



An
Coimisiún
Pleanála

Technical Note: Ecology R323410TN

Development

Proposed Limerick City Greenway (UL to NTP) within the townlands of Dromroe, Sreelane, Newcastle and Castletroy, Co. Limerick.

Type of Application

Local Authority development.

Planning Authority

Limerick City and County Council.

Topic

DAU submission, EIAR (Biodiversity) including lesser horseshoe bat, and NIS including Annex I habitat and Annex II species otter.

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1.0 Introduction

1.1. Background

- 1.1.1. Case reference HA91.323410 relates to Local Authority development application for the proposed Limerick City Greenway from the University of Limerick (UL) to the National Technology Park (NTP).

1.2. Site Location and Development Description

- 1.2.1. The greenway route runs along the southern bank of the River Shannon and commences west of the Groody River confluence with the River Shannon at the Groody River Bridge in the townland of Dromroe, west of the UL campus. The greenway route will pass through the townlands of Dromroe, Sreelane, and to the NTP in Castletroy.
- 1.2.2. The proposed greenway is 4.48km long and the project boundary is approximately 8m wide, but this width is subject to the river edge, the Plassey Mill Race stream, mature trees, existing structures and fences, embankments, and road verges.
- 1.2.3. Documentation on file includes an Environmental Impact Assessment Report (EIAR) (Chapter 6 Biodiversity) and Natura Impact Statement (NIS).

1.3. Scope of Report

- 1.3.1. The Commission's Planning Inspector requested a report from ecologists, dated 15th December 2025, to review application documents with respect of the issues raised in the Department of Housing, Local Government and Heritage via the Development Applications Unit (DAU) dated 9th October 2025, which are summarised as follows:

Implications for European Sites

- Potential for significant adverse effect on the integrity of the Lower River Shannon Special Area of Conservation (SAC) (site code: 002165), particularly regarding the conservation objectives for the priority Annex I Qualifying Interest (QI) habitat Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, *Alnion incanae*,

Salicion albae) (91E0) and the Annex II QI species Otter (Lutra lutra) [1355].

- Impacts from surface water runoff or water quality impacts as a result of sediment and pollutants released during works.
- Spread of invasive species.
- Disturbance of species during construction.

Biodiversity

- The development has the potential to have a significant negative impact on the ecological quality and availability of the riparian habitat for foraging and commuting bat species, including Annex II and Annex IV Lesser Horseshoe Bats.
- Potential of impact on ecosystem, including displacement of wildlife through disturbance, lighting, habitat fragmentation, barrier creation.
- Spread of invasive species.

1.3.2. My assessment, as directed by the Senior Planning Inspector, is focused only on the items as per their request, as set out under Section 1.3.1 above. I conducted a site visit with the Senior Planning Inspector on the 21st of January 2026.

1.3.3. This report includes a review of the application documentation including the NIS, EIAR specifically Chapter 6 Biodiversity, third party submissions, drawings, and design details on file.

1.3.4. In my capacity as Senior Ecologist, with over 25 years professional experience, I have the relevant expertise to advise on the Appropriate Assessment (AA) and Biodiversity Impact Assessment for the proposed appeal.

2.0 Background

2.1.1. An NIS and EIAR was submitted by Limerick City and County Council (LCCC) in August 2025, in support of their application to ACP for the Proposed Limerick City Greenway UL to the NTP. The applicant also submitted a Response to Submission Report in December 2025.

- 2.1.2. The proposed development is located adjacent to the Lower River Shannon SAC (site code: 002165) and River Shannon and River Fergus Estuaries Special Protected Area (SPA) (site code: 004077) is 3.7km downstream via the Park Canal, 7.3km via the River Shannon.
- 2.1.3. Construction will be carried out in 5 no. sections and the construction work in each section will be directly supplied by an adjoining compound. Temporary haul roads are required to facilitate the construction of the proposed greenway. Approximately 3.6km of haul roads will be developed along the proposed greenway route and will subsequently form the subbase layers of the proposed greenway. Approximately 0.3km of haul roads that will not coincide with the proposed greenway route (i.e. they are required to connect construction compounds and the temporary works area to existing roads) will be reinstated following the works in that section.
- 2.1.4. A total of 5no. new bridges and 26no. new culvert crossings are included as part of the works.
- 2.1.5. Open shallow drains will be constructed alongside the greenway to direct surface water to culverts under the greenway in greenfield sites where existing drainage is not present, or in locations where the proposed greenway severs the natural drainage routes. Positive drainage will be maintained along existing roads and gullies will be adjusted to suit new kerb lines.
- 2.1.6. There is existing public lighting along the existing path between the Groody River bridge and the UL Boat House.
- 2.1.7. There will be new public lighting along the proposed greenway which follows the south bank of the River Shannon for approximately 3km. Public lighting will be controlled by light sensors so their turn on time will vary during the calendar year and turn on after dusk, but lights will turn off at 23:00 hours in accordance with the LCCC Public Lighting Design Specification.
- 2.1.8. In the Response to Submission document, Section 22.1.1. the applicant has proposed potential design modification at Plassey Beach and in the Alluvial

Woodland to safeguard the 12 no. trees proposed to be removed as part of the original design.

