

**Ecological Impact Assessment
Of
NENAGH HISTORIC & CULTURAL QUARTER
VISITOR EXPERIENCE PLAN
Part 8 Application**



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Carron
Co. Clare
Ireland
Tel: +353 (0) 657 089 080
mail@eireco.ie
www.eireco.ie

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1. Introduction

This report has been prepared by Paul Murphy of EirEco Environmental Consultants on behalf of Tipperary Co. Co. and Scott Tallon Walker Architects, to determine the potential effects, if any, of the proposed development plan for the regeneration of the Nenagh Historic and Cultural Quarter on the natural environment. The report presents an overview of habitats and ecological sensitivities at and in the vicinity of the proposed study area and provides an assessment of the potential impacts of the proposed development on the ecological environment.

A Screening Report for Appropriate Assessment was separately prepared by EirEco Environmental Consultants (August 2021) which considered whether the proposed development plan, alone or in combination with other projects or plans, would have adverse effects on the integrity of European sites, and concluded no significant effects were likely.

2. Methodology

A pre-survey data search was conducted in order to collate existing information from the project area and its environs in relation to records of rare or protected species of flora in the study area from the following information sources:

- National Biodiversity Data Centre (NBDC),
- National Parks and Wildlife Service (NPWS)
- Botanical Society of Britain and Ireland (BSBI).
- National Bat Database held by the National Biodiversity Data Centre (www.biodiversityireland.ie);
- Review of Ordnance Survey mapping and aerial photography of the project area and its environs.

The site was surveyed on the 3rd June 2021 during which habitats at and in the vicinity of the study area were mapped and classified following the Heritage Council Classification system (Fossitt, 2000). Evidence of and the suitability for protected species of fauna was assessed based on a combination of field signs, the nature of the habitats present and a review of databases including that of the NBDC, NPWS, BirdWatch Ireland (BWI) and Bat Conservation Ireland (BCI). The surveys aimed at identifying the occurrence and distribution of habitats and species in the vicinity of the site, including those listed under Annex I and Annex II respectively of the EU Habitats Directive. It also addressed various species of fauna protected under the Wildlife (Amendment) Act (2000), plants protected under the Flora Protection Order (2015) and invasive species of plant and animal listed under the European Communities Birds and Natural Habitats Regulations (2011).

A bat survey was undertaken by Karen Banks on 13th July 2021 during which the existing buildings within the project area were surveyed for potential roost sites and signs of bats. The survey utilised a high powered torch, close focussing binoculars and an endoscope (Explorer Premium 8803 with 9mm camera) where required. The external inspection involved looking for bat droppings on the ground, stuck to walls, windowsills or in crevices in the stone work and recording suitable entry and exit points. The buildings were not accessed for an internal inspection.

Dusk and dawn surveys of buildings within the project area were undertaken on 13th and 14th July 2021 in order to watch and listen for bats exiting bat roosts to determine the presence or absence of bats at the time of survey. The dusk emergence surveys commenced approximately 15 minutes before sunset and ended approximately 90 minutes after sunset. The dawn re-entry survey commenced approximately 60 minutes before sunrise and ended approximately 15 minutes after sunrise. Surveys were undertaken in optimal conditions (avoiding periods of very heavy rain, strong winds (> Beaufort Force 5), mists and dusk temperatures below (12°C)).

An Anabat Walkabout detector was utilised for the survey, which records bat echolocation calls directly on to an internal SD memory card. Each time a bat is detected, an individual time-stamped (date and time to the second) file is recorded. Data was then downloaded and all recordings were analysed by the Anabat Insight software analysis programme version 1.9.7.

In order to supplement the information gathered from the emergence survey, a passive monitoring system of bat detection was also deployed for this survey (i.e. a bat detector is left in the field, there is no observer present and bats which pass near enough to the monitoring unit are recorded and their calls are stored for later analysis). Passive monitoring was completed using three Anabat Swift bat monitors, which were positioned adjacent to Nenagh Gaol and Nenagh Castle. The detectors were set to record from approximately 30 minutes before sunset until sunrise and were left recording for one night.

