

Tree Roosts - Ward River Regional Park

Bat Survey



FINAL REPORT

13th September 2024



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Bat Survey

1. INTRODUCTION

1.1 Background

This report has been prepared by Faith Wilson (an independent ecological consultant and licensed bat specialist) who was appointed by Fingal County Council to complete a bat survey of two trees proposed for removal as part of conservation works to historic structures in the vicinity of the Cascades in the Ward River Regional Park, Swords, Co. Dublin as located within the red line boundary on **Figure 1.1** below.

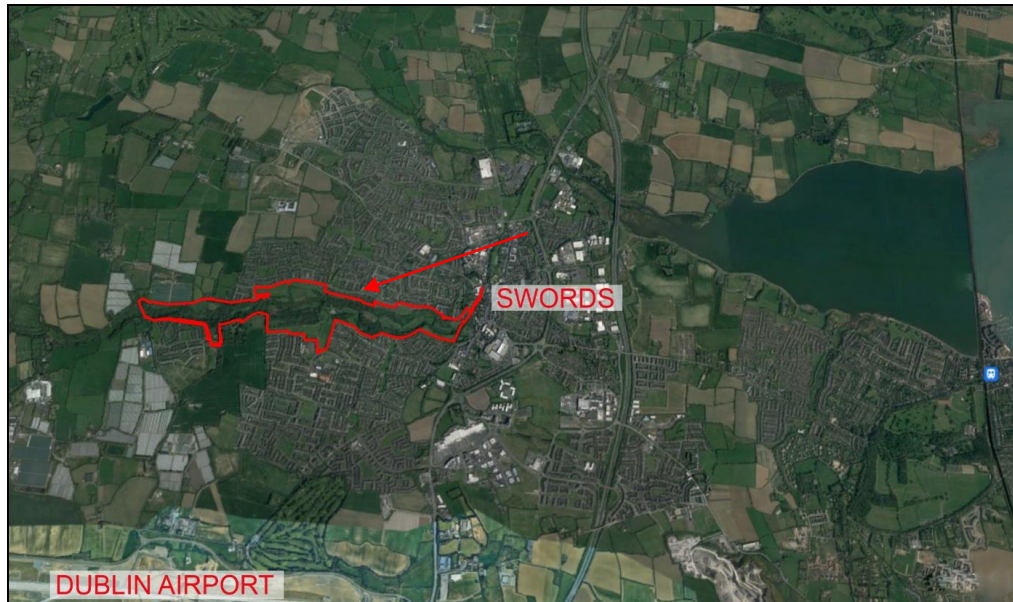


Figure 1.1 Ward River Regional Park.

This report aims to;

- Identify species of bats using the site.
- Examine the trees scheduled for removal for roosting potential.
- Assess the potential impacts on bats by the proposed tree removal.
- Recommend mitigation measures to ensure the safeguarding of bats during the tree felling works.
- Determine if a bat derogation licence is required for the project.

The bat surveys were undertaken by Faith Wilson BSc CEnv MCIEEM. Faith is a highly experienced ecologist specialising in flora and faunal surveys (including bats), ecological impact assessment, and impact mitigation. Faith is an active member of Bat Conservation Ireland (BCI) and previously served on the board of BCI. Faith attended and helped to deliver the BCI Bat Detector and Bat Handling Workshops which are the standard training for the carrying out of bat surveys in Ireland and also authored the guidance for surveying bats in wind farms in Ireland.

1.2 Relevant Legislation

1.2.1 Bats

Eleven species of bats occur in Ireland and all are protected under both national and international law.

Wildlife Act 1976

In the Republic, under Schedule 5 of the Wildlife Act 1976, all bats and their roosts are protected by law. It is unlawful to disturb either without the appropriate licence. The Act was amended in 2000.

Bern and Bonn Convention

Ireland has also ratified two international conventions, which afford protection to bats amongst other fauna. These are known as the 'Bern' and 'Bonn' Conventions. The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), exists to conserve all species and their habitats, including bats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries, which covers certain species of bat.