- 2.1.9. The greenway route is adjacent to the southern bank of the River Shannon and intersects lands designated as part of the Lower River Shannon SAC (site code: 002165), designated for QI habitats including Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260], Alluvial forests with *Alnus glutinosa* which can be found in the River Shannon and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0] and can be found on the banks and floodplain of the River Shannon, intermittently along the route.
- 2.1.10. The SAC is also considered an important site for a number of Annex II species including otter (*Lutra lutra*) [1355], freshwater pearl mussel (*Margaritifera margaritifera*) [1029], sea lamprey (*Petromyzon marinus*) [1095], brook lamprey (*Lampetra planeri*) [1096], river lamprey (*Lampetra fluviatilis*, [1099] and the Atlantic salmon (*Salmo salar*, only in fresh water) [1106] and common bottlenose dolphin (*Tursiops truncatus*) [1349].

3.0 Assessment – Implications for European Sites

3.1. Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]

Potential Loss/Degradation/Fragmentation of QI Annex I habitat area

- 3.1.1. The QI Annex I Priority habitat *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0] (hereafter referred to as Alluvial Woodland) is found within the Zone of Influence (Zol) of the proposed works. Priority habitats under the EU Habitats Directive (Council Directive 92/43/EEC) are habitats in danger of disappearance within the EU, requiring strict conservation in SACs and also have specific provisions under Article 6(4) of the Directive.
- 3.1.2. The calculated areas of permanent and temporary loss of habitats as a result of the project are not provided in the NIS but are provided in the EIAR Chapter 6 Biodiversity including Table 6.21 provides details on the

temporary habitat loss associated with temporary working areas and compounds, and Table 6.22 provides details on permanent habitat loss along the proposed greenway route when considering a 5m buffer. Woodland loss as a result of the proposed development is 0.6ha of riparian woodland and 0.5ha of mixed broadleaved woodland.

- 3.1.3. As stated under the EIAR Section 12.2.1.7, the linear width of the project boundary is approximately 8m wide which varies depending on constraints such as the edge of the River Shannon, the Plassey Mill Race stream, mature trees, existing structures and fences, embankments, and road verges. The width of the paved surface of the proposed greenway varies between 3.5-4.3m wide. In addition to the paved greenway area, there is additional land take required for ancillary works such as lighting, drainage, embankment, planting etc as shown in the Planning Drawing cross sections. I note that existing and proposed infrastructure are presented on the same Planning Drawings, making it difficult to distinguish between existing infrastructure and the proposed works. Other than for bridges, there are no cross sections of existing infrastructure, only cross sections of proposed works are presented, making it very difficult to interpret and assess proposed interventions and impacts on the natural environment. A 5m buffer was used to calculate habitat loss, however, the linear width of the project boundary is stated as approximately 8m wide. Therefore, I am concerned that the full land take has not been considered in the calculations of permanent habitat loss in the EIAR Table 6.22.
- 3.1.4. The Annex I habitat Alluvial woodland 91E0 is a generic term for a number of different woodlands. The principal communities within the SAC¹ as they correspond to Fossitt (2000) habitat classification are Riparian woodland (WN5) by Fossitt (2000) and Wet willow-alder-ash woodland (WN6). From the NIS, 91E0 Alluvial woodland habitat was recorded at one location, 250m east after the Living Bridge. Whilst the habitats have been categorised to Level 3 according to Fossitt (2000), given the potential for direct interaction of the proposed development with Annex I QI habitat

¹https://www.npws.ie/sites/default/files/publications/pdf/002165_Lower%20River%20Shannon%20SAC%20Woodland%20Supporting%20Doc_V1.pdf

within an SAC, I consider that targeted botanical surveys would be required of woodland within the site boundary to more accurately confirm the presence, location, area, condition and conservation assessment of Annex I habitat within the site boundary and provide useful baseline information (in terms of best available scientific information) to inform the AA. The design of the targeted habitat surveys must have regard to best practice guidance and published research. For example, the publications^{2 3 4} listed in the footnotes below would be considered (as a minimum) in the design of targeted woodland habitat surveys.

