

Chapter 5:

Biodiversity

5.0 BIODIVERSITY

5.1 INTRODUCTION

The Biodiversity assessment was prepared by Padraic Fogarty of OPENFIELD Ecological Services. Pádraic Fogarty has worked for 20 years in the environmental field and in 2007 was awarded an MSc from Sligo Institute of Technology for research into Ecological Impact Assessment (EclA) in Ireland. OPENFIELD is a full member of the Institute of Environmental Management and Assessment (IEMA).

A separate dedicated bat survey was carried out by Brian Keeley of Wildlife Surveys Ireland and included a survey in June 2019.

The planning application will be accompanied by the following biodiversity (flora and fauna) documentation:-

- Biodiversity Impact Assessment Chapter (part of Environmental Impact Assessment Report (EIAR));
- Bat Impact Assessment Report;
- Tree Survey;
- Information for Screening for Appropriate Assessment and Natura Impact Statement for Stage 2 AA

5.2 STUDY METHODOLOGY

The assessment was carried out in accordance with the following best practice methodology: draft 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' by the Environmental Protection Agency (EPA, 2017) and 'Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland' by the Chartered Institute of Ecology and Environmental Management (IIEEM, 2016).

Site visits were carried out on the 11th of October 2018 and the 24th of May 2019. On each occasion the site was surveyed in accordance with the Heritage Council's Best Practice Guidance for Habitat Survey and Mapping (Smith et al., 2010). Habitats were identified in accordance with Fossitt's Guide to Habitats in Ireland (Fossitt, 2000). A species list for each habitat was compiled and these are presented in Appendix 1 of this report. Species abundance was determined using the DAFOR scale (D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare). This is a subjective form of habitat description commonly used in conjunction with habitat classifications. Sample digital photos were also taken. Data were then uploaded to the ArcView 9.2 GIS software suite.

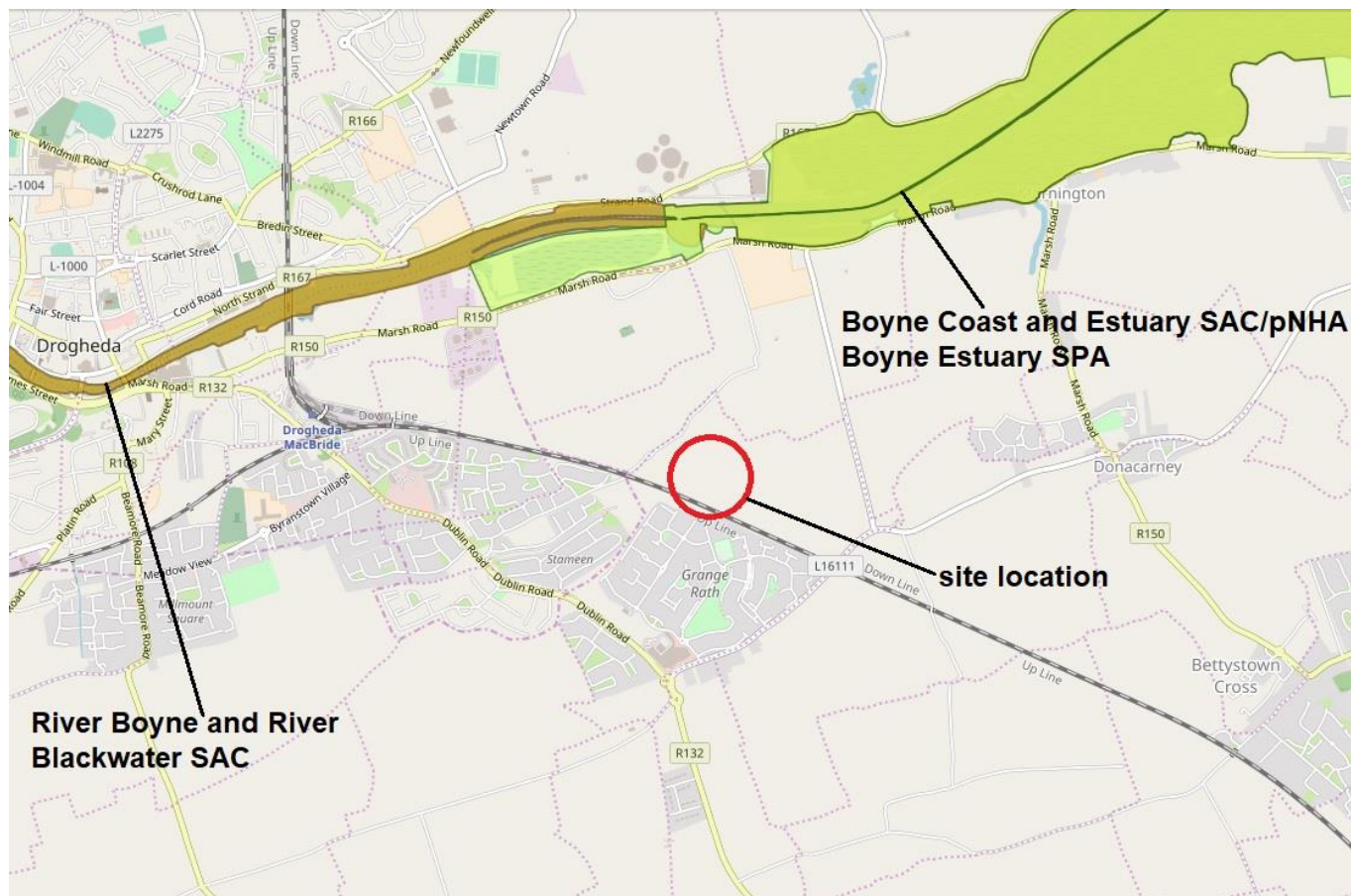
Surveys took place within the optimal survey period for general habitat, mammals and breeding bird/amphibian surveys (Smith et al., 2010). A dedicated bat survey was carried out for this development during the optimal period. It was possible to classify all habitats on the site to Fossitt level 3. A full species list is presented as an appendix to this chapter.

5.3 THE EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO)

Best practice guidance suggests that an initial zone of influence be set at a radius of 2km for non-linear projects (IEA, 1995). However, some impacts are not limited to this distance and so sensitive receptors further from the project footprint may need to be considered as this assessment progresses. This is shown in figure 4.1.

There are a number of designations for nature conservation in Ireland including National Park, National Nature Reserve, RAMSAR site, UNESCO Biosphere reserves, Special Protection Areas (SPA – Birds Directive), Special Areas of Conservation (SAC – Habitats Directive); and Natural Heritage Areas. The mechanism for these designations is through national or international legislation. Proposed NHAs (pNHA) are areas that have yet to gain full legislative protection. They are generally protected through the relevant County Development Plan. There is no system in Ireland for the designation of sites at a local, or county level.

Figure 5.1 – Approximate 2km radius of proposed site showing areas designated for nature conservation and water courses (from www.epa.ie)



Boyne Estuary SPA (site code: 4080)

The tidal estuary of the Boyne is located to the east of the town of Drogheda. A site synopsis report states that it is home to ten birds with a population of national importance (Shelduck *Tadorna tadorna*, Oystercatcher *Haematopus ostralegus*, Golden plover *Pluvialis apricaria*, Grey plover *Pluvialis squatarola*, Lapwing *Vanellus vanellus*, Knot, Sanderling, Black-tailed godwit *Limosa limosa*, Redshank *Tringa totanus* and Turnstone *Arenaria interpres*). Two of these species are listed on Annex I of the Birds Directive (Golden plover and Black-tailed godwit). An additional Annex I species, Little Tern, has been re-established through a conservation programme at Baltray.