EU Habitats Directive

All bat species are given strict protection under Annex IV of the EU Habitats Directive, whilst the lesser horseshoe bat (*Rhinolophus hipposideros*) and greater horseshoe bat (*Rhinolophus ferrumequinum*) are given further protection under Annex II of the EU Habitats Directive. Both are listed as a species of community interest that is in need of strict protection and for which E.U. nations must designate Special Areas of Conservation (SACs). The latter is only known from a single site and no breeding populations have been recorded to date. The former are a species of the western seaboard of Ireland and have not yet been recorded on the east coast.

The principal pressures on Irish bat species have been identified as follows:

- urbanized areas (e.g. light pollution);
- bridge/viaduct repairs;
- pesticides usage;
- removal of hedges, scrub, forestry;
- water pollution;
- other pollution and human impacts (e.g. renovation of dwellings with roosts);
- infillings of ditches, dykes, ponds, pools and marshes;
- management of aquatic and bank vegetation for drainage purposes;
- abandonment of pastoral systems;
- speleology and vandalism;
- communication routes: roads; and
- inappropriate forestry management.

2. METHODOLOGY

2.1 Desk Study & Field Surveys

The bat survey consisted of several elements – a desktop review and consultation with Bat Conservation Ireland, an inspection of the trees scheduled for removal to assess their potential to support roosting bats, and a bat detector activity survey, which was conducted on 27th August 2024.

The aims of the surveys were to:

- a) To identify what species of bats are present on the site.
- b) Identify if any bat roosting sites are present in the trees scheduled for removal.
- c) To ensure the protection of any bats that are/may be present during the proposed tree felling works.
- d) To determine if a bat derogation licence is required for the work.

Bat activity is usually detected by the following signs (though direct observations are also occasionally made):

- bat droppings (these will accumulate under an established roost or under access points);
- insect remains (under feeding perches);
- oil (from fur) and urine stains;
- scratch marks; and
- bat corpses.

Bat activity is governed by the activity of their insect prey and insect abundance is in turn governed by weather conditions and climate. Insects, and therefore bats, are unlikely to be present at temperatures below 7°C or during periods of strong winds or heavy rainfall so surveying in such conditions is not possible.

The field survey was undertaken within the active bat season and during good weather conditions (dry conditions and temperature at 8°C and greater).

Bats were identified by their ultrasonic calls coupled with behavioural and flight observations made using a Guide TK612 Thermal Monocular and on computer by sound analysis of recorded echolocation and social calls with dedicated software (Wildlife Acoustic's Kaleidoscope Pro; version 5.6.0).

The nature and type of habitats present are also indicative of the species likely to be present.

The trees scheduled for removal were assessed for their potential use by bats using standard criteria, which were created by bat specialists from Bat Conservation Ireland for use in the assessments of tree roosts on large infrastructural projects.

They are as follows:

- Presence or absence of bat droppings (these can be hard to find amongst leaf litter or may be washed away following periods of wet weather),
- Bat droppings may also be seen as a black streak beneath holes, cracks, branches, etc.,
- Presence or absence of smooth edges with dark marks at potential entrances to roosts,
- Presence or absence of urine stains at potential entrances to roosts,
- Presence of natural cracks and rot holes in the trunk or boughs of the tree,
- Hollow trees,
- Presence or absence of creepers such as ivy or honeysuckle on trees (ivy clad trees are often used by bat species such as pipistrelles as roosts),
- Presence or absence of loose bark such as that of sycamore, or flaky bark on coniferous species such as cedars, cypress and Scot's pine,
- Presence or absence of bracket fungi which may indicate a rotten or potentially hollow centre to the tree,
- Known bat roosts previously identified,
- Trees with storm or machinery damage or broken boughs,
- Clutter level - where the branches and trunk are easily accessible, this is considered a better tree for bat roosts,
- Adjoining habitat - if there are a variety of feeding opportunities for bats, this increases the potential of a tree as a bat roost,
- Adjoining potential roosts / known roosts. This raises the likelihood of a tree being of benefit as bats may move roosts if the roost becomes too hot or cold during roosting and a nearby alternative roost is highly desirable.

In accordance with best practice as described in the 'Guidelines for the Treatment of Bats During the Construction of National Road Schemes' (NRA 2006), *Bat Surveys for Professional Ecologists: Good Practice Guidelines - 3rd edition* (Collins, 2016) and 'Bat Mitigation Guidelines for Ireland' (Marnell, *et al.* 2022), a bat activity survey of the general environs of the trees scheduled for removal was conducted during the active bat season.

