Ecological Impact Assessment

Proposed residential development at Stocking Lane, Ballyboden, Dublin 16

04 October 2021

NM Ecology Ltd - Consultant Ecologists
276 Harold's Grange Road, Dublin 16
Website: www.nmecology.com
Email: info@nmecology.com
Tel: 087-6839771

Executive Summary

This Ecological Impact Assessment has been prepared by NM Ecology Ltd on behalf of MacCabe Durney Barnes Ltd as part of a planning application for a residential development at Stocking Lane, Ballyboden, Dublin 16. The proposed development will involve the construction of 131 no. residential units, a shop, a creche, and associated paved areas, landscaping and services. The aim of this report is to identify, quantify and evaluate the impacts of the proposed development on ecosystems and their components, including designated sites, habitats, flora and fauna.

There are no designated sites within 2 km of the proposed development site, and no viable pathways for indirect impacts on distant designated sites.

Habitats within the proposed development site include dry meadow, treelines, hedgerows, mixed broadleaved / conifer woodland, and built surfaces. No rare or protected plant species were observed. The woodland, treeline and hedgerow habitats are considered to be of local importance, but the vast majority will be retained and incorporated into the development. A small number of trees will be removed, but they will be compensated by tree and shrub planting throughout the site, achieving a net positive effect. All other habitats are considered to be of negligible value, and their clearance will have no ecological impact. No invasive non-native species (e.g. Japanese knotweed) were recorded.

Surveys for protected fauna were undertaken during site inspections, and two bat surveys were carried out. 'Bat sensitive' lighting techniques have been incorporated into the lighting plan for the proposed development, which will avoid or minimise impacts on foraging or commuting bats. Impacts on breeding birds and small mammals will be avoided by scheduling site clearance works for the non-breeding season (October – February, inclusive), or by commissioning a pre-construction survey by a suitably-qualified ecologist.

Subject to the successful implementation of these measures, it is concluded that the proposed development will not cause any significant negative impacts on designated sites, habitats, legally protected species, or any other features of ecological importance.

Table of Contents

1 Introduction

1.1 Assessment brief

The aim of this Ecological Impact Assessment (EcIA) is to identify, quantify and evaluate the impacts of the proposed development on ecosystems and their components, including designated sites, habitats, flora and fauna. It has been prepared in accordance with the *Guidelines for Ecological Impact Assessment in the UK and Ireland* (2018), which are the primary resources used by members of the Chartered Institute of Ecology and Environmental Management (CIEEM).

The purpose of this document is to:

- Provide an objective and transparent assessment of the potential ecological impacts of the proposed development for all interested parties, including planning authorities and the general public
- Facilitate objective and transparent determination of the consequences of the development in terms of national, regional and local policies relevant to ecology
- Propose the steps will be taken to adhere to legal requirements relating to designated sites and legally protected species (CIEEM 2018).

Although the above guidelines provide a scientifically-rigorous framework for EcIA, some processes also rely on the professional judgement of an ecologist, including survey design, the valuation of ecological features, and the characterisation of impacts. An outline of the author's experience, training and accreditation is provided in the following section, which support his competency to make such judgements.

1.2 Statement of authority

All surveying and reporting was carried out by Nick Marchant, the principal ecologist of NM Ecology Ltd. He has an MSc in Ecosystem Conservation and Landscape Management from NUI Galway and a BSc in Environmental Science from Queens University Belfast. He is a member of the Chartered Institute of Ecology and Environmental Management, and operates in accordance with their code of professional conduct.

He has fourteen years of professional experience, including eleven years as an ecological consultant, one year as a local authority biodiversity officer, and two years managing an NGO in Indonesia. He provides ecological assessments for developments throughout Ireland and Northern Ireland, including wind farms, infrastructural projects (water pipelines, greenways, etc.), and a range of residential and commercial developments.

2 Methods

2.1 Scoping

The objective of this assessment was to identify any ecological features that would pose a constraint to the proposed development. It involved the following steps:

- Identification of designated sites within an appropriate zone of influence
- A walkover survey incorporating the following elements:
  - Classification and mapping of habitats
  - A search for rare or protected flora, and for any problematic non-native plant species (e.g. Japanese Knotweed)
  - A search for field signs of rare or protected fauna (e.g. badgers), and habitat suitability assessments for species that are shy, nocturnal or seasonal
- Valuation of ecological features, review of legal considerations, and selection of important ecological features
- Assessment of impacts on important ecological features and development of appropriate mitigation strategies

It is also noted that a bat survey was requested by SDCC Parks Department as part of a previous planning application at the site (planning reference SD18A/0225), and an updated survey was requested by the Planning Authority in its report on ABP.Ref.310111-21.