Table 5.1 – Features of interest for the Boyne Coast & Estuary SPA (EU code in square parenthesis)

Oystercatcher (<i>Haematopus ostralegus</i>) [A130]
Golden Plover (<i>Pluvialis apricaria</i>) [A140]
Grey Plover (<i>Pluvialis squatarola</i>) [A140]
Knot (<i>Calidris canutus</i>) [A143]
Sanderling (<i>Calidris alba</i>) [A144]
Black-tailed Godwit (<i>Limosa limosa</i>) [A156]
Redshank (<i>Tringa totanus</i>) [A162]
Turnstone (<i>Arenaria interpres</i>) [A169]
Little Tern (<i>Sterna albifrons</i>) [A195]

Lapwing (<i>Vanellus vanellus</i>) [A142]
Wetlands & Waterbirds [A999]

- **Grey Plover.** These birds do not breed in Ireland but winter throughout coastal estuaries and wetlands. Its population and distribution are considered to be stable
- **Redshank.** Once common breeders throughout the peatlands and wet grasslands of the midlands Redshanks have undergone a 55% decline in distribution in the past 40 years. Agricultural intensification, drainage of wetlands and predation are the chief drivers of this change.
- **Lapwing.** Although still one of the most widespread of the breeding waders Lapwing populations have declined by over 50% in the past 40 years. This has been driven by changes in agricultural practices and possibly increased predation.
- **Black-tailed Godwit.** Breeding in Iceland these waders winter in selected sites around the Irish coast, but predominantly to the east and southern halves. Their range here has increased substantially of late.
- **Turnstone.** This winter visitor to Irish coasts favours sandy beaches, estuaries and rocky shores. It is found throughout the island but changes may be occurring due to climate change.
- **Little Tern.** Breeding colonies have declines in nearly all scattered Irish nesting localities over the past 40 years. On mainland colonies wardening, to prevent predation effects, is now crucial for long-term survival.

Boyne Coast and Estuary SAC (site code: 1957)

This SAC encompasses the tidal sections of the River Boyne, as far upriver as Drogheda. Its habitat value is centred on coastal and intertidal areas and includes salt marshes and sand dunes in various successional stages. A number of scarce or notable plants have been recorded from the dunes including the Wild Clary *Salvia verbenaca*, which is listed on the Red Data Book (Curtis & McGough, 1988).

Table 5.2 – Qualifying interests of the Boyne Coast and Estuary SAC

Aspect	Level of Protection
Fixed coastal dunes with herbaceous vegetation	Habitats Directive Annex I priority
Embryonic shifting dunes	Habitats Directive Annex I
Shifting dunes with <i>Ammophila arenaria</i> (Marram grass)	
Mediterranean salt meadows	
Atlantic salt meadows	
Estuaries	
Mudflats and sandflats not covered by seawater at low tide	
Salicornia and other annuals colonising mud and sand	

- **Embryonic shifting dunes (2110).** As their name suggests these sand structures represent the start of a sand dune’s life. Perhaps only a meter high they are a transient habitat, vulnerable to inundation by the sea, or developing further into white dunes with Marram Grass. They are threatened by recreational uses, coastal defences, trampling and erosion.
- **Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120).** These are the second stage in dune formation and depend upon the stabilising effects of Marram Grass. The presence of the grass traps additional sand, thus growing the dunes. They are threatened by erosion, climate change, coastal flooding and built development.
- **Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130 – priority habitat).** These are more stable dune systems, typically located on the landward side of the mobile dunes. They have a more or less permanent, and complete covering of vegetation, the quality of which depends on local hydrology and grazing regimes. They are the most endangered of the dune habitat types and are under pressure from built developments such as golf courses and caravan parks, over-grazing, under-grazing and invasive species.
- **Atlantic and Mediterranean salt meadows (1330 & 1410):** these are intertidal habitats that differ somewhat in their vegetation composition. They are dynamic habitats that depend upon processes of erosion, sedimentation and colonisation by a typical suite of salt-tolerant organisms. The main pressures are invasion by the non-native *Spartina anglica* and overgrazing by cattle and sheep.

- **Estuary (1130):** This is the portion of a river that is influenced by the tide but retaining a significant freshwater influence. Substrates can range from rocks and boulders, to expanses of fine mud and sand. They are an important resource for birds and other fauna and many estuaries have twin designations (i.e. both SAC and SPA). It is considered that the majority of estuary habitat is in good condition however approximately a quarter is negatively affected by excess nutrient input and damaging fishing practices.
- **Tidal mudflats (1140):** This is an intertidal habitat characterised by fine silt and sediment. Most of the area in Ireland is of favourable status however water quality and fishing activity, including aquaculture, are negatively affecting some areas.
- **Salicornia mudflats (1310):** This is a pioneer saltmarsh community and so is associated with intertidal areas. It is dependant upon a supply of fresh, bare mud and can be promoted by damage to other salt marsh habitats. It is chiefly threatened by the advance of the alien invasive Cordgrass *Spartina anglica*. Erosion can be destructive but in many cases this is a natural process.

The Boyne Coast and Estuary pNHA is effectively superseded by the SAC and SPA designations. Only a small area of coastal habitat, to the south of Mornington, is excluded from these areas. The pNHA designation is not recognised in law so it is considered that the SAC/SPA provides a more robust level of protection.

Description of structure and functional relationships:

Estuaries are among the most productive habitats on earth as great quantities of sediment and nutrients are deposited from their feeding rivers. The abundance of invertebrate life living within these sediments provides resources for large flocks of wetland and wading birds, some of which use estuaries on a seasonal basis. Dynamic coastal habitats meanwhile are important in buffering inland areas from storms as well as potential future impacts from climate change (Little, 2000).

River Boyne and River Blackwater SAC (site codes: 2299)

The river Boyne and river Blackwater drain most of county Meath. They are important salmonid rivers and are home to a range of aquatic and riparian species. The reasons why these rivers are an SAC are set out in the site’s ‘qualifying interests’ and these are given in table 4.3.

Table 5.3 – Qualifying interests of the River Blackwater and River Boyne SAC

Aspect	Level of Protection
Alluvial forest (code: 91E0)	Habitats Directive Annex I priority
Alkaline fens (code: 7230)	Habitats Directive Annex I
Atlantic salmon <i>Salmo salar</i> (code: 1106)	Habitats Directive Annex II
River lamprey <i>Lampetra fluviatilis</i> (code: 1099)	
Otter <i>Lutra lutra</i> (code: 1355)	

The conservation status of these features of interest have not been assessed at the level of the SAC. Habitats and species designated under the Habitats Directive have been assessed as part of Ireland’s commitments under Article 17 of that Directive. These assessments are at a national scale only. Table 5.4 gives the assessment of those features of relevance to the River Boyne and River Blackwater SAC (NPWS, 2013b & c). The conservation status of the Otter, River Lamprey and Atlantic Salmon have been assessed as near threatened, least concern and vulnerable respectively (Marnell et al., 2009; King et al., 2011).