This survey assisted in determining if any bat roosts are present in any of the trees, what bat species occur within the site and how bats are using the site.

The survey also used the guidance from 'Bat Roosts in Trees - A Guide to Identification and Assessment for Tree-Care and Ecology Professionals' (BTHK, 2018) when assessing the trees.

A bat detector survey was carried out at dusk on the 27th August 2024 using several types of bat detectors - these included an Echo meter Touch Pro 2, two Batbox Duet Heterodyne/Frequency Division detectors and a Pettersson D100 Heterodyne detector. The emergence of bats from the trees at dusk was monitored and observations of bats using the area were made with a thermal

imaging scope (Guide TK612 Thermal Monocular) which afforded additional visual detectability of bats as darkness fell.

Bat activity is predominantly bi-modal, with bats taking advantage of increased insect numbers on the wing during the periods after dusk and before dawn, (there is usually a lull in activity in the middle of the night). While this holds true for 'hawking' species (bats that capture prey in the open air), 'gleaning' species such as brown long-eared (*Plecotus auritus*), Natterer's (*Myotis nattereri*) and Whiskered/Brandt's bats (*Myotis mystacinus/brandtii*) remain active throughout the night, as prey is available on foliage for longer periods.

3. RESULTS

3.1 Desktop Survey

The Bat Conservation Ireland Database of bat records was searched for records of bats from the environs of Swords. The database contains records of roosts, ad hoc observations and the results of surveys such as the BATLAS 2010 and 2020 projects and the All Ireland Daubenton's Monitoring Project.

Species recorded from the Swords area include:

- Common pipistrelle (*Pipistrellus pipistrellus*),
- Soprano pipistrelle (*Pipistrellus pygmaeus*),
- Nathusius' pipistrelle (*Pipistrellus nathusii*),
- Brown long-eared bat (*Plecotus auritus*)
- Leisler's bat (*Nyctalus leisleri*),
- an unidentified pipistrelle species (*Pipistrellus* sp.).
- Daubenton's bat (*Myotis daubentonii*),
- Natterer's bat (*Myotis nattereri*) and
- Whiskered bat (*Myotis mystacinus*).

A survey completed by NATURA in 2015 confirmed that; 'Five species of bats were found to forage in the Park. There are abundant potential roosting habitats for bats including crevices in old trees and cavities in built structures such as bridges, walls and the castle in Swords'.

Common name	Scientific name	Status in 2015	Status in 2003*	Principal habitat(s)
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	Present	Present	Various
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	Present	Present	Various
Leisler's bat	<i>Nyctalus leisleri</i>	Present	Present	Woodland
Brown long-eared bat	<i>Plecotus auritus</i>	Present	Present	Woodland
Daubenton's bat	<i>Myotis daubentonii</i>	Present	Present	Lake, rivers
Natterer's bat	<i>Myotis nattereri</i>	Possible	Not recorded	Woodland
Whiskered bat	<i>Myotis mystacinus</i>	Possible	Not recorded	Woodland

*after Keeley (2003)

Figure 3.1 Five bat species were confirmed within the park in 2015.

Previous bat surveys conducted by this author were completed in 2023. These included detector surveys of built structures in the Ward River

Regional Park – these included the Brick Arch and Cascades which adjoin the trees proposed for felling.

The Brick Arch and the environs of the Cascades and Ushers Lake were the focus of detailed bat surveys which were conducted on the 30th May and the 12th, 20th and 29th June 2023 and 5th September 2023.

These surveys confirmed the importance of this area for a number of species – these were Common pipistrelle, Soprano pipistrelle and Leisler’s bat with Daubenton’s bat recorded on Ushers Lake. This species was not previously recorded from Usher’s Lake – in the 2015 survey it was only recorded over the Broadmeadow River which is located outside (to the north) of the park.

There were high levels of activity in the environs of several built structures within the park – these are the Cascades and the Brick Arch as show below on **Plates 1 and 2**.



Plate 1. Structures such as the Brick Arch can offer bats roosting locations.

The results of these surveys can be seen on **Figure 3.2** below. Bats were recorded commuting towards the Brick Arch and the River Ward from both the North and South sides of the valley. The most frequently encountered species was Soprano pipistrelle followed by Common pipistrelle. It is suspected that these bats are roosting in Rose Cottage which is located above the valley on the northern side. A tree roost is suspected in the mature beech located to the south of the Brick Arch based on bat activity in this area and the direction of flight from this tree by the bats. This tree offers many crevices and holes which bats could avail of for roosting purposes.



