APPENDIX 7.1

Bat and Bird Survey Report

Éire Ecology

Éire Ecology

Environmental Consultants

Bird and Bat Report

Parkway Valley

Singland, Ballysimon, Limerick

DOCUMENT DETAILS

Client:	Kirkland Investments.
Project Title:	Parkway Valley mixed use development.
Document Title:	Bird and Bat Report
Prepared By:	John Curtin – Lead Ecologist
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EXECUTIVE SUMMARY

This updated document reports on the findings of bird and bat surveys conducted between 2025 and 2026 at the site of a proposed mixed purpose development which lies to the east of Limerick off the R445 in the townland of Singland, Co. Limerick. The site is brownfield, consisting of gravel, concrete and recolonising scrub with residential and commercial buildings to the west and wet grassland to the east. Features of note in the surrounding area include the Groody Stream found to the east which flows north into the River Shannon.

Surveys included pre-construction bat and bird surveys focusing on the site while also examining connectivity with the wider landscape.

A preliminary ecological appraisal found no bat roosting potential on site. Static detector surveys showed the site is used by feeding bats, predominantly Common, Soprano Pipistrelle and Leisler's bats with lower numbers of rarer woodland bats such as Brown Long-eared and Myotis species. Low numbers of Lesser Horseshoe bats were recorded in a May static deployment while none were recorded in an Autumn deployment.

Bird surveys were conducted in both the winter and the breeding seasons. Overall, low activity was recorded with gull species noted overfly generally not interacting with the site; Herring gull were noted resting on the ground on one occasion. Oystercatchers were recorded during a February 2025 survey. During the breeding season several passerines were recorded as probably breeding, however these were confined to scrub rather than open areas. Monthly wintering surveys were extended between October 2025 and January to 2026. The main species of note recorded during this period was Lapwing. Low numbers (13) were noted in October. 51 were noted in December landing by a pool of water adjacent to the site. Highest numbers were recorded in January were a max of 165 were recorded. The January observations show the start of migratory behaviour where the species gathers and starts moving northwards.

Mitigation and enhancement measures have been proposed which should see the site having no net negative impacts on the local bird and bat population. Measures include wildlife friendly lighting, the installation of integrated swift boxes into the walls of buildings, installation of a bat house, the use of a calling system to attract breeding swifts, the creation of a wildlife pond and large green areas with bat and bird friendly planting.

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1 INTRODUCTION

Eire Ecology was commissioned by Kirkland Investments to carry out an assessment of birds and bat usage of lands located at the Parkway Valley site located in Singland, Dublin Road, Limerick, Co. Limerick.

The report concentrates on ecological features within the development area of particular significance, primarily bird and bat species.

The report has been compiled in compliance with the European Communities Legal requirements and follows guidance outlined in the following documents:

- Guidelines on the information to be contained in Environmental Impact Assessment Reports May 2022.
- (CIEEM, Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3, 2024)

The European Habitats Directive 92/43/EEC (Article 6) indicates the need for plans and projects to be subject to Habitats Directive Assessment (also known as Appropriate Assessment) if the plan or project is not directly connected with or necessary to the management of a Natura 2000 site (which includes SACs and SPAs) but which has the potential to have implications on a site's conservation objectives. These implications can be significant effects either individually or in combination with other plans or projects.

1.1 Proposed Project

The Parkway Valley site is the former Horizon Mall brownfield site on which a mixed use commercial and leisure development was partially constructed in 2007. It was demolished in 2020, with reinforced concrete retaining walls left in situ. It is understood that much of the material from the demolition was used for backfilling and land raising purposes on the site such that the site is now predominately covered in made ground.

The Limerick Development Plan 2022 – 2028 (LDP) requires the preparation of a masterplan for the Parkway Valley to inform future development. A masterplan which provides for the orderly and comprehensive full build out of the site, will inform and support phased development applications.

The masterplan (entire site inclusive of current proposal) seeks to optimise the potential for this landmark site to deliver a sustainable form of development which contributes strongly to the townscape and placemaking of Limerick City at a local level while also contributing to the achievement of national strategic development priorities. It aims to transform the Parkway Valley site into a leading example of a sustainable employment & enterprise centre supported by a neighbouring residential village set in a parkland setting delivering a mix of tenures and population age profile. The Parkway Valley development will be an outstanding destination for leisure with distinctive and diverse public spaces, which organically merge into the Groody Valley Green Wedge.

The current LRD application relates primarily to the southern part of the overall lands as shown in Figure 1-1 and comprises the first stage of the proposed works.

Figure 1-1 Showing the indicative design for the project.

2 LEGISLATION & PLANNING POLICY

2.1.1 EU Habitats Directive

The "Habitats Directive" (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna) is the main legislative instrument for the protection and conservation of biodiversity within the European Union and lists certain habitats and species that must be protected within wildlife conservation areas, considered to be important at a European as well as at a national level. A "Special Conservation Area" or SAC is a designation under the Habitats Directive. The Habitats Directive sets out the protocol for the protection and management of SACs.

The Directive sets out key elements of the system of protection including the requirement for "Appropriate Assessment" of plans and projects. The requirements for an Appropriate Assessment are set out in the EU Habitats Directive. Articles 6(3) and 6(4) of the Directive.

2.1.2 EU Birds Directive

The "Birds Directive" (Council Directive 79/409/EEC as codified by 2009/147/EC) provides for a network of sites in all member states to protect birds at their breeding, feeding, roosting and wintering areas. This directive identifies species that are rare, in danger of extinction or vulnerable to changes in habitat and which need protection (Annex I species). Appendix I indicates Annex I bird species as listed on the Birds Directive. A "Special Protection Area" or SPA, is a designation under The Birds Directive. SACs and SPAs form a pan-European network of protected sites known as Natura 2000 sites and any plan or project that has the potential to impact upon a Natura 2000 site requires Appropriate Assessment (AA).

2.1.3 Wildlife Act 1976 – 2012

The primary domestic legislation providing for the protection of wildlife in general, and the control of some activities adversely impacting upon wildlife is the Wildlife Act of 1976, as amended. The aims of the wildlife act according to the National Parks and Wildlife Service are "... to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems, to provide for the development and protection of game resources and to regulate their exploitation, and to provide the services necessary to accomplish such aims." The Wildlife (Amendment) Act of 2000 amended the original Act to improve the effectiveness of the Act to achieve its aims.

2.1.4 Planning and Development Act 2024

The Planning and Development Act 2020 (as amended) requires that ecological assessments demonstrate clear, evidence-based evaluation of potential impacts on protected species, habitats, and ecosystem functions, in line with national policy and EU environmental law. The Act strengthens obligations for transparency, proportionality, and the use of up-to-date ecological data in decision-making. This report has been prepared to meet those statutory requirements by providing a focused appraisal of likely ecological effects and outlining mitigation measures that ensure compliance with the 2024 framework.

3 METHODOLOGY

3.1 Statement of Authority

The present report was compiled by John Curtin of Eire Ecology providing information on flora and fauna. John Curtin B.Sc. is the principal ecologist with Eire Ecology and has over 10 years of experience in ecological impact assessment.

3.2 Desk Study

The assessment was carried out in three stages, firstly through desktop assessment to determine existing records in relation to habitats and species present in the study area. This included research on the NPWS

metadata website, the National Biodiversity Data Centre (NBDC) database and a literature review of published information on flora and fauna occurring in the development areas.

3.3 Field Surveys

The second phase of the assessment involved site visits to establish the existing environment in the footprint of the proposed development with particular reference to birds and bats. The site visits and surveys were undertaken across the overall masterplan lands. The potential to host bat roosts was examined at the time of a walkover survey. A photographic record was made of the main features of interest. A static bat detector survey was conducted in May and September 2025. A roost assessment survey was also conducted of trees within the site in February 2025. Breeding and wintering bird surveys were conducted from February 2025 to January 2026 inclusive. The final part of the assessment involves an evaluation of the proposed development area and determination of the potential impacts on the fauna of the area. This part of the assessment forms the basis for Impact Assessment and is based on the following guidelines and publications:

- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DEHLG, December 2009, Rev 2010);
- Assessment of plans and projects significantly affecting Natura 2000 sites (EC, 2002);
- Bat Mitigation Guidelines for Ireland V2 (National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, 2022).
- BirdWatch Ireland and the National Parks and Wildlife Service of the Department of the Environment, Heritage and Local Government. Countryside Bird Survey: Counter Manual. (2012)
- British Trust for Ornithology. Bird Atlas 2007-11, Field Methods.
- Colhoun, K., and Cummins, S. (2013). Birds of Conservation Concern in Ireland 2014–2019. Irish Birds 9:523—544
- Collins 2023 Bat Surveys for Professional Eccologists: Good Practice Guidelines (4th edition). London: BCT.
- Crowe, O (2005) Ireland's wetlands and their waterbirds: Status and Distribution. BirdWatch Ireland, Newcastle, Co Wicklow
- EPA Advice Notes on for Preparing Environmental Impact Statements Draft September 2015.
- EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports 2022
- Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC (EC, 2007);
- Guidelines for Planning Authorities & An Bord Pleanala on carrying out Environmental Impact Assessments (March 2013)
- Managing Natura 2000 Sites (EC, 2000);
- Natura Scheme for evaluating ecological sites (Nairn & Fossitt, 2004)
- Natural England Guidance for bird surveys in relation to development https://www.gov.uk/guidance/wild-birds-surveys-and-mitigationfor-development-projects#surve
- Natural England Guidance for bird surveys in relation to onshore windfarms https://www.gov.uk/guidance/wild-birds-surveys-and monitoring-for-onshore-wind-farms
- NRA (2009) 'Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes'
- Scottish Natural Heritage (2017) Recommended bird survey methods to inform impact assessment of onshore wind farms, Version 2, SNH, Perth

- Wetland Bird Survey (WeBS): Numbers and Trends

The location of the proposed development in the townland of Singland, Ballysimon, Co. Limerick is presented in Figure 3-1 below.

Figure 3-1 Showing the indicative site location at Singland, Limerick

4 EXISTING ENVIRONMENT

4.1 DESIGNATED CONSERVATION AREAS

The nearest European sites to the proposed development are the Lower River Shannon SAC (Site Code: 002165) c. 705m to the North (linear distance at the closest point) and the River Shannon and River Fergus Estuaries SPA (Site Code: 004077) located 2.97km to the west (linear distance).

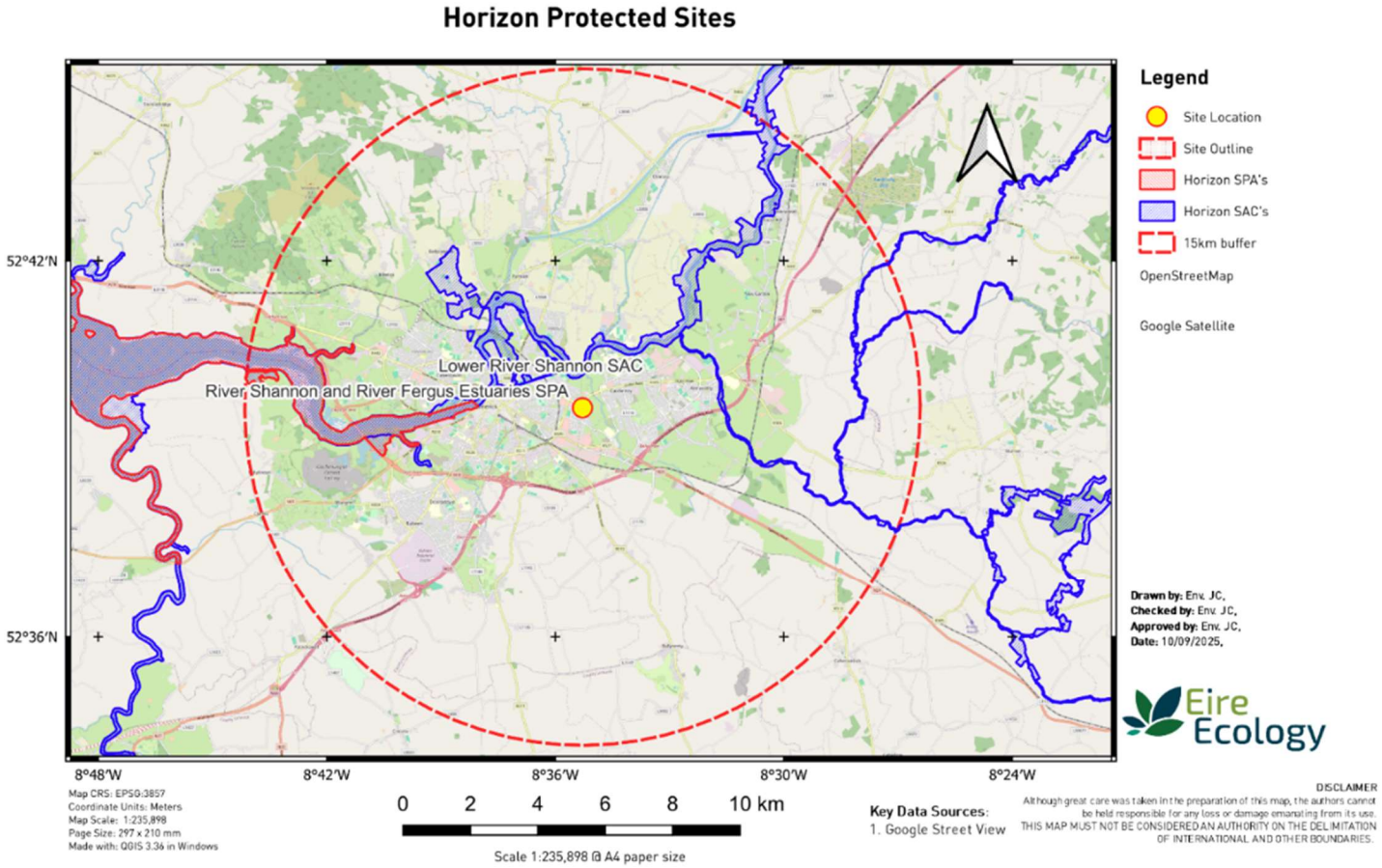


Figure 4-1: EU Designated Sites in the locality

Table 4-1: Designated site found in the locality

Site	Site Code	Distance	Has the designated site a high ornithological / bat value?	Has the site ornithological / bat connectivity to the subject site?
EU Designated Sites				
Lower River Shannon SAC	002165	0.705km	The site synopsis refers to the bird population of the Shannon and Fergus estuaries and the large number of wintering waterfowl that utilise it. The synopsis also mentions breeding birds such as kingfisher, peregrine and terns. There are no mentions of bats in the site synopsis and conservation objective documents.	The SAC is located to the north of the site. The River Groody located to the east of the site provides some ecological connectivity to this SAC.
River Shannon and River Fergus Estuaries SPA	004077	2.97km	This SPA is the most important coastal wetland site in the country and regularly supports in excess of 50,000 wintering waterfowl designated for 21 bird species. Much of these species are designated during the winter period however also supports a nationally important breeding population of Cormorant.	While there is connectivity to this site (via the River Groody and the Shannon), large amounts of anthropogenic interference in Limerick city reduces the influence on the site.
Nationally Designated Sites				
Fergus Estuary & Inner Shannon, North Shore pNHA	002048	2.6km	Yes. This pNHA overlays parts of the Lower River Shannon SAC with a somewhat expanded range. While there is a lack of documentation on this site numerous wintering waterbirds will utilise the site.	The pNHA lies on the north-western edge of Limerick city with 2.6km of predominantly urban lands between acting as at least a partial barrier. It is still possible some wintering waterbirds who utilise this site could fly east along the Shannon and enter the site via the Groody river.
Inner Shannon Estuary - South Shore pNHA	000435	3.7km	Yes. This pNHA overlays parts of the Lower River Shannon SAC with a somewhat expanded range. While there is a lack of documentation on this site numerous wintering waterbirds will utilise the site.	The pNHA lies on the western edge of Limerick city with 3.7km of predominantly urban lands between acting as at least a partial barrier. It is still possible some wintering waterbirds who utilise this site could fly east along the Shannon and enter the site via the Groody river.
Knockalisheen Marsh pNHA	002001	3.8km	Yes. It consists of unimproved pasture sloping down to a wetland area which drains into the Shannon River. The site is of high ecological value in that it is a good example of unimproved pasture and wetland with good botanical diversity notable for the presence of several species of orchid, including Marsh Helleborine (*Epipactis palustris*). The ornithological importance of the site has not been established but it is presumed to be a feeding and roosting area for birds of the Shannon	The pNHA lies on the north-western edge of Limerick city with 3.8km of predominantly urban lands between acting as at least a partial barrier. It is still possible some wintering waterbirds who utilise this site could fly east along the Shannon and enter the site via the Groody river.
Cloonlara House pNHA	000028	5.4km	Yes. This site is designated due to the presence of a Leisler's bat roost where over 100 bats have been recorded during the summer months.	(BCT, 2016) states the CSZ[1] for Leisler's bats is 3km. In Ireland (Shiel, 2008) has conducted studies showing this species can range further afield (up to 13.4km) thus extending the CSZ to 4km is reasonable. The subject site, at 5.4km sits outside the CSZ for this roost.

[1] A core sustenance zone (CSZ), as applied to bats, refers to the area surrounding a communal bat roost within which habitat availability and quality will have a significant influence on the resilience and conservation status of the colony using the roost.

Site	Site Code	Distance	Has the designated site a high ornithological / bat value?	Has the site ornithological / bat connectivity to the subject site?
Castleconnell (Domestic Dwelling, Occupied) pNHA	000433	5.8km	Yes, information on this site is limited other than stating it is a Daubenton's roost.	BCT states this species has a CSV of 2km and primarily selects sites with treelines either side of a substantial watercourse. The subject site sits well outside this zone with little relevant connectivity.
Loughmore Common Turlough pNHA	000438	6.8km	Yes. Turlough that supports Lapwing, golden plover and snipe in winter.	During winter, foraging lapwing and golden plover in Ireland forage along estuaries during low tide however also regularly utilise tillage, grasslands with a short sward and less often bare till (Gillings, 1999). These species do not utilise bare gravel given the lack of food sources. It is highly unlikely the subject site provides suitable habitat for these species. Snipe do regularly roost in bare gravel habitats, typically spread out in low numbers.
Woodcock Hill Bog NHA	002402	9.0km	Bog habitat which may contain associated species such as hen harrier, red grouse etc.	The site does not have connectivity given the distances and lack of similar habitats.

4.1.1.1 Designated species recorded in the surrounding area

The NBDC database was consulted for details on designated records held for the site and the surroundings. The database was consulted on the 17/09/2025 for details on historical records from the site and the surrounding 2km square; R65D. Results are outlined in **Table 4-2**.

