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# Bat Report

Walkers Lane, Annacotty, Limerick

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### **Executive Summary**

This bat survey report has been prepared by NM Ecology Ltd on behalf of Regal Park Developments (the applicant), as part of a planning application for a proposed development at Annacotty in the east of Limerick City. The report provides the results of a bat survey of the proposed development site, and includes an assessment of potential impacts on roosting, feeding and commuting bats.

A mature ash tree on the northern boundary of the site is used as a day roost / satellite roost by a single common pipistrelle bat. The tree will be retained and incorporated into the new development, but there is a risk that a damaged limb (the location of the roost) may need to be removed for safety reasons. An ecologist will liaise with a tree surgeon prior to any works on this tree, and will determine whether it will be possible to retain the roosting location. If not, an alternative roosting space will be provided, and measures will be taken to ensure the protection of the bat during works.

The proposed development site does not appear to be an important feeding area or commuting route for bats. Nonetheless, potential indirect impacts on roosting, feeding or commuting bats could occur if there was an increase in artificial lighting around the roost or the vegetation around the boundary of the property. In response, a range of bat-sensitive lighting techniques will be implemented during the construction and operation of the development, which will ensure that lighting is used only where required, and that it does not adversely affect the important areas for bats.

Subject to these measures, it can be concluded that the proposed development will not cause any significant residual impacts on bats.

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## 1 Introduction

### 1.1 Background to the assessment

As part of a planning application for the proposed development, NM Ecology Ltd were commissioned to carry out a bat survey of the site. The focus of the survey was the treelines and hedgerows around the margins of the site, particularly the mature trees on the northern site boundary. Based on the results, the potential impacts of the proposed development on bat species are assessed in Section 3 of this report.

### 1.2 Conservation and legal status of bats in Ireland

Bats are relatively common and widespread throughout Ireland, particularly in areas with woodland and water. In the red list of terrestrial mammal species (Marnell et al 2009), all pipistrelle species, *Myotis* species and brown long-eared bat are listed as 'least concern' in the island of Ireland, which means that they are "*widespread and common*" and "*do not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened status*" under the IUCN assessment criteria. Leisler's bat is listed as 'near-threatened' because Ireland is an international stronghold for this species, but in practice this species is common and widespread throughout Ireland and the Irish population is considered to be stable, so there is no risk of imminent population declines.

Nonetheless, in recognition of their vulnerability to development, all bats are afforded strict legal protection throughout Europe. Under the *Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995* (as amended) it is an offence to kill any protected animal, deliberately disturb them during breeding, rearing, hibernation or migration, or to damage / destroy a breeding site or resting place. Bats are also protected by the *Wildlife Act 1976* (as amended).

### 1.3 Statement of authority

All surveying and reporting was carried out by Nick Marchant, the principal ecologist of NM Ecology Ltd. He has eleven years of professional experience, including eight years as an ecological consultant, one year as a local authority biodiversity officer, and two years managing an NGO in Indonesia. 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 regularly carries out bat surveys for projects throughout Ireland and Northern Ireland, and has completed training courses in *Bat Identification and Survey* (Bat Conservation Ireland, 2008), *Bat mitigation for construction projects* (Bat Conservation Trust, 2014) and *Bat handling, mist netting and harp trapping* (Bat Training UK, 2014).

#### 1.4 Baseline description of the site

The site is located in a suburban setting in the east of Limerick City. It currently contains a field of unmanaged grassland, with treelines and hedgerows along some of the boundaries. The site is bound to the north by the R445 Dublin Road, to the east by a housing estate, to the south by a local road and low-density housing, and to the west by the L1165 road and open grassland. The site and its immediate surroundings are shown in Figure 1 below.



**Figure 1. Aerial photograph of the proposed development site (shown in red) and the surrounding area. 'Bird's-eye' aerial imagery obtained from Bing Maps, 2018**

#### 1.5 Description of the proposed development

The proposed development will comprise a mixture of detached houses, duplex units and apartments, with a total of 137 residential units. The primary access point will be from the southern boundary of the site, which will lead to internal roads, on-street parking and underground car-parks beneath the apartment buildings.

