

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

VOLUME III APPENDICES

Appendix 7-1 Baseline Bat Report F-211052 – Cleeves –
2025.09.18 (S)



Baseline Bat Report

Cleeves Riverside Quarter,
Co. Limerick





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Prepared By: **MKO
Tuam Road
Galway
Ireland
H91 VW84**



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APPENDICES

Appendix 1 – 2022 Bat Report

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1. INTRODUCTION

1.1 Purpose of this Report

MKO was commissioned to complete a comprehensive suite of bat surveys at Cleeves Riverside Quarter, Co. Limerick (Grid Ref: R 57051 57119). This report provides details of the bat surveys undertaken, including survey design, methods and results, and recommendations to safeguard bats. The report was first completed in 2024 to help inform the proposed design of the Cleeves Masterplan site. The report has been reviewed and updated in August 2025 to support the Phase II planning application of the phased development proposal for the significant city centre regeneration area. The development phases are detailed in Chapter 1 of the EIAR.

The report presents the ecological baseline recorded within the Masterplan site in relation to bats. The bulk of the surveys was carried out in February, May, July and September 2023. These followed preliminary surveys undertaken in 2021/2022 and presented in **Appendix 1**. 2023 surveys included a roost suitability assessment of buildings not covered during 2022 surveys, as well as seasonal manual activity surveys and ground-level static detectors surveys. The site was revisited in 2024 and 2025, as walkovers and roost inspection surveys were carried out to reconfirm the existing baseline.

The main objective of the surveys was to assess the site for its suitability for foraging and commuting bats, as well as assess and inspect any structures for potential roosts, including maternity roosts. The bat surveys were designed to establish the nature, scale and locations of potential bat activity within the site.

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 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)*
- *Lesser Horseshoe Bat Species Action Plan 2022-2026 (NPWS & VWT, 2022)*

1.2 Site Description

The Proposed Development site is located in the Docklands of, Co. Limerick (Grid Ref: R 57051 57119) and is accessed via The North Circular Road.

The Proposed Development site is located on the former Cleeves factory site on the northern bank of the River Shannon. The proposed Masterplan will include the redevelopment and revitalisation of the site as a public realm accommodating a mix of uses including proposed residential and office spaces, educational and tourist facilities.

- Where the ‘proposed development’ is referred to, this encompasses the entirety of the Phase II development
- Where ‘the Application site’, or ‘the site’, is referred to, this relates to the primary red line boundary of the proposed development
- Where ‘the Masterplan site’ is referred to, this relates to the wider MS area which has been considered as part of the assessment.

There are six distinct, but yet permeable areas identified within the overall Cleeves Masterplan site, these are detailed in Figure 2.1 of Chapter 2 Project Description and are described as follows:

- ‘Flaxmill Site’ (1.6 hectares) comprises the Flaxmill, perimeter walls, Chimney, Engine House, Water Tank and Steeping Galleries.
- ‘Shipyard Site’ (0.7 hectares) gently sloping towards the river, is located between the North Circular Road and Condell Road, adjoining Fernhill residential development to the north west and St, Michael’s Rowing club to the south east, is currently used for storage and car parking and includes a warehouse.
- ‘Riverfront’ (0.22 hectares) including St Michael’s Rowing Club premises and club facilities, is defined by O’Callaghan Strand to the north and the River Shannon to the south extending from a point defined by the Condell Road and Shannon Bridge to the west.
- ‘Stonetown Terrace Site’ (0.43 hectares) is accessed via the Stonetown Terrace Road and is defined by the Landsdowne Hall apartment block to the east, existing housing in Clanmaurice Gardens to the north, Clanmaurice Avenue to the west and the Quarry Site to the south. The site comprises an Upper Reservoir structure.
- ‘Quarry Site’ (0.61 hectares) is dominated by a cliff face which adjoins the long rear gardens of housing in Clanmaurice Avenue to the north. Part of the southern boundary touches the North Circular Road and extends to include 2 no. Victorian Houses.
- ‘Salesians Site’ (0.9 hectares) is separate to the Cleeves Complex, located to the west of the Quarry site, with the long rear gardens of housing in Clanmaurice Avenue defining the northern boundary, Salesians primary school defining the western boundary and North Circular Road defining the southern boundary. The site comprises a complex of buildings including a former secondary school, currently used for the temporary accommodation of Ukrainian refugees and Fernbank House, a former private dwelling which has been much altered and extended to meet the needs of the school.

1.3

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 <i>Pipistrellus pipistrellus</i>	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 <i>Pipistrellus pygmaeus</i>	Favourable	
Nathusius' pipistrelle <i>Pipistrellus nathusii</i>	Unknown	
Leisler's bat <i>Nyctalus leisleri</i>	Favourable	
Daubenton's bat <i>Myotis daubentonii</i>	Favourable	
Natterer's bat <i>Myotis nattereri</i>	Favourable	
Whiskered bat <i>Myotis mystacinus</i>	Favourable	
Brown long-eared bat <i>Plecotus auritus</i>	Favourable	
Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Inadequate	

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 1-2 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 <i>Myotis</i> , 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 1-3 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 1-3 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 bat unit within its Ecology team, dedicated to scoping, carrying out, and reporting 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 is covered under the licence under condition of being accompanied by more experienced colleagues.

Survey scoping was prepared by Sara Fissolo. The daytime walkover survey and inspections were carried out by Sara Fissolo, Kate Greaney, and Nathan Finn. Manual activity surveys were lead by MKO staff detailed below. Data manual ID were carried out by Kate Greaney and David Culleton. This report was prepared by Kate Greaney, was reviewed by Sara Fissolo, and was approved by Pat Roberts. Staff's roles and relevant training are presented in Table 1-4 below.

Table 1-3 Project team qualifications and training.

Staff	Role	Training
Aoife Joyce (B.Sc., M.Sc.)	Project Director	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), Kaleidoscope Pro Analysis (Wildlife Acoustics).
Sara Fissolo (B.Sc.)	Project Ecologist	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).
Ryan Connors (B.Sc., M.Sc.)	Seasonal Bat Ecologist	Surveying Trees for Bats (BRTS), Structure & Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal), Kaleidoscope Pro Analysis (Internal).
Kate Greaney (B.Sc., M.Sc.)	Ecologist	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)
Nathan Finn (B.Sc., M.Sc.)	Seasonal Bat Ecologist.	Bat Detector and Survey Training (BCI), Kaleidoscope Pro Analysis (Internal), Endoscope Training (Internal), Structure & Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal).
David Culleton (B.Sc., M.Sc.)	Seasonal Bat Ecologist	Bat Detector and Survey Training (BCI), Kaleidoscope Pro Analysis (Internal), Endoscope Training (Internal), Structure & Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal).
Nora Szijarto (B.Sc., M.Sc.)	Seasonal Bat Ecologist	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 McEntegart (B.Sc.)	Ecologist	Bat Handling Training Course (BCI), Bats: Assessing the Impact of Development on Bats, Mitigation & Enhancement - (CIEEM), Kaleidoscope Pro Analysis (Wildlife Acoustics), 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)
Neil Campbell (BSc.)	Ecologist	Structure & Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal), Kaleidoscope Pro Analysis (Wildlife Acoustics).
Laura Granicz (BSc., MSc.)	Ecologist	Structure & Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal), Advanced Bat Survey Techniques (BCI), Kaleidoscope Pro Analysis (Wildlife Acoustics).

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.*
- *Review of specially requested records from the NPWS Rare and Protected Species Database for the hectads which overlap with the study area.*
- *Limerick County Development Plan 2022-2028*
- *BCI Database*
- *Review of NPWS Lesser Horseshoe Bat national dataset*

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

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 27/11/2023). 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 27/11/2023).

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 27/11/2023).

2.1.5 Previous Reports

MKO was provided with documentation of previous ecological assessment carried out within the site to inform the survey scope. A summary of relevant results from previous surveys is provided within the report.

2.2 Field Study

2.2.1 Bat Habitat Appraisal

A complete walkover survey of the Masterplan site was carried out during daylight hours on the 9th February 2023. This walkover followed surveys carried out in 2022 and primarily covered areas that were not visited during previous surveys. Walkovers were repeated on the 6th October 2024, the 27th March 2025 and the 5th June 2025.

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 Bat Conservation Trust (BCT) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (4th edn.) (Collins, 2023).

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 4.2 of the 2023 BCT Guidelines identifies a grading protocol to assess trees, which is divided into three Suitability Categories: No suitability (NONE), Further Assessment Required (FAR), and Potential Roosting Feature present (PRF). This initial tree grading protocol can inform a preliminary roost assessment (PRA) to determine the available tree-roosting resource within the proposed development site, depending on whether a PRF could accommodate a small number of bats (PRF-I) or a larger roost, including maternity roosts (PRF-M). More information on PRAs is provided below.

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 Masterplan site to identify any potential roost features (PRFs). The licence, issued by NPWS, is intended for professionals carrying out surveys with the potential to disturb roosting bats. The aim of the survey was to determine the presence of roosting bats, potential access points, roosting locations and the need for further survey work or mitigation.

The site was first visited in February, with following visit carried out in May, July, and September 2023. All structures within the site that were not inspected in 2022 were assessed for their potential to support roosting bats. All other buildings were re-visited were necessary to assess any baseline changes since 2022 surveys, focusing on areas where evidence of roosting bats was previously identified.

On the 9th February, bat droppings were collected at two locations within the Flaxmill building (B9) (IG Ref: R 57058 57145) and Electrical Station (B10) (IG Ref: R 57030 57129) and sent for DNA analysis to SureScreen Scientifics in the UK. Two intact droppings were collected at each location and were stored and labelled in separate lab testing vials, with one acting as reserve for the lab analysis process.

In addition, interior inspections of the Salesians school buildings (BL16, 16b, 16c, 16d), convent and Secondary School (BL16a), St. Micheal's Rowing Club (BL17, 17a, 17b) and a previously occupied semi-detached house (B1b) on the Victorian Terrace on North Circular Road were inspected for hibernacula and potential signs of other roosting.

An updated site visit was carried out on the 6th October 2024 by Sara Fissolo, Colin Murphy and Nora Szijarto, accompanied by LCCC Ecologist Sean Doyle. These primarily focused on the Flaxmill building to facilitate Phase 1 Heritage works on this protected structure. A derogation licence from NPWS has been obtained for the heritage works (DER-BAT-2025-169). Bat monitoring is ongoing at the site as part of Phase 1 Heritage works in line with conditions from the derogation licence.

Another site visit was carried out by Sara Fissolo and David Mesarcik on the 5th June 2025 to reinspect all areas within the site. A thermal camera (Pixfra ARC Thermal Monocular) and an endoscope were used to aid these assessments. The aim of these surveys was to check whether known roosting locations

were still in use, whether any significant changes in the baseline had occurred since undertaking the surveys in 2023, and whether any new evidence of bat roosting activity could be found.

A systematic search of all accessible interiors, including all attic spaces, was undertaken. The exterior of each building was inspected first from ground level and included all accessible windowsills, walls, eaves, roof ridge and roof slates. Inspections were carried out with the aid of torches, a ladder, an endoscope, a thermal camera and binoculars, and searched for evidence of bat use, including live and dead specimens, droppings, feeding remains, urine splashes, fur oil staining and noises, as well as potential access points into the structure.

Trees present within the site were examined from ground level for the presence of rot holes, hazard beams, cracks and splits, partially detached bark, knot holes, gaps between overlapping branches and any other PRFs identified by Andrews (2018). Notes were initially compiled on any trees marked as PRF, including location and species.

2.2.2 Bat Activity Surveys

2.2.2.1 Manual Surveys

Manual activity surveys included roost surveys of any feature identified as a potential roost, as well as night-time bat walkovers (NBW). Surveys were carried out throughout the bat activity season, in spring summer and autumn 2023, to assess the use of the site at different times of the year.

For each of the surveys, surveyors were equipped with active full spectrum bat detectors, Batlogger M (Elekon AG, Lucerne, Switzerland). A Pettersson D200 Ultrasound Detector (Wildcare) was used by one surveyor on the 15th of May 2023. 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 and presented in Figure 2-1.

Table 2-2 Bat Activity survey effort

Date	Surveyors	Type	Sunrise/Sunset	Survey Time	Weather
15/05/2023	SF, KG, DC, NF, LM, NS, NC, LG	Dusk Emergence	21:24	21:00 – 23:00	11-13°C, Dry, Calm – Light breeze
24/07/2023	SF, KG, DC, RC, NS, LG assisted by Tom Peters (B.Sc.), NC assisted by Katy Beckett (B.Sc.)	Dusk Emergence	21:40	21:30 – 23:30	16-17°C, Dry, Calm
25/07/2023	SF, KG, DC, RC	Dawn Re-entry & NBW	05:42	04:10 – 06:00	13-15°C, Dry, Calm
26/09/2023	SF assisted by Timothy O'Callaghan (B.Sc.) and Tom Peters, KG assisted by Caitrin Ferren, DC, NF, RC, Stephanie Corkery (B.Sc., M.Sc.)	Dusk Emergence	19:24	19:04 – 21:10	13 - 15°C, Dry, Calm
27/09/2023	SF, KG, DC, NF	Dawn Re-entry & NBW	07:28	05:55 – 06:55	13 - 15°C, Dry – Moderate Breeze, Calm

2.2.2.1.1 Roost Surveys

Any structure identified during the bat habitat appraisal as having potential to host roosting bats was subject to presence/absence surveys in the form of emergence and re-entry surveys. Rationale for survey effort was based on guidelines proposed by Collins in Tables 7.1 and 7.2 (Collins, 2016). Multiple structures were identified within the site and were subject to roost surveys following the initial roost assessment. Where structures had been previously surveyed in 2022, top-up surveys were carried out. The primary objective of the survey scope was to assess the site for the presence of Lesser Horseshoe bats.

Surveyors were located across the site 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), aided the survey effort, as detailed in Section 2.3.1.1.

Surveys were carried out in favourable weather conditions (Table 2-1). Roost emergence surveys commenced at least 15 minutes before sunset and concluded approximately 1.5 hours after sunset. Re-entrance surveys commenced approximately 1.5 hours before sunrise and concluded 15 minutes after sunrise. The dawn re-entry survey, the morning of the 27th of September was cut short due to a heavy downpour of rain.

Night Vision Aids

The use of NVAs is now considered standard best practice for bat activity surveys. MKO employed thermal camera equipment (Thermal Monocular Eye II E6+ V3.0 (InfiRay, UK)). The thermal camera, mounted on a tripod, was used during roost surveys 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 the NVA was saved and reviewed in office in full, with any instances of emergence marked for future use. The location of the NVA is presented in Figure 2-1.

2.2.2.1.2 Night-time Bat Walkover

Manual activity surveys also comprised of nighttime bat walkovers which coincided with dusk emergence and dawn re-entry surveys. The aim of this survey was to observe bat species using the site and visually assess bat behaviour and important features used by bats within the site, as well as to identify a possible commuting corridor for Lesser horseshoe bats. During dawn activity surveys, the aim of the walkover was to spot any swarming behaviour within the site to identify any additional potential roosting areas.

The transects were walked by a surveyor, recording bats in real time. They occurred alongside the manual roost surveys. Surveyors were equipped with an active full spectrum bat detector, the Batlogger M bat detector (Elekon AG, Lucerne, Switzerland). The route was prepared with reference to the proposed layout, desktop and walkover survey results, as well as a suspected Lesser horseshoe bat commuting corridor between two known roosting locations. The route is presented in Figure 2-1.

2.2.3 Static Detectors Surveys

Full spectrum SM4 bat detectors (Wildlife Acoustics, Maynard, MA, USA), were deployed during static surveys to record bat activity across each survey period. Three detectors were deployed on 15th May 2023 and collected on 1st June 2023 to show bat activity during the spring survey period. There were three detectors deployed on the 24th July and collected on 10th August to show bat activity for the summer survey period. Five detectors were then deployed during autumn survey period from the 12th of September until the 27th of September 2023. The locations of static detectors were selected to represent the range of habitats present within the site, including favourable bat habitats as well as to investigate a potential commuting corridor for Lesser horseshoe bats between the Cleeve's site and the adjacent school.

Settings used were those recommended by the manufacturer for bats, with minor adjustments in gain settings and band pass filters to reduce background noise when recording. Detectors were set to record from 30 minutes before sunset until 30 minutes after sunrise. The Song Meter automatically adjusts sunset and sunrise times using the Solar Calculation Method when provided with GPS coordinates. Static detector locations are shown in Figure 2-1 and presented in Table 2-3. Habitats are assessed in line with Fossitt (2000). A detailed description of the habitats within the site is provided in EIAR Chapter 7 Biodiversity.

Table 2-3 Static Detector Location

Detector ID	IG Reference	Habitat	Site	Season	Deployment	Collection
D01	R 56923 57150	BL3	Quarry/Reservoir	Spring	15/05/2023	01/06/2023
D02	R 56901 57173	WL1	Quarry/Victorian Terrace	Spring	15/05/2023	01/06/2023
D03	R 57049 57209	GS1	Stonetown Terrace	Spring	15/05/2023	01/06/2023
D04	R 56996 57164	BL3 FL7	Quarry/Reservoir	Summer	24/07/2023	10/08/2023
D05	R 56920 57245	ER2	Quarry	Summer	24/07/2023	10/08/2023
D06	R 56858 57257	BL3	Salesians	Summer	24/07/2023	10/06/2023
D07	R 56858 57257	BL3	Salesians	Autumn	12/09/2023	27/09/2023
D08	R 56905 57249	BL3/ED3	Quarry	Autumn	12/09/2023	27/09/2023
D09	R 57033 57186	BL3	Flaxmill	Autumn	12/09/2023	27/09/2023
D10	R 56997 57248	GA2/WL1	Stonetown Terrace	Autumn	12/09/2023	27/09/2023
D11	R 56901 57199	ED2/WL1	Quarry/Victorian Terrace	Autumn	12/09/2023	27/09/2023

2.2.4 Bat Call Analysis

All recordings were later analysed using bat call analysis software Kaleidoscope Pro v.5.4.8 (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 (*Plectous 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.

Echolocation by Lesser horseshoe bats (*Rhinolophus hipposideros*) is directional and can be missed by detectors, particularly manual detectors. MKO employs omni-directional microphones to limit under-recording for the species.

2.2.5 Assessment of Bat Activity Levels

The online database tool Ecobat (mammal.org.uk) is recommended by Collins to assess bat activity levels within a site. This web-based interface, launched in August 2016, allows users to upload activity data and to contrast results with a comparable reference range, allowing objective interpretation. Uploaded data then contributes to the overall dataset to provide increasingly robust outputs. Ecobat generates a percentile rank for each night of activity and provides a numerical way of interpreting levels of bat activity in order to provide objective and consistent assessments.). Ecobat was unavailable for a cross-site analysis of static data at the time of analysis. Therefore, activity levels were assessed based on professional experience gained from performing bat surveys in a wide variety of Irish habitats.



Map Legend

Site outline

Static detectors

15/05/2023

24/07/2024

12/09/2024

Surveyor locations

15/05/2023

26/09/2023

27/09/2023

24/07/2023

25/07/2023

Transect at dawn
- 25.07.2024



Drawing Title

Survey Effort 2023

Project Title

Cleeves

Drawn By

NS

Checked By

SF

Project No.

211052

Drawing No.

Fig.2-1

Scale

1:1,500

Date

2024-05-28



MKO

Planning and
Environmental
Consultants

Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkofireland.ie
Website: www.mkofireland.ie

3. RESULTS

3.1 Desktop Study

3.1.1 Limerick Co. Development Plan – 2022-2028

The Limerick County Development Plan came into effect on 29th July 2022. The plan was searched for references to the protection of bats, in particular lesser horseshoe bat. This species is present in the county but is considered of particular concern due to risk of isolation and the fragmentation of corridors between Cork and Clare populations. The following Objective was found in relation to the conservation of the lesser horseshoe bat:

Objective EH O2: *It is an objective of the Council to require all developments in areas where there may be Lesser Horseshoe Bats, to submit an ecological assessment of the effects of the development on the species. The assessment shall include mitigation measures to ensure that feeding, roosting or hibernation sites for the species are maintained. The assessment shall also include measures to ensure that landscape features are retained and that the development itself will not cause a barrier or deterrent effect on the species.*

The following Objective was found in relation to the conservation of other Irish bat species:

Objective EH O3: *It is an objective of the Council to require all developments where there are species of conservation concern, to submit an ecological assessment of the effects of the development on the site and nearby designated sites, suggesting appropriate mitigation measures and establishing, in particular, the presence or absence of the following species: Otter, badger, bats, lamprey and protected plant species such as the Triangular Club Rush, Opposite Leaved Pond Weed and Flora Protection Order Species generally.*

3.1.2 National Biodiversity Data Centre

A review of the National Bat Database of Ireland on the 27/11/2023 yielded results of bats within a 10km hectad of the proposed works. The search yielded 5 bat species within 10km. Table 3-1 lists the bat species recorded within the hectad which pertains to the proposed works site (R55).

A review of the NBDC bat landscape map provided a habitat suitability index of 37.11 (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
R55	Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)	27/01/2015	National Lesser Horseshoe Bat Database of Ireland	Annex II & IV
R55	Pipistrelle (<i>Pipistrellus pipistrellus sensu lato</i>)	16/06/2014	National Bat Database of Ireland	Annex IV
R55	Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>)	16/06/2014	National Bat Database of Ireland	Annex IV
R55	Leisler's bat (<i>Nyctalus leisleri</i>)	07/06/2007	National Bat Database of Ireland	Annex IV
R55	Daubenton's Bat (<i>Myotis daubentonii</i>)	29/08/2009	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) and the site is situated within the current known range of this species.

A search of all Designated Sites within a 15km radius of the site found two sites designated for the conservation of bats. The Lesser horseshoe bat roosts for which the SACs have been designated, are significantly outside the core foraging range (2.5km) of Lesser Horseshoe bat (NPWS, 2013). There is therefore no potential for significant effect on the Lesser horseshoe bat population for which the SACs have been designated. Table 3-2 shows the designated sites within 15km.

Table 3-2 European and National and proposed National Sites Designated to Bats

Designated Site	Distance to Site	Species	Roost Type
Ratty River Cave SAC	14.4km	Lesser horseshoe bat	Hibernacula
Danes Hole Poulnalecka SAC	14.7km	Lesser horseshoe bat	Hibernacula

3.1.4 National Parks and Wildlife Service Records

The results of the information request received from the NPWS scientific data unit of Rare and Protected Species is detailed in Table 3-3. This includes Lesser horseshoe roost records within a 10km radius of the Proposed Development site (IG Ref: R 57051 57119). No roost records were found within 1km of the site. One roost record was found within 2.5km of the proposed development site.

Table 3-3 Lesser horseshoe bat records within 10km of the Proposed Development

Most Recent Count	Species	Location	Roost Type	Distance from Site
n/a	Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Doonass House	Night	5-10km
2020	Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Mountshannon House	n/a	5-10km
2012	Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Ardnacrusha	n/a	5-10km
2020	Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Limerick Canal	n/a	1-2.5km

3.1.5 Habitat and Landscape

A review of mapping and photographs provided insight into the habitats and landscape features present at the proposed development site. The site is primarily surrounded by residential housing but is connected to the wider landscape through a series of tree and hedgerows. In addition, the Shannon Estuary is located approximately 50m to the southeast of the site.

A review of the GSI online mapper did not indicate the possible presence of any subterranean sites within the 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 no caves within the proposed site or within 10 km of the study area.

No national monuments are reported within the site.

3.1.6 Previous Reports

Surveys were carried out by MKO ecologists in July 2022 to assess the suitability of the site for roosting bats.

In summary, all buildings present within the proposed development site were found to have some potential to host roosting bat species. Evidence of bats, including feeding remains, small accumulations of droppings, and scattered droppings, were identified in several buildings. Suggesting the use of the site by a small number of bats. No evidence of hibernacula or maternity roosts was identified.

The 2022 report prepared by MKO is presented in **Appendix I**.

Ecology Ireland Ltd. EcIA – Summary of May 2021 Results

A preliminary site assessment was carried out in April 2021 by Ecology Ireland, following initial observations made in October 2020. Ground level site inspections as well as passive detector surveys were carried out. No roosting locations were identified, though a dropping found in building 9 was DNA analysed and identified as pertaining to lesser horseshoe bat.

An SM4 bat detector, deployed to the west of the reservoir over 10 nights in April 2021, recorded high levels of activity (15,000+ passes) by all species found in Ireland except Natterer's bat, while another deployed to the north of St. Micheal's rowing club recorded a total of 25 passes, mostly common pipistrelles with some soprano pipistrelles and Leisler's bat passes. Regular lesser horseshoe bat passes were recorded within the proposed development site, with early dusk activity times suggesting potential roosting nearby or within the buildings on site.

3.2 Bat Habitat Appraisal

The latest appraisals were conducted in 2025, with previous walkovers undertaken since 2021. 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 Masterplan Site is considered of *Moderate* suitability, particularly in relation to presence of the reservoir within the Quarry Site, its connectivity to the wider area, as well as identified roosts.

The site is in limited but regular use as a storage facility, and occasionally hosts drills and one-off events. This low usage has created an uncommon environment for bats in a mostly urbanised area, with limited artificial lighting in the Quarry Site and no human disturbance at night, with the exception of the Salesians school, which is in full time use as temporary accommodation.

Built and open areas, such as artificial surfaces around the Flaxmill, and the Salesians, and open grassland in Stonetown Terrace are considered of *Low* suitability; however, they are surrounded by green infrastructure and do not limit connectivity within the site. The areas directly adjacent to existing roads, including the Shipyard, sections of the site near O'Callaghan Strand and the North Circular Road, are considered of negligible suitability due to the levels of artificial surfaces and lighting present.

The River Shannon in itself is considered a commuting corridor for bats to travel between suitable foraging habitats outside of Limerick City centre.

With regard to roosting bats, the existing buildings on site generally present a *Moderate* suitability to host roosting bats. A thorough inspection of every accessible building on the site was completed. Details of the finding of each inspection is described in Table 3-4 below, this accounts for all findings across all inspections.

3.2.1 Preliminary Roost Assessment

Multiple structures were identified and inspected as part of the roost assessment effort. Figure 3-1 refers to the buildings on site and will be referenced throughout the roost assessment and results. The Masterplan site has been visited by MKO in November 2021, July 2022, February 2023, May 2023, July 2023, September 2023, October 2024, March and June 2025. Small areas of the site were inaccessible: the upstairs of building 15 has been deemed unsafe due to asbestos. Building 11 was accessible in 2021 and 2022 but has since been deemed structurally unsound and internal access was restricted. Buildings 16 and 17, in the Salesians, were previously inaccessible, but as of February 2023 access was granted and thorough internal inspections completed.

Results from SureScreen Scientifics DNA analysis were received on Monday 6th March 2023. Lesser horseshoe bat (*Rhinolophus hipposideros*) was confirmed using the air vents on the ground floor of the main Cleeves building (B9). The results from the Electrical Station (B10) were inconclusive – indicating potential use by multiple bat species.

A more detailed account of the inspections carried out throughout 2022 and 2023 can be found in Appendix 1 and Appendix 2 of this report. Any structures assigned *Moderate* or *High* roosting suitability were also the subject of roost emergence surveys throughout 2023. Details of the emergence surveys are presented in Section 4.4.1. Any update from this baseline as a result of the inspections carried out in 2024 and 2025 is presented below for each area within the Masterplan site.

Flaxmill Site

The Flaxmill and associated buildings (Coldstore and its extension, Dairy Building, Engine House) were last revisited in 2025. Fresh droppings were found at three previously identified LHB roosting locations: in a dark section at the top floor of the Dairy Building, which is closely associated to the Flaxmill; under unused air conditioning units on the ground floor of the Flaxmill, behind the section of the building which has been used for public consultations; and scattered within the Coldstore building (B11). No evidence of roosting (i.e. accumulations) were found in the Coldstore. Other roosting locations previously identified, including on the first floor under a staircase and within the adjacent room, did not show any signs of recent use.

Quarry Site

No baseline changes were reported in the quarry walls, where a soprano pipistrelle roost was identified in 2023. The Quarry Site remained the most suitable foraging location for bats, due to the existing vegetation along the quarry walls and surrounding the reservoir.

Stonetown Terrace Site

No baseline changes were reported in Stonetown Terrace. No roosting was previously identified in this area, which is considered suitable for commuting and foraging.

Salesians Site

The likely roost found within the interior courtyard of the Salesian convent was revisited and inspected. The location was identified in 2023 and a dusk emergence survey was performed, with no bats observed emerging or heard during the survey. Activity by a small number of pipistrelle bats was recorded during a subsequent survey (see Section 3.3.1.1).

The roosting location appeared to be an external pipe wrapped in insulation, which was connected to the boiler room of the convent (Plate 3-1 and Plate 3-2). The boiler is still in use and serves the adjacent school buildings, which since 2023 host an accommodation centre. Fresh droppings were seen on walls above a door near the pipe (Plate 3-3), on two separate sections of the pipe itself, and under the insulation. The thermal camera or endoscope did not reveal presence of bats during the inspection. Based on the evidence found and the previous surveys undertaken, the location consistently hosts a small pipistrelle summer roost (*Pipistrellus sp.*).



Plate 3-1 Salesian convent internal yard



Plate 3-2 Droppings above door by heating pipe



Plate 3-3 Heating pipe wrapped in insulation

The classroom where LHBs were found roosting in 2023 was also revisited, a small amount of droppings were found above a cupboard located under a previously identified hanging location, however usage of the building seems to have diminished. Since previous surveys in 2023, the school has been closed down and the buildings have been put to use as emergency accommodation for Ukrainian refugees. The school buildings are therefore always occupied and it is likely that noise and lighting disturbance in the school yard in front of the roost has increased.

O'Callaghan Strand

No evidence of roosting was identified within the buildings adjacent to O'Callaghan Strand (B4, B5, B6). The buildings are in an advanced state of dereliction, with water ingress and light penetration making them unsuitable for significant roosting.

Infiltration Gallery & NCR

No baseline changes were reported in the infiltration and NCR buildings (B14b, B14a, B14 and B15). The only buildings which were not reaccessed in 2025 were the Victorian terraces along NCR.

Shipyards Zone

No baseline changes were reported in the Shipyards Zone, the open area is still a carpark and the existing warehouse is in use.

