
BAT ROOST ASSESSMENT AND SURVEY

**for the
Civic Amenity Site in Gort**

prepared for



Comhairle Chontae na Gaillimhe
Galway County Council

by FGE Consulting



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1. Introduction

FGE Consulting were commissioned by Galway County Council to undertake a bat activity survey a proposed new civic amenity site in Gort, Co. Galway. The aims of the study were to determine the following:

- To assess and evaluate the likely importance of the existing structures and habitat for bats.
- The diversity and relative abundance of bats present within the study area and its immediate environs.

1.1. Site Location and Description

The proposed new civic amenity site is (Plates in Appendix), is located approximately 500m to the north of Gort Town, Co. Galway. Hawthorn/blackthorn hedgerows line either side of the road leading up to the proposed site. The majority of these linear features are managed and are at a height of 1.5m, however, there are a number of sections of these hedgerows which have mature well developed vegetation (c4m high). The proposed development site itself is has old stumps from sycamore trees. No significant vegetation is present on site. Agricultural fields reside either side of the road and surrounding the proposed site. A waste water treatment plant is currently directly to the north of the site. To the south of the site there is fenced area that has now become a small scrubland, mainly consisting of willow trees. A site location map is presented in Figure 1.



Figure 1: Location of the proposed development.

1.2. Legal Status and Conservation Issues of Bats

All Irish bat species are protected under the Wildlife Act (1976) and Wildlife Amendment Act (2000). Also, the EC Directive on The Conservation of Natural habitats and of Wild Fauna and Flora (Habitats

Directive 1992), seeks to protect rare species, including bats, and their habitats and requires that appropriate monitoring of populations be undertaken. Across Europe, they are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats. 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. The Irish government has ratified both these conventions.

All Irish bats are listed in Annex IV of the Habitats Directive and the lesser horseshoe bat is further listed under Annex II.

Also, it should be noted that any works interfering with bats and especially their roosts, including for instance, the installation of lighting in the vicinity of the latter, may only be carried out under a licence to derogate from Regulation 23 of the Habitats Regulations 1997, (which transposed the EU Habitats Directive into Irish law) issued by NPWS. The details with regards to appropriate assessments, the strict parameters within which derogation licences may be issued and the procedures by which and the order in relation to the planning and development regulations such licences should be obtained, are set out in Circular Letter NPWS 2/07 "Guidance on Compliance with Regulation 23 of the Habitats Regulations 1997 - strict protection of certain species/applications for derogation licences" issued on behalf of the Minister of the Environment, Heritage and Local Government on the 16th of May 2007.

Furthermore, on 21st September 2011, the Irish Government published the European Communities (Birds and Natural Habitats) Regulations 2011 which include the protection of the Irish bat fauna and further outline derogation licensing requirements re: European Protected Species.

NB: Destruction, alteration or evacuation of a known bat roost is a notifiable action under current legislation and a derogation licence has to be obtained from the National Parks and Wildlife Service (NPWS) before works can commence.

The current status and legal protection of the known bat species occurring in Ireland is given in Table 1 below (Marnell *et al.* 2009).

Table 1: Legal status and protection of the Irish bat fauna

Common and scientific name	Wildlife Act 1976 & Wildlife (Amendment) Act 2000	Irish Red List status	Habitats Directive	Bern & Bonn Conventions
Common pipistrelle <i>Pipistrellus pipistrellus</i>	Yes	Least Concern	Annex IV	Appendix II
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	Yes	Least Concern	Annex IV	Appendix II
Nathusius' pipistrelle <i>Pipistrellus nathusii</i>	Yes	Not referenced	Annex IV	Appendix II
Leisler's bat <i>Nyctalus leisleri</i>	Yes	Near Threatened	Annex IV	Appendix II
Brown long-eared bat <i>Plecotus auritus</i>	Yes	Least Concern	Annex IV	Appendix II
Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Yes	Least Concern	Annex II Annex IV	Appendix II
Daubenton's bat <i>Myotis daubentonii</i>	Yes	Least Concern	Annex IV	Appendix II

