Planning and Environmental Consultants

Baseline Bat Report

Markievicz Bridge Repairs

DOCUMENT DETAILS

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Planning and Environmental Consultants

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1. INTRODUCTION

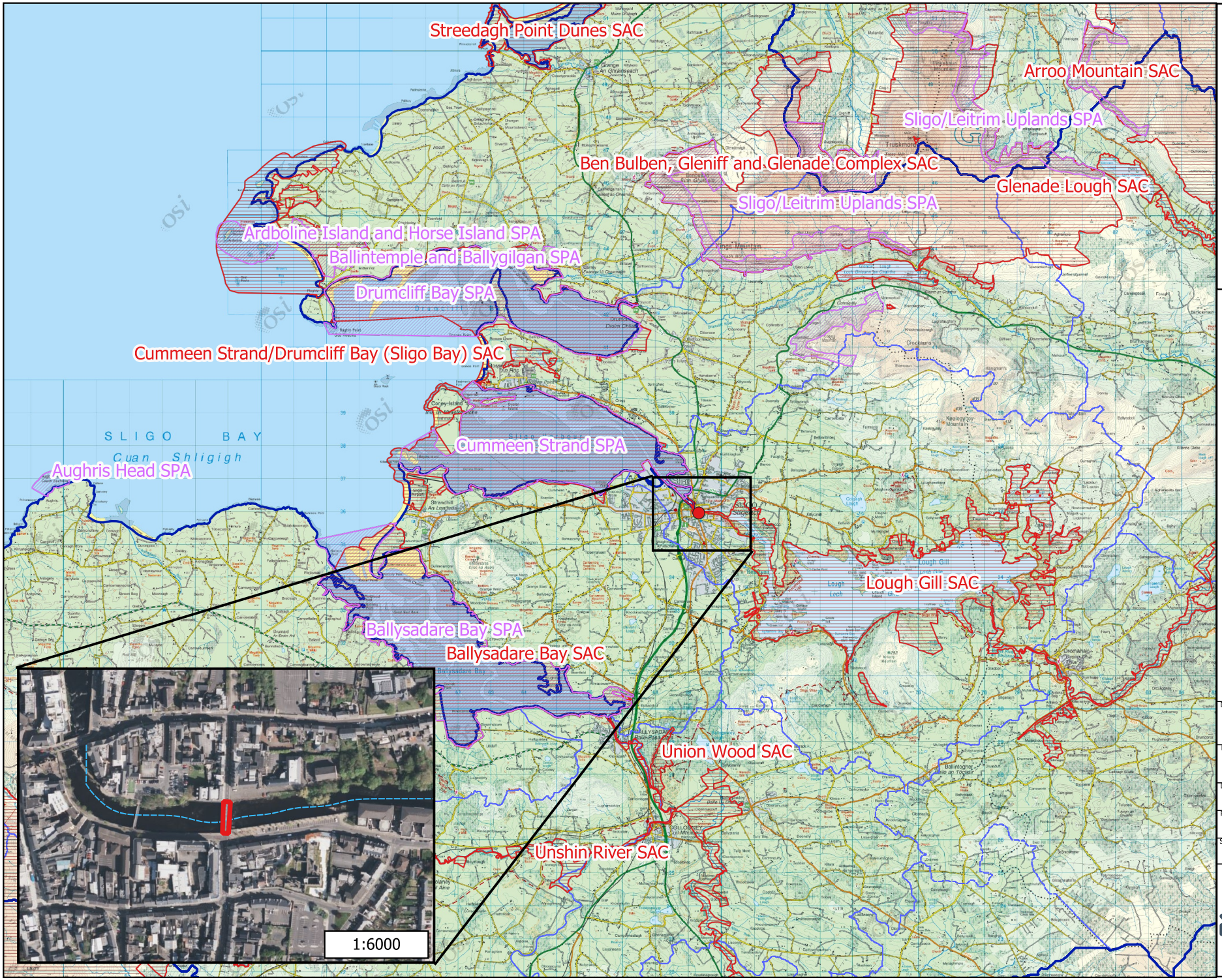
1.1 Purpose of this Report

MKO was commissioned to complete a comprehensive assessment of the potential effects on bats, as part of an Ecological Impact Assessment (EcIA) for an application for planning permission of scour repairs and vegetation removal at Markievicz Bridge, Co. Sligo (Grid Reference: G 69329 35946). This report provides details of the bat surveys undertaken, including survey design, methods and results, and recommendation to safeguard bats. An impact assessment based on the information contained in this report is carried out within the accompanying EcIA.

Surveys included a suitability appraisal and roost surveys. The main objective of the surveys was to determine the presence of roosting bats within the bridge. No seasonal scope was designed in 2024 as the information available was considered sufficient to undertake an assessment, in the interest of proportionality.