Table 5.4 – Assessment of features of interest of the River Boyne and River Blackwater SAC

Alluvial forest (code: 91E0)	Bad
Alkaline fens (code: 7230)	Bad
Atlantic salmon <i>Salmo salar</i> (code: 1106)	Inadequate
River lamprey <i>Lampetra fluviatilis</i> (code: 1099)	Not assessed
Otter <i>Lutra lutra</i> (code: 1355)	Good

Alkaline Fens: Threats of ‘high importance’ are groundwater abstractions, land reclamation, diffuse groundwater

pollution, land abandonment/under-grazing. These fen systems are often a complex mosaic of habitats, with tall sedge beds, reedbeds, wet grasslands, springs and open-water often co-occurring at a given fen site. Their integrity is reliant upon a stable, high water table; calcareous/low-nutrient water supply; and controlled mowing and/or grazing.

Alluvial Wet Woodland: This is a native woodland type that occurs on heavy soils, periodically inundated by river water but which are otherwise well drained and aerated. The main pressures are identified as alien invasive species, undergrazing and overgrazing. Pollution from agricultural land may also be significant.

River lamprey: This species spends its entire life cycle in freshwater and is considerably smaller than the larger, and more threatened Sea lamprey. As juveniles they are indistinguishable from Brook lamprey at the species level and are only differentiated by their size at adults. Since surveys are carried out on the juvenile life stage these two species are jointly assessed. Although threatened by pollution, along with all aquatic life, they are assessed as being of 'good' status.

Atlantic salmon: This once abundant fish has suffered a dramatic decline in recent decades. On land they are threatened by pollution and barriers to migration while at sea mortality may occur through industrial fisheries, parasites from aquaculture operations and climate change. The Habitats Directive only protects the salmon in its freshwater habitat and for some SACs specific conservation objectives have been set for water quality. Salmon will only spawn in clean, sediment-free beds of gravel.

Otter: This aquatic mammal lives its entire life in and close to wet places, including rivers, lakes and coastal areas. They will feed on a wide variety of prey items. Despite local threats from severe pollution incidents and illegal fishing, its population is considered stable and healthy, and so is assessed as being of 'good' status.

Description of structure and functional relationships

Rivers are dynamic ecosystems that are a function of numerous factors such as climate, geology and land use, all of which determine the water quality and quantity at any given time. Processes such as erosion and deposition ensure that even the course of the river can change over time. The function of these fully- or semi-aquatic habitats depends upon maintaining water volume, free movement of key species, water chemistry to which the particular species are adapted as well as the structure of riparian habitats and, crucially, its floodplain (Giller & Malmqvist, 1998). Threats to river systems in Ireland include eutrophication, overgrazing, excessive fertilisation, afforestation and the introduction of alien invasive species (NPWS, 2008).

The NPWS web site (www.npws.ie) contains a mapping tool that indicates historic records of legally protected species within a selected Ordnance Survey (OS) 10km grid square. The Colpe Road site is located within the square O17 and four species of protected animal and flowering plant are highlighted. These species are detailed in Table 5.5. It must be noted that this list cannot be seen as exhaustive as suitable habitat may be available for other important and protected species. In summary, it can be seen that of the four species two records remain current.

Table 5.5 – Known records for protected species within the O17 10km square

Species	Habitat ^{1 2}	Current status ³
<i>Galeopsis angustifolia</i> Red Hemp-nettle	Calcareous gravels	Record pre-1970
<i>Hordeum secalinum</i> Meadow Barley	Upper parts of brackish marshes, chiefly near the sea	Record pre-1970
<i>Lutra lutra</i> Otter	Wetlands, rivers and coastal zone	Present
<i>Phoca vitulina</i> Harbour Seal	Coastal and marine habitats	Present

Water quality in rivers and estuaries is monitored on an on-going basis by the Environmental Protection Agency (EPA). They assess the pollution status of a stretch of water by analysing the invertebrates living in the substrate as different species show varying sensitivities to pollution. They arrive at a 'Q-Value' where Q1 = grossly polluted and

¹ Parnell et al., 2012

² Hayden & Harrington, 2001

³ www.bsbi.org / www.biodiversityireland.ie

Q5 = pristine quality (Toner et al., 2005). The Colpe Road site is not within the catchment of any significant river. Small water courses in this vicinity join the estuary of the River Boyne to the north. There are no EPA monitoring points along the Stagrennan Stream – the nearest water course to the subject site shown on EPA maps. The estuary of the Boyne has been assessed as of 'intermediate' water quality and is 'moderate' for the most recent WFD monitoring period (2010-2015). These data are taken from the mapping tool on www.epa.ie.

5.3.1 Stakeholder Consultation

Because of the relatively low ecological sensitivity of the site, third party observations were not sought as part of the preparation for this chapter. Consultation with statutory consultees and the public will form part of the planning process.

5.3.2 Site Survey

Aerial photography from the OSI and historic mapping shows that this area has been occupied by agricultural and with farm buildings since historical times. The main Dublin to Belfast railway line runs to the south while a public road passes to the south-east and north-east.

5.3.2.1 Flora

The subject site comprises a series of large fields which are in agricultural production and at the time of survey were **tilled land – BC3. Hedgerow – WL1** field boundaries are found along the route of the railway line as well as internal field boundaries and the boundary to the north-west. They are composed of Hawthorn *Crataegus monogyna*, Ash *Fraxinus excelsior* with Ivy *Hedera helix* and Brambles *Rubus fruticosus agg.* Within the hedgerows there are occasional very tall/veteran specimens of Ash. A taller **treeline – WL2** can be found along a relatively short stretch to the south-west. This is composed of tall Ash, Copper Beech *Fagus sylvatica*, Sycamore *Acer pseudoplatanus* and Lime *Tilia sp.* Following guidance from the Heritage Council (Foulkes et al., 2013) these features are of 'higher significance' due to their age and structure. There are no water courses on the site although ditches, which were dry at the time of survey, accompany hedgerows and are likely to lead to the Stagrennan Stream, which itself discharges to the Boyne Estuary.

The lands through which the proposed road will pass was surveyed for a planning application in 2018. This application was subsequently granted permission. The lands are composed of arable crops with sections of hedgerow field boundary. It has not been proposed to change the route of the road and so there will be no change to the extent of habitat to be removed over and above what has been permitted.

A section of the lands within the project boundary are along Mill Road to the north-east. This is entirely composed of hard surfacing and no vegetation is to be affected in this area.

There are no habitats which are examples of those listed in Annex II of the Habitats Directive. There are no plant species which are listed as alien invasive on Schedule 3 of SI No. 477 of 2011. Habitats are mostly of low ecological value while boundary hedgerows and treelines can be considered to be of high local value.

Figure 5.2 – Habitat map of the Colpe West site



5.3.2.2 FAUNA

The site survey included incidental sightings or proxy signs (prints, scats etc.) of faunal activity, while the presence of certain species can be concluded where there is suitable habitat within the known range of that species. Table 5 details those mammals that are protected under national or international legislation in Ireland. Cells are greyed out where suitable habitat is not present or species are outside the range of the study area.

Table 5.6 – Protected mammals in Ireland and their known status within the O17 10km square. Those that are greyed out indicate either that suitable habitat is not present or that there are no records of the species from the National Biodiversity Data Centre 10km.