Natterer's bat <i>Myotis nattereri</i>	Yes	Least Concern	Annex IV	Appendix II
Whiskered bat <i>Myotis mystacinus</i>	Yes	Least Concern	Annex IV	Appendix II
Brandt's bat <i>Myotis brandtii</i>	Yes	Data Deficient	Annex IV	Appendix II

1.3. Statements of Authority

Domhnall Finch – Senior Ecologist and Technical Director (FGE Consulting):

Domhnall Finch (PhD, MSc, BSc, PgCert, ACIEEM, AHEA), has over 10 years' experience conducting technical assessments for a range of development types including infrastructure and residential.

Domhnall is a specialist in the field of bat, mammal and avian ecology and survey methodology. He has been the lead Project Ecologist of a number of medium and large-scale projects, including the largest bat and mammal survey works of any infrastructure to be undertaken in Ireland. This project was a wind farm development for Bord na Mona that spanned 22,000 ha, and it required intensive sampling effort, survey design, mapping and precise report writing. He has been involved in the production of over 25 wind farm avian reports and has a wealth of experience in Habitat Surveys & Mapping (Fossitt 2000), Marsh Fritillary Surveys, Electro-fishing Surveys and Q-sampling. Through his experience he has refined his report writing skills and has produced top quality reports for Article 6 Appropriate Assessments, Natura Impact Assessments, Construction Environmental Management Plan, Ecology Report and Flora and Fauna chapters for various projects. Throughout his professional career he has had to liaise with a number of stakeholders, from clients in large corporations such as BnM, ESB, ESBI, OPW, and Coillte, to farmers/landowners and subcontractors. Domhnall has a firm understanding of the legislations surrounding planning and the environment and has a positive working relationship with many of the statutory consultees such as NPWS and IFI.

Domhnall has had a keen interest in ornithology since childhood and has honed and refined his bird identification skills over a number of years having worked in the UK for the RSPB and also for Birdwatch Ireland at their Head Quarters. Beyond ecology and project management, Domhnall has extensive experience in GIS and has conducted variety mapping and analysis techniques for projects. These including the use of Network Analysis, remote sensing techniques, DEMs, spatial analytics, landscape modelling, predictive modelling, ecosystem services/habitat/connectivity mapping and data processing.

2. Methods

2.1. Desktop Review

A desktop review of publicly available relevant data was undertaken on the National Biodiversity Data Centre (NBDC) and National Parks & Wildlife Service (NPWS) websites. The National Biodiversity Data Centre was reviewed for relevant data, specifically i) existing species records for the 10km square in which the study site is located and ii) an indication of the relative importance of the wider landscape in which the study site is located, based on Model of Bat Landscapes for Ireland (Lundy et al. 2011). In the latter, the index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats.

Consultation was also undertaken with Bat Conservation Ireland (BCI) to identify the nearest roost locations and the species present within the immediate area.

2.3. Bat Activity Survey (Transects)

Walked bat activity transects were conducted following Collins (2016) guidelines. Ultrasonic detection was carried out using Wildlife Acoustics full spectrum Echo Meter Touch Pro 2 bat detectors. All activity surveys were carried out in suitable weather conditions (minimum 10°C, light wind and no precipitation). Details on survey effort in different habitat suitability's and timings of the surveys can be found in Table 2 and Table 3.