Plate 2. Structures such as the Cascades support mosses, liverworts and ferns of interest as well as offering nesting potential for dipper and roosting locations for bats.



Figure 3.2. Bat registrations in the Ward River Valley in the vicinity of Ushers Lake, the Cascades, the Brick Arch and the playing fields on the northern side of the valley.

No bats were recorded emerging from the Brick Arch or the Cascades during any of the surveys.

There were large numbers of Common pipistrelle and Soprano pipistrelle foraging over the river immediately downstream of the bridge adjoining the Cascades on all surveys. The disturbed nature of the water exiting the Cascades creates a lot of clutter which renders this immediate area unfavourable for bats hence their focus downstream where the tree lined

nature of this part of the river is very favourable for invertebrates and hunting bats.

3.2 Field Survey

3.2.1 Trees Proposed for Removal

Two trees are proposed for removal as they are causing issues for the built structures in the vicinity of the Cascades. These are both mature Sycamore (Tree Nos. 1724 and 1701).

They are shown on **Figure 3.3** and **Plates 3** and **4** below.

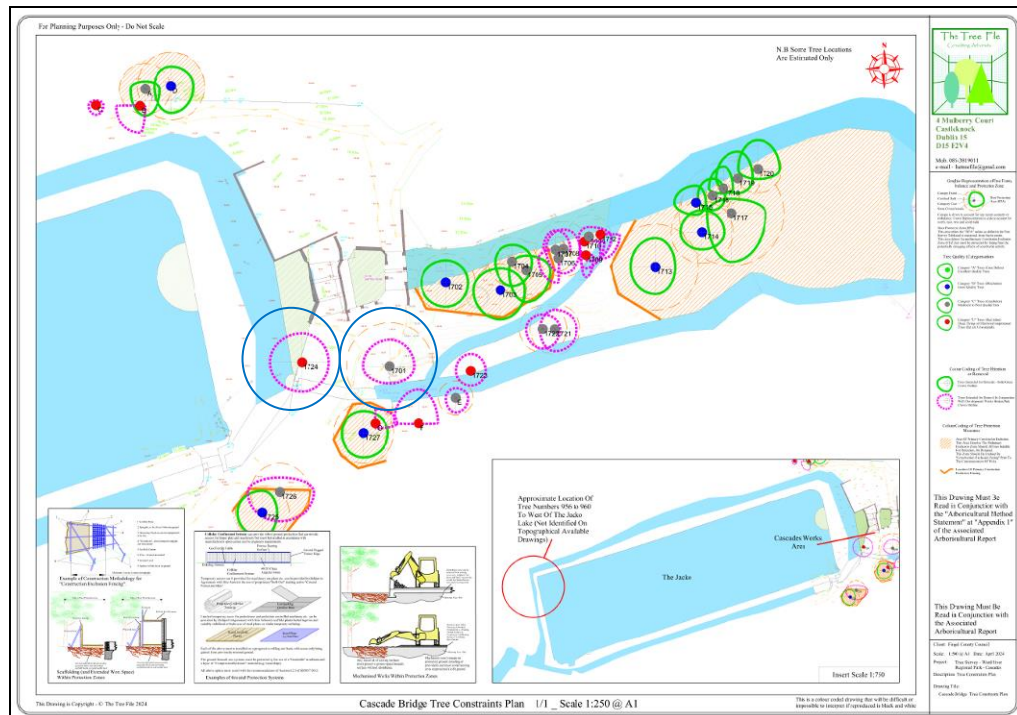


Figure 3.3. Tree Constraints Study - Cascades. The trees proposed for removal are encircled in blue - trees no 1724 and 1701.



Plate 3. Sycamore 1724



Plate 4. Sycamore 1701.

3.2.3 Potential Bat Roosts in Trees

Both trees contain a series of features (crevices, holes, lifting bark, splits and cavities) that bats may avail of for roosting purposes.

Sycamore 1724 contains a large cavity at the base that offers bats roosting potential.