The methodologies used to determine the value of ecological resources, to characterise impacts of proposed development and to assess the significance of impacts and any residual effects are in accordance with the NRA *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (NRA/TII, 2009). This methodology is consistent with the *Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland – Terrestrial, Freshwater and Coastal* (CIEEM, January 2016). The evaluation of ecological resources uses the following scale:

- International Importance;
- National Importance;
- County Importance;
- Local Importance (Higher Value).
- Local importance (Lower Value)

Impacts during site preparation, construction and operation upon ecological receptors were quantified and characterised based on CIEEM impact characterisation (Table 1). Following an evaluation of ecological receptors, the potential impact (positive, neutral or adverse) of the project on the ecological receptors was carried out based on the criteria in an impact significance matrix (based on NRA, 2009) (Table 2).

Table 1: Characterisation of the impacts

Direction of impact	Whether the impact benefits (beneficial or positive) or detracts (adverse or negative) from net biodiversity value of the receptor;
Magnitude	level of severity of influence on the receptor; fragmentation and isolation of habitats; disturbance to species from noise, light or other visual stimuli
Extent	Area affected and percent of total area of the receptor; direct loss of wildlife habitats
Complexity	direct or indirect effect
Reversibility	reversible or irreversible
Timing/ Frequency	constant or intermittent and impact on critical life stages
Duration	measured time interval for the activity and predicted duration of the impact on receptor
Confidence	certain/near certain, probably, unlikely or extremely unlikely

Table 2. Impact Matrix

Impact level	Site Category				
	A sites Internationally important	B sites Nationally important	C Sites High value, Locally important	D sites Moderate value, locally important	E Sites Low value, locally important
Severe adverse	Any permanent impacts	Permanent impacts on a large part of a site			
Major adverse	Temporary impacts on a large part of a site	Permanent impacts on a small part of a site	Permanent impacts on a large part of a site		
Moderate adverse	Temporary impacts on a small part of a site	Temporary impacts on a large part of a site	Permanent impacts on a small part of a site	Permanent impacts on a large part of a site	
Minor adverse	Temporary impacts on a small part of a site	Temporary impacts on a large part of a site	Permanent impacts on a small part of a site	Permanent impacts on a large part of a site	
Negligible	No impacts	No impacts	No impacts	No impacts	Permanent impacts on a small part of a site
Minor beneficial				Permanent beneficial impacts on a small part of a site	Permanent beneficial impacts on a large part of a site
Moderate beneficial			Permanent beneficial impacts on a small part of a site	Permanent beneficial impacts on a large part of a site	
Major beneficial		Permanent beneficial impacts on a small part of a site	Permanent beneficial impacts on a large part of a site		

3. Description of the Proposed Development

The development plan objective is to examine the existing historic and cultural quarter of Nenagh and its component parts and identify the optimum visitor experience, product mix and operation models which will maximise potential and contribute to the comprehensive physical, economic and social transformation of Nenagh as a successful and sustainable visitor destination. The study area is shown in Figure 1. The development plan has the following objectives:

- Deliver a series of linked attractions that provide a motivating visitor experience based on a multifunctional and vibrant urban centrepiece for the enjoyment and quality of life of existing and future generations based on local heritage and history;
- Apply best practice in place-making, reclaiming the street for pedestrians, facilitating sustainable transport modes and providing places to socialise so as to enhance the livability of the town;
- Elevate Nenagh Town as an historical, heritage and cultural tourism destination of scale and significance;
- Contribute to the economic sustainability of Nenagh Town through creating business and employment opportunities;
- Lengthen the tourist season by motivating visitors to consider travelling to Nenagh during the shoulder and off seasons;
- Protect and safeguard the heritage assets located in the historic and cultural quarter;
- Identify opportunities to utilise public assets to optimise their contribution to the economic, social and cultural life of the town.

The historic quarter consists of the following key elements (see locations in Figure 1):

1. Nenagh Gaol.
2. Nenagh Castle.
3. Banba Square including streets, laneways and car parks.
4. Pearse Street terraced structure Properties (No's 35 and 36).
5. Tourist Information Office & Arts Centre.
6. Nenagh Genealogy Centre/Nenagh Heritage Centre.
7. Former Sheahan's Hardware premises (former Rialto Cinema).
8. Cluster of Civil Defence buildings and surrounding areas in the Courthouse carpark.

4. Description of the Existing Environment

4.1 Designated Conservation Areas

The location of Nenagh Historical Quarter is not covered by any designated conservation area. There are no watercourses within the study area, but the Nenagh River and the Ardgregane Stream flow through the town of Nenagh and both drain into Lough Derg. The location of the study area relative to the designated area boundaries is shown in Figure 2. Table 1 details the qualifying interests / conservation interests for the designated conservation areas within c15km of the Nenagh Historic Quarter.