- 3.1.5. In addition, the classification of habitats in terms of geographical importance is not set out in the NIS but is provided in the EIAR Biodiversity Chapter 6. WN5 and WN6 habitats are classified as Local Importance (Higher Value) and given the associations with the Annex I Priority habitat 91E0, there is concern that the ecological significance of Internationally Important Annex I habitat is understated.
- 3.1.6. It is noted in the submission from the DAU and in the CO supporting document for woodland habitats⁵, that the full extent of the habitat is not mapped within the SAC. Due to the close associations of 91E0 with WN5 and WN6, in addition to the WN1 Mixed broadleaved woodland recorded within the study area, these woodlands cumulatively provide continuity of woodland cover for faunal and floral woodland communities including the alluvial woodland community.
- 3.1.7. The applicant has proposed potential design modification at Plassey Beach to minimise the impact on Alluvial woodland by safeguarding 12 no. trees proposed to be removed as part of the original design, which is welcomed. However, I also share the concerns of the DAU with respect to the extent of habitat loss is only expressed in the number of trees and not the potential

² Daly, O.H., O'Neill, F.H., & Barron, S.J. (2023). The monitoring and assessment of four EU Habitats Directive Annex I woodland habitats. Irish Wildlife Manuals, No. 146. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.

³ O'Neill, F.H. & Barron, S.J. (2013) Results of monitoring survey of old sessile oak woods and alluvial forests. Irish Wildlife Manuals, No. 71. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland

⁴ Perrin et al (2008) National Survey of Native Woodlands 2003-2008, National Parks and Wildlife Service

⁵https://www.npws.ie/sites/default/files/publications/pdf/002165_Lower%20River%20Shannon%20SAC%20Woodland%20Supporting%20Doc_V1.pdf

effect on the structure and function of the multilayered ecosystem, including associated vegetation and community at all woodland structural levels.

- 3.1.8. It is noted that a number of trees will be removed including dead trees as part of the proposal. The arboricultural assessment on the loss of trees, is provided in the NIS and Response to Submissions, that from an arboricultural perspective no high-quality trees will be removed “...and 95% of the trees are classified as B class trees of Moderate quality (i.e. trees with an estimated remaining life expectancy of at least 20 years”.

Arboricultural assessments focus on the physical condition, safety, and landscape amenity value of individual trees, while ecological value centres on the biodiversity, habitat potential, and the species a tree supports, including the retention of dead trees to support saproxylic fauna. In addition, environmental functions include carbon storage and water regulation. It should also be noted that the trees with a life expectancy of 20 years are currently fulfilling their ecosystem services, and the felling of same and replacement with c.305 while in the long-term may have benefits for biodiversity, in the short to medium term there will be a time-lag before the new planting can provide the same level of functional ecosystem service.

- 3.1.9. It is argued in the application documentation, particularly with respect of the proposed Bridge no.2 at Ch0+970, that alluvial woodland communities recorded here no longer support the structure and function attributes of Annex I habitat 91E0 Alluvial Woodland. While the Structure and Functions of the 91E0 habitat may be in ‘Unfavourable’ condition at this site (e.g. due to a low number of indicator species, cover of non-native invasive species, lack of regeneration etc.), the habitat is still assigned Annex I status⁶. It is also noted in the CO document that there is an absence of suitable terrain to accommodate the expansion of alluvial woodland, therefore the priority for the SAC is to protect and restore existing woodland. The construction of a bridge at this location would effectively impede future restoration of the 91E0 habitat in this area and failure to achieve conservation goals.

⁶ <https://www.npws.ie/sites/default/files/publications/pdf/IWM146.pdf>

Potential changes in ecological functions/features such as changes in hydrology, decrease in water quality and spread of invasive alien species.