The bat survey and assessment were informed by a desk study and with reference to the following guidelines:

- *Bat Survey Guidelines: Traditional Farm Buildings Scheme. The Heritage Council, Áras na hOidhreachta, Church Lane, Kilkenny (Aughney, T., Kelleher, C. & Mullen, D., 2008)).*
- *'Bat Workers' Manual' (3rd edn). JNCC, Peterborough (Mitchell-Jones, A.J. & McLeish, A.P. (eds) 2004).*
- *The Lesser Horseshoe Bat Conservation Handbook, Vincent Wildlife Trust (Schofield, HW., 2008).*
- *Bat Surveys for Professional Ecologists – Good Practice Guidelines (3rd edn.) (Collins, 2016)*
- *Bat Surveys for Professional Ecologists – Good Practice Guidelines (4th edn.) (Collins, 2023)*
- *Bat Roosts in Trees (Andrews, 2018)*
- *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (NRA, 2006a)*
- CIEEM (2013) *Competencies for Species Surveys: Bats.* Chartered Institute of Ecology and Environmental Management, Winchester.
- *Guidelines for the Treatment of Bats during the Construction of National Road Schemes (NRA, 2006b)*
- *British Bat Calls: A Guide to Species Identification (Russ, 2012)*
- *Bat Mitigation Guidelines for Ireland – V2. Irish Wildlife Manuals, No. 134. (Marnell, Kelleher & Mullen 2022)*
- *UK Bat Mitigation Guidelines, (Reason, P. F. and Wray, S. 2023)*
- *Guidance Note 08/23: Bats and Artificial Lighting at Night (ILP, 2023)*



Map Legend

- Site Location
- Site Boundary
- Special Protection Area (SAC)
- Special Area of Conservation (SAC)
- Garavogue River
- WFD Sub-Catchments
- WFD Catchments

Drawing Title

Site Location

Project Title	
Markievicz Bridge Scour Repairs	
Drawn By: CF	Checked By: EF
Project No.: 220943	Drawing No.: Figure 1-1
Scale: 1:150,000	Date: 14.10.2024

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1.2 Policy and Legislation

All Irish bats are protected under European legislation, namely the Habitats Directive (92/43/EEC). All Irish species are listed under Annex IV of the Directive, requiring strict protection for individuals, their breeding sites and resting places. The Lesser horseshoe bat (*Rhinolophus hipposideros*) is further listed under Annex II of the Directive, requiring the designation of conservation areas for the species. Under this Directive, Ireland is obliged to maintain the favourable conservation status of Annex-listed species. This Directive has been transposed into Irish law through the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011).

In addition, Irish species are further protected by national legislation (Wildlife Acts 1976, as amended). Under this legislation, it is an offence to intentionally disturb, injure or kill a bat or disturb its roost. Any work at a roost site must be carried out with the agreement of the National Parks and Wildlife Service (NPWS) and a derogation licence must be granted before works commence.

The NPWS monitors the conservation status of European protected habitats and species and reports their findings to the European Commission every 6 years in the form of an Article 17 Report. The most recent report for the Republic of Ireland was submitted in 2019. Table 1-1 summarises the current conservation status of Irish bat species and identified threats to Irish bat populations.

Table 1-1 Irish Bat Species Conservation Status and Threats (NPWS, 2019)

Bat Species	Conservation Status	Principal Threats
Common pipistrelle *Pipistrellus pipistrellus*	Favourable	**A05** Removal of small landscape features for agricultural land parcel consolidation (M) **A14** Livestock farming (without grazing) [impact of anti-helminthic dosing on dung fauna] (M) **B09** Clear--cutting, removal of all trees (M) **F01** Conversion from other land uses to housing, settlement or recreational areas (M) **F02** Construction or modification (e.g. of housing and settlements) in existing urban or recreational areas (M) **F24** Residential or recreational activities and structures generating noise, light, heat or other forms of pollution (M) **H08** Other human intrusions and disturbance not mentioned above (Dumping, accidental and deliberate disturbance of bat roosts (e.g. caving) (M) **L06** Interspecific relations (competition, predation, parasitism, pathogens) (M) **M08** Flooding (natural processes) **D01** Wind, wave and tidal power, including infrastructure (M)
Soprano pipistrelle *Pipistrellus pygmaeus*	Favourable	
Nathusius' pipistrelle *Pipistrellus nathusii*	Unknown	
Leisler's bat *Nyctalus leisleri*	Favourable	
Daubenton's bat *Myotis daubentoni*	Favourable	
Natterer's bat *Myotis nattereri*	Favourable	
Whiskered bat *Myotis mystacinus*	Favourable	
Brown long-eared bat *Plecotus auritus*	Favourable	
Lesser horseshoe bat *Rhinolophus hipposideros*	Inadequate	

1.3 Bat Roosting Behaviour

Bats use a variety of natural and manmade structures as roosting or resting places. The type of roost and its level of use is determined by its function in the bat life cycle. Table 1-2 provides a summary of different types of bat roosts (Collins, 2023).

Table 1-2 Bat Roost Types and Definitions

Roost Type	Definition
Day	Where individuals or small groups, rest/shelter in the day but are rarely found by night in summer.
Night	Where bats rest/shelter at night but are rarely found in the day.
Feeding	Where individuals, or a few individials, rest/feed for short periods during the night but are not present by day.
Transitional	Used by a few individuals for short periods of time prior to or following hibernation.
Maternity	Where females give birth and raise their young.
Hibernation	Where bats are found during winter (constant cool temperature and high humidity).
Satellite	An alternative roost found in close proximity to the main nursery colony used throughout the breeding season.
Swarming Site	Where large numbers gather in late summer to autumn. Important mating sites. Roosting may occur alongside swarming.
Mating Site	Where mating takes place in late summer to winter.

The likelihood of detecting active roosts is determined by the timing of the roost survey. In general:

- April surveys may detect transitional roosts used by bats following hibernation and prior to summer roosting.
- May-August surveys may detect maternity colonies and male/non-breeding female summer roosts.
- August surveys are best to determine maximum counts of adult and juvenile bats.
- August – October surveys may detect swarming and mating bats.
- September and October surveys may detect transitional roosts used by bats following the dispersal of maternity colonies and prior to hibernation.
- Day, night, feeding and satellite roosts may be found anytime between April and October.
- November – March surveys may detect hibernacula.