A contact ("bat pass"), as recorded in the results from these surveys, describes a bat observed by the surveyor. This contact can range from a commuter passing quickly to a foraging bat circling a feature lasting for several minutes. Bat contacts do not equate to numbers of bats as individual bats of the same species cannot be differentiated. A single bat continuously foraging in proximity to the detector can generate a large number of contacts in one night. In addition, variability occurs in the likelihood of detection between species. When several bats of the same species were encountered together, they were recorded under the one contact. A separate contact was recorded for each pass. A contact finished when the recorder assumes the bat is no longer present. The same bat may be recorded in several contacts throughout the night. This survey type cannot estimate abundance of bats, rather activity; the amount of uses bats make of an area/feature. These contacts were GPS tagged using the Echo Meter Touch Pro 2. If multiple visits for a transect are required, the start and end points of transect walks were alternated between visits to intersperse time and location (i.e., to prevent bias due to certain areas always being surveyed close to dusk). These surveys give a good initiation of bat activity levels present at a location; however, they are only a snap shot in time.

Table 2: Survey effort required for habitat suitability categories according to Collins (2016).

Low Habitat Suitability	Moderate Habitat Suitability	High Habitat Suitability
One survey visit ¹ per season (Spring – April/May, summer – June/July/August, autumn – September/October) ² in appropriate weather conditions for bats Further surveys may be required if these survey visits reveal	One survey visit ³ per month (April to October) ⁴ in appropriate weather conditions for bats. At least one of the surveys should comprise dusk and pre-dawn (Or dusk to dawn) within one 24-hour period.	Up to two survey visits ⁵ per month (April to October) ⁶ in appropriate weather conditions for bats. At least one of the surveys should comprise dusk and pre-dawn (Or dusk to dawn) within one 24-hour period.

¹ A survey visit should aim to cover all habitats represented in the survey area that could be impacted by the proposed activities. This may consist of a single transect carried out on a single night for small sites with low habitat diversity but could range up to multiple transects carried out over one or several nights on a larger site with greater habitat diversity.

² April, September and October surveys are both weather and location dependent. Conditions may become more unsuitable in these months, particularly in northerly latitudes, which may reduce length of the survey season.

³ A survey visit should aim to cover all habitats represented in the survey area that could be impacted by the proposed activities. This may consist of a single transect carried out on a single night for small sites with low habitat diversity but could range up to multiple transects carried out over one or several nights on a larger site with greater habitat diversity.

⁴ April, September and October surveys are both weather and location dependent. Conditions may become more unsuitable in these months, particularly in northerly latitudes, which may reduce length of the survey season.

⁵ A survey visit should aim to cover all habitats represented in the survey area that could be impacted by the proposed activities. This may consist of a single transect carried out on a single night for small sites with low habitat diversity but could range up to multiple transects carried out over one or several nights on a larger site with greater habitat diversity.

⁶ April, September and October surveys are both weather and location dependent. Conditions may become more unsuitable in these months, particularly in northerly latitudes, which may reduce length of the survey season.

higher levels of bat activity than predicted by habitat alone.		
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Table 3: Recommended start and end times for activity surveys according to Collins (2016).

Survey Type	Start Time	End Time
Dusk survey – bat activity	Sunset ⁷	2–3 hours after sunset
Dusk survey – swarming	2 hours after sunset	5 hours after sunset
Dusk to pre-dawn survey	Sunset	Sunrise or later if bats still active
Pre-dawn survey	2 hours before sunrise	Sunrise or later if bats still active

The overall aim of the night-time activity transects are to investigate bat activity in the zone of influence of the proposed development and to detect any bats which may be emerging/re-entering roosts at dusk/dawn. While a daytime visual inspection may detect signs of any large aggregations of roosting bats, smaller numbers of bats or bats roosting in discrete locations may not be apparent during daytime visual inspection. The night-time activity surveys primarily utilised visual detection, with the support of ultrasonic detection equipment.

2.4. Static/Passive Bat Detector

Static/Passive activity surveys involve bat detectors being deployed at fixed locations to record bat activity remotely for a period of time, usually one week, between dawn and dusk (Table 4). FGE Consulting use full spectrum Wildlife Acoustic SM4 or Song Meter Mini Bat detectors for all of our static activity surveys. These can be deployed for long periods of time to gather large amounts of data and pick up variability in bat activity in the absence of ecologist. They are used to quantify bat activity and species present at a site.