Public open space will be provided in the north, south and west of the site, and the houses will have private gardens. A mature treeline along the northern boundary will be retained and incorporated into the landscaping scheme. Foul water will be discharged to a local authority foul sewer on the Dublin Road. Surface water will be channelled through a bypass separator, collected in an attenuation tank, and discharged to a local authority storm drain on the Dublin Road.

## 1.6 Methods

### Bat surveying techniques

Survey methods were developed using *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Bat Conservation Trust, 3<sup>rd</sup> edition, 2016).

Preliminary ground-level roost assessments were carried out for all mature trees to assess their suitability for roosting bats, using the methods in Section 6.2 of the BCT Guidelines. An emergence and re-entry survey of a mature tree was carried out on the 15<sup>th</sup> and 16<sup>th</sup> of August 2018, using an Anabat Walkabout detector. Following the emergence survey, a transect survey of the remainder of the site was carried out, which involved a continuous walk at a slow pace around the hedgerows and treelines at the edges of the site, repeated four times.

The survey was carried during the peak season of bat activity, and coincided with the maternity period, i.e. the birth and raising of offspring. Weather conditions at the time of survey were suitable for bats, with mild temperatures, light winds and no rain.

### Assessment of potential impacts

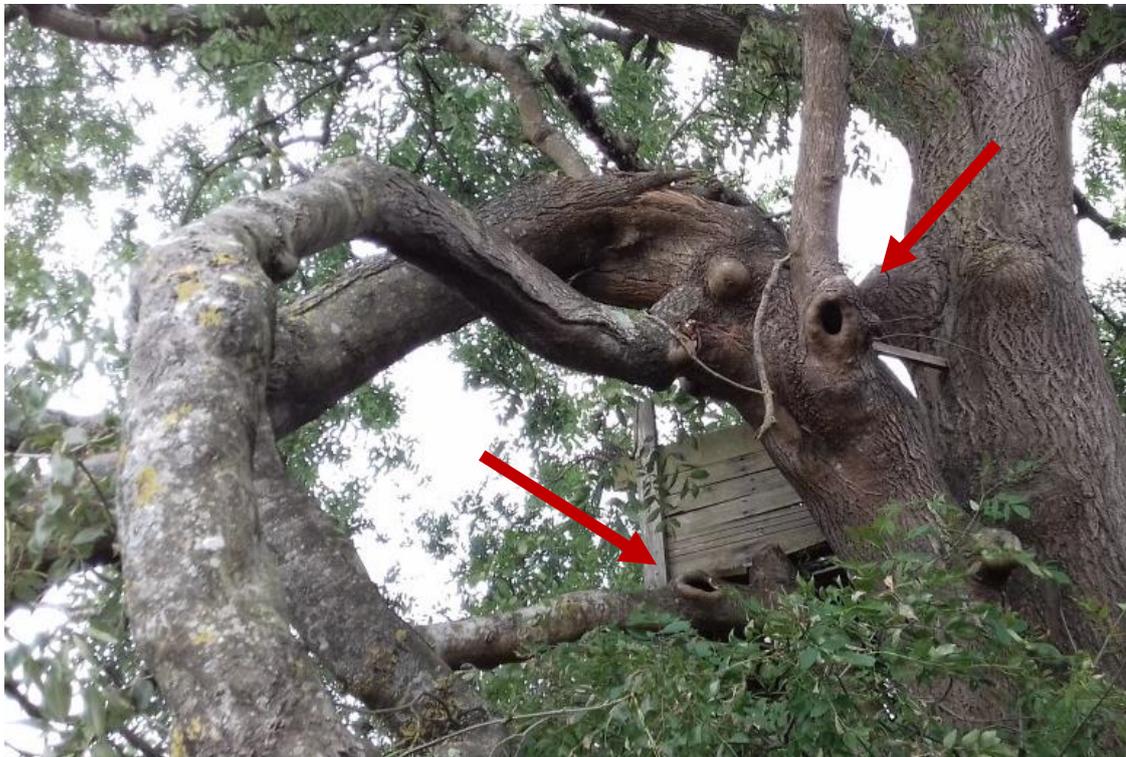
Impacts are assessed in accordance with *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2016), which is the primary resource used by members of the Chartered Institute of Ecology and Environmental Management (CIEEM). Based on information collected during desktop and walkover surveys, the ecologist assigns an ecological value to each feature based on its conservation status at different geographical scales. For example, a site may be of national ecological value for a given species if it supports a significant proportion (e.g. 5%) of the total national population of that species. Potential direct, indirect or cumulative impacts on ecological features can be described in relation to their magnitude, extent, duration, reversibility and timing/frequency, as outlined in the CIEEM (2016) guidelines.