2.2 Data collection and walkover survey

A desk-based scoping study was carried out using data from the following sources:

- Plans and specifications for the proposed development
- Bedrock, soil, subsoil, ground water and surface water maps from the Geological Survey of Ireland webmapping service (www.gsi.ie/mapping.htm), and the Environmental Protection Agency web viewer (http://gis.epa.ie/EPAmaps/)
- Maps and details of designated sites from www.npws.ie

The following resources were used for the walkover surveys:

- Habitat surveys were carried out in accordance with the *Best Practice Guidance for Habitat Survey and Mapping* (Smith et al 2011), and using the classification system of *A Guide to the Habitats of Ireland* (Fossitt 2000)
- Flora were identified using *Webb's An Irish Flora* (8th edition, Parnell & Curtis 2012), *Grasses, Sedges Rushes and Ferns of the British Isles and northwestern Europe* (Rose 1989) and *The Vegetation Key to the British Flora* (Poland & Clement 2009). Nomenclature follows the plant crib of the Botanical Society of the British Isles (BSBI 2007). The abundance and extent of species is described using the DAFOR scale (Dominant, Abundant, Frequent, Occasional, Rare)

- Fauna surveys followed the methods outlined in the *Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes* (NRA 2006), with reference to other species-specific methods as appropriate.

Desktop data from internet resources was accessed between September 2018 and September 2021. Site inspections were carried out on the 17th and 21st of September 2018, and the 23rd of September 2021. The survey was carried out within the boundaries of the proposed development site, and adjacent lands were inspected visually within a 10 m buffer.

Bat survey

Survey methods were developed using *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Bat Conservation Trust, 3rd edition, 2016). Preliminary roost inspections of buildings and trees were undertaken in order to identify any features suitable for roosting bats. Emergence and re-entry surveys of the building adjoining the northern boundary of the site (which is not part of this planning application) were carried out at sunset on the 21st of September 2018, and at sunrise on the 22nd. An emergence survey was carried out at an oak tree on the western boundary on 13th August 2021. General activity surveys were carried out in the remainder on both the 21st of September 2018 and 13th August 2021. All surveys were carried out using an Anabat Walkabout detector (Titley Scientific Inc).

Surveys were carried during the peak season of bat activity, and in appropriate weather conditions; mild temperatures, light winds and no rain.

2.3 Valuation of ecological features

Based on the information collected during the desktop and walkover surveys, the ecologist assigns an ecological value to each feature based on its conservation status at different geographical scales (Table 1). 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.

Table 1: The six-level ecological valuation scheme used in the CIEEM guidelines (2016)

Ecological value	Geographical scale of importance
International	International or European scale
National	The Republic of Ireland or the island of Ireland
Regional	Leinster, and/or the east coast of Ireland
County	County Dublin
Local	Ballyboden and associated suburban areas
Negligible	None, the feature is common and widespread

It is accepted that any development will have an impact on the receiving environment, but the significance of the impact will depend on the value of the ecological features that would be affected. The following is outlined in the CIEEM guidelines: "*one of the key challenges in an EcIA is to decide which ecological features (habitats, species, ecosystems and their functions/processes) are important and should be subject to detailed assessment. Such ecological features will be those that are considered to be important and potentially affected by the project. It is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to impacts from the development, and that will remain viable and sustainable."*

For the purposes of this report we have only assessed impacts on ecological features that are of local value or higher (refer to Table 1), or those that receive legal protection. These features are termed 'important ecological features' and are listed in Section 4.6. Impacts on features of negligible ecological value (e.g. amenity grasslands) are not considered to be significant, so they are not included in the impact assessment.

2.4 Ecological Impact Assessment

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 (2018) guidelines. Depending on the type of impact and the sensitivities of the important ecological feature, the ecologist may determine that the impact would have a 'significant effect'. The following definitions are provided in the CIEEM guidelines: "*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 EcIA, 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 will be taken to avoid, minimise or compensate for impacts (where possible). Based on these measures, the impact assessment will be repeated, and any residual impacts of the proposed development will be discussed.

3 Development proposals

3.1 Characteristics of the proposed development

The proposed development will involve the construction of 131 no. residential units in a range of designs, including apartments and semi-detached houses. Access to the site will be from Stocking Lane on the western boundary of the site, and will lead to internal roads, cycle / pedestrian paths, on-street parking areas, and an underground car park. Access will also be provided to an existing residence that adjoins the northern boundary of the site.

Public open spaces will be created throughout the site, and many of the houses will have private gardens. Existing mature trees will be retained and incorporated into the development, and new trees, shrubs and other vegetation will be planted throughout the site. A lighting plan has been developed; it is discussed in Section 5.3. Foul water and surface water will be discharged to local authority sewers on Stocking Lane.