Roost Inspection Findings per Building

Table 3-4 Roost inspection Findings per Building


Buildings	Site	Description of the Findings Within the Site	Bat use Evidence
B1 – Occupied & Unoccupied Dwelling	Quarry – Victorian Houses	<ul style="list-style-type: none"> Some cracks under the windowsill on the northern elevation with multiple access points through broken windows. Rotting timber fascia. Ivy cover on the northern and eastern elevations. 	<ul style="list-style-type: none"> No evidence of bat use
B2 – Garage/ Storage unit	Shipyards	<ul style="list-style-type: none"> Galvanised roof and brick walls. Some cracks under the led flashing on the roof. Regularly used and bright during the day. 	<ul style="list-style-type: none"> No evidence of bat use
B3 – Offices/ Storage Unit	Flaxmill Site / O’Callaghan Strand	<ul style="list-style-type: none"> Tar flat roof and brick walls approximately 70 metres long. Exposed timber roof beams. Cavity wall created on the southern elevation between the old stone wall and an installed inner Fiberglass Reinforced Panels (FRP) wall. Light penetration throughout. 	<ul style="list-style-type: none"> No evidence of bat use.
B4 – Offices	O’Callaghan Strand	<ul style="list-style-type: none"> Attic space with exposed timber roof beams and felt underlining. Multiple access points through gaps in the windows and doors. Slates missing on the northern and southern facing sides to the roof. Lead flashing with gaps present around the chimney. Large roof overhang with an exposed soffit on the eastern elevation. Light penetration throughout. 	<ul style="list-style-type: none"> No evidence of bat use
B5 – Storage unit	O’Callaghan Strand	<ul style="list-style-type: none"> Large storage room. Fiberglass Reinforced Panels (FRP) on the floor and ceiling. Exposed metal beams hanging from the roof. Dark areas to the building throughout. 	<ul style="list-style-type: none"> No evidence of bat use
B6 – Cold Store	O’Callaghan Strand / Flaxmill	<ul style="list-style-type: none"> Fiberglass Reinforced Panels (FRP) on the floor and ceiling in the eastern section. Exposed stone walls to the west and exposed timber roof beams with a galvanised roof. Dark during the daytime with multiple gaps in the stone walls. Gaps lead all the way through to the outside. 	<ul style="list-style-type: none"> No evidence of bat use
B7 – Cold Store	O’Callaghan Strand / Flaxmill Site	<ul style="list-style-type: none"> Large storage room. Fiberglass Reinforced Panels (FRP) on the floor and ceiling. Light penetration throughout. 	<ul style="list-style-type: none"> No evidence of bat use


B8 – Dairy Factory	Flaxmill Site	<ul style="list-style-type: none"> • Light penetration throughout. • Roof tiles missing and broken in places revealing the exposed timber roof beams above. • Concrete walls. 	<ul style="list-style-type: none"> • Feeding remains found • Second floor: small amounts of droppings found in 1 location.
B9 – Flaxmill	Flaxmill Site	<ul style="list-style-type: none"> • Four-storey building with attic space. • Multiple access points. • Stone wall building with slate roof. • Dark areas to the building throughout. • Collapsed ceiling tiles and exposed timber roof beams. 	<ul style="list-style-type: none"> • Ground floor: droppings found in 2 locations, in small numbers, as well as feeding remains. • Third floor: feeding remains throughout, some droppings found in 1 location.
B10 – Electrical station/Storage Unit	Flaxmill Site	<ul style="list-style-type: none"> • Concrete walled building with galvanised roof. • Large access points on the east and west elevation. • Light penetration throughout. • Some gaps in the walls. 	<ul style="list-style-type: none"> • Feeding remains found. • Droppings found in electrical station.
B11 – Coldstore	Flaxmill Site	<ul style="list-style-type: none"> • Bright during the daytime and exposed due to the partial roof. • Inner rooms present within the building are dark and sheltered. • Access points in the windows and door. 	<ul style="list-style-type: none"> • Droppings found in an inner room. • Feeding remains found
B12 – Storage Unit	Flaxmill / Stonetown Terrace	<ul style="list-style-type: none"> • No roof on the southern half of the building – exposed. • Some small gaps in the stonework in the southern section • Northern section has an intact roof. • Northern section is dark 	<ul style="list-style-type: none"> • Scattered droppings found on floor.
B13 – Workshop Storage	Flaxmill / Quarry Reservoir	<ul style="list-style-type: none"> • Large storage area. • Multiple access points. • Western section is dark and the eastern section is bright during daytime. 	<ul style="list-style-type: none"> • Feeding remains found. • Small amount of dropping found in the back of the building
B14 – Storage unit/ Offices	North Circular Road	<ul style="list-style-type: none"> • Large storage room. • Fiberglass Reinforced Panels (FRP) on the floor and ceiling. • Dark during the daytime. 	<ul style="list-style-type: none"> • Small amount of droppings found under galvanised sheeting and in front room.
B15 – Offices	North Circular Road	<ul style="list-style-type: none"> • Two-story building with concrete walls and a tile roof. • Light penetration throughout. • Top floor inaccessible due to questionable structural integrity 	<ul style="list-style-type: none"> • No evidence of bat use.
B16 – Salesians School and Convent	Salesians	<ul style="list-style-type: none"> • Two-story school building with concrete walls and a tile roof – in regular use since 2023 as temporary accommodation. • Unused Salesian sister’s convent - multistorey building with attic and basement spaces • Unused prefab buildings with attic and chimney spaces. 	<ul style="list-style-type: none"> • Evidence of bat dropping in the courtyard of the convent. • Deceased bat found in basement of the convent

			<ul style="list-style-type: none"> • Droppings and feeding remains found in unused prefab building north of the school – LHB roost confirmed in used by two individuals
B17 – St Micheals Rowing club	St Micheals Rowing club	<ul style="list-style-type: none"> • Two-story building with concrete walls and a tile roof – in regular use • Well lit externally. 	<ul style="list-style-type: none"> • No evidence of bat use.



Map Legend

 Building Outline



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Drawing title

2023 Buildings Numbered

Project Title

Cleaves Riverside Quarter

Drawn By	KG	Checked By	SF
Project No.	211052	Drawing No.	1
Scale	1:1500	Date	03/11/2023



MKO
Planning and
Environmental
Consultants

Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkofireland.ie
Website: ww.mkofireland.ie

3.3 Bat Activity Surveys

3.3.1 Manual Surveys

3.3.1.1 Dusk Emergence and Dawn Re-entry Surveys

Dusk Emergence 15th May 2023

An emergence survey was carried out on the 15th of May by eight surveyors positioned across the proposed development site. An emergence survey was performed by two surveyors on Salesian Sisters Convent. Two surveyors were located at the front and back of terraced house B1a to survey potentially emerging bats and observe any bats commuting into the site from that area. The other surveyors were located around the central reservoir to observe activity at this location and better understand commuting routes into the site. Table 3-5 shows the location and species composition results of each surveyor.

No bats were observed emerging from the convent, with very limited activity recorded throughout the survey at this location.

High activity was recorded at the reservoir with one surveyor detecting Lesser horseshoe bats. These were recorded outside the known roost emergence times for the species. Their commuting route was not identified. The thermal camera was utilised to monitor the reservoir's arches. No signs of roosting were identified.

Records from the two surveyors located at the terraced house suggest potential roosting within the southern roof aspect – no visual of the roof was possible from the house's yard. As for commuting and foraging activity, pipistrelle bats were observed commuting across the road from the nearby estate and into the site.

Table 3-5 Manual activity survey 15th May

Batlogger	IG Ref.	Building	Soprano pipistrelle	Common pipistrelle	Leisler's bat	Brown long-eared bat	Myotis spp.	Lesser horseshoe bat
B	R 56819 57214	16	9	4	2	-	-	-
D	R 56914 57181	14a North	152	366	7	-	1	-
E	R 56901 57160	14a South	51	82	8	-	-	-
F	R56904 57184	14b	53	123	6	-	-	-
G	R 57001 57136	10	2	25	2	-	-	-
H	R 56797 57261	16b	132	12	-	-	-	-
J	R 56950 57230	Quarry	48	223	14	1	-	-
Heterodyne	R 56998 57176	Arches	1	11	-	-	-	2

Dusk Emergence 24th July 2023

An emergence survey was carried out on the 24th of July 2023 by eight surveyors positioned across the proposed development site to provide coverage of all buildings identified as potential roosts. Each surveyor was allocated a Batlogger with specific ID. Table 3-6 shows the location and species composition results of each surveyor.

The rowing club presented no bat activity, with no bats observed emerging from the building and no bats recorded during the survey by the two surveyors.

High bat activity was recorded by each of the surveyors at the quarry site. Up to six bats were observed potentially emerging from the ivy along the western quarry wall. Common and soprano pipistrelle bats were recorded foraging and commuting at both locations.

No bats were observed emerging from buildings 1a and 1b, though regular commuting and foraging activity was recorded. Surveyors at the old primary school building observed no bat emergences and bat activity was low.

Table 3-6 Manual activity survey 24th July

Batlogger	IG Ref.	Building	Soprano pipistrelle	Common pipistrelle	Leisler's bat	Myotis spp.
A	R 56991 57160	Arches	34	298	1	-
E	R 56921 57244	Western Quarry	407	271	-	-
F	R 57022 57027	17b	2	9	-	-
G	R 56856 57263	16b East	9	18	1	-
H	R 56832 57261	16b West	8	18	1	1
I	R 57105 57039	17	12	9	-	-
J	R 56976 57216	Eastern Quarry	48	287	5	-
K	R 56892 57147	1a	67	256	3	-

Dawn Re-entry survey 25th July 2023

A re-entry survey was undertaken on the 25th of July 2023 by four surveyors positioned in different locations across the proposed development site to survey potential areas where roosting was anticipated. One surveyor was located outside of buildings 1a in order to observe potential bats re-entering the buildings and to detect any possible commuting routes from the site. One surveyor was positioned at the north-west side of the quarry, with the thermal scope, to confirm the observations of the previous evening. Another surveyor was located in proximity of the reservoir and its arches to survey any potential re-entries and commuting behaviour. A fourth surveyor walked across the main Cleeves site to assess activity throughout and to identify any swarming behaviour around the factory buildings. Table 3-7 shows the location and species composition results of each surveyor.

No re-entries were observed at buildings 1a and little activity was recorded. Three soprano pipistrelle bats were observed re-entering the ivy on the western wall of the quarry. A single Lesser horseshoe bat was observed entering building 9. No other re-entries were observed. High pipistrelle activity was recorded throughout the quarry and reservoir areas.

Table 3-7 Manual Activity Survey 25th July

Batlogger	IG Ref.	Building	Soprano pipistrelle	Common pipistrelle	Leisler's bat	Brown long-eared bat	Lesser horseshoe bat
E	R 56921 57244	Western Quarry	22	109	-	-	-
G	NBW	NBW	21	152	1	-	6
J	R 56991 57160	Arches	11	199	-	1	-
K	R56892 57144	1a	13	10		-	-

Dusk Emergence 26th September 2023

An emergence survey was carried out on the 26th September 2023 by eight surveyors positioned across the proposed development site to provide coverage of all buildings identified as potential roosts. Table 3-8 shows the location and species composition results of each surveyor.

Consistent foraging bat activity was recorded by each of the surveyors at Stonetown Terrace. However, no bats were seen emerging from this location.

The Quarry also had high activity with pipistrelle bats were observed potentially emerging from the ivy along the western quarry wall. These were confirmed following review of thermal footage (Plate 3-4). Both common and soprano pipistrelle bats were recorded foraging and commuting at this location.

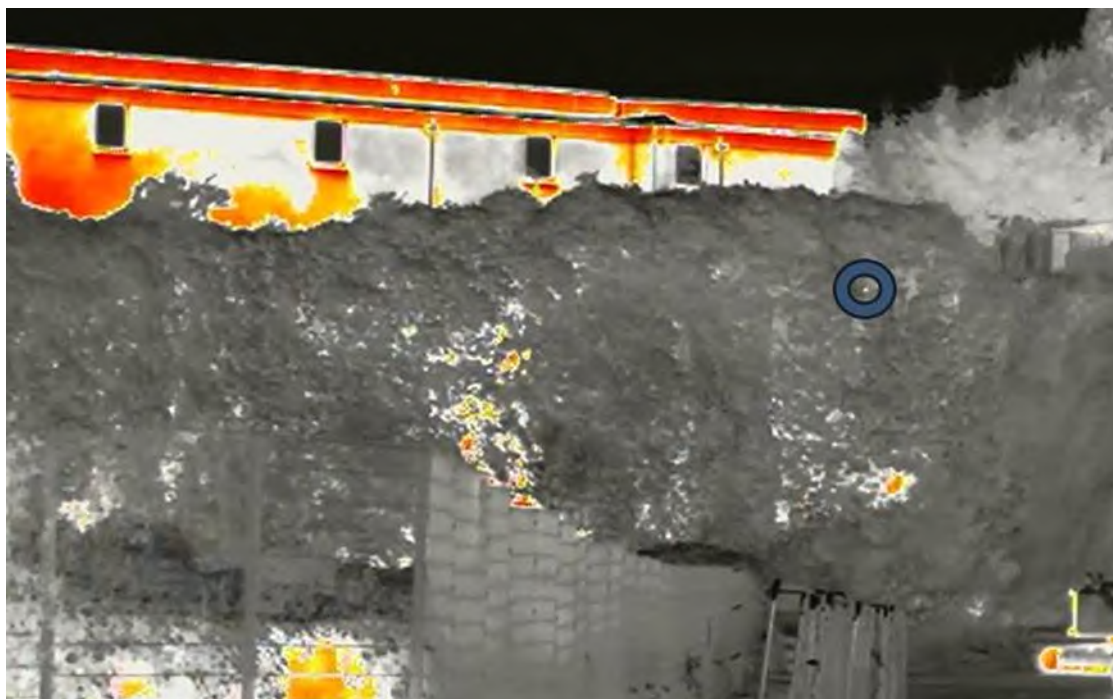


Plate 3-4 Circled, heat signature of bat emerging at 19.43

No bats were observed emerging from building 11, though activity commuting and foraging activity was high. One unidentified bat was observed entering Building 10.

Common and soprano pipistrelle were observed flying above the school internal yard for a long time after sunset, suggesting roosting activity within the area. Presence of roosting was recorded at this site during inspections, but no activity had been recorded in previous seasons. The number of individual bats was estimated between 4 and 8, as bats were flying around the school yard in and out of sight and were difficult to count. A lot of the activity recorded by surveyors A and L consists in the same pipistrelle passes, as surveyors were quite close to each other.

Two Lesser horseshoe bats were observed flying within and then emerging from Building 16b, and soon later were spotted commuting east towards the Cleeves site. The bats are thought to have been roosting either within the ventilation stack or chimney to the east of the structure, as these were the only sections of the building where a complete inspection was not possible due to lack of full visibility from the ground. No other surveyor recorded the species during the manual survey.

Table 3-8 Manual Activity Survey 26th September

Batlogger	Location (IG)	Building	Myotis spp.	Leisler's bat	Common pipistrelle	Soprano pipistrelle	Lesser horseshoe bat
A	R 56833 57255	School Courtyard			133	131	
C	R 57002 57214	Stonetown Terrace		2	303	41	
D	R 57015 57222	Stonetown Terrace	1	2	195	29	
E	R 56918 57242	Quarry	1	2	519	226	
F	R 56858 57261	16b East	1		13	26	6
H	R 57013 57168	B11			179	10	
J	R57045 57230	Stonetown Terrace		2	264	98	
L	R 56837 57264	B16b		1	118	88	28

Dawn Re-entry 27th September 2023

A re-entry survey was undertaken on the 27th of September 2023 by four surveyors positioned in different locations across the proposed development site at areas of likely roost re-entry. Two surveyor was located outside of building 16b in order to observe potential bats re-entering the buildings and to detect any possible commuting routes from the site. Another surveyor was located at the building 11 to survey any potential re-entries and commuting behaviour. A fourth surveyor walked across the main Cleeves site to assess activity throughout and to identify any swarming behaviour around the factory buildings. Table 3-9 shows the location and species composition results of each surveyor.

No re-entries were observed at any of the locations and little activity was recorded. A faint Lesser horseshoe bat call was recorded in front of Building 16b approximately 10 minutes after the start of the survey, however it was not seen by surveyors. Weather conditions deteriorated throughout the survey, which was stopped due to heavy rain conditions approximately 20 minutes before sunrise, as bat activity had stopped.

Table 3-9 Manual Activity Survey 27th September

Batlogger	Location (IG)	Building	Common pipistrelle	Soprano pipistrelle	Lesser horseshoe bat
D	NBW	NBW – Flaxmill Site	1	1	
H	R 57013 57168	11	9	3	
J	R 56832 57261	16b	2	1	1
L	R 56833 57255	16b		1	

3.3.1.2 Night Walkover Surveys

Manual activity surveys also comprised night walkover transects at dusk. Night walkover surveys took place on the 24th and 25th of July and the 26th of September 2023. The main purpose of the walkover surveys was to see how different bat species utilise the site. Bat activity was recorded on the surveys, and there was a particular focus on Lesser horseshoe bat activity. The transects took place alongside the dawn reemergence along a chosen route which linked two suspected Lesser horseshoe bat roosts together.

The same nighttime bat walkover was repeated on each date and was used to observe the bat activity on the main Cleeves site. Common pipistrelles dominated the species composition of the surveys, and this species continuously utilises the site for both commuting and foraging. On the 25th of July one single Lesser horseshoe bat was seen re-entering building 9.

3.3.2 Static Detectors Surveys

SM4 static detectors were deployed on the site each survey period. Locations were chosen to represent areas of likely bat activity and to cover a potential commuting corridor between the school site and the Cleeves site which was suspected to be used by Lesser horseshoe bats for commuting.

The detectors at D09 and D11 stopped recording during the night of the 19th of September as their memory cards had reached full capacity.

In total 75,697 bat passes were recorded. Analysis of the detector recordings positively identified six bats to species level with *Myotis* genus also present. Common pipistrelle (*Pipistrellus pipistrellus*) made up the vast majority of the activity recorded within the site (n=54,381), followed by Soprano pipistrelles (*Pipistrellus pygmaeus*) (n=18,290). Leisler's bat (*Nyctalus leisleri*) was the next most common recorded species (n=1,785). Followed by Lesser horse bat (*Rhinolophus hipposideros*) (n=780). There was fewer instances of *Myotis* spp. (n=232) and Brown long eared bat (*Plecotus auritus*) (n=117) recorded on the site across all seasons. Nathusius' pipistrelle calls (*Pipistrellus nathusii*) (n=112) were recorded in autumn, both in isolation or foraging with other pipistrelle species. Plate 3-1 shows total bat species composition recorded at the site.

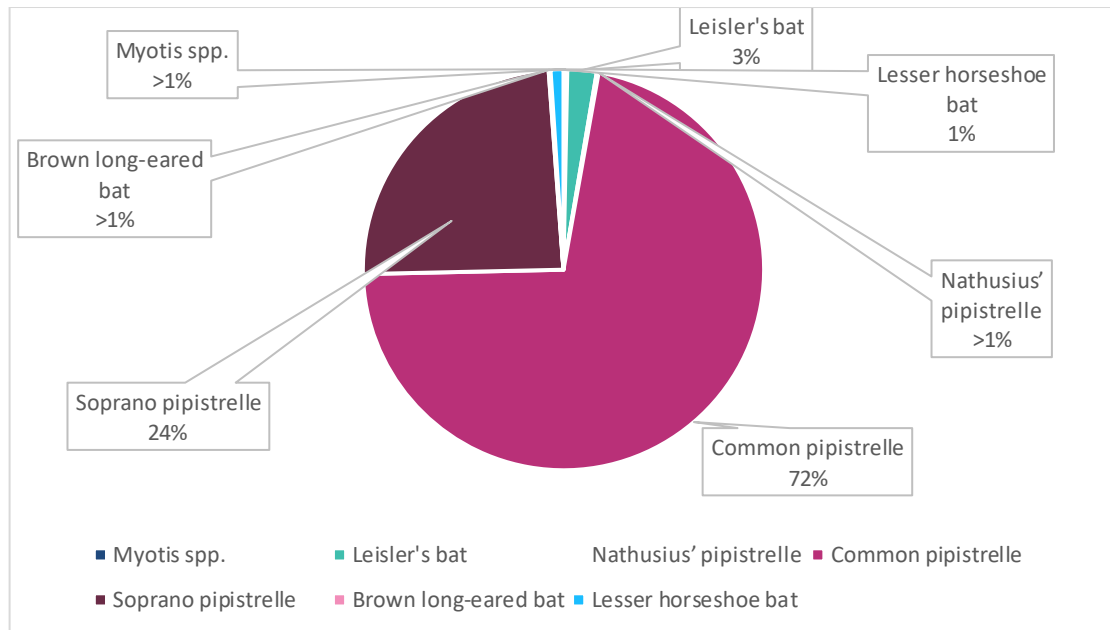


Plate 3-1 Total bat species composition.

Plate 3-2 shows total bat passes per detector, which are summarised in Table 3-10.

Table 3-10 Static detector results, total bat passes.

Detector	Common Pipistrelle	Soprano Pipistrelle	Leisler's Bat	Nathusius' pipistrelle	Brown Long-eared Bat	Myotis spp.	Lesser Horseshoe Bat
D01	10,237	3,348	83	-	3	13	82
D02	2,292	2,029	152	-	4	10	21
D03	2,833	3,217	287	-	11	13	15
D04	14,935	581	189	-	33	29	21
D05	9,886	2,381	184	-	16	20	189
D06	680	1,259	242	-	10	7	109
D07	330	1,456	153	1	7	29	119
D08	9,194	1,333	152	62	6	45	135
D09	1,715	1,346	89	14	28	36	17
D10	1,511	852	160	3	25	13	12
D11	732	488	94	32	5	17	60

Species composition varied across detectors. Common pipistrelles were the most frequently recorded species on all detectors. Myotis species were recorded in similar numbers across all detectors, as were Soprano pipistrelles and Leisler's bats. Brown long-eared bats were most commonly recorded on D08 and D09. Nathusius' pipistrelles were recorded in higher numbers on D08. Lesser horseshoe bats were

recorded in similar number for the spring and summer deployments. The counts on D06, deployed in the summer and D07, deployed in the autumn were similar as the detectors were placed in the same location. High counts of Lesser horseshoe bats were also seen on D05 and D08.

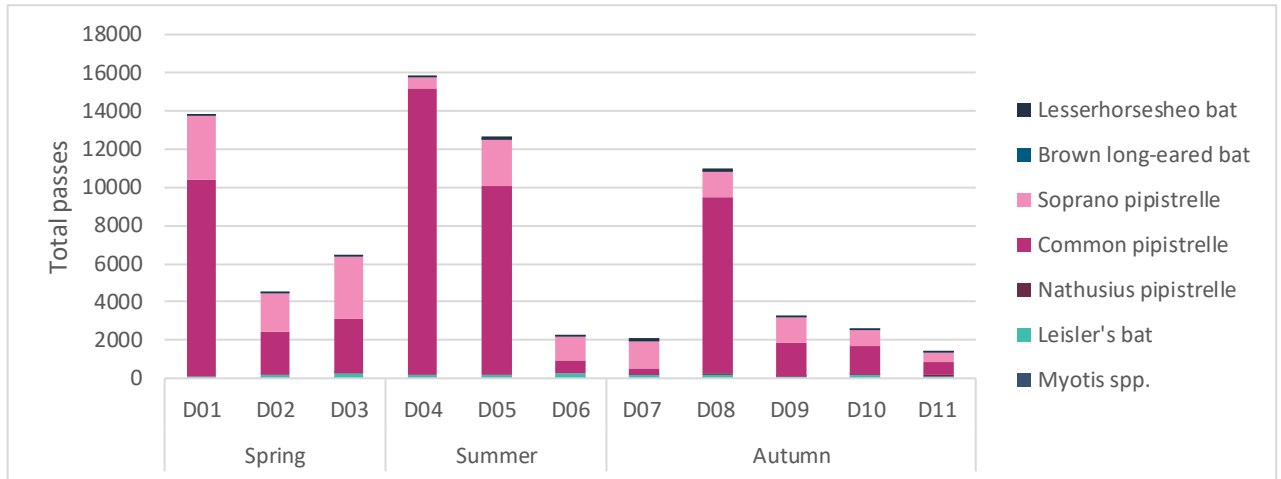


Plate 3-2 Total bat passes per detector

Plate 3-3 shows the Lesser horseshoe bat activity across all detectors. The detectors were placed with the hopes of confirming a commuting corridor for this species. D06 and D07 were placed in the same location but at different seasons and species count was similar both times. Based on the timestamps and the results of manual activity surveys, it is likely that this commuting corridor exists for Lesser horseshoe bats between the two confirmed roosting locations. Bats were picked up at slightly different times, minutes apart, as if a bat were to commute along the route. In total 780 passes of Lesser horseshoe bat were recorded across all detectors.

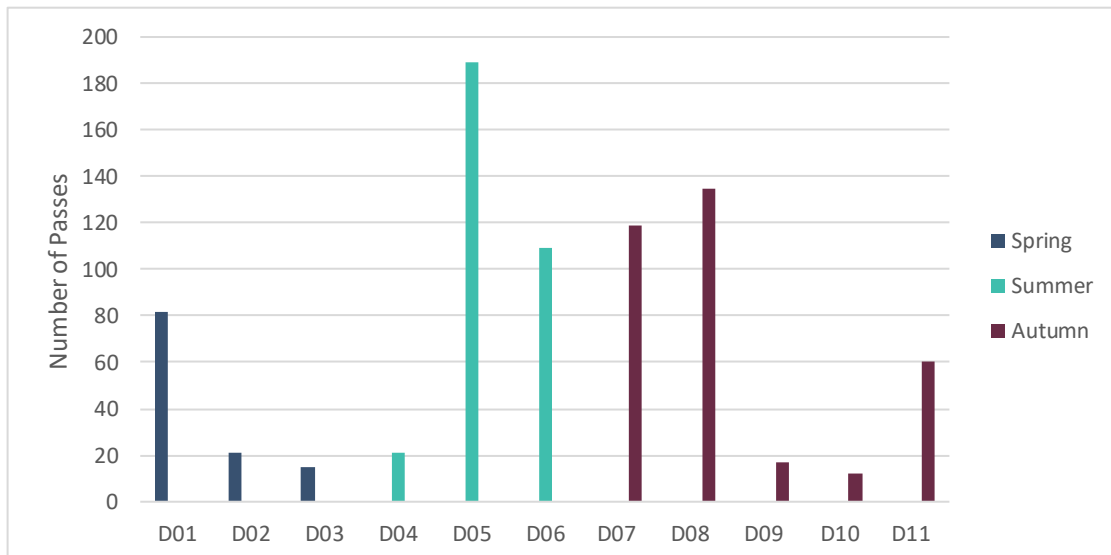


Plate 3-3 Lesser horseshoe bat count per detector

4.

DATA EVALUATION

4.1.1

Discussion and Interpretation

Out of the six species recorded within the site, Nathusius' pipistrelle is the only one recorded outside their known range. The species was recorded only during the static surveys carried out in Autumn. Whilst significant to record outside of its range, the species is often underreported and is known to occur in Limerick County.

Despite the extensive survey effort, no large roosts or maternity roosts were identified within the site. Notably, no significant accumulations of droppings indicative of regular roosts were found. Instead, evidence suggested opportunistic use of structures by bats, with droppings and feeding remains observed in seven buildings across the proposed development area. The majority of buildings surveyed exhibit characteristics conducive to supporting bat roosts, in particular accessibility and some dark, mostly undisturbed locations. However, the quality of the buildings, with water ingress, light ingress and lack of unexposed and warm roosting locations make it largely unsuitable for significant roosts to establish. The site is completely accessible to bats and is likely to present other resting sites (i.e. night perches/opportunistic roosting), but there is no likelihood that significant roosts were missed during the surveys undertaken.

Four active roosts were identified within the site. A small (8no.) soprano pipistrelle roost was recorded within the rock face of the site's quarry. A Lesser horseshoe bat roost was confirmed in building B9 when an individual was observed entering the building from the ground floor during a dawn re-entry survey. The precise location within the structure remains unconfirmed due to the building's extensive interior connectivity, and it was not found at known perches. Two lesser horseshoe bats were seen re-entering the derelict classroom building located at the rear of the school. Droppings discovered during inspections at the Salesians' convent also confirmed the presence of roosting bats within piping ducts in the internal yard. Continuous monitoring will be necessary to ensure no baseline changes occur.

The Quarry Site represents the focal point for commuting and foraging activity on the site, with the rest of the Masterplan site presenting limited suitability for any significant activity, in particular as mostly disturbed by artificial lighting. This assessment was confirmed by the surveys undertaken, which recorded small numbers of bats foraging continuously around the Reservoir and on occasion across the rest of the site. In particular, very little activity was recorded at the Riverfront and in the Salesians front yard. The reservoir and quarry represent the only diversion within the site from the surrounding urban matrix and as such represent a suitable habitat for the local bat populations, even attracting light-sensitive species such as LHB and Myotis species.

A commuting corridor utilized by LHB was identified traversing the site, connecting at least the two known roosting locations and using the quarry walls and above private gardens outside the site to navigate. This suggests that the site serves as a vital foraging ground and regular roosting site by a small number of individuals of this species. No evidence of maternity roosts or hibernating behaviour was observed for this species. No evidence of an influx into the site was recorded for this species, however pipistrelles were observed commuting into the site across North Circular Road. It is likely that bats use the existing green infrastructure surrounding the site to move to and from highly suitable foraging locations, in particular the Westfield Wetlands located to the south-west of the site. No evidence that bats are moving into the site directly from the River Shannon was recorded, and whilst this is likely to happen on occasion, this is not considered to be the most likely route into the site due to the lighting on O'Callaghan Strand presenting a connectivity barrier. Little to no bat activity was recorded in this area during the manual activity surveys.

This detailed overview provides a comprehensive understanding of the bat ecology within the Masterplan site.

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. The lesser horseshoe bat population recorded within the site was assigned **National Importance**. Even though a small number of bats was recorded, which would be normally assessed as County Importance at most, this small population has the potential to have national importance due to the need to maintain a viable corridor between populations present in the counties surrounding Limerick, and particularly as it is located in an urban location of Limerick City, which records very low numbers of lesser horseshoe bats.

The Proposed works site has the potential to support a roosting site of ecological significance, however no evidence of large roosts was found within the inspected structures. No roosting site of National Importance was recorded within the site. No hibernacula or maternity roosts were identified within the site during the surveys undertaken in winter and summer.

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.

- No significant access issues were encountered with the Site during static deployments, as the detectors were deployment where intended.
- Access was limited in two buildings due to the presence of asbestos in the attic space of building 15 and the structural integrity of building 11. Access was gained throughout the remainder of the buildings within the site.
- Good survey coverage of the site has been achieved, with 11 detectors being deployed in across the site, throughout multiple survey seasons, covering the range of habitats present at the site.
- The dawn survey on the 27th of September had to be cut short due to weather conditions. Good survey coverage of the site has previously been attained and bats would likely have re-entered the roosts due to the weather.
- 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 – The detectors at D09 and D11 stopped recording during the night of the 19th of September as their memory cards had reached full capacity.
- 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.
- 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.