1.3.1 Bat Roost Significance

Whilst there are no clear Irish guidelines on assessing the significance of a roost, significance should be assessed at an appropriate spatial scale, based on species distribution, conservation status, current population trends, functionality of the site and the Zone of Influence (ZoI) of the project in question as it relates to bats (Reason and Wray, 2023). The significance of a bat roost is dependent on the rarity of the species using the roost and its function to the bat's life cycle, as outlined in Table 1-2 above. Table 3.2 of the CIEEM guidelines (adapted in Table 1-3) provides a starting point on the geographical assessment, which will rely on professional judgement and will be based on the baseline data collected and available information gathered during desktop studies.

Table 1-3 Roost importance at various geographic levels, adapted to Ireland from Table 3.2 of CIEEM guidelines (Reason and Wray, 2023)

Conservation status/ distribution	Individual or very small occasional/ transitional/ opportunistic roosts	Non-breeding day roosts (small numbers of species)	Mating sites, small numbers of hibernating bats	Larger transitional roosts	Hibernation sites	Autumn swarming sites	Maternity sites

Widespread all geographies	Site	Site	Site	Site/Local	Local/County [Larger hibernation sites rare in the UK]	Local/County [Very large pipistrelle swarming sites appear uncommon in the Ireland]	Unlikely to exceed Local/County importance unless colonies are atypically large; importance increased for assemblages.
Widespread in many geographies, but not as abundant in all	Site	Site	Site, dependent on local distribution [For *Myotis*, see swarming site column]	Local/County	Local/County importance dependent on size and number of species	County/National importance dependent on size; importance increased for larger sites that serve larger numbers/species	Unlikely to exceed County importance unless colonies are atypically large; importance increased for assemblages.
Rarer or restricted distribution	Site (very well-used night roosts may be of County importance for some species)	Site/Local/County, dependent on local distribution	Site/Local/County dependent on local distribution	Local/County	Local/County importance dependent on size and local distribution; increased value for assemblages.	County/National importance on size and local distribution; increased value for assemblages.	County/National importance on size and local distribution; increased value for assemblages.
Rarest Annex II species and very rare	Site (very well-used night roosts may be of Local/County importance for some species)	Site/Local/County, dependent on local distribution	Site/ Local/County, dependent on local distribution	Local/County	County/Regional importance on size and local distribution; increased value for assemblages	County/National importance on size and local distribution; increased value for assemblages.	County/National importance on size and local distribution; increased value for assemblages

All the largest roosts of Lesser Horseshoe Bat (LHB) in Ireland are of international importance and it is anticipated that all large Leisler's bat roosts (>100) would also have international significance (NRA, 2006) due to the limited distribution of this species in other European countries. Table 1-4 provides some criteria for determining the significance of different building roosts, as determined by the Bat Expert Panel of the Heritage Council in 2003 (NRA, 2006). Geographic criteria will be applied to these values.

Table 1-4 Level of Importance of Various Roosts in Ireland

Species	Indicator	Significance
Lesser horseshoe bat	Special Area of Conservation	Very significant
	If present	Significant
Whiskered bat	>10	Very significant
	If present	Significant
Natterer's bat	>10	Very significant
	If present	Significant
Daubenton's bat	Maternity roost	Significant
Leisler's bat	Maternity roost	Significant
Common pipistrelle	Maternity roost	Significant
Soprano pipistrelle	Maternity roost	Significant
Brown long-eared bat	Maternity roost	Significant

1.4 Statement of Authority

MKO employs a dedicated bat unit within its Ecology team who scope, carry out, and report on bat surveys, as well as producing impact assessments in relation to bats. MKO ecologists have relevant academic qualifications and are qualified in undertaking surveys to the levels required. MKO's Ecology team holds an open bat derogation licence from NPWS. The licence is intended for professionals carrying out surveys with the potential to disturb roosting bats (i.e. roost inspections). Graduate and seasonal ecologist staff are also covered under the licence under condition of being accompanied by more experienced colleagues.

Survey scoping was prepared by Sara Fissolo. The manual surveys were carried out by David Culleton, Laura McEntegert, Nora Szijarto, Frederick Mosley, Cuan Feeney and Cormac Roberts. Data manual ID was carried out by David Culleton. This report was prepared by David Culleton, was reviewed by Sara Fissolo, and was approved by Aoife Joyce. Staff's roles and relevant training are presented in Table 1-5 below.

Table 1-5 Project team qualifications and training.

Staff	Role	Qualifications and Training
Aoife Joyce (B.Sc., M.Sc.)	Project Director	B.Sc. (Hons) Environmental Science, University of Galway, Ireland. M.Sc. (Hons) Agribioscience, University of Galway, Ireland. Advanced Bat Survey Techniques – Trapping, biometrics, handling (BCI), Bat Impacts and Mitigation (CIEEM), Bat Tree Roost Identification and Endoscope Training (BCI), Bats in Heritage Structures (BCI), Bats and Lighting (BCI).
Sara Fissolo (B.Sc.)	Project Ecologist	B.Sc. (Hons) Ecology and Environmental Biology, University College Cork, Ireland. Advanced Bat Survey Techniques (BCI), Bat Impacts and Mitigation (CIEEM), Bats in Heritage Structures (BCI), Bat Care (BCT), Bats and Lighting (BCI), Kaleidoscope Pro Analysis (Wildlife Acoustics).
David Culleton (B.Sc., M.Sc.)	Bat Ecologist	B.Sc. (Hons) Zoology, University College Cork, Ireland. M.Sc. (Hons) Conservation Behaviour, Atlantic Technological University, Galway, Ireland. Bat Detector and Survey Training (BCI), Kaleidoscope Pro Analysis (Wildlife Acoustics), Endoscope Training (Internal), Structure & Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal).
Laura McEntegert (B.Sc.)	Ecologist	B.Sc. (Hons) Botany and Plant Science, National university of Ireland, Galway Bat Handling Training Course (BCI), Bats: Assessing the Impact of Development on Bats, Mitigation & Enhancement - (CIEEM), Kaleidoscope Pro Analysis (Wildlife Acoustics). Endoscope Training (Internal), Emergence and Re-Entry Surveys (Internal) Structure & Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal).
Nora Szijarto (B.Sc., M.Sc.)	Bat Ecologist	B.Sc. Biology, University of Lausanne, Switzerland M.Sc. Behaviour, Evolution and Conservation, University of Lausanne, Switzerland Bat Detector and Survey Training (BCI), Kaleidoscope Pro Analysis (Wildlife acoustics), Endoscope Training