3.2 Other developments in the area (potential in-combination effects)

The proposed development site is located in a suburban setting in Ballyboden. It is included in zone RES: *Existing Residential* of the South Dublin County Development Plan 2016 – 2022, for which the planning objective is "*to protect and/or improve residential amenity*". The surrounding area is characterised by long-established housing estates, and it is not subject to significant development pressure.

Live and recently-approved planning applications in the vicinity of the site were reviewed on the online planning records of South Dublin County Council. The following applications were identified:

- Planning permission was granted to Irish Water in 2016 (planning reference SD16A/0097) for the replacement of an existing open reservoir with a closed reservoir at a site to the west of the proposed development site, on the opposite side of Stocking Lane. At the time of writing in September 2021 it is understood that the development is complete and operational.
- Applications have been made for a small residential development (e.g. planning references SD21A/0194 and SD19A/0058) located immediately to the north-west of the site, but to date all planning applications have been refused
- Permission was granted to Broadcrest Ltd in 2015 (SD15A/0017) for the construction of 317 residential units at a site approx. 50 m north-west of the proposed development. Several planning applications were subsequently submitted for minor alterations to the design. At the time of writing in September 2021 this development is complete.
- A planning application (SD21A/0202) was submitted in 2021 for a development of 11 no. residential units in the grounds of Brookwood House to the north of the site. At the time of writing, no decision has been made on this application.

All other nearby planning applications were for small-scale developments such as residential extensions.

In summary, one live planning application was identified that could potentially be constructed at the same time as the proposed development, if both were granted planning permission. The potential for cumulative impacts is addressed in the impact assessment.

4 The Receiving Environment

4.1 Environmental setting

The site consists of a single large field of dry meadow, which is cut periodically for hay. Wire fencing around the field suggests that it was formerly used as a pasture for horses or cattle, but there was no signs of any such management in recent years. An occupied residence is located just outside the northern boundary of the site; this residence will not be modified, but access will be provided as part of the proposed development.

The surrounding area is suburban in character, with existing housing estates to the south, east and north-west of the site. There are some mature houses and gardens to the north of the site, including Rockwood Lodge, which is a protected structure. Stocking Lane forms the western boundary of the site, and an open reservoir – Ballyboden Waterworks – is located to the west of the site on the opposite site of Stocking Lane.

Geology and soils

The underlying bedrock is metamorphic (dark slate-schist, quartzite & coticule), and is a locally-important aquifer. Subsoils are limestone till, and soils are deep and well-drained.

Hydrology

The closest watercourse is the Owendoher River, which is located approx. 80 m from the eastern boundary of the proposed development site. It flows from south to north, and merges with the Kilmashogue / Whitechurch Stream approx. 2 km downstream, before joining the River Dodder a further 0.9 km downstream. The Dodder flows north-east and merges with the River Liffey estuary approx. 9 km downstream, and subsequently reaches the coastal waters of Dublin Bay a further 5 km to the east. The Owendoher River is currently of good status (Water Framework Directive Status Assessments 2013-2018), and the River Dodder is of moderate status. The Liffey estuary and the coastal waters of Dublin Bay are of good status.

4.2 Designated sites

There are no designated sites within 2km[1] of the proposed development site (Figure 1), nor any sites within 10km along downstream watercourses. The closest designated site is the Dodder Valley pNHA, but it is located upstream in the Dodder catchment, so there is no potential pathway between the sites. Therefore, no designated sites are considered to be at risk of impacts from the proposed development.