A contact (“bat pass”), as recorded in the results from these surveys, describes a bat recorded by the static detector. This contact can range from a commuter passing quickly to a foraging bat circling a feature lasting for several minutes. Bat contacts do not equate to numbers of bats as individual bats of the same species cannot be differentiated. A single bat continuously foraging in proximity to the detector can generate a large number of contacts in one night. In addition, variability occurs in the likelihood of detection between species. When several bats of the same species were encountered together, they were recorded under the one contact. A separate contact was recorded for each pass. The same bat may be recorded in several contacts throughout the night. This survey type cannot estimate abundance of bats, rather activity; the amount of uses bats make of an area/feature.

Table 4: Recommended start and end times for static/passive detector surveys according to Collins (2016).

Survey Type	Start Time	End Time
Automated bat detector survey	30 minutes before sunset	30 minutes after sunrise

⁷ Adjust to earlier if in darker habitats such as woodland or if data justifies (e.g., if bats are already out by sunset on previous surveys or automated detectors show pre-sunset activity).

2.5. Survey Limitations

There were no seasonal or climatic constraints as the survey was undertaken at the optimum time of year when bats are fully active.

3. Results

3.1. Desktop Review

The following species have previously been recorded in the 10km square (M40) in which the site is located:

- Brown long-eared bat (*Plecotus auritus*)
- Leisler's Bat (*Nyctalus leisleri*)
- Common pipistrelle (*Pipistrellus pipistrellus*)
- Soprano pipistrelle (*Pipistrellus pygmaeus*)
- Daubenton's Bat (*Myotis daubentonii*)
- Lesser Horseshoe Bat (*Rhinolophus hipposideros*)
- Nathusius's Pipistrelle (*Pipistrellus nathusii*)
- Natterer's Bat (*Myotis nattereri*)

The absence of other bat species records may reflect lack of data as opposed to an absence of bats from the relevant area.

The overall bat suitability index value (52.67) according to 'Model of Bat Landscapes for Ireland' (Lundy et al. 2011) suggests the landscape in which the proposed site is located is of moderate suitability for bats in general. Species specific scores are provided in Table 5.

Table 5: Suitability of the study area for the bat species according to 'Model of Bat Landscapes for Ireland' (Lundy et al. 2011).

Common name	Scientific name	Suitability index
All bats		52.67
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	52
Brown long-eared bat	<i>Plecotus auritus</i>	72
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	56
Lesser horseshoe bat	<i>Rhinolophus hipposideros</i>	52
Leisler's bat	<i>Nyctalus leisleri</i>	63
Whiskered bat	<i>Myotis mystacinus</i>	61
Daubenton's bat	<i>Myotis daubentonii</i>	52
Nathusius pipistrelle	<i>Pipistrellus nathusii</i>	0
Natterer's bat	<i>Myotis nattererii</i>	66

BCI identified that nine species of bats have been recorded within 10km of the proposed site:

- Brown long-eared bat (*Plecotus auritus*)
- Leisler's Bat (*Nyctalus leisleri*)
- Common pipistrelle (*Pipistrellus pipistrellus*)
- Soprano pipistrelle (*Pipistrellus pygmaeus*)
- Daubenton's Bat (*Myotis daubentonii*)
- Lesser Horseshoe Bat (*Rhinolophus hipposideros*)
- Natterer's Bat (*Myotis nattereri*)
- Whiskered/Brant's Bat (*Myotis mystacinus/brandtii*)
- Nathusius's Pipistrelle (*Pipistrellus nathusii*)

The closest lesser horseshoe bat activity record to the site is approximately 2.5km away. However, there are six known lesser horseshoe bat roosts within 2km of the site. The closest one being approximately 700m away.

3.2. Bat Activity Survey (Transects)

Walked transects were undertaken along the full length of the proposed site on the 5th of July and the 4th of August 2021 by Domhnall Finch (Table 6).