A single bird / bat record has been recorded from within the subject site; Louis Peacock, an ornithologist has recorded 45 lapwing within the suite on the 05th of January 2024. All other records are vague records from 1km to 10km in resolution.

Table 4-2**:** Designated birds and bats recorded in the R65D 2km grid

Species name	*Latin Name*	Date of last record	Designation
Barn Owl	*Tyto alba*	31/12/2011	Wildlife Acts || Birds of Conservation Concern - Red List
Black-headed Gull	*Chroicocephalus ridibundus*	31/07/1991	Wildlife Acts || Birds of Conservation Concern - Red List
Common Gull	*Larus canus*	31/07/1991	Wildlife Acts || Birds of Conservation Concern - Amber List
Common Pipistrelle	*Pipistrellus pipistrellus sensu stricto*	23/05/2012	EU Habitats Directive - Annex IV || Wildlife Acts
Coot	*Fulica atra*	31/07/1991	EU Birds Directive - Annex II & III
Cormorant	*Phalacrocorax carbo*	14/03/2023	Wildlife Acts || Birds of Conservation Concern - Amber List
Curlew	*Numenius arquata*	03/03/2020	Wildlife Acts || EU Birds Directive Annex II || Birds of Conservation Concern - Red List
Daubenton's Bat	*Myotis daubentonii*	23/05/2012	EU Habitats Directive - Annex IV || Wildlife Acts
Goldcrest	*Regulus regulus*	06/04/2020	Wildlife Acts || Birds of Conservation Concern - Amber List
Greenfinch	*Chloris chloris*	31/12/2011	Wildlife Acts || Birds of Conservation Concern - Amber List
Grey Wagtail	*Motacilla cinerea*	31/07/1991	Wildlife Acts || Birds of Conservation Concern - Red List
Greylag Goose	*Anser anser*	03/03/2020	Invasive Species: Regulation S.I. 477/2011 & 374/2024 (Ireland) || Wildlife Acts || EU Birds Directive - Annex II & Annex III || Birds of Conservation Concern - Amber List
House Martin	*Delichon urbicum*	31/12/2011	Wildlife Acts || Birds of Conservation Concern - Amber List
House Sparrow	*Passer domesticus*	22/04/2020	Wildlife Acts || Birds of Conservation Concern - Amber List
Kestrel	*Falco tinnunculus*	17/12/2012	Wildlife Acts || Birds of Conservation Concern - Amber List
Kingfisher	*Alcedo atthis*	04/06/2021	Wildlife Acts || EU Birds Directive - Annex I || Birds of Conservation Concern - Amber List
Lapwing	*Vanellus vanellus*	05/01/2024	Wildlife Acts || EU Birds Directive Annex II || Birds of Conservation Concern - Red List

Species name	*Latin Name*	Date of last record	Designation
Leisler's Bat	*Nyctalus leisleri*	10/05/2019	EU Habitats Directive - Annex IV || Wildlife Acts
Linnet	*Linaria cannabina*	31/07/1991	Wildlife Acts || Birds of Conservation Concern - Amber List
Mallard	*Anas platyrhynchos*	04/03/2020	EU Birds Directive - Annex II & III
Meadow Pipit	*Anthus pratensis*	31/07/1991	Wildlife Acts || Birds of Conservation Concern - Red List
Mistle Thrush	*Turdus viscivorus*	14/03/2023	Wildlife Acts || Birds of Conservation Concern - Amber List
Mute Swan	*Cygnus olor*	03/03/2020	Wildlife Acts || Birds of Conservation Concern - Amber List
Pheasant	*Phasianus colchicus*	31/12/2011	EU Birds Directive - Annex II & III
Robin	*Erithacus rubecula*	14/03/2023	Wildlife Acts || Birds of Conservation Concern - Amber List
Rock Dove	*Columba livia*	20/06/2016	EU Birds Directive - Annex II
Skylark	*Alauda arvensis*	31/07/1991	Wildlife Acts || Birds of Conservation Concern - Amber List
Snipe	*Gallinago gallinago*	04/03/2020	Wildlife Acts || EU Birds Directive Annex II & III || Birds of Conservation Concern - Amber List
Soprano Pipistrelle	*Pipistrellus pygmaeus*	23/05/2012	EU Habitats Directive - Annex IV || Wildlife Acts
Sparrowhawk	*Accipiter nisus*	24/08/2013	Wildlife Acts || Birds of Conservation Concern - Amber List
Starling	*Sturnus vulgaris*	26/07/2019	Wildlife Acts || Birds of Conservation Concern - Amber List
Stock Dove	*Columba oenas*	31/07/1991	Wildlife Acts || Birds of Conservation Concern - Amber List
Swallow	*Hirundo rustica*	10/05/2020	Wildlife Acts || Birds of Conservation Concern - Amber List
Swift	*Apus apus*	08/06/2023	Wildlife Acts || Birds of Conservation Concern - Amber List
Wigeon	*Mareca penelope*	03/03/2020	Wildlife Acts || EU Birds Directive Annex II & III || Birds of Conservation Concern - Red List
Woodpigeon	*Columba palumbus*	03/03/2020	EU Birds Directive - Annex II & III

4.1.1.2 Pl Ref: 2560113 LRD Built Student Accommodation

A planning application was submitted on the opposite bank of the Groody river for 5 no. separate blocks, ranging in height from 5 - 8 storeys, with a total of 1,400 no. student bedspaces. Planning was submitted in February with approval granted in November 2025. A preliminary survey was carried out in January 2024 examining for potential roosts only. The EcIA does refer to bat friendly lighting in the design brief but specific light colour is not referenced. An FI letter requested a bat activity survey conducted at the appropriate time of year. The updated EcIA states *"A dusk and dawn bat survey was completed on the 23rd and 24th of April 2025, respectively. Five species of bats were recorded on and adjacent to the site. The species present were Common pipistrelle Pipistrellus pipistrellus, Soprano Pipistrelle Pipistrellus pygmaeus, Leisler's Bat (Nyctalus leisleri), Daubenton's Myotis bat (Myotis daubentonii) and Brown Long-eared Bat (Plecotus auritus). Two roost locations were*

identified. The first is the White willow salix alba where Leisler's Bat Nyctalus leisleri are roosting and the second location are the trees at the end of the treeline adjacent to the Groody River where Common pipistrelle (Pipistrellus pipistrellus) and Soprano Pipistrelle (Pipistrellus pygmaeus) are roosting."

During April surveys no ground nesting or waterbirds were recorded with all species noted being common to the locality.

5 Field Survey

5.1 Survey Personal

Surveys were conducted by John Curtin B.Sc, and Karolina Illien M.Sc, both ecologists experienced in ornithology and bat surveys. Shane O'Neill also conducted wintering bird surveys. Shane is an experienced ornithologist with over 15 years of experience.

5.2 Baseline surveys

Table 5-1 provides a summary of surveys conducted within and surrounding the site.

Table 5-1 Summary of survey dates

Date	Survey type	Start Time	End Time	Details	Surveyor
10/02/2025	Vantage point (VP)	09:00	12:00	Oystercatchers (max 15) and Herring gull (max 4) recorded within site.	KI
	Wintering transect	12:05	13:25	Snipe (1) and Oystercatcher (4) and Heron (1) recorded during transect.	
	Hinterland	13:30	16:00	Seven locations suitable for wintering birds checked surrounding the site. No species of note found.	
	Ground Level Tree Assessment			Trees and structures within the site were assessed for their potential to host a bat roost.	
12/03/2025	VP 1	09:00	12:00	The only species of note recorded was Herring gull (max of 4).	JC
	Wintering transect	12:00	13:00	No species of interest were found.	
	VP 2	13:00	15:00	The only species of note recorded was Common gull (1) and Herring gulls (max of 5)	
	Hinterland	15:05	16:15	Seven locations suitable for wintering birds checked surrounding the site. No species of note found.	
	Ground Level Tree Assessment			All remaining trees and structures within the site were assessed for their potential to host a bat roost. No potential roost features were found.	
06/05/2025	Breeding bird transect			No evidence of breeding birds was found from the main bare ground areas of the site. The site has substantial immature trees regrowth. Probably breeding wren, blackbird and were noted along the southern and western borders, outside the main areas of works.	JC
	Setup of two static bat detectors			Static 1 was setup towards the north of the site, attached to a fence adjacent to the R445 road. Static 2 was set on the southern end of the site between a path and bordering fields with scrub surrounding. Both statics were placed in the highest bat potential landscape when compared to the centre of the site which lacks landscape features thus activity recorded will be higher than found in the main cleared areas of the site.	
20/05/2025	Collection of static bat detectors				

Date	Survey type	Start Time	End Time	Details	Surveyor
	Breeding transect			Again, no evidence of breeding birds was noted from the main bare ground areas of the site. Closer to the pylons to the east, blackbird, wren, dunnock where heard. Towards the north east in scrub areas blue tits were observed probably breeding.	KI
29/08/2025	Setup of two static bat detectors			Statics were reset in the same locations	JC
04/09/2025	Collection of static bat detectors				
29/10/2025	VP	09:10	12:10	For the most part the site itself was quiet as it is Built land with SW1 throughout. 1 Snipe was recorded leaving this area believed to be flushed by a horse. Just West of site there were 13 Lapwing roosting and foraging on another patch of Built land. The rest of the birds recorded were recorded flying over the site or close to the site but not on the site.	SON
	Transect	13:00	14:30	Snipe were the main bird of interest recorded on the site during the transect. These were recorded in a flooded area of the site on the east side. A total of 7 horses have been kept in this field also. The rest of the area holds some small birds that would be expected to be found in scrub or in hedgerows	SON
	Hinterland	14:30	16:30	The area surrounding the site is predominantly built land with some green areas throughout. These areas are well kept and would be suitable for foraging Gulls, but none were recorded using these green areas during this hinterland survey. Buzzard was recorded in the fields to the E/SE of the site. These GS4's are unsuitable rank grasslands with little value to wintering waders. It is possible that there are patches that maybe suitable but not in large numbers.	SON
11/10/2025	VP	09:00	12:00	Similar to the last visit there was not much recorded on the site itself but the built area to the W did have Lapwing, Common Gull and Herring Gull using the flooded area for preening. These birds for the most part looked to be coming from the river to the N.	SON
	Transect	12:30	14:00	Again the flooded field on the eastern edge of the site held the most birds of interest, primarily Snipe. The rest of the area was quiet but held a larger amount of small birds than the last visit.	SON
	Hinterland	14:00	16:00	The Buzzard was recorded in the GS4 again this time but no other birds of interest were recorded during the Hinterland survey. The same route was taken as was taken last visit.	SON
07/12/2025	VP	09:30	12:30	There was nothing of interest recorded on the site itself as on previous visits. The built area to the west had a flock of 26 Black-headed gull, 2 Herring Gull and 3 Lapwing recorded on it. The Black-headed Gull and Herring Gull were coming and going from the flooded area to the northend of the site. The Lapwing were roosting on the site and were there throughout the VP.	SON
	Transect	12:35	14:00	Again snipe were bird of interest recorded on the site. As before they were recorded in the flooded section of the site and none in the built section.	SON
	Hinterland	14:00	16:00	Nothing of interest was recorded during this hinterland survey. There was an increase of Horses in all the GS4 to the south of the site which may improve the habitat for waders as the cover is thick, long and not suitable for waders before now,	SON

Date	Survey type	Start Time	End Time	Details	Surveyor
23/01/2026	VP	10:00	13:00	The site itself was again quiet on this visit the wet area to the west was being used by Lapwing, Black-headed Gull, Common Gull, Lesser Black-backed gull, Herring gull, also recorded were Cormorant and Sparrowhawk flying over the site. The largest flock recorded was Lapwing. They were recorded circling over the site with the highest numbers of 165. This flock landed just west of the site and was still present when surveys finished.	SON
	Transect	13:00	14:15	Snipe were recorded again in the wet area of the site numbers were fewer than last time. The area that they were in was again the flooded section of the site to the east with none in the built section.	SON
	Hinterland	14:20	16:30	Sparrowhawk was only bird of interest recorded during this hinterland survey. The green areas to the S of the site, the GS4's, had the trees cut and hedges removed since the last survey. It is possible this could have caused disturbance to any birds in this area.	SON

5.3 Limitations of Survey

All of the surveys were carried out in acceptable weather conditions although weather conditions were less conducive to bat activity during the August to September static survey with higher wind and rain than the May surveys. This likely reduced activity levels somewhat.

5.4 Bats

There are nine resident bat species in Ireland accounting for nearly a third of Irelands mammal populations. Bats are protected by EU Habitats Directive as well as the 1976 Wildlife Act and 2000 Amendment (BCI, 2010). Lesser Horseshoe bats have an additional protection under the EU Habitats Directive. In order to comply with legislation that bats are not killed or injured, it is essential to ensure that measures to reduce risk to bats are undertaken or that the presence of bats can be ruled out.

5.4.1 Assessment of Potential Roost Habitats

No buildings are present on site. The retaining walls do not have any bat roost potential. A detailed inspection of trees was undertaken. The aim was to compile information on actual and potential roosting locations.

5.4.1.1 Potential tree roosts

A Ground Level Tree Assessment (GLTA) was conducted on the 10th of February and the 12th of March 2025. Trees that were likely to contain Potential Roost Features (PRF's), or those that have been noted to contain PRF's were recorded within the site following guidelines set out in (Collins, Bat Surveys for Professional Eccologists: Good Practice Guidelines (4th edition), 2023) with additional reference to the Bat Tree Habitat Key (Andrews, 2016) and BCT Guidelines ed 2 and 3 (Collins, 2016) & (Hundt., 2012).

All trees were assessed from ground level using binoculars.

Examples of crevice features include:

- Natural holes;
- Cracks/splits in major limbs;
- Loose bark; and
- Hollows/cavities.

Each tree was assessed with categorised according to table 5-2 below. It should be noted that for the majority of trees surveyed from ground, it will remain unknown if a feature is either a PRF-I or PRF-M.

Table 5-2: (Collins, 2023)

Suitability	Description	
None	Either no PRFs in the tree or highly unlikely to be any	
FAR	Further assessment required to establish if PRFs are present in the tree	
PRF	A tree with at least one PRF present	
	PRF-I	PRF is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats
	PRF-M	PRF is suitable for multiple bats and may therefore be used as a maternity colony

5.4.2 Static bat detector surveys

Two Song Meter Mini full spectrum bat recorders were deployed within suitable habitat for bats from the 06th to the 20th of May 2025, and again from the 29th of August to the 4th of September 2025, within the bat active season.

Each bat pass does not correlate to an individual bat but is representative of bat activity levels. Some species such as the pipistrelles will continuously fly around a habitat and therefore it is likely that a series of bat passes within a similar time frame is one individual bat. On the other hand, Leisler's bats tend to travel through an area quickly and therefore an individual sequence or bat pass is more likely to be indicative of individual bats.

Per SNH (2019) guidance, static units (Song Meter SM4BAT and SM-Mini) were programmed to commence half an hour before sunset and finish half an hour after sunrise to ensure that bat species that emerge early in the evening and return to roosts late are recorded.

The data was analysed with Wildlife Acoustic's Kaleidoscope Pro; version 5.6.8). This software identifies many of the calls made by Irish bats. All calls were manually verified. Results below show some Myotis calls were recorded. Distinguishing between Myotis species recordings is difficult (unless distinctive social calls are recorded thus several calls are recorded to genus level only). These could be either Whiskered, Daubenton's or Natterer's bat. Similarly, several Pipistrelle calls were recorded with a peak frequency of around 40kHz. These calls are lower than expected for Common Pipistrelle but higher than typical for Nathusius's.

5.4.3 GLTA Results

In total, 27 trees and clumps of trees were assessed. All were categorised as having no roosting potential. (see figure 5-1 below and table 0-6 in the appendices).

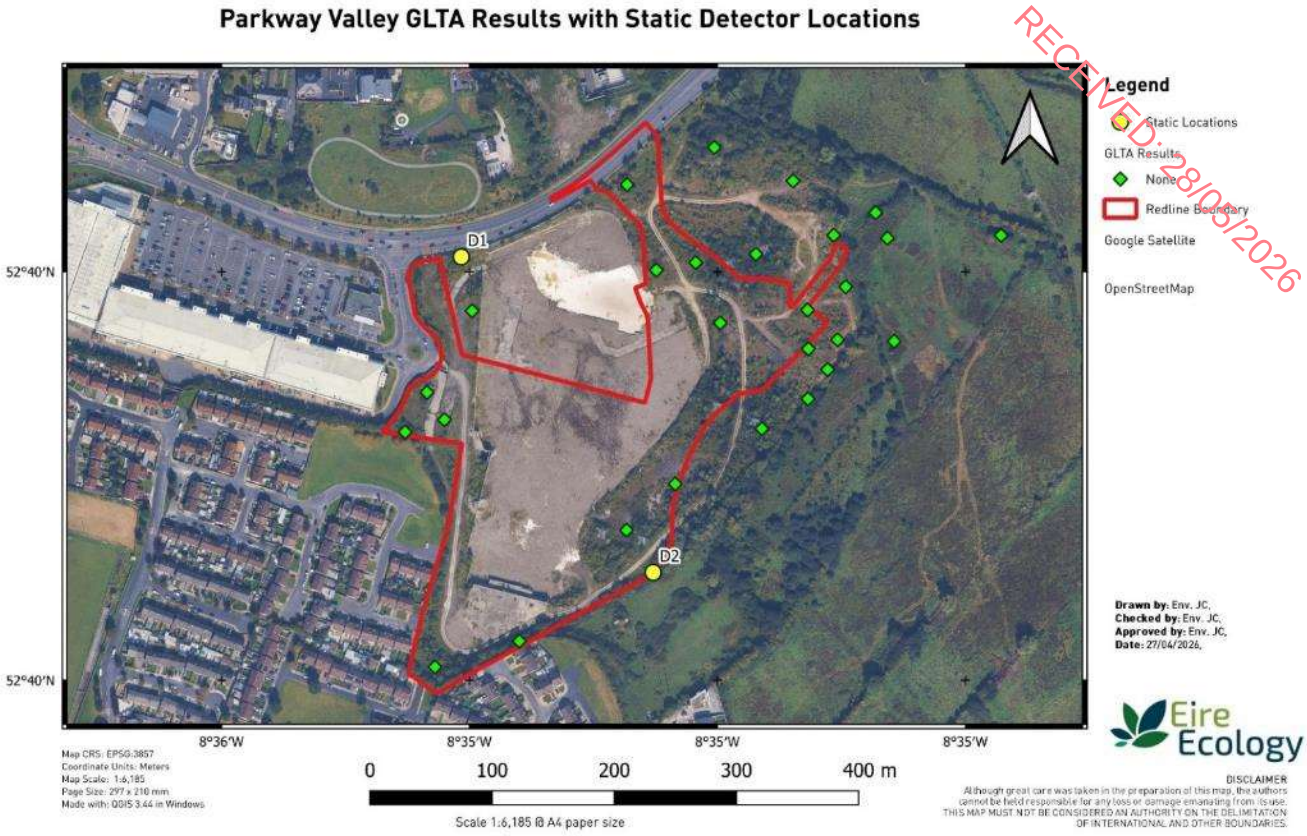


Figure 5-1: Location of static bat detectors & results from preliminary roost assessment.