		(Internal), Structure & Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal).
Frederick Mosley (B.A., M.Sc.)	Seasonal Bat Ecologist	B.A. (Hons) Biological and Biomedical Science Mod. Zoology, Trinity College, Dublin (2022) M.Sc. Marine Biology, University College Cork (2023) Kaleidoscope Pro Analysis (Wildlife Acoustics), Endoscope Training (Internal), Structure and Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal)
Cormac Roberts	Student Bat Ecologist	
Cuan Feely (B.Sc.)	Graduate Ecologist	BSc. (Hons) Environmental Science, University of Galway. Structure & Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal).

2. METHODOLOGY

2.1 Desktop Study

A desktop review of published material was undertaken to inform all subsequent field studies and assessments. The aim of the desktop review was to identify the presence of species of interest within the site and surrounding region.

The following list describes the sources of data consulted:

- *Review of online web-mappers: National Parks and Wildlife Service (NPWS) mapping.*
- *Review of NPWS Article 17 Report.*
- *Review of the publicly available National Biodiversity Data Centre web-mapper.*
- *Sligo County Development Plan 2024-2030.*
- *BCI Database.*
- *Review of NPWS Lesser Horseshoe Bat national dataset.*
- *Published reports.*

A number of published reports of surveys completed on bridges around Ireland were reviewed for references to Markievicz bridge (Shiel, C. 1999, Smiddy, P. 1991).

2.1.1 Bat Species' Range

EU member states are obliged to monitor the conservation status of natural habitats and species listed in the Annexes of the Habitats Directive. Under Article 17, they are required to report to the European Commission every six years. In April 2019, Ireland submitted the third assessment of conservation status for Annex-listed habitats and species, including all species of bats (NPWS, 2019).

The 2019 Article 17 Reports were reviewed for information on bat species' range and distribution in relation to the location of the proposed development.

2.1.2 National Bat Database of Ireland

The National Bat Database of Ireland holds records of bat observations received and maintained by Bat Conservation Ireland. These records include results of national monitoring schemes, roost records as well as ad-hoc observations. The database was searched for bat presence and roost records within a 10km radius of the proposed site, as well as general landscape suitability for bats.

2.1.3 Designated Sites

The potential for the proposed works to impact on sites that are designated for nature conservation is considered in separate Ecological Impact Assessment (EcIA) and Appropriate Assessment Screening (AASR) reports. Special Areas of Conservation (SACs) are designated under EU Habitats Directive. The European Sites that are within the Zone of Likely Impact, with bats identified as Qualifying Interests, are listed in Section 3.1.3 below.

Natural Heritage Areas (NHAs) are designated under the Wildlife (Amendment) Act 2000 and their management and protection is provided for by this legislation and planning policy. Proposed Natural Heritage Areas (pNHAs) were designated on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. Any identified NHAs and pNHAs designated for the protection of bats are presented in Section 3.1.3 and potential for impacts was fully considered.

2.1.4 Habitat and Landscape

2.1.4.1 Ordnance Survey Mapping

Ordnance survey maps (OSI 1:5,000 and 1: 50,000) and aerial imagery (ortho-based maps) were reviewed to identify any habitats and features likely to be used by bats. Maps and images of the site and general landscape were examined for suitable foraging, commuting or roosting habitats including woodlands and forestry, hedgerows, tree lines and watercourses.

2.1.4.2 Geological Survey Ireland

The Geological Survey Ireland (GSI) online mapping tool and University of Bristol Spelaeological Society (UBSS) Cave Database for the Republic of Ireland were consulted for any indication of natural subterranean bat sites, such as caves, within 10km of the proposed site (BCI, 2012) (last searched on the 08/10/2024). Furthermore, the archaeological database of national monuments was reviewed for any evidence of manmade underground structures, e.g. souterrains, that may be used by bats (last searched on the 8th October 2024).

2.1.4.3 National Monuments

The archaeological database of national monuments was reviewed for any evidence of manmade underground structures, e.g. souterrains, that may be used by bats (last searched on the 08/10/2024).

2.2 Field Study

2.2.1 Bat Habitat Appraisal

A walkover survey of the Study Area was carried out during daylight hours on the 17th September 2024. The landscape features on the site were visually assessed for potential use as bat roosting habitats and commuting/foraging habitats using a protocol set out in BCT *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (4th edn.) (Collins, 2023). The aim of the survey was to determine the presence of roosting bats within the proposed site.

Table 4.1 of the 2023 BCT Guidelines identifies a grading protocol for assessing structures, as well as commuting/foraging habitat for bats, which is summarised in Table 2-1. The protocol is divided into five Suitability Categories: *High, Moderate, Low*, *Negligible and None*.