During both walked transect surveys a low–moderate level of bat activity was observed on-site, with a total of 45 bat passes, from five different bat species, being recorded. These included Leisler's bat (n = 14), common pipistrelle (n = 15), soprano pipistrelle (n = 11), Natterer's bat (n = 4), and Whiskered bat (n = 1).

Table 6: Details of the two transect surveys undertaken at the proposed development.

Date	Sunset/ sunrise [HH:MM]	Start Time [HH:MM]	End Time [HH:MM]	Temp [°C]	Precipitation	Cloud Cover [%]	Wind Condition [km/h]
18 th of August	20:53	20:50	23:00	17.9 – 19.7	Dry	50	0.4 – 1.7
31 th of August	20:26	20:20	22:34	16.1 – 18.3	Dry	30	1.4 – 3.2

The majority of the activity was around the scrubland area (directly south of the proposed development) and the tall vegetation along the roadside (mainly at the southern end of the site); with a few bat passes recorded commuting along the entire road.

3.3. Static/Passive Bat Detector

The static bat detector was placed out between the scrubland, directly to the south, and the proposed development between the 18th to the 31st of August 2021. In total, 2653 bat passes were recorded during the survey and temperatures ranged from 10 – 24°C. Overall, seven species were recorded over the 14 days, including soprano pipistrelle (n=1749), common pipistrelle (n=310), Leisler's bat (n=350), Whiskered bat (n=15), Natterer's bat (n=188), brown long-eared bat (n=39), and lesser horseshoe bat (n=2). This equates to a mean of 189.5 bat passes per night.

The results of this static detector survey indicate a moderate level of bat activity within the proposed development.

4. Discussion

4.1. Potential Impact of the Planned Development on Bats

The proposed development of the civic amenity centre will result in increased human presence onsite and, inevitably, a temporary increase in noise and light levels due to human activity. Changes to the existing site will cause temporary disturbance for on-site bat populations and, without mitigation measures to safeguard and retain these animals, the proposed development could result in the loss of potential foraging and commuting sites for the local bat population.

Overall, there was moderate bat activity observed on-site including light sensitive bats such as myotis species and lesser horseshoe (although very rarely). Lesser horseshoe roosts are also in close proximity of the site.

4.2. Mitigation Measures for the Protection of Bats

Specific mitigation measures are required to protect the onsite bat population; however, no derogation licence will be required for these works.

4.2.1. *Timing of Structural Works*

All road widening works and the creation of the passing bays should take place between October and February to avoid the breeding season and to coincide when fewer animals are expected to be using the road. This should lessen the impact on these animals and will also avoid the bird breeding seasons.

4.2.2. *Positioning of Passing Bays*

Passing bays would be placed in areas where the road is already open; thus, reducing any impact of vegetation removal and connectivity within the site. The ideal position of these passing bays can be seen in Figure 2. The passing bays should not be placed in any other locations, other than what has been suggested below.