- 3.1.10. The COs for 91E0 alluvial woodland includes a target to maintain the appropriate hydrological regime (flooding depth/height of water table) necessary for the maintenance of alluvial vegetation. As a Groundwater-Dependent Terrestrial Ecosystem (GWDTE), the habitat is highly sensitive to changes in hydrological regimes. Periodic flooding or constant flushing is essential for the maintenance of alluvial woodland. Changes in hydrological contributions from neighbouring lands such as changes in groundwater flow, surface runoff, and streamflow regulation from the construction of the greenway and new drainage channels, alteration of surrounding habitats, may have local impacts on the structure, composition, and health of alluvial woodlands with increased vulnerability to invasive species.
- 3.1.11. I share the concerns raised in third party submissions regarding potential pollution entering the River Shannon and proximal drainage channels during the construction works, which pose significant risks to QI aquatic habitats, species, and water quality. It is acknowledged that a Construction Environmental Management Plan (CEMP) is included in the application documents which includes site specific environmental protection measures during construction. However, I outline specific deficiencies regarding details on pollution management and constructability below.
- 3.1.12. Detailed measures are proposed for bridge demolition and construction works to protect the River Shannon from contaminated liquids and silt associated with construction activities including a temporary sheet piled wall will be inserted into the riverbank between the water filled barrier and the worksite, and a silt curtain will be suspended in the River Shannon. As outlined in the NIS Section 6.2, “...if water enters the work site a sump pump will pump water to a silt buster to remove contaminated material from water before it is returned to the River Shannon downstream.”

- 3.1.13. In addition, Flood risk is discussed in the EIAR Chapter 8 Water and from the OPW CFRAMS⁷ study "...appreciable lengths of the proposed Greenway are in Flood Zone A (2.36km)". Flood Zone A is high probability of 1 in 10-year flood events and over half the length of the greenway is within this zone. Mitigation in terms of design and operation of the greenway including alternative greenway diversions and signage, are proposed to manage the greenway in flood conditions.
- 3.1.14. The NIS or CEMP do not sufficiently address potential issues relating to the inundation of water into the works area and potential for uncontrolled water pollution events to the River Shannon. There is no hydrological assessment to inform the proposed mitigation measures during construction including the use of a silt buster to treat pumped water prior to discharging to watercourses and whether this method is appropriate to manage the volumes and silt loading in the pumped water to ensure satisfactory water quality of returning waters to the river, mill race or drains.
- 3.1.15. In addition, the pumping of the works areas will likely result in the intake of silts, and no measures are outlined to manage the water volumes and silt loading in the abstracted water. No provision for attenuation or silt ponds is provided in the proposals and whether there are sufficient lands available in close proximity to the SAC to manage the risk of silt laden water being returned to the river.
- 3.1.16. In addition, I am also concerned regarding the constructability and the successful installation of pollution control measures such as sediment barriers including silt curtains /sediment netting/ fences or silt traps at all interfaces of the proposed greenway works area, where there is proposed widening, grading and drainage works particularly in constrained works areas on the steep river banks of the River Shannon, drainage channels and the Plassey Mill Race.
- 3.1.17. The application documents include extensive records of invasive alien species, including Giant Hogweed (*Heracleum mantegazzianum*) and Himalayan Balsam (*Impatiens glandulifera*) which are regulated under the

⁷ OPW National Catchment-based Flood Risk Assessment and Management (CFRAM) Programme

European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), as amended, and non-regulated invasive species including Winter Heliotrope (*Petasites fragrans*) and Cherry Laurel (*Prunus laurocerasus*) were also recorded along the length of the proposed greenway route, often interspersed within the riparian woodland. Invasive species are also recognised as a significant pressure in the CO supporting document for woodland habitat in the SAC (2012)⁸ and includes a specific attribute and target for the management of invasive species.

- 3.1.18. Appendix E of the NIS includes an Invasive Species Management Plan (ISMP) to manage the unintentional spread of invasive species during construction works, including biosecurity measures and proposals for in-situ and excavation management.
- 3.1.19. Under Regulation 49(2) of the 2011 Regulations, it is an offence to plant, disperse, allow or cause to disperse, spread or otherwise cause to grow in any place, any plant included in Part 1 of the Third Schedule without a licence from the NPWS. Therefore, the challenge that this presents to the construction and operation of the development cannot be underestimated. The NIS section 3.4.2, states that invasive species plants will be removed, wrapped in plastic, and buried and that no invasive species will be moved to a different location within the works site or off site. In the ISMP however the procedure for off-site disposal is presented under Section 4.4.2.3. Difficulties regarding the calculation of the volumes invasive species infested material are acknowledged, however there is no information regarding on-site containment methods managed under specific, long-term plans. Therefore, I am not satisfied that the local authority/applicant has sufficiently demonstrated that the proposal would not contravene the Regulation 49 European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) as amended.