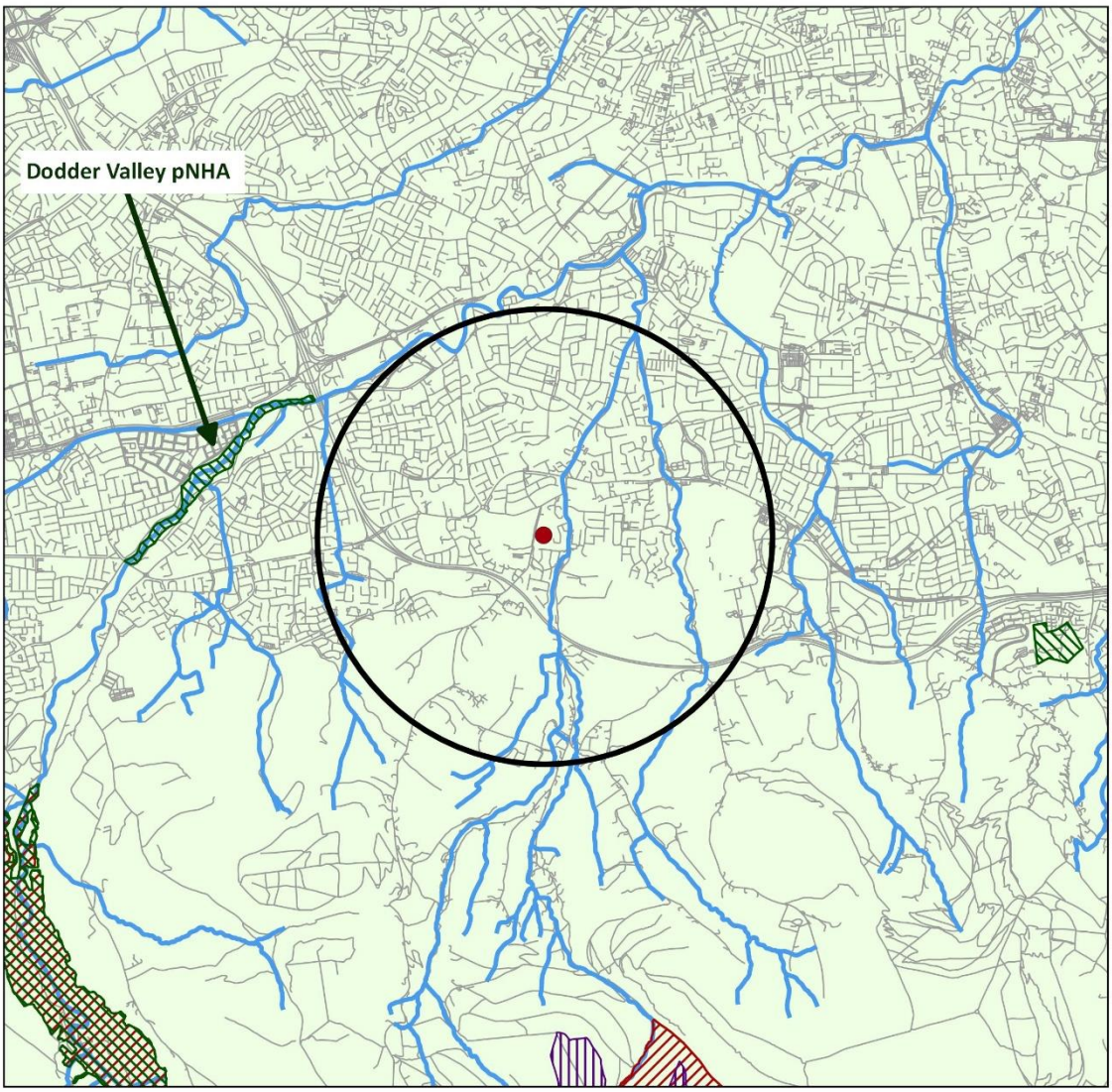
[1] For the purposes of this assessment we considered indirect impacts on designated sites within a potential zone of influence of 2km. This distance is considered to be proportionate to the relatively small scale of the proposed development and its suburban setting.

Figure 1	Designated sites
Location	Stocking Lane, Ballyboden
Applicant	MacCabe Durney Barnes Ltd
Date	09-07-2019

NM Ecology Ltd - Ecological Consultants
Website: www.nmecology.com
Email: info@nmecology.com
Tel: 087-6839771

Site location
- Proposed development site
- Buffer zone (2km)
- Roads
- Watercourses

Designated sites
- Special Areas of Conservation
- Special Protection Areas
- Natural Heritage Areas



NM ECOLOGY

0 1 2 3 4 5 km

4.3 Phase 1 Habitat Survey

Habitats within the proposed development site were classified using *A Guide to Habitats in Ireland* (Fossitt 2000). A habitat map is provided in Figure 2.

Mixed broadleaved / conifer woodland (WD2)

There are a number of mature trees along the western boundary of the proposed development site alongside Stocking Lane. Most trees are non-native, with a number of large Monterey Cyprus *Cupressus macrocarpa*, in addition to hybrid black poplars *Populus nigra*, sycamore *Acer pseudoplatanus*, and individual pedunculate oak *Quercus robur*, horse chestnut *Aesculus hippocastanum*, ash *Fraxinus excelsior* and beech *Fagus sylvatica*. Many saplings and seedlings of English elm *Ulmus procera* were observed in the south-western corner of the site. There was no ground flora of note in the woodland, although some trees were overhanging dry meadow vegetation (see below).

Most of the trees in this habitat are non-native, but the woodland forms part of a network of similar habitat along Stocking Lane and throughout the wider area, which is of value as habitat for birds and other fauna. On this basis, the woodland is considered to be of local ecological value.

Treelines and hedgerows (WL2 / WL1)

The northern, eastern and southern boundaries of the proposed development site are lined by a near-continuous strip of vegetation, comprising a mixture of treelines and hedgerows. Several areas have a combination of both habitats, so they are described in here in combination.