The nearest designated conservation area is the Lough Derg Special Protection Area (Site code 004058), which is located just under 7km from the Nenagh Historic Quarter. The site is of special conservation interest for its nationally important breeding populations of Cormorant and Common Tern and its nationally important wintering populations of Tufted Duck and Goldeneye. In addition, the SPA supports a range of other species including Whooper Swan, Greenland White-fronted Goose and Hen Harrier, which along with Common Tern are listed on Annex I of the E.U. Birds Directive. Parts of Lough Derg SPA are a Wildfowl Sanctuary. In view of the potential hydrological connectivity between the study area and this designated area, this site is given further consideration in Section 2.5 below.

The next nearest designated area is the Slievefelim to Silvermines Mountains SPA (site code 004165) which is approx. 8.5km to the south of Nenagh. This SPA is designated for Hen Harrier and consists of a large area of uplands and potentially suitable foraging habitat for this species. Part of the SPA is also designated as the Silvermines Mountains West Special Area of Conservation (site code 002258). The site is of conservation importance for its heath and Calaminarian grassland vegetation, and also as a foraging area for Hen Harrier. In view of the special conservation interests / qualifying interests for these sites and the lack of any connectivity between the sites and the study area, these sites are screened out from further assessment.

Lough Derg North-east Shore SAC (Site code 002241) which is located just over 10km to the northwest. This site is designated for a range of habitats which are associated with the lake shore and karst landscapes. While the SAC extends to cover the north-eastern portion of Lough Derg, its qualifying interests are limited to terrestrial or ground water dependent habitats. The potential for the proposed plan giving rise to a significant effect on any of the qualifying interests for the SAC as a result of a deterioration in water quality arising from the proposed plan is considered extremely remote. This is in view of the distance from the source to the receptor, the nature of the proposed plan, and the nature of the qualifying interests. The SAC is located upstream of the confluence of the Nenagh River into Lough Derg.

The Slieve Aughty Mountains SPA (Site code 004168) is approximately 16km to the northwest of the Nenagh Historic Quarter. This SPA is designated for both Hen Harrier and Merlin and consists of a large area of uplands and potentially suitable foraging habitat for these species. In view of the special conservation interests for this site and the lack of any connectivity between the site and the study area, this SPA is screened out from further assessment.

In conclusion, the only designated conservation area that is considered at any risk of a potential effect (significant or otherwise) from the proposed plan is the Lough Derg SPA. This arises from the potential for hydrological connectivity between the study area and this designated area, and this site is therefore given further consideration in Section 2.5 below.