5.4.4 Static bat survey 2025

Table 5-3 below provides a summary of data with full data tables provided in Appendix A. Results show number of registrations and Bat passes per hour (Bp/Hr) and divides results per species and detector. An overall average of 77.8 Bp/Hr was recorded from the Spring period, reducing to 8.2 Bp/Hr in Autumn.

Both detectors recorded Lesser Horseshoe bat during the spring period, one registration at each detector. No Lesser Horseshoe Bats were recorded during the Autumn Survey Period.

Activity across the site was high in Spring, with the highest areas of bat activity being by the R445, along the northern boundary of the site. The most common species recorded was Common Pipistrelle with 13,888 registrations (81%) followed by Leisler's Bat (9.7%) and Common Pipistrelle with 859 (4.2%). Unidentified Myotis species comprised <1% of recordings each with other species recording at similarly low levels.

It should be noted that a single bat continuously circling a small stand of trees will produce numerous recordings, thus the number of registrations cannot quantify abundance, rather activity.

Table 5-3: Summary of results from static detector surveys

Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Unidentified Myotis	Total	Minutes recorded	BpHr
07th to the 20th May 2025											
1	871	8,527	413	112	327	2	1	0	10,253	6,167	99.8
2	595	4,623	304	8	208	2	1	4	5,745	6,167	55.9
Total	1,466	13,150	717	120	535	4	2	4	15,998	12,334	**77.8**
BpHr	7.1	38.9	2.1	0.4	1.6	0.012	0.006	0.012			
29th August to the 04th of September 2025											
1	0	64	13	0	0	0	0	0	77	3,972	1.2
2	194	674	129	0	5	1	0	1	1,004	3,972	15.2
Total	194	738	142	0	5	1	0	1	1,081	7,944	**8.2**
BpHr	1.5	5.6	1.1	0.0	0.04	0.08	0	0.08			
Combined data for all seasons											
1	871	8,591	426	112	327	2	1	0	10,330	10,139	61.1
2	789	5,297	433	8	213	3	1	5	6,749	10,139	39.9
Total	1,660	13,888	859	120	540	5	2	5	17,079	20,278	50.5
BpHr	4.9	41.1	2.5	0.4	1.6	0.015	0.006	0.015			
% of total	9.7	81.3	5.0	0.7	3.2	0.03	0.01	0.03			

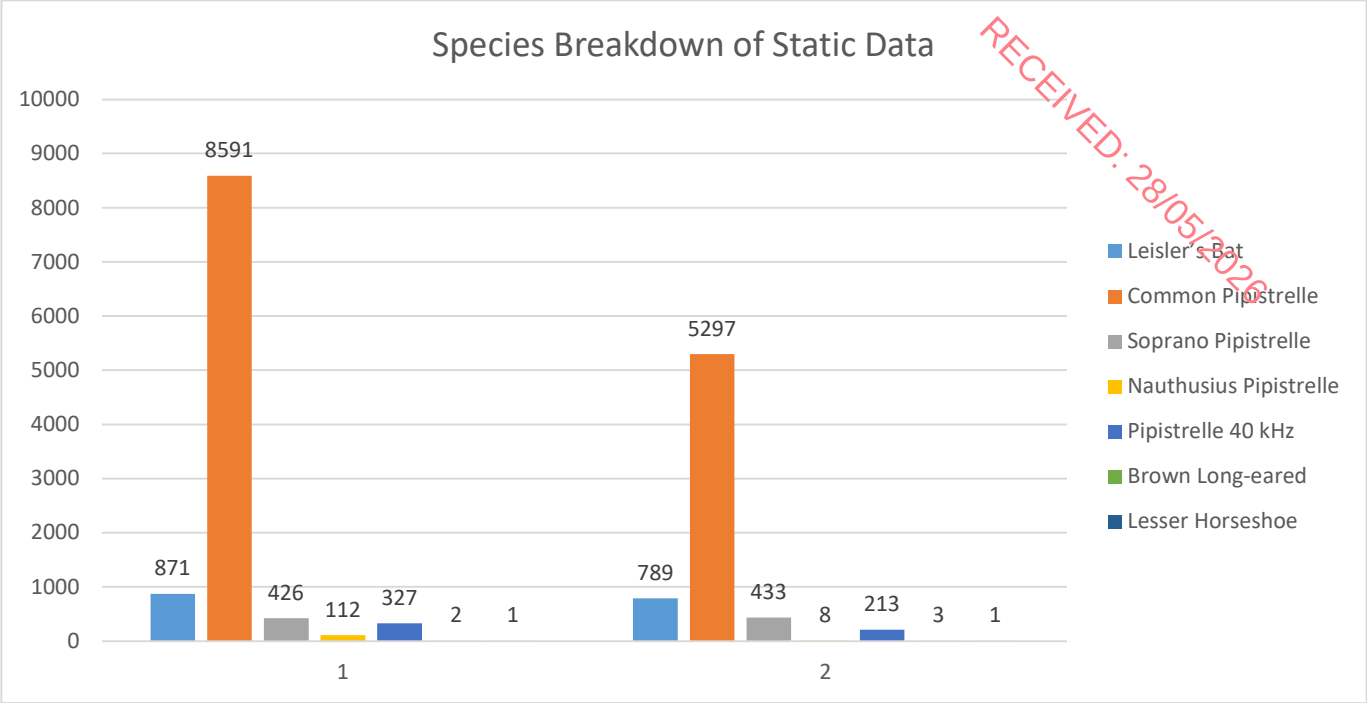


Figure 5-2: Species breakdown per detector.

Highest-level activity was on the 14th of May, with detector 1 recording 895 individual calls and 384 recorded on detector 2. In Spring, detector 1 had the highest activity, showing a considerable amount of Common pipistrelle activity (83% of calls). Detector 2, located by the southern boundary of the site shows a lower activity in Spring, despite having better connectivity and minimal lighting features. Autumn surveys showed a considerable drop in activity for both detectors, with Detector 1 reducing from 99.8 Bp/Hr down to 1.2 Bp/Hr. Weather conditions likely played a role with Mays survey occurring over a period of dry, unseasonably warm weather with little winds, while windspeed and rain were occurring more frequently in the second period.

5.4.4.1 Time Analysis indicating proximity to a roost.

While the site itself was found not to contain any bat roosting potential, analysis was conducted on the recording times of bat registration for both survey periods in order to determine the likelihood of nearby roosts in the surrounding locality. The time of first emergence for each species can give an insight into the distance of a roost from a static detector.

Activity analysis is conducted at each detector and is separated by species. Each species has a typical median emergence time when they exit their roosts after sunset, this is represented by the grey boxes on the graphs below. Considerable activity at or before typical emergence is indicative of a roost close to the detector (red highlight).

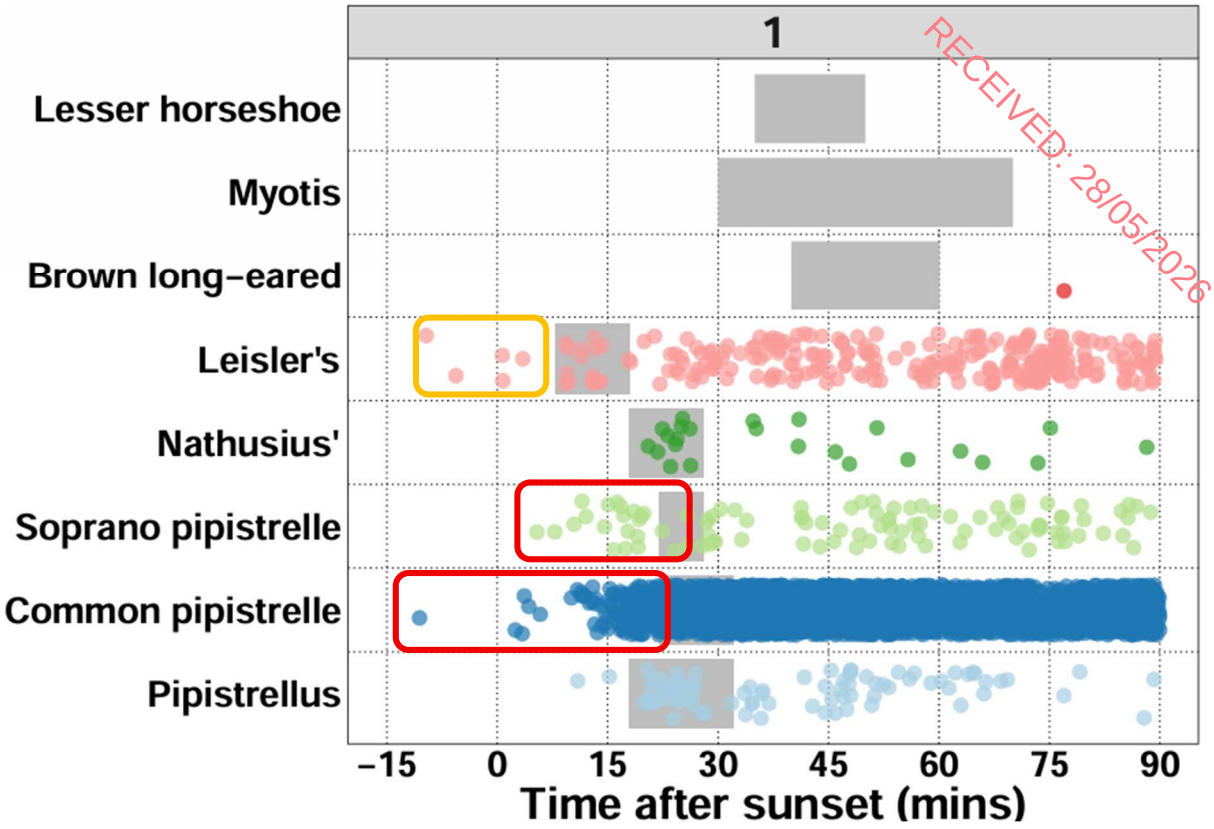


Figure 5-3: Detector 1 - Time analysis, up to 90 minutes after sunset.

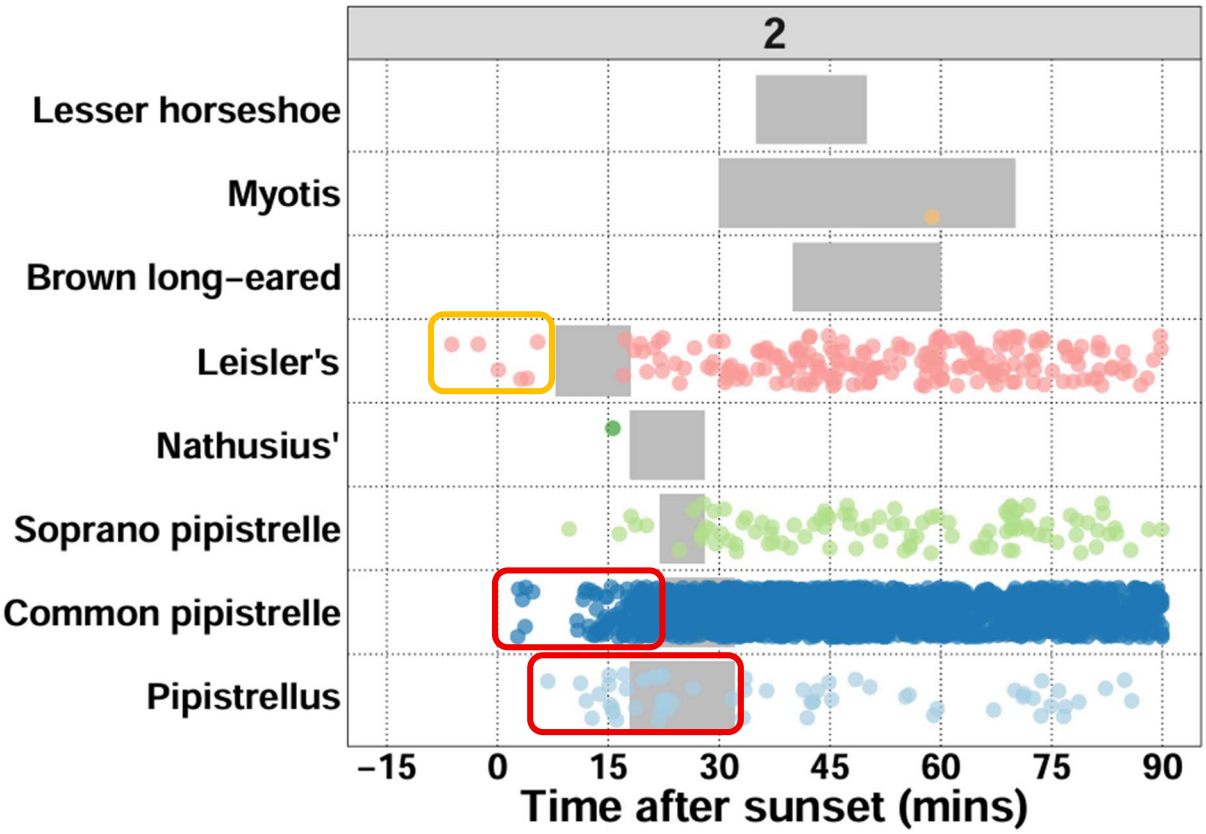


Figure 5-4: Time analysis, up to 90 minutes after sunset

5.4.4.1.1 Pipistrelle Species

Time analysis reveals that Common Pipistrelle, Soprano Pipistrelle and Unidentified Pipistrelle are often on site before their typical emergence times. Detector 1 has slightly earlier registrations, indicating bats move south across the site after their emergence.

5.4.4.1.2 Leisler's Bat

Leisler's had a moderate level of activity during the survey, with a handful of instances of early emergence times. Leisler's Bats tend to travel some distance from their roosts before hunting and this is reflected in earlier emergence times of this species. In August, Leisler's bat had a higher proportion of the bat activity, but like all species had a considerable drop in registrations. No Leisler's Bats were recorded at detector 1 in Autumn and only 194 recordings at detector 2. Given this, it is likely that a satellite roost was present near the site in Spring, while the Autumn data does not support the idea of a roost nearby.

5.4.4.1.3 Lesser Horseshoe Bat

Lesser Horseshoe bat recordings did not occur close to sunset thus suggesting these records are not from bats roosting close to the site. At D1 a recording was made on the 08th of May at 22:52 while at D2 the recording was dated 17th of May at 00:56. While surveys demonstrate the site has very low usage by this species it confirms a corridor for this species does exist in the city, with Lesser Horseshoe likely utilising the Groody River system as a navigational aid.

5.4.4.2 Bat Discussion

Six species of bat were positively identified during the various bat surveys: Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), nathusius Pipistrelle (*Pipistrellus nathusii*), Brown Long-eared bat (*Plecotus auritus*), Leisler's bat (*Nyctalus leisleri*) and Lesser Horseshoe bat (*Rhinolophus hipposideros*). In addition, five unidentified Myotis bat species were recorded, these being either Whiskered, Natterers or Daubenton's bats. Finally, several Pipistrelle calls recorded from the static detectors had a peak frequency of 40kHz thus could be either Common or Nathusius Pipistrelle.

Surveys reveal the site is unsuitable for roosting bats but is used for feeding purposes. Detectors were placed in areas of highest bat potential; thus, these results should be interpreted as a conservative result. Predominantly, Pipistrelle species and Leisler's were most frequently recorded thus mitigation and enhancement will reflect this. The presence of Lesser Horseshoe bats, albeit at very low numbers confirms the wider area is usable by this species and a corridor probably exists along the Groody River. While the site itself is of relatively low value for the species it is important the site does not impact the potential north-south corridor by creating excessive light spill outside the site.

5.5 Birds

All species of birds are protected under the Wildlife Act 1976/ Wildlife Amendment Act 2000. Every autumn and spring several billions of birds undergo migratory journeys between their breeding and non-breeding grounds. These migratory movements link ecosystems and biodiversity on a global scale and their protection require

international efforts. The impact of direct anthropogenic changes, including light pollution that reroutes migrants and collisions with manmade structures cause fatalities (Nussbaumer, 2019). In order to ascertain if the proposed site is used as a wintering or breeding site for protected and vulnerable birds, dedicated breeding and wintering bird surveys were conducted within and surrounding the site.

Six days of Vantage point (VP) surveys alongside wintering transects were conducted on the site during the winter season. In addition, to better understand the relationship between the site and the surrounding areas, hinterland point counts were conducted during the wintering periods. Target species for the surveys included all migratory birds such as swans and geese given the close proximity to an estuary and grassland as these species graze on grass. In addition, birds of prey, ducks, plovers, lapwings, sandpipers, gulls and terns. For the purposes of the survey raptors were also considered to be target species. In line with I-WeBS methodology, Cormorant, Shag, Little Egret, Grey Heron, and Kingfisher were also included (Lewis L. J., 2017).

Table 5-4: Elements of the following guidelines were used to decide survey methods

Type of survey	Reference/ Source
Vantage point survey	Gilbert, G., Gibbons, D.W. & Evans, J. (1998) Bird Monitoring Methods - a Manual of Techniques for Key UK Species. RSPB: Sandy.
VP survey is designed to quantify the level of flight activity and its distribution over the survey area. Its primary purpose is to provide input data for the Collision Risk Model (Band et al. 2007), which predicts mortalities from collision with turbines. Data can also be used to provide an overview of bird usage of the site, which may help to inform an overview of potential disturbance and displacement.	
Type of survey	Reference/ Source
WeBS	Wild birds: surveys and monitoring for onshore wind farms - GOV.UK (www.gov.uk)
Important movements of birds can take place at any time of year but usually you should survey from: • March to July for breeding birds • November to March for wintering birds • March and October for passage birds	
Type of survey	Reference/ Source
Wintering and migratory waterfowl	Scottish Natural Heritage - Recommended bird survey methods to inform impact assessment of onshore wind farms
Disturbance or displacement to wintering and migrant waterfowl can occur on both roost sites and feeding areas, so surveys for both of these should be considered. In addition, searching the survey area for signs of wildfowl presence (counts of droppings) can help determine if feeding birds are using the site by night or on days previous to survey visits. The spring migration, period is defined as March – mid-May but this will vary depending on species and location. The autumn migration period is defined as September – November but again varies with species.	

Vantage point surveys were conducted at 52.659654, -8.588860.