The treelines have a mixture of native and non-native species, particularly poplars (*Populus nigra* and *P. alba*), ash, beech and sycamore, and some occasional Norway maple *Acer platanoides* and silver birch *Betula pendula*. In some areas the understorey is a characteristic of hedgerow, but there was no other ground flora of note.

Hedgerows consisted of dense bramble *Rubus fruticosus* ag. and hawthorn *Crataegus monogyna*, while some of the gardens of adjoining properties are lined with non-native species such as *Griselenia* sp. There is a section of Snowberry *Symphoricarpos albus* hedge along the eastern boundary of the site. In many areas the hedgerow is bordered by dense growth of agricultural weeds, notably nettles *Urtica dioica*, creeping thistle *Cirsium arvense* and common ragwort *Senecio jacobaea*.

These habitats have low species diversity and consist mainly of non-native species. However, as noted above, they form part of a network of linear woodland along Stocking Lane and throughout the wider area, so they have value as habitat for birds and other fauna. On this basis, all treelines and hedgerows are considered to be of local ecological value.

Dry meadow (GS2)

The majority of the field has been in low-intensity agricultural use for a number of years, and currently appears to be used for occasional hay production (not cut every year). There is no evidence of intensive management in recent years (e.g. re-seeding or fertilisation) so the habitat is described here as a semi-natural meadow habitat rather than an improved agricultural grassland.

Yorkshire-fog *Holcus lanatus* and false oat-grass *Arrhenatherum elatius* are abundant, ribwort plantain *Plantago lanceolata* is frequent, and a number of agricultural forbs are occasional, including creeping bent *Agrostis stolonifera*, white clover *Trifolium repens*, common mouse-ear *Cerastium fontanum*, common chickweed *Stellaria media*, creeping buttercup *Ranunculus repens*, dandelion *Taraxacum officinale* and ragwort *Senecio jacobaea*.

The margins of the field are not mowed, and support some additional species that are intolerant of mowing. Cock's-foot *Dactylis glomerata* is dominant, and occasional species include field horsetail *Equisetum arvense*, common hogweed *Heracleum sphondylium*, nettle *Urtica dioica*, bush vetch *Vicia sepium*, creeping thistle *Cirsium arvense* and hairy sedge *Carex hirta*.

The species richness of this habitat is relatively high for a suburban site, but all plant species are common and widespread throughout Dublin city, so it is considered to be of negligible ecological value.

Buildings and artificial surfaces (BL3)

This habitat refers to the driveway of the existing residence, which is located in the north-west of the site. It is unvegetated, and thus of negligible ecological value.

Rare or protected flora

No rare or protected plants were encountered during field surveys.

Invasive plant species

No invasive species (as listed on the third schedule of the *European Communities (Birds and Natural Habitats) Regulations 2011*) were recorded at the proposed development site.

Figure 2	Habitat Map
Location	Stocking Lane, Ballyboden
Applicant	MacCabe Durney Barnes Ltd
Date	08-07-2019

NM Ecology Ltd - Ecological Consultants
Website: www.nmecology.com
Email: info@nmecology.com
Tel: 087-6839771

Site location
Site boundary

Habitats
- WD2 Mixed broadleaved woodland
- WL1 Hedgerow
- WL2 Treeline
- GS2 Dry meadow
- BL3 Built land

NM ECOLOGY

0 20 40 60 80 100 m

4.4 Surveys for protected / priority fauna

Bats

Potential roost features

Two of the trees have features suitable for roosting bats: a mature oak on the western boundary, and a Norwegian maple in the south-western boundary. Both had small knotholes of suitable size for individual bats, but they did not have crevices or cavities that would be suitable for larger numbers of bats (e.g. a maternity roost). Therefore, both are considered to have low suitability for roosting bats, based on the classification system in the *Bat Survey: Good Practice Guidelines* document (Collins, 2016).

There are no buildings within the site boundary, but an existing residence adjoins the northern boundary of the site, for which a new access road will be provided as part of the proposed development. It is a two-storey structure with a high-pitched tile roof. There may be some crevices around the eaves and under roof tiles, but no prominent features were observed. Therefore, the building is considered to have low suitability for roosting bats.

In the wider area, Rockwood Lodge (a two-storey Georgian-style house) was identified as a potential bat roost. It is located approx. 20 – 30 m to the north of the site. A bat survey of the building and grounds was carried out in September 2020 as part of a planning application (refer to Section 3.2). One common pipistrelle was found to be roosting within the structure, and three other species of bat were recorded foraging within the site.

Results of bat surveys (2018)

Emergence and re-entry surveys of the residence adjoining the northern boundary of the site were carried out in September 2018. Weather conditions were ideal, with mild temperatures and no wind or rain. No bats were observed emerging from the structure at dusk or entering the structure at dawn.