3.2.4 Detector Survey - 27th August 2024

The detector survey completed at dusk confirmed that both trees are used by pipistrelle bats as mating roosts. Bats were observed in song flight and calling repeatedly from the vicinity of both of these trees with many social calls detected. Aerial chases were also observed especially in the vicinity of Sycamore 1724.



Plate 5. Sycamore 1724.



Plate 6. Sycamore 1701.

4. ASSESSMENT OF SIGNIFICANCE

Both the Sycamore trees show evidence of importance as a bat mating roost. These trees are therefore to be regarded as a confirmed bat roost under the Wildlife Acts 1976 and 2000 and the Birds and Natural Habitats Regulations 2011.

Any works to these trees will require a bat derogation licence from National Parks and Wildlife Service.

The potential impacts on bats arising from the proposed tree felling include:

- Injury/death to bats during tree felling works.
- Loss of a bat mating roost.

5. MITIGATION MEASURES

A bat derogation license is required for the proposed tree felling and an application for this has been submitted to NPWS.

The trees are used as a mating roost by Soprano pipistrelle and Common pipistrelle and potentially Leisler's bat.

5.1.1 Measure 1: Consideration of Alternatives

Retention of these trees was discussed by the project design team of conservation architects, landscape architects, contractor and arborist on foot of the findings of the bat survey. Queries regarding their potential retention were set out as shown on **Figure 5.1** below.

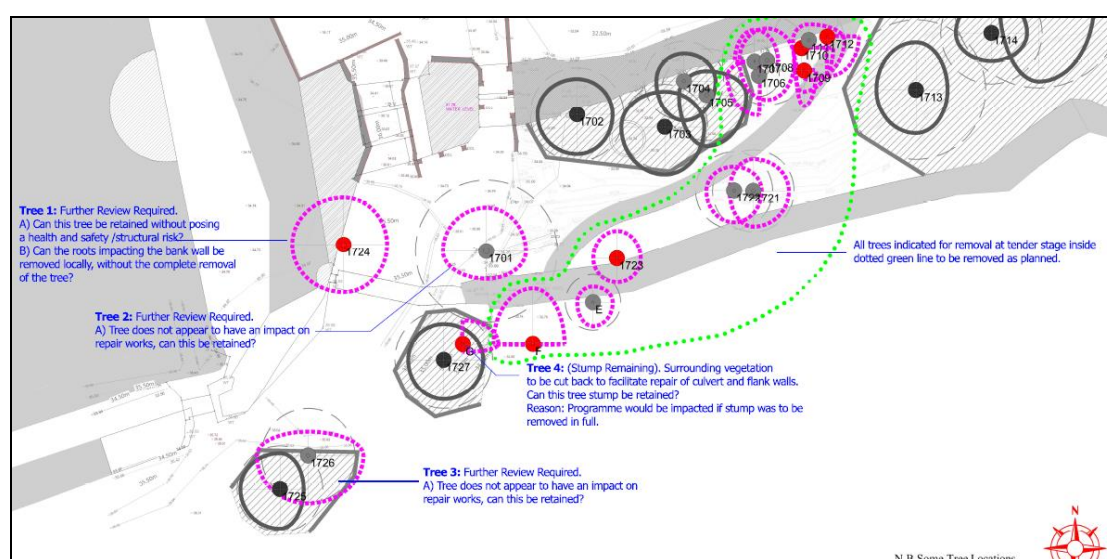


Figure 5.1. Tree Retention Discussion Document.

The response from the arborist (The Tree File (2024)) is set out below:

Sycamore 1724

‘In respect of tree 1724, greatest concern relates to safety and liability.

The nature of the tree’s defects is highly obvious and visible. In the event of failure, liability through negligence is currently best defined by H.M. Fitzpatrick (Incorporated Law Society) in his succinct narrative of negligence being proven if there is – “a fault within the tree noticeable to the layman through a cursory inspection”.

In this instance, I would suggest that the defect is highly obvious, but compounded in that regardless of laymanship, the issue has been described and distributed to many for review.

Secondly, if we manage to keep the tree alive, this biologically implies an annual incremental growth. Therefore, issues regarding damage to the existing wall will over time, be compounded, notwithstanding a low rate relating to ill-health.

For additional consideration, issues would arise should any repair work to the wall be required (see drawing query 1b). Such works would occur within what is regarded as the “structural root zone” (Australian Standards 2009) or, under the National Joint Utilities Board’s “prohibited zone”.