⁸https://www.npws.ie/sites/default/files/publications/pdf/002165_Lower%20River%20Shannon%20SAC%20Woodland%20Supporting%20Doc_V1.pdf

3.2. Otter (*Lutra lutra*) [1355]

Disturbance to QI Annex II species/Reduction in species populations and density

- 3.2.1. Otter is listed on Annex II of the Habitats Directive and is a QI species of the Lower River Shannon SAC. Otter is also listed on Annex IV of the Habitats Directive as a species requiring strict protection wherever it occurs.
- 3.2.2. The extent of otter habitat in Ireland is identified in the NPWS Threat Response Plan for Otter⁹ and in the CO (NPWS, 2012), the extent of otter habitat within the SAC is calculated as 958.9ha along riverbanks/ around ponds. A 10m terrestrial buffer along riverbanks is considered to comprise part of the otter habitat and there is available habitat for the species in proximity to the subject site.
- 3.2.3. As outlined in the NIS Section 4.1.3, dedicated otter surveys undertaken during May 2021, July 2024, and August 2025. No evidence of otter was recorded on the riverbank during site. It is also noted in the report that not all areas of the riverbank at water level were accessible due to heavy vegetation.
- 3.2.4. The otter survey methodology is not presented in the NIS, however in the EIAR Biodiversity Chapter and Response to Submissions document it is stated that the surveys were completed in accordance with the methodology of the 'Standard Otter Survey' method and outlined by the National Otter Survey publication (IWM76, Reid et al, 2013), which is in line with a recognised approach.
- 3.2.5. Different techniques exist to survey otter, the most commonly used of which is a detailed search for field signs, including spraint (droppings which are commonly left on rocks in a watercourse), prey remains, holts and couches, and footprints. Construction works can cause indirect impacts (through disturbance) to breeding holts within 150m of proposed development.
- 3.2.6. Therefore, as a minimum, watercourses in proximity to the proposed works including tributaries of the River Shannon i.e. the Groody River and Mulkear

⁹ NPWS (2009) *Threat Response Plan: Otter* (2009-2011). National Parks & Wildlife Service, Department of the Environment, Heritage & Local Government, Dublin.

River, must be surveyed 150m upstream and downstream of the proposed development to ensure that any breeding holts are identified and assessed appropriately. In addition, surveys should avoid periods immediately following heavy rainfall or flooding to ensure signs are visible. Camera trap surveys are also highly useful in ascertaining whether otter is present on a site, particularly when traditional, direct-observation surveys are restricted by challenging terrain, dense vegetation, or safety concerns, cameras can be deployed at strategic locations to inform the assessment.

- 3.2.7. The information provided lacks clear details on the methodology and weather conditions. Limitations for the ecologists to access the riverbanks are identified however no mitigation was applied to ensure the validity of the findings.
- 3.2.8. It is concluded in the NIS Section 4.1.3 “...*where the proposed greenway works will take place, are unlikely to be significantly affected as there will be no impacts on foraging and commuting habitats of the species.*”
- 3.2.9. The COs for otter include targets for no significant decline in extent of terrestrial and freshwater habitat, couching sites and holts, fish biomass, and no significant increase in barrier to connectivity.
- 3.2.10. Potential impacts include habitat loss and fragmentation, disturbance and displacement and water quality degradation during construction and disturbance and displacement during operation resulting from increased recreational pressure at night and artificial lighting, structures including retaining walls, culverts and fencing may also act as barriers in commuting corridors.
- 3.2.11. In the NIS otter is classified as an ecological receptor of Local Importance (High value) which significant understatement of the species’ ecological value of International Importance as an Annex II species and QI of the SAC.
- 3.2.12. Given that the proposed greenway intersects the riverbank at many locations, within the 10m terrestrial otter habitat buffer, I am not satisfied that based on the information provided that the proposed greenway will not result in adverse effects on the conservation objectives for otter.

3.3. Aquatic Habitats and Species

- 3.3.1. In addition to otter, the SAC is also an important site for a number of Annex II species including freshwater pearl mussel (*Margaritifera margaritifera* [1029], sea lamprey (*Petromyzon marinus*) [1095], brook lamprey (*Lampetra planeri*) [1096], river lamprey (*Lampetra fluviatilis*, [1099] and the Atlantic salmon (*Salmo salar*, only in fresh water) [1106] and common bottlenose dolphin (*Tursiops truncatus*) [1349]. Freshwater pearl mussel is recorded in the Cloon River in County Clare and in a separate catchment from the proposed works and therefore there are no likely significant effects on the species from the proposed project.
- 3.3.2. There is potential for the proposed works to result in water quality degradation. A deterioration in water quality has the potential to indirectly impact aquatic QI species within the Lower River Shannon, namely salmon, brook lamprey, river lamprey, sea lamprey, and common bottlenose dolphin. These species have conservation objective targets relating to water quality and/or habitat quality requirements. A summary of their conservation status is provided in Table 1. Measures to protect water quality are outlined in the NIS Section 6.2, however concerns regarding constructability and the successful implementation of pollution control measures at constrained locations, are discussed in Section 3.1.11 above, therefore potential for adverse effects on aquatic species cannot be excluded.