Species	Level of Protection	Habitat ⁴	Red List Status ⁵
Otter <i>Lutra lutra</i>	Annex II & IV Habitats Directive;	Rivers and wetlands	Near Threatened
Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Wildlife (Amendment) Act, 2000	Disused, undisturbed old buildings, caves and mines	Least Concern
Grey seal <i>Halichoerus grypus</i>	Annex II & V Habitats Directive;	Coastal habitats	-
Common seal <i>Phocaena phocaena</i>	Wildlife (Amendment) Act, 2000		-
Whiskered bat <i>Myotis mystacinus</i>	Annex IV Habitats Directive; Wildlife (Amendment) Act, 2000	Gardens, parks and riparian habitats	Least Concern
Natterer's bat <i>Myotis nattereri</i>		Woodland	Least Concern
Leisler's bat <i>Nyctalus leisleri</i>		Open areas roosting in attics	Near Threatened
Brown long-eared bat <i>Plecotus auritus</i>		Woodland	Least Concern
Common pipistrelle <i>Pipistrellus pipistrellus</i>		Farmland, woodland and urban areas	Least Concern

⁴ Harris & Yalden, 2008

⁵ Marnell et al., 2009

Soprano pipistrelle Pipistrellus pygmaeus		Rivers, lakes & riparian woodland	Least Concern
Daubenton's bat Myotis daubentonii		Woodlands and bridges associated with open water	Least Concern
Nathusius' pipistrelle Pipistrellus nathusii		Parkland, mixed and pine forests, riparian habitats	Least Concern
Irish hare Lepus timidus hibernicus	Annex V Habitats Directive;	Wide range of habitats	Least Concern
Pine Marten Martes martes	Wildlife (Amendment) Act, 2000	Broad-leaved and coniferous forest	Least Concern
Hedgehog Erinaceus europaeus		Woodlands and hedgerows	Least Concern
Pygmy shrew Sorex minutus		Woodlands, heathland, and wetlands	Least Concern
Red squirrel Sciurus vulgaris		Woodlands	Near Threatened
Irish stoat Mustela erminea hibernica	Wildlife (Amendment) Act, 2000	Wide range of habitats	Least Concern
Badger Meles meles		Farmland, woodland and urban areas	Least Concern
Red deer Cervus elaphus		Woodland and open moorland	Least Concern
Fallow deer Dama dama		Mixed woodland but feeding in open habitat	Least Concern
Sika deer Cervus nippon		Coniferous woodland and adjacent heaths	-

A Badger sett was found within the hedgerow along the north-western boundary of the site. This had at least two entrances with signs of active trails leading to the orchard to the north, as well as bedding material. There is a historic record of Badger activity from this vicinity from the National Biodiversity Data Centre (dated to 2007). Badgers and their setts are protected under the Wildlife Act. The sett was resurveyed in May 2019 and again signs of activity were noted.

Otter is recorded from along the Boyne Estuary and suitable habitat on this site is not available. Although widespread, there was no evidence that Irish Hare is present. Woodland habitat is not present to support Deer, Pine Marten or Red Squirrel. Small mammals such as the Irish Stoat, Hedgehog and Pygmy Shrew are considered more or less ubiquitous in the Irish countryside, including on disused land in urban areas (Lysaght & Marnell, 2016). No direct evidence of any mammal was recorded. Rabbit *Oryctolagus cuniculus* and Fox *Vulpes vulpes* are common in Meath along with Brown Rat *Rattus norvegicus*, House Mouse *Mus domesticus* and Field Mouse *Apodemus sylvaticus*. These species are not protected.

Features on the site may be suitable for foraging bats, particularly along hedgerows and treelines (Hundt, 2012). A number of very large, old trees may provide roosting opportunities. A detector-based survey was carried out in June 2019, within the optimal flying period. This report is presented separately but its findings are summarised here. No roosts were recorded. Three species were noted to be feeding: Common Pipistrelle, Soprano Pipistrelle and Leisler's Bat. The bat report notes that "Bat activity was strongly associated with the hedgerow and was absent from the exposed sections of fields".

October lies outside the optimal season for surveying breeding birds. The following list of birds which were recorded from the site is indicative only: Blackbird *Turdus merula*, Wood Pigeon *Columba palumbus*, Rook *Corvus frugilegus*, Magpie *Pica pica*. A Buzzard *Buteo buteo* was seen flying overhead. Other species were noted during a survey of adjacent lands in December 2017: Robin *Erithacus rubecula*, Wren *Troglodytes troglodytes* and Dunnock *Prunella modularis*.

During the May 2019 breeding birds were recorded, including: Pheasant *Phasianus colchicum*, Blackbird, Song Thrush *Turdus philomelos*, Wood Pigeon, Jackdaw *Corvus monedula*, Starling *Sturnus vulgaris* and Hooded Crow *C. corone*.

These species are all of low conservation concern/green list (Colhoun & Cummins, 2013). Suitable nesting habitat is available for other common garden birds in treelines and hedgerows.

There are no habitats on the site which are suitable for breeding amphibians, fish or aquatic invertebrates.

Most habitats, even highly altered ones, are likely to harbour a wide diversity of invertebrates. In Ireland only one insect is protected by law, the Marsh Fritillary butterfly *Euphydryas aurinia*, and this is not to be found on in this area. Other protected invertebrates are confined to freshwater and wetland habitats and so are not present on this site. Marsh Fritillary is not recorded from this vicinity and is unlikely to be present given its habitat preferences.

5.3.3 Overall Evaluation of the Context, Character, Significance and Sensitivity of the Proposed Development Site

In summary, it has been seen that the application site is agricultural land with traditional field boundaries. These boundaries are of high local value to biodiversity. There are no examples of habitats listed on Annex I of the Habitats Directive or records of rare or protected plants. There are no species listed as alien invasive as per SI 477 of 2011. Field boundaries provide habitat for common breeding birds and foraging areas for bats while one hedgerow contains a Badger sett.

Significance criteria are available from guidance published by the National Roads Authority (NRA, 2009). From this an evaluation of the various habitats and ecological features on the site has been made and this is shown in table 5.7.

Table 5.7 – Evaluation of the importance of habitats and species on the Colpe Road site

Tilled land – BC3	Negligible ecological value
Treeline – WL2 Hedgerow – WL1	High local ecological value

5.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The proposed development will see site clearance and the removal agricultural habitats within the red line boundary, and a construction phase to include a 357 residential homes and all associated infrastructure. It is proposed to retain most of the hedgerows and treelines within areas of open space. Post construction the land will be landscaped.

5.5 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT

This section provides a description of the potential impacts that the proposed development may have on biodiversity in the absence of mitigation. Methodology for determining the significance of an impact has been published by the EPA.

5.5.1 Construction Phase

The following potential impacts are likely to occur during the construction phase **in the absence of mitigation**:

1. Hedgerows and the treeline are to be retained within areas of open space. 25 trees have been identified as Category 'U': "Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years", and so will be removed as part of the development. In addition, approximately 100m of hedgerow will be removed for road access and within areas of open space. Post-construction landscaping will include new native and non-native planting which will, in time, provide new habitat for common countryside birds. The pedestrian access route to the west passes through rough grassland and no trees are to be removed for this aspect of the development. A root protection fence will be in place to protect all trees and hedgerows to be retained.
2. The direct mortality of species during demolition. This impact is most acute during the bird breeding season which can be assumed to last from March to August inclusive. Trees and hedgerows provide suitable nesting habitat and mitigation will be required during the construction phase as all birds' nests and eggs are protected under the Wildlife Act. Tree felling can impact upon bats which may be roosting in small spaces. A bat survey has been carried out however no evidence of roosting was found.
3. Pollution of water courses through the ingress of silt, oils and other toxic substances. As part of the screening for AA, significant effects to Natura 2000 sites could not be ruled out from this source. Best site practice will be followed in line with guidance from Inland Fisheries Ireland.
4. Impact to Badgers. There will be no direct interference with the Badger sett. Nevertheless, disturbance is likely to occur given the proximity of construction activities. The number of Badgers using this sett is unknown. The construction of this project may result in the abandonment of the sett and the permanent loss of Badgers from this area. Given that Badgers are legally protected, this is a potentially significant impact.
5. Impact to trees and hedgerows to be retained. The compaction of soil within the root zones of trees, through the movement of machinery or the storage of construction materials, can result in permanent damage to trees. Without proper safeguards, this could affect all of the trees and linear woodlands to be retained.