Table 2-1 BCT protocol for bat habitat appraisals (Collins, 2023)

Assessment	Rationale
High	Structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions, and surrounding habitat. Continuous, high-quality, well-connected habitats, connected to known roosts.
Moderate	A structure used by bats due to their size, shelter, protection, conditions and surrounding habitat, but are unlikely to support a roost of high conservation status, and suitable, connected habitats.

Low	Structures with one or more potential roost sites that could be used by an individual bat opportunistically, and suitable but isolated habitats that could be used by a small number of bats.
Negligible	No obvious features present, but a level of uncertainty remains.
None	No habitat features likely to be used by roosting, foraging or commuting bats.

2.2.1.1 Preliminary Roost Assessment

A search for roosts was undertaken within the boundary of the Proposed Development site by three licenced ecologists to identify any potential roost features (PRFs).

The site was visited in September 2024. However, no internal inspection of the bridge was possible due to high water levels in the river. The bridge was assessed from ground level with the aid of torches, a thermal camera and binoculars, for its potential to support roosting bats and searched for potential access points into the structure.

2.3 Bat Activity Surveys

2.3.1 Manual Surveys

Manual activity surveys included roost surveys of the bridge. For each of the surveys, surveyors were equipped with active full spectrum bat detectors, Batlogger M (Elekon AG, Lucerne, Switzerland). Surveys commenced at least 15 minutes before sunset, and continued until two hours after sunset. Where possible, species identification was made in the field and any other relevant information was also noted, e.g., numbers, behaviour, features used, etc. All bat echolocation was recorded for subsequent analysis to confirm species identifications, as detailed in Section 2.4. The survey effort is summarised in Table 2-2.

Table 2-2 Bat Activity survey effort

Date	Surveyors	Type	Sunrise/ Sunset	Weather
17/09/2024	David Culleton, Cormac Roberts, Laura McEntegert and Nora Szijarto	Dusk Emergence	19:44	16-22°C, Dry, Calm
01/10/2024	Laura McEntegert, Frederick Moseley, Cormac Roberts and Cuan Feely	Dusk Emergence	19:09	13-16°C, Dry, Calm

2.3.1.1 Roost Surveys

The bridge was identified during the bat habitat appraisal as having potential to host roosting bats was subject to presence/absence surveys in the form of emergence surveys. Rationale for survey effort was based on guidelines proposed by Collins in Tables 7.1 and 7.2 (Collins, 2023).

Surveyors were located at various locations around the structure (Locations 1, 2, 3 and 4) with a focus on potential access point and roosting features identified during the daylight walkover surveys. The purpose was to identify any bat species, numbers, access points and roosting locations within each the PRF structure. Night vision aids (NVAs), including a thermal camera, aided the survey effort. Surveyor locations are presented in Figure 2-1.

Surveys were carried out in favourable weather conditions. Roost emergence surveys commenced at least 15 minutes before sunset and concluded between 1.5 and 2 hours after sunset.

2.3.1.2 Night Vision Aids

The use of NVAs is now considered standard best practice for bat activity surveys. MKO employs thermal camera equipment. The thermal cameras (InfiRay Eye II V2.0 and Pixfra RANGER R625), mounted on a tripod, was used during the roost survey to identify potential roosting hotspots and monitor emergence activity. The camera was fully monitored by a surveyor, who was equipped with a bat detector to record bat echolocation calls.

Footage from NVAs was saved and reviewed in office in full, with any instances of emergence marked for future use. The location of the NVAs is presented in Figure 2-1.

2.4 Bat Call Analysis

All recordings were later analysed using bat call analysis software Kaleidoscope Pro v.5.6.8 (Wildlife Acoustics, MA, USA). The aim of this was to identify, to a species or genus level, what bats were present at the proposed development site. Bat species were identified using established call parameters, to create site-specific custom classifiers. All identified calls were also manually verified.

Echolocation signal characteristics (including signal shape, peak frequency of maximum energy, signal slope, pulse duration, start frequency, end frequency, pulse bandwidth, inter-pulse interval and power spectra) were compared to published signal characteristics for local bat species (Russ, 1999). *Myotis* species (potentially Daubenton's bat *(M. daubentonii),* Whiskered bat *(M. mystacinus),* Natterer's bat *(M. nattereri)*) were considered as a single group, due to the difficulty in distinguishing them based on echolocation parameters alone (Russ, 1999). The echolocation of Soprano pipistrelle *(P. pygmaeus)* and Common pipistrelle *(P. pipistrellus)* are distinguished by having distinct (peak frequency of maximum energy in search flight) peak frequencies of ~55 kHz and ~46 kHz respectively (Jones & van Parijs, 1993). Some overlapping is possible between these species: where no certainty could be achieved, calls were identified to genus level.

Individual bats of the same species cannot be distinguished by their echolocation alone. Thus, 'bat passes' was used as a measure of activity (Collins, 2023). A bat pass was defined as a recording of an individual species/species group's echolocation containing at least two echolocation pulses and of maximum 15s duration. All bat passes recorded in the course of this study follow these criteria, allowing comparison. Due to the volume of bat activity data recorded, where multiple bat passes were recorded within the same registration, rarer or harder to record species were identified. Underreporting of common species is possible using this method, and is accounted for within the assessment.

Echolocation calls by Brown long-eared bats (*Plecotus auritus*) are intrinsically quiet and hard to record by static equipment. All data collected, including Noise files and Auto ID files are checked to ensure all calls for this species have been captured. However, a level of underrepresentation is expected for this species and is accounted for in the assessment of activity levels.