CONCLUSIONS

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

- Six bat species, as well as *Myotis* sp. were recorded commuting and foraging across the proposed works site during the bat surveys carried out, including Soprano pipistrelle, Common pipistrelle, Leisler's bat, Brown long-eared bat, Nathusius' pipistrelle and Lesser horseshoe bat (LHB).
- Most of the buildings located within the Masterplan site have the potential to support bat roosts. However, no dropping accumulations indicative of large regular roosts were found. The small accumulations of bat droppings and feeding remains recorded suggest that the structures on site are used with likely regularity by a small number of bats. Droppings were found in seven buildings within the proposed development site, either scattered or accumulated under likely LHB perches. One of these LHB perches were confirmed using DNA analysis. Despite multiple revisits, no LHBs were ever noted roosting at these locations during the daytime.
- Four active roosts were identified within the site:
 - One lesser horseshoe bat was observed entering the Coldstore building, west of the Flaxmill, from the ground floor during a dawn re-entry survey, however no confirmation of its day roosting location was possible: the entrance is well connected to the whole interior.
 - A small soprano pipistrelle roost counting approx. 6-8 bats was identified within the western rock face of the Quarry Site.
 - Two lesser horseshoe bats were found to be roosting within a derelict classroom building at the back of the Salesians School.
 - Another active roost was found within the Salesians, in the interior yard of the convent. Based on the evidence found in 2025 and the previous surveys undertaken in 2023, the location consistently hosts a small pipistrelle summer roost (*Pipistrellus* sp.).
- Baseline conditions present lighting disturbance around the Flaxmill site near O'Callaghan Strand, where security lighting operates all night, along the NCR and site boundaries, where road illumination spills onto the site, and in the Salesians, where the school currently operated as an accommodation centre. The central Quarry Site, with the Reservoir, present the darkest environments on the site, and the northern boundary, along the quarry walls between the Flaxmill and into the Salesians, was identified as a regular commuting corridor for LHB. This species is particularly sensitive to light pollution and represents the benchmark towards which all impacts on bats need to be assessed.
- The commuting corridor for lesser horseshoe bats was confirmed during static and manual surveys to run between at least two identified roosting locations, one at the Salesians and one within the Flaxmill. The species utilises the site for foraging purposes and for roosting. No evidence of maternity roost or hibernating behaviour was identified for this species. It is unusual to find lesser horseshoe bats regularly utilising an urban environment. As such, due to the available roosting opportunities, the site is potentially a significant outpost for the species, despite the low numbers of individuals recorded.
- Soprano and common pipistrelles were observed commuting into the site by crossing NCR towards the Reservoir. This location and the westernmost section of the site, by the Salesians, are considered the most likely entry and exist points into the site. This is as a result of existing, but suboptimal, green infrastructure including treelines and private gardens located outside the MS in these areas.
- With regard to foraging and commuting bats, the reservoir and quarry areas are of Moderate suitability. Built and open areas, such as open yards and open grassland are considered of Low

suitability. This assessment was confirmed by the surveys undertaken, which recorded small numbers of bats foraging continuously around the Reservoir and on occasion across the rest of the site. The Quarry Site was confirmed to be the focal point of bat activity around the Masterplan site, with low activity levels recorded at all other sites. In particular, very little activity was recorded at the Riverfront and in the Salesians front yard.

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APPENDIX 1

2022 BAT REPORT

Bat Report

Cleeves Riverside Quarter,
Co. Limerick





DOCUMENT DETAILS

Client: **Limerick Twenty Thirty (LTT)**

Project Title: **Cleeves Riverside Quarter, Co. Limerick**

Project Number: **211052**

Document Title: **Bat Report**

Document File: **BR D1 – 211052 – 2023.01.16**

Prepared By: **MKO**
Tuam Road
Galway
Ireland
H91 VW84



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1.

INTRODUCTION

MKO was commissioned to undertake a summer bat survey at Cleeves Riverside Quarter, Co. Limerick (Grid Ref: R 57051 57119) (Figure 1-1). The project will include the redevelopment and revitalisation of the Cleeves site as a public realm accommodating a mix of uses including proposed residential and office spaces, educational and tourist facilities.

This survey follows a winter bat survey MKO undertook in February 2022, within the site of the proposed development. The summer survey, carried out in July 2022, included a daytime inspection of the proposed development buildings and bat activity surveys. Manual dusk and dawn surveys were carried out and passive static detectors were deployed onsite for 15 nights. The main objective of the surveys was to gather information on roosting bats and inspect the structures for potential roosts, including maternity roosts. The bat surveys were designed to establish the nature, scale and locations of potential bat activity in each of the buildings on site and involved an extensive interior and exterior inspection of the buildings. As per the winter surveys, for the purposes of this report the buildings have been divided into blocks and are numbered 1-16 (Plate 3-2).

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 hOidhreacht, 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 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)*
- *Guidance Note 08/18: Bats and Artificial Lighting in the UK (ILP, 2018)*

1.1

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). Lesser horseshoe bats are referred to as LHB within this document.

In addition, Irish species are further protected by national legislation (Wildlife Acts 1976-2022). 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.



Map Legend

 Site Boundary



Drawing Title

Site Location

Project Title

Cleeves Riverside Quarter, Limerick

Drawn By

SF

Checked By

AJ

Project No.

211052

Drawing No.

Fig 1-1

Scale

1:40,000

Date

01.12.2022



MKO
Planning and
Environmental
Consultants
Tuam Road, Galway
Ireland, H91 VW 84
+353 (0) 91 735611
email: info@mkofireland.ie
Website: www.mkofireland.ie

1.2

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 1-1 provides a summary of different types of bat roosts.

Table 1-1 Bat Roost Types and Definitions

Roost Type	Definition
Day	Where individuals or small groups of male's 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 rest/feed during the night but are rarely found during the day.
Transitional	Used by a few individuals for short periods of time prior to or following hibernation.
Swarming	Where large numbers gather in late summer to autumn. Important mating sites.
Mating	Where mating takes place in late summer to winter.
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.

There are currently no clear guidelines to determine the significance of a bat roost. All the largest roosts of 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). Table 1-2 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).

Table 1-2 Level of Importance of Various Building Roosts

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

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

Statement of Authority

The summer bat surveys were undertaken by MKO ecologists that are professionally trained in bat survey techniques and are qualified in undertaking surveys to this level. The daytime inspection survey was carried out by licenced ecologists Aoife Joyce (BSc., MSc., DER-BAT-2022-06), Laura McEntegart (BSc., DER-BAT 2022-62) and Sara Fissolo (BSc., DER-BAT-2022-30) accompanied by Stephanie Corkery (BSc., MSc.). They were joined by Neil Campbell (BSc., MSc.), Laura Gránicz (BSc., MSc.), Kate Greaney (BSc., MSc.), Kevin McElduff (BSc.) and Patrick O'Boyle (BSc., MSc.) for the bat activity surveys.

This report was prepared by Sara Fissolo and was reviewed by Aoife Joyce and Pat Roberts (BSc., MCIEEM). Sara has two years' experience in ecological assessments and has completed CIEEM courses in Bat Impacts and Mitigation and Kaleidoscope Pro Analysis. Aoife has over three years' experience in ecological assessments and has completed CIEEM and BCI courses in Bat Impacts and Mitigation, Bat Tree Roost Identification and Endoscope training and Kaleidoscope Pro Analysis. Pat has over 13 years' experience in ecological assessment.

2.

METHODS

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.*
- *Review of specially requested records from the NPWS Rare and Protected Species Database for the hectads which overlap with the study area.*
- *Review of the Limerick County Development Plan 2022-2028*

2.1.1

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 development site.

In addition, information on species' range and distribution, available in the 2019 Article 17 Reports (NPWS, 2019), was reviewed in relation to the location of the proposed development. 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.

2.1.2

National Parks and Wildlife Service Records

The NPWS maintains all lesser horseshoe bat roost monitoring datasets and roost locations. As the proposed development is within the known distribution range of lesser horseshoe bat, the NPWS were consulted to provide any records of lesser horseshoe roosts within 10km of the proposed development. An information request was sent to the NPWS scientific data unit requesting records from the Rare and Protected Species Database on the 12th September 2022. A response was received on the 16th September 2022.

2.1.3

Designated Sites

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 4.1.2 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. The potential for effects on these designated sites is fully considered.

Proposed Natural Heritage Areas (pNHAs) were designated on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. However, the potential for effects on these designated sites is fully considered.

2.1.4 Habitat and Landscape

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.

2.1.5 Previous Reports

The results obtained during the surveys carried out by MKO in winter 2021-2022 were used to inform the field work methodology and survey effort for the summer assessment. As part of the desktop study, a previous ecological report prepared by Ecology Ireland in 2021 for the proposed development was also consulted in reference to bats.

2.2 Field Study

2.2.1 Ecological Appraisal (Bats)

A walkover survey of the Study Area was carried out during daylight hours on the 7th July 2022. 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* (3rd edn.) (Collins, 2016). Table 4.1 of the 2016 BCT Guidelines identifies a grading protocol for assessing structures, trees and commuting/foraging habitat for bats. The protocol is divided into four Suitability Categories: *High*, *Moderate*, *Low* and *Negligible*.

The summer surveys were preceded by surveys carried out in winter 2021-2022. A summary of results obtained during the winter survey is presented in Section 3.1.5 below. The full winter report is available in **Appendix I**.

2.2.2 Summer Roost Assessment

A search for roosts was undertaken within the boundary of the proposed development by three licenced ecologists and a graduate ecologist. The aim was to determine the presence of roosting bats, potential access points, roosting locations and the need for further survey work or mitigation.

The search comprised a detailed inspection of the exteriors and interiors of the buildings inspected in winter to look for evidence of bat use, including live and dead specimens, droppings, feeding remains, urine splashes, fur oil staining and noises (Collins, 2016).

A walkover was carried out during daylight hours on the 7th of July 2022 and all accessible buildings were inspected. A systematic search of all accessible interiors, including all attic spaces, was undertaken. The exterior of the building was inspected first from ground level and included all accessible windowsills, walls, eaves, roof ridge and roof slates.

Trees within the site were visually assessed from ground level, for natural features of high value to roosting bats including knot holes, trunk hollows, splits/cracks in branches and areas of flaking bark and also for signs indicating possible bat use including droppings, staining and scratching of bark and any other potential roost features (i.e., PRFs) identified by Andrews (2018).

2.2.3 Bat Activity Surveys

2.2.3.1 Emergence/Re-entry Surveys

A dusk emergence survey was carried out by nine surveyors the evening of the 7th July 2022, followed by a dawn re-entry survey on the morning of the 8th July carried out by eight surveyors. All surveyors were equipped with active full spectrum bat detectors, Batlogger M (Elekon AG, Lucerne, Switzerland). 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.

Surveyors were located across the site 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 the structure. The location of all surveyors is presented in Figure 2-1.

Conditions were suitable for both bat surveys (Table 2-1). Emergence surveys commenced 15 minutes before sunset and concluded 1hr 15min after sunset. Re-entrance surveys commenced 2 hours before sunrise and concluded 15 minutes after sunrise.

Table 2-1 Bat Activity survey effort

Date	Surveyor	Type	Sunrise/ Sunset	Weather
7 th July 2022	Aoife Joyce, Laura McEntegart, Sara Fissolo, Stephanie Corkery, Neil Campbell, Laura Gránicz, Kate Greaney, Kevin McElduff and Patrick O'Boyle	Dusk	21:58	17-18°C, Dry, Light-gentle breeze
8 th July 2022	Laura McEntegart, Sara Fissolo, Stephanie Corkery, Neil Campbell, Laura Gránicz, Kate Greaney, Kevin McElduff and Patrick O'Boyle	Dawn	05:21	14-15°C, Dry/light drizzle, Calm

2.2.3.2 One-Night Static Detectors Surveys

Two full spectrum bat detectors, Song Meter Mini (Wildlife Acoustics, Maynard, MA, USA), were deployed within the proposed development site on the night between the 7th and 8th of July 2022, the same night the emergence and re-entry surveys were carried out. Settings used were those recommended by the manufacturer for bats, with minor adjustments in gain settings and band pass filters to reduce background noise when recording. Detectors were set to record from 30 minutes before sunset until 30 minutes after sunrise.

The detectors were located in the interior space of two buildings to complement bat activity surveys which were carried out outside the structures in the form of emergence and re-entry surveys. The locations were selected based on findings of the daylight inspection surveys. The deployment of static detectors for a single night allowed for additional monitoring of bat activity within the buildings, which might not have been picked up by surveyors located outside, and to identify any potential night roosts within the areas in which the detectors were deployed.

The Song Meter Mini, dual-channel acoustic recorder is capable of the long-term acoustic monitoring of bats. Static detector locations can be found in Figure 2-1.

2.2.3.3 Two-week Static Detectors Surveys

Full spectrum SM4 bat detectors (Wildlife Acoustics, Maynard, MA, USA), were deployed during static surveys to record bat activity at two fixed locations over a 2-week period in July 2022. The two locations

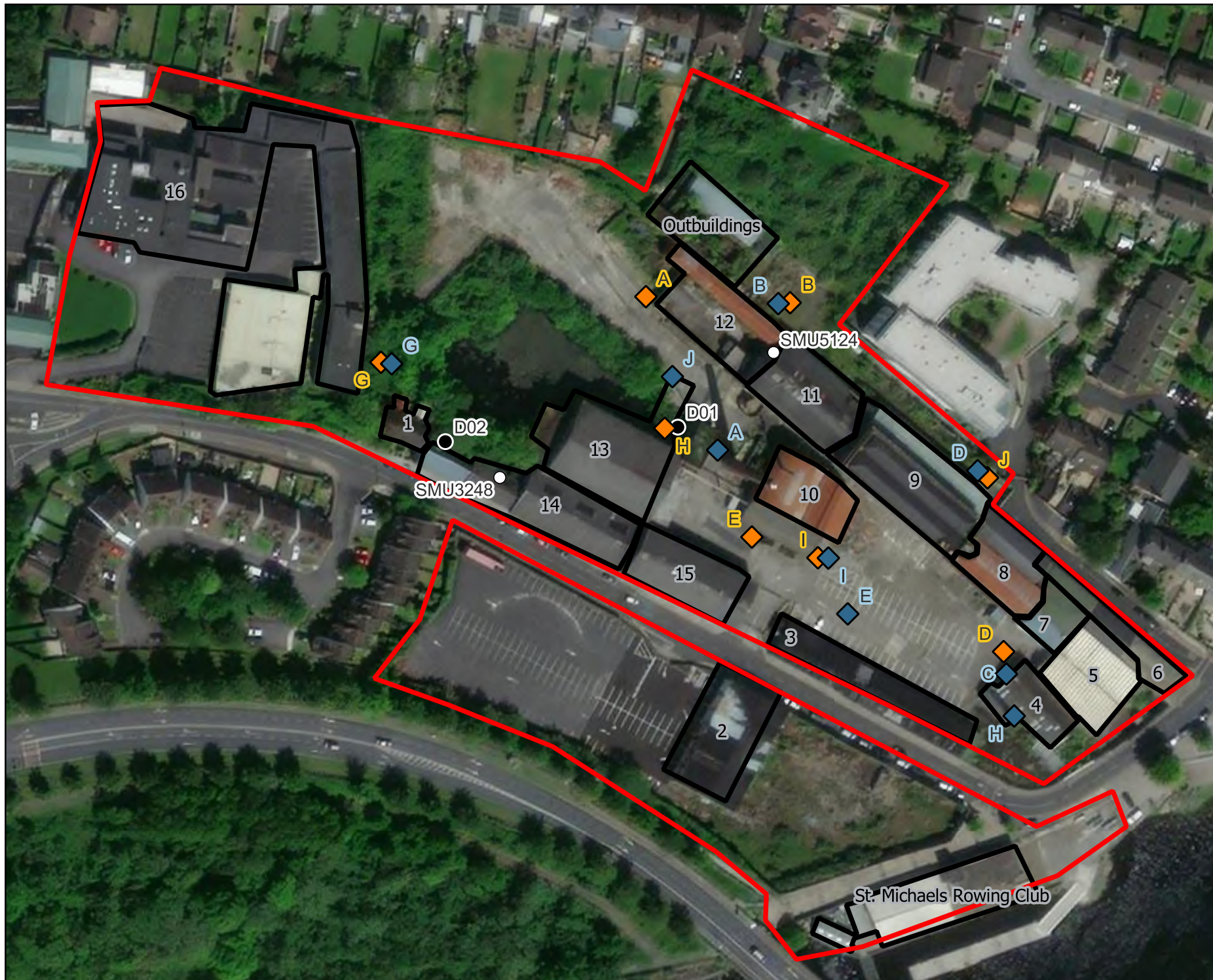
of static detectors were selected to represent the range of habitats present within the site, including favourable bat habitats. Settings used were those recommended by the manufacturer for bats, with minor adjustments in gain settings and band pass filters to reduce background noise when recording. Detectors were set to record from 30 minutes before sunset until 30 minutes after sunrise. The Song Meter automatically adjusts sunset and sunrise times using the Solar Calculation Method when provided with GPS coordinates.

The survey was designed to utilise two static detectors to monitor bat activity. Two SM4 detectors were deployed on site on the 7th July 2022 and collected on 22nd July 2022. Static detector locations can be found in Figure 2-1.




2.3

Survey Limitations



Survey design and effort was created in accordance with the most current best practice guidelines for surveying bats (Collins, 2016). July is within the optimal survey period for summer bat surveys (Collins, 2016). In addition, there were no limitations associated with weather conditions. While access to a small number of interior areas was restricted due to structural integrity and health and safety, a thorough assessment was carried out. Overall, there were no limitations in the scope, scale or context of the assessment.



Map Legend

-  Site Boundary
-  Dusk Surveyors
07.07.2022
-  Dawn Surveyors
08.07.2022

Static Detectors

-  SM Mini - one night
-  SM4 - two weeks



Drawing Title

Survey Effort

Project Title

Cleeves Riverside Quarter

Drawn By

SF

Checked By

AJ

Project No.

211052

Drawing No.

Figure 2-1

Scale

1:1500

Date

07.09.2022



MKO
Planning and
Environmental
Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkofireland.ie
Website: www.mkofireland.ie

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3. RESULTS

3.1 Desktop Study

3.1.1 Limerick County Development Plan 2022-2028

The Limerick County Development Plan came into effect on 29th July 2022. The plan was searched for references to the protection of bats, in particular lesser horseshoe bat. This species is present in the county but is considered of particular concern due to risk of isolation and the fragmentation of corridors between Cork and Clare populations. The following Objective was found in relation to the conservation of the lesser horseshoe bat:

Objective EH O2: *It is an objective of the Council to require all developments in areas where there may be Lesser Horseshoe Bats, to submit an ecological assessment of the effects of the development on the species. The assessment shall include mitigation measures to ensure that feeding, roosting or hibernation sites for the species are maintained. The assessment shall also include measures to ensure that landscape features are retained and that the development itself will not cause a barrier or deterrent effect on the species.*

The following Objective was found in relation to the conservation of other Irish bat species:

Objective EH O3: *It is an objective of the Council to require all developments where there are species of conservation concern, to submit an ecological assessment of the effects of the development on the site and nearby designated sites, suggesting appropriate mitigation measures and establishing, in particular, the presence or absence of the following species: Otter, badger, bats, lamprey and protected plant species such as the Triangular Club Rush, Opposite Leaved Pond Weed and Flora Protection Order Species generally.*

3.1.2 National Biodiversity Data Centre

A review of the National Bat Database of Ireland on the 1st March 2022 yielded results of bats within a 10km radius of the proposed development. The search yielded 5 bat species within 10km. Table 3-1 lists the bat species recorded within the hectad which pertains to the current Study Area (R55).

Table 3-1 NBDC Bat Records

Hectad	Species	Date	Database	Status
R55	Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)	27/01/2015	National Lesser Horseshoe Bat Database	Annex II & IV
R55	Pipistrelle (<i>Pipistrellus pipistrellus sensu lato</i>)	16/06/2014	National Bat Database of Ireland	Annex IV
R55	Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>)	16/06/2014	National Bat Database of Ireland	Annex IV
R55	Leisler's bat (<i>Nyctalus leisleri</i>)	07/06/2007	National Bat Database of Ireland	Annex IV
R55	Daubenton's Bat (<i>Myotis daubentonii</i>)	29/08/2009	National Bat Database of Ireland	Annex IV

3.1.3 National Parks and Wildlife Service Records

The results of the information request received from the NPWS scientific data unit of Rare and Protected Species is detailed in Table 4-2. This includes Lesser horseshoe roost records within a 10km

radius of the Proposed Development site (IG Ref: R 57051 57119). No roost records were found within 1km of the site. One roost record was found within 2.5km of the proposed development site.

Table 3-2 NPWS Lesser horseshoe bat records within 10km of the Proposed Development.

Most Recent Count	Species	Location	Roost Type	Distance from Site
n/a	Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Doonass House	Night	5-10km
2020	Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Mountshannon House	n/a	5-10km
2012	Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Ardnacrusa	n/a	5-10km
2020	Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Limerick Canal	n/a	1-2.5km

3.1.4 Designated Sites

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

A search of all Designated Sites within a 15km radius of the site found two sites designated for the conservation of bats; Ratty River Cave SAC (14.4km) and Danes Hole, Poulnalecka SAC (14.7km). The Lesser horseshoe bat roosts for which the SACs have been designated, are significantly outside the core foraging range (2.5km) of Lesser Horseshoe bat (NPWS, 2013). There is therefore no potential for significant effect on the Lesser horseshoe bat population for which the SACs have been designated.

3.1.5 Habitat and Landscape

A review of OSI maps and aerial photography revealed the site is connected to the wider landscape through a series of treelines, hedgerows and woodlands. The site is primarily surrounded by residential housing. In addition, the Shannon Estuary is located approx. 50m to the south-east.

3.1.6 Previous Reports

Ecology Ireland – May 2021

A preliminary site assessment was carried out in April 2021 by Ecology Ireland, following initial observations made in October 2020. Ground level site inspections as well as passive detector surveys were carried out. No roosting locations were identified, though a dropping found in building 9 was DNA analysed and identified as pertaining to lesser horseshoe bat.

An SM4 bat detector, deployed to the west of the reservoir over 10 nights in April 2021, recorded high levels of activity (15,000+ passes) by eight bat species (all but Natterer's bat), while another deployed to the north of St. Micheal's rowing club recorded a total of 25 passes, mostly common pipistrelles with some soprano pipistrelles and Leisler's bat passes. Regular lesser horseshoe bat passes were recorded within the proposed development site, with early dusk activity times suggesting potential roosting nearby or within the buildings on site.

MKO - Winter Report Summary – 2021/2022

Winter surveys were carried out by MKO ecologists in November 2021 and February 2022 to assess the suitability of the site for roosting and hibernating bats.

In summary, all buildings present within the proposed development site were found to have some potential to host roosting bat species. Evidence of bats, including feeding remains, small accumulations of droppings, and scattered droppings, were identified in seven buildings (B3, B8, B9, B10, B11, B12 and B13), suggesting the use of the site by a small number of bats. No evidence of hibernacula or large maternity roosts was identified.

The winter report prepared by MKO is presented in **Appendix I**.

3.2

Bat Habitat Appraisal

A walkover survey, assessing bat habitat suitability for summer roosts, was conducted on the 7th July 2022. The results of this walkover survey build upon the assessment provided in the winter survey report. A summary of habitats identified in winter is presented in Table 3-2.

Table 3-3 Habitats recorded within the proposed development site

Habitat	Fossit (2000) Code
Buildings and Artificial Surfaces	BL3
Dry meadows and grassy verges	GS2
Spoil and bare ground	ED2
Scrub	WS1
Marsh	GM1
Reservoir	FL8

An overall view of the site is presented in Plate 3-1. Each building is listed in Table 3-3, together with their suitability to host roosting bats.

Structures with *High* roosting potential present 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 (Collins, 2016). Structures with *Moderate* roosting potential could be used by bats due to their size, shelter, protection, conditions and surrounding habitat, but are unlikely to support a roost of high conservation status. Structures with *Low* potential present one or more potential roost sites that could be used by an individual bat opportunistically.

Table 3-4 Suitability to roosting bats of each building within the proposed development site

Building Number	Building Name	Bat Roosting Suitability
B1	Occupied & Unoccupied Dwelling	Moderate
B2	Garage/ Storage Unit	Low
B3	Office space & Storage unit	Moderate
B4	Offices	Moderate
B5	Storage Unit	Low
B6	Cold Store	Low
B7	Cold Store	Low
B8	Dairy Factory	Low
B9	Cleeves Factory	High
B10	Electrical station/ Storage Unit	Moderate
B11	Storage Unit	Moderate
B12	Storage Unit	Low
B13	Workshop	Low
B14	Storage Unit & Offices	Moderate
B15	Offices	Low

B16	School Buildings	Low
-----	------------------	-----



Plate 3-1 Overall map layout, all buildings numbered.

3.3 Summer Roost Assessment

The daytime inspection surveys carried out in July 2022 did not identify any additional substantial evidence of bats within the proposed development site. All locations where small amounts of droppings were observed during the surveys carried out in winter were revisited, and no or little additional signs of bats were found. Scattered droppings were found within Building 14, where no evidence of bat use was previously identified. The building is very dark during the daytime and presents suitable roosting habitat for bats.



Plate 3-2 Interior of Building 14.

The Cleeves factory building was re-confirmed as having a *High* roosting potential. Evidence of one or two fresh droppings were observed throughout the building; however, no large accumulations of fresh droppings were recorded. Additional broken windows were identified along the eastern staircase of the main Cleeves factory building, providing further potential access points for bats in addition to those previously identified (i.e. collapsed roof tiles, gaps in barred windows, gaps under flashing).

The attic of the Cleeves factory building (Plate 3-3) was not fully accessible for inspection due to health and safety concerns. No evidence of bats was observed during the inspection, but it was deemed suitable to host roosting bats, including maternity roosts, due to the availability of access and the favourable conditions provided by the intact roof, with interior lining and wooden beams (Plate 3-4).



Plate 3-3 Cleeves Factory main building



Plate 3-4 Cleeves factory attic space – roof lining

Fresh droppings were also identified in the boiler room in front of the electrical station (B10), where a small accumulation had already been recorded in winter.

No roosting bats were observed during the daylight inspection. Table 3-4 below presents a summary of results by building inspected, for winter and summer.

Table 3-5 – Winter vs. Summer Roost Inspection Results

Buildings	Description of the Findings Within the Site	Winter Results	Summer Results
Inspection Survey			
B1 – Occupied & Unoccupied Dwelling	<ul style="list-style-type: none"> Some cracks under the windowsill on the northern elevation with multiple access points through broken windows. Rotting timber fascia. Ivy cover on the northern and eastern elevations. 	<ul style="list-style-type: none"> No evidence of bat use 	<ul style="list-style-type: none"> No evidence of bat use
B2 – Garage/Storage unit	<ul style="list-style-type: none"> Galvanised roof and brick walls. Some cracks under the led flashing on the roof. Regularly used and bright during the day. 	<ul style="list-style-type: none"> No evidence of bat use 	<ul style="list-style-type: none"> No evidence of bat use
B3 – Offices/Storage Unit	<ul style="list-style-type: none"> Tar flat roof and brick walls approximately 70 metres long. Exposed timber roof beams. Cavity wall created on the southern elevation between the old stone wall and an installed inner Fiberglass Reinforced Panels (FRP) wall. Light penetration throughout. 	<ul style="list-style-type: none"> Feeding remains found in the western section of the building at two separate locations. 	<ul style="list-style-type: none"> No additional evidence.
B4 – Offices	<ul style="list-style-type: none"> Attic space with exposed timber roof beams and felt underlining. Multiple access points through gaps in the windows and doors. Slates missing on the northern and southern facing sides to the roof. Lead flashing with gaps present around the chimney. Large roof overhang with an exposed soffit on the eastern elevation. Light penetration throughout. 	<ul style="list-style-type: none"> No evidence of bat use 	<ul style="list-style-type: none"> No evidence of bat use
B5 – Storage unit	<ul style="list-style-type: none"> Large storage room. Fiberglass Reinforced Panels (FRP) on the floor and ceiling. Exposed metal beams hanging from the roof. Dark areas to the building throughout. 	<ul style="list-style-type: none"> No evidence of bat use 	<ul style="list-style-type: none"> No evidence of bat use
B6 – Cold Store	<ul style="list-style-type: none"> Fiberglass Reinforced Panels (FRP) on the floor and ceiling in the eastern section. Exposed stone walls to the west and exposed timber roof beams with a galvanised roof. Dark during the daytime with multiple gaps in the stone walls. Gaps lead all the way through to the outside. 	<ul style="list-style-type: none"> No evidence of bat use 	<ul style="list-style-type: none"> No evidence of bat use
B7 – Cold Store	<ul style="list-style-type: none"> Large storage room. Fiberglass Reinforced Panels (FRP) on the floor and ceiling. Light penetration throughout. 	<ul style="list-style-type: none"> No evidence of bat use 	<ul style="list-style-type: none"> No evidence of bat use

B8 – Dairy Factory	<ul style="list-style-type: none"> • Light penetration throughout. • Roof tiles missing and broken in places revealing the exposed timber roof beams above. • Concrete walls. 	<ul style="list-style-type: none"> • Feeding remains found 	<ul style="list-style-type: none"> • Feeding remains found
B9 – Cleeves Factory	<ul style="list-style-type: none"> • Four-storey building with attic space. • Multiple access points. • Stone wall building with slate roof. • Dark areas to the building throughout. • Collapsed ceiling tiles and exposed timber roof beams. 	<ul style="list-style-type: none"> • Ground floor: Droppings found in 4 locations • First floor: Droppings found in 1 location. • Second floor: Feeding remains found in 2 locations. • Third floor: Droppings found in 1 location. 	<ul style="list-style-type: none"> • Ground floor: fresh droppings found in 2 locations, in small numbers, as well as feeding remains. • Second floor: small amounts of fresh droppings found in 1 location. • Third floor: feeding remains throughout, some fresh droppings found in 1 location.
B10 – Electrical station/ Storage Unit	<ul style="list-style-type: none"> • Concrete walled building with galvanised roof. • Large access points on the east and west elevation. • Light penetration throughout. • Some gaps in the walls. 	<ul style="list-style-type: none"> • Feeding remains found • Droppings found 	<ul style="list-style-type: none"> • Feeding remains found • Small amount of fresh droppings found in electrical station, same as winter
B11 – Storage Unit	<ul style="list-style-type: none"> • Bright during the daytime and exposed due to the partial roof. • Inner rooms present within the building are dark and sheltered. • Access points in the windows and door. 	<ul style="list-style-type: none"> • Droppings found in an inner room • Feeding remains found 	<ul style="list-style-type: none"> • No additional evidence.
B12 – Storage Unit	<ul style="list-style-type: none"> • No roof on the southern half of the building – exposed. • Some small gaps in the stonework in the southern section • Northern section has an intact roof. • Northern section is dark 	<ul style="list-style-type: none"> • Feeding remains found in the northern section 	<ul style="list-style-type: none"> • Scattered droppings found on floor.
B13 – Workshop	<ul style="list-style-type: none"> • Large storage area. • Multiple access points. • Western section is dark and the eastern section is bright during daytime. 	<ul style="list-style-type: none"> • Feeding remains found 	<ul style="list-style-type: none"> • No additional evidence.
B14 – Storage unit/ Offices	<ul style="list-style-type: none"> • Large storage room. • Fiberglass Reinforced Panels (FRP) on the floor and ceiling. • Dark during the daytime. 	<ul style="list-style-type: none"> • No evidence of bat use 	<ul style="list-style-type: none"> • Small amount of fresh droppings found under galvanised sheeting and in front room.
B15 – Offices	<ul style="list-style-type: none"> • Two-story building with concrete walls and a tile roof. • Light penetration throughout. • Top floor inaccessible due to questionable structural integrity 	<ul style="list-style-type: none"> • No evidence of bat use 	<ul style="list-style-type: none"> • No evidence of bat use.
B16 – School Buildings	<ul style="list-style-type: none"> • Two-story building with concrete walls and a tile roof. • Light penetration throughout. • In regular use 	<ul style="list-style-type: none"> • No evidence of bat use on exterior 	<ul style="list-style-type: none"> • No evidence of bat use on exterior.