Table 1: Lower River Shannon SAC Qualifying Aquatic Habitats and Species

Species Code	Annex II Qualifying Species	Overall Status and Trend ¹⁰	Conservation Objective
1095	<i>Petromyzon marinus</i> (Sea Lamprey)	Bad	Restore
1096	<i>Lampetra planeri</i> (Brook Lamprey)	Favourable	Maintain
1099	<i>Lampetra fluviatilis</i> (River Lamprey)	Inadequate	Maintain
1106	<i>Salmo salar</i> (Salmon)	Bad	Restore
1349	<i>Tursiops truncatus</i> (Common Bottlenose Dolphin)	Favourable	Maintain

¹⁰ https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol1_Summary_Article17.pdf

4.0 Biodiversity

4.1. Bats

- 4.1.1. The Bat Activity Survey report (2024) is provided in the EIAR Part 3 Appendices, and a summary of the findings are provided in EIAR Biodiversity Chapter 6, Section 6.4.2.3.
- 4.1.2. All bat species in Ireland are listed on Annex IV of the Habitats Directive as species which are afforded a system of strict protection under the provisions of Articles 12, 13 and 16 of the Directive. The Habitats Directive is transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations, 2011-2021. Requirements in relation to strict protection are set out in Regulations 51 – 54.
- 4.1.3. The Lesser Horseshoe Bat is also listed on Annex II of the Habitats Directive, which means that it is a species whose conservation requires the designation of SACs.
- 4.1.4. From the desktop study which the project site is located within an area classified as being of high potential for all bat species in accordance with the All-Ireland Bat Landscape Classification. From Bat Conservation Ireland records, there are records for a Brown Long-eared roost within the boundaries of the proposed, a roost of the Annex II (EU Habitats Directive) species Lesser Horseshoe Bat is located approximately 2.2km from the proposed works and there are two proposed Natural Heritage Areas (pNHA) designated for bats, including Castleconnell Dwelling (pNHA 000433) and Cloonlara House (pNHA 000028) located 2.4km and 3.4km respectively from the project site.
- 4.1.5. From Table 6.1 dedicated bat surveys to inform the impact assessment for the proposed development were undertaken within a 50m buffer of the preferred Greenway on the 19th July 2021, 9th to 21st September 2021, 10th of January 2024, 19th of June and 10th of July 2024, and 5th August 2025.

- 4.1.6. O'Donnell Environmental undertook bat surveys on an iteration of the scheme in 2021, however the scope and design of the project subsequently changed, and bat surveys were reconvened by Ryan Hanley ecologists in 2024.
- 4.1.7. The bat activity survey methodology is presented in Section 2 of Bat Activity Survey report (2024) and makes reference to the Bat Conservation Trust (BCT) *Bat Surveys for Professional Ecologists – Good Practice Guidelines* 4th edition Collins (2023). The evaluation of ecological features follows the NRA (TII) publication '*Guidelines for Assessment of Ecological Impacts of National Roads Schemes*' (2009). Impact assessment follows '*Guidelines on the Information to be contained in Environmental Impact Assessment Reports*' published by the EPA (2017). Reporting follows Chartered Institute of Ecology and Environmental Management (2018) '*Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine*'.
- 4.1.8. The classification system used for Potential Roost Features (PRFs) is based on Collins (2016)¹¹ and Collins (2023)¹² which includes 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.
- 4.1.9. The O'Donnell Environmental 2021 survey report is not provided with the application documents; however, the findings are summarised in Section 3.1.6 of the Bat Activity Report 2024 and results from passive acoustic detector surveys are provided in Appendix 9 of the report.
- 4.1.10. Transect Surveys were undertaken July 19th and September 9th, 2021, and Passive Detector Survey with detectors deployed at two locations along the proposed scheme layout for 13 nights from the nights of 9th September to 21st September 2021 inclusive. Eight bat species were recorded during the 2021 surveys. Overall, 350 registrations of bat activity were recorded during the nighttime walkover (transect) surveys, with Soprano Pipistrelle the most

¹¹ Collins, J. (ed) (2016) *Bat Surveys for Professional Ecologists – Good Practice Guidelines* (3rd edn.) The Bat Conservation Trust, London.