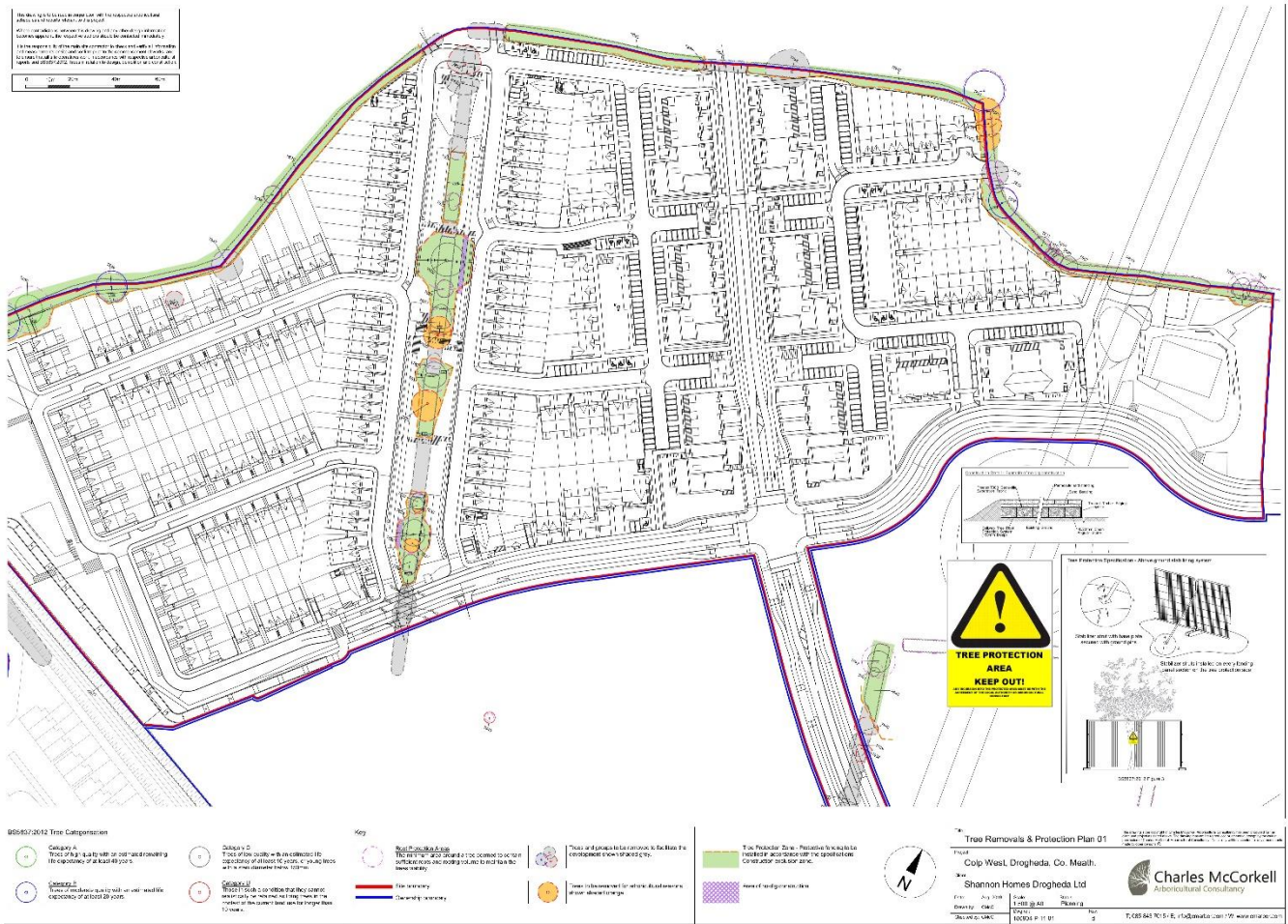


Figure 4.4 – Trees to be removed (grey) and those to be retained (green).

5.5.2 Operation Phase

The following potential impacts are likely to occur during the operation phase **in the absence of mitigation**:

6. Pollution of water from foul wastewater arising from the development. Wastewater will be sent to the municipal treatment plant at Drogheda, which is operated by Irish Water under licence from the EPA (licence no.: D0041-01). The Annual Environmental Report (AER) for 2017 shows that it is not currently meeting its requirements under the Urban Wastewater Treatment Directive. This was due to the failure of a single sample for ammonia. The exact cause of this exceedance is given as ‘unknown’. This plant discharges into the Boyne Estuary however monitoring of the receiving environment indicates that the discharge “does not have an observable negative impact on the water quality” (Irish Water, AER, pg7). There is a treatment capacity of 101,600 population equivalent (P.E.) while the mean loading in 2016 was 52,612 P.E. This indicates that sufficient capacity exists to successfully treat the expected additional loading from this development.
7. Pollution of water from surface water run-off. Where soil and natural vegetation, which is permeable to rainwater and slows its flow, is replaced with impermeable hard surfaces, changes to surface water quality and quantity can occur. A new surface water drainage system is to be installed in accordance with the SUDS principles. This will be divided into three catchment areas, two of which will discharge to open ditches and one to an existing surface water sewer. Each catchment will include open attenuation detention basins which is a form of SUDS. No negative effect arising to the quantity or quality of surface run-off will occur.
8. Artificial lighting. Artificial lighting can affect areas beyond the site boundary. The bat survey states: “There will be an increased level of lighting as there will be increased density of living quarters. There will be increased lighting for the construction and operation of the new buildings. This would lead to the disturbance of light intolerant or shy species while the more urban-adapted species will be affected to a lesser extent.

Pipistrelles and Leisler’s bats are less affected by light than all other species, but Pipistrelles will avoid light where possible. Leisler’s bats may be attracted to lighting later into the night time to feed on moths that themselves are attracted or disorientated by the lights.”

9. Impacts to Natura 2000 areas (SACs or SPAs) in and along the River Boyne could not be ruled out, due to the potential for construction pollutants to enter the Boyne Estuary. A Natura Impact Statement has been prepared which recommended mitigation measures to ensure that no adverse effects to the integrity of the Boyne Coast and Estuary SAC will occur.

Table 5.1.8 – Significance level of likely impacts in the absence of mitigation

Impact		Significance
Construction phase		
1	Loss of habitat	Not significant
2	Mortality to animals during construction	Significant effect – permanent impacts to species of high local value/or species with legal protection
3	Pollution of water during construction phase	Moderate effect
4	Impacts to Badgers	Significant effect
5	Damage to trees to be retained	Moderate effect
Operation phase		
6	Wastewater pollution	Neutral – no effect
7	Surface water pollution	Neutral – no effect
8	Artificial lighting	Moderate effect

Overall it can be seen that five potentially significant or moderate effects are predicted to occur as a result of this project in the absence of mitigation.