3.4

Emergence Survey

An emergence survey was carried out on the 7th of July 2022 by nine surveyors. Surveyors were positioned across the proposed development site to provide coverage of all buildings identified during the daylight surveys as potential roosts. Particular focus was given to potential access areas in buildings where signs of bats were identified. Table 3-6 presents the survey results per surveyor. Each surveyor was allocated a Batlogger with specific ID. Figure 3-1 presents the results of the manual dusk survey.

Table 3-6 Dusk Emergence Survey Results by Surveyor

Batlogger	Location (IG)	PRF Focus	Results	Species Recorded & Number of Passes
A	R 57008 57153	B13, B14, B15	No emergence. Some foraging activity. Social calls recorded.	Soprano (24) & Common pipistrelle (144).
B	R 57030 57198	B9, B11, B12	No emergence. Activity concentrated above B12.	Soprano (27) & Common pipistrelle (139), Leisler's bat (2).
C	R 57095 57092	B4, B5, B7, B8	No emergence. Very few bats recorded.	Soprano (2) & Common pipistrelle (9).
D	R 57090 57145	B9, B11	No emergence. Limited activity.	Soprano (20) & Common pipistrelle (202).
E	R 57049 57087	B3	No emergence. Limited activity.	Soprano (11) & Common pipistrelle (44).
G	R 56906 57180	B1 unoccupied, B16 east.	No emergence. Foraging within back garden.	Soprano (63) & Common pipistrelle (136), Leisler's bat (2), Lesser horseshoe bat (1).
H	R 57098 57073	B4	No emergence. Common pipistrelle foraging within building. Very few bats recorded.	Soprano (11) & Common pipistrelle (37), Leisler's bat (1).
I	R 57038 57121	B9, B10	No emergence. Some foraging activity.	Soprano (75) & Common pipistrelle (68).
J	R 56994 57176	B11, B12, B13	No emergence. High activity. Foraging activity within building 11 and above 12. Continuous commuting and foraging around the reservoir.	Soprano (37) & Common pipistrelle (276), Brown long-eared bat (1).



Map Legend

 Site Boundary

◆ Surveyor Locations
07.07.2022

Bat Species

- Myotis spp.
- Leisler's bat
- Nathusius pipistrelle
- Common pipistrelle
- Soprano pipistrelle
- Brown long-eared bat
- Lesser horseshoe bat



Drawing Title

Dusk Survey Results

Project Title

Cleeves Riverside Quarter

Drawn By

SF

Checked By

AJ

Project No.

211052

Drawing No.

Figure 3-1

Scale

1:3000

Date

07.09.2022



MKO
Planning and
Environmental
Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkofireland.ie
Website: www.mkofireland.ie

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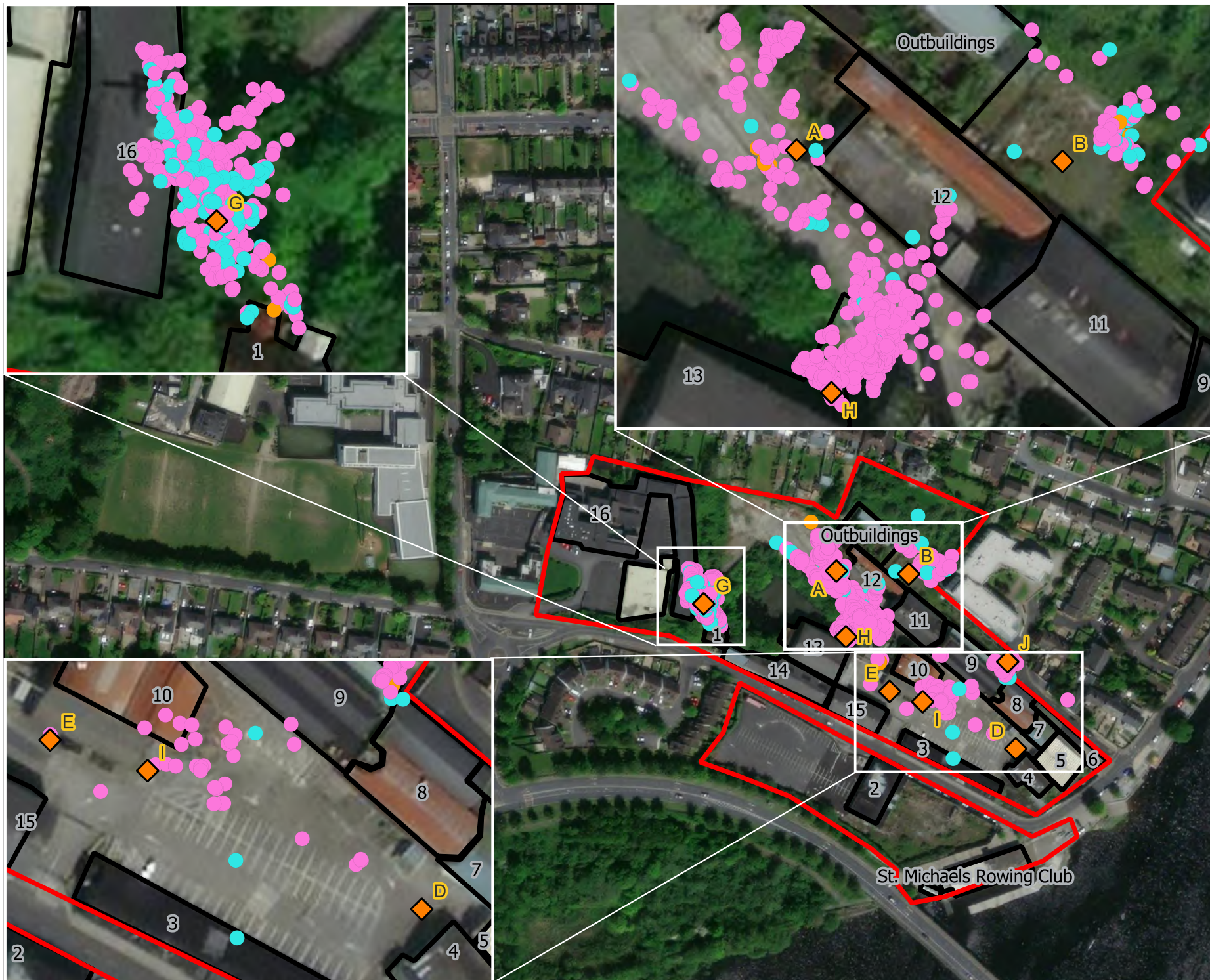
3.5

Re-Entry Surveys

Re-entry surveys were carried out the morning of the 8th of July 2022 by eight surveyors. Consideration was given to the results of the dusk emergence surveys to confirm surveyor positions. Most surveyors maintained their positions from the previous surveys. Where little activity was recorded at highly illuminated areas, surveyors moved to concentrate on different access points. Table 3-7 presents the survey results by surveyor, which are identified by their Batlogger ID. Figure 3-2 presents the results of the manual dawn survey.

Table 3-7 Dawn Re-entry Survey Results by Surveyor

Batlogger	Location	PRF Focus	Results	Species Recorded & Number of Passes
A	R 57018 57127	B13 arches & B11	Potential re-entry B11. Social calls recorded.	Soprano (22) & Common pipistrelle (196), Leisler's bat (7).
B	R 57030 57198	B9, B11, B12 Back	No re-entry. Few bats recorded.	Soprano (18) & Common pipistrelle (39), Leisler's bat (2).
D	R 57095 57092	B4, B5, B7, B8	No re-entry. Very few bats recorded.	Soprano (4) & Common pipistrelle (5).
E	R 57029 57143	B10	No re-entry. Foraging activity within the building.	Soprano (2) & Common pipistrelle (37), Leisler's bat (2).
G	R 56906 57180	B1 unoccupied, B16 east	No re-entry. Mainly 2-3 common pipistrelles foraging within garden.	Soprano (157) & Common pipistrelle (392), Leisler's bat (5).
H	R 56992 57160	B11, reservoir arches	Potential ~3 common pipistrelle re-entry at arches. Foraging activity and social calling by pipistrelles.	Soprano (27) & Common pipistrelle (673), Leisler's bat (6).
I	R 57038 57121	B9, B10	No re-entry. Foraging activity within B10. Building left before dawn.	Soprano (3) & Common pipistrelle (39).
J	R 57090 57145	B9, B11	No re-entry. Limited activity.	Soprano (1) & Common pipistrelle (38), Leisler's bat (1).



Map Legend

Site Boundary

Surveyor Locations
08.07.2022

Bat Species

Myotis spp.

Leisler's bat

Nathusius pipistrelle

Common pipistrelle

Soprano pipistrelle

Brown long-eared bat

Lesser horseshoe bat



Drawing Title

Dawn Survey Results

Project Title

Cleaves Riverside Quarter

Drawn By

SF

Checked By

AJ

Project No.

211052

Drawing No.

Figure 3-2

Scale

1:3000

Date

07.09.2022



MKO
Planning and
Environmental
Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkofireland.ie
Website: www.mkofireland.ie

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3.5.1 One-night Static Detectors

Two SM-mini bat detectors were deployed within the site at Building 14 and Building 9, where small accumulations of droppings were recorded during the daylight surveys. The detectors were set to record bat activity within the two buildings from sunset until sunrise. No bat calls were recorded on the detector SMU7119 deployed within Building 9. Five individual passes were recorded by the detector SMU3248 deployed within Building 14. Table 3-8 shows a summary of the results obtained.

Table 3-8 Species recorded by Song Meter Mini detectors over one night, 7th July 2022

Detector	Species	Date	Time	Evidence of Potential Day/Night Roosting
SMU3248	Common pipistrelle	07/07/2022	21:39:42	Yes
SMU3248	Lesser horseshoe bat	07/07/2022	22:07:12	Yes
SMU3248	Soprano pipistrelle	08/07/2022	01:35:51	No
SMU3248	Soprano pipistrelle	08/07/2022	02:25:38	No
SMU3248	Lesser horseshoe bat	08/07/2022	05:23:10	Yes

The pass times recorded by the detector located within Building 14 suggest potential roosting activity by a common pipistrelle bat (*Pipistrellus pipistrellus*), which was active 19 minutes before sunrise, and a lesser horseshoe bat, which was active 9 minutes after dusk and then again after sunrise. Lesser horseshoe bats (*Rhinolophus hipposideros*) are a late emerging species known to fly within the structures they roost in before eventually emerging. According to the results obtained on the static detector, it is possible that individual bats are roosting within Building 14 on occasion.

3.5.2 Two-weeks Static Detectors

Two SM4 static detectors were deployed on the site at two different locations (D01 and D02) from the 7th to the 22nd of July 2022, for a total of 15 nights. These detectors allowed a specified look into species composition, commuting and foraging activities within the site. Locations were chosen to represent areas of likely bat activity. High activity was recorded on the two detectors, with the memory cards (64GB + 64GB) on detector D01 reaching full capacity after 9 nights and detector D02 after 11 nights.

All recordings were later analysed using bat call analysis software Kaleidoscope Pro v.5.4.2 (Wildlife Acoustics, MA, USA). Bat species were identified using established call parameters, to create site-specific custom classifiers. All identified calls were also manually verified. In total 26,604 bat passes were recorded.

Analysis of the detector recordings positively identified five bats to species level with *Myotis* genus also present. Common pipistrelle (*Pipistrellus pipistrellus*) made up the majority of the activity recorded within the site (n=22,961), followed by Soprano pipistrelles (*Pipistrellus pygmaeus*) (n=3,389). Leisler's bat (*Nyctalus leisleri*) (n=146) and lesser horseshoe bat (n=80) were recorded less frequently. *Myotis* spp. (n=27) and Brown long-eared bat (*Plecotus auritus*) (n=1) was rarely encountered, with 1% or less of total bats recorded (Plate 3-5).

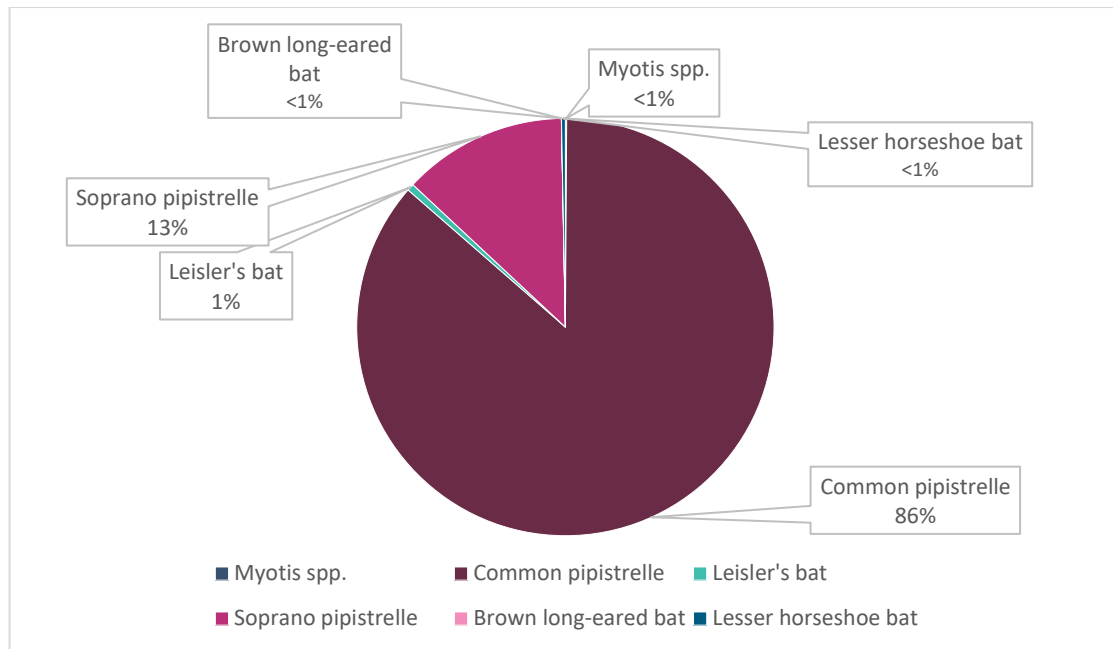


Plate 3-5 Bat Species Composition.

Plate 3-6 shows total bat passes per detector. Activity was compared between days where both detectors were active (8 nights). Detector D01 was located in the centre of the site, east of the existing reservoir, near the reservoir arches. Detector D02 was located south of the reservoir, near Building 1. Both areas presented vegetation and suitable foraging habitats for bats. Activity was high at both locations, with a higher number of passes recorded at D02 for all species. While activity at both detectors was high, it was noted during the dusk and dawn surveys that a small number of bats were feeding continuously around the reservoir. The high activity could be attributed to the same bats flying back and forth for extended periods and may not be representative of high numbers of bats utilising the site.

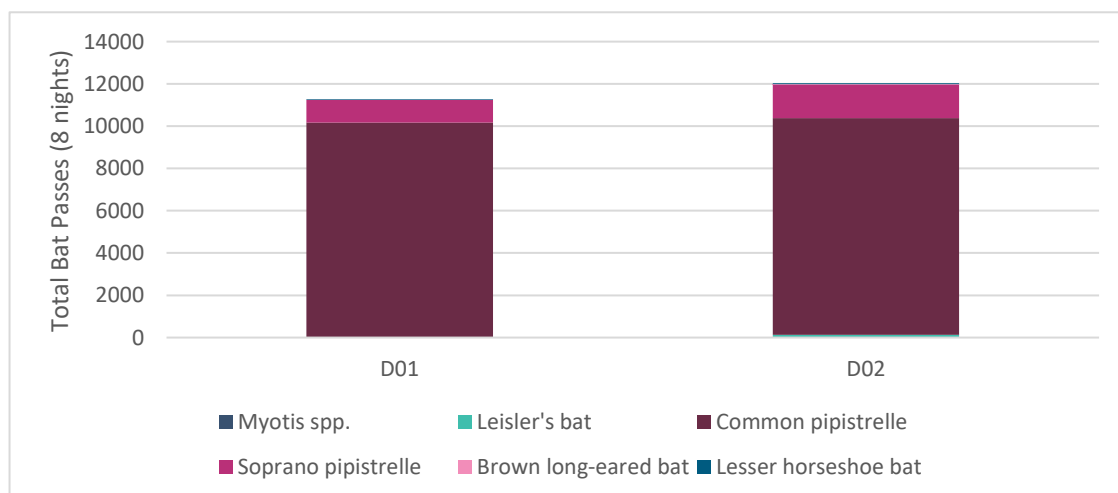


Plate 3-6 Total bat passes per detector across 8 nights.

Analysis of the detector recordings also highlighted the total bat passes per night. Species composition per night is shown in Plate 3-6. Activity was uniform throughout the deployment. Activity was lower after night 8 as one detector (D01) was full and no longer recording additional data. Both detectors were full by night 11 (17/07/22). Common pipistrelle and soprano pipistrelle bats were most commonly recorded during the survey periods. These species are common and widespread across Ireland.

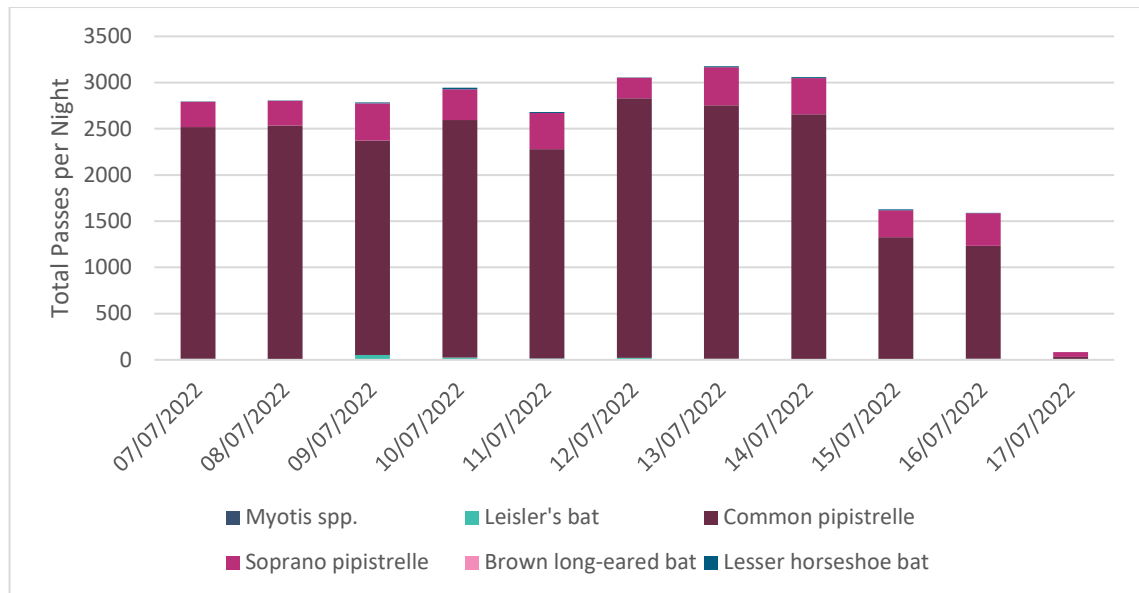


Plate 3-7 Total Bat Passes per Night

3.6

Summary of Summer 2022 Surveys Results

All buildings surveyed within the proposed development site are accessible to bats due to their state of disrepair. The majority provide suitable habitat for roosts, as outlined in Table 3-3 above.

No roosting bats were identified during the daytime inspection of the structures within the site; however, small accumulations of fresh droppings or feeding remains were noted in Buildings 3, 8, 9, 10, 12 and 14.

No bats were observed emerging or re-entering any of the structures during the dusk and dawn emergence and re-entry surveys. However, the potential of a small common pipistrelle roost located under the reservoir arches was reported during the dawn re-entrance survey. Bats were observed commuting and foraging throughout the site, with some commuting through the structures, feeding for a short time and emerging again.

Commuting and foraging activity was concentrated around the reservoir where artificial light levels were at a minimum. It was noted that activity was significantly lower in areas where street and security lights were illuminating the site i.e. the southern section of the site had higher levels of artificial lighting than the northern section of the site and thus fewer bats were recorded.

The static detectors recorded high levels of bat activity near the reservoir. However, it was noted during the dusk/dawn surveys that a small number of bats were observed feeding for extended periods in the same locations around the reservoir.

Emergence times recorded by static detectors (Section 3.5.1) suggest that there could be roosts present within or in proximity to the proposed development site.

3.6.1

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 1976-2021.

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. The population of lesser horseshoe bat recorded during the surveys was assigned ***National Importance*** due to the need to maintain a viable corridor between populations present in the counties surrounding Limerick.

No hibernacula or maternity roosts were identified within the site during the surveys undertaken in winter and summer 2022. However, it is likely that the site is used opportunistically by individual bats with possible day/night/feeding/satellite roosts present.

4.

CONCLUSION & RECOMMENDATIONS

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

- Six bat species were recorded commuting and foraging across the proposed development site during the bat surveys carried out in July 2022, including Common pipistrelle, Soprano pipistrelle, Leisler's bat, Lesser horseshoe bat, *Myotis spp.* and Brown long-eared bat.
- Most of the buildings surveyed have the potential to support bat roosts. No dropping accumulations indicative of large regular roosts were found. The small accumulations of bat droppings and feeding remains recorded suggest that the structures on site support opportunistic use by bats. Droppings were found in five buildings within the proposed development site.
- No large permanent or maternity roosts were recorded during the 2022 summer surveys.
- More information is needed to ensure the proposed works will not have significant effects on the local bat populations.
- A derogation licence from the NPWS will be required in order to restore/demolish buildings where evidence of bats was identified, as well as to block any potential access points to these buildings.

The following recommendations relate to the preparation of the licence application:

- It is likely that the licence would require that any loss of roosting habitat would be compensated for with the provision of alternative roosting locations. This could be achieved by creating bespoke roosting habitat within the roof spaces of the buildings to be retained, the main factory building (B9) and the southern storage unit building (B14) in particular. Purpose-built access points within these roof spaces may also be required.
- Purpose-built access points within these roof spaces may also be required.
- The proposed development has the potential to be beneficial to bats. If the proposed development site falls into disrepair, its value as a habitat for roosting bats is likely to diminish. The sympathetic and well-designed renovation of the factory roof, as well as any other building to be retained, has the potential to enhance its value for bats and to prevent their likely decline. Landscaping proposed in open habitats can also encourage bat activity, by creating tall linear features such as treelines and hedgerows for connectivity across the site and with the surrounding habitats; by planting native, diverse vegetation to attract insect preys; and by providing dark, secure areas for foraging, as well as diverse habitats to suit different bat species.
- Further surveys will be required in advance of specific development proposals to determine the likely effects on bats resulting from any such works and to enable the design and implementation of specific and effective mitigation. Interior inspections of buildings not accessed in 2022 will be carried out in 2023.

Summary of proposed additional surveys:

- Winter hibernacula survey
- Spring dusk & dawn & statics
- Summer dusk & dawn & statics
- Autumn dusk & dawn & statics

5.

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Wildlife Act 1976 and Wildlife (Amendment) Act 2000.



APPENDIX 1

WINTER BAT REPORT

Bat Report

Cleeves Riverside Quarter,
Co. Limerick.





DOCUMENT DETAILS

Client: **Limerick Twenty Thirty (LTT)**

Project Title: **Cleeves Riverside Quarter, Co. Limerick.**

Project Number: **211052**

Document Title: **Bat Report**

Document File Name: **BR F – 211052 - 2022.04.12**

Prepared By: **MKO
Tuam Road
Galway
Ireland
H91 VW84**



Planning and
Environmental
Consultants

Rev	Status	Date	Author(s)	Approved By
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02	Final	12/04/2022	TM	AJ

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1. INTRODUCTION

MKO was commissioned to undertake a winter bat survey at Cleeves Riverside Quarter, Co. Limerick. (Grid Ref: R 57051 57119) (Figure 1-1). The project will include the redevelopment and revitalisation of the Cleeves site as a public realm accommodating a mix of uses including proposed residential and office spaces, educational and tourist facilities.

MKO undertook a winter bat survey in February 2022 (Collins, 2016), within the site of the proposed development works. The main objective of the survey was to gather information on roosting bats and inspect the structures for hibernacula. The bat surveys were designed to establish the nature, scale and locations of potential bat activity in the building on site. The bat surveys were designed to establish the nature, scale and locations of potential bat activity in each of the buildings on site and involved an extensive interior and exterior inspection of the buildings. For the purposes of this report the buildings have been divided into blocks and are numbered 1-16 (Plate 3-10). Lesser horseshoe bat will be referred as LHB throughout the report.

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 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. Irish Wildlife Manuals, No. 25. (Kelleher & Marnell, 2006)*
- *Guidance Note 08/18: Bats and Artificial Lighting in the UK (ILP, 2018)*

1.1 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.

In addition, Irish species are further protected by national legislation (Wildlife Acts 1976-2021). 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.



Map Legend

 Site Boundary



Drawing Title

Site Location

Project Title

Cleeves Riverside Quarter, Limerick

Drawn By	Checked By
TM	AJ
Project No.	Drawing No.
211052	Fig 2.1
Scale	Date
1:40000	12.04.22



MKO
Planning and
Environmental
Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkofireland.ie
Website: www.mkofireland.ie

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1.2

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 1-1 provides a summary of different types of bat roosts.

Table 1-1 Bat Roost Types and Definitions

Roost Type	Definition
Day	Where individuals or small groups of male's 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 rest/feed during the night but are rarely found during the day.
Transitional	Used by a few individuals for short periods of time prior to or following hibernation.
Swarming	Where large numbers gather in late summer to autumn. Important mating sites.
Mating	Where mating takes place in late summer to winter.
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.

There are currently no clear guidelines to determine the significance of a bat roost. All the largest roosts of 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).

Table 1-2 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).

Table 1-2 Level of Importance of Various Building Roosts

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
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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

Statement of Authority

The winter bat survey was undertaken by MKO ecologists Aoife Joyce (BSc., MSc.), Tim Murphy (BSc.) and Kevin McElduff (BSc.). MKO ecologists are professionally trained in bat survey techniques and are experts in undertaking surveys to this level.

This report was prepared by Tim Murphy and was reviewed by Aoife Joyce and John Hynes. Tim has over one years' experience in ecological assessments and has completed CIEEM courses in Bat Impacts and Mitigation. Aoife has over three years' experience in ecological assessments and has completed CIEEM and BCI courses in Bat Impacts and Mitigation, Bat Tree Roost Identification and Endoscope training and Kaleidoscope Pro Analysis. John Hynes (BSc., MSc., MCIEEM) who has over 9 years' experience in ecological assessment.

2.

METHODS

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.

2.1.1

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.

In addition, information on species' range and distribution, available in the 2019 Article 17 Reports (NPWS, 2019), was reviewed in relation to the location of the proposed development. 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.

2.1.2

Designated Sites

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 4.1.2 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. The potential for effects on these designated sites is fully considered.

Proposed Natural Heritage Areas (pNHAs) were designated on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. However, the potential for effects on these designated sites is fully considered.

2.1.3

Habitat and Landscape

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.

2.2

Ecological Appraisal (Bats)

A walkover survey of the Study Area was carried out during daylight hours on the 15th December 2021 and 22nd February 2022. 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* (3rd edn.) (Collins, 2016). Table 4.1 of the 2016 BCT Guidelines identifies a grading protocol for assessing structures, trees and commuting/foraging habitat for bats. The protocol is divided into four Suitability Categories: *High*, *Moderate*, *Low* and *Negligible*.

2.3

Winter Roost Assessment

A search for roosts was undertaken within the boundary of the proposed development by two licenced ecologists. The aim was to determine the presence of roosting bats, potential access points, roosting locations and the need for further survey work or mitigation.

This was undertaken by inspecting the structures on site to look for and identify hibernating bats or any evidence of bat occupation (i.e. droppings, urine stains or dead specimens) (Collins, 2016). Roost disturbance license conditions for wintering bats were adhered to in order to reduce the potential disturbance, on hibernating bats, caused by surveyors on site.

A walkover was carried out during daylight hours on the 15th December 2021 and 22nd February 2022 and all accessible buildings were inspected. A systematic search of all accessible interiors, including all attic spaces, was undertaken, checking all cracks, crevices and voids for hibernating bats using binoculars, torches and endoscopes. The exterior of the building was inspected first from ground level and included all accessible windowsills, walls, eaves, roof ridge and roof slates.

Trees within the site were visually assessed from ground level, for natural features of high value to roosting bats including knot holes, trunk hollows, splits/cracks in branches and areas of flaking bark and also for signs indicating possible bat use including droppings, staining and scratching of bark and any other potential roost features (i.e. PRFs) identified by Andrews (2018).

2.4

Survey Limitations

Survey design and effort was created in accordance with the most current best practice guidelines for surveying bats (Collins, 2016). February is within the optimal survey period for winter bat surveys, (Collins, 2016). In addition, there were no limitations associated with weather conditions. While access to a small number of interior areas was restricted due to structural integrity and health and safety an assessment was carried out. Overall, there were no limitations in the scope, scale or context of the assessment.

3. RESULTS

3.1 Desktop Study

3.1.1 National Biodiversity Data Centre

A review of the National Bat Database of Ireland on the 1st March 2022 yielded results of bats within a 10km radius of the proposed development. The search yielded 3 bat species within 10km. Table 3-1 lists the bat species recorded within the hectad which pertains to the current Study Area (R55).

Table 3-1 NBDC Bat Records

Hectad	Species	Date	Database	Status
R55	Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)	27/01/2015	National Lesser Horseshoe Bat Database	Annex II & IV
R55	Pipistrelle (<i>Pipistrellus pipistrellus sensu lato</i>)	16/06/2014	National Bat Database of Ireland	Annex IV
R55	Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>)	16/06/2014	National Bat Database of Ireland	Annex IV

3.1.2 Designated Sites

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

A search of all Designated Sites within a 15km radius of the site found two sites designated for the conservation of bats; Ratty River Cave SAC (14.4km) and Danes Hole, Poulnalecka SAC (14.7km). The Lesser horseshoe bat roosts for which the SACs have been designated, are significantly outside the core foraging range (2.5km) of Lesser Horseshoe bat (NPWS, 2013). There is therefore no potential for significant effect on the Lesser horseshoe bat population for which the SACs have been designated.

3.1.3 Habitat and Landscape

A review of OSI maps and aerial photography revealed the site is well connected to the wider landscape through a series of treelines, hedgerows and woodlands. The is surrounded by agricultural fields and residential housing. In addition, The Shannon Estuary is located approx. 50 m to the South East.

3.2 Bat Habitat Appraisal

A walkover survey, assessing bat habitat suitability, was conducted on the 15th December 2021 and 22nd February 2022.

The survey area is dominated by **Buildings and Artificial Surfaces (BL3)** with small areas of **Dry meadows and grassy verges (GS2)**, **Spoil and bare ground (ED2)** and **scrub (WS1)** occurring throughout. A small strip of stony riverbank with marsh vegetation (**GMI**) occurs along the banks of the Shannon along with an artificial pond (**FL8**) located in the middle of the site complex.

The majority of habitat within the site was classified as **Buildings and Artificial Surfaces (BL3)** (Plate 3-1 and 3-2). The buildings and hardstand, predominantly used as car parking, are located throughout the site. Small patches of dry grassland (**GS2**) occur within the survey area, where areas of shallow soil occur. The grassland areas are often found in mosaic with scrub (**WS1**), and it appears that most areas

of grassland are being slowly colonized by scrub. Along the stony shore of the River Shannon marsh vegetation (*GMI*) is developed. This lies to the southeast of the site. The reservoir (*FL8*) located centrally within the site boundary is bordered by the *GS2* and *BL3* habitats.