Depending on the type of impact and the sensitivities of an important ecological feature, the ecologist may determine that there would be a 'significant effect'. The following definitions are provided in the CIEEM: "A *significant effect* is simply an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project". "For the purpose of EclA, a '*significant negative effect*' is an effect that undermines biodiversity conservation objectives for 'important ecological features', or for biodiversity in general.". Where significant impacts are identified, measures will be taken to avoid, minimise or compensate for impacts.

## 2 Survey Results

### 2.1 Preliminary roost inspection of mature trees

A mature Ash tree is located at the eastern end of the northern tree-line. In the tree report it is numbered 0756, and is listed as a veteran tree of class A2 / A3. It is approx. 25 – 30 m in height, and has a trunk diameter of > 1 m. Two of the lower limbs have large knotholes that lead to open cavities (Figure 2); it was not possible to inspect the interior of these holes from ground level, but it is likely that one or both would provide roosting opportunities for bats. One of the lower limbs has recently collapsed, leaving a series of cracks and folds in the fractured surface that could be used by bats. Overall, this tree is considered to have moderate suitability for roosting bats.



**Figure 2. Photograph showing cavities on a lower limb of the mature ash tree**

A second semi-mature ash tree is located near the eastern end of the northern treeline. It is approx. 20 – 25 m in height, and has a trunk diameter of approx. 0.8 m. It has a single knothole and small cavity on the trunk, which is considered to have low suitability for roosting bats.

All other trees are relatively small and do not have any crevices or cavities, so they are considered to have negligible suitability for roosting bats. There are no buildings or other built structures within the proposed development site.

## 2.2 Emergence / re-entry survey

The survey was carried out on the 15<sup>th</sup> and 16<sup>th</sup> of August 2018. Weather conditions were suitable, with light winds, little rain (a brief period of drizzle at dusk), and mild temperatures (approx. 12 – 16 °C). Sunset was at 21:00 and sunrise was at 06:18, so the emergence survey took place from 20:50 - 22:30, the transect survey from 22:30 – 23:30, and the re-entry survey from 04:30 – 06:30 the following morning. The emergence and re-entry surveys were carried out a location that provided a good view of both of the mature ash trees described above.

### Emergence survey

The first bat pass – a Leisler's bat – was recorded at 21:23. It was not observed, and is thought to have been flying overhead at a height of at least 20 m. Common pipistrelle bats were recorded at 21:34 and 21:42, both of which were close to the observer, and it was possible that they emerged from one of the mature trees, but this could not be confirmed with certainty due to the low light levels. Two other Leisler's bats were recorded at this location during the emergence survey, both of which were thought to be flying overhead.