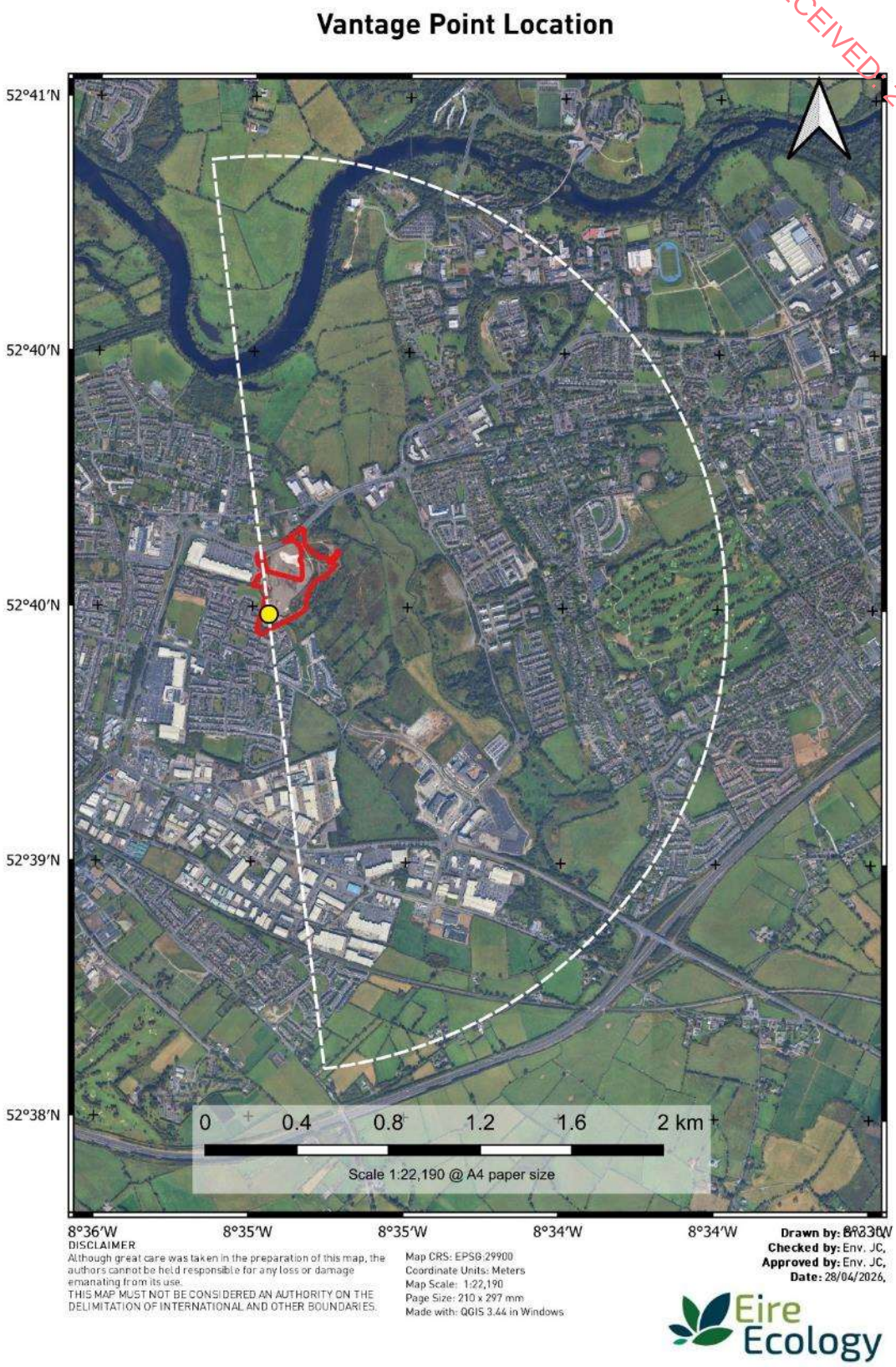


Figure 5-5: VP location

5.5.1.1 Birds within the site of the proposed development

Herring gull, Common gull, Great Black-backed Gull, Lesser Black-backed Gull, Black-headed Gull, Mute Swan, Mallard, Snipe, Lapwing, Kestrel and Oystercatcher were the only species of note recorded within the site. Of these the majority of gull sightings were of overflying birds not interacting with the site.

5.5.1.2 Vantage Point Results

Seven, three-hour vantage point surveys were conducted from February 2025 to January 2026. Table 5-5 summaries results from the VP surveys showing number of times species were observed and highest numbers recorded. Only five species of interest were noted interacting with the site; Oystercatcher, Herring Gull, Mew Gull, Kestrel, Snipe and Northern Lapwing. No Nationally important flock numbers were recorded. Lapwing were not present in February 2025 but were seen 10 times in wintering surveys between October 2025 and January 2026, with a max flock size of 165. Lapwing presence onsite is consistent with historical data, with a record of this species from within the site noted on the NBDC, dated in January. This species is a Conservation objective of the River Shannon and River Fergus Estuaries SPA which is 2.5km away and Loughmore Common Turlough pNHA (6.8km) notes Lapwing, Snipe and Golden Plover are noted as being present on site during Winter months.

Table 5-5: Species list of target species recorded from VP

Species	Highest numbers observed	Number of times observed	Observations of birds Interacting with site	BOCCI4[1]	1% National Population	Nationally Important numbers?	C.O. of adjacent SPA's?
Black-headed Gull	19	20	0	Amber	Unknown	-	Yes
Great Black-backed Gull	3	4	0	Green	Unknown	-	No
Great Cormorant	1	1	0	Amber	110	No	Yes
Herring Gull	3	6	1	Amber	Unknown	-	No
Kestrel	1	1	1	Red	Unknown	-	No
Lesser Black-backed Gull	1	1	0	Amber	Unknown	-	No
Mallard	2	1	0	Amber	280	No	Yes
Mew Gull	3	4	2	Amber	Unknown	-	No
Mute Swan	1	1	0	Amber	90	No	Yes
Northern Lapwing	165	10	6	Red	850	No	Yes
Oystercatcher	15	1	1	Red	610	No	No
Snipe	2	2	2	Red	Unknown	-	No
Sparrowhawk	1	1	0	Green	Unknown	-	No

Table 5-6: Species list of non-target species recorded from VP.

Species	Sum of Est no. individuals	BOCCI4	Species	Sum of Est no. individuals	BOCCI4
Blackbird	9	Green	Linnet	25	Amber
Blue Tit	5	Green	Long-tailed Tit	9	Green
Bullfinch	3	Green	Magpie	15	Green
Chaffinch	11	Green	Meadow Pipit	2	Red
Chiffchaff	3	Green	Mistle Thrush	2	Green

Species	Sum of Est no. individuals	BOCCI4	Species	Sum of Est no. individuals	BOCCI4
Coal Tit	1	Green	Pied Wagtail	7	Green
Collared Dove	1	Green	Raven	3	Green
Dunnock	4	Green	Reed Bunting	28	Green
Goldfinch	59	Green	Robin	12	Green
Great Tit	7	Green	Rook	125	Green
Greenfinch	1	Amber	Song Thrush	3	Green
Hooded Crow	16	Green	Starling	100	Amber
House Sparrow	6	Amber	Winter Wren	9	Green
Jackdaw	21	Green	Wood Pigeon	44	Green

5.5.1.3 Wintering Transect Survey

A wintering transect was conducted on the 10th of February 2025 within the site. During the wintering transect 4 oyster catchers, a single snipe and a single heron were recorded within the site alongside song thrush, hooded crow and rook. The 12th of March transect recorded wren, robin, magpie and rook.

Wintering Surveys Resumed in October 2025. Transects on the 29th of October recorded no species making use of the Phase 1 site. Bird activity was concentrated in the lands to the East of the site, with 16 species being noted outside the site, including Buzzard, Kestrel, Snipe and Winter Wren.

In November, Wren and Snipe were found onsite during transects. Wren was found to the Northeast of the site, in scrubby areas bordering more suitable lands further East. Snipe was flushed from the built land near the Eastern boundary of the site.

In December, 7 species were found within the site during transect surveys, they were; Blackbird Chaffinch, Robin, Reed Bunting, Snipe, Song Thrush and Winter Wren. Snipe was seen in the largest numbers, with a flock of 22 roosting in the center of the site on built land. Three observations of Lapwing were made within the boundary of the Phase 2 site outline. Two of these observations noted Lapwing roosting onsite and the other noted a flock circling the site overhead.

The final transect was conducted in January 2026 and species observed onsite were Blackbird, Chaffinch, Dunnock, Great tit, Long-tailed Tit, Meadow Pipit, Raven and Wintering Wren. All bird sightings on site were made at the Eastern boundary of the Phase 1 site, adjacent to more favorable habitat to the east.

5.5.1.4 Breeding Transect Survey

Breeding transect surveys were conducted on the 6th and 20th of May 2025. No definite evidence of breeding was found however blackbird, blue tit, house sparrow (probably breeding adjacent to site), and wren are probably breeding in or close to the site (see table 5-7 and figure 5-6 below).

Table 5-7: Breeding transect summary

Species	Sum of Est no. individuals	BOCCI4	Breeding evidence	Behavior
Blackbird	5	Green	Probably	Pair
Blackcap	2	Green	Possibly	Singing male
Blue Tit	2	Green	Probably	Pair
Chaffinch	1	Green	Possibly	Suitable habitat
Chiffchaff	1	Green	Possibly	Singing male
Dunnock	1	Green	Possibly	Singing male
Herring Gull	1	Green	No	Flying
Hooded Crow	1	Green	No	Flying
House Sparrow	3	Amber	Probably	Pair
Jackdaw	1	Green	No	Flying
Long-tailed Tit	1	Green	Possibly	Suitable habitat
Reed Bunting	1	Green	Possibly	Suitable habitat
Robin	1	Green	Possibly	Singing male
Willow Warbler	2	Amber	Possibly	Singing male
Winter Wren	5	Green	Probably	Territory
Wood Pigeon	1	Green	No	Flying

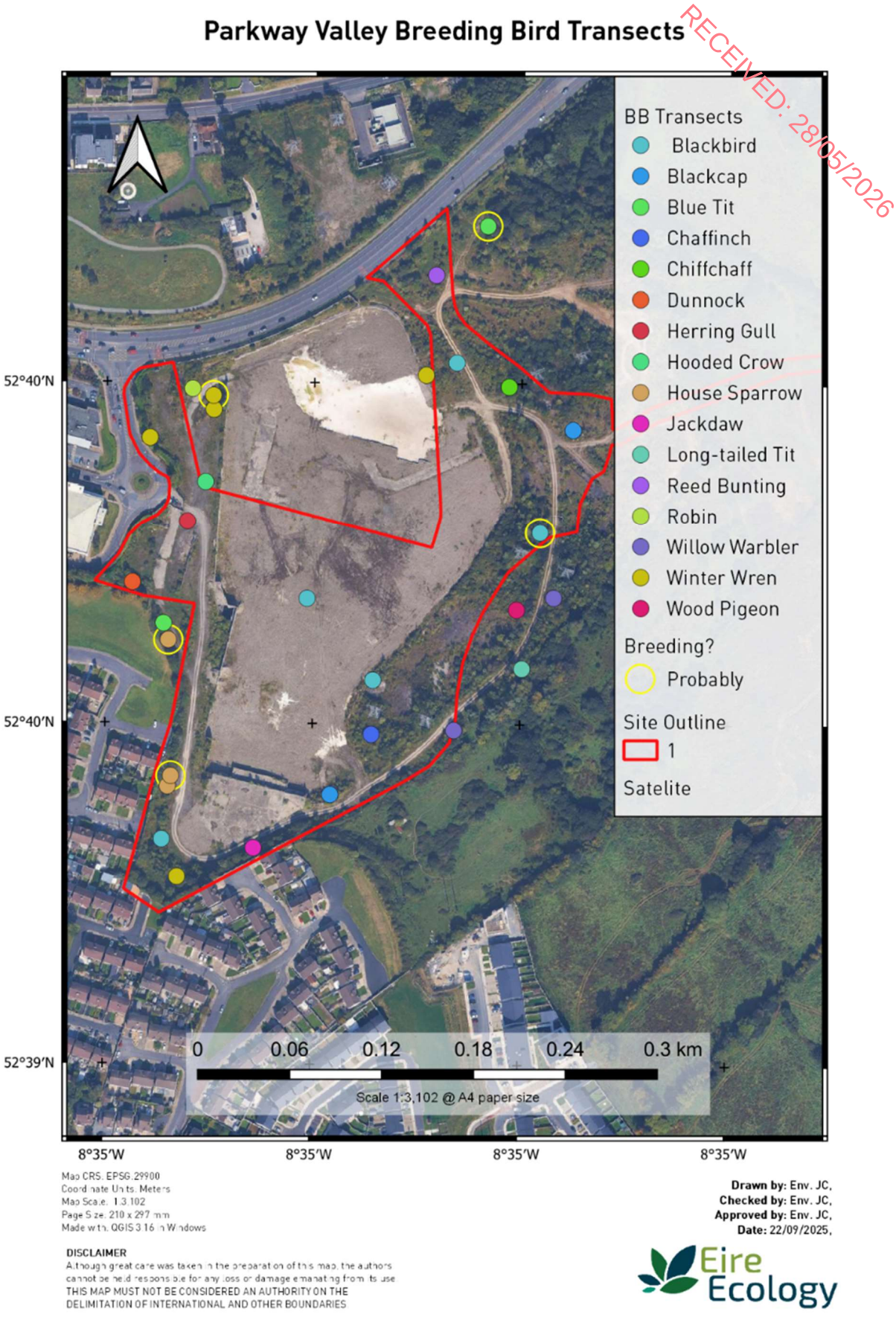


Figure 5-6: Breeding bird transect results.

5.5.1.5 Hinterland Results

During the wintering surveys the fields located to the north and east were checked for flocks of wintering birds. Surveys were conducted using binoculars and spotting scope. Hinterland Survey in February focused on lands to the north of the site and activity was very low, with no species of interest found to be making use of these lands. A single observation of Snipe was made to the South-east of the site.

Wintering Surveys resumed in October where focus was placed on the lands immediately surrounding the site where habitats were more favourable and in housing estates adjacent to the site. Species observed during Hinterland survey included; Buzzard, Grey Wagtail, Kestrel, Mew Gull and Snipe. The majority of these were noted using lands to the east of the site boundary, with Buzzard, Common Mew gull and Wigeon noted on lands south of the site and a single observation of Mew Gull over housing estates to the West of site. During the November survey; Black-headed Gull, Buzzard, Herring Gull and Snipe were noted over southern fields. Buzzard was observed during this survey flying along the river to the Southeast. December Hinterland Survey noted Great-Crested Grebe and Snipe. The final Hinterland survey was conducted in January 2026. Species noted during this survey include; Kestrel, Meadow Pipit, Snipe, and Sparrowhawk. A male Sparrowhawk hunting along hedgerow and Kestrel hunting over open habitat were both noted using lands to the South of the site.

Overall, no large flocks of species of interest were noted in the surrounding wet grassland meadows. This is likely due to management and height of vegetation. Short cropped grass is favoured by wintering waterbirds such as lapwing and golden plover while geese and swans favour improved grassland fields.

Table 5-8: Winter Hinterland Survey Summary

Species	Max Obs.	No. of Obs.	Species	Max Obs.	No. of Obs.
Black-headed Gull	1	1	Meadow Pipit	2	1
Buzzard	2	1	Mew Gull	7	5
Great Crested Grebe	1	1	Snipe	13	4
Grey Wagtail	1	1	Sparrowhawk	1	1
Herring Gull	1	1	Treecreeper	1	1
Kestrel	2	1	Wigeon	4	4

5.6 Lapwing

Lapwing was the primary species of interest noted in Wintering surveys at the Parkway Valley Proposed Development Site. Lapwing was observed 10 times during VP surveys between October 2025 and January 2026. The largest flock observed was made up of 165 individuals was noted in January 2026.

This species was most noted perched on bare, built land south of ponding water **located outside the boundary of the current planning proposal**. The ponded area is screened from the road by a large fence effectively isolating the site from road traffic. Figure 5-7 shows all records. Red circles represent perched lapwing with flightlines colour coded by month.

While this is not a Nationally important flock (850), it can be considered of regional importance. It should be noted regionally important numbers were recorded only once and are likely to represent small flocks gathering in preparation to move north. Lapwing was not found to be present on site in February 2025 despite January 2026 showing highest levels of activity. This shows the current site is of highest value at mid-winter.

5.6.1 Association with designated sites

Lapwing are a conservation objective of the River Shannon and River Fergus Estuaries SPA (004077) located 2.97km to the NW (linear distance) and have been noted using the Loughmore Common Turlough pNHA located 6.8km SW of the site.

5.6.1.1 River Shannon and River Fergus Estuaries SPA (004077)

The SPA supporting documents shows the highest dot densities occur west of the city along upper estuary margins, particularly:

- Ringmoylan / Shannon Airport Lagoon fringes
- Bunratty / Fergus Estuary margins

Birds are shown mainly as **"**Roosting/Other**"**, indicating use of:

- Saltmarsh edges
- Flooded grassland immediately adjacent to the SPA boundary

Flocks observed within the site were noted flying in and out from the north-east rather than the west / north west. This Lapwing flock recorded east of Limerick City is unlikely to represent an ex-situ component of the River Shannon and River Fergus Estuaries SPA population. The SPA Supporting Document and associated distribution mapping indicate that SPA-linked Lapwing are concentrated west of the city, associated with estuarine margins and adjacent supratidal grasslands. The observed inland flock is therefore best interpreted as a discrete, non-SPA-dependent wintering group.

5.6.1.2 Loughmore Common Turlough pNHA (000438)

Loughmore Common Turlough, located 6.8km SW from the site is noted as having populations of Lapwing present. Given the Lapwing on site were seen entering from the North and East, and that Limerick City is located between the site and pNHA, it is highly unlikely that birds present on site represent an ex-situ population of Lapwing associated with the pNHA.