With regard to foraging and commuting bats, areas of Buildings and Artificial Surfaces *BL3* and dry grassland *GS2* considered *Low* suitability, i.e. habitats that could be used by small numbers of commuting bats (Collins, 2016). Scrub (*WS1*) and Marsh (*GMI*) habitats provide connectivity to the surrounding landscape. As such, they were assessed as having *Moderate* suitability i.e. Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens (Collins, 2016).

The Cleeves factory (Grid Ref; R 57063 57143) (Plate 3-1) was assessed as having *High* roosting potential i.e. A 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 (Collins, 2016).

The associated warehouses, offices, workshops, dairy factory, cold store buildings and school buildings (Plate 3-10 & Plate 3-2 – 3-7) around the site were assessed as having *Low to Moderate* roosting potential i.e. A structure with one or more potential roost sites that could be used by a bats due to their size, shelter, protection, conditions and surrounding habitat but are unlikely to support a roost of high conservation status (Collins, 2016).

The reservoir (Plate 3-8 & Plate 3-9) and associated arched tunnels assessed as having *Low* roosting potential due to there being no visible gaps in the store work i.e. A structure with one or more potential roost sites that could be used by an individual optimistically. However, these potential roosts do not provide enough size, shelter, protection, conditions and surrounding habitat to be used on a regular basis by a large number of bats. (Collins, 2016).

The mosaic of grassland and scrub within the site were assessed as having *Negligible* roosting potential for bats due to the lack of potential roost features.



Plate 3-1 Southern Elevation of the Cleeves Factory within the site to the left of the image and Building B8 to the right of the image. Temporary HSE prefab units in the foreground of the image.



Plate 3-2 – Office buildings and storage units, B3 & B4, in the foreground & the rowing club building in the background– facing southeast



Plate 3-3 – Workshop, office and storage unit buildings, B13 & B14, to the left of the image and the reservoir to the right of the image– facing west



Plate 3-4 – Electrical station/ Storage Unit, B10, in the foreground & offices and workshop buildings, B15 & B13, in the background– facing southwest



Plate 3-5 – Storage Unit, B11 to the left of the image– southern elevation



Plate 3-6 – Southern elevation of Unoccupied and Occupied Dwelling, B1 – left of the image



Plate 3-7 – Southern & eastern elevation of Unoccupied Dwelling, B1



Plate 3-8 – Scrub WS1 to the west of the site & Office and cold store building, B14, to the right of the image, western elevation of workshop building, B13, in the background & a portion of the reservoir to the left of the image.



Plate 3-9 – Northern elevation of the Arch tunnel within the site



B1	Occupied & Unoccupied Dwelling
B2	Garage/ Storage Unit
B3	Office space & Storage unit
B4	Offices
B5	Storage Unit
B6	Cold Store
B7	Cold Store
B8	Dairy Factory
B9	Cleeves Factory
B10	Electrical station/ Storage Unit
B11	Storage Unit
B12	Storage Unit
B13	Workshop
B14	Storage Unit & Offices
B15	Offices
B16	School Buildings

Plate 3-10 Overall Map Layout with buildings numbered

3.3 Winter Roost Assessment

This section describes the findings of the internal, external and roost surveys conducted at Cleeves Riverside Quarter in 2022. Following the presentation of these results, a summary of the findings of all the surveys as they apply to each building is provided in Section 4 below.

Exterior Inspection

The exteriors of the existing buildings within the site, numbered in Plate 3-10, were inspected from ground level to search for signs of bat activity, including potential access points to the building such as broken windows or cracks in the walls and roofs, and potential roosting locations.

All buildings surveyed within the site contained some potential roost features, including gaps in roof slates, fascias, soffits, flashing and gaps in the stone walls. No evidence of bat use was identified during the exterior inspection of the structures. However, recent rain conditions may have removed any external evidence of bat use. Buildings B1, B3, B4, B8, B9, B10 and B11 contained multiple potential access points and all other buildings contain at least one access point.

Interior Inspection

Interior access was gained to all buildings within the site, with the exception of St. Michaels rowing club, the school buildings and two derelict buildings to the north of the site. In addition, access to the upper floors of office building, B15, (Plate 3-10) were restricted due to the structural integrity of the building.

Buildings where interior access could not be gained were subject to an exterior inspection, as outlined above. A total of fifteen buildings were inspected internally for evidence of roosting bats (Plate 3-11 – 3-12). This number is excluding St. Michaels Rowing Club, the school buildings and the outbuildings, to the north of the site. This is due to restricted access due to the structural integrity of the building. There were signs of bat activity, i.e. droppings and feeding remains, observed in a number of buildings and is described in Table 3-2 below. No hibernacula or observations of bats were found during the interior inspection.

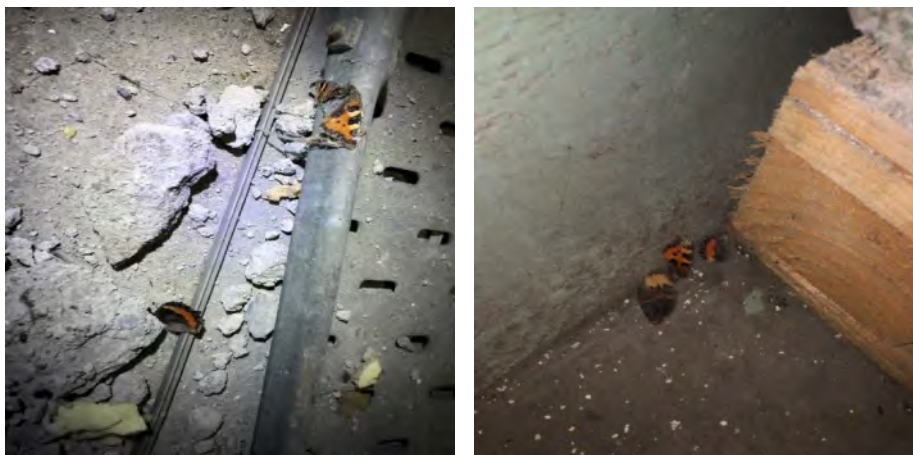


Plate 3-11 Interior inspection – Sample feeding remains (Building B9 & B3, respectively)



Plate 3-12 Interior inspection – Sample roosting sites (Building B9 First Floor & B9 Ground Floor, respectively)

Table 3-2 – Roost Inspection Results

Buildings	Description of the Findings Within the Site	Evidence of bats and Potential entry/exit locations	Overall Potential Roosting Suitability
Interior Inspection Survey			
B1 – Occupied & Unoccupied Dwelling	<ul style="list-style-type: none"> Some cracks under the windowsill on the northern elevation with multiple access points through broken windows. Rotting timber fascia. Ivy cover on the northern and eastern elevations. 	<ul style="list-style-type: none"> No evidence of bat use 	<ul style="list-style-type: none"> Moderate
B2 – Garage/Storage unit	<ul style="list-style-type: none"> Galvanised roof and brick walls. Some cracks under the led flashing on the roof. Regularly used and bright during the day. 	<ul style="list-style-type: none"> No evidence of bat use 	<ul style="list-style-type: none"> Low
B3 – Offices/Storage Unit	<ul style="list-style-type: none"> Tar flat roof and brick walls approximately 70 metres long. Exposed timber roof beams. Cavity wall created on the southern elevation between the old stone wall and an installed inner Fiberglass Reinforced Panels (FRP) wall. Light penetration throughout. 	<ul style="list-style-type: none"> Feeding remains found in the western section of the building at two separate locations. 	<ul style="list-style-type: none"> Moderate
B4 – Offices	<ul style="list-style-type: none"> Attic space with exposed timber roof beams and felt underlining. Multiple access points through gaps in the windows and doors. Slates missing on the northern and southern facing sides to the roof. Lead flashing with gaps present around the chimney. Large roof overhang with an exposed soffit on the eastern elevation. Light penetration throughout. 	<ul style="list-style-type: none"> No evidence of bat use 	<ul style="list-style-type: none"> Moderate
B5 – Storage unit	<ul style="list-style-type: none"> Large storage room. Fiberglass Reinforced Panels (FRP) on the floor and ceiling. Exposed metal beams hanging from the roof. Dark areas to the building throughout. 	<ul style="list-style-type: none"> No evidence of bat use 	<ul style="list-style-type: none"> Low
B6 – Cold Store	<ul style="list-style-type: none"> Fiberglass Reinforced Panels (FRP) on the floor and ceiling in the eastern section. Exposed stone walls to the west and exposed timber roof beams with a galvanised roof. Dark during the daytime with multiple gaps in the stone walls. Gaps lead all the way through to the outside. 	<ul style="list-style-type: none"> No evidence of bat use 	<ul style="list-style-type: none"> Low
B7 – Cold Store	<ul style="list-style-type: none"> Large storage room. Fiberglass Reinforced Panels (FRP) on the floor and ceiling. 	<ul style="list-style-type: none"> No evidence of bat use 	<ul style="list-style-type: none"> Low

	<ul style="list-style-type: none"> Light penetration throughout. 		
B8 – Dairy Factory	<ul style="list-style-type: none"> Light penetration throughout. Roof tiles missing and broken in places revealing the exposed timber roof beams above. Concrete walls. 	<ul style="list-style-type: none"> Feeding remains found 	<ul style="list-style-type: none"> Low
B9 – Cleeves Factory	<ul style="list-style-type: none"> Four-storey building with attic space. Multiple access points. Stone wall building with slate roof. Dark areas to the building throughout. Collapsed ceiling tiles and exposed timber roof beams. 	<ul style="list-style-type: none"> Ground floor: Droppings found in 4 locations First floor: Droppings found in 1 location. Second floor: Feeding remains found in 2 locations. Third floor: Droppings found in 1 location. 	<ul style="list-style-type: none"> High
B10 – Electrical station/ Storage Unit	<ul style="list-style-type: none"> Concrete walled building with galvanised roof. Large access points on the east and west elevation. Light penetration throughout. Some gaps in the walls. 	<ul style="list-style-type: none"> Feeding remains found Droppings found 	<ul style="list-style-type: none"> Moderate
B11 – Storage Unit	<ul style="list-style-type: none"> Bright during the daytime and exposed due to the partial roof. Inner rooms present within the building are dark and sheltered. Access points in the windows and door. 	<ul style="list-style-type: none"> Droppings found in an inner room Feeding remains found 	<ul style="list-style-type: none"> Moderate
B12 – Storage Unit	<ul style="list-style-type: none"> No roof on the southern half of the building – exposed. Some small gaps in the stonework in the southern section Northern section has an intact roof. Northern section is dark 	<ul style="list-style-type: none"> Feeding remains found in the northern section 	<ul style="list-style-type: none"> Low
B13 – Workshop	<ul style="list-style-type: none"> Large storage area. Multiple access points. Western section is dark and the eastern section is bright during daytime. 	<ul style="list-style-type: none"> Feeding remains found 	<ul style="list-style-type: none"> Low
B14 – Storage unit/ Offices	<ul style="list-style-type: none"> Large storage room. Fiberglass Reinforced Panels (FRP) on the floor and ceiling. Dark during the daytime. 	<ul style="list-style-type: none"> No evidence of bat use 	<ul style="list-style-type: none"> Low
B15 – Offices	<ul style="list-style-type: none"> Two-story building with concrete walls and a tile roof. Light penetration throughout. Top floor inaccessible due to questionable structural integrity 	<ul style="list-style-type: none"> No evidence of bat use 	<ul style="list-style-type: none"> Low
B16 – School Buildings	<ul style="list-style-type: none"> Two-story building with concrete walls and a tile roof. Light penetration throughout. In regular use 	<ul style="list-style-type: none"> No evidence of bat use 	<ul style="list-style-type: none"> Low

4.

OVERALL FINDINGS

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

Each of the buildings surveyed has the potential to support one or more roosts of a variety of bat species. Evidence of bats were identified in 7 buildings. Although no large accumulations of droppings or evidence of bat use was identified, it is likely that small numbers of bats are regularly utilising the buildings since their abandonment.

In addition to direct loss of roosts, lighting and noise disturbance should be considered in the design of any development. There are additional surveys agreed to take place during the bat activity season (April-October), in advance of any proposed development works, to determine the current status of the roosts and the likely effects on bats resulting from any proposed works. Surveys are proposed for the summer period to gather information on potential maternity roosts within the buildings. Additional surveys, in combination with the winter bat survey results, will allow for the design and implementation of site specific and effective mitigation.

Successfully providing replacement roosts for LHB populations presents a significant challenge. As such, it is common practice for post construction monitoring to be required by NPWS on granting of a derogation licence. This will likely involve additional surveys, on completion of any development, to determine the effectiveness of any prescribed mitigation measures and to ensure bats are still utilising the area.

6.

CONCLUSION

All buildings within the site contained some potential roost features including gaps in roof slates, fascias, soffits, flashing and gaps in the stone walls. No evidence of bat use was identified during the exterior inspection of each of the structures. However, buildings B1, B3, B4, B8, B9, B10 and B11 contained multiple potential roosting features to the exterior and all other buildings contained at least one access point.

During the interior inspection of all the buildings, buildings B3, B8, B9, B10, B11, B12 and B13 all contained signs of bat use, i.e. feeding remains and droppings. These PRF's within the buildings mentioned above were considered suitable for transitional, day, night or satellite roosts. No hibernacula were identified with the site boundary.

This report, along with the additional surveys agreed to take place during the bat activity season (April-October), will be used to determine the current status of the roosts and the likely effects on bats resulting from any proposed works. A combination of the results gathered will provide a full and comprehensive assessment of the potential for impact on bat populations within the site boundary. The surveys and assessment provided in this report are in accordance with the relevant industry guidance.

7.

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APPENDIX 2

2023 WINTER REPORT

Briefing Note

Cleeves Riverside Quarters
– 2023 Winter Survey





DOCUMENT DETAILS

Client: **Limerick Twenty Thirty**

Project Title: **Cleeves Riverside Quarters – 2023 Winter Survey**

Project Number: **211052**

Document Title: **Briefing Note**

Document File Name: **BN F – 211052 – 2023.03.28**

Prepared By: **MKO
Tuam Road
Galway
Ireland
H91 VW84**



Planning and
Environmental
Consultants

Rev	Status	Date	Authors	Checked by	Approved By
01	Final	28/03/2023	Sara Fissolo, Kate Greaney	Colin Murphy	Pat Roberts
			<i>Sara Fissolo</i>	<i>Colin Murphy</i>	<i>Pat Roberts</i>
			<i>Kate Greaney</i>		

Background

MKO was commissioned to undertake additional winter bat surveys at Cleeves Riverside Quarter, Co. Limerick (Grid Ref: R 57051 57119) In February 2023. The project will include the redevelopment and revitalisation of the Cleeves site as a public realm accommodating a mix of uses including proposed residential and office spaces, educational and tourist facilities. The main objective of the surveys was to gather additional information on roosting bats, inspect the structures for winter roosts and to access four additional buildings which were previously not accessed.

For the purposes of the surveys the buildings have been divided into blocks, and sub-blocks and are numbered 1-17. They are presented in Figure 1.

Methods

The site visit undertaken for this assessment was carried out on 9th February 2022 by ecologists Pat Roberts, Sara Fissolo, Colin Murphy and Kate Greaney. February is within the optimal survey period for hibernacula surveys (Collins, 2016).

The site had previously been visited in December 2021, February 2022 and July 2022 where all accessible buildings were subject to an internal and external inspection to search for the presence of roosting bats. All buildings were revisited in February 2023, in particular areas where small dropping accumulations were previously identified.

Droppings were collected at two locations within the Cleeves main building (B9) (IG Ref: R 57058 57145) and Electrical Station (B10) (IG Ref: R 57030 57129) and sent for analysis to SureScreen Scientifics in the UK. Two intact droppings were collected at each location, and were stored and labelled in separate lab testing vials, with one acting as reserve for the lab analysis process.

In addition, interior inspections of the Educate Together school buildings (BL16, 16b, 16c, 16d), St. Joseph's Convent (BL16a), St. Micheal's Rowing Club (BL17, 17a, 17b) and a previously occupied semi-detached house (B1b) were inspected for hibernacula and potential signs of other roosting.

Results

No additional signs of bats were found within the buildings previously inspected and the surveys did not identify any evidence of hibernating bats within the proposed development site.

Results from SureScreen Scientifics were received on Monday 6th March. Lesser horseshoe bat (*Rhinolophus hipposideros*) was confirmed using the air vents on the ground floor of the main Cleeves building (B9). The results from the Electrical Station (B10) were inconclusive – indicating potential use by multiple bat species.

The following summarises findings within the newly inspected buildings:

Building	Code	Section	Bat Evidence	Winter Assessment	Other Roosts
St Joseph's Covent	BL16a	Basement – Boiler Room.	One dead bat found in advanced state of decomposition – ID not possible. Likely flew in and could not find way out. Open windows provide access into area, but warm conditions not suitable for hibernation. No other signs of bat use found.	Negligible	Low
		Ground Floor	Scattered droppings in Kitchen area – no access location found but windows potentially left open on occasion. Evidence of two small roosts found in the central courtyard, within rugs wrapped around exposed plumbing – to be revisited in May.	Negligible	Low
		First Floor & Mezzanine	No signs of bats – rooms very bright.	Negligible	Low
		Second Floor	No signs of bats – rooms very bright. Open windows in a bathroom could provide access during activity season.	Negligible	Low
		Roof	Water tank room has access potential but no signs of use. Not suitable hibernacula.	Negligible	Low
Educate Together school	BL16, BL16c, BL16d	Main Building	No evidence of bat use. School in use. Basement section provides access but in use as boiler room. No hibernacula suitability. Potential roosting spaces outdoors under flashing.	Negligible	Low
	BL16b	Outbuildings	Buildings completely open for access via doors and windows. Four hanging spots found with small dropping accumulations	Negligible	Low

			underneath, in cabinets, utility room and bathroom. LHB night roost suspected.		
St. Micheal's Rowing Club	BL17, BL17a	Main building	No evidence of bat use. Mice droppings found. No access to top floor – door was stuck - will revisit in May. Potential roosting spaces outdoors under flashing.	Negligible	Low
	BL17b	Outdoor storage sheds	No evidence of bat use. No access potential and bright during daytime.	Negligible	Negligible
Semi-detached House		Small building on two floors	No evidence of bat use. May site visit will inspect attics.	Negligible	Low

Incidental Findings

No incidental sightings of other protected species occurred during the survey.

Further Surveys

Further surveys are planned for Spring, Summer and Autumn 2023 to assess use of the site by bats, in particular Lesser horseshoe bat. Surveys will include daytime inspections of all buildings, in particular those not previously surveyed in Summer 2022, manual activity surveys carried out at dusk, and static detector surveys.

The 2023 winter roost survey found no hibernacula on site.

No other additional roosting locations were identified in the buildings inspected in 2022. Signs of additional small roosts were identified in St. Joseph's Convent (BL16a) and within the school's outbuildings (BL16b). These will be re-visited during the activity season to classify type of use. The Spring, Summer and Autumn surveys will focus on the identification of commuting routes in and out of the site as well as on the regularity of use of the roosting locations identified.



Map Legend

Building Outline

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Drawing Title

2023 Buildings Numbered

Project Title

Cleeves Riverside Quarter

Drawn By

SF

Project No.

211052

Scale

1:1500

Checked By

CM

Drawing No.

1

Date

08/03/2023

MKO
Planning and
Environmental
Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkofireland.ie
Webste: www.mkofireland.ie

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

VOLUME III APPENDICES

Appendix 7-2 Winter bird Survey Report 2021-2022





BRIEFING NOTE

Project Reference	211052
Date	26.09.2022
Subject	2021/ 2022 Wintering Bird Surveys - Limerick 2030 Cleeves Riverside Quarter
Author(s)	Kevin Mc Elduff (B.Sc. (Env))

Background

This briefing note outlines the results of the 2021/ 2022 wintering bird surveys undertaken at St. Michael's Rowing club for Limerick Twenty Thirty Strategic Development DAC. The site of the Proposed Development is divided up into two parcels located at North Circular Road, Limerick City, Co. Limerick (Grid Ref: R 57051 57119).

Statement of Authority

A total of four wintering bird surveys were carried out by Kevin Mc Elduff (B.Sc. (Env.)) of MKO on 15/12/2021, 12/01/2022, 15/02/2022 and 14/03/2022. Kevin has also prepared this briefing note. This briefing note has been reviewed by Colin Murphy (B.Sc. M.Sc.) Colin is a Project Ecologist with over 2.5 years professional consultancy experience.

Methodology

Prior to the commencement of surveys, an initial field visit was undertaken to assess the habitats on site and plan the surveys, as well as to identify suitable vantage points. The survey area covered the development site and the area of shoreline within River Shannon and River Fergus Estuaries SPA, approximately 15m to the south of the Proposed Development site. The surveys were undertaken at the site over four dates: 15/12/2021, 12/01/2022, 15/02/2022 and 14/03/2022. Surveys were undertaken monthly at alternate high/low tides. A combination of low and high tide counts has been used due to the differences in behaviour and site use between tidal states, with different species likely to be foraging and roosting in different areas of River Shannon and River Fergus Estuaries SPA and the surrounding terrestrial habitats, depending on the stage of the tidal cycle.

The surveys were undertaken by appropriately qualified ornithologists. All observations were recorded, and detailed point data was gathered for each species observation, with all bird species denoted using standard British Trust for Ornithology (BTO) codes and with the number of each species recorded next to each registration. The species recorded in the surveys were those covered by Irish Wetlands Bird Survey (I-WeBS) counts, i.e. all divers, grebes, cormorant, shag, herons, swans, geese, ducks, rails, crakes, waders, gulls and kingfisher. However, in addition to this, all other bird species, including all common and widespread passerines, were also recorded from within the proposed development site.

Wintering Bird Surveys

A total of eight bird species were recorded during the four surveys carried out during the 2021/ 2022 survey period: Black-headed gull, Cormorant, Heron, Lesser black-backed gull, Mallard, Mute swan, Oystercatcher and



Redshank. All birds were recorded outside the site, either feeding (F) on the River Shannon or roosting (R) on the riverbank and in the water (details below).

Three of these species (Black-headed gull, Cormorant, Heron, Lesser black-backed gull, Mallard, Mute swan, Oystercatcher and Redshank, Cormorant and Redshank) are Special Conservation Interests of the River Shannon and River Fergus Estuaries SPA which is located in close proximity to the site.

Breeding and wintering populations of Mute swan, Cormorant, Mallard, Black-headed gull and Lesser black-backed gull are amber listed, Redshank and Oystercatcher are red listed as per *Birds of Conservation Concern in Ireland 2020-2026* (Gilbert et al 2021).

Table 1 Results of 15/12/2021 wintering bird survey

15/12/2021 15:00 High Tide – Sunny – Cloud cover 40% – Low wind – Visibility 2km +		
Mute Swan (<i>Cygnus olor</i>)	8	Feeding
Cormorant (<i>Phalacrocorax carbo</i>)	4	Feeding
Mallard (<i>Anas platyrhynchos</i>)	6	Feeding
Black-headed gull (<i>Larus ridibundus</i>)	100	Feeding
Lesser black-backed gull (<i>Larus fuscus</i>)	16	Feeding

Table 2 Results of 12/01/2022 wintering bird survey

12/01/2022 9:00 Low Tide – Sunny – Cloud cover 50% – Low wind – Visibility 2km +		
Grey heron (<i>Ardea cinerea</i>)	4	Feeding
Black-headed gull (<i>Larus ridibundus</i>)	250	Feeding
Mute Swan (<i>Cygnus olor</i>)	8	Feeding
Cormorant (<i>Phalacrocorax carbo</i>)	15	Feeding
Mallard (<i>Anas platyrhynchos</i>)	6	Feeding
Redshank (<i>Tringa tetanus</i>)	1	Feeding
Oystercatcher (<i>Haematopus ostralegus</i>)	19	Feeding
Lesser black-backed gull (<i>Larus fuscus</i>)	6	Feeding

Table 3 Results of 15/02/2022 wintering bird survey

15/02/2022 7:05 High Tide – Cloud cover 90% – Moderate Wind – Visibility less than 2km		
Mute Swan (<i>Cygnus olor</i>)	8	Roosting/ Feeding
Black-headed gull (<i>Larus ridibundus</i>)	~1,250	Feeding
Mallard (<i>Anas platyrhynchos</i>)	5	Feeding
Cormorant (<i>Phalacrocorax carbo</i>)	110	Feeding
Lesser black-backed gull (<i>Larus fuscus</i>)	15	Feeding
Oystercatcher (<i>Haematopus ostralegus</i>)	75	Feeding

Table 4 Results of 14/03/2022 wintering bird survey

14/03/2022 11:00 Low Tide – Sunny – Cloud cover 30% – Low wind – Visibility 2km +		
Mute Swan (<i>Cygnus olor</i>)	14	Feeding
Cormorant (<i>Phalacrocorax carbo</i>)	9	Feeding
Mallard (<i>Anas platyrhynchos</i>)	11	Feeding
Black-headed gull (<i>Larus ridibundus</i>)	200	Feeding
Lesser black-backed gull (<i>Larus fuscus</i>)	25	Feeding/ Roosting



Conclusions of 2021/ 2022 Wintering bird surveys

The proposed development site does not provide suitable supporting habitat for SCI species associated with any SPA. No SCI species were recorded within the proposed development site during the course of the 2021/ 2022 wintering bird survey season.

Additional Surveys

While the wintering bird surveys carried out during the 2021/ 2022 survey period indicate that the proposed development site does not provide suitable habitat for SCI species nor does the site support any populations of SCI species, we recommend that wintering bird surveys be carried out for the upcoming 2022/ 2023 survey season. The purpose of these additional surveys is to ensure that the most up to date data is available for future planning applications to reduce risks.



ENVIRONMENTAL IMPACT ASSESSMENT REPORT

VOLUME III APPENDICES

Appendix 7-3 Invasive Species Management Plan



Invasive Species Management Plan

Cleeves Riverside Quarter,
Co. Limerick



DOCUMENT DETAILS

Client: **Limerick City & County Council,
in partnership with Limerick Twenty Thirty DAC**

Project Title: **Cleeves Riverside Quarter, Co. Limerick**

Project Number: **211052-a**

Document Title: **Invasive Species Management Plan**

Document File Name: **211052-a - ISMP - D1 - 2025.09.05**

Prepared By: **MKO
Tuam Road
Galway
Ireland
H91 VW84**



Rev	Status	Date	Author(s)	Approved By
01	Draft	05/09/2025	DM, SF	PR

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1. INTRODUCTION

MKO were commissioned to prepare a site-specific Invasive Species Management Plan on behalf of Limerick City & County Council, in partnership with Limerick Twenty Thirty DAC. This ISMP has been prepared to provide information on the management of identified species listed on the *First Schedule* of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) at Cleeves Riverside Quarter, located on the northern side of the River Shannon, in Limerick City, Co Limerick. The location of the proposed development is shown in **Figure 1-1** below.

Cleeves Riverside Quarter is proposed to be developed into a mixed-use development that seeks the regeneration and adaptive reuse of a strategic brownfield site, as part of the Limerick City and County Council 'World Class Waterfront revitalisation and transformation project'.

Japanese knotweed (*Reynoutria japonica* syn. *Fallopia japonica*) and Himalayan Knotweed (*Koenigia polystachya*), two invasive species listed on the *First Schedule*, were identified within the Application Site. These species will be taken into account as part of the proposed development in order to prevent their potential spread throughout the site and the surrounding landscape.

This document has been prepared with reference to current legislation and best practice guidelines in the identification, treatment and management of invasive alien species listed on the *First Schedule*. The document does not provide advice or guidance with reference to waste legislation.

1.1 Statement of Authority

This report has been prepared with information gathered during initial Invasive Species Surveys by Invasive Plant Solutions in 2021, and updated surveys carried out by MKO Ecologists, Sara Fissolo (BSc. (Hons)) and David Mesarcik (BSc. Hons.). This report has been prepared by David Mesarcik (BSc. Ecology and Evolutionary Biology; Hons. Ecology) and Sara Fissolo (BSc. (Hons) Ecology and Environmental Biology). This report has been reviewed by Pat Roberts (B.Sc., M.Sc., MCIEEM). Sara is a Project Ecologist with MKO with over five years of professional consultancy experience. Pat has over 20 years' experience in ecological assessment and management.

1.2 Legislative Framework

The European Union (Invasive Alien Species) Regulations 2024 (S.I No. 374/2024) contain specific provisions that govern the control of listed invasive non-native species (INNS). It is an offence to release or allow to disperse or escape, to breed, propagate, import, transport, sell or advertise species listed on the *First Schedule* of the European Union (Invasive Alien Species) Regulations 2024 without a Licence.

The two regulations that deal specifically with this scheduled list of species are:

- Regulation 17 & 18: *Prohibition of introduction, dispersal, retention, breeding, importing, exporting, dealing or release certain species within or throughout the nation*

Following on from that, the following are strictly prohibited:

- Dumping invasive species cuttings anywhere other than in facilities licensed to accept them;
- Planting or otherwise causing to grow in the wild - hence the landowner should be careful not to cause further spread;
- Disposing of invasive species at a landfill site without first informing the landfill site (that is licensed under Number 10 of 1996 - Waste Management Act, 1996 (as amended) to take such *First Schedule* material (plant or soil) that the waste contains invasive species material (this action requires an appropriate licence);

- Moving soil which contains *First Schedule*-specific non-native invasive species in the Republic of Ireland, unless under licence from the National Parks and Wildlife Service (NPWS) (this licence is separate from and does not discharge any person being in receipt of other necessary waste permits/ licences etc.); and

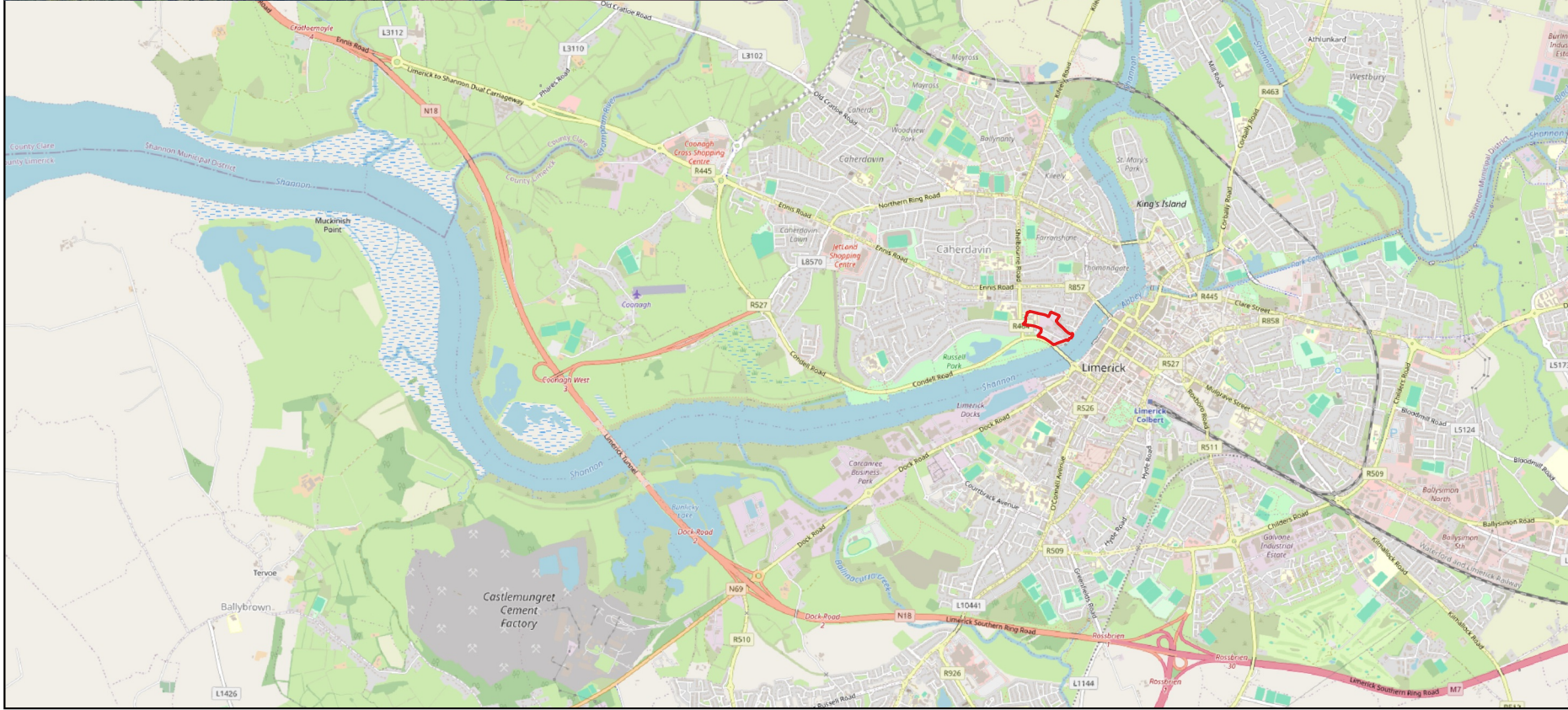
Regulation (EU) No. 374/2024 of the European Parliament and of the Council on the prevention and management of the introduction and spread of invasive alien species (hereafter referred to as the IAS Regulation) lists specific Species of Union Concern, some of which overlap with the First Schedule species.