5.6 POTENTIAL CUMULATIVE IMPACTS

A number of the identified impacts can also act cumulatively with other impacts from similar developments in this area of Drogheda. This will include additional development to the north and south as well as a commercial development as part of a separate application and a permitted temporary school on adjacent lands. These impacts primarily arise through the additional loading to the municipal Wastewater Treatment Plant. It is considered that this effect is not significant as the plant is operating in compliance with emission limit standards with existing additional capacity to treat the expected additional loading from this project.

In this instance, the incorporation of SUDS attenuation measures will result in no negative effect to surface water quality.

Increasing urbanisation, and in particular land use change from agricultural to urban uses, is resulting in the loss of habitat for common species of plants and animals. This project will contribute to that loss arising from the removal of potential bat roosts. It can be seen along side a number of permitted developments in this region including A ten year permission for a commercial development at Colpe Road (ref: LB/180620), a school building adjacent to the site (reference: SA130927 & ABP Reference: PL17.243331), a residential development at Marsh Road, Newtown (ref.: 17387), a Strategic Housing Development at Bryanstown (ref.: ABP-3037899-19) and a live application for a Strategic

Housing Development on a site at Newtown, Marsh Road & McGraths Lane Railway Terrace, Drogheda (Reg. Ref.: 305110).

5.7 'Do NOTHING' IMPACT

In the event that this project does not proceed the land can be expected to remain in agricultural use for the foreseeable future. Existing wildlife populations would remain relatively undisturbed.

5.8 AVOIDANCE, REMEDIAL & MITIGATION MEASURES

This report has identified five impacts that were assessed as 'significant' or 'moderate negative'. Mitigation is therefore recommended to reduce the severity of these effects. The proposed mitigation would also apply to the potential cumulative impacts of the proposed development.

The principal mitigation that should be considered in any development is avoidance of impact. Detailed consideration was therefore given by the design team to avoid direct or indirect impacts on the boundary and the vast majority of internal hedgerows as well as treelines are retained. This has ameliorated the majority of the potential impacts for biodiversity.

5.8.1 Construction Phase

BIOCONST1: Mortality to animals during construction – mitigation by avoidance.

- 1a. The removal of hedgerow, treeline should not take place from March to August inclusive as per the Wildlife Act.
- 1b. The following mitigation is taken directly from the bat survey report:
"All the mature trees within the site shall be examined for the presence of bats by a bat specialist prior to felling. Should bats be noted in any tree, it is a protected structure and a derogation must be sought as discussed above. A bat detector survey within the appropriate season and weather conditions would allow the ruling out of several trees at one time. Alternatively, trees may be surveyed by a bat specialist from height (hoist, tree climbing etc.)."

BIOCONST2: Pollution during construction – mitigation by reduction

Best practice site management will be employed during works at all times. These should conform to guidance from Inland Fisheries Ireland (2016) and will be presented in a Pollution Prevention Plan. It will be the responsibility of the site manager to ensure that pollution does not occur. Fuels, oils and other dangerous substances should be stored in a bunded area. Sediment-laden water will not be discharged to water courses or surface ditches. Given the context of the site rainwater is likely to percolate to ground. However, there may be times when heavy rainfall exceeds the soil's absorption capacity. In this event, run-off will be directed to suitably-sized silt traps or attenuation ponds. Only clean, silt-free water will be discharged to ditches etc. Pollution prevention measures will be inspected at appropriate intervals and a record of these inspections will be maintained by the site manager.

BIOCONST3: Impacts to Badgers. The works will require a licence from the NPWS to disturb the Badger sett. The application for this licence has been made and the protective measures which will be adhered to during construction works. This will include protective fencing around the sett entrance to prevent encroachment of machinery. There will be no direct disturbance of the badger sett. Where excavation of soil will take place within 50m of the sett it will be done only under the supervision of a suitably qualified ecologist.

BIOCONST4: Damage to trees to be retained

Protective fencing will be erected in advance of any construction works commencing outside the drip-line of the canopy of retained trees within and along the site boundaries in order to prevent damage by machinery, compaction of soil, etc. in accordance with BS 5837:2012. This will be signed off on by a qualified arborist or ecologist to ensure it has been erected properly before any machinery is allowed on site. No ground clearance, earth moving, stock-piling or machinery movement will occur within these protected areas.

5.8.2 Operation phase

BIOOPER5: Artificial lighting

The following measures are taken from the bat report:

Lighting should be controlled to avoid light pollution of green areas and should be targeted to areas of human activity and for priority security areas. Motion-activated sensor lighting is preferable to reduce light pollution.

- None of the remaining mature trees or trees proposed for planting shall be illuminated.
- Dark corridor for movement of bats along the grounds of the site. Lighting should be directed downwards away from the treetops.
- All luminaires shall lack UV elements when manufactured and shall be LED
- A warm white spectrum (ideally <2700Kelvin but as low as the Council limitations allow) shall be adopted to reduce blue light component
- Luminaires shall feature peak wavelengths higher than 550nm
- Tree crowns shall remain unilluminated
- Planting shall provide areas of darkness suitable for bats to feed and commute through the site.

5.8.3 'Worst-case' scenario

In a worst case scenario temporary negative impacts could be expected to occur to water quality. Permanent damage to trees and hedgerows could occur from compaction of soil within the root zones.

5.9 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

This section allows for a qualitative description of the resultant specific direct, indirect, secondary, cumulative, short, medium and long-term permanent, temporary, positive and negative effects as well as impact interactions which the proposed development may have, assuming all mitigation measures are fully and successfully applied.

Construction Phase

There will be some temporary residual impacts to biodiversity arising from this project and cumulatively with adjoining lands.

- The removal of individual trees will result in some mortality to species and habitat loss. These are predicted to be not significant.
- As landscaping matures it is likely that negative effects from habitat loss will be offset.

With mitigation, there are expected to be no residual negative effects to biodiversity which can be considered to be significant.

Operation Phase

During the operation phase there may be on-going disturbance to the Badger sett arising from the proximity of housing and human activity. This may result in the abandonment of the sett and this would represent a moderate negative impact to biodiversity.

Enhancement measures

- A bat box scheme is to be implemented which will increase the availability of roosting locations for bats.
- Landscaping will add new area of vegetation which will attract wildlife.

5.9 MONITORING

There are no anticipated significant impacts associated with the construction phase of the proposed development, following the implementation of the recommended mitigation measures outlined in Section 4.7.1, which are considered sufficient in reducing the potential for adverse impacts. Monitoring is required where the success of mitigation measures is uncertain or where residual impacts may in themselves be significant.

Construction phase

Monitoring during the construction phase should be carried out to ensure that measures to prevent pollution prevention and protect the root zones of trees are fully implemented.

Operation phase

There are no anticipated significant impacts associated with the operation of the proposed development. Mitigation measures, where recommended in Section 4.8, are considered sufficient in reducing the potential for adverse impacts. Therefore, monitoring is not required as part of the development during the operational phase. No monitoring is required during the operation phase.

5.10 INTERACTIONS

There are interactions between biodiversity and the water (chapter 6) and landscaping (chapter 9).

5.11 DIFFICULTIES ENCOUNTERED IN COMPILING

This chapter is based on a number of site visits across the seasons and dedicated surveys for specialist species groups. No difficulties were encountered in compiling this study.