Map Legend

- Markievicz Bridge
- Surveyor Locations

NVA Locations

- 01/10
- 17/09

N

Drawing Title
2024 Survey Effort

Project Title
Markievicz Bridge Repairs

Drawn By	Checked By
DC	SF
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220943	2-1
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3. RESULTS

3.1 Desktop Study

No references to Markievicz Bridge was found within the reviewed published material.

3.1.1 Sligo Co. Development Plan (2024-2030)

The Sligo County Development Plan (2024-2030) was searched for references specific to the protection of bats. The following objective was found:

24.1.2 Protecting biodiversity – non-designated sites
Protected Species

Certain plant, animal and bird species are protected by law. This includes plant species listed in the Flora Protection Order 1999 and animals and birds listed in the Wildlife Act 1976 and subsequent statutory instruments, those listed in Annex IV of the Habitats Directive (92/43/EEC), and those listed in Annex I of the Birds Directive (2009/147/EC). Proposals for developments, where appropriate, will require an assessment of the presence of bats and other protected species, and must ensure that suitable avoidance and/or mitigation measures are put in place accordingly.

Protected species – policies*: It is the policy of Sligo County Council to:*

P-PS-1 *Ensure that development does not have a significant adverse impact incapable of satisfactory mitigation on plant, animal or bird species protected by law.*

P-PS-2 *Consult with the National Parks and Wildlife Service (DHLGH) and take account of any licensing requirements when undertaking, approving, and authorising development which is likely to affect plant, animal or bird species protected by law.*

P-PS-3 *Provide guidance to developers and others in relation to species protected by law and their protection and management in the context of development.*

P-PS-4 *Ensure, where appropriate, the protection and conservation of areas, sites, species and ecological networks of biodiversity value outside designated sites, and require an appropriate level of ecological assessment by suitably qualified professionals to accompany any development proposals likely to impact on such areas or species.*

P-PS-5 *Require all new developments to incorporate habitat facilities for wildlife species, including Swifts, in or on buildings or their facades, where appropriate.*

Protected species – objective: *It is an objective of Sligo County Council to:*

O-PS-1 *Undertake surveys, as appropriate, to establish the location of protected flora and fauna in the Plan area through the County Heritage Plan and the County Biodiversity Action Plan.*

3.1.2 National Biodiversity Data Centre

A review of the National Bat Database of Ireland on the 178 yielded results of bats within a 10km hectad of the proposed works. The search yielded 6 bat species within 10km. Table 3-1 lists the bat species recorded within the hectad which pertains to the proposed works site (G63).

A review of the NBDC bat landscape map provided a habitat suitability index of 36.11 (red). This indicates that the proposed development area has high habitat suitability for bat species.

Table 3-1 NBDC Bat Records

Hectad	Species	Date	Database	Status
G63	Brown Long-eared Bat (*Plecotus auritus*)	31/12/2009	National Bat Database of Ireland	Annex IV
G63	Common Pipistrelle (*Pipistrellus pipistrellus sensu stricto*)	26/05/2018	National Bat Database of Ireland	Annex IV
G63	Daubenton's Bat (*Myotis daubentonii*)	31/08/2021	National Bat Database of Ireland	Annex IV
G63	Lesser Noctule (*Nyctalus leisleri*)	26/05/2018	National Bat Database of Ireland	Annex IV
G63	Natterer's Bat (*Myotis nattereri*)	31/12/2009	National Bat Database of Ireland	Annex IV
G63	Pipistrelle (*Pipistrellus pipistrellus sensu lato*)	31/12/2009	National Bat Database of Ireland	Annex IV
G63	Soprano Pipistrelle (*Pipistrellus pygmaeus*)	26/05/2018	National Bat Database of Ireland	Annex IV

3.1.3 Designated Sites

Within Ireland, the Lesser horseshoe bat is the only bat species requiring the designation of Special Areas of Conservation (SACs). The site is situated outside the current known range for this species.

No proposed Natural Heritage Area (pNHA) designated for the protection of bats were identified within 10km of the proposed works.

3.1.4 Habitat and Landscape

A review of the GSI online mapper did not indicate the possible presence of any subterranean sites within the Proposed Development site and a search of the National Monuments Database did not reveal the presence of any manmade subterranean sites within the site.

A search of the UBSS Cave Database for the Republic of Ireland found thirteen caves within 10 km of the proposed site (Table 3-2).

No national monuments are reported within the site.

Table 3-2 Caves within 10km of the proposed site.

Cave	Distance to Site	Description
Tonapubble	1.9km	24m long rift
Tully Cave	6.3km	
Deerpark Cave	5.8km	2 caves, one is 12m long
Sramore Cave	9.0km	20m crawl
Finn McCool's Pot	9.3km	25m deep, 138m long

Lily's Hole	9.5km	Large chamber 15m long, 2 entrances
Knocknarea Cave 1	7.5km	20m of intersecting tunnels
Knocknarea Cave 2	7.6km	4 small caves, longest is 15m
Knocknarea Cave 3	7.7km	System of tunnels and rifts 50m in total
Knocknarea Cave 4	7.8km	Tunnel 30m long
Knocknarea Cave 5	7.6km	5m long high cleft
Knocknarea Cave 6	7.6km	30m long rift
Knocknarea Cave 7	7.4km	15m network of rifts

3.2 Bat Habitat Appraisal

A detailed description of the habitats located within the Proposed Development site are presented in the accompanying Ecological Impact Assessment (EcIA). A bat walkover and inspection survey were conducted on the 17th of September 2024. During this survey, habitats within the study area were assessed for their suitability for bats to roost, forage and commute. Connectivity with the wider landscape was also considered to determine habitat suitability.