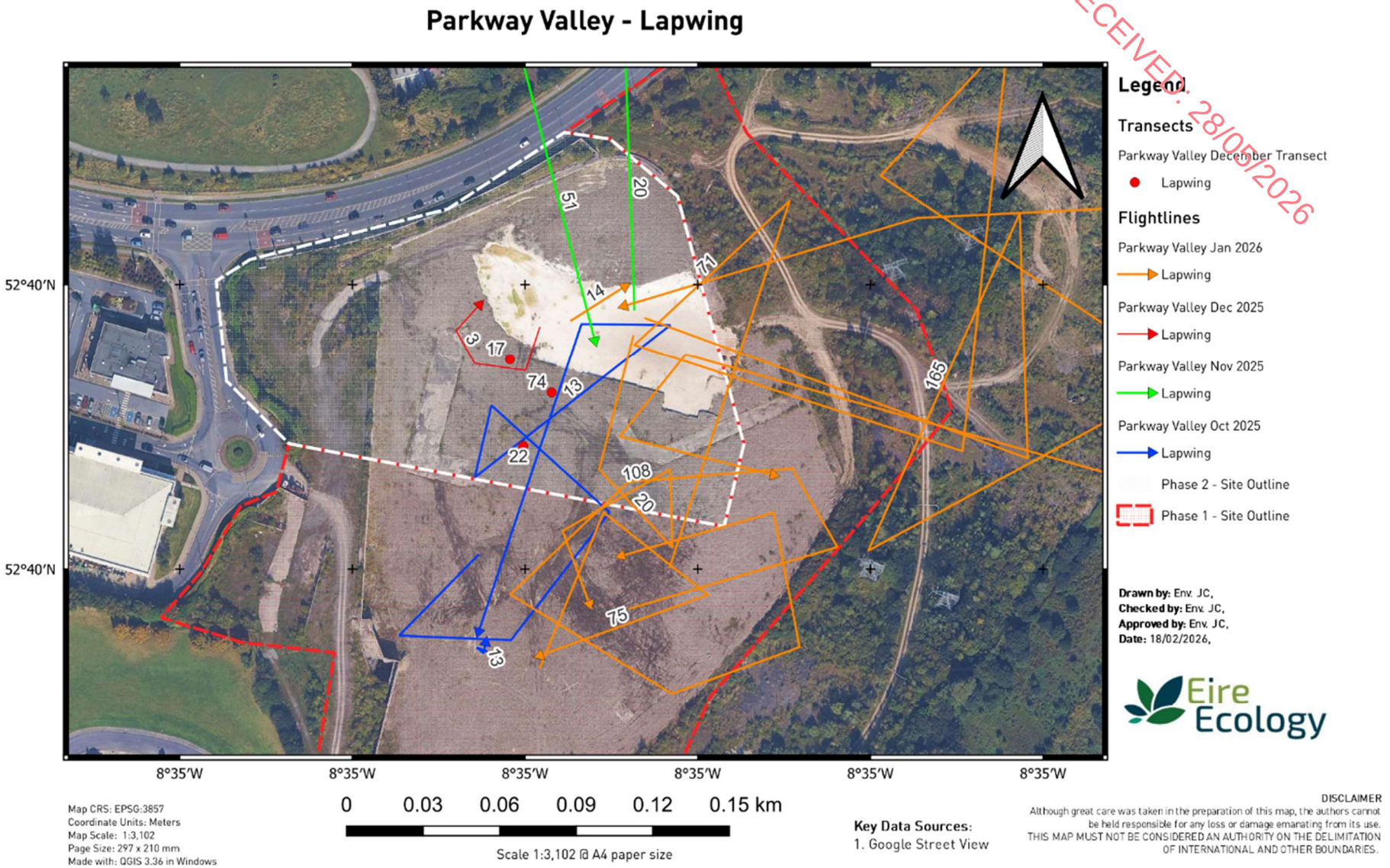


Figure 5-7: Lapwing Activity on Site; Vantage Point and Transect Surveys

5.6.1.3 Significance of Birds & Bats

The significance of potential ecological effects on birds was determined using Percival (2003) together with professional judgement. The effects were further described with reference to (EPA, 2022) and (CIEEM, 2024) criteria for characterizing ecological impacts.

Table 5-9: Criteria for assessing impacts based on CIEEM (2024) and (EPA, 2022)

Parameter	Description	
Quality	Positive effect: A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).	
	Neutral effect: No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.	
	Negative effect: A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).	
Extent	The area over which an impact occurs	
Duration	• Momentary – effects lasting from seconds to minutes • Brief – effects lasting less than a day • Temporary – effects lasting less than a year • Short-term – effects lasting 1 to 7 years • Medium term – effects lasting 7 to 15 years • Long term – effects lasting 15 to 60 years • Permanent – effects lasting over 60 years • Reversible	
Reversibility	Irreversible impacts: permanent changes from which recovery is not possible within a reasonable time scale or for which there is no reasonable chance of action being taken to reverse it. Reversible impact: temporary changes in which spontaneous recovery is possible or for which effective mitigation (avoidance/cancellation/reduction of effect) or compensation (offset/recompense/offer benefit) is possible.	
Frequency and Timing	Frequency –How often the effect will occur. (once, rarely, occasionally, frequently, constantly –or hourly, daily, weekly, monthly, annually) Timing –the timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons e.g. bird nesting season.	
Describing the significance of effects (EPA, 2022)	Imperceptible	An effect capable of measurement but without significant consequences.
	Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
	Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
	Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
	Profound	An effect which obliterates sensitive characteristics

The combination of desk study and the field study has determined that the site in question is not an integral component for and Conservation objective for surround SAC's or SPAs.

The site is of low ecological value for birds baring Lapwing which the site is of county importance (while acknowledging that in February numbers increase to regional importance. It should be noted, the area of value

to the species lie outside the current site outline. The site is also of value to Oystercatcher where low numbers were observed in the winter of 2025.

The site is of local higher value for all bat species. Although Lesser Horseshoe bats were recorded, activity from this species within the site is low and given the distance to SAC's designated for this species, no significant impacts on these SAC's are expected.

5.6.1.3.1 Significance values for birds & bats

Table 5-11 evaluates the importance of species of interest found within the site. A determination of sensitivity for bird species is based on table 5-10.

While Black-headed Gull, Cormorant, Great Black-backed Gull, Lesser Black-backed Gull, Mallard, Mute Swan and Sparrowhawk were recorded overflying, they did not interact with the site, thus will not be impacted by the development.

Table 5-10 Determination of Sensitivity in study area

Sensitivity	Determining factor
Very High	Species that form the cited interest of SPAs and other statutorily protected nature conservation areas. Cited means mentioned in the citation text for the site as a species for which the site is designated.
High	Species that contribute to the integrity of an SPA but which are not cited as species for which the site is designated. Ecologically sensitive species including the following : divers, common scoter, hen harrier, golden eagle, red-necked phalarope, roseate tern and chough. Species present in nationally important numbers (>1% Irish population)
Medium	Species on Annex 1 of the EC Birds Directive Species present in regionally important numbers (>1% regional (county) population) Other species on BirdWatch Ireland's red list of Birds of Conservation Concern
Low	Any other species of conservation interest, including species on BirdWatch Ireland's amber list of Birds of Conservation Concern not covered above.

Table 5-11: Evaluation of importance for species of interest found interacting with site

Species	Species information	Designation (BOCCI4)	Sensitivity	Value of Hinterland	Value of subject site
Birds					
Common Mew	It is estimated; Ireland's breeding population of Common gull is 3896 (Cummins, 2019) with wintering numbers boosted by arrivals from Scotland and continental Europe. While long term trends (1988-2018) suggest a reduction of 25% the short-term trend (1998-2018) for this species is more favourable with an increase of 82% and an expansion of range. There are no breeding records from this species near Limerick city from 2015-18 (Cummins 2019). Two sightings of a mew gull were recorded on the same day in March 2025 (potentially the same bird). In Jan 2026 two were noted landing by the ponded area (just outside the current site.)Impacts on the species by the development are likely negligible.	Amber	Low	Local	Local
Herring gull	It is estimated; Ireland's breeding population of Herring gull is 60,540 (Cummins, 2019). While long term trends (1988-2018) suggest a reduction of 33%, the short-term trend (1998-2018) for this species is more favourable with an increase of 87% and an expansion of range. The National Urban Gull Survey 2021 (Keogh, 2021) shows that gulls, in particular Herring and Lesser black backed gulls have learnt to breed in urban areas. The report states 2 apparently occupied nests were recorded from herring gull in Limerick during the survey period. Herring gulls were observed overflying the site on twelve occasions with max observed numbers of 5. Three of these observations were of birds flying in and landing by the pond. Herring gulls are not designated as a Conservation Objective of the River Shannon & River Fergus SPA. The subject site is not suitable for breeding Herring gull and gulls in Urban environments are habituated to anthropologic activity.	Amber	Low	Local	Local
Heron	Green listed in BoCC 2020-2026. Observed on one occasion in winter. No signs during breeding season, with unsuitable breeding habitat. This species is not a CO of the of the River Shannon & River Fergus SPA.	Green	Low	Local	Local
Kestrel	A single sighting was recorded near the site in October 2025 where a bird perched on a wall before flying off. Also seen in Hinterland areas. No impacts are expected.	Red	Medium	Local	Local
Lapwing	BoCCI 4:Red List. ROI wintering population: peak of 42,514 (I-WeBS 2016/17). The species is designated as a CO of the River Shannon & River Fergus SPA with a peak record of 10873 (CO supporting document). Section 6.6 assess the significance of the flock and concludes these are not an ex-situ population associated with the Shannon estuary SPA. A recording was noted on the NBDC in January 2025. Follow-up wintering surveys from October 2025 to January 2026 noted 10 observations. The site does not provide any feeding habitat for this species while the area they were observed perching on lies outside the current site outline.	Red	Medium. Red listed and reaching regional numbers.	Immediate hinterland grasslands are not of high value as the sward is too high. The pond and bare ground found just outside the site is of regional importance as a resting spot.	Local higher value. The species was not found to utilise the actual site other than circling over.

Species	Species information	Designation (BOCCI4)	Sensitivity	Value of Hinterland	Value of subject site
Oystercatcher	It is estimated; Ireland's wintering population of Oystercatcher is 61,000. The max observed on the site was 15 well below the nationally important 610 figure. *Oystercatcher are not designated as a Conservation Objective of the River Shannon & River Fergus SPA.* The subject site is not suitable for breeding Oystercatcher, with no breeding season sightings. The site has a value as wintering rest site but has limited feeding potential. This species can regularly found in urban parks with a short sward.	Red	Medium (red listed)	Local high with good habitats along the Shannon, increasing to the west where the estuary can be found	Local higher value
Snipe	Severe declines have been recorded in Snipe breeding and wintering populations in Ireland, resulting in its move to the Red-List in the most recent BoCCI assessment (Gilbert, Stanbury and Lewis, 2021). According to the last IUCN Red List assessment in 2016, the Snipe is a species of 'Least Concern' on a global scale. However, a decreasing global population trend was noted. This ground nesting species finds suitable breeding habitat where there is grassy tussocks within or adjacent to boggy areas. Bogs and wet grassland can be suitable habitat for this species. The habitat on site is suitable for wintering birds with three observations recorded. Breeding surveys do not indicate breeding snipe on this site.	Red	Medium (red listed)	Habitats to the east bordering the Groody River appear more suitable for wintering and potentially breeding snipe.	Local low value
		Bats			
Leisler's Bat	Designated as an Annex IV species of the Habitats Directive and protected under the Wildlife Act with a conservation status of favourable. Roche 2024 shows the population trend for this species as +117.5% over the past 12 years. This species was not found roosting on the site but does use the site for feeding purposes.	Annex IV & Wildlife act	Low; this species is adapted to hunt at heights and is one of the most frequently recorded bats within urban areas. Can fly above the heights of streetlights.	Local higher value	Local higher value
Common Pipistrelle	Designated as an Annex IV species of the Habitats Directive and protected under the Wildlife Act with a conservation status of favourable. Roche 2024 shows the population trend for this species as +117.9% over the past 12 years. The site does not contain roosting potential for this species however is recorded feeding onsite. Overall Common Pipistrelle represented 81% of all activity within the site. Early nightly registrations suggest a roost relatively close to the site.			Local higher value	Local higher value
Soprano Pipistrelle	Designated as an Annex IV species of the Habitats Directive and protected under the Wildlife Act with a conservation status of favourable. Roche 2024 shows the population trend for this species as +221% over the past 12 years. The site had relatively low activity from this species in comparison top Common Pipistrelle with an average BpHr of 2.5 compared to 41. Detector 1 to the north had earlier recordings than the southern suggesting a roost located to the north			Local higher value	Local higher value
Nathusius Pipistrelle	Designated as an Annex IV species of the Habitats Directive and protected under the Wildlife Act. Trends for this species are unknown with low confidence but a potential population increase from 23.5% over the past 17 years to +0.41% over the last 12 (Roche 2024). The NPWS distribution and range data does not suggest the species is located in Limerick. Static recordings from the site showed 120 definite recordings from this species during all surveys while 540 recordings were either Common or Nathusius Pipistrelle.		Low; this species is adapted to hunt at heights and can fly above the heights of streetlights. This species can be found to cohabit roosts of Common and Soprano Pipistrelle.	Local higher value	Local higher value
Brown Long-eared	Designated as an Annex IV species of the Habitats Directive and protected under the Wildlife Act. The site had very low Myotis activity with only 5 recordings		While these are sensitive species, the site was not found to be of high value site for them.	Local higher value	Local value

Species	Species information	Designation (BOCCI4)	Sensitivity	Value of Hinterland	Value of subject site
Myotis species	All three species are designated as an Annex IV species of the Habitats Directive and protected under the Wildlife Act. The site had very low Myotis activity with only 5 recordings.		While this is a sensitive species the site was not found to be of high value site for this species.	Local higher value	Local value
Lesser Horseshoe	Designated as an Annex II & IV species of the Habitats Directive and protected under the Wildlife Act. The closest designated sites for this species are Danes Hole SAC, 15.99km to the NW in Clare and Curragchase SAC, 19.5km to the SW. The site sits within the species range and distribution and lies adjacent to a potential corridor for the species between the Clare and Limerick ranges via the Shannon and Groody rivers. Numbers recorded within the site are very low (BpHr of 0.006) however efforts will be needed to ensure light spill from the development will not impact eastern fields where a corridor should be maintained for this species.	Annex II, IV & Wildlife act	High. This species typically requires landscape features for navigation such as hedgerows and edge habitat while typically feeding in woodland. They winter roost in underground structures such as caves and cellars while require a void for entering summer roosts. It typically flies at 2m or lower thus excessive lighting can create a barrier to roosts or commuting routes.	County value	County value

6 ASSESSMENT OF IMPACTS

Determination of impacts is derived with guidance from (EPA, 2022) and (CIEEM, 2024). Table 6-1 provides definitions for magnitude of effect. This data alongside the previously assigned significance value is inputed into Table 6-2 significance matrix to provide a final significance impact of the development per species deemed to have potential to be impacted. Given the lack of interaction and / or low number of observations impacts on Myotis bat species, Brown Long-eared bats, Snipe, Herron and Common gull can be discounted.

Table 6-1: Determination of Magnitude of Effects.

Magnitude	Description
Very High	Total loss or very major alteration to key elements/ features of the baseline conditions such that the post development character/ composition/ attributes will be fundamentally changed and may be lost from the site altogether. Guide: < 20% of population / habitat remains
High	Major loss or major alteration to key elements/ features of the baseline (pre-development) conditions such that post development character/ composition/ attributes will be fundamentally changed. Guide: 20-80% of population/ habitat lost
Medium	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of baseline will be partially changed. Guide: 5-20% of population/ habitat lost
Low	Minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible but underlying character/composition/attributes of baseline condition will be similar to pre-development circumstances/patterns. Guide: 1-5% of population/ habitat lost
Negligible	Very slight change from baseline condition. Change barely distinguishable, approximating to the "no change" situation. Guide: < 1% population/ habitat lost

Table 6-2: Significance matrix

Significance		Sensitivity			
		Very high	High	Medium	Low
Magnitude	Very High	Very high	Very high	High	Medium
	High	Very high	Very high	Medium	Low
	Medium	Very high	High	Low	Very Low
	Low	Medium	Low	Low	Very Low
	Negligible	Low	Very Low	Very Low	Very Low

Table 6-3 Impacts on species of interest

Species	Potential Impacts		Duration and Magnitude of potential impact	Frequency and reversibility	Magnitude and Significance of effect
Herring gull	Direct Habitat Loss	Based on baseline data the proposed development will have a negligible impact on the local herring gull population. While wintering herring gull were recorded resting once, the post construction habitats will remain as useable. The site is currently not a suitable breeding or feeding site. The creation of a wildlife pond could create good suitable alternative habitat for this species while green short cropped areas can be utilised by this species. Tall structures as proposed could also provide breeding habitat.	Long-term negligible level negative impact	Occurs once, irreversible	The magnitude of the impact is assessed as Very Low. Low sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
	Displacement and barrier effect	Based on baseline surveys, the proposed development is not expected to result in any meaningful displacement of Herring Gull. Activity levels were very low and limited to occasional resting, indicating that the site does not form part of any regular commuting route, feeding territory, or loafing area for the species. As such, the loss or alteration of habitats within the footprint will not displace birds from any functionally important resource. Given the absence of significant flight activity across the site, the proposed structures are also unlikely to create a barrier to movement. Herring Gull is a highly mobile species capable of readily adjusting flight paths around built form, and no protected foraging or roosting areas occur in the surrounding landscape that could be severed or isolated by the development. Consequently, any barrier effect is assessed as negligible.	Temporary and of low to negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of impact is assessed as Very Low. Low sensitivity species + Low Impact = Low effect significance. No likely significant effects at a local level are predicted
Common Pipistrelle	Direct Habitat Loss	The proposed development will see the transformation of predominantly bare ground and recolonising scrub to built lands, along with amenity grassland, additional treelines and the creation of a wildlife pond. No roosting habitat was found. The wider habitat, particularly to the east has good feeding habitat while buildings to the west provide good roosting potential. Common Pipistrelle was the most frequently recorded species within the site (average of 41BpHr) thus significance is increased for this species. The proposal will see the creation of roosting habitat, the creation of treelines and a wildlife pond will alleviate the loss of some feeding habitat (see mitigation section).	Permanent and of medium magnitude. Long-term adverse effects (particularly with mitigation and enhancement) will not result in a significant impact on the local bat population.	Occurs once, long term	The magnitude of the impact is assessed as Medium. Low sensitivity species + Medium Impact = Very Low effect significance. No likely significant effects at a local level are predicted
	Displacement and barrier effect	It is unlikely construction activity will occur during nighttime within the bat active season. As such it is highly unlikely the construction phase will have an impact on this species. Lighting during the operational phase can impact bats, however Common Pipistrelle is less impacted than woodland species (see mitigation section on wildlife friendly lighting measures).	Temporary and of low magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of the impact is assessed as Very Low. Low sensitivity species + Low Impact = Very Low effect significance. No likely significant effects at a local level are predicted
Nathusius Pipistrelle	Direct Habitat Loss	The proposed development will see the transformation of predominantly bare ground and recolonising scrub to built lands, along with amenity grassland, additional treelines and the creation of a wildlife pond. No roosting habitat was found. The wider habitat, particularly to the east has good feeding habitat while buildings to the west provide good roosting potential. The proposal will see the creation of roosting habitat, the creation of treelines and a wildlife pond will alleviate the loss of some feeding habitat (see mitigation section).	Permanent and of negligible to low magnitude and will not result in long-term adverse effects (particularly with mitigation and enhancement).	Occurs once, long term	The magnitude of the impact is assessed as Very Low. Low sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted