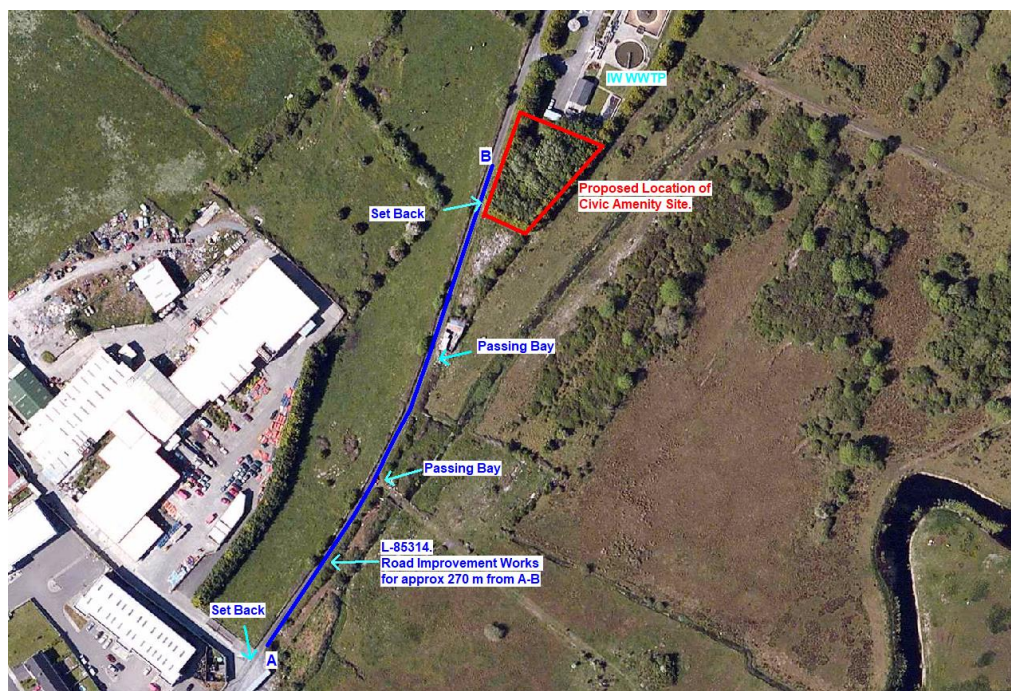


Figure 2: Position of passing bays and other associated works.

4.2.3. *Planting New Vegetation and Trimming Regime*

To offset the loss of any vegetation during the works and the construction of the passing bays, these areas should be planted with additional native hedgerow species, such as hawthorn, blackthorn, rowan trees, and willow. New hedgerows should also be planted around the new civic amenity centre to increase connectivity in the area.

Only trimming of vegetation is allowed on the sides of the hedgerow, to enable works. No trimming to the top of the hedgerow will occur as part of these works.

4.2.4. *Lighting*

In general, artificial light creates a barrier to commuting bats and it can also result in roosts being abandoned therefore onsite lighting should be avoided. Strict lighting regimes and measure should be used at the proposed development. These include:

- directional fixed lights only to be used during operational hours (09:00 to 17:00)
- outside of these hours motion activated lighting should be used for security reasons only.
- no lights should be installed along the road leading up to the proposed development.
- lighting accessories should be used - including hoods, cowls, louvers and shields to direct the light to the intended area only. Thus, ensuring there is no up or back spill from these lighting fixtures and security lighting.
- lights with low/minimal ultra-violet spectrums should be used. Avoiding white and blue wavelengths if possible.

5. Conclusion

The road leading up to the proposed development is locally important for bats and the proposed redevelopment of the site can be achieved without negatively impacting the site's protected species. It is considered that, following completion of the proposed works, with mitigation, the bat species present will persist without significant negative impact on their populations.

Overall, the following mitigation measures need to be implemented to safeguard the bat populations at the proposed development:

- all road widening works and the creation of the passing bays should take place between October and February.
- only trimming of vegetation is allowed on the sides of the hedgerow, to enable works. No trimming to the top of the hedgerow will occur as part of these works.
- additional hedgerows should be planted around the passing bays, the new civic amenity centre and wherever else there may be a loss of vegetation.
- strict lighting regimes and measures should be followed, including:
 - directional fixed lights only to be used during operational hours (09:00 to 17:00)
 - outside of these hours motion activated lighting should be used for security reasons only.
 - no lights should be installed along the road leading up to the proposed development.
 - lighting accessories should be used - including hoods, cowls, louvers and shields to direct the light to the intended area only. Thus, ensuring there is no up or back spill from these lighting fixtures and security lighting.
 - lights with low/minimal ultra-violet spectrums should be used. Avoiding white and blue wavelengths if possible.

6. References

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7. Appendix



Title: The middle section of the road showing tightly managed hedgerows



Title: Some of the more mature hedgerow near the south end of the proposed development



Title: The proposed site showing little vegetation within the site and low hedgerows directly opposite it



Title: Scrub habitat to directly south of the proposed development