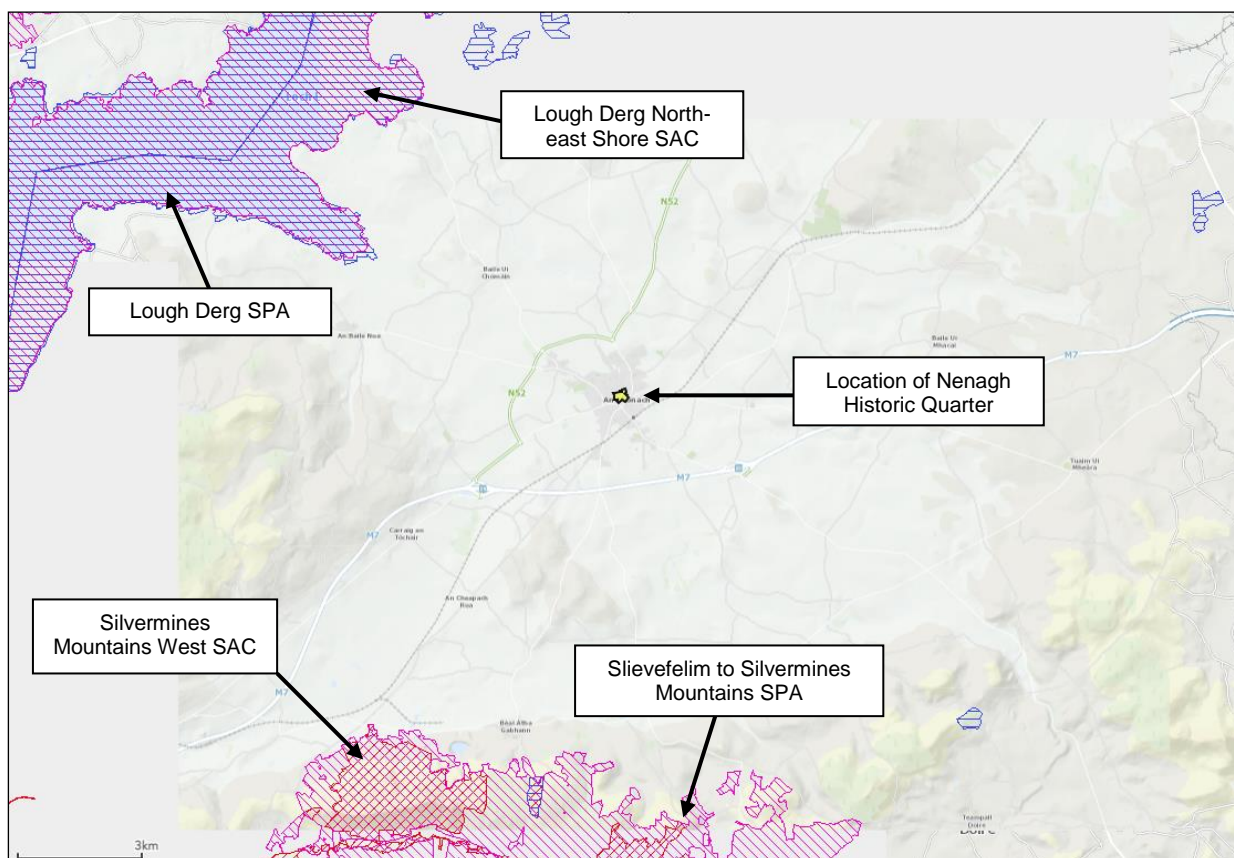


Figure 2. Nenagh Historic Quarter (yellow) relative to designated conservation Areas. (Source: NPWS Mapviewer)

4.2 Habitats

The study area for the Nenagh Historical and Cultural Quarter is located within the central part of Nenagh town. Figure 3 presents the habitats recorded within the study area using the Heritage Council classification (Fossitt, 2000). The study area is comprised primarily of buildings and artificial surfaces (BL3) with some extensive areas of amenity grassland (GA2) and treelines (WL2) around the church and grounds of the castle. The most significant of the treelines is to the northeast of the church fronting St Flannan Street which consists of mature oak (*Quercus* sp.) and horse chestnut (*Aesculus hippocastanum*). A treeline of semi-mature sycamore (*Acer pseudoplatanus*) occurs to the northeast of the castle, with scattered young to semi-mature trees of birch (*Betula* sp.), cherry (*Prunus* sp.) and maple (*Acer* sp.) in both grounds. A recently developed ornamental garden comprising primarily herbaceous plants occurs in the Castle Garden which is linked between the castle grounds and the church yard. Small pockets of ornamental shrubs (WS3) occur elsewhere along with a few areas of flower beds and borders (BC4).

The old walls (BL1) of the out buildings to the south of the castle and leading to the Governor's Victorian House at the Gaol complex support a variety of mural plant species including Pellitory-of-the-wall (*Parietaria judaica*), red valerian (*Centranthus rubra*), ivy-leaved toadflax (*Cymbalaria muralis*) and sow thistle (*Sonchus asper*). The Polypody fern (*Polypodium cf. vulgare*) and wall rue (*Asplenium ruta-muraria*) are both occasional, while the garden escapee bearberry (*Cotoneaster cf. dammeri*) occurs in a few locations.