¹² Collins, J. (ed) (2023) *Bat Surveys for Professional Ecologists – Good Practice Guidelines* (4th edn.) The Bat Conservation Trust, London.

frequently recorded species, Common Pipistrelle, Leisler's Bat and Daubenton's bat were highly abundant along the walked transect. Lesser Horseshoe Bat was recorded during the transect survey in July 2021 (3 registrations) only.

- 4.1.11. A high level of bat activity was recorded, 22,282 bat registrations, during the passive survey period. Dates of were recorded on the passive detectors during the survey period. Registrations and results for individual species are detailed below in the Appendix, sections A-D.
- 4.1.12. Three buildings were identified within the ZOI which had 'moderate' suitability to support roosting bats, including two historical structures in ruins including Troy Castle and the Plassey Mills site and a disused house, three structures had 'low' suitability including residential dwellings, and the remaining structure were considered 'negligible'. No roosting bats were encountered in trees. Seven trees in proximity to the proposed development were considered 'low' and no 'moderate' or 'high' suitability trees were present.
- 4.1.13. Due to route amendments and to provide an updated reflection of bat activity in the area, Ryan Hanley ecologists conducted further bat surveys to cover areas that may not have been captured in the O'Donnell 2021 surveys.
- 4.1.14. During the nighttime walkover (transect) surveys, 350 registrations of bat activity were recorded which is consistent with O'Donnell 2021, who recorded similar levels of bat activity and species during their active surveys.
- 4.1.15. The Passive (Automated/Static) Detector Survey was carried out at 'Bat_01' for 7 nights from the nights of 19th of June to the 25th of June 2024 inclusive and recording was carried out at 'Bat_02' for 7 nights from the 3rd of July to the 9th of July 2024 inclusive. Bat_01 was deployed near the Plassey Mill (Sreelane Castle) ruins and Bat_02 was deployed near Troy Castle ruins in woodlands near the NTP, with a total of 1163 and 1122 registrations respectively. High levels of Soprano Pipistrelles were detected at detector Bat_01 near UL Boathouse which suggests there is a potential

roost in close proximity to this area. This is consistent with findings by O'Donnell Environmental in 2021.

- 4.1.16. No confirmed bat roosts were identified within the study area; however, bat boxes were recorded within the 50m ZoI of the proposed development, along with a large bat house (UL Bat House).
 - 4.1.17. Considerably higher levels of activity were detected by the surveys carried out in 2021 with 22,282 bat registrations over 13 nights, in comparison with 2,285 registrations in 2024. It is argued in the Bat Impact Assessment that in the 2021 survey the timings were different and the placement of the static detector along the Mulkear River (16,000+ registrations), in linear riparian habitat that would be highly attractive as a commuting and foraging route.
 - 4.1.18. The conclusion of the 2024 report in conjunction with the findings of the O'Donnell 2021 report, states the study area is considered to be of 'local importance, higher value' for bats and with the implementation of proposed mitigation measures, "...*the proposed scheme is likely to result in a permanent, "nonsignificant" negative effect on bat ecology at a local scale*".
 - 4.1.19. Between the 2021 and 2024 bat surveys, all nine bat species resident in Ireland were recorded within the study area. Overall, the species recorded were consistent with the surveys carried out by O'Donnell Environmental in 2021, save for the lesser horseshoe bat, which was not recorded in the 2024 survey. It is acknowledged in the report however that "*While Annex II lesser horseshoe bat was not detected during the surveys carried out in 2024, it was identified in the 2021 surveys. Considering this finding alongside the records reported by the NBDC, BCI and protected areas (SAC/pNHA) in the zone of influence of the scheme with this species as their qualifying interest, it is prudent to assume Lesser Horseshoe Bat will be active in the area.*
- 4.1.20. From existing records, a lesser horseshoe bat roost is located within approximately 2.2km proposed development and the lies within the core foraging range of the species (2.5km from a roost).