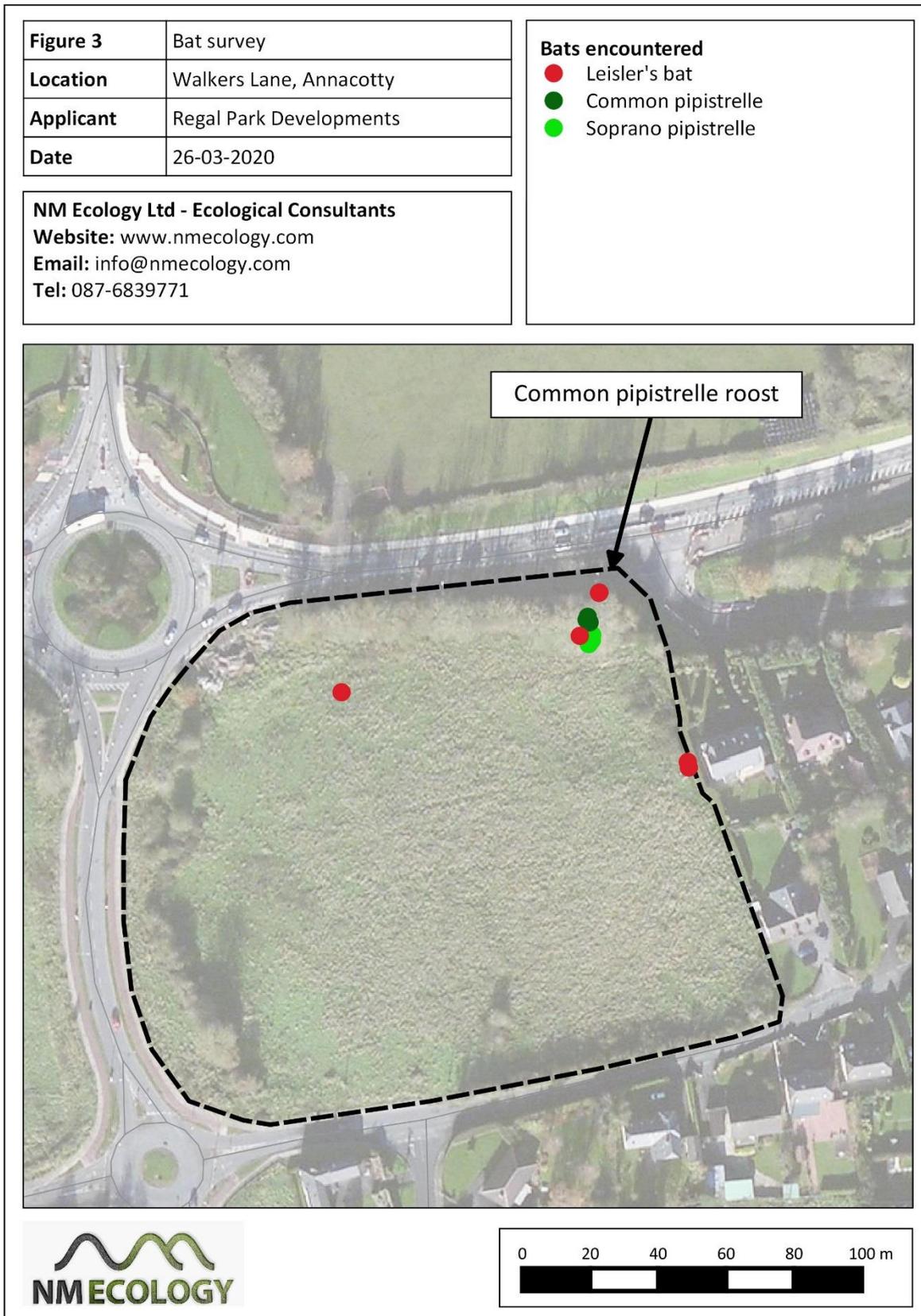
### Transect survey

Bat activity was very low during the transect survey. A Leisler's bat was recorded on the eastern boundary of the site, and a second Leisler's bat in the north-west of the site, but both bats appeared to be feeding in open air above the site rather than around the hedgerows / treelines. No pipistrelles or any other species were recorded feeding within the site.