1.3

Guidance Documents

The high-level management options provided in this report have taken account of the following guidance documents and literature sources :

- Irish Water (2016) IW-AMT-SOP-009 Information and Guidance Document on Japanese Knotweed
- Stokes et al. (2004). Stokes, K., O'Neill, K. & McDonald, R.A. (2004) Invasive species in Ireland. Unpublished report.
- TII (2020) The Management of Invasive Alien Plant Species on National Roads – Technical Guidance
- Property Care Association (2018) Code of Practice for the Management of Japanese Knotweed
- NRA (2010). Guidelines on management of noxious weeds and non-native invasive plant species on national roads. National Roads Authority.
- Actions for Biodiversity 2017-2021, Ireland's 3rd National Biodiversity Action Plan.



Map Legend

Application Site



Drawing Title

Site Location

Project Title

Cleeves Riverside Quarter

Drawn By

SF

Checked By

PR

Project No.

211052-a

Drawing No.

Figure 1-1

Scale

1:50,000

Date

15.08.2025



MKO
Planning and
Environmental
Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkofireland.ie
Website: ww.mkofireland.ie

1.4

Location/Extent of Invasive Species within the Site

Dedicated invasive species surveys were first carried out by Invasive Plant Solutions between February 2021 and May 2021, and guided the treatment undertaken to date at the site. Further invasive species surveys were conducted by MKO Ecologists during the multidisciplinary surveys between 2021 and 2025 within the site to ensure no other *First Schedule* species had established. In 2025, the areas where Japanese Knotweed and Himalayan Knotweed had been recorded were reassessed to establish the current baseline.

Ecology of Japanese knotweed

Japanese knotweed is a tall, vigorous, ornamental plant that escaped cultivation in the late nineteenth century and has since become an aggressive invader in both rural and urban environments. The plant can grow up to 3m high and its root system can extend up to 3m into the ground and 7m laterally from the parent plant. The reason this plant is such a threat is due to the nature of its regeneration. Cut fresh stems can produce fresh shoots and roots from nodes when immersed in soil or water. Very small fragments (0.7g) of fresh knotweed shoot and root material have the potential to start a whole new plant.

Ecology of Himalayan knotweed

Himalayan knotweed is a perennial plant native to the Himalayas that was introduced to cultivation in the 19th century and has since spread beyond cultivated areas. It typically grows between 0.6 and 2.5 meters in height and spreads via an underground rhizome system. The plant has hollow, bamboo-like stems that are capable of producing roots from nodes when in contact with soil. Small stem fragments, as short as 2 cm, can develop into new plants. It forms dense colonies through vegetative reproduction, primarily via rhizomes and rooted stem nodes.

1.4.2

Previous Extent and Treatment

Himalayan knotweed was identified during the invasive species survey carried out by Invasive Plant Solutions in 2021. A series of healthy Himalayan Knotweed plants were recorded growing in a linear strip of vegetation between the southwestern boundary of the carpark at the Shipyard Site and the pedestrian path which leads up from the northern bank of the River Shannon onto the Condell Road above (See Figure 2-1). Although this area was not treated by Invasive Plant Solutions as it was outside the original site boundary, it was recommended for treatment to Limerick County Council. This area has since been included within the Application site boundary.

A large, mature stand of Japanese knotweed was found in an area of scrub adjacent to the Reservoir located within the Site. An Invasive Species Management Plan was prepared by Invasive Species Solutions and is provided in **Appendix 1** of this document. Treatment began in mid 2021 with targeted stem injections on mature stands and spot spraying on seedlings. The site was revisited annually, and the extent was monitored and treated accordingly. The treatment of Japanese Knotweed on site since 2021 is summarised in Table 1-1 below.

Table 1-1 Treatment carried out by Invasive Plant Solutions

Year	Date	Treatment Type	Number of Treated Plants	Notes
2021	26/05/2021	Treatment 1: Stem Injection / Foliar Spraying	Stem Injection = 530 Spot Spray = 41	
	11/10/2021	Treatment 2: Stem Injection / Foliar Spraying	Stem Injection = 12 Spot Spray = 20	
2022	04/08/2022	Treatment 1: Stem Injection / Foliar Spraying	Stem Injection = 2 Spot Spray = 14	
	27/10/2022	Treatment 2: Foliar Spraying	Stem Injection = 0 Spot Spray = 3	No mature canes visible
2023	06/10/2023	Treatment 1: Foliar Spraying	Stem Injection = 0 Spot Spray = 2	No mature canes visible
2024	17/09/2024	-	-	No regrowth observed. Site colonised by Old Man's Beard

1.4.3 Current Baseline

A dedicated invasive species survey was carried out to reassess and map the full extent and distribution of Japanese knotweed on the 5th June 2025 in line with NRA (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes) by MKO Ecologists, Sara Fissolo (BSc. Hons.) and David Mesarcik (BSc. Hons.).

The Application Site area was walked and systematically surveyed for the presence of invasive species (listed under the *First Schedule*) with an emphasis on Japanese knotweed and Himalayan knotweed. The full extent and distribution of *First Schedule* Invasive plant species was mapped. Invasive plant species that are not listed under the *First Schedule* of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024), were also recorded within the Site. This survey was carried out within the optimum survey season for botanical surveys

During the survey carried out in June 2025, new growth was recorded in close proximity to the original extent of the Japanese Knotweed infestation. While the extent of the knotweed seemed to have reduced significantly, small stands were found at three adjacent locations along the water edge (Plates 2-1 and 2-2, and Figure 2-1). The area was covered with thick old man's beard (*Clematis vitalba*) scrub and it was difficult to establish the full extent of the knotweed without removing the surrounding vegetation and risking fragmenting potentially hidden canes.

No above-ground growth of Himalayan knotweed was recorded at the previously identified location.

Various other low and medium impact species, not listed on the *First Schedule* of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024), were recorded, including winter heliotrope (*Petasites pyrenaicus*), butterfly bush (*Buddleja davidii*), wall cotoneaster (*Cotoneaster horizontalis*), and old man's beard (*Clematis vitalba*). The mapped locations of the *First Schedule* invasive species within the Application Site are shown in **Figure 2-1** below.



Plate 2-1. View of J. knotweed stand almost hidden by surrounding vegetation.



Plate 2-2 View of a single shoot of J. knotweed recorded in proximity of the original extent of infestation.



Map Legend:

Application Site Boundary

Invasives

Japanese knotweed

Japanese Knotweed Stands recorded in 2025

Himalayan knotweed

7m Buffer

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Drawing Title	
Invasive Species Map	
Project Title	
Limerick Twenty Thirty Cleaves Riverside Quarter	
Drawn By	Checked By
DM	SF
Project No.	Drawing No.
211052	Figure 2.1
Scale	Date
1:1,790	2025-09-05

MKO
Planning and
Environmental
Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkofireland.ie
Website: www.mkofireland.ie

2. MANAGEMENT AND TREATMENT METHODOLOGIES

2.1 Treatment Plan for Japanese Knotweed

It is proposed to continue previous treatment measures until the start of the proposed works as per the management plan included in **Appendix I**.

Further to this, consideration has been given to on-site management options prior to construction, such as bunding of any residual infested material on site. However, there will be limited space for the creation of a knotweed cell, bund or on-site burial on site. In addition, the area infested with Japanese knotweed is located in close proximity to water and on uneven terrain, which includes large, dumped materials. Due to the extent of works proposed in this area, which include the construction of a temporary access road, site levelling, and landscaping excavations, the site is at risk of re-infestations from dormant rhizomes.

Off-site treatment in-combination with continued monitoring is considered the best site-specific treatment. The treatment plan of Japanese Knotweed on the Application Site is detailed below.

2.1.1 Chemical Treatment

Chemical treatment of Japanese Knotweed will continue following the methodology outlined in the previous Invasive Species Management Plan included in **Appendix 1**, until construction works are set to begin on the Application Site.

2.1.2 Ex-Situ Removal

Research has shown that rhizomes can grow a distance of 7 m and achieve a depth of around 2 m from the parent crown (Environmental Agency, 2006). However, the actual extent of the rhizome can vary considerably depending on the soil type and the history of the site. Due visual assessments being impaired by the presence of dense *Clematis* scrub and the complexity of the terrain, whilst the extent of Japanese knotweed within the site seems to have significantly reduced since initial surveys in 2021, the original extent will be considered to be potentially contaminated. Mechanical excavation will take place in this area. All plant material and potentially contaminated soil will be removed off the site to a licensed waste facility. The excavation will be fully supervised and all material inspected to make sure there are no living rhizome left. Toolbox talks will be held with all members of the site and contractors' team responsible for carrying out measures detailed in this management plan. This will detail locations of infested material and how to carry out work on site in a biosecure way.

For off-site treatment, it will be necessary to obtain a licence from the National Parks and Wildlife Service to remove the contaminated material from the site and dispose of it at a waste facility that is licenced to receive it. An NPWS licence application would require the following information:

- > Methods of removal
- > Method of transportation
- > Treatment of the species
- > Proposed bio-security measures
- > Invasive Species Management Plan
- > Timeframe of works
- > Evidence that the proposed landfill facility will accept the species.

The following procedure will be adhered to ensure that there is no further contamination:

- The potentially contaminated area will be marked out and fenced off, including a 7m buffer around its extent. Once machinery and personnel enter the contaminated area, they will not leave until they have been cleaned down following the procedure that is set out below.
- All knotweed vegetative material above ground will be removed together with any *Clematis* scrub located in the contaminated areas. This removal will be carried out first to ensure spread of potential knotweed segments is avoided. All vegetation will be loaded onto a waiting truck to be taken off site to a waste facility under licence.
- Excavations will begin within the contaminated area under the supervision of an ecologist. Excavations will start from edge of the 7m buffer and excavated material will be checked for rhizomes by the ecologist:
 - Where no rhizomes are identified within the excavated material, it will be treated as uncontaminated and may be removed from the contaminated area.
 - Where rhizomes are encountered within the excavated material, this will be loaded onto a waiting truck to be transported to the waste facility under licence. The truck will be filled to no more than 75% capacity and will be covered to avoid spillage in transit.
 - Any large materials (i.e. cement blocks) likely to be excavated which can be completely cleared and excluded from infestation will not need to be sent to the licenced waste facility and can be either reused on site or sent to landfill.
- Following these operations, all personnel, equipment and machinery will be cleaned down as per the methodology below, prior to exiting the contaminated area.
- All site hygiene measures outlined in Section 3 will be adhered to.

Clean Down Procedure

- All plant, machinery, tools and personnel will be cleaned down prior to leaving the contaminated areas.
- Clean down will be undertaken on an impermeable membrane such as a radon barrier and following completion of the clean down operation, this will be brushed clean with sweepings left within the contaminated area to ensure that there is no potential to spread any contaminated material.
- Power washing will be avoided to prevent potentially contaminated run-off from spreading outside the site.

2.2

Treatment Plan for Himalayan Knotweed

Whilst no further evidence of Himalayan knotweed was found in 2025 in the area previously identified in 2021, where construction works including excavations are proposed, the site is at risk of re-infestations from dormant rhizomes. As such, it is recommended that:

- A buffer zone (7m) is implemented around the area where Himalayan knotweed was found to avoid any unnecessary personnel or machinery entering this area.
- The area will continue to be monitored annually prior to construction and,
- Where excavation works are proposed, any contaminated soil material is removed ex-situ as per Section 2.1.2 prior to construction.

2.3

Post Treatment Monitoring

Ongoing monitoring will be required for all *First Schedule* Invasive Species and non-native Invasive Species of potential concern recorded with suitable follow-up management in order to control new growth or re-establishment within the infested areas.

Following the initial treatment and removal, at operation of the development the treated areas will be re-surveyed annually to ensure no invasive species re-establish. If necessary, the areas will be re-treated until no growth is recorded for two consecutive years. If invasive plants are found to be re-establishing, they shall be treated as per the measures outlined in Section 2.1.1 of this report.

3.

SITE HYGIENE AND BIOSECURITY MEASURES

Prior to construction or treatment works being carried out, an Ecological Clerk of Works (ECoW) will be appointed. The ECoW will be responsible for supervising the treatment and removal of Japanese knotweed and monitoring of Himalayan knotweed throughout the entire construction phase.

The following site hygiene and biosecurity measures will be adhered to throughout the duration of the proposed construction works:

- No ground works will take place on site prior to the application of this site-specific Invasive Species Management Plan (ISMP). The ISMP will ensure all measures are taken to avoid the spread of species listed on the First Schedule.
- A designated 7m bio-secure area/exclusion zone will be set up with hazard tape at the infested locations to prevent disturbance in these areas.
- The contractor will assign a member of their team as Environmental Officer to ensure the management plan is adhered to throughout the proposed works.
- All works in relation to *First Schedule* invasive species will be supervised by the Ecological Clerk of Works (ECoW).
- The ECoW will give a Toolbox Talk to all staff in relation to knotweeds and their management on site.
- All machinery will be thoroughly cleaned down prior to arriving on the site to avoid the potential spread of invasive species from elsewhere.
- Machinery that is used for excavation of invasive material will not be used for any other works until they are fully cleaned down and then visually inspected by a specialist to ensure no fragments of Invasive plant material are present.
- Prior to leaving the invasive species exclusion zones, all boots and clothing will be thoroughly brushed down to remove any contaminated material prior to leaving the area.
- Clean down will be carried out using brushes and shovels and power washing will be avoided insofar as possible. This is to prevent potentially contaminated run-off from spreading outside the site.
- Once the machinery has been cleaned down as much as possible, the machines will be air blasted to remove any remaining material. The machine will track out of the contaminated areas on site over plywood or other suitable material in order to protect the machine from potential contamination while exiting the contaminated area.
- Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any invasive species, and where it is confirmed that none are present.
- All measures prescribed in the invasive species management plan will be incorporated into the contractor's respective method statements for works where *First Schedule* invasive species and invasive species of potential concern occur.

4.

CONCLUSIONS

The bespoke management plan for the treatment of invasive species outlined in this document has been designed to follow the guidance outlined in Section 1.3. Careful implementation of the prescribed management measures will ensure that the works are conducted within the confines of legislation as outlined in Section 1.2.

It should be noted that this management plan provides for the management of *First Schedule* invasive species only within the footprint of the current proposal. Any invasive species that are located outside the construction footprint will be left undisturbed and will not be the subject of any management as part of the current proposal. All such areas will be avoided during construction activities to avoid potential spread of any invasive plant species.

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APPENDIX 1



invasiveplantsolutions

INVASIVE ALIEN PLANT SPECIES : SITE ASSESSMENT REPORT & MANAGEMENT PLAN

FORMER CLEEVE'S FACTORY & ASSOCIATED SITES – NORTH CIRCULAR ROAD, LIMERICK CITY
FOR
LIMERICK TWENTY THIRTY D.A.C.

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DOCUMENT NAME	STATUS	REV	DATE	COMMENT	AUTHOR	CKD.
LK-01-21/SARMP/00	DRAFT	00	24/05/2021	ISSUED FOR COMMENT	KYRAN COLGAN	K.C.

FORMER CLEEVES FACTORY AND ASSOCIATED SITES								
PROJECT NO.	LK-01-21	GPS POSITION : ITM	X	556955	Y	657177	TIME	Various
DATE OF ASSESSMENT	February to May 2021	WEATHER	Suitable for inspection and survey work					

EXECUTIVE SUMMARY

In February 2021 Invasive Plant Solutions was retained by Limerick Twenty Thirty DAC, to provide IAPS (invasive alien plant species) consultancy services in connection with a group of four adjacent properties, located in the vicinity of The North Circular Road and O'Callaghan's Strand, on the western side of the River Shannon in Limerick City. The properties are in various current uses, including education, carparking, leisure and brownfield / former industrial.

Our appointment arose on foot of a Baseline Ecological Assessment carried out by Ecology Ireland on the former Cleeve's Condensed Milk factor site, reported in November 2020. That report identified the presence of Japanese Knotweed, an invasive alien plant species listed in Schedule 3 of S.I. 477 of 2011 (The European Communities (Birds and Natural Habitats) Regulations 2011), within the inaccessible lagoon area of the site. Their report advised on the need to prepare an IAPS management plan for the Japanese Knotweed.

A series of walk through inspections and surveys of the former Cleeve's Condensed Milk factor site, as well as the other three sites referred to, were carried out by Invasive Plant Solutions between February 2021 and May 2021. The outcome of these surveys was to validate the presence, and extent, of the identified Japanese Knotweed location, as well as identifying the presence of a further Himalayan Knotweed stand located outside, but immediately adjacent to, the southern / south western boundary of the carpark / brownfield site, itself located in the southern sector of the survey area.

As part of the inspection and survey process we were also retained to advise and monitor the opening up of the lagoon area containing the Japanese Knotweed stand, to facilitate the detailed inspection and survey of the infested area, as well as to carry out careful hand clearance of the enclosing scrub in the immediate environs of the Japanese Knotweed stand itself. The Japanese Knotweed stand has now been fully assessed, with a new access point established, with the enclosing fencing now re-secured, and with advisory / warning signage now put in place.

This Site Assessment Report and Management Plan sets out the actions, measures and programme necessary to ensure that the Japanese Knotweed stand continues to be safely isolated and that the process of its control and eradication is commenced and safely implemented.



KYRAN COLGAN
Director

24 MAY 2021



The Stationhouse
Station Road
Dundrum
Co. Tipperary
E34 EK83

T : 086-2621443 / 062-71589

W : www.knotweed.ie

E : info@knotweed.ie

I.A.P.S. SITE ASSESSMENT REPORT

SECTION 1 : INTRODUCTION

This Site Assessment Report has been prepared for the client / agency referenced in Section 3 below, and is for their sole and exclusive use. The report reflects the particular site circumstances and conditions, as they presented on the days of inspection. Depending on the time of year of the site assessment, and particularly in advance of, the annual IAPS growing season, the evidence of invasive plant species on site may be limited. In these circumstances follow up site inspections, later in the growing season, may be recommended. This will be included in Conclusions and Recommendations at Sections 18 of the report.

By their nature, IAPS are aggressive interlopers to our native habitat, are capable of aggressive and rapid dominance, and if left untreated generally result in extensive habitat impairment. It is therefore reasonable to conclude that, where IAPS are identified, but control measures are not applied, these plant species will spread beyond their observed extents.

In addressing invasive alien plant species the precautionary principle should always be applied to their assessment, management and control. All recommended management and control measures should be carried out strictly in accordance with a Site Specific Treatment Plan, and follow “best practice” principles, as set out in technical reference documents such as the UK Environment Agency’s *The Knotweed Code of Practice*

Control measures should be implemented using a recognised professional service with expertise in this field of work, and take into account any and all sensitivities highlighted in this report. Particular care should be taken in circumstances where the invasive plant species are located within a designated site of ecological importance, such as an SAC, SPA or NHA, or are set within the context of known ecological sensitivities. Where the use of herbicides are proposed, these should be applied strictly in accordance with the manufacturers recommendations, by a registered Professional Pesticides User, and fully in compliance with the European Communities (Sustainable Use of Pesticides) Regulations, 2012, (S.I. 155 of 2012).

Under no circumstances should any IAPS be cut or dug out without the advice, direction and supervision of an invasive species specialist. Many plant species have extensive root / rhizome systems which spread beyond the footprint of the above ground plant, and some can regenerate themselves from very small fragments of root or stem. Some plants produce very substantial quantities of seeds, which remain viable for many years, while others produce a sap which causes severe skin damage.

The off-site removal of Japanese knotweed, its variants, soil infested with knotweed material, and other IAPS, is strictly controlled by legislation and requires a licence from the National Parks and Wildlife Service in advance of its removal, in accordance with the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477).

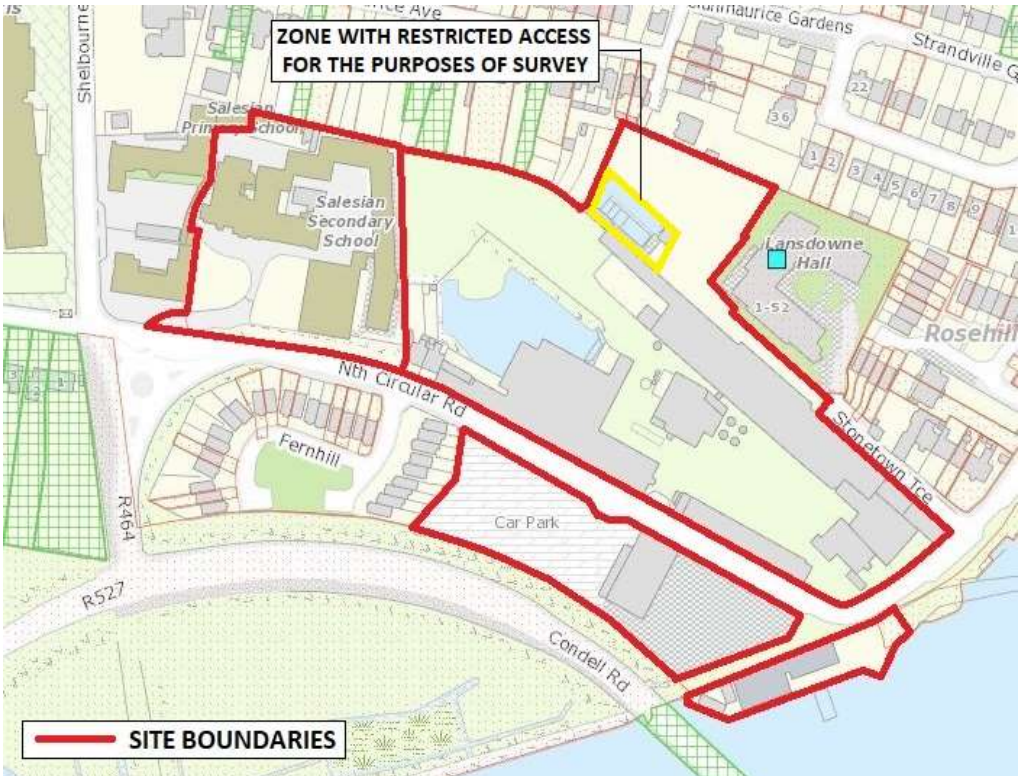
SECTION 2 : LEGISLATIVE CONTEXT

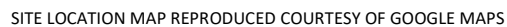
Japanese Knotweed, *Fallopia japonica*, and other invasive plant species, are listed as Invasive Alien Plant Species in Part 1 of the Third Schedule of the *European Communities (Birds and Natural Habitats) Regulations 2011* (SI 477 of 2011, as amended). In addition, soils and other material containing Knotweeds are classified in Part 3 of the Third Schedule as vector materials and are subject to the same strict legal controls. Failure to comply with the legal requirements set down can result in either civil or criminal prosecution, with very severe penalties accruing. A person who commits an offence under Regulations 49 & 50 is liable (a) on summary conviction, to a Class A fine or imprisonment for a term not exceeding six months, or both, or (b) on conviction on indictment, to a fine not exceeding €500,000, or imprisonment for a term not exceeding three years, or both. A person who knowingly incites, directs, procures, permits or assists another person to carry out an action that is an offence under these Regulations shall also be guilty of an offence. The relevant sections of the regulations are reproduced below.

- 49(2) *Save in accordance with a licence granted [by the Department of Arts, Heritage and the Gaeltacht], any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place [a restricted non-native plant], shall be guilty of an offence.*
- 49(3) *... it shall be a defence to a charge of committing an offence under paragraph (1) or (2) to prove that the accused took all reasonable steps and exercised all due diligence to avoid committing the offence.*
- 50(1) *Save in accordance with a licence, a person shall be guilty of an offence if he or she [...] offers or exposes for sale, transportation, distribution, introduction or release—*
- (a) *[any restricted non-native animal or plant species],*
 - (b) *anything from which an animal or plant referred to in subparagraph (a) can be reproduced or propagated, or*
 - (c) *a vector material listed in the Third Schedule, [which includes] soil or spoil taken from places infested with Japanese Knotweed....and its hybrids...*

It is an offence under regulations 49(2) and 50(1) to spread, or cause to spread, Japanese Knotweed and other IAPS. An offence may only be avoided if the relevant party can prove that they took all reasonable steps to avoid causing an offence under the legislation. To comply with these regulations, therefore, this management plan relies solely on methodologies necessary to ensure strict compliance with the legislation.

SECTION 3 : CLIENT & SITE DETAILS

GENERAL DETAILS										
SITE ADDRESS	NORTH CIRCULAR ROAD & O'CALLAGHAN'S STRAND, LIMERICK CITY									
CLIENT DETAILS	LIMERICK TWENTY THIRTY DAC MERCANTILE BUILDING GARDENS INTERNATIONAL HENRY STREET LIMERICK V94 4A62					OWNERSHIP	PUBLIC	X	PRIVATE	
						CONTACT	ADVANCE SERVICES - 061 546920			
						EMAIL	info@advanceservices.ie			
CONSULTANTS / AGENTS	PROJECT MANAGERS – T.B.C. ARCHITECTS – T.B.C. PLANNING CONSULTANTS – T.B.C. ENVIRONMENTAL CONSULTANTS – T.B.C. ECOLOGICAL CONSULTANTS – ECOLOGY IRELAND FACILITIES MANAGEMENT – ADVANCE SERVICES									
CURRENT SITE USAGE	AGRICULTURAL		FORESTRY		RESIDENTIAL		COMMERCIAL		INDUSTRIAL	
	PUBLIC SPACE		GREENFIELD		BROWNFIELD	X	OTHER			
SITE AREA	APPROX. 4.15 Ha. / 10.24 Acres									
AGENCIES INVOLVED	LOCAL AUT.	X	NPWS		IFI		IRISH WATER		BORD NA MONA	
	ESB		IRISH RAIL		GNI		OTHER			
SITE DESCRIPTION	<p>THE SURVEY AREA CONSISTS OF A GROUP OF FOUR PROPERTY HOLDINGS, ORIENTATED AROUND THE NORTH CIRCULAR ROAD. THE LARGEST OF THESE IS THE FORMER CLEEVES CONDENSED MIK FACTORY, WHICH BOUNDS THE NORTHERN SIDE OF CIRCULAR ROAD AND THE WESTERN SIDE OF O'CALLAGHAN'S STRAND. THE SITE COMPRISES A SERIES OF LARGE INDUSTRIAL STRUCTURES, BUILDINGS AND SHEDS, OPEN YARDS, A WATER FILLED LAGOON, AND TWO RESIDENTIAL DWELLINGHOUSES. TO THE WEST OF THE FACTORY SITE IS THE SALESIAN SECONDARY SCHOOL HOLDING, WHICH ALSO INCORPORATES AN EDUCATE TOGETHER SCHOOL. DIRECTLY OPPOSITE THE CLEEVES FACTORY SITE, ON THE SOUTHERN SIDE OF NORTH CIRCULAR ROAD, LIES A GENERALLY OPEN SITE, COMPRISING A LARGE CARPARK TO THE WEST, OLD INDUSTRIAL STRUCTURES IN THE CENTRE, AND BROWNFIELD LANDS TO THE EAST. THE FOURTH SITE COMRISES THE ST. MICHAELS BOAT CLUB, LOCATED AT THE JUNCTION, AND TO THE SOUTH, OF NORTH CIRCULAR ROAD AND O'CALLAGNAN'S STRAND, AND BORDERING THE RIVER SHANNON ALONG ITS SOUTHERN SIDE</p> <p>BOUNDARIES ARE GENERALLY WELL DELINEATED AND CLEARLY DEMARCATED, AND ARE FORMED BY A COMBINATION OF BUILDINGS AND STRUCTURES, WALLS, FENCING AND RAILINGS</p> <p>FOR THE PURPOSE OF THE SURVEY OF THE PROPERTIES THERE WAS ONE SECTOR ON THE CLEEVES FACTORY SITE WHICH PROVIDE JUST LIMITED ACCESS, AND WHICH SHOULD BE REVISITED WHEN FULLER ACCESS IS POSSIBLE</p>  <p>— SITE BOUNDARIES</p> <p>LAND HOLDING MAP WITH SURVEY AREA OUTLINES IN RED</p> <p>MAP REPRODUCED COURTESY OF LAND DIRECT</p>									



SECTION 5 : SCOPE OF I.A.P.S. SURVEY

The scope and purpose of the I.A.P.S. Survey was to:

- Confirm presence, or otherwise, and extent of Japanese Knotweed and its hybrids within, or in close proximity to, the cluster of sites forming the study area
- Confirm the presence, or otherwise, of any other I.A.P.S. within or in close proximity to, the cluster of sites forming the study area
- Use the survey results to inform the preparation of an I.A.P.S. Site Assessment Report
- Use the survey results to inform the preparation of an I.A.P.S. Management Plan, particularly in relation to any necessary bio-security and control measures that may be required

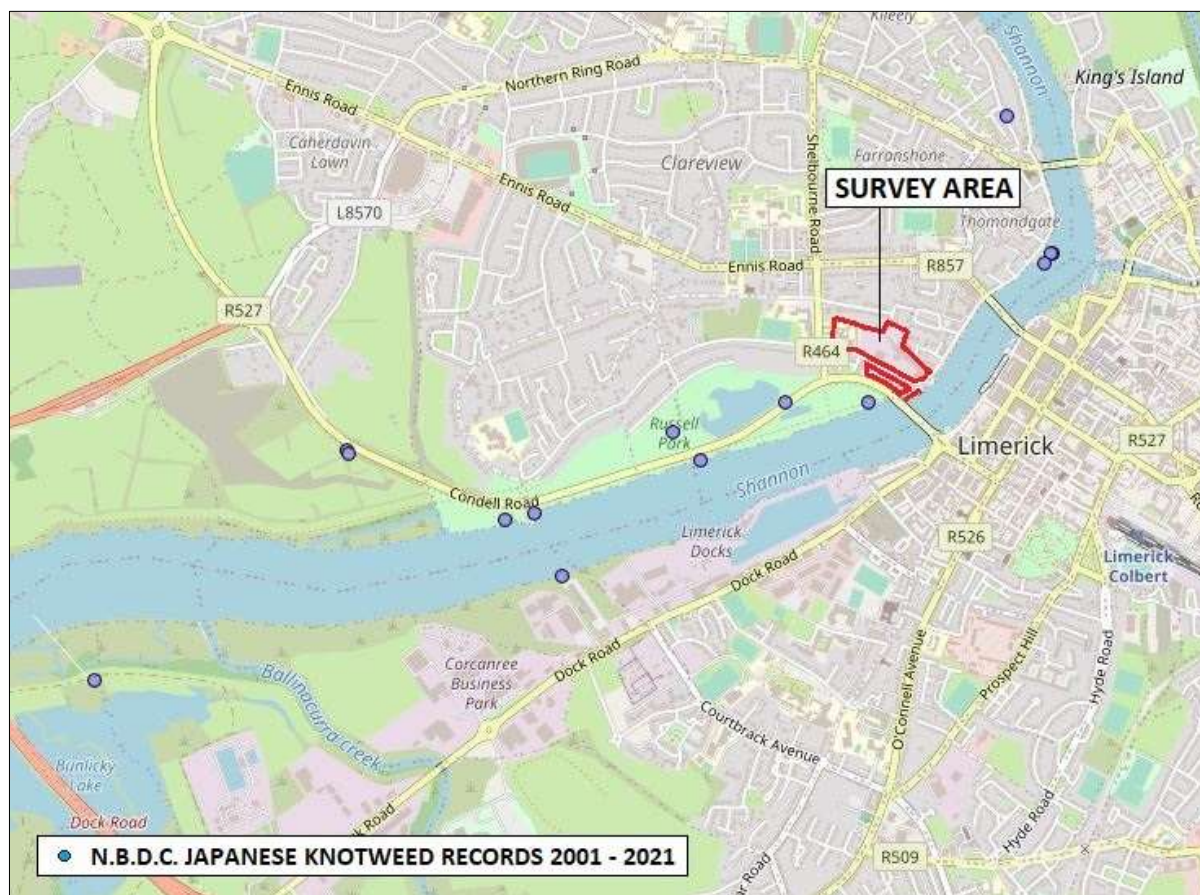
SECTION 6 : BACKGROUND RESEARCH

A desktop study was carried out in May 2021, to identify any formal records that may exist for the presence of land based I.A.P.S., as set out in Part 1, Schedule 3, of S.I. 477 of 2011, within for the study area.

