	x	x	x				
<i>Poa trivialis</i>	Rough meadow-grass	x		x				
<i>Polygonum aviculare ag.</i>	Knotgrass	x						
<i>Polystichum setiferum</i>	Soft shield-fern					x	x	
<i>Potentilla reptans</i>	Creeping cinquefoil			x				
<i>Prunus avium</i>	Wild cherry							x
<i>Prunus spinosa</i>	Blackthorn						x	x
<i>Ranunculus acris</i>	Meadow buttercup			x			x	
<i>Ranunculus repens</i>	Creeping buttercup	x	x	x	x			
<i>Reseda luteola</i>	Weld	x						
<i>Rosa canina</i>	Dog-rose						x	x
<i>Rubus fruticosus ag.</i>	Bramble			x	x	x	x	x
<i>Rumex conglomeratus</i>	Clustered dock			x			x	
<i>Rumex crispus</i>	Curled dock		x	x				
<i>Rumex obtusifolius</i>	Broad-leaved dock	x		x	x		x	
<i>Sambucus nigra</i>	Elder							x
<i>Senecio jacobaea</i>	Common ragwort	x	x	x				
<i>Senecio vulgaris</i>	Groundsel	x						
<i>Sinapis arvensis</i>	Charlock	x			x			
<i>Sisymbrium officinale</i>	Hedge mustard	x			x			
<i>Smyrniolum olusatrum</i>	Alexanders	x						x
<i>Solanum dulcamara</i>	Bittersweet				x		x	
<i>Sonchus arvensis</i>	Perennial sow-thistle							
<i>Sonchus asper</i>	Prickly sow-thistle	x						x
<i>Sonchus oleraceus</i>	Smooth sow-thistle	x						
<i>Taraxacum officinale ag.</i>	Dandelion		x	x		x	x	x

<i>Latin name</i>	<i>Common name</i>	<i>ED2/ ED3</i>	<i>GA2</i>	<i>GS2</i>	<i>BL2</i>	<i>FW4</i>	<i>WL1</i>	<i>WL2</i>
<i>Trifolium pratense</i>	Red clover			x				
<i>Trifolium repens</i>	White clover	x	x	x				
<i>Triticum aestivum</i>	Bread wheat	x						
<i>Ulex europaeus</i>	Gorse						x	x
<i>Urtica dioica</i>	Common nettle	x		x			x	x
<i>Veronica chamaedrys</i>	Germander speedwell			x			x	
<i>Veronica persica</i>	Common field-speedwell	x						
<i>Veronica serpyllifolia</i>	Thyme-leaved speedwell	x						
<i>Vicia cracca</i>	Tufted vetch			x				
<i>Vicia sativa</i>	Common vetch			x				
<i>Vicia sepium</i>	Bush vetch			x			x	
x <i>Cuprocyparis leylandi</i>	Leyland cypress							x
<b><i>No. of species</i></b>		<b>43</b>	<b>12</b>	<b>39</b>	<b>11</b>	<b>8</b>	<b>31</b>	<b>30</b>

**Table A2.** Bird species recorded at Ballymastone with Latin name, breeding evidence and breeding status.

Common name	Latin name	Breeding evidence	Breeding status
Blackbird	<i>Turdus merula</i>	Carrying food	Confirmed
Blackcap	<i>Sylvia atricapilla</i>	Singing male	Possible
Blue Tit	<i>Cyanistes caeruleus</i>	With young	Confirmed
Bullfinch	<i>Pyrrhula pyrrhula</i>	Pair seen	Probable
Buzzard	<i>Buteo buteo</i>	Carrying food	Confirmed
Chaffinch	<i>Fringilla coelebs</i>	With young	Confirmed
Coal Tit	<i>Periparus ater</i>	With young	Confirmed
Dunnock	<i>Prunella modularis</i>	Suitable habitat	Possible
Goldcrest	<i>Regulus regulus</i>	Singing male	Possible
Goldfinch	<i>Carduelis carduelis</i>	Pair seen	Probable
Great Tit	<i>Parus major</i>	Singing male	Possible
Greenfinch	<i>Carduelis chloris</i>	Singing male	Possible
Herring Gull	<i>Larus argentatus</i>	Flying over	Non-breeding*
Hooded Crow	<i>Corvus cornix</i>	Flying over	Non-breeding*
House Martin	<i>Delichon urbicum</i>	Flying over	Non-breeding*
Jackdaw	<i>Corvus monedula</i>	Suitable habitat	Possible
Linnet	<i>Linaria cannabina</i>	Suitable Habitat	Possible
Magpie	<i>Pica pica</i>	Suitable habitat	Possible
Mallard	<i>Anas platyrhynchos</i>	Flying over	Non-breeding*
Pied Wagtail	<i>Motacilla alba</i>	With young	Confirmed
Robin	<i>Erithacus rubecula</i>	Singing male	Possible
Rook	<i>Corvus frugilegus</i>	Flying over	Non-breeding*
Song Thrush	<i>Turdus philomelos</i>	Singing male	Possible
Starling	<i>Sturnus vulgaris</i>	Flying over	Non-breeding*
Swallow	<i>Hirundo rustica</i>	Flying over	Non-breeding*
Wood Pigeon	<i>Columba palumbus</i>	Pair seen	Probable
Wren	<i>Troglodytes troglodytes</i>	With young	Confirmed
Yellowhammer	<i>Emberiza citrinella</i>	Singing male	Possible

\*likely to be breeding in area, but not within site or immediate surrounds

## Appendix 2 - Plates



**Plate 1.** The ruderal Scarlet Pimpernel recolonising bare soil of old wheat field



**Plate 2.** Dry ditch along Hedgerow segment 1. Woodland species visible, e.g. False Brome, Hart's-tongue, Soft Shield-fern



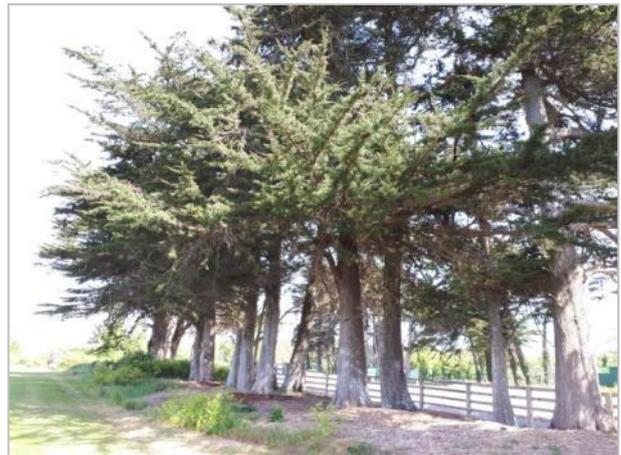
**Plate 3.** Strip of bare ground adjacent to Hedgerow Segments 2 and 3



**Plate 4.** Playing field (Amenity grassland)



**Plate 5.** High-biodiversity area of dry meadow and scrub between study site (Hedgerow segment 4) and Donabate Golf course



**Plate 6.** Monterey Cypress treeline in east of site



**Plate 7.** Scrub and grassy verge habitat at base of mature hedgerow (Hedgerow segment 1)



**Plate 8.** Moribund Ash tree in Hedgerow segment 2



**Plate 9.** Small Badger latrine in the south-western hedgerow just outside the site boundary



**Plate 10.** Badger footprint in dried mud under road fence to north of the site





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