During the emergence survey, bats were recorded soon after sunset. Leisler's bats were observed feeding continually on the western boundary of the site around the tops of trees above Stocking Lane. Common pipistrelles were observed around the hedgerow to the north and east of the residence and occasionally in the garden. This pattern was consistent throughout the survey, with a moderate level of activity. The site was relatively dark, with little light spill from the surrounding roads or residential areas.

Following the completion of the emergence survey, a transect survey was undertaken. The route covered the boundaries of the site and the centre of the field, and it was repeated three times. A map of all bat records is shown in Figure 3, although it should be noted that it also includes the results of the emergence and re-entry surveys, so there was much higher survey effort in the north of the site around the residence. Activity during the transect survey

was relatively low: some Leisler's bats were recorded overhead, and a single common pipistrelle was recorded on the eastern boundary, but no other bat activity was recorded.

Activity during the dawn survey was significantly lower than during the dusk survey. A common pipistrelle was recorded social calling near the western boundary of the site, but it only passed through the site momentarily. Some soprano pipistrelles were recorded passing overhead, but not in the vicinity of the house. Leisler's bats were recorded feeding on the western boundary of the site for approx. 20 minutes immediately prior to sunrise, similar to their behaviour during the emergence survey. However, they did not roost in the vicinity of the site.

Results of bat surveys (2021)

Under CIEEM guidance (CIEEM 2019) it is recommended that surveys are repeated if more than three years has elapsed. We consider the 2018 survey data to still be valid, as there has been no change in the condition of the site or the conservation status of bats in the intervening three years. Nonetheless, the bat survey was repeated in 2021 in the interests of good practice.

It was not considered necessary to re-survey the residence on the northern boundary of the site, because it has low suitability for bats, it is located outside the site boundary, and because there had been no change to the residence since 2018 (when no bat roost was recorded). Instead, an emergence survey was carried out at the mature oak tree on the western boundary of the site, and an activity survey was carried out along the remainder of the western boundary.

No bats were observed emerging from the mature oak tree on the western boundary. Some Leisler's bats were detected soon after sunset, and foraged around the canopies of the woodland on the western boundary of the site for approx. 30 – 40 minutes. Several common pipistrelles also fed consistently around the canopies of the trees, starting approx. 20 – 30 minutes after sunset and continuing for the remainder of the survey. Occasional activity of soprano pipistrelle and Daubenton's bats was recorded during the survey.

The majority of bat feeding activity was around the canopies of mature trees, both conifers and broadleaf species. The woodland on the western site boundary forms a continuous line of vegetation along the sides of Stocking Lane, with a connection to the open reservoir to the west of the site. This complex of woodland and freshwater habitats appears to be a locally-important feeding area for bats.

Figure 3	Bat survey
Location	Stocking Lane, Ballyboden
Applicant	MacCabe Durney Barnes Ltd
Date	08-07-2019

NM Ecology Ltd - Ecological Consultants
Website: www.nmecology.com
Email: info@nmecology.com
Tel: 087-6839771

Site location
Site boundary

Bat passes
- Leisler's bat
- Common pipistrelle
- Soprano pipistrelle

NM ECOLOGY

0 20 40 60 80 100 m

Figure 4	Bat activity survey 2021
Location	Stocking Lane, Ballyboden
Applicant	MacCabe Durney Barnes Ltd
Date	16-09-2021

NM Ecology Ltd - Ecological Consultants
Website: www.nmecology.com
Email: info@nmecology.com
Tel: 087-6839771

Bat activity
- Leisler's bat
- Common pipistrelle
- Soprano pipistrelle
- Daubenton's bat

NM ECOLOGY

0 10 20 30 40 50 m

Evaluation

The site is considered to have negligible value for roosting bats, as no roosts were discovered in the mature oak tree or the adjoining residence, and all have low suitability for roosting bats.

The site is used as a foraging and commuting area by four species: Leisler's bat, common pipistrelle, soprano pipistrelle and Daubenton's bats. The mature woodland / treeline along the western boundary of the site appears to be a locally-important feeding area, as part of a larger complex of woodland and freshwater habitats outside the site boundary. Linear vegetation in other parts of the proposed development site is used occasionally. Overall, the site is considered to have local value for foraging and commuting bats.

Birds

A number of common garden birds were recorded during the surveys, including wren, robin, blackbird, blue tit, magpie, jackdaw, woodpigeon and chaffinch. All are of good conservation status in Ireland.

Suburban areas rarely support significant populations of endangered birds, so the site is considered to be of negligible value. However, all birds (including nests, eggs and chicks) receive protection under the Wildlife Act 1976 (as amended).