With regard to foraging and commuting bats, the proposed works site is considered of *Low* suitability due to the lack of habitat diversity and street lighting present along both sides of the river. However, the presence of semi-natural woodland at the northern border of the river to the east and west provide some forging opportunities, and connectivity to the wider landscape. Urban areas, which surround the bridge, are considered of *Low* suitability.

Details of the assessment of Markievicz bridge for its suitability to host roosting bats are presented below.

3.2.1 Preliminary Roost Assessment

Markievicz Bridge is a stone bridge located in the centre of Sligo town (IG Ref: G 69329 35946) (Plate 3-1 and 3-2). Due to health and safety concerns, no inspection of the bridge was possible during either of the two site visits. Despite the urban area, the bridge is located in proximity to quality foraging habitat to the east and the west and multiple access points were identified and therefore, Markievicz Bridge was assigned a *Moderate* roosting potential. The bridge was subject to dusk emergence surveys on the 17th September and the 1st October 2024, as detailed in Section 3.3.1.1.

Plate 3-1 Markievicz Bridge; Western aspect

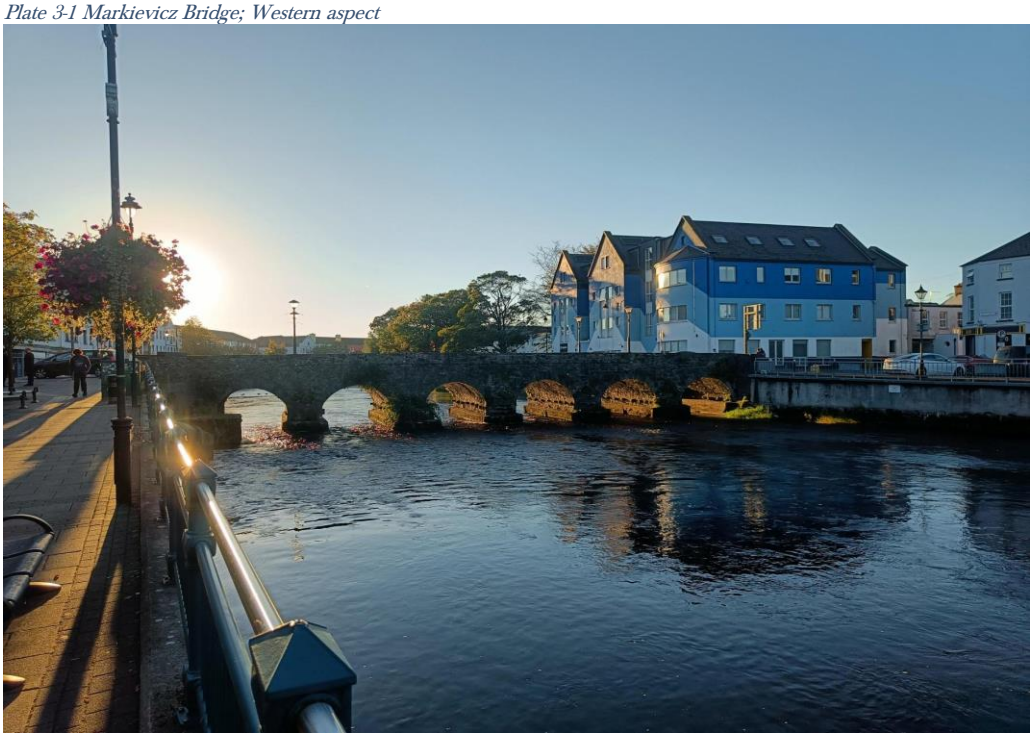

Plate 3-2 Markievicz Bridge; Eastern aspect

3.3 Bat Activity Surveys

3.3.1.1 Dusk Emergence Surveys

Two dusk emergence survey were carried out by four surveyors at Markievicz Bridge. Bat activity was recorded during both surveys. Surveys were carried out in suitable weather conditions and commenced a minimum of 15 minutes before sunset, and concluded approximately 2 hours after sunset.

During the survey on the 17th September 2024, six Soprano pipistrelles were observed emerging from the stonework beneath the second to northernmost arch under the bridge (Plate 3-3). Soprano pipistrelle was the most recorded species during this survey (n=665), followed by Common pipistrelle (n=134) and, to a lesser extent, Leisler's bat (n=25). Soprano and Common pipistrelles were observed foraging under the two northernmost arches of the bridge. A small number of Leisler's bats were recorded commuting during the manual survey.

No bats were observed emerging from the bridge during the survey on the 1st October 2024. Higher Soprano pipistrelle activity (n=1060) was recorded during this survey. Instances of Common pipistrelle (n=120) were less than that recorded during the survey on the 17th September. Foraging and social behaviours were observed at the two northernmost arches of the bridge. No Leisler's bats were recorded. Table 3-3 shows the species passes recorded during each survey. Surveyor locations are presented in Figure 2-1.

Table 3-3 Manual Survey Species passes

Date	Surveyor	Leiser's bat	Common pipistrelle	Soprano pipistrelle
17/09/2024	1	10	57	264
	2	13	74	303
	3	1	3	91
	4	1		7
01/10/2024	1		4	288
	2		7	284
	3		60	346
	4		49	142

Plate 3-3 Emergence location in the northern aspect of the second to northernmost arch.