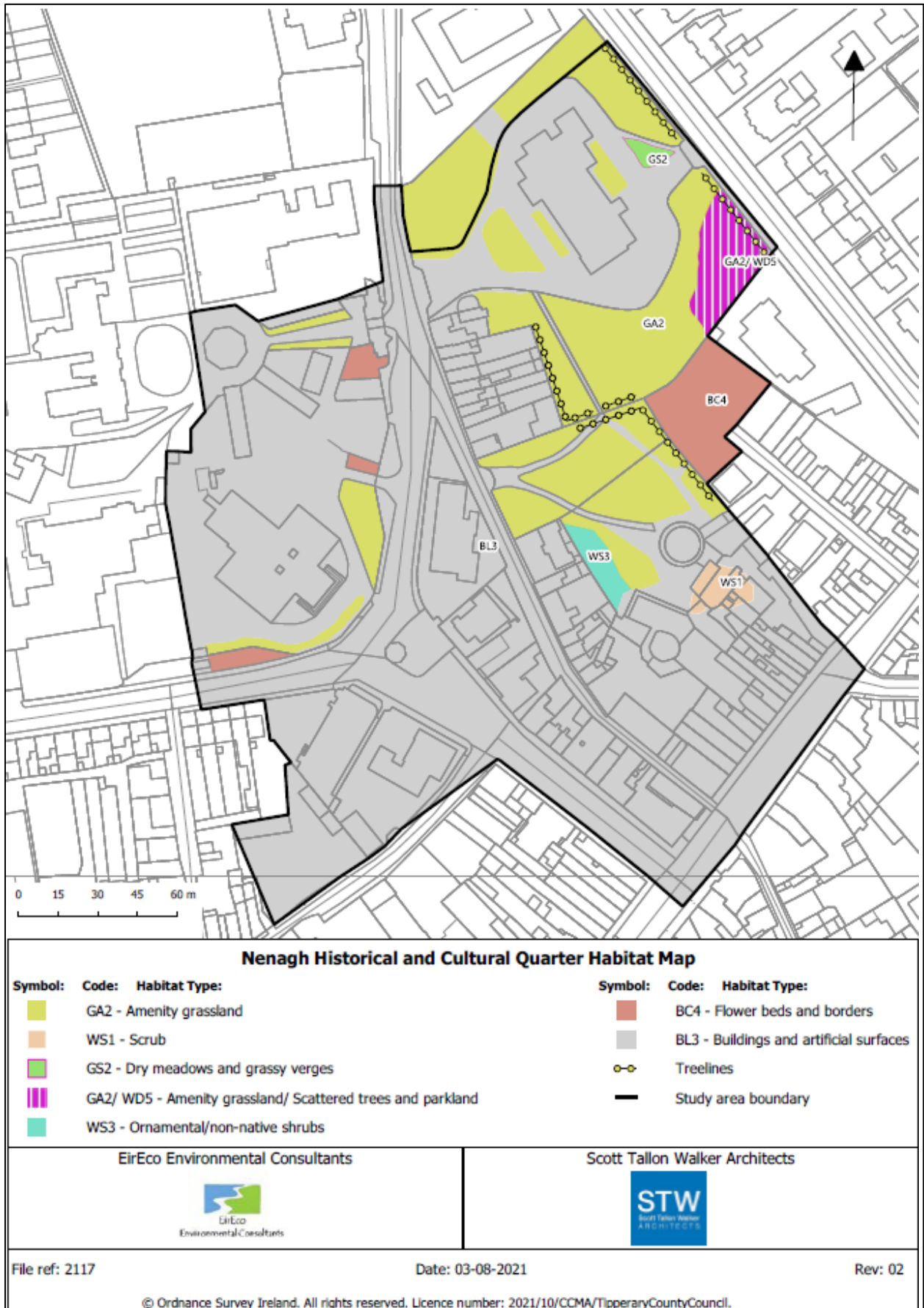


Figure 3. Nenagh Historical and Cultural Quarter Habitat Map.

4.3 Birds

The habitats within the study area support a suite of bird species typical of urban environments including blackbird, song thrush, robin, various tit species, chaffinch and dunnock. A small colony of swifts (approx. 10 pairs) are nesting high on the north side of the castle in a section with cavities while swallow and jackdaw appear to be nesting in some buildings in the area. Swift are an amber listed species under the Birds of Conservation Concern Ireland (2020-26) due to dwindling numbers. A rookery occurs on the south side of the treeline fronting St Flannan Street. Other species not recorded and likely to breeding in the area include pied wagtail, wood and feral pigeon, collared dove and goldfinch.

4.4 Bats

A review of existing bat records of the proposed project area indicates that four of the ten known Irish species of bat have been recorded within a 4km radius of the project area, namely pipistrelle species, soprano pipistrelle, Leisler's and Daubenton's bat. There are no existing records of roosting bats from within 4km of the project area.