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APPENDIX 5.1 – BAT SURVEY REPORT

A Bat Assessment of Colpe Road Mornington, County Meath and an Evaluation for Potential Impacts of the Proposed Housing on the Bat Fauna

Brian Keeley B.Sc. (Hons) in Zool.

June 2019

Introduction

Bats are a widespread element of the Irish fauna. They are known to occur from much of the rural landscape, but they are also present within the urban environment and here they occupy buildings and occasionally trees for short or long periods. Houses and other buildings are a vital element of the annual cycle of all Irish bat species and at no time more so than the period May to August, but many bats may also avail of buildings as hibernation sites. Summer is the easiest time to identify the presence of bats due to the often-increased numbers present, the high level of activity and the milder, drier weather allowing bat signs to accumulate.

The presence of bats in winter may be impossible to determine in many buildings unless there is adequate access to confirm either signs of bat usage or the presence of the bats themselves. Signs may still be available to confirm this at a later stage in the year if the roost area is accessible to a trained observer.

Changes to a site including demolition, extension to or modification of existing buildings as well as new construction may remove or modify bat roosting sites and may also affect their feeding and commuting activity.

Bats are protected by Irish and EU law and to prevent unlawful injury or death, it is essential that a full understanding of the site is available in advance to protect the resident bats from unintentional and to create a pathway by which a legal derogation and exemption may be designed in consultation with the National Parks and Wildlife Service of the Department of Culture, Heritage and the Gaeltacht.

The site at Colpe Road, County Meath is a large predominantly agricultural site with a number of mature trees within the fields. The proposed development would see the removal of the farm buildings and hedgerow within the site. This assessment will address the potential for bat roosting within the farm buildings and trees and the level of bat feeding and commuting within the site and around the surrounding vegetation within which the project is proposed.

Methodology

The proposed site of housing on Colpe Road was examined on 11th June 2019 in daylight and again by means of a bat detector survey from prior to sunset (which was at 21.55 hours) for one and a half hours approximately and again up to sunrise (04.55 hours) on 12th June, 2019. The site was visually inspected for the presence of bats with the aid of a high-powered beam.

All walls and windows and doors of the two-storey house (the nearest likely roost albeit that it is not within the site *per se*) were fully examined for evidence of bat occupancy or previous usage indicated by the presence of bat droppings or staining. The house was examined internally on 19th June 2019 at which time the attic was entered and any signs of bats were sought.

The mature trees within the grounds were examined from ground level for evidence of bats and any audible sounds of larger bat groupings were sought (bats may become noisier in the summer if the temperatures are high or prior to emergence).

The bat detector assessment that commenced prior to sunset was undertaken equipped with an Echometer3 (EM3) full spectrum receiver with a screen displaying the ultrasonic signals received and also recording all ultrasonic signals received to a SD card for later analysis. A Songmeter2Bat+ (SM2) was placed beside the two storey building and this building was monitored for bat activity and returning or entering bats from 3.45 am and ceasing at sunrise.

Surveying continued for the next 1.5 hours within the site and involved a walked transect that considered all hedgerow and mature trees as well as encircling all buildings (see Figure 1).

Survey Constraints

Weather conditions in June 2019 were mixed and some nights were cool approaching cold by sunrise. However, on the night of survey, weather conditions were well suited to bat activity at sunset (13°C) and there was no wind (a slight breeze) or rain. Morning temperatures were mild (11°C), allowing continued bat activity. Weather conditions in June 2019 were typical of the season. This is a representative survey of the site given the size of the site and the availability of habitat suitable for bats within and around the site.

Existing Environment

Species of bat roosting within the site

None

Species of bat feeding within the site

Common Pipistrelle	<i>Pipistrellus pipistrellus</i>
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>
Leisler's bat	<i>Nyctalus leisleri</i>

Two pipistrelle species were noted on similar numbers of occasions throughout the site (see Figure 2). These species are widespread in Ireland and constitute the two most common species overall. Common pipistrelles show little specialisation while soprano pipistrelles typically choose areas close to water for maternity roosts while male bats may be more likely to feed in more diverse habitats.

Bat activity was present relatively early around the two-storey house outside of the site but the bat was not seen to emerge from the building. No bats were noted to enter the building.

Leisler's bat activity was much less commonly encountered and was along mature trees to the northern section of the site (along with a common pipistrelle) and to the south close to the railway line.

Bat activity was strongly associated with the hedgerow and was absent from the exposed sections of fields.

Modifications or Features introduced by the proposed development

✦ Demolition of existing buildings

There will be demolition of farm buildings within the site. This presents the potential for a long-term slight to moderate negative impact if a roost were destroyed without any mitigation. It would constitute a breach of the Wildlife Act 1976 and 2000 and the Habitats Directive and associated statutory instruments.

This building was not a bat roost at the time of survey, or previously. However, bats may move roosts and may enter buildings in periods other than the survey period. Where there are large numbers of bats, this may be obvious. For individuals, their presence may be very difficult to confirm.

✦ Vegetation alterations

There will be a requirement to remove some of the vegetation from the site to facilitate the project. This will include a number of mature oak trees.

✦ Lighting

There will be an increased level of lighting as there will be increased density of living quarters. There will be increased lighting for the construction and operation of the new buildings. This would lead to the disturbance of light intolerant or shy species while the more urban-adapted species will be affected to a lesser extent.

Pipistrelles and Leisler's bats are less affected by light than all other species, but Pipistrelles will avoid light where possible. Leisler's bats may be attracted to lighting later into the night time to feed on moths that themselves are attracted or disorientated by the lights.

Impacts of The Proposed Development

Disturbance from lighting

Lighting will be utilised for two different functions:

1) Access and safety and 2) Security and policing. The former is to allow ease of use at night. The latter is to ensure a perceived higher security level. This may affect light-intolerant bat species during foraging and if directed at emergence points would affect all bat species, even those that will feed in illuminated areas. Species such as Leisler's bat and common pipistrelle are less affected than almost all other Irish bat species and this would not be a significant impact. At worst, it would be a permanent moderately negative impact.

Reduced Feeding

Reduced vegetation including the removal of any of the trees within the site may lead to reduced insect abundance. On the night of survey, three species were noted, two at the same time on occasion. This will be a permanent slight negative impact.

Cumulative Impacts with other approved developments

Potential roost loss

Demolition creates a risk of roost loss. This could lead to injury or death to a species protected under the Wildlife Act and Habitats Directive (if a roost were present and not identified) and would therefore constitute a breach of the Irish and EU legislation. Demolition of the two storey house and farm buildings within an improved development (Reg. Ref.: LB180620) could affect bat presence within the site.

Proposed Mitigation

Incorporation of six bat boxes (Schwegler types 2F or 2FN or equivalent) is proposed into the site to provide bat roost opportunities. All bat boxes must be *unlit* and should be at least 2.5 metres above ground height and preferably 3 metres or higher.



Plate 1: Schwegler Bat Boxes

The bat boxes shall be installed on mature trees that are to be retained or on buildings (or poles if there are no options of the above type). Three boxes shall be attached to each of two trees unless there are better opportunities created by modifying this arrangement according to the bat specialist.

All mature trees shall be checked for the presence of bats prior to felling

All the mature trees within the site shall be examined for the presence of bats prior to felling by a bat specialist. Should bats be noted in any tree, it is a protected structure and a derogation must be sought as discussed above. A bat detector survey within the appropriate season and weather conditions would allow the ruling out of several trees at one time. Alternatively, trees may be surveyed by a bat specialist from height (hoist, tree climbing etc.)