Species	Potential Impacts		Duration and Magnitude of potential impact	Frequency and reversibility	Magnitude and Significance of effect
	Displacement and barrier effect	It is unlikely construction activity will occur during night time within the bat active season. As such it is highly unlikely the construction phase will have an impact on this species. Lighting during the operational phase can impact bats however Nathusius Pipistrelle is less impacted than woodland species (see mitigation section on wildlife friendly lighting measures).	Temporary and of low magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of the impact is assessed as Very Low. Low sensitivity species + Low Impact = Very Low effect significance. No likely significant effects at a local level are predicted
Soprano Pipistrelle	Direct Habitat Loss	The proposed development will see the transformation of predominantly bare ground and recolonising scrub to built lands, along with amenity grassland, additional treelines and the creation of a wildlife pond. No roosting habitat was found. The wider habitat, particularly to the east has good feeding habitat while buildings to the west provide good roosting potential. The proposal will see the creation of roosting habitat, the creation of treelines and a wildlife pond will alleviate the loss of some feeding habitat (see mitigation section).	Permanent and of negligible to low magnitude and will not result in long-term adverse effects (particularly with mitigation and enhancement).	Occurs once, long term	The magnitude of the impact is assessed as Very Low. Low sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
	Displacement and barrier effect	It is unlikely construction activity will occur during night time within the bat active season. As such it is highly unlikely the construction phase will have an impact on this species. Lighting during the operational phase can impact bats however Soprano Pipistrelle is less impacted than woodland species (see mitigation section on wildlife friendly lighting measures).	Temporary and of low magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of the impact is assessed as Very Low. Low sensitivity species + Low Impact = Very Low effect significance. No likely significant effects at a local level are predicted
Leisler's Bat	Direct Habitat Loss	The proposed development will see the transformation of predominantly bare ground and recolonising scrub to built lands, along with amenity grassland, additional treelines and the creation of a wildlife pond. No roosting habitat was found. The wider habitat, particularly to the east has good feeding habitat while buildings to the west provide good roosting potential. The proposal will see the creation of roosting habitat, the creation of treelines and a wildlife pond will alleviate the loss of some feeding habitat (see mitigation section).	Permanent and of negligible to low magnitude and will not result in long-term adverse effects (particularly with mitigation and enhancement).	Occurs once, long term	The magnitude of the impact is assessed as Very Low. Low sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
	Displacement and barrier effect	It is unlikely construction activity will occur during night time within the bat active season. As such it is highly unlikely the construction phase will have an impact on this species. Lighting during the operational phase can impact bats however Soprano Pipistrelle is less impacted than woodland species (see mitigation section on wildlife friendly lighting measures).	Temporary and of low magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of the impact is assessed as Very Low. Low sensitivity species + Low Impact = Very Low effect significance. No likely significant effects at a local level are predicted
Lesser Horseshoe Bat	Direct Habitat Loss	While the development will see the transformation of bare ground and portions of scrub, the subject site is not a suitable feeding ground for this species. No feeding buzzes were recorded during static surveys. The proposed development will see an eastern scrubland protected which will maintain a N-S corridor for passing Lesser Horseshoe.	Permanent and of negligible to low magnitude and will not result in long-term adverse effects (particularly with mitigation and enhancement).	Occurs once, long term	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted

Species	Potential Impacts		Duration and Magnitude of potential impact	Frequency and reversibility	Magnitude and Significance of effect
	Displacement and barrier effect	While the subject site is of low potential the increase in lighting could adversely impact this species ability to travel between the Limerick and Clare ranges via the Groody River. This potential impact is increased with the potential in-combination effect of more developments along the Groody and the current lights along the R445. Mitigation is required to ensure light spill does not occur on eastern scrub.	Permanent and of low magnitude and will not result in long-term adverse effects (with sufficient mitigation).	Occurs during construction phase	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Low Impact = Very Low effect significance. No likely significant effects at a local level are predicted
Oystercatchers	Direct Habitat Loss	Based on baseline data the proposed development will have a negligible impact on the local Oystercatcher population. While wintering oystercatcher resting habitat will be lost as a result of the proposed development the city has numerous suitable habitat for this species. The site is not a suitable breeding or feeding site. The creation of a wildlife pond could create good suitable alternative habitat for this species while green short cropped areas can be utilised by this species	Long-term negligible level negative impact	Occurs once, irreversible	The magnitude of the impact is assessed as Very Low. Medium sensitivity species + Negligible Impact = Very Low effect significance. No likely significant effects at a local level are predicted
		The IECS Toolkit26 suggests that oystercatcher is of moderate sensitivity to disturbance. There is the potential of disturbance to wintering oystercatcher through construction phase activities that could disturb birds and displace them from the area. It is likely oystercatchers are attracted to the open areas of site when ponded water sits on site. This will not be allowed to occur in the construction phase which will reduce the potential of the site for wintering waterbirds. An ECoW will conduct regular checks during the wintering seasons and if oystercatchers are present a no construction buffer of 150m will be implemented on areas used by the species (Goodship 2022)	Temporary and of low to negligible magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of impact is assessed as Low. Medium sensitivity species + Low Impact = Low effect significance. No likely significant effects at a local level are predicted
Lapwing	Direct Habitat Loss	Based on baseline data the proposed development (phase 1 current boundary) was not utilised by this species, rather a ponded area of bare ground to the north of the site (within the phase 2 area). Much of the site is becoming increasingly scrub-dominated, and this natural succession is progressively encroaching on the remaining open ground. In the absence of active management, the extent of suitable roosting habitat is expected to decline further, reducing the site's value for Lapwing in the short to medium term. To address this, the proposed works include the creation of a new pond and areas of managed grassland to the east of the site, which will provide more sustainable open habitat conditions and maintain the availability of suitable roosting and foraging areas for Lapwing into the future.	Long-term low level negative impact	Occurs once, irreversible	The magnitude of the impact is assessed as Low. Medium sensitivity species + Low Impact = Low effect significance. No likely significant effects at a local level are predicted

Species	Potential Impacts		Duration and Magnitude of potential impact	Frequency and reversibility	Magnitude and Significance of effect
	Displacement and barrier effect	The IECS Toolkit26 suggests that lapwing is of moderate sensitivity to disturbance. There is the potential of disturbance to wintering lapwing through construction phase activities that could disturb birds and displace them from the area. It is likely lapwing are attracted to the open areas of site when ponded water sits on site. This will not be allowed to occur in the construction phase which will reduce the potential of the site for wintering waterbirds. An ECoW will conduct regular checks during the wintering seasons and if Lapwing are present a no construction buffer of 150m will be implemented on areas used by the species	Temporary and of low magnitude and will not result in long-term adverse effects.	Occurs during construction phase	The magnitude of impact is assessed as Low. Medium sensitivity species + Low Impact = Low effect significance. No likely significant effects at a local level are predicted

7 MITIGATION & ENHANCEMENT MEASURES

7.1 Bats

For the proposed development; measures below are focused on the creation of roosting, feeding and commuting habitats and the creation of sensitive lighting regime which will create sufficient lighting for residents while allowing bat species most frequently found here to continue to utilise the site. In regard to the Lesser Horseshoe bat, the protection of a probable North-South (N-S) corridor through Limerick city along the Groody River is also essential.

7.1.1 Lesser Horseshoe corridor

Figure 7-1 shows the location of the site, situated close to the Groody River valley, a strip of grassland potentially used by Lesser Horseshoe bats flying N-S from the Clare to Limerick ranges. Static surveys confirmed the presence of the species albeit in very low numbers. A desktop study also revealed another proposed development on the east bank of the Groody river where student accommodation blocks are proposed. Existing street lights along the R445 (see figure 7-1) are already creating a potential barrier along the potential corridor thus efforts are required to prevent additional light spill from the Parkway Valley Proposed Development.

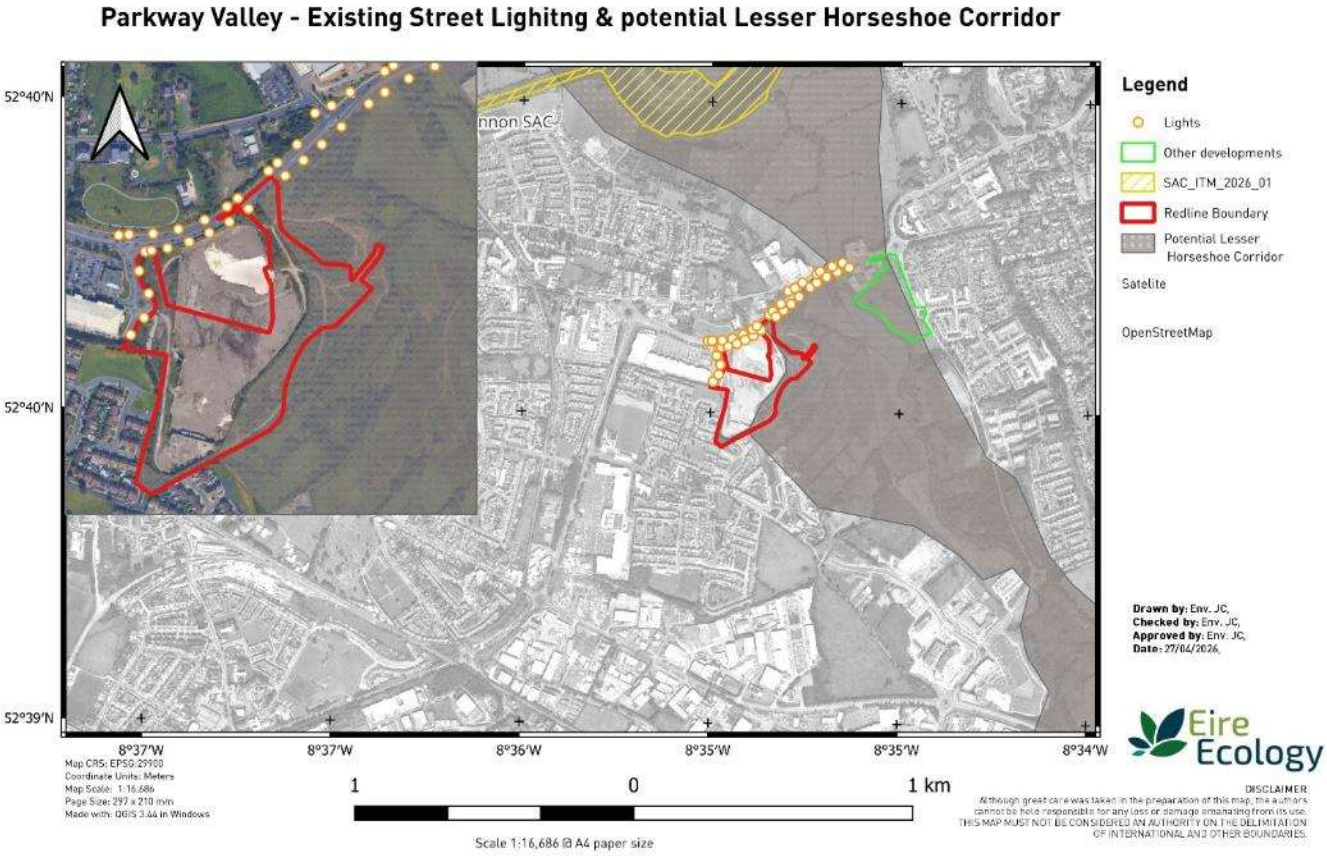
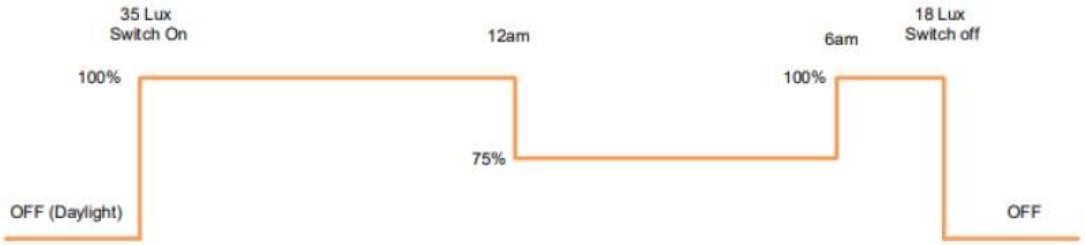


Figure 7-1: Subject Site Location situated by edge of potential Lesser Horseshoe corridor

7.1.1.1 Molony Fox Consulting lighting Report

A lighting report has been completed for the Parkway Valley proposed development. The lighting scheme has been produced with ecologist input and reference to; (BCT I. , 2023), (BCI, 2010) and (Voigt, 2018).

- The Scheme comprises primarily of pole mounted Warm White (2700k) LED fittings with internal louvres. The Warm White LED light source has the least negative impact on insects and bat prey items as identified in previous studies and is also a compact light source which enables easier control of the light spread.
- Internal louvres minimise light spill, particularly to the rear of the fitting, and also completely eliminate any upward light from the fittings.
- Lowest possible design illuminance levels considering the nature of the site.
- A dimming proposal will ensure lights are reduced for periods of the night (see figure 7-2)



In areas where bats are passing and feeding, light levels will be reduced further to a minimum of 1.2 lux whilst maintaining compliance with the regulations. Public Lighting Profile 4D will be selected in this regard.

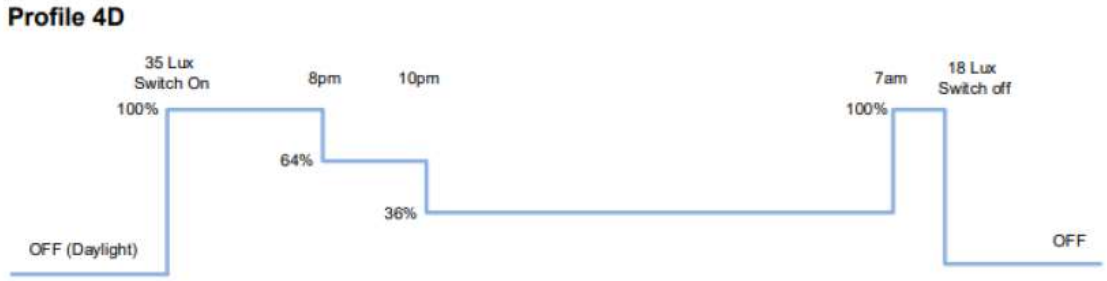


Figure 7-2: Extract of two dimming proposals for the site

7.1.1.1.1 Dark Zones

The aim of the lighting scheme is to have an overall low light level where invertebrates are not attracted away from dark areas as well as dedicating an eastern zone of land as a dark zone (see figure 7-3). This will have benefits for the local bat populations by maintaining a hunting zone over scrubby woodland and help maintain the potential Lesser Horseshoe corridor along the Groody River.

7.1.2 Bat roosts

It is proposed to install a bat house to the east within the dark zone. It is proposed to have an internal space of 2mx2m with a max height of 3m. The building will be constructed of plastered block & timber frame with insulation between the timber frame and block. The building will have an A-framed roof with bitumen felt. It will

contain a loft with an open hatch between the upper and lower floor. The building will have tilt tray to prevent predator access. 2x woodstone bat boxes will be installed within the building suitable for Pipistrelle and Leisler's bats.

7.1.3 Wildlife pond

A pond created to the east within the dark zone will provide ideal hunting grounds for bat species. The lack of lighting proposed for this area will allow it to be accessible by bat species.

7.1.4 Internal landscaping

Several design features have been proposed which will increase the attractiveness of the development for bats. These include an internal green corridor between blocks A, D and B, C as well as the creation of green roofs.

7.1.5 Eastern treeline

A new eastern treeline composed of **native, locally appropriate species** will be established along the road boundary to function as a **light-blocking landscape feature**. This planting will intercept low-angle spill from vehicle and amenity lighting, reinforcing the effectiveness of the **bat-sensitive lighting design** and maintaining dark conditions within habitats further east. This treeline will consist of both hedge species planted in a double row; hawthorn, blackthorn, hazel, with Yew interspersed at 2 – 3m intervals. The treeline will also enhance ecological connectivity by strengthening existing linear features and providing additional foraging and commuting structure for bats. Once established, this vegetated barrier will operate as a permanent, passive mitigation measure supporting the site's long-term ecological function.

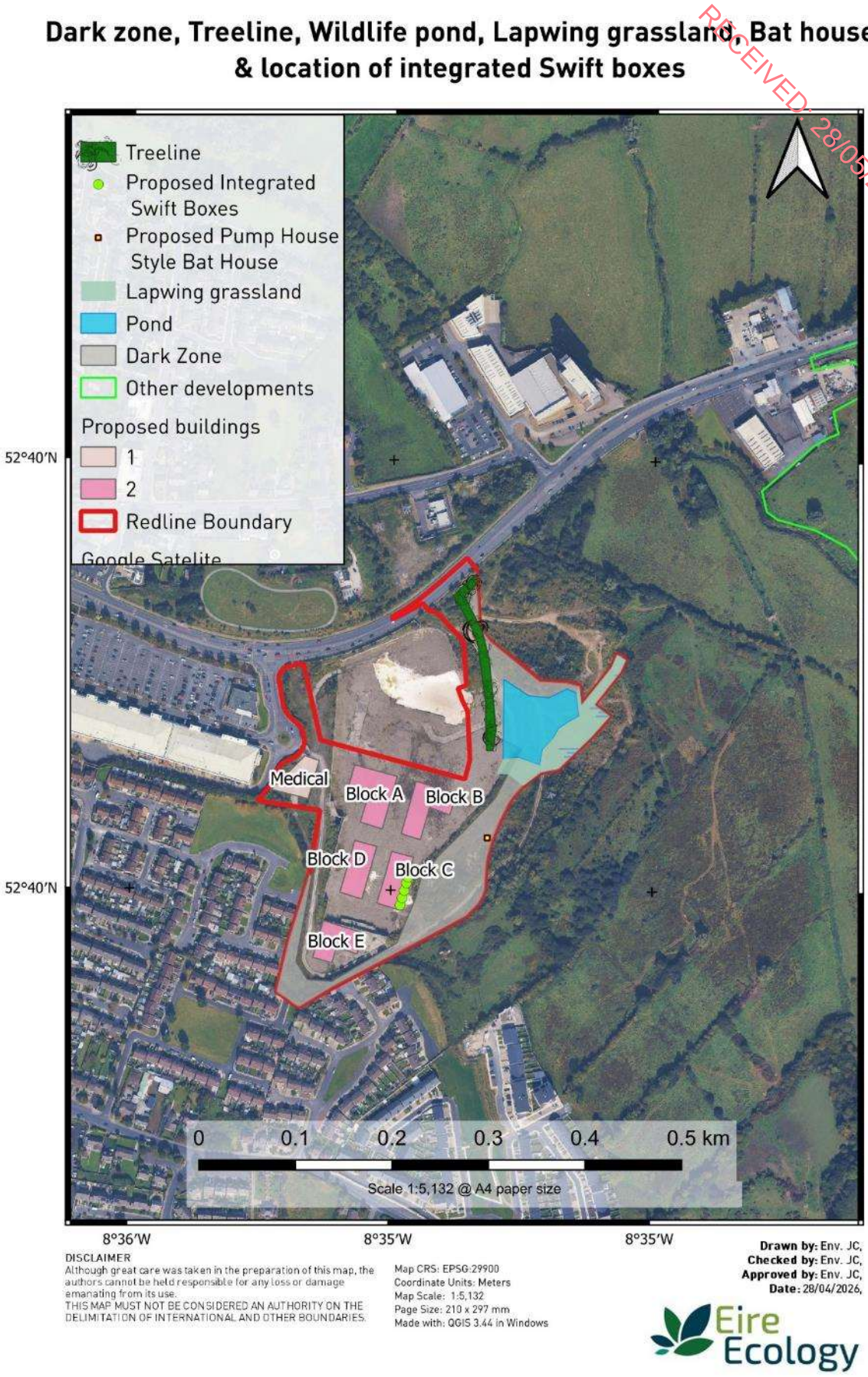


Figure 7-3: Mitigation

7.2 Birds

7.2.1 Construction phase

Vegetation removal could impact on nesting passerines such as blackbird and wren thus ideally this activity should be carried out only outside the bird-nesting season (March 1st – August 31st) in order to avoid impacts on nesting birds. In the event this work is required earlier an ecological clerk of works (ECoW) should be onsite to ensure no nesting birds are present. Should an occupied nest be found the clearance works will have to wait until after fledging.