Habitats within the project area that are of potential value for foraging bats are limited to the grounds of Nenagh Castle, which supports an area of amenity grassland and planted trees. The grounds of St Mary's church, adjacent to Nenagh Castle (outside of the project area) would also provide suitable foraging habitat for bats. Nenagh Castle supports several potential roosting features for bats. Nenagh Genealogy Centre is of moderate suitability for roosting bats and there is a small amount of suitable foraging habitat to the north-west of this building. Nenagh Goal supports features that are of moderate suitability for roosting bats and the adjacent Civil Defence buildings are of negligible to low suitability for roosting bats; these buildings are located in built land that is of low suitability for foraging and commuting bats. The entire project area is light by street lamps at night, however there are some dark areas within the grounds of Nenagh Castle.

Results from the bat surveys undertaken in July 2021 indicate that five species of bat, namely common pipistrelle, soprano pipistrelle, Leisler's, brown long-eared bat and Myotis species forage and commute within the project area. No bats were recorded roosting within the project area, however common pipistrelle was observed flying in to the grounds of Nenagh Castle from the south-east early in the evening, indicating the likely presence of a roost in the immediate environs of the castle. Most of the bat activity recorded was within the grounds of Nenagh Castle. The bat populations are considered to be of Local Interest (Higher Value).

4.5 Overall evaluation of the proposed study area

The proposed study area for the Nenagh Historical Quarter development plan is not covered under any wildlife or conservation designation, the nearest designated site being the Lough Derg SPA which is just under 7km to the northwest. There are no records of or evidence of any rare, threatened or legally protected plant species as listed in the Irish Red Data Book or the Flora Protection Order (2015) known to occur within the study area.

The habitats at and in the vicinity of the historical and cultural quarter in Nenagh consist primarily of buildings and artificial surfaces with small amounts of amenity grassland, treelines, scattered trees and ornamental shrubs. The buildings and treelines are rated of Local Importance (Higher Value) while the other features are rated of Local Importance (Lower Value).

A small colony of swifts (approx. 10 pairs) are nesting high on the north side of the castle. This species is amber listed (BOCCI 2020-26) and the colony is rated of Local Importance (Higher Value).

No bats were recorded roosting within the project area, however common pipistrelle was observed flying in to the grounds of Nenagh Castle from the south-east early in the evening, indicating the likely presence of a roost in the immediate environs of the castle. Most of the bat activity recorded was within the grounds of Nenagh Castle. In relation to the foraging and commuting bat species recorded within the project area, the bat populations are considered to be of Local Importance (Higher Value).

5. Potential Impacts of the Proposed Development

5.1 Impacts on Designated Areas

The proposed study area for the Nenagh Historical Quarter development plan is not covered under any wildlife or conservation designation, the nearest designated site being the Lough Derg SPA which is just under 7km to the northwest.

A Screening Assessment undertaken for the proposed development (EirEco 2021) concluded that the development plan will not result in any risk of impacting directly or indirectly on any habitat or species associated with the Lough Derg SPA or any other European site. There is considered no significant risk of impacting on water quality within the SPA as the study area is adequately catered for by the existing sewage network and waste water treatment system in place for Nenagh town.

5.2 Impacts on Habitats

The proposed development plan will not result in any risk of impacting on any habitat of significant ecological value. The majority of the study area is dominated by buildings and artificial surfaces which are of low ecological value. The principle habitats of ecological importance are the treelines and scattered trees which will be retained and afforded protection within the development plan. As part of the development plan, there will be further tree planting and landscaping which will serve to enhance the semi-natural habitats within the study area thereby having a minor beneficial impact on the natural environment.

5.3 Impacts on Fauna

While no bat roosts were recorded within the project area, a common pipistrelle roost is located in the vicinity of Nenagh Castle, and the grounds of the castle provide a valuable foraging resource within the urban fabric of Nenagh. The proposed development plan may result in some maintenance and repairs to buildings which could limit their value or potential for use by roosting bats. In addition, while the entire project area is light by street lamps at night, there are some dark areas within the grounds of Nenagh Castle. Inappropriate lighting in this area could restrict the value of the area for foraging by bats.

The study area supports a suite of bird species typical of urban environments including blackbird, song thrush, robin, various tit species, chaffinch and dunnock. A small colony of swifts (approx. 10 pairs) are nesting high on the north side of the castle in a section with cavities. Swift are an amber listed species under the Birds of Conservation Concern Ireland (2020-26) due to dwindling numbers. Maintenance of the castle could reduce the suitability of the structure to support nesting swifts.