The National Biodiversity Data Centre (NBDC) invasive species database and mapping system were reviewed, covering the study area, the immediately surrounding lands, and the broader hinterland.

The search of the NBDC invasive alien plant species database yielded no records of the presence of land based I.A.P.S. within the survey area itself or within its immediate surroundings. However there are a number of IAPS records for the broader hinterland, generally relating to the River Shannon upstream of the subject sites, and for Russell Park and Westfields Wetlands downstream, and to the west, of the sites. These records are primarily for the presence of Japanese Knotweed, but also include a small number of records for Giant Hogweed and Himalayan Balsam plants. For reference, we have reproduced below the NBDC map record for the nearest Japanese Knotweed sites, as recorded between 2000 and 2021.

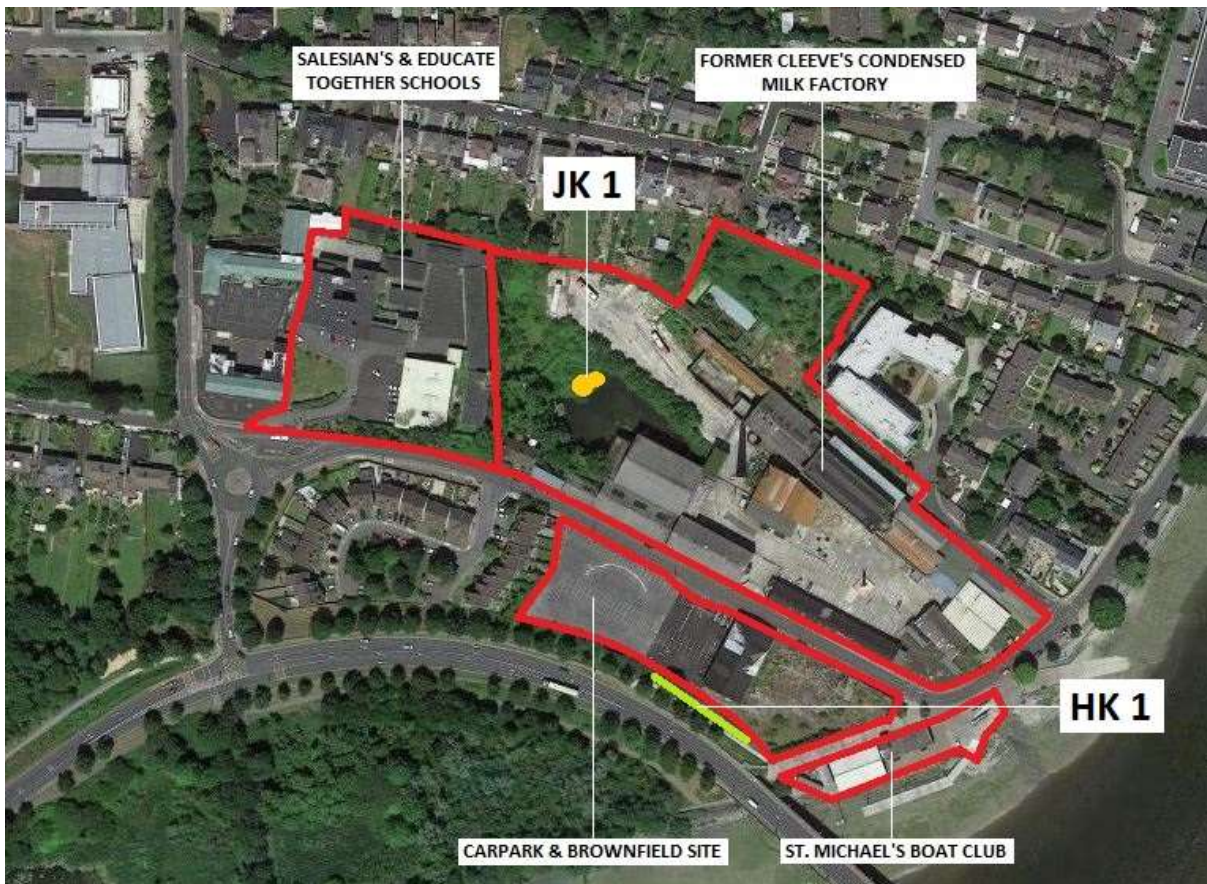
In addition we also referred to various open source mapping, satellite imaging, and data sets, including Land Direct, Geohive, NPWS Map Viewer, Google Maps and Bing Maps



MAPPING RECORDS OF JAPANESE KNOTWEED IN THE VICINITY OF THE SURVEY AREA, 2001- 2021

MAP REPRODUCED COURTESY OF NATIONAL BIODIVERSITY DATA CENTRE

SECTION 7 : I.A.P.S. - OVERALL INFESTATION DETAILS

INVASIVE ALIEN SPECIES							
JAPANESE KNOTWEED	X	GIANT KNOTWEED	n/a	BOHEMIAN KNOTWEED	n/a	HIMALAYAN KNOTWEED	X
GUNNERA	n/a	HIMALAYAN BALSAM	n/a	GIANT HOGWEED	n/a	RHODODENDRON	n/a
AMERICAN SKUNK CABBAGE	n/a	THREE CORNERED GARLIC	n/a	SPANISH BLUEBELL	n/a	HOTTENTOT FIG	n/a
OTHER NON NATIVE SPECIES							
BUDDLEIA	n/a	WINTER HELIOTROPE	n/a	MONTBRETIA	n/a	OTHER	n/a
DESCRIPTION & EXTENT OF PRIMARY I.A.P.S. COLONISATIONS				DESCRIPTION & EXTENT OF SECONDARY I.A.P.S. COLONISATIONS			
JAPANESE KNOTWEED – JK 1				HIMALAYAN KNOTWEED – HK 1			
<p>JK 1 IS A SINGLE MONOLITHIC, HEALTHY, STAND OF MATURE JAPANESE KNOTWEED, LOCATED ON THE NORTH WESTERN EDGE OF THE INTERNAL LAGOON AREA, ITSELF LOCATED TOWARDS THE WESTERN END OF THE FORMER CLEEVES FACTORY SITE. THE STAND IS POSITIONED ON STEEP SLOPING GROUND WHICH APPEARS TO HAVE BEEN FORMED, IN PART, BY HISTORICALLY PLACED RUBBLE OR C & D FILL MATERIAL. THE STAND IS FRINGED ON ITS OTHER SIDES BY WELL ESTABLISHED NATIVE VEGETATION, SCRUB AND TREES.</p> <p>THE ENTIRE LAGOON AREA IS GENERALLY INACCESSIBLE AND IS ENCLOSED BY SECURE FENCING AND EXISTING BUILDINGS</p> <p>IN FEBRUARY 2021 LIMITED, CONTROLLED AND SUPERVISED SCRUB CLEARANCE WITHIN THE LAGOON AREA WAS CARRIED OUT, SUFFICIENT TO PROVIDE SAFE ACCESS TO THE ZONE OF INFESTATION, AS PART OF THE PROCESS TO ENABLE BETTER ASSESSMENT AND SURVEY</p> <p>THE LAGOON AREA WAS SUBSEQUENTLY RE-SECURED, WITH WARNING / ADVISORY SIGNAGE FITTED ON THE ENCLOSING FENCING</p>				<p>HK 1 IS A SERIES OF HEALTHY HIMALAYAN PLANTS, THINLY SPREAD THROUGH NATIVE GRASSES AND SCRUB, OCCUPYING THE LINEAR ZONE OF VEGETATION THAT RUNS BETWEEN THE OUTSIDE OF THE SOUTH WESTERN BOUNDARY OF THE CARPARK / BROWNFIELD SITE AND THE PEDESTRIAN PATH WHICH LEADS UP FROM THE NORTHERN BANK OF THE RIVER SHANNON ONTO THE CONDELL ROAD ABOVE.</p> <p>ALTHOUGH THIS AREA OF INFESTATION IS OUTSIDE THE LIMITS OF THE SURVEY AREA AND WITHIN THE PUBLIC REALM THE PLANTS ARE GROWING ALONG, AND IMMEDIATELY AGAINST, THE BOUNDARY OF THIS PROPERTY. IF LEFT UNADDRESSED, THERE IS THE POSSIBLE THREAT OF VIABLE PLANT MATERIAL SPREADING ONTO, AND ESTABLISHING ON, THE PROPERTY, EITHER BY GROWING OVER OR THROUGH THE BOUNDARY WALL., OR AS A RESULT OF DISPERSAL AS PART OF GENERAL GROUND MAINTENANCE AND CUTTING ACTIVITIES ALONG THIS SECTION OF PUBLIC GROUND</p>			
DISTRIBUTION MAP							
							

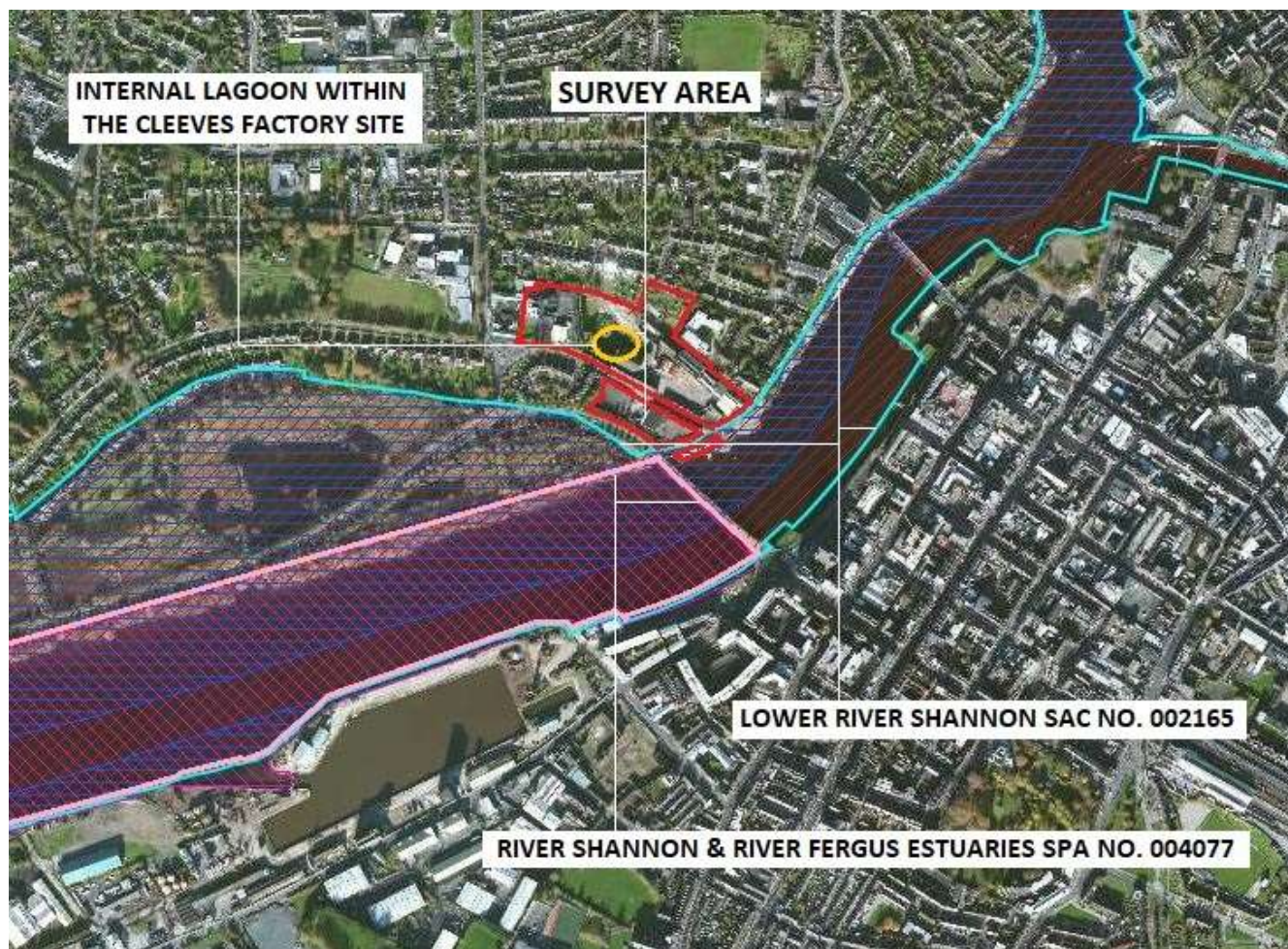
SECTION 8 : I.A.P.S. - INDIVIDUAL INFESTATION DETAILS

INFESTATION DETAILS	NO.	ITM - X	ITM - Y	SIZE (m X m)	COMMENTS
INFESTATION 1	JK 1	556898	657229	12m x 8m	On north western edge of the lagoon in the factory site
INFESTATION 2	HK 1	556921 to 556972	657057 to 657090	65m x 1-4m	Scattered through undergrowth on north side of path

SECTION 9 : I.A.P.S. - ENVIRONMENTAL IMPACT AND LOCAL SENSITIVITIES

ENVIRONMENTAL CONTEXT								
VISUAL IMPACT	MINIMAL	X	MODERATE		SIGNIFICANT		SEVERE	
ENVIRONMENTAL IMPACT	LIMITED	X	MODERATE		SIGNIFICANT		SEVERE	
TRANSLOCATION RISK	LOW		MEDIUM	X	HIGH		ACUTE	
PROXIMITY TO WATER BODY	DISTANT	n/a	VICINITY		ADJOINING	X	WITHIN	
NATURE OF WATER BODY	RIVER	X	SEA		LAKE		CANAL	
DESIGNATED STATUS								
WITHIN A DESIGNATED SITE	SAC	YES	SPA	NO	NHA / pNHA	NO	NO.	
DESIGNATED SITE NEARBY	SAC	YES	SPA	YES	NHA / pNHA	YES	NO.	SEE BELOW
DESIGNATED SITES								
DETAILS	<p>THE NEAREST DESIGNATED SITE IS THE LOWER RIVER SHANNON SAC NO. 002165, WHOSE NORTH WESTERN BOUNDARY FALLS ALONG THE LINE OF THE SOUTH EASTERN BOUNDARY OF BOTH THE CLEEVE'S FACTORY SITE AND THE CARPARK / BROWNFIELD SITE, AS WELL AS ENCOMPASSING THE FULL EULL EXTENT OF THE ST. MICHAEL'S BOAT CLUB SITE</p> <p>THE NORTH EASTERN LIMIT OF THE RIVER SHANNON & RIVER FERGUS ESTUARIES SPA NO. 004077 IS IN CLOSE PROXIMITY TO THE SOUTH AND SOUTH WESTERN BOUNDARIES OF BOTH THE CARPARK / BROWNFIELD SITE AND THE ST. MICHAEL'S BOAT CLUB SITE</p> <p>THERE IS A LAGOON AREA WITHIN THE CLEEVE'S FACTORY SITE WHICH EXHIBITS SOME POTENTIAL FOR TIDAL INFLUENCES, AND WHICH MAY BE DIRECTLY, OR INDIRECTLY, LINKED TO THE ABOVE REFERENCED SAC OR SPA</p>							

MAP



RELATIONSHIP BETWEEN THE SURVEY AREA & THE CLOSEST DESIGNATED SITES

MAP REPRODUCED COURTESY OF THE N.P.W.S. MAPVIEWER FACILITY

SECTION 10 : SITE PHOTOGRAPHS

JAPANESE KNOTWEED – JK 1



FEBRUARY 2021 – LOOKING NORTH



MARCH 2021 – LOOKING WEST

SECTION 10 : SITE PHOTOGRAPHS – CONTD.

JAPANESE KNOTWEED – JK 1



APRIL 2021 – LOOKING WEST



APRIL 2021 – EMERGENCE OF NEW SEASON GROWTH

SECTION 10 : SITE PHOTOGRAPHS – CONTD.

JAPANESE KNOTWEED – JK 1



MAY 2021 – LOOKING WEST



MAY 2021 – NEW SEASON GROWTH REACHING FULL EMERGENCE

SECTION 10 : SITE PHOTOGRAPHS – CONTD.

JAPANESE KNOTWEED – JK 1



SECURE FENCING AND ADVISORY SIGNAGE ALONG THE NORTH WESTERN BOUNDARY OF THE LAGOON



SECURE FENCING, WALL AND ADVISORY SIGNAGE ALONG THE NORTH EASTERN BOUNDARY OF THE LAGOON

SECTION 10 : SITE PHOTOGRAPHS – CONTD.

HIMALAYAN KNOTWEED – HK 1



FEBRUARY 2021 – ZONE OF INFESTATION LOOKING SOUTH EAST



FEBRUARY 2021 – DEAD STEMS FROM 2020 GROWTH

SECTION 10 : SITE PHOTOGRAPHS – CONTD.

HIMALAYAN KNOTWEED – HK 1



MAY 2021 – ZONE OF INFESTATION LOOKING SOUTH EAST



MAY 2021 – ZONE OF INFESTATION LOOKING NORTH WEST

SECTION 10 : SITE PHOTOGRAPHS – CONTD.

HIMALAYAN KNOTWEED – HK 1



MAY 2021 – EMERGING NEW SEASON GROWTH AMONGST OTHER VEGETATION, CLOSE TO PROPERTY BOUNDARY WALL



MAY 2021 – CLOSE UP OF EMERGING NEW SEASON GROWTH

SECTION 11 : SITE ASSESSMENT CONCLUSIONS & RECOMMENDATIONS

1. As confirmed in this report, viable Japanese Knotweed (JK 1) has been identified at one location, at the north western end of the lagoon contained within the former Cleeves condensed milk factory site. In addition, viable Himalayan Knotweed (HK 1) has been identified within the linear vegetation strip which runs along the outside of the southern / south western boundary of the carpark / brownfield site.
2. based on the time of year that the site inspections were carried out, particularly at the early stages of the 2021 growing season for Himalayan Knotweed, it is possible that I.A.P.S. plants could present beyond the limits of those recorded. In applying the “precautionary principle”, on-going site monitoring should be maintained
3. Further site monitoring visits should be scheduled for the 2021 summer growing period, to inspect for newly emergent I.A.P.S., as well for possible additional growth and spread at the already identified sites
4. Although the Himalayan Knotweed (HK 1) is located within the public domain, and not yet identified on the surveyed sites, the Himalayan Knotweed plants presence pose a risk to the immediately adjacent property due to their proximity, and the realistic risk of crossing the boundary line from either natural growth and spread, or via dispersal as a result of disturbance

Therefore the relevant public authorities should be immediately notified of the plants presence. They should be provided with the relevant section of this assessment report, if considered necessary, and they should be formally requested to prepare, provide and implement a bio-secure management plan for the Himalayan Knotweed stands as soon as practicable

5. The lagoon area in the vicinity of the Japanese Knotweed infestation (JK 1) has been hand cleared to provide safe access for assessment, and is now securely fenced off, with appropriate warning / advisory signage put in place. This fencing should be maintained in position for the duration of the Japanese Knotweed management process. Additional fencing should be fitted along the north eastern bank of the lagoon when, and if, any activities need to take place within the vicinity of the Japanese Knotweed infested zone or the broader lagoon area
6. The Japanese Knotweed infestation is healthy and suitable for the commencement of a herbicide control programme during the summer of 2021. A multi annual treatment programme should be agreed and implemented at the earliest appropriate opportunity, to arrest the risk of further spread of the Japanese Knotweed, and to commence the process of control and eradication. See Sections 11 to 13 for further details
7. This management plan, and any potential treatment methodology, may need to be screened for potential impacts on ecological receptors and sensitivities, where they exist, to fully consider and comply with the requirements of S.I. 477 of 2011 – The European Communities (Birds and Natural Habitats) Regulations 2011 and S.I. 155 of 2012 – the European Communities (Sustainable use of Pesticides) Regulations 2012

When using herbicides as part of an I.A.P.S. management plan and treatment programme, consideration must always be given to the proximity of ecological receptors and designated sites. typically non residual, aquatic approved, herbicides should be specified for treatment

8. This Report and Management Plan should be circulated to ALL relevant parties, as well as any prescribed authorities or adjoining land owners affected by the I.A.P.S. presence, where either relevant or appropriate to do so
9. All relevant staff and site visitors should be briefed on the identification, risks and dangers of Japanese Knotweed and other I.A.P.S., and on the specific measures, restrictions and protocols to be deployed on the four sites
10. No ground maintenance, opening up or any other ground disturbance should take place within the fenced area, without prior consultation with, and the direction of, an invasive alien plant species specialist, and then only under strict supervision
11. If access to the infested area is necessary, and particularly if any essential work has to be carried out within the fenced location, then this must only be done following formal approval in advance, and after the preparation and agreement of a “task specific” method statement. No viable plant material, rhizome, infested soils or other vector materials should be disturbed in, or removed from, the zone of infestation
12. If and when development proposals are being considered for the former Cleeve’s Condensed Milk factory site, and particularly if those proposals would necessitate the disturbance of the zone of Japanese Knotweed infestation before the completion of a multi-annual herbicide control programme, and before full eradication of the Japanese Knotweed can be validated, then this Report and Management Plan should be re-visited, and amended and updated as necessary

In such circumstances detailed consideration will have to be given to replacing the multi-annual herbicide treatment programme with a site specific ground remediation process, designed to provide for removal of all infested soils, and their bio-secure management via either on-site containment or off-site disposal to an appropriate licenced waste facility

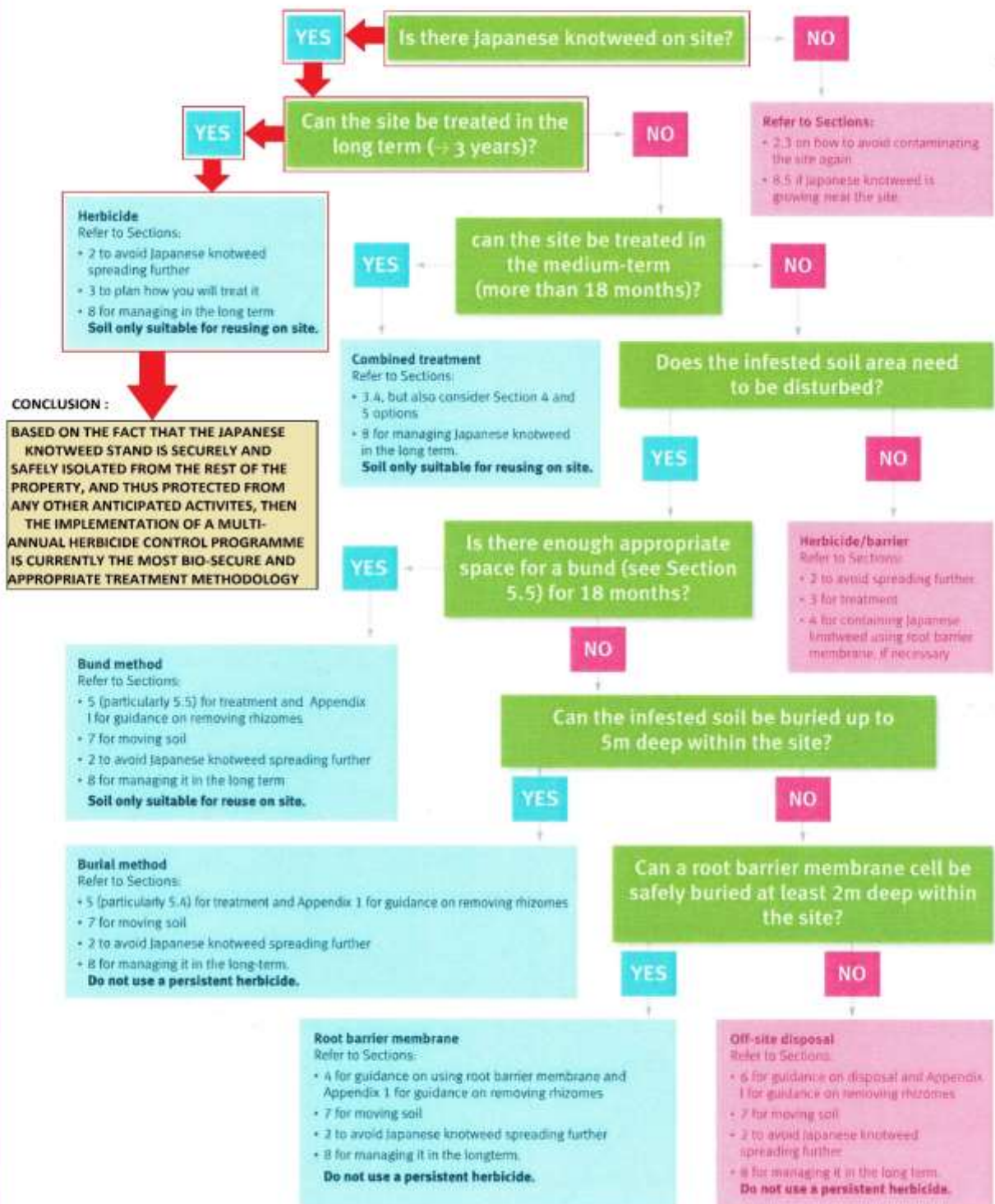
I.A.P.S. MANAGEMENT PLAN

SECTION 12 : JAPANESE KNOTWEED - PROCESS OF TREATMENT SELECTION

INVASIVE ALIEN SPECIES					
JAPANESE KNOTWEED	X	GIANT KNOTWEED		BOHEMIAN KNOTWEED	
SELECTION OF TREATMENT					

THE MATRIX BELOW HAS BEEN DEVELOPED BY THE U.K. ENVIRONMENT AGENCY, BASED ON BEST PRACTICE AND THE APPLICATION OF "THE PRECAUTIONARY PRINCIPLE". THIS PROCESS IS DESIGNED TO ARRIVE AT THE OPTIMUM JAPANESE KNOTWEED MANAGEMENT SOLUTION, WHICH POSES THE LEAST BIO-SECURITY RISK, AND WHICH MANAGES THE PLANTS ERADICATION / REMEDIATION AS CLOSE AS POSSIBLE TO THE PLANTS LOCATION