4. DATA EVALUATION

4.1.1 Discussion and Interpretation

Markievicz Bridge is located within the known range of seven species of Irish bats. Bats were recorded in the vicinity of the bridge during each manual survey. Soprano pipistrelle activity was higher than any other species during the surveys. Leisler's bat was recorded only during the first manual survey. Soprano pipistrelles were observed consistently foraging and socialising at the two northernmost arches during both surveys. The northern section of the bridge is well connected to foraging habitats to the east and west and the majority of bat activity during the manual surveys was observed at the two northernmost arches. No bats were observed emerging from either side of the bridge and it is likely that there are no roosts present there. However, a Soprano pipistrelle roost was identified under the second-to-northmost arch of the bridge. Six bats were observed emerging from the structure during the September survey, and no bats emerged during the October survey. The roost is likely a small day roost or a small maternity roost (Reason & Wray, 2023) and, therefore, is likely of site importance or of local importance. The roost not likely to be a hibernation roost.

Overall, bat activity was moderate around the bridge and only synanthropic bats were recorded during the surveys. A bat roost was confirmed during the surveys and quality habitats to the east and west provide foraging opportunities for roosting bats.

4.1.2 Importance of Bat Population Recorded at the Site

Ecological evaluation within this section follows a methodology that is set out in Chapter three of the '*Guidelines for Assessment of Ecological Impacts of National Roads Schemes'* (NRA, 2009).

All bat species in Ireland are protected under the Bonn Convention (1992), Bern Convention (1982) and the EU Habitats Directive (92/43/EEC). Additionally, in Ireland bat species are afforded further protection under the Birds and Natural Habitats Regulations (2011) and the Wildlife Acts 1976 (as amended). Bats as an Ecological Receptor have been assigned ***Local Importance (Higher value)*** on the basis that the habitats within the study area are utilized by a regularly occurring bat population of Local Importance.

2024 surveys confirmed that bats are currently using Markievicz Bridge to roost. No evidence of large roosts was found during the surveys. However, on a precautionary basis, as the bridge was surveyed in Autumn only it cannot be ruled out that the roost found is a maternity roost, and therefore it should be considered as such.

4.1.3 Survey limitations

A comprehensive suite of bat surveys were undertaken at the Proposed Development site. The surveys undertaken in accordance with BCT Guidance, provide the information necessary to allow a complete, comprehensive and robust assessment of the potential impacts of the Proposed Development on bats receptors.

Access limitations can relate to roost inspections:

- Due to high water levels and the fast-flowing river, it was not possible to inspect the sides of the bridge, or underneath the arches. However, a second manual survey was undertaken to provide a robust assessment of the bridge.

Survey limitations can relate to deployment coverage, data storage, equipment failure or deployment-related incidents:

- Good survey coverage of the site has been achieved, with four surveyors providing full coverage of the bridge during both manual surveys.
- MKO employs data storage redundancy methods to ensure no data is lost from the field to final analysis - no data was lost.
- SD card corruption or fill-up can prevent data from being collected during deployments – no issues with data on-site data storage were encountered.
- Bat detector's microphones are checked before every season to ensure they have good sensitivity for data collection, and detectors' software updates are installed as soon as they become available - no issues related to equipment were encountered during the surveys.
- Incidents during deployments, such as tampering or livestock interference, can prevent data from being collected effectively - no incidents were reported during the surveys.

Activity assessment limitations can relate to data analysis procedures and a lack of standardised and Ireland-based assessment methods:

- MKO's data analysis methods include manually checking of 100% of bat passes identified by Auto ID Software, as well as noise and no ID files. Where multiple species, or multiple individuals of the same species, are identified within the same call, only one is reported, prioritising hard to detect species. This is due to the large volumes of data collected. While this method is likely to introduce a bias, it is not believed to affect the overall conclusions of the assessment, as only commonly recorded species might be underreported.
- No activity threshold currently exists for Irish bat species to objectively assess bat activity within a certain habitat, and no standardised assessment method has been proposed across the country. Ecobat software recommended by existing guidelines was not available for use at the time of the assessment, as under maintenance. MKO experience surveying habitats similar to those present within the site aided with the assessment.

No significant limitations in the scope, scale or context of the assessment have been identified.

5. CONCLUSION & RECOMMENDATIONS

The following points set out the main conclusions following the completion of the surveys described above:

- Three bat species were recorded commuting and foraging across the proposed works site during the bat surveys carried out in September and October 2024, including Soprano pipistrelle, Common pipistrelle and Leisler's bat.
- The existing landscape occurring within the site provides moderate habitats for commuting and foraging bats.
- One active roost was recorded.

A full assessment of the potential impacts on bats as a result of the proposed development is presented in the EcIA which will accompany the planning application. Consideration should be given to the following measures to mitigate for potential impacts:

- Any proposed works will avoid the confirmed roost during steaming/abrasive cleaning and mortar joint repointing. A derogation licence from NPWS will be required in the event that the roost location cannot be retained.
- A derogation licence to disturb bats is required should works be undertaken during the bat activity season (April–October).
- Should proposed works be undertaken outside of the activity season (November–March), a pre-commencement survey by a licenced ecologist will be completed to ensure no roosting bats are present. If roosting bats are found during this survey, a derogation licence will be required to continue carrying out the works.
- Should additional suitable roosting features be identified during the site supervision, they will be subject to an interior inspection by the ecologist to ensure no roosting bats are present within. Suitable additional roosting spaces will be recommended for retention.
- If scaffolding is to be erected for an extended period during the bat activity season, there should be no obstructing of obstructing of commuting/foraging corridors.
- During the bat activity season, no lighting should be implemented under the bridge arches to minimise disturbance to roosting bats.

The surveys undertaken provide a good understanding of the use of the structure and surrounding habitats by bats and the report provides an overview with regard to the likely challenges faced and constraints associated with the proposed works.

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