Disturbance on the existing pond on site could impact Lapwing using the site. Hoarding is already present along the road to the north of the site and provides good mitigation against disturbance. Lapwing are sensitive to visual stimuli out to 300m, (Cutts 2013), thus additional hoarding is required to be erected south of the pond to ensure disturbance from construction works will not occur. Hoarding should consist of solid fence at least 2.5m tall.

7.2.1.1 Wildlife pond and managed grassland suitable for roosting Lapwing

A pond is proposed to the southeast of the site. While manicured ponds offer little for wildlife, this pond will be situated away from high levels of human activity and surrounded by habitat beneficial to bird life. The pond should be of high value for species such as lapwing, reed bunting, little grebe, mallard, heron and little egret. To the south-east of the pond, an area of grassland will be managed for lapwing. According to (Gillings 1999), Lapwings generally preferred short swards but avoided swards more than 10 cm tall. The optimum sward is around 7 cm tall and lapwings prefer to feed in fields that have been mown twice. Grassland to the southeast of the pond will be short sward, less than 7 cm, with scattered bare ground up to 10% of the area. Scattered clumps up to 10-15cm must make up 20% of the habitat area.

7.2.1.2 Swift boxes

6 x treble integrated swift boxes will be installed into the wall of block C facing east (see figure 7-3 above). Occupancy success of integrated boxes are less influenced by direction than mounted boxes. In, addition, a calling system will be installed for the first two years of operational phase and or until such time as occupancy has been confirmed. The calling system will conform to Swift Conservation Irelands Guidance document (Appendix B) A licence will be sought from the NPWS prior to instillation of lure.

7.3 Monitoring

Post-construction monitoring will be required for a minimum of three years to confirm that the bird and bat mitigation measures are effective. This will include Lux monitoring of the Dark Zone. Should monitoring identify any unforeseen impacts or deficiencies, the mitigation strategy will be reviewed and amended as necessary.

8 RESIDUAL IMPACTS

Residual impacts are those that occur after the mitigation measures have taken effect. It is the authors opinion that the proposed development will have negligible negative impacts on the local bird and bat populations as long as all mitigation measures are implemented. Multiple enhancement measures, including the creation of treelines, green areas, wildlife pond, bat and bird box instillation and a sensitive lighting regime should provide a net positive to the local biodiversity.

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APPENDIX A – Tables and Figures

Table 0-1: Bird survey weather conditions

Date	Sunset / sunrise	Cloud %	Wind direction	Visibility	Rain
10/02/2025	08:00	66-100	F1 NE	Good	Dry
12/03/2025	06:55	33-65	F2 W	Good	Dry
06/05/2025	05:52	33-65	F1 E	Good	Dry
20/05/2025	05:30	66-100	F1 SW	Good	Showers later in day
29/10/2025	07:26	66-100	F1 SW	Good	Heavy shower

10/11/2025	07:48	33-65	F2 E	Good	Dry
07/12/2025	08:31	66-100	F1 SW	Moderate	Heavy shower
23/01/2026	08:29	66-100	F3 E	Good	Light shower

Table 0-2: VP Target Species Observations

Date	Obs No.	Species Name	No. of Birds	Comments
10/02/2025	1	Herring Gull	4	Flying over site, not interacting
10/02/2025	2	Herring Gull	1	Flying over site, not interacting
10/02/2025	3	Herring Gull	4	Laned on pond then flew off
10/02/2025	4	Herring Gull	4	Landed on pond
10/02/2025	5	Oystercatcher	15	Took off from lower area and flew towards the SE
12/03/2025	1	Mew Gull	1	Flying over site, not interacting
12/03/2025	2	Herring Gull	4	Flying over site, not interacting
12/03/2025	3	Mew Gull	1	Flying over site, not interacting
12/03/2025	4	Herring Gull	5	Flying over site, not interacting
29/10/2025	1	Northern Lapwing	13	Roosting on bare stone in area just outside of site.
29/10/2025	2	Herring Gull	1	Flying through the site
29/10/2025	3	Mew Gull	3	Circled low for 180sec possibly landed back in field
29/10/2025	4	Kestrel	1	Flew in from E landed on Wall didn't see where she went flushed L 5 minutes later.
29/10/2025	5	Northern Lapwing	13	Flushed by K circled landed back in same spot
29/10/2025	6	Mew Gull	2	Flying W-SE 5-15m
29/10/2025	7	Great Black-backed Gull	1	Flying SE-W along S edge of the site
29/10/2025	8	Great Black-backed Gull	1	Flying SE-W along S edge of site
29/10/2025	9	Great Black-backed Gull	1	Flew NE-SW off site to the N/NW
29/10/2025	10	Mew Gull	1	Flew in from the W circled low over the site flew back out SW
29/10/2025	11	Snipe	1	Flew out of scrub turned NE continued NE 0-10m
10/11/2025	1	Northern Lapwing	51	Flew in from the N circled as they did so landed in wet area N end of the site preening.
10/11/2025	2	Mute Swan	1	Flew NE-SW turned S over the site
10/11/2025	3	Black-headed Gull	3	Flushed off pond N end of the site landed again, same area as L.
10/11/2025	4	Black-headed Gull	3	Flew off pond to the N of the site flew SW
10/11/2025	5	Black-headed Gull	2	flew in from SW landed into pond.
10/11/2025	6	Black-headed Gull	1	Flew in from the SW landed into the pond
10/11/2025	7	Herring Gull	1	Circling off site to the W of the site
10/11/2025	8	Black-headed Gull	1	Flew off the pond flew SW.
10/11/2025	9	Herring Gull	2	Flying NE to SW through the site
10/11/2025	10	Great Black-backed Gull	3	Flew in from the W turned over the site flew W
10/11/2025	11	Snipe	2	Roosting on built land.
07/12/2025	1	Black-headed Gull	3	Preening on pond 2 flew W 1 flew N
07/12/2025	2	Black-headed Gull	1	Preening on pond before flying W
07/12/2025	3	Black-headed Gull	1	Flying through the site W-E
07/12/2025	4	Black-headed Gull	1	Flew in from the S landed on the pond to the N of the site
07/12/2025	5	Black-headed Gull	2	Flew in from the S landed into pond

Date	Obs No.	Species Name	No. of Birds	Comments
07/12/2025	6	Black-headed Gull	1	Flew in from the S turned W
07/12/2025	7	Black-headed Gull	11	Flew in from the S landed in pond
07/12/2025	8	Herring Gull	2	Flew in from the S landed in pond
07/12/2025	9	Black-headed Gull	4	Flew W out of pond
07/12/2025	10	Black-headed Gull	1	Flew out of the pond flew W
07/12/2025	11	Black-headed Gull	1	Flying w-E just S of the site
07/12/2025	12	Northern Lapwing	3	flushed landed again in the built area
23/01/2026	1	Northern Lapwing	75	No flight recorded flock roosting
23/01/2026	2	Northern Lapwing	20	Flock flew from pond landed with others L and roosted
23/01/2026	3	Black-headed Gull	19	19 BH roosting in pond far end of site
23/01/2026	4	Northern Lapwing	14	Roosting in water with BHs
23/01/2026	5	Mew Gull	2	2 flew in from S landed onto pond
23/01/2026	6	Northern Lapwing	108	108 flushed off side circled and landed again back in same area
23/01/2026	7	Mallard	2	Flying male and female circled before landing off site to the east
23/01/2026	8	Black-headed Gull	4	Flew off pond flew SW
23/01/2026	9	Lesser Black-backed Gull	1	Flew in from the S landed on pond
23/01/2026	10	Northern Lapwing	71	Circling over site landed onto pond at far end of site
23/01/2026	11	Black-headed Gull	1	flew onto site turned and flew back out to SE
23/01/2026	12	Great Cormorant	1	flew e-w turned SW
23/01/2026	13	Northern Lapwing	165	Flushed off pond circled out to the east joined by another small flock circled before landing again
23/01/2026	14	Herring Gull	3	Flew out of the pond flying SW
23/01/2026	15	Sparrowhawk	1	Circling flew S
23/01/2026	16	Black-headed Gull	1	Flew in from W landed on pond
23/01/2026	17	Black-headed Gull	3	Flew in from west landed on pond
23/01/2026	18	Herring Gull	1	Flew in with the BH

Table 0-3: VP Non-target Species Observations

Date:	Species	Est no.	Date:	Species	Est no.
10/02/2025	Winter Wren	1	11/10/2025	Hooded Crow	5
10/02/2025	Rook	3	11/10/2025	Rook	100
10/02/2025	Rook	2	11/10/2025	Magpie	4
10/02/2025	Chaffinch	4	11/10/2025	Great Tit	2
10/02/2025	Hooded Crow	1	11/10/2025	Long-tailed Tit	5
10/02/2025	Mistle Thrush	1	11/10/2025	Chiffchaff	1
12/03/2025	Winter Wren	1	11/10/2025	Pied Wagtail	3
12/03/2025	Blackbird	1	11/10/2025	Bullfinch	2
12/03/2025	Rook	3	11/10/2025	Wood Pigeon	10
12/03/2025	Wood Pigeon	2	11/10/2025	Collared Dove	1
12/03/2025	Dunnock	1	11/10/2025	Jackdaw	3
12/03/2025	Song Thrush	1	11/10/2025	Meadow Pipit	1
12/03/2025	Mistle Thrush	1	11/10/2025	Dunnock	1
12/03/2025	Coal Tit	1	11/10/2025	Goldfinch	6
12/03/2025	Blue Tit	1	07/12/2025	House Sparrow	3

12/03/2025	Jackdaw	5	07/12/2025	Starling	35
12/03/2025	Starling	30	07/12/2025	Dunnock	1
12/03/2025	Chaffinch	1	07/12/2025	Magpie	2
29/10/2025	Robin	3	07/12/2025	Rook	1
29/10/2025	Chaffinch		07/12/2025	Hooded Crow	4
29/10/2025	Chiffchaff	1	07/12/2025	Robin	1
29/10/2025	House Sparrow	1	07/12/2025	Jackdaw	2
29/10/2025	Starling	7	07/12/2025	Blackbird	1
29/10/2025	Hooded Crow	4	07/12/2025	Wood Pigeon	6
29/10/2025	Rook	6	07/12/2025	Song Thrush	1
29/10/2025	Jackdaw	11	07/12/2025	Chiffchaff	1
29/10/2025	Magpie	5	07/12/2025	Bullfinch	1
29/10/2025	Blue Tit	2	23/01/2026	Robin	3
29/10/2025	Dunnock	1	23/01/2026	Chaffinch	1
29/10/2025	Great Tit	3	23/01/2026	Starling	8
29/10/2025	Reed Bunting	28	23/01/2026	Great Tit	2
29/10/2025	#N/A		23/01/2026	Meadow Pipit	1
29/10/2025	Winter Wren	4	23/01/2026	Winter Wren	1
29/10/2025	Wood Pigeon	20	23/01/2026	Blackbird	2
29/10/2025	Pied Wagtail	2	23/01/2026	Song Thrush	1
29/10/2025	Blackbird	2	23/01/2026	#N/A	
29/10/2025	Goldfinch	40	23/01/2026	Magpie	4
11/10/2025	Chaffinch	4	23/01/2026	Blue Tit	2
11/10/2025	Starling	20	23/01/2026	Goldfinch	12
11/10/2025	House Sparrow	2	23/01/2026	Long-tailed Tit	4
11/10/2025	Robin	5	23/01/2026	Pied Wagtail	2
11/10/2025	Blackbird	3	23/01/2026	Rook	10
11/10/2025	Winter Wren	2	23/01/2026	Raven	3
11/10/2025	Greenfinch	1	23/01/2026	Wood Pigeon	6
11/10/2025	Linnet	25	23/01/2026	Hooded Crow	2

Table 0-4: Breeding bird transects

Date	Species	No's	Observations	Lat	Lon	Breeding Code if applicable	Breeding?
06/05/2025	Hooded Crow	2	-	52.66142	-8.58905	Flying	No
06/05/2025	Jackdaw	1	-	52.65927	-8.58856	Flying	No
06/05/2025	Wood Pigeon	1	flying over	52.66067	-8.58604	Flying	No
20/05/2025	Herring Gull	2		52.66118	-8.58922	Flying	No
20/05/2025	Blackbird	1		52.66026	-8.58742	Flying	No
20/05/2025	Blackbird	1		52.66073	-8.58806	Flying	No
06/05/2025	Robin	1	-	52.66196	-8.58918	PB Singing male	Possibly
06/05/2025	Dunnock	1	-	52.66082	-8.58974	PB Singing male	Possibly
06/05/2025	Willow Warbler	1	-	52.65996	-8.58663	PB Singing male	Possibly
06/05/2025	Willow Warbler	1	-	52.66074	-8.58568	PB Singing male	Possibly
06/05/2025	Blackcap	1	-	52.66173	-8.5855	PB Singing male	Possibly
06/05/2025	Chiffchaff	1	-	52.66198	-8.58612	PB Singing male	Possibly
20/05/2025	Blackcap	1		52.65958	-8.58782	PB Singing male	Possibly
06/05/2025	Winter Wren	1	-	52.66184	-8.58897	PB suitable nesting habitat	Possibly
06/05/2025	House Sparrow	1	-	52.65963	-8.58939	PB suitable nesting habitat	Possibly
06/05/2025	Winter Wren	1	-	52.6591	-8.5893	PB suitable nesting habitat	Possibly
06/05/2025	Chaffinch	1	-	52.65994	-8.58743	PB suitable nesting habitat	Possibly
06/05/2025	Long-tailed Tit	1	-	52.66033	-8.58598	PB suitable nesting habitat	Possibly
06/05/2025	Blackbird	1	-	52.66212	-8.58663	PB suitable nesting habitat	Possibly
06/05/2025	Reed Bunting	1	-	52.66263	-8.58683	PB suitable nesting habitat	Possibly
20/05/2025	Winter Wren	1		52.66167	-8.58958	PB suitable nesting habitat	Possibly
20/05/2025	Blue Tit	1		52.66058	-8.58944	PB suitable nesting habitat	Possibly
20/05/2025	Blackbird	1		52.65932	-8.58945	PB suitable nesting habitat	Possibly
20/05/2025	Winter Wren	1		52.66205	-8.58692	PB suitable nesting habitat	Possibly
06/05/2025	House Sparrow	2	-	52.66049	-8.58939	PSB Pair	Probably
06/05/2025	Blackbird	2	-	52.66113	-8.58582	PSB Pair	Probably
06/05/2025	Blue Tit	2	-	52.66292	-8.58634	PSB Pair	Probably

20/05/2025	Winter Wren	1		52.66192	-8.58897	PSB Territory	Probably
20/05/2025	House Sparrow	1		52.65969	-8.58936	PSB Territory	Probably

Table 0-5: Bat static results

Detector	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Unidentified Myotis	Total
1	6th May	11	646	50	0	26	0	0	0	733
1	7th May	30	719	26	6	20	0	0	0	801
1	8th May	26	628	39	8	20	1	1	0	723
1	9th May	48	593	20	5	19	0	0	0	685
1	10th May	125	628	24	2	23	1	0	0	803
1	11th May	76	544	22	5	22	0	0	0	669
1	12th May	73	411	22	5	16	0	0	0	527
1	13th May	56	578	16	7	20	0	0	0	677
1	14th May	81	745	32	12	25	0	0	0	895
1	15th May	88	431	39	8	10	0	0	0	576
1	16th May	72	446	35	10	24	0	0	0	587
1	17th May	47	666	35	10	25	0	0	0	783
1	18th May	53	707	24	7	25	0	0	0	816
1	19th May	54	373	16	11	22	0	0	0	476
1	20th May	31	412	13	16	30	0	0	0	502
1	29th August	0	16	5	0	0	0	0	0	21
1	30th August	0	6	0	0	0	0	0	0	6
1	31st August	0	3	0	0	0	0	0	0	3
1	1st September	0	2	0	0	0	0	0	0	2
1	2nd September	0	13	0	0	0	0	0	0	13
1	3rd September	0	12	3	0	0	0	0	0	15
1	4th September	0	12	5	0	0	0	0	0	17
2	6th May	18	297	26	0	21	0	0	0	362
2	7th May	26	408	28	0	7	0	0	0	469

Detector	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Unidentified Myotis	Total
2	8th May	13	219	18	1	8	0	0	1	260
2	9th May	27	292	14	0	14	0	0	1	348
2	10th May	45	284	18	0	6	0	0	0	353
2	11th May	18	328	18	0	7	0	0	0	371
2	12th May	74	260	15	0	4	0	0	0	353
2	13th May	60	442	34	7	59	0	0	1	603
2	14th May	51	305	20	0	7	0	0	1	384
2	15th May	45	516	47	0	12	0	0	0	620
2	16th May	56	309	13	0	9	1	0	0	388
2	17th May	38	240	19	0	23	0	1	0	321
2	18th May	42	232	14	0	16	1	0	0	305
2	19th May	50	313	14	0	11	0	0	0	388
2	20th May	32	178	6	0	4	0	0	0	220
2	29th August	43	162	38	0	0	0	0	0	243
2	30th August	7	33	13	0	0	0	0	0	53
2	31st August	7	48	10	0	0	0	0	0	65
2	1st September	36	57	12	0	0	0	0	0	105
2	2nd September	40	160	29	0	1	1	0	0	231
2	3rd September	48	78	10	0	3	0	0	1	140
2	4th September	13	136	17	0	1	0	0	0	167