Planting of vegetation

Where there is an opportunity to provide vegetative cover, native and local plant species should be employed including typical plants such as oak (the greatest value for most wildlife), hawthorn, blackthorn, elder, gorse, bramble, in addition to other species such as dog rose with an encouragement of species such as *Clematis* and other species attractive to moths.

Lighting

Lighting should be controlled to avoid light pollution of green areas and should be targeted to areas of human activity and for priority security areas. Motion-activated sensor lighting is preferable to reduce light pollution. None of the remaining mature trees or trees proposed for planting shall be illuminated.

- Dark corridor for movement of bats along the grounds of the site. Lighting should be directed downwards away from the treetops.
- All luminaires shall lack UV elements when manufactured and shall be LED
- A warm white spectrum (ideally <2700Kelvin) shall be adopted to reduce blue light component
- Luminaires shall feature peak wavelengths higher than 550nm
- Tree crowns shall remain unilluminated
- Planting shall provide areas of darkness suitable for bats to feed and commute through the site.

IMPACTS OF THE DEVELOPMENT AFTER MITIGATION

It is predicted that this development will have no direct impact upon the conservation status of bats. There will be a slight loss in feeding opportunities for bats due to vegetation loss and increased building density. Over time, this will reduce as vegetation develops.

Appendices

Figure 1 depicting the proposed development at Colpe Road

Figure 2 depicting bat activity within the site on the date of survey; 11th June 2019

Tables of bat activity

Spectrograms of bat signals recorded

Plates depicting the existing buildings of the site

Bat Conservation Ireland data from the surrounding area



Figure 1: Proposed development (left) and transect walked during the survey (right)

Bat activity within the site from sunset up to 23.30 hours



Legend

Green paddle-Common pipistrelle Blue paddle-Soprano pipistrelle Yellow paddle-Leisler's bat

Table 1 Below is a table of the bat activity noted and the time of encounter

DATE	TIME	AUTO ID	MANUAL ID	
11/06/2019	22:18:05	PIPI	PIPI – Green paddle	
11/06/2019	22:32:55	PIPI	PIPI– Green paddle	
11/06/2019	22:33:55	PIPY	PIPY – Blue paddle	
11/06/2019	22:36:28	PIPY	PIPY - Blue paddle	
11/06/2019	22:36:59	PIPY	PIPY - Blue paddle	
11/06/2019	22:37:30	PIPY	PIPY - Blue paddle	
11/06/2019	22:39:32	PIPY	PIPY - Blue paddle	
11/06/2019	22:40:03	PIPY	PIPY - Blue paddle	
11/06/2019	22:44:09	PIPY	PIPY - Blue paddle	
11/06/2019	22:56:54	NYLE	NYLE – Yellow paddle	
11/06/2019	22:58:56	PIPI	PIPI – Green paddle	
11/06/2019	22:59:27	PIPI	PIPI – Green paddle	
11/06/2019	23:01:29	PIPI	PIPI – Green paddle	
11/06/2019	23:05:04	PIPI	PIPI– Green paddle	
11/06/2019	23:05:35	PIPI	PIPI – Green paddle	
11/06/2019	23:06:07	PIPI	PIPI NYLE – Star in Yellow paddle	
11/06/2019	23:20:22	PIPY	PIPY - Blue paddle	
11/06/2019	23:23:55	PIPI	PIPI – Green paddle	
11/06/2019	23:24:26	PINA	PIPI – Green paddle	
11/06/2019	23:24:56	PIPI	PIPI – Green paddle	
11/06/2019	23:27:29	PIPI	PIPI – Green paddle	

Bat activity around the two-storey house fadjaent to the site rom sunset up to sunrise

DATE	TIME	HOUR	AUTO ID	MANUAL ID
11/06/2019	22:15:00	22	NYLE	NYLE
11/06/2019	22:32:00	22	PIPI	PIPI
11/06/2019	22:33:30	22	PIPI	PIPI
11/06/2019	22:34:30	22	PIPI	PIPI
11/06/2019	22:35:00	22	PIPI	PIPI
11/06/2019	22:49:11	22	PIPI	PIPI
11/06/2019	22:52:41	22	NYLE	NYLE
11/06/2019	22:53:11	22	PIPI	PIPI
11/06/2019	22:53:41	22	PIPI	PIPI
11/06/2019	22:54:41	22	PIPI	PIPI
11/06/2019	22:55:11	22	PIPI	PIPI
11/06/2019	22:55:41	22	PIPI	PIPI
11/06/2019	22:56:11	22	PIPI	PIPI
11/06/2019	22:57:41	22	NYLE	NYLE
11/06/2019	22:58:11	22	PLAUR	PIPI PIPY NYLE
11/06/2019	22:58:41	22	PIPI	NYLE
11/06/2019	22:59:11	22	PIPI	PIPI
11/06/2019	23:00:11	23	NYLE	NYLE
11/06/2019	23:00:41	23	NYLE	NYLE
11/06/2019	23:11:30	23	PIPI	PIPI NYLE
11/06/2019	23:17:30	23	NYLE	NYLE
11/06/2019	23:24:00	23	PIPI	PIPI
11/06/2019	23:27:30	23	PIPI	PIPI
11/06/2019	23:28:00	23	NYLE	NYLE
11/06/2019	23:29:00	23	PIPI	PIPI
11/06/2019	23:32:00	23	PIPY	PIPY
11/06/2019	23:32:30	23	PIPY	PIPY
11/06/2019	23:33:30	23	NYLE	NYLE
11/06/2019	23:42:00	23	NYLE	NYLE
11/06/2019	23:56:30	23	PIPY	PIPY
12/06/2019	00:00:00	0	PIPY	PIPY
12/06/2019	00:15:30	0	NYLE	NYLE
12/06/2019	00:20:00	0	PIPY	PIPY
12/06/2019	00:48:41	0	PIPI	PIPI
12/06/2019	00:49:41	0	NYLE	NYLE
12/06/2019	00:50:11	0	PIPY	PIPY
12/06/2019	00:55:11	0	PIPY	PIPY
12/06/2019	00:59:11	0	PIPY	PIPY
12/06/2019	01:06:41	1	PIPI	PIPI
12/06/2019	01:07:11	1	PIPI	PIPI
12/06/2019	01:08:11	1	PIPI	PIPI
12/06/2019	01:13:11	1	PIPY	PIPY
12/06/2019	01:37:52	1	PIPI	PIPI
12/06/2019	01:56:00	1	PIPI	PIPI

12/06/2019	02:09:00	2	PIPY	PIPY
12/06/2019	02:31:41	2	PIPI	PIPI
12/06/2019	02:54:00	2	PIPI	PIPI
12/06/2019	03:17:30	3	PIPI	PIPI
12/06/2019	03:48:00	3	PIPI	PIPI
12/06/2019	03:49:30	3	NoID	PIP
12/06/2019	03:50:00	3	PIPI	PIPI
12/06/2019	03:53:30	3	PIPI	PIPI
12/06/2019	03:58:30	3	PIPI	PIPI
12/06/2019	03:59:30	3	PIPI	PIPI
12/06/2019	04:00:30	4	PIPI	PIPI
12/06/2019	04:02:00	4	PIPI	PIPI
12/06/2019	04:02:30	4	PIPY	PIPY
12/06/2019	04:17:30	4	NoID	PIPI