Terrestrial mammals

No mammals were observed during field surveys, nor any characteristic field signs of protected fauna (e.g. badger setts, pine marten scats). There are records on the online databases of the National Biodiversity Data Centre (2km grid square O12l) for fox, grey squirrel, Leisler's bat and common pipistrelle bat. Neither fox nor grey squirrel receives any legal protection, so neither is considered to be an 'important ecological feature' for the purposes of this assessment.

The hedgerows and marginal vegetation would be suitable for some small mammals, including hedgehog, stoat and pygmy shrew. All three species are protected under the Wildlife Act 1976 (as amended). These species are largely nocturnal, and they do not have characteristic field signs, so it is very difficult to establish their presence during walkover surveys. Therefore, on a precautionary basis it will be assumed that one or more of these species will be present, so they are considered to be 'important ecological features'. Nonetheless, it is unlikely that any of these species would use the site in significant numbers, so it is considered to be of negligible value for all mammal species.

Reptiles and amphibians

No reptiles or amphibians were observed during the site survey. Considering the lack of suitable breeding sites for amphibians, and that all habitats within the site boundary are

well-represented in the surrounding landscape, the proposed development site is considered to be of negligible value for these taxa.

Terrestrial invertebrates

The habitats within the proposed development site are common in urban landscapes in Ireland, so the site is considered to be of negligible value for invertebrates.

4.5 Potential limitations and information gaps

The walkover surveys were carried out in September 2018, which is an ideal time for surveys of most flora and fauna, including bats. Therefore, the assessment does not have any limitations or information gaps.

4.6 Identification of important ecological features

Table 3 provides a summary of all ecological features identified on the site, including their valuation and legal / conservation status. For the purposes of this impact assessment, any features that are of local ecological value, or that receive legal protection, are considered to be 'important ecological features', and will be addressed in the impact assessment.

Table 3: Identification of 'Important Ecological Features'

Ecological feature	Valuation	Legal status	Important feature?
Designated sites	National	WA	No
Mixed broadleaved / conifer woodland (WD2)	Local	-	Yes
Treelines (WL2) / Hedgerows (WL1)	Local	-	Yes
Dry meadow (GS2)	Negligible	-	No
Buildings and artificial surfaces (BL3)	Negligible	-	No
Bats	Local	HR, WA	Yes
Birds	Negligible	WA	Yes
Small mammals (e.g. hedgehog, stoat, pygmy shrew)	Negligible	WA	Yes
Other terrestrial mammals	Negligible	-	No
Reptiles and amphibians	Negligible	-	No
Invertebrates	Negligible	-	No

** HR – European Communities (Birds and Natural Habitats) Regulations 2011 (as amended); WA - protected under Section 19 or 20 of the Wildlife Act 1976 (as amended)*

In summary, the important ecological features identified on the proposed development site are the woodland, treeline and hedgerow habitats, bats (specifically their foraging / commuting habitat), birds and small mammals.

5 Predicted Impacts of the Proposed Development

5.1 Habitat loss during site clearance works (construction phase)

Almost all of the woodland, treelines and hedgerows around the boundary of the site will be retained and incorporated into the new development. Some trees at the site entrance will be removed to provide sightlines, but this will only involve a small number of trees, so it will not have a significant ecological impact.

The loss of these trees will be more than compensated by the landscaping scheme for the proposed development, which will involve extensive tree-planting in public areas and along site boundaries. Many of the properties will have private gardens, which will subsequently be planted by the owners. Therefore, the proposed development is expected to have a positive effect on the woodland, treeline and hedgerow habitats within the site and the surrounding area.

5.2 Impact on nesting birds during site clearance works (construction phase)

Most of the woodland, treeline and hedgerow habitats will be retained, but it will be necessary to remove some trees at the site entrance, and to trim or prune other features in the remainder of the site. It is possible that birds will nest in some of these trees, and it is possible that some small mammals will breed in hedgerows and other dense vegetation.

If trees and shrubs are cut during the bird nesting season (usually between March and August, inclusive), it is possible that active nests could be destroyed. The breeding season for small mammals is approximately the same. The killing of any birds or small mammals, or the disturbance of their breeding / resting places would constitute an offence under the *Wildlife Act* 1976 (as amended).

5.3 Impacts on bat foraging areas and commuting routes

Lighting will be installed for safety reasons along internal roads and in public areas. Some types of light can attract insects, which in turn can attract bats, but in general bats avoid any areas with artificial lighting. Therefore, the illumination of previously-unlit areas can cause displacement of bats, particularly if lights are directed towards trees and hedgerows.