Flowchart for treating Japanese knotweed



SECTION 13 : JAPANESE KNOTWEED - MANAGEMENT MEASURES

TREATMENT PLAN				
TREATMENT METHODOLOGY	BASED ON THE ANALYSIS CARRIED OUT USING THE FLOWCHART AT SECTION 12 , THE CURRENT MANAGEMENT SOLUTION IS AS FOLLOWS :			
	1. FENCE OFF THE POTENTIAL JAPANESE KNOTWEED STAND JK 1, USING SECURE FENCING, AND INCLUDING ADVISORY/WARNING SIGNAGE – SEE APPENDIX 3 AND 4 FOR TYPICAL EXAMPLES			
	2. CARRY OUT A FURTHER INSPECTION OF THE GROUNDS DURING THE 2021 SUMMER GROWING PERIOD, TO VALIDATE THE RESULTS OF THE CURRENT SITE SURVEYS, AND TO SCREEN THE SITE FOR ADDITIONAL INVASIVE ALIEN PLANT SPECIES WHICH MAY NOT HAVE FULLY EMERGED AT THE TIME OF THE MOST RECENT SITE INSPECTION			
	3. UPDATE THIS I.A.P.S. ASSESSMENT REPORT & MANAGEMENT PLAN, IF REQUIRED, FOLLOWING THE FOLLOW UP SITE SURVEY			
	4. SCREEN THE PROPOSED TREATMENT METHODOLOGY FOR COMPLIANCE WITH S.I. 477 OF 2011 AND S.I. 155 OF 2012, AS WELL AS FOR POTENTIAL IMPACTS ON ECOLOGICAL SENSITIVITIES AND RECEPTORS WITHIN ANY NEARBY DESIGNATED SITES			
MANAGEMENT ELEMENTS	5. WHEN SCREENED, AND CLEARED, INSTITUTE A MULTI-ANNUAL HERBICIDE TREATMENT PROGRAMME AT JK 1, COMMENCING AS SOON AS PRACTICABLE IN SUMMER 2021			
	INITIAL / MULTI-ANNUAL HERBICIDE CONTROL	X	ON-SITE BELOW GROUND SOIL CONTAINMENT CELL	
	DEEP BURIAL – GREATER THAN 5m		EXCAVATE AND DISPOSE OFF-SITE	
	FOLIAR SPRAY		STEM INJECTION	X
	CUT AND STEM FILL		SPOT SPRAY / LEAF WIPE / SWAB	X
HERBICIDE TREATMENT	STEM INJECTION TO CONSIST OF A 2ml DOSE OF UNDILUTED ROUNDUP BIACTIVE XL, OR ALTERNATIVE LICENCED GLYPHOSATE BASED AND AQUATIC APPROVED HERBICIDE, APPLIED FULLY IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS. INJECTION TO BE APPLIED TO ALL SUITABLE HEALTHY KNOTWEED STEMS, AS CLOSE AS POSSIBLE TO THE BASE OF EACH HOLLOW STEM, USING A PROPRIETARY CALLIBRATED INJECTION UNIT AND NARROW GAUGE NEEDLE, WITH HERBICIDE SUPPLIED VIA A PRE-FILLED DISPENSING UNIT. ON-SITE HANDLING OF HERBICIDE TO BE AVOIDED			
	SPOT SPRAY TO CONSIST OF A TARGETED DOSE OF ROUNDUP BIACTIVE XL IN SOLUTION, AT A DILUTION RATE OF 1:40, OR ALTERNATIVE GLYPHOSATE BASED AND AQUATIC APPROVED HERBICIDE, APPLIED FULLY IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS. SPRAY TO BE APPLIED ONLY TO SUITABLE HEALTHY KNOTWEED LEAVES, AND APPLIED USING A PROPRIETRY SPRAY UNIT FITTED WITH AN ANTI DRIFT SHIELD. SPRAY ONLY TO BE APPLIED UNDER SUITABLE PREVAILING WEATHER CONDITIONS AND APPLIED AT A RATE AND PRESSURE WHICH MINIMISES RUN OFF FROM THE KNOTWEED LEAVES. SITE HANDLING AND MIXING OF HERBICIDE TO BE AVOIDED TO THE GREATEST EXTENT POSSIBLE			
	APPROVED FOR USE WITH JAPANESE KNOTWEED	X	APPROVED FOR USE IN AQUATIC ENVIRONMENTS	X
	FENCE OFF INFESTATIONS AND FIT WARNING SIGNS	X	SET 5 – 7m SAFETY ZONE AROUND INFESTATIONS	X
HERBICIDE TYPE	APPROVED FOR USE WITH JAPANESE KNOTWEED	X	APPROVED FOR USE IN AQUATIC ENVIRONMENTS	X
BIO-SECURITY MEASURES	FENCE OFF INFESTATIONS AND FIT WARNING SIGNS	X	SET 5 – 7m SAFETY ZONE AROUND INFESTATIONS	X

SECTION 14 : JAPANESE KNOTWEED - TREATMENT PROGRAMME

PROGRAMME	
STAGE 1 SPRING / SUMMER 2021	<ul style="list-style-type: none"> DEPLOY BIOSECURITY MEASURES, COMPRISING SECURE FENCING AND ADVISORY / WARNING SIGNAGE CARRY OUT FOLLOW UP SITE SURVEYS, TO INSPECT FOR NEW, EMERGING AND SPREADING I.A.P.S. UPDATE ASSESSMENT REPORT AND MANAGEMENT PLAN, BASED ON OUTCOME OF SURVEY INSPECT FENCING AND SIGNAGE. CARRY OUT ANY NECESSARY REPAIRS / REPLACEMENT / RE-CONFIGURATION WHEN CLEARED TO DO SO, CARRY OUT THE FIRST HERBICIDE TREATMENT AT JAPANESE KNOTWEED STAND JK 1, CONSISTING OF STEM INJECTION & SPOT SPRAYING APPLICATIONS
STAGE 2 SUMMER/AUTUMN 2021	<ul style="list-style-type: none"> INSPECT FENCING AND SIGNAGE. CARRY OUT ANY NECESSARY REPAIRS / REPLACEMENT / RE-CONFIGURATION RECORD RESULTS OF SPRING / SUMMER HERBICIDE TREATMENT CARRY OUT SECOND HERBICIDE TREATMENT AT JAPANESE KNOTWEED STAND JK 1, CONSISTING OF STEM INJECTION, IF NECESSARY, & SPOT SPRAYING APPLICATIONS
STAGE 3 SPRING 2022 – 2024/26	<ul style="list-style-type: none"> CONTINUE IMPLEMENTATION OF THE MULTI-ANNUAL HERBICIDE TREATMENT PROGRAMME AND MANAGEMENT MEASURES, WITH SUFFICIENT TREATMENT, CONTROL AND INSPECTION VISITS, SCHEDULED TO SUIT THE EVOLVING SITE AND CLIMATIC CONDITIONS, AND AS NECESSARY TO ACHIEVE AND VALIDATE FULL ERADICATION OF THE JAPANESE KNOTWEED STAND JK 1



KYRAN COLGAN
Director

24 MAY 2021



The Stationhouse
Station Road
Dundrum
Co. Tipperary
E34 EK83

T : 086-2621443 / 062-71589

W : www.knotweed.ieE : info@knotweed.ie

FORMER CLEEVES FACTORY & ASSOCIATED SITES
NORTH CIRCULAR ROAD
LIMERICK CITY

APPENDIX 1
Japanese Knotweed I.D. Sheet

Japanese Knotweed

Species Description

Scientific name: *Fallopia japonica*

AKA: Japanese Bamboo, Pysen saethwr (Welsh),

Polygonum cuspidatum, *Reynoutria japonica*

Native to: Japan, Taiwan, northern China

Habitat: Common in urban areas, particularly on waste land, railways, road sides and river banks

Tall herbaceous perennial with bamboo like stems. Often grows into dense thickets. Characteristic leaves and stems, persistence of last year's dead canes and distinctive rhizome (underground root-like stems) enables year round identification.

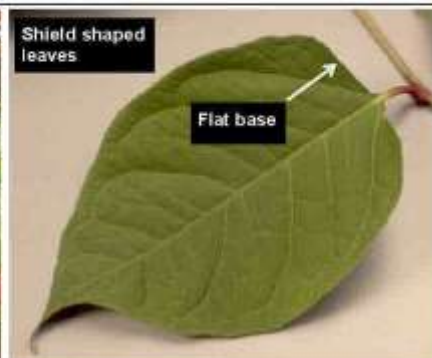
Introduced in the early 19th century as an ornamental plant. Now common and widespread across the UK. Spreads rapidly in the wild by natural means and as a result of spread by humans. Spread is solely by vegetative means, either fragments of rhizome or stem. Does not produce seed in the UK. Negative impacts include outcompeting native flora, contributing to river bank erosion and increasing the likelihood of flooding. Can also cause significant delays and cost to development as well as structural damage (it can grow through asphalt and some other surfaces).

Japanese Knotweed is listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England, Wales and Scotland. As such it is an offence to plant or otherwise cause Japanese knotweed to grow in the wild. Under the Environmental Protection Act 1990, Japanese Knotweed is classified as controlled waste.

For details of legislation go to www.nonnativespecies.org/legislation.



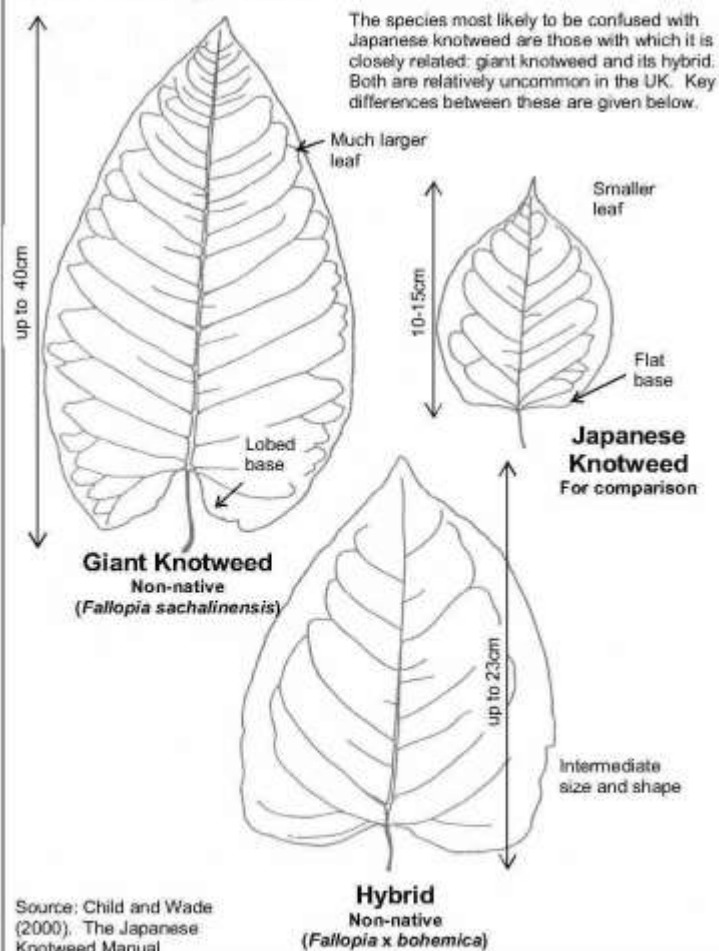
Key ID Features



Identification throughout the year



Similar Species



Distribution

Widespread and common across the UK. Notably extensive infestations are found in the south-west of England, south Wales and Greater London, however similarly extensive populations can also be found elsewhere.

Source: NBN Gateway. Check website for current distribution



References and further reading:

- Blamey, M, Fitter, R and Fitter, A (2003) "The Wild Flowers of Britain and Ireland. The Complete Guide to the British and Irish Flora." A & C Black
- Child, L E and Wade, P M (2000) "The Japanese Knotweed Manual". Packard
- Environment Agency (2006) "The Japanese Knotweed Code of Practice". Environment Agency
- Preston, C D, Pearman, D A and Dines, T A (editors) (2002) "New Atlas of the British and Irish Flora". Oxford University Press
- Stace, C (1999) "Field Flora of the British Isles". Cambridge University Press

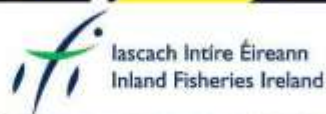
Photos from: Olaf Booy, Helen Parish, Max Wade, Vicky White

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APPENDIX 2
Himalayan Knotweed I.D. Sheet



Himalayan Knotweed



Photos: Joe Caffrey (IFI)



Be biosecurity aware! To avoid the risk of introducing and / or spreading harmful aquatic invasive species or pathogens, please clean and disinfect any equipment that has been used or come into contact with water. For best practice guidelines refer to: <http://www.fisheriesireland.ie/invasive-species/invasive-species.html>

For reporting incidences of invasive species
FREEPHONE 1890 34 74 24



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APPENDIX 3
Sample Site Signage



Restricted Access

**The soil in this area
contains Japanese Knotweed
and is being treated.**

Do not enter unless authorised.

**Do not remove soil from this
area without authorisation.**

SAMPLE SIGN 1



SAMPLE SIGN 2

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APPENDIX 4
Sample Site Fencing



SAMPLE FENCING 1 – POST AND WOVEN MESH FENCING



SAMPLE FENCING 2 – HEAVY DUTY HERRAS FENCING

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

VOLUME III APPENDICES

Appendix 7-4 Bat Derogation Licence Application Form –
Phase II (1)





NPWS

An tSeirbhís Páirceanna
Náisiúnta agus Fiadhúlra
National Parks and Wildlife
Service

Application for Derogation Under Regulation 54 & 54A of the European Communities (Birds and Natural Habitats) Regulations 2011, as amended

Revision 2.0 – July 2025

- This form can be used by any individual or Company applying for a derogation under Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations 2011 (“the Regulations”) or any individual applying on behalf of the Minister for Housing, Local Government and Heritage under Regulation 54(A) of the Regulations.
- Note this application form is not for Domestic Dwelling Derogations (bats within private homes) which can be found here > ([3D Application Form](#))
- Please ensure that you answer questions fully in order to avoid delays and/or your application being rejected on the basis that it does not contain sufficient information and detail for the application to be considered further.
- Please read and familiarise yourself with the [NPWS Guidance on Applications for Regulation 54 Derogations for Annex IV species: Guidance for Applicants](#)
- Please read and familiarise yourself with the [European Commission's Guidance document on the strict protection of animal species of Community interest under the Habitats Directive](#)
- Please also note that the responses to these questions are supplementary to the documentation required for the NPWS to be in a position to consider your application. A complete application should include both the application form and an associated report. Failure to supply either will result in your application being returned and/or refused.
- In circumstances in which a derogation is given on foot of this application, the Applicant is responsible for ensuring compliance with the conditions of any such derogation, even though they may employ another person to act on their behalf. To carry out any activity without, or not in accordance with, a derogation granted under regulation 54 or 54A of the Regulations constitutes a criminal offence, subject to prosecution.
- If you experience any problems filling in this form, please contact the Wildlife Licensing Unit: reg54derogations@npws.gov.ie
- Please note – applications, associated reports and derogations will be published on the NPWS website and/or the Department's Open Data website.
- Where any applicant is applying for a derogation to carry out surveys, please ensure to list all qualified ecologists and trainees under their supervision. See section 1(c) of Part A.

Part A: The Applicant - Personal Details

These questions relate to the person responsible for any proposed works and who will be the **Applicant**.
If this application is being submitted on behalf of a third party, please also complete Part B below.

1. (a) Name of Applicant

Title (Mr/Mrs/Miss/Ms/Dr)	Forename(s)	Surname
Mr	Martin	Ryan
(b) Company Name, if applicable	Limerick Twenty Thirty	
(c) Address Line 1	The GPO Building, Gardens International	
Address Line 2	Henry Street	
Town	Limerick	
County	Limerick	
Eircode	V94 01W7	
(d) Contact number	061 557207	
(e) Email address	martin.ryan@limerick2030.ie	
(f) Address where works are to be carried out if different from (b) above.		
Address Line 1	Cleeves Riverside Quarter	
Address Line 2		
Town	Limerick	
County	Limerick	
Eircode		

Details of Person Submitting Application on Behalf of Applicant/Derogation Holder

Information relating to the person (e.g. ecologist) responsible for submitting the application on behalf of the applicant should be entered below:

1. (b) Name of Person/Ecologist

Title (Mr/Mrs/Miss/Ms/Dr)	Forename(s)	Surname
Ms	Sara	Fissolo
Mr	Pat	Roberts
(b) Company Name	MKO	
Address Line 1	Tuam Road	
Address Line 2		
Town	Galway	
County	Galway	
Eircode	H91 VW84	
(c) Contact number	091 735 611	
(d) Email address	sfissolo@mkoireland.ie ; proberts@mkoireland.ie	

(e) Relationship to Applicant	Contracted Ecologist consultant
--------------------------------------	---------------------------------

For Survey Derogations Only

1. (c) Please Indicate the Names to Appear on the Derogation Along with the Position Held e.g. Supervisor/Trainee

Forename(s)	Surname	Supervisor or Trainee

Part B: Species covered by the Derogation

1. **Species of Animal:** Please indicate which species is/are the subject of the application:

- Bat ☒
- Otter ☐
- Kerry Slug ☐
- Natterjack Toad ☐
- Dolphin ☐
- Whale ☐
- Turtle ☐
- Porpoise ☐

2. Please detail the exact species (scientific name): Pipistrellus pygmaeus, Rhinolophus hipposideros

3. Please provide the maximum number of individuals affected* 8, 2

4. Please provide the maximum number of breeding or resting sites affected* 10 resting locations

5. Please provide the maximum number of eggs to be taken* n/a

6. Please provide the maximum number of eggs to be destroyed* n/a

*If no figures can be provided for the maximum number of individuals, breeding sites, resting places and eggs to be covered by the derogation please provide reasons why.

Four active roosts were identified within the site:

- One lesser horseshoe bat was observed entering the Coldstore building, west of the Flaxmill, from the ground floor during a dawn re-entry survey, however no confirmation of its day roosting location was possible: the entrance is well connected to the whole interior.
- A small soprano pipistrelle roost counting approx. 6-8 bats was identified within the western rock face of the Quarry Site – this roost will be retained.
- Two lesser horseshoe bats were found to be roosting within a derelict classroom building at the back of the Salesians School.
- Another active roost was found within the Salesians, in the interior yard of the convent. Based on the evidence found in 2025 and the previous surveys undertaken in 2023, the location consistently hosts a small pipistrelle summer roost (*Pipistrellus* sp.).

In addition, a number of other LHB perches were found in buildings around the site, where fresh droppings were found in 2025. The site is completely accessible to bats and is likely to present other resting sites (i.e. night perches/opportunistic roosting) but no evidence of other breeding sites was found.

7. **Species of Plant:** Please indicate which species is/are the subject of the application:

- Killarney Fern ☐
- Slender Naiad ☐
- Marsh Saxifrage ☐

8. If you previously received a derogation for any species of animal or plant, please state derogation number and confirm that you have made a return to NPWS on the numbers actually affected by that derogation.

DER-BAT-2025-169 ongoing, for same LHBs

9. **Proposed Dates for Activities:** Please indicate the timeframe that you propose to carry out the activities. Dates set by NPWS may differ from dates proposed here. *A derogation will only be issued with a start and end date within a calendar year.*

Start Date: TBD – following grant of planning permission

End Date: TBD – following grant of planning permission

Part C: Nature of the Derogation.

1. Please tick which prohibition(s) the application for a derogation relates to:

Regulation 51	
Deliberately capture or kill any specimen of the relevant species in the wild	<input type="checkbox"/>
Deliberately disturb these species particularly during the period of breeding, rearing, hibernation and migration	<input checked="" type="checkbox"/>
Deliberately take or destroy eggs of the relevant species in the wild	<input type="checkbox"/>
Damage or destroy a breeding or resting place of such an animal, or	<input checked="" type="checkbox"/>
Keep, transport, sell, exchange, offer for sale or offer for exchange any specimen of the relevant species taken in the wild, other than those taken legally as referred to in Article 12(2) of the Habitats Directive.	<input type="checkbox"/>
Regulation 52	
Deliberately pick, collect, cut, uproot or destroy any specimen of these species in the wild, or	<input type="checkbox"/>
Keep, transport, sell, exchange, offer for sale or offer for exchange any specimen of these species taken in the wild, other than those taken legally as referred to in Article 13(1)(b) of the Habitats Directive.	<input type="checkbox"/>

Further information should be provided in the format set out in Part E: Template for Supporting Information

Part D: Derogation Tests

Note: The following summary information must be provided by the applicant in all cases, and will be used to determine if a derogation can be provided. Further information must be provided in the format set out in Part E: Template for Supporting Information

Test 1: Reason for the Derogation

1. Please tick which reason(s) below explains how this application qualifies under Regulation 54(2)(a-e) or Regulation 54A(2)(a-e) of the European Communities (Birds and Natural Habitats)

Regulations: Please provide a summary of how the application meets the 3 conditions required to provide a derogation. Note that in all cases additional information must be provided (see Part E).

a.	In the interests of protecting wild flora and fauna and conserving natural habitats (proceed to 2a)	<input type="checkbox"/>
b.	To prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property (proceed to 2b)	<input type="checkbox"/>
c.	In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment (proceed to 2c)	<input checked="" type="checkbox"/>
d.	For the purpose of research and education, of re-populating and re-introducing these species and for the breeding operations necessary for these purposes, including artificial propagation of plants (proceed to 2d)	<input type="checkbox"/>
e.	To allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of certain specimens of the species to the extent specified therein, which are referred to in the First Schedule (proceed to 2e)	<input type="checkbox"/>

2a. In the interests of protecting wild flora and fauna and conserving natural habitats:

- i) Please state the wild flora, fauna or habitats that require protection and /or conservation.
- ii) Please summarise how the interests of protection and conservation of the species/habitat concerned justify affecting another species under strict protection.

2b) To prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property:

- i) Please summarise the nature of the potential damage, why it is considered “serious” and how this outweighs the conservation interest of the species under strict protection.

2c) In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment:

- i) Where the reason is for public health and public safety, summarise the evidence provided to support this reason (e.g. documentary evidence of the risk from a chartered structural engineer, tree surgeon, Garda Síochána, qualified health professional etc.)

The roosts identified are located in a derelict site in the centre of Limerick City, which is proposed for redevelopment.

The proposed development includes phase 2 of a Masterplan for the development of the Cleaves Site in Limerick City. The Masterplan, published in 2023 was prepared in response to the requirements for a coordinated and holistic approach to development on the Cleaves Site (5.30 hectares) as detailed in the Limerick Development Plan 2022 – 2028. It provides a broad framework for LTT’s vision for the future and creative re-use of this strategic city centre site and its valuable assets, providing a flexible and phased approach to development.

To allow for redevelopment, existing buildings and warehouses, with the exception of two protected structures, will need to be demolished. The structures present roosting availability for bats as they have open access and are mostly not in use and derelict. The structures cannot be retained as they are, as they impede redevelopment.

- ii) Where the reason is for “other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the

environment”, summarise the nature of the public interest and how this outweighs the conservation interest of the species under strict protection.

Regeneration of the Cleaves site is promoted at national, regional and local policy level, providing a solid planning framework for its development. The site is prioritised for investment under the Urban Regeneration and Development Fund (URDF), with enabling infrastructure and governance reforms supporting its transformation. There are a number of more strategic and generic policies and objectives influencing the approach to development on the site. The proposed development has been carefully considered and designed in the context of such strategic policy, mindful of environmental and social, obligations and targets. The proposed development provides for 232 no. new residential units and 270 no. new student bedspaces. It will contribute towards the government’s target deliverance of housing, achieving compact growth and a high quality, sustainable development. This provision is in the context of a housing crisis in Limerick and in Ireland.

Chapter 3: Project Need & Spatial Planning Policy (Draft) prepared for the EIAR in support of the planning application of the development is provided in support of this application.

- 2d)** For the purpose of research and education, of re-populating and re-introducing these species and for the breeding operations necessary for these purposes, including artificial propagation of plants:
- i) Please summarise the objective(s) of the proposed activities making reference to those listed above and how the the purpose of such activities overrides the interests of strict protection of the species. ¹
- 2e)** To allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of certain specimens of the species to the extent specified therein, which are referred to in the First Schedule
- i) Please clearly state the objective of the activity and verify that this reason is being chosen as the objective of the activity does not match reasons a-d listed above.
 - ii) Please summarise how the activity will result in the taking or keeping of limited numbers of specimens of the species, how it will be applied on a selective basis and to a limited extent, and how it will be done under strictly supervised conditions.

¹ Note that this reason may be appropriate for when research involves surveys that may cause disturbance of species under strict protection. But the sole purpose of the surveys should be for research and education or the other reasons listed above under 1d.

Test 2: Absence of Alternative solutions

2. Please summarise the alternative solutions that have been considered and why these solutions are deemed unsatisfactory. This must include the option of the “do-nothing” alternative and evidence should be objective and robust. Note that in all cases further information must be provided in the format set out in Part E: Template for Supporting Information.

Alternative Solution	Reasons for “Unsatisfactory”
Do-Nothing	If the proposed development was not to go ahead, the habitats within the site will likely be retained in the short term and remain available to bats as is. This is unsatisfactory for the reasons listed in 2c ii. Due to its prominent location within Limerick City, the site is likely to be eventually used for a different development.
Retain existing roosts unaffected, completely avoid disturbance	The nature of the site does not feasibly allow for all roosts to be unaffected whilst also allowing for redevelopment. The buildings on site are derelict and will need to be removed for any development or change of use to occur, which cannot happen around them in the same density proposed. A level of disturbance during construction is considered unavoidable due to the scale of works required. Not redeveloping the site is considered unsatisfactory due to its prime location and the opportunity to regenerate a central area of Limerick City which currently lays derelict.
Different development	<p>The development was designed in line with planning development standards to maximise use of its prime location for residential and public realm uses. The development goals have influenced the overall approach to the development proposal from masterplan concept to detailed design, resulting in a development with an acute focus on compact growth and mixed-use brownfield regeneration, adaptive re-use, reversal of vacancy and dereliction and sustainable travel.</p> <p>The designs were carried out in consideration of the local biodiversity, bats in particular, and incorporated mitigations and compensations to maintain the used of the site for roosting but also commuting and foraging as much as compatible with human use. Any alternative redevelopment proposal within the site would result in similar impacts to the current proposal's.</p>
Alternative compensatory measures and mitigations	A number of compensatory measures and mitigations were considered during the development design. These are provided in the further information document attached. In summary, all feasible and satisfactory mitigations considered were applied to the design. Feasibility was determined considering the likelihood of upkeep of compensatory roosts by bats, the potential disturbance of any alternative roosting habitat during operation (i.e. tampering, lighting), the potential disturbance during construction works, the constraint of providing public amenity spaces in line with planning requirements, and the jurisdiction of the developer.

Test 3: Impact of a Derogation on Conservation Status

3. Please summarise the possible impacts on the population of the species that is subject to this application, taking into account all the mitigation and/or compensation measures that are to be undertaken. Evidence that such mitigation has been successful elsewhere should be provided where relevant. Mitigation measures being relied upon must ensure that the derogation will not be detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range. Note that in all cases further information must be provided in the format set out in Part E: Template for Supporting Information.

The proposed development is not anticipated to affect the conservation status of the species encountered roosting on site due to the small number of individuals affected, the provision of compensatory roosting habitats and other mitigations provided during construction and operation to avoid mortality and limit disturbance.

Soprano Pipistrelle

A small roost (non breeding) of this species, will be lost as a result of the proposed development. However, following the implementation of mitigation as described above, no significant effects resulting from the loss of roosting, foraging or commuting habitat, direct mortality or disturbance, are anticipated.

According to the latest Article 17 reporting (2019), soprano pipistrelle are in favourable conservation status and the granting of this derogation licence will not result in any effect on that status as there will be no reduction in roosting resource and no significant disturbance.

Lesser Horseshoe Bat

A small (non breeding) population of approximately two bats utilises a number of locations throughout the site for roosting. Following the implementation of mitigation as described above, no significant effects resulting from the loss of roosting, foraging or commuting habitat, direct mortality or disturbance, are anticipated.

According to the latest Article 17 reporting (2019), lesser horseshoe are in inadequate conservation status. This is found in relation to their range, habitats and future prospects. It is noted that the population of only two bats is afforded National Importance due to the urban location of the population and location within their range. Thus it was important to ensure that roosting, foraging and commuting habitat was retained on the site following the redevelopment. This has been achieved through informed design and bespoke mitigation. As such, the granting of this derogation licence will not result in any effect on that status as there will be no reduction in roosting resource and no significant disturbance.

Part E: Template for Supporting Information

This application form should provide a summary of the evidence that the applicant has provided. In all cases, it is necessary to provide separate supporting information so that the assessment of the application can be undertaken in a robust and comprehensive manner. Applicants should refer to guidance provided by the NPWS and the European Commission whilst preparing this application form and the supporting information.

It is essential that supporting information is prepared in a consistent manner using the template below so that NPWS officials assessing the application can locate the relevant evidence to determine if the three Tests can be met. Failure to provide sufficient evidence will result in the application being refused.

The structure of the Supporting Information should be as follows:

- 1) Table of Contents
- 2) Introduction
 - a. Objective of the proposed works (for example, as part of construction of a national road, repair of roofing, undertaking surveys etc.)
 - b. Name, qualifications and relevant experience of scientific staff, including trainees, (e.g. ecologist) involved in the preparation of the application and those responsible for carrying out the proposed activity.
 - c. If this application is for the carrying out of surveys that may cause disturbance, qualifications of all involved must be provided and trainees must be clearly identified.
- 3) Background to proposed activity including location, ownership, type of and need for the proposed activity, planning history, policy context, zoning in relevant Development plan (or equivalent), etc.
- 4) Full details of proposed activity to be covered by the derogation (including a site plan). The site may be inspected by an NPWS representative, so the details given should clearly reflect the extent of the project. This information will be used to compare site conditions with the Method Statement.
- 5) Ecological Survey and site assessment (Not required for applications to carry out surveys)
 - a. Pre-existing information on species at location and environs.
 - b. Status of the species in the local/regional area (relevant to the consideration of the impact on the population at the relevant geographic scale (Test 3))
 - c. Objective(s) of survey
 - d. Description of Surveys Area
 - e. Survey methodology (including evidence as to how the methodology represents best practice and is appropriate to the Objective). Methodology should include survey maps, details of timing, climate, equipment used and identify any uncertainties or difficulties encountered.
 - f. Survey results including raw data, any processed or aggregated data, and negative results as appropriate. Photographs and maps must be provided where site-specific features are referred.
 - g. Population size class assessment.
- 6) Evidence to support the Derogation Tests
 - a. Test 1 - Reason for Derogation:
 - i. There should be a clear explanation as to why a specific reason(s) has been selected in the application form.

- ii. Applicants are advised to read the guidance published by the NPWS '[Guidance on Applications for Regulation 54 Derogations for Annex IV species: Guidance for Applicants](#)' with specific reference to Section 3.1.
- b. Test 2 - Absence of Alternative Solutions
 - i. Applicants must list the alternatives to the proposed activity that have been considered, including the do-nothing alternatives in a clear and objective manner. A basic requirement is that these alternatives should be compared in terms of their impact on the species subject to strict protection. It should be clear to NPWS officials as to why the chosen approach has been selected.
 - ii. Applicants are advised to read the guidance published by '[Guidance on Applications for Regulation 54 Derogations for Annex IV species: Guidance for Applicants](#)' with specific reference to Section 3.2.
- c. Test 3 - Impact of a derogation on Conservation Status
 - i. Applicants should include details of the population at the appropriate geographic scale and an evaluation of how the proposed activity will affect the conservation status both before and after mitigation measures have been applied.
 - ii. Full and detailed descriptions of proposed mitigation measures that are relevant to the potential impact on the target species. Evidence that such mitigation has been successful elsewhere should be provided, where available.
 - iii. Applicants are advised to read the guidance published '[Guidance on Applications for Regulation 54 Derogations for Annex IV species: Guidance for Applicants](#)' with specific reference to Section 3.3.

7) Monitoring the impacts of the derogations

- a. Applicants must include details of how they propose to verify whether the derogations have been implemented correctly and whether they achieved their objective, using scientifically based evidence, and, if necessary, how the applicant will take corrective measures where required.
- b. Applicants should provide details of proposed reports to be submitted to the NPWS including the results of monitoring.
- c. Applicants are advised to read the guidance published by the European Commission "[Guidance document on the strict protection of animal species of Community interest under the Habitats Directive](#)" with specific reference to Section 3.4.

Part F. Declaration

I declare that all of the foregoing particulars are, to the best of my knowledge and belief, true and correct. I understand that the deliberate killing, injuring, capturing or disturbing of protected species, or damage or destruction of their breeding sites or resting places or the deliberate taking or destroying of eggs is an offence without a derogation and that it is a legal requirement to comply with the conditions of any derogation I may be granted following this application. I understand that NPWS may visit to check compliance with a derogation.

Please note that under Regulation 5 of the European Communities (Birds and Natural Habitats) Regulations 2011-2021 an authorised officer may enter and inspect any land or premises for the purposes of performing any of their functions under these Regulations or for obtaining any information which they may require for such purposes.

Signature of the Applicant

Date

Name in BLOCK LETTERS

PRIVACY STATEMENT

See Privacy Statement at www.npws.ie/licences

npws.ie

Department of Housing, Local Government and Heritage



An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreachta
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Local Government and Heritage