6. Mitigation

6.1 Mitigation during Construction

The principal risk of impact from the proposed Nenagh Historic and Cultural Quarter Visitor Experience Plan is on the bat and swift populations occurring within the study area. The risks to bats from the loss of roost space as a result of maintenance of buildings is considered low as no roosts were identified within any of the structures. Nonetheless, any proposals for maintenance works on any of the historic buildings should allow for a review by a suitably qualified and experienced bat specialist to assess the potential for enhancing their suitability for use by bats.

It is recommended that the value of the grounds of Nenagh Castle for bats is enhanced by considering the installation of lighting with sensitivity for local wildlife, while still providing the necessary lighting for human usage. This is particularly important for bat foraging/commuting habitat around retained trees within the grounds.

The following general principals should be followed in relation to the lighting plan for the grounds of Nenagh Castle:

- The lighting design should be flexible and be able to fully take into account the presence of protected species. Therefore, appropriate lighting should be used within the Historical Quarter and adjacent areas with more sensitive lighting regimes deployed in wildlife sensitive areas (i.e. the grounds of Nenagh Castle).
- Dark buffer zones will be used to separate habitats or features from lighting by forming a dark perimeter around them. This should be used for habitat features noted as foraging areas for bats.
- Buffer zones should be used to protect dark buffer zones and rely on ensuring light levels (levels of illuminance measured in lux) within a certain distance of a feature do not exceed certain defined

limits. The buffer zone can be further subdivided into zones of increasing illuminance limit radiating away from the feature or habitat that requires to be protected.

- As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed.

Luminaire design is extremely important to achieve an appropriate lighting regime. Luminaires come in a myriad of different styles, applications and specifications which a lighting professional can help to select. The following should be considered when choosing luminaires. This is taken from the most recent BCT Lighting Guidelines (BCT, 2018).

- All luminaires used will lack UV/IR elements to reduce impact.
- LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (<2700 Kelvins is recommended to reduce the blue light component of the LED spectrum).
- Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
- The use of specialist bollard or low-level downward directional luminaires should be considered in bat sensitive areas to retain darkness above.
- Column heights will be carefully considered to minimise light spill. The shortest column height allowed should be used where possible.
- Only luminaires with an upward light ratio of 0% and with good optical control will be used.
- Luminaires will always be mounted on the horizontal, i.e. no upward tilt.
- Any external security lighting will be set on motion-sensors and short (1min) timers.

There is considerable potential to enhance the suitability of the study area for foraging by bats (with benefits for a range of biota) through the provision of appropriate landscape planting to attract greater abundance and diversity of invertebrates which in turn provide food for bats. The following recommendations for enhancement planting to attract nocturnal flying insects are adapted from *Landscape and Urban Design for Bats and Biodiversity* (BCT, 2012):

- Mixtures of flowering plants, trees (including fruit trees) and shrubs to encourage a diversity of insects to sustain bats and other wildlife throughout the year. It is recommended that new planting should include pollinator friendly tree species including locally appropriate species listed in the Pollinator Friendly Planting Code¹;
- Flowers that vary in colour, fragrance, shape, amount of nectar and time of flowering;
- Pale flowers that are more easily seen in poor light, so attracting insects at dusk;
- Single flowers, which tend to produce more nectar than double varieties; and
- Flowers with insect-friendly landing platforms and short florets, like those in the daisy or carrot families.

Amenity grassland management within the large areas of lawns in the church yard and castle grounds should adopt a more varied approach with areas allowed to develop as meadow, whilst maintaining a mown verge along pathways etc. The meadow areas would benefit from enhancement planting of appropriate grassland herbs which can be incorporated as pre-grown plugs or by seeding following suitable ground preparation.

There are currently a small number of swifts using cavities high on the castle walls for nesting purposes. This species has undergone a considerable reduction in population over the last few decades associated with a lack of suitable nesting sites. Artificial nest boxes designed specifically for swifts are available and should be incorporated in appropriate locations into buildings within the historic quarter.

7. Residual Impacts

The proposed Nenagh Historic and Cultural Quarter Visitor Experience Plan does not pose any significant adverse ecological impact either during construction or operation. The proposed development plan incorporates a variety of measures to increase the amount of tree, shrub and flower planting within the study area which will give rise to a moderate beneficial residual impact for biodiversity over time.

¹ National Biodiversity Data Centre (2021) Pollinator Friendly Planting Code. All-Ireland Pollinator Plan 2021-2025. www.biodiversityireland.ie/pollinator-plan.

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