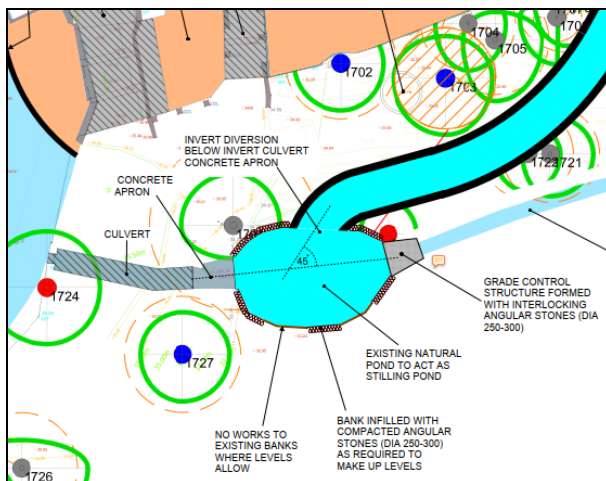
Because the tree is effectively in contact with the existing wall, this zone (STZ radius of 2.9m structural root zone, radius 1.0m NJUG) prohibits any works close to the tree. This would include the simple dismantling of the existing wall, let alone any deliberate severance of roots near the wall.

My recommendation is that the tree is removed; however any final decision is ultimately for Fingal County Council.

Notwithstanding the above, should a decision be made to retain the tree, I would advocate towards substantial crown reduction works. This would, in the short-term, improve the tree's safety by reducing wind resistance and weight carriage. Unfortunately, the loss of canopy/fovia cover is likely to compound the trees overall decline and may contribute to a more rapid decline. Equally and as noted above, should the tree remain alive, wall issues will persist’.

Sycamore 1701

‘The original proposal to remove this tree was based on several grounds including early decline, extensive ground environment damage/compaction, erosion to south-east of tree and an expectation that the tree would be disturbed/undermined by works associated with the temporary river diversion (see snip below).



As mentioned in respect of Tree 1, it appears that these works require works/disturbance (provision of compacted angular stone) within the “structural root zone” and among already exposed (erosion) roots. This issue contributed greatly to the recommendation to remove the tree.

Overall, temporary works combined with visible onset of decline combined with immense environmental damage having occurred already, led me to suggest that this tree was unlikely to be sustainable’.

Whilst Fingal County Council may ultimately try to retain some of these trees an application for a bat derogation licence was requested to be submitted.

A series of mitigation measures to ensure that the bats are protected during any tree felling/surgery works are outlined below.

5.1.2 Measure 2: Confirmed Roost - Timing of Tree Felling Works

The tree felling works must be done under the supervision of a licensed bat specialist and conducted when bats are active and can escape out of harm's way. These works will be done during the autumn months (October/early November) when bats are not yet in hibernation.

5.1.3 Measure 3: Site Meeting Before Works Commence

The tree surgeons will meet with the bat specialist on site before commencing works to be appraised of bat ecology and shown what to look for or be aware of during the works.

5.1.4 Measure 4: Felling Methodology

Both the Sycamore trees proposed for felling will be examined further prior to felling by a bat specialist. This may require access via a hoist or other means to reach all potential roost sites within the tree including dense ivy, cavities, crevices, loose bark, limb damage etc. and inspect them with an endoscope.

The tree will then be removed in sections and the main trunk of the tree left intact and removed by winching to the ground and left in position for a further 24 hours before being cut up or removed from site.

6. CONCLUSIONS

A number of alternatives were considered when assessing the removal of these tree including their long term retention and viability. It may be possible to crown reduce them and to try and keep them but this may not be compatible with the building conservation works.

The mitigation measures detailed above will ensure that bats are physically protected during any tree felling surgery/works and will not be killed or injured.

There are numerous other trees within the Ward River Regional Park that bats may avail of from a mating roost perspective.

The species of bats for which the bat derogation licence applies (*Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*) are all listed as species of Least Conservation Concern (Marnell, F., Looney, D. & Lawton, C. (2019) Ireland Red List No. 12: Terrestrial Mammals. National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Dublin, Ireland.)

The loss of these trees is unlikely to cause a significant impact on the local bat populations in the park and will not affect the long term conservation status of these species in Ireland.

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