A lighting plan has been developed for the proposed development, with input from NM Ecology Ltd. The plan includes dark zones along the western, north-eastern and south-eastern boundaries of the site, in which bat-sensitive lighting will be provided. On the

western boundary, this will include the use of zero-UV LEDs with a warm tone (typically 2,700 K), mounted on lighting poles of 5 – 6 m height, with luminaires that prevent light spill above the horizontal. This will ensure that the canopies of mature trees (where bats were feeding in greatest numbers) will not be illuminated, and thus that there is no impact on the bat feeding area. In the north-east and south-east of the site, external lighting in the rear gardens of new properties will have timers and motion sensors to ensure that lighting is provided only when necessary.

In combination, these measures will provide a dark corridor around the western, northern and eastern sections of the site. As a result, there will be only a slight negative effect on bat foraging habitat within the site.

5.4 Potential in-combination impacts with other developments (all phases)

As noted in Section 3.2, there is a live planning application (SD21A/0202) for a development of 11 no. residential units in the grounds of Brookwood House to the north of the site. There could potentially be cumulative impacts on bat foraging / commuting habitat due to lighting, particularly for the residential development to the north-west of the site. However, the surrounding area is broadly similar to the proposed development site, and would be of no more than local ecological value. Therefore, it is not expected that cumulative impacts would increase the significance of any potential impacts on foraging / commuting bats.

6 Proposed mitigation measures

6.1 Protection of birds and small mammals during site clearance works

Under Sections 22 and 23 of the *Wildlife Act* 1976 (as amended), it is an offence to kill or injure a protected bird or mammal, or to disturb their breeding / resting places. Most birds nest between March and August (inclusive), and the breeding season for most small mammals is similar. Therefore, it is strongly recommended that all tree felling and site clearance works are carried out between September and February (inclusive), i.e. outside the nesting season. If this is not possible, an ecologist will survey the affected areas in advance in order to determine whether any breeding birds or mammals are present. If any are encountered, vegetation clearance will be delayed until the breeding has been completed, i.e. chicks have fledged and a nest has been abandoned.

All retained trees and hedgerows will be protected during construction works, as outlined in the Tree Protection Plan and Arboricultural Implications Assessment.

7 Residual Impacts

A small number of trees will be removed during site clearance, but this will be compensated by the planting of new trees and shrubs as part of the landscaping scheme of the proposed development. Overall, this is expected to have a positive effect on the woodland, treeline and hedgerow habitats.

The lighting plan includes bat-sensitive lighting techniques, which will minimise effects on foraging and commuting bats. As a result, there will be only a slight negative effect on bat foraging habitat within the site.

Any removal of trees or shrubs would take place outside the breeding season of birds and small mammals, or the area would be surveyed by an ecologist to confirm that no nesting birds or breeding mammals were present. As a result, there would be no impact on birds or small mammals, and no legal offence under the *Wildlife Act 1976* (as amended).

Subject to the successful implementation of these measures, we conclude that the proposed development will not cause any significant negative impacts on designated sites, habitats, legally protected species, or any other features of ecological importance.

8 References

Botanical Society of the British Isles, 2007. *Plant species nomenclature checklist.* Botanical Society of the British Isles, Southampton.

Chartered Institute of Ecology and Environmental Management, 2013. *Guidelines for Preliminary Ecological Appraisal*. C.I.E.E.M., Hampshire, England.

Chartered Institute of Ecology and Environmental Management, 2018. *Guidelines for Ecological Impact Assessment in the U.K and Ireland: Terrestrial, Freshwater and Coastal* (2nd Edition). C.I.E.E.M., Hampshire, England.

CIEEM 2019. Advice note on the lifespan of ecological reports & surveys. Available online at https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf

Collins, J. (ed.), 2016. *Bat surveys for professional ecologists: good practice guidelines* (3rd edn). The Bat Conservation Trust, London.

European Commission, 2002. *Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. Official Publications of the European Communities, Luxembourg.

Marnell, F., Kingston, N., Looney, D., 2009. *Ireland Red List No. 3 – Terrestrial Mammals*. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

Perrin, P.M. & Daly, O.H., 2010. *A provisional inventory of ancient and long-established woodland in Ireland. Irish Wildlife Manuals, No. 46*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland

Poland, J., Clement, E., 2009. *The Vegetation Key to the British Flora*. John Poland and the Botanical Society of the British Isles, Southampton.

Rose, F., 1989. *Grasses, Sedges Rushes and Ferns of the British Isles and northwestern Europe*. Penguin Books Ltd, London.

Rose, F., 2006. *The Wildflower Key*. Penguin Books Ltd, London.

Stace, C., 2010. New Flora of the British Isles, 3rd Edition. Cambridge University Press

Stone, E.L. (2013) *Bats and lighting: Overview of current evidence and mitigation guidance*. University of Bristol