The low levels of bat activity may be explained, in part, by the levels of artificial light surrounding the site. There are street lights around the northern, western and southern boundaries of the site, which cast light onto many of the boundary treelines and hedges. Bats are nocturnal animals that avoid brightly-lit areas, so the streetlights are likely to have reduced the suitability of these areas for feeding bats. The centre of the site and the eastern boundary were the only areas in darkness.

### Re-entry survey

Four bats were recorded at dawn: a common pipistrelle at 05:44, and three soprano pipistrelles at 05:46, 05:47 and 05:54. The common pipistrelle circled briefly at the mature ash tree shown in Figure 2, and appeared to enter a roost, although the exact roosting point could not be confirmed. The soprano pipistrelle bats were feeding along the hedgerow, and flew away to the north-east. A single bat was seen in silhouette circling briefly at a residence approx. 50 m east of the proposed development site (note that this is outside the boundary of the proposed development site), and also appeared to enter a roost. No other bats were recorded during the re-entry survey.



### 2.3 Conclusions

Three bat species were recorded within the proposed development site: Leisler's bat, common pipistrelle and soprano pipistrelle. All three species are common and widespread throughout Ireland, and this is a typical species assemblage for suburban sites. No lesser horseshoe bats or any other rare species were recorded.

A mature ash tree at the eastern end of the northern treeline supports a single roosting common pipistrelle bat. This is likely to be a day roost or satellite roost, and is highly unlikely to be a maternity roost (as the survey was carried out in August). There also appears to be a single bat (probably a common or soprano pipistrelle) roosting in a house approx. 50 m outside the eastern boundary of the proposed development site, which would also be a day roost or satellite roost. Common pipistrelle bats are the most common and widespread bat species in Ireland, and roosts of individual bats are very common. Therefore, the site is considered to be of local importance for this species.

With the exception of the small bat roost, the site appears to be of little or no importance as a feeding area or commuting route for bats. A small number of Leisler's bats were recorded, but all appeared to be flying in open air at least 20 m above the site, and were not associated with any of the treeline or hedgerow habitats. No other species were recorded elsewhere on the site. The low numbers of feeding and commuting bats may be due to light-spill from streetlights on surrounding roads. Overall, the site is considered to be of negligible value for feeding and / or commuting bats.

## 3 Impact assessment

### 3.1 Appraisal of potential impacts

#### Direct impacts on roosting bats

A mature ash tree in the northern treeline is used as a roost by a single common pipistrelle bat. This tree will be retained and incorporated into the landscaping scheme for the proposed development, so it will not need to be felled. However, the bat appears to be roosting in a cavity on the lower limb, part of which has recently collapsed. In the tree report it is recommended that the fallen section of the limb is removed, but if the remainder of the limb is also removed, it would destroy the bat roost. If this was to occur, it would have an impact of local significance on bats. The killing of bats or destruction / disturbance of a roost would constitute an offence under the *European Communities (Birds and Natural Habitats) Regulations 2011 (as amended)* and the *Wildlife Act 1976 (as amended)*.

If the roost is retained, there is a risk of indirect impacts if the proposed development resulted in an increase in artificial lighting around the tree, particularly if any lights were directed

towards the roost entrance. In a worst-case scenario this could cause the bat to abandon its roost and move elsewhere, which would also have an impact of local significance on bats, and would constitute a legal offence.

#### Potential to affect foraging areas or commuting routes

The proposed development site does not appear to be an important feeding area or commuting route for bats. It is noted that a significant proportion of the existing boundary vegetation will be retained, so these features will still be available for feeding bats when the development is complete. However, if the proposed development caused a significant increase in artificial lighting around these features, it could displace the small number of bats that use the site. This would have a slight negative impact on local bat populations, but would not constitute a significant ecological impact or a legal offence.