- 4.1.21. Lesser horseshoe bat is the most photophobic of all the Irish bats¹³. From the Vincent Wildlife Trust (VWT) 2020 report *Using Circuitscape to identify potential landscape corridors for the lesser horseshoe bat in Ireland*, County Limerick was noted as having the highest density of streetlights per m² within the range of lesser horseshoe bat in the west of Ireland, which could be acting as a barrier to the movement of this photophobic species. The retention of existing linear landscape features within at least 2.5km but preferably 5km of lesser horseshoe bat roosts with 20 bats or more is essential to counteract the documented genetic differentiation that has already occurred within the species throughout its Irish distribution¹⁴. Therefore, network of watercourses, canals, hedgerows, treelines, woodlands are key potential corridors for the species within Limerick City are vital for the conservation of LHB.
- 4.1.22. When considering how bats move through the landscape, artificial lighting at night has been shown to be particularly harmful along river corridors, near woodland edges and hedgerows¹⁵. The proposal includes for new public lighting along the south bank of the River Shannon for approximately 3km, there cumulatively with existing lighting there will be a continuous light barrier along 4.5km the river. The maintenance of existing lighting and the introduction of lighting to areas where there is currently no lighting can cause barrier effects and nightscape fragmentation.
- 4.1.23. Given the bat activity recorded on site, potential bat roosts in close proximity to the development and the sensitivity of bat species, i.e. lesser horseshoe bat, to changes in ecological corridors and artificial lighting at night, I agree with the DAU submission that sufficient information has not been provided as to the impacts on lesser horseshoe bat and a detailed and comprehensive study of year-round use of the entire riparian area, and associated habitat features is required to inform the impact assessment.

¹³ NPWS & VWT (2022) Lesser Horseshoe Bat Species Action Plan 2022- 2026. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.

¹⁴ Bat Conservation Trust (2023) Bats and artificial lighting at night. Guidance Note GN08/23. BCT, London & Institution of Lighting Professionals (ILP), Warwickshire.

¹⁵ Bat Conservation Trust (2023) Bats and artificial lighting at night. Guidance Note GN08/23. BCT, London & Institution of Lighting Professionals (ILP), Warwickshire

- 4.1.24. Therefore, I do not agree with the conclusion in the EIAR Section 6.5.3.5 that “...*the proposed greenway will result in a permanent, ‘not significant’, negative effect on bat ecology at a local scale.*”

4.2. Other Biodiveristy Considerations

- 4.2.1. With respect to proposals for bug hotels or bird boxes and wildflower, when dealing with semi natural habitats and protected sites it is more beneficial for local wildlife to retain standing/fallen deadwood, undisturbed natural vegetation, and ground nesting habitat for example. Artificial structures can provide some support they often cannot replicate the ecological complexity, structural diversity, and sustained habitat quality of natural sites. When creating wildflower meadows, it is more beneficial and sustainable to harvest seed from existing, local wildflower populations, which are adapted to the local climate and soil conditions. This will reduce the risk of introducing potentially non-native and invasive or genetically exotic strains of ‘native’ species.

5.0 Conclusion

5.1. NIS Appropriate Assessment

- 5.1.1. Following an examination, analysis and evaluation of the NIS all associated material submitted and taking into account observations I consider that there are insurmountable deficiencies in the design proposals, scientific information and mitigation proposals, therefore it is not possible to reach clear precise and definitive findings regarding the exclusion of adverse effects on the site integrity of the Lower River Shannon SAC.
- 5.1.2. Section 7 of the NIS states that the residual impact on Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0] is assessed as not significant, negative, unlikely, temporary, and direct. I do not agree with this conclusion as there are inconsistencies regarding the calculated permanent loss of the QI Annex I habitat area and the construction of bridges and the greenway within the floodplain will effectively prohibit the natural regeneration prospects of 91E0

alluvial woodland within the SAC in proximity to the proposed development which is contrary to the conservation objectives to restore this habitat within the SAC.

- 5.1.3. In addition, I have significant concerns regarding the constructability of the proposed greenway in such an ecologically sensitive environment, where there is considerable risk of pollution and disturbance during the construction stage and continued disturbance to Annex II species during the operation of the greenway. Habitat loss, disturbance and displacement of QI Annex II species, and changes in ecological functions such as a decrease in water quality and spread of invasive alien species, will result in adverse effects on site integrity of the SAC overall in view of the conservation objectives.
- 5.1.4. I conclude that there is reasonable scientific doubt that the proposed development, individually or in combination with other plans and projects, would not adversely affect the integrity of Lower River Shannon SAC (site code: 002165) in view of the site's conservation objectives and qualifying interests.

5.2. Biodiversity - Bats

- 5.2.1. Given the bat activity recorded on site, potential bat roosts in close proximity to the development and the sensitivity of bat species, i.e. lesser horseshoe bat, to changes in ecological corridors and artificial lighting at night, sufficient information has not been provided as to the impacts on lesser horseshoe bat and a detailed and comprehensive study of year-round use of the entire riparian area, and associated habitat features is required to inform the impact assessment.

I confirm that this report represents my professional planning assessment, judgement and opinion on the matter assigned to me and that no person has influenced or sought to influence, directly or indirectly, following my professional assessment and recommendation set out in my report in an improper or inappropriate way.

Paula Kearney
Senor Ecologist

14th May 2026