Table 0-6: GLTA results

Tree number	Species	GLTA	description	Long	Lat
1	Willow	None	Along SE fenceline. Several trees, no potential	52.66107	-8.5849
2	Willow	None	Scrub. No potential	52.66143	-8.5849
3	Willow	None	No potential	52.66128	-8.58467
4	Willow & birch	None	Scrub. No potential	52.6615	-8.58455
5	Willow	None	No potential	52.66189	-8.58445
6	Willow	None	No potential	52.66227	-8.58459
7	Willow	None	Scrub. No potential	52.66213	-8.58553
8	Willow	None	Scrub. No potential	52.66267	-8.58508
9	Willow	None	Scrub. No potential	52.66172	-8.58491
10	Willow & birch	None	Scrub. No potential	52.66162	-8.58597
11	Willow	None	Scrub. No potential	52.66207	-8.58626
12	Willow	None	Scrub. No potential	52.66201	-8.58674
13	Willow	None	Scrub. No potential	52.6601	-8.5871
14	Willow	None	Willow treeline. No potential.	52.65929	-8.5884
15	Willow	None	Scrub. No potential	52.6591	-8.58942
16	Willow	None	No potential	52.66044	-8.58651
17	Willow	None	No potential	52.66085	-8.58546
18	Willow	None	Willow treeline. No potential.	52.66243	-8.58409
19	Willow	None	No potential	52.66225	-8.58394
20	Willow	None	No potential	52.66149	-8.58386
21	Willow	None	Slightly more mature but no potential.	52.66227	-8.58257
22	Willow	None	No potential	52.66291	-8.58604
23	Willow	None	No potential	52.66264	-8.58709
24	Willow & Buddleia	None	Scrub. No potential	52.66111	-8.58951
25	Willow	None	No potential	52.66082	-8.58978
26	Willow	None	Scrub. No potential	52.66091	-8.5893
27	Willow	None	No potential	52.66171	-8.58897

APPENDIX 7.2

Appropriate Assessment Screening Report

Moore Group

Report for the purposes of Appropriate Assessment Screening

Parkway Valley Residential Development

Prepared by: Moore Group – Environmental Services

26 May 2026

On behalf of Kirkland Investments

Project Proponent	Kirkland Investments
Project	Parkway Valley LRD
Title	Report for the purposes of Appropriate Assessment Screening Parkway Valley LRD

Project Number	25012	**Document Ref**	25012 Parkway Valley LRD AAS1 Rev5
Revision	**Description**	**Author**	**Date**
Rev5	Updated per LRD Opinion	G. O'Donohoe	26 May 2026
Moore Archaeological and Environmental Services Limited			

Table of Contents

Abbreviations

AA	Appropriate Assessment
ACP	An Coimisiún Pleanála
CEMP	Construction Environmental Management Plan
EEC	European Economic Community
EPA	Environmental Protection Agency
EU	European Union
FWPM	Freshwater Pearl Mussel
GIS	Geographical Information System
LAP	Local Area Plan
NHA	Natural Heritage Area
NIS	Natura Impact Statement
NPWS	National Parks and Wildlife Service
OSI	Ordnance Survey Ireland
pNHA	proposed Natural Heritage Area
SAC	Special Area of Conservation
SPA	Special Protection Area
SuDS	Sustainable Drainage System
UÉ	Uisce Éireann
WFD	Water Framework Directive

1. Introduction

1.1. General Introduction

This report for the purposes of Appropriate Assessment (AA) Screening contains information required for the competent authority to make a determination on screening for Appropriate Assessment (AA) in respect of the construction and operation of a large residential development (LRD) at Parkway Valley on the Dublin Road (R445), Limerick (hereafter referred to as the Proposed Development) to determine whether it is likely individually or in combination with other plans or projects to have a significant effect on any European sites, in light of best scientific knowledge.

Having regard to the provisions of the Planning and Development Act 2000, as amended (the "Planning Acts") (section 177U), the purpose of a screening exercise under section 177U of the PDA 2000 is to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with other plans or projects is likely to have a significant effect on a European site.

If it cannot be *excluded* on the basis of objective information that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site then it is necessary to carry out a Stage 2 appropriate assessment under section 177V of the Planning Acts.

When screening the project, there are two possible outcomes:

- the project poses no potential for the possibility of a significant effect and as such requires no Stage 2 assessment; or
- the project has potential to have a significant effect (or this is uncertain and therefore cannot be excluded) and therefore a Stage 2 Appropriate Assessment of the project is necessary.

This report has been prepared by Moore Group - Environmental Services to enable the competent authority to make a determination on AA screening in relation to the Proposed Development. The report was compiled by Ger O'Donohoe B.Sc. Applied Aquatic Sciences (ATU Galway, 1993) & M.Sc. Environmental Sciences (TCD, 1999) who has over 30 years' experience in environmental impact assessment and has completed numerous Appropriate Assessment Screening Reports and Natura Impact Statements on terrestrial and aquatic habitats for various development types.

1.2. Legislative Background - The Habitats and Birds Directives

Article 6(3) and 6(4) of the Habitats Directive are transposed into Irish Law inter alia by the Part XAB of the Planning Acts (in particular section 177U and 177V) which governs the requirement to carry out appropriate assessment screening and appropriate assessment, where required, per Section 1.1 above.

The Habitats Directive (Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora) is the main legislative instrument for the protection and conservation of biodiversity in the European Union (EU). Under the Habitats Directive, Member States are obliged to designate Special Areas of Conservation (SACs) which contain habitats or species considered important for protection and conservation in an EU context.

The Birds Directive (Council Directive 2009/147/EC on the conservation of wild birds), transposed into Irish law by the Bird and Natural Habitats Regulations 2011 as amended, and the Wildlife Act 1976, as amended, is concerned with the long-term protection and management of all wild bird species and their habitats in the EU. Among other things, the Birds Directive requires that Special Protection Areas (SPAs) be established to protect migratory species and species which are rare, vulnerable, in danger of extinction, or otherwise require special attention.

SACs designated under the Habitats Directive and SPAs, designated under the Birds Directive, form a pan-European network of protected sites known as Natura 2000. The Habitats Directive sets out a unified system for the protection and management of SACs and SPAs. These sites are also referred to as European sites.

Articles 6(3) and 6(4) of the Habitats Directive set out the requirement for an assessment of proposed plans and projects likely to have a significant effect on Natura 2000 sites.

Article 6(3) establishes the requirement to screen all plans and projects and to carry out an appropriate assessment if required (Appropriate Assessment (AA)).

> ***Article 6(3):*** *"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to an appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."*

Article 6(4) establishes requirements in cases of imperative reasons of overriding public interest.

2. Methodology

The Commission's methodological guidance (EC, 2002, 2018, 2021 see Section 2.1 below) promotes a four-stage process to complete the AA and outlines the issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

Stages 1 and 2 deal with the main requirements for assessment under Article 6(3). Stage 3 may be part of Article 6(3) or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4).

Stage 1 Screening: This stage examines the likely effects of a project either alone or in combination with other plans and projects upon a Natura 2000 site and considers whether it can be objectively concluded that these effects will not be significant. In order to screen out a project, it must be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on a European site.

Stage 2 Appropriate Assessment: This stage considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a Natura 2000 site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. The proponent of the plan or project will be required to submit a Natura Impact Statement, i.e. the report of a targeted professional scientific examination of the plan or project and the relevant Natura 2000 sites, to identify and characterise any possible implications for the site in view of the site's conservation objectives, taking account of in combination effects.

Stage 3 Assessment of Alternative Solutions: This stage examines alternative ways of implementing the project that, where possible, avoid any adverse impacts on the integrity of the Natura 2000 site.

Stage 4 Assessment where no alternative solutions exist and where adverse impacts remain: Where imperative reasons of overriding public interest (IROPI) exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the sites will be necessary.

To ensure that the Proposed Development complies fully with the requirements of Article 6 of the Habitats Directive and all relevant Irish transposing legislation, Moore Group compiled this report to enable the competent authority to make a determination on AA screening in relation to the Proposed Development to determine whether it can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on a European site(s).

2.1. Guidance

This report has been compiled in accordance with guidance contained in the following documents:

- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities. (Department of Environment, Heritage and Local Government, 2010 rev.).
- Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPWS 1/10 & PSSP 2/10.
- Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC (EC, 2018).
- Guidance document on the strict protection of animal species of Community interest under the Habitats Directive (EC, 2021).

- Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EC, 2021).
- Office of the Planning Regulator (OPR) Practice Note PN01 Appropriate Assessment Screening for Development Management (OPR, 2021).
- Natura Impact Statement Sustainable Residential Development and Compact Settlement Guidelines for Planning Authorities (NPWS, 2024).

2.2. Data Sources

Sources of information that were used to collect data on the Natura 2000 network of sites, and the environment within which they are located, are listed below:

- The following mapping and Geographical Information Systems (GIS) data sources, as required:
    - National Parks & Wildlife (NPWS) protected site boundary data;
    - Ordnance Survey of Ireland (OSI) mapping and aerial photography;
    - OSI/Environmental Protection Agency (EPA) rivers and streams, and catchments;
    - Digital Elevation Model over Europe (EU-DEM);
    - Google Earth and Bing aerial photography 1995-2026;
- Online data available on Natura 2000 sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie including:
    - Natura 2000 - Standard Data Form;
    - Conservation Objectives;
    - Site Synopses;
- National Biodiversity Data Centre records;
    - Online database of rare, threatened and protected species;
    - Publicly accessible biodiversity datasets.
- Status of EU Protected Habitats in Ireland. (National Parks & Wildlife Service, 2019); and
- Relevant Development Plans;
    - Limerick Development Plan 2022-2028
- Relevant Reports;
    - Éire Ecology Bird and Bat Report - appendix to the Project EIAR.

3. Description of the Proposed Development

3.1. Description of the Existing Environment

The site comprises the footprint of a now demolished structure, with some remaining concrete surfaces (BL3) within a large area of Scrub (WS1), bare and recolonising ground (ED2/ED3), with smaller areas of Dry grassland (GS2) and reed swamp (FS1). A description of Habitats and Species surveyed during fieldwork on 18/06/25 and 11/09/2025 by Moore Group Ecologists is presented as follows. Information on Birds and Bats is provided from Éire Ecology Surveys commenced in February 2025 on Wintering Birds, continuing on Breeding Birds in June 2025 and commencing Bat Surveys in June 2025 and continuing into September 2025. Habitats are presented in Section 3.2, Figure 2 below.

Dry meadows and grassy verges (GS2)

This habitat occurs principally in the northeastern section of the site, adjacent to the Dublin Road (R445), as well as small, scattered patches along tracks. It generally occurs intermixed with scattered Scrub (WS1). Species present includes Cock's Foot (*Dactylis glomerata*), Red Fescue (*Festuca rubra*), Oxeye Daisy (*Leucanthemum vulgare*), Ribwort Plantain (*Plantago lanceolata*) and Bird's foot Trefoil (*Lotus corniculatus*).

Scrub (WS1)

Scrub occurs around the margins of the entire site, both as large stands and scattered patches among other transitional habitats. Where it is longest established, for example along the southwestern boundary, it comprises stands of fast growing trees and shrubs, including Downy Birch (*Betula pubescens*), Grey Willow (*Salix cinerea*), Goat Willow (*Salix caprea*), Gorse (*Ulex europaeus*), Rowan (*Sorbus aucuparia*), Swedish Whitebeam (*Sorbus intermedia*), and *Buddleia*.

Spoil and bare ground (ED2)

This habitat occurs throughout the site, often in an intimate mosaic with WS1 and ED3 habitats. The substrate is largely crushed stone, with smaller areas of barish earth and spoil heaps. A broad range of species occur on this habitat across the site, including Red Valerian (*Centranthus ruber*), Fox and Cubs (*Pilosella aurantiaca*), Bilbao's Fleabane (*Erigeron floribundus*), Grey Willow saplings and Charlock (*Sinapis arvensis*).

Recolonising bare ground (ED3)

This category refers to habitats with greater vegetation cover than the previous category; both habitats are intermixed throughout the site however. A large suite of ruderal species occupy this habitat, with Common Centaury (*Centaurium erythraea*), Yellowwort (*Blackstonia perfoliata*), Broad-leaved Willowherb (*Epilobium*

montanum), Self Heal (*Prunella vulgaris*), Scarlet Pimpernel (*Lysimachia arvensis*), Cat's Ear (*Hypochaeris radicata*), Hawksbeards (*Crepis* sp.), Creeping Bent (*Agrostis stolonifera*) and Yorkshire Fog (*Holcus lanatus*).

Reed and large sedge swamps (FS1)

This category refers to a small hollow adjacent to a pylon in the northeastern section of the site. Bulrush (*Typha latifolia*) is the dominant species.

Buildings and artificial surfaces (BL3)

This category refers to hard surfaces on site. This includes the paved section of access road on the western side of the site, the concrete basement walls, and the raised concrete surface at the southwestern section of the site.

Badgers

The NBDC database was consulted for details on badger records held for the Proposed Development area. The database was consulted on the 22/09/2025 for details on historical records from the site. There is a single record for a roadkill badger on the Dublin Road (R445) immediately north of the proposed development site (McLoughlin, 2012). There were no signs of badgers or setts within the proposed development area. The area is heavily disturbed brownfield, curtailed by intervening wire mesh fences and road development restricting badger movement into the site.

Otters

There were no signs of otters in the study area. The nearest NBDC records refer to records on the River Shannon 1km to the north downstream from 13/12/2012.

Bats

Six species of bat were positively identified during the various bat surveys: Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Nathusius Pipistrelle (*Pipistrellus nathusii*), Brown Long-eared bat (*Plecotus auritus*), Leisler's bat (*Nyctalus leisleri*) and Lesser Horseshoe bat (*Rhinolophus hipposideros*). In addition, five unidentified Myotis bat species were recorded, these being either Whiskered, Natterers or Daubenton's bats. Finally, several Pipistrelle calls recorded from the static detectors had a peak frequency of 40kHz thus could be either Common or Nathusius Pipistrelle.

Surveys reveal the site is unsuitable for roosting bats but is used for feeding purposes.

Lesser Horseshoe bat recordings did not occur close to sunset thus suggesting records are not from bats roosting close to the site. At the D1 survey point, located immediately outside the site boundary along the Dublin Road, a recording was made on the 08th of May at 22:52. At the D2 survey point, located at the southern boundary of the site, the recording was dated 17th of May at 00:56. While surveys demonstrate the site has very low usage

by this species it confirms a corridor for this species does exist in the city, with Lesser Horseshoe likely utilising the Groody River system as a navigational aid.

There are no European sites designated for Lesser Horseshoe bats in the zone of influence of the Proposed Development.

Birds

Bird surveys were conducted in both winter and the breeding season. Overall, low activity was recorded with gull species noted overfly generally not interacting with the site; Herring gull were noted resting on the ground on one occasion. Oystercatchers were recorded during a February survey. During the breeding season several passerines were recorded as probably breeding, however these were confined to scrub rather than open areas.

Overall, no large flocks of species of interest were noted in the surrounding wet grassland meadows. This is likely due to management and height of vegetation. Short cropped grass is favoured by wintering waterbirds such as lapwing and golden plover while geese and swans favour improved grassland fields.

Lapwing was the primary species of interest noted in Wintering surveys at the Parkway Valley development. Lapwing was observed 10 times during VP surveys between October 2025 and January 2026. The largest flock observed was made up of 165 individuals was noted in January 2026.

This species was most noted perched on bare, built land south of ponding water located outside the boundary of the current planning proposal. The ponded area is screened from the road by a large fence effectively isolating the site from road traffic.

While this is not a Nationally important flock (c. 850), it can be considered of regional importance. The regionally important numbers were recorded only once and are likely to represent small flocks gathering in preparation to move north. Lapwing was not found to be present on site in February 2025 despite January 2026 showing highest levels of activity. This shows the current site is of highest value at mid-winter.

This Lapwing flock recorded east of Limerick City is unlikely to represent an *ex-situ* component of the River Shannon and River Fergus Estuaries SPA population. The SPA Supporting Document and associated distribution mapping indicate that SPA-linked Lapwing are concentrated west of the city, associated with estuarine margins and adjacent supratidal grasslands. The observed inland flock is therefore best interpreted as a discrete, non-SPA-dependent wintering group.

Loughmore Common Turlough, located 6.8km SW from the site is noted as having populations of Lapwing present. Given the Lapwing on site were seen entering from the North and East, and that Limerick City is located between the site and pNHA, it is highly unlikely that birds present on site represent an *ex-situ* population of Lapwing associated with the pNHA.

Aquatic Species

There are no water courses with flowing water on site (See Figure 2 below). The site has large areas of pooled standing water which is ephemeral in nature depending on rainfall. Drainage is generally to ground or diffuse to distant drainage ditches to the east of the site. These drainage ditches were observed in September 2025 to be stagnant, but they have distant connectivity to the Groody River in that they link to the floodplain of the river and/or to more established water courses such as the EPA named Industrial Estate/Galvone Stream, which discharges the Groody c. 200m to the east of the site.

The ditches nearest the site were observed to have shallow stagnant stands of water with no instream flora and heavy/dense vegetation cover. They do not have fisheries value and have sub-optimal value to amphibians such as newts and frogs.

There are no plans to directly affect these drainage ditches. The proposed development does include surface water drainage design to link to one drainage ditch in the east to discharge treated surface water. Thus, the primary concern for aquatic species is upholding good water quality. Information from the Hydrological and Hydrogeological Risk Assessment presented in the Project EIAR is included as follows with regard to groundwater. There would be a potential pathway to the underlying aquifer through the bedrock via vertical migration following the proposed localised excavation of bedrock. The bedrock will be temporarily unprotected by any overburden subsoil from any localised diesel/fuel oil spills during construction. The site is underlain by an aquifer which is 'moderately productive in local zones', with a combination of 'low', 'moderate' and 'high' vulnerability across the site. This aquifer is characterised by discrete local fracturing with little connectivity. As such, flow paths are generally local. The potential for offsite migration due to any construction discharges is low as there is no significant pathway in the aquifer.

3.2. Description of the Proposed Development

The Proposed Development consists of the construction and operation of a large residential development comprising 403 no. residential units over 5 no. apartment blocks, a crèche and medical centre and all associated and ancillary development. Figure 1 shows the Proposed Development location and Figure 2 shows a detailed view of the Proposed Development boundary on recent aerial photography. Figure 3 shows the layout of the Proposed Development.

Figure 1. Showing the Proposed Development location at Parkway, Limerick.