### **3.2 Proposed mitigation measures**

#### Felling of mature trees

The mature ash on the northern boundary of the site will be retained, but will require some 'tree surgery' to ensure that it is safe for future residents, which may have a direct impact on the bat roost. Prior to any such works, the contractor will employ an ecologist to liaise with the tree surgeon regarding the scope of works required. Where possible, the roosting site will be retained in its current condition, and only the dead wood on the end of the limb will be removed. However, if the damaged limb is considered unsafe and must be removed in its entirety, then the following procedures will be followed.

As the removal of the limb would destroy a bat roost, any such works would require a derogation licence from the *European Communities (Birds and Natural Habitats) Regulations 2011*. The employer's ecologist will be required to submit a site-specific mitigation strategy as part of the licence application, which should include the following:

- One or more bat boxes will be installed on the trunk of the tree at a similar height and aspect to the limb that will be removed, in order to compensate for the loss of the roost
- Work will be undertaken outside the hibernation season (i.e. no work between November and March, inclusive). A pre-felling survey will be carried out in order to confirm whether any bats are roosting in the tree at the time of works. If there is any indication that a maternity roost is present, then no disturbance will be permitted between May and August, inclusive.
- If bats are present, they will be excluded from the tree before felling using a plastic tube or other exclusion device. Alternatively, if feasible, the bat may be removed by hand and transferred to the bat box.

### Bat-sensitive lighting

There is a risk of impacts on the bat roost and on feeding / commuting bats if any new lighting is directed towards any of the vegetation along the site boundaries. A detailed lighting plan for the site has not yet been developed, as this typically occurs in the later stages of the construction of a residential development. However, if 'bat-sensitive' lighting techniques are incorporated into the lighting plan, they would avoid or minimise any potential impacts of lighting on bats.

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

- All lights will be fitted with directional hoods and/or luminaires to direct the light downwards onto targeted areas and to prevent unnecessary light-spill. No lights will be directed towards the bat roost or any treelines / hedgerows around the margins of the site.
- Where lighting is required for pedestrian safety, it will be installed at the lowest-possible level, e.g. on lighting poles of up to 1 – 2 metres in height. Lights will be directed onto ground level, with no light spill above the horizontal.
- The intensity of lighting will be kept to the minimum level required for safety. It is acknowledged that high-intensity lighting will be required for safety reasons on public roads, but for pedestrian lighting the intensity will be reduced to the lowest lux levels required for safe pedestrian access.
- Low-UV LEDs or low / high pressure sodium lamps will be the preferred bulb type, as they have least adverse effect on bats. Mercury, metal halide or high-UV LED bulbs will not be used.
- Any external lighting around new properties (e.g. safety lights at the front and rear of properties) will be fitted with motion sensors and will have a timer of up to 60 seconds. This will ensure that lighting will be active only when required, and will not be left switched on overnight.

These measures will apply both to temporary lighting during the construction of the proposed development, and to permanent lighting during the operation of the development.

In order to ensure that these techniques are effective, and that bat mitigation measures can be balanced with public safety requirements, the developer will employ an ecologist to liaise with the contractor on the lighting design; this should be included as a condition of planning.

### **3.3 Residual impacts**

It is intended that the lower limb of the mature ash tree on the northern treeline will be retained, and thus that there will be no direct impact on the bat roost. However, if the limb is not safe to retain, then measures will be taken to provide an alternative roost site and to ensure the protection of the bat during construction. Any such work will be carried out under a

derogation licence from the Department of Culture, Heritage and the Gaeltacht. As a result, there will not be a significant impact on roosting bats, and no legal offence under the Habitats Regulations 2011.

Bat-sensitive lighting techniques will be implemented throughout the site in order to avoid light-spill onto the bat roost or potential feeding areas / commuting routes. As a result, there will be no residual impacts on foraging, commuting and roosting bats.

## **4 References**

Chartered Institute of Ecology and Environmental Management (2016). *Guidelines for Ecological Impact Assessment in the U.K and Ireland: Terrestrial, Freshwater and Coastal* (2nd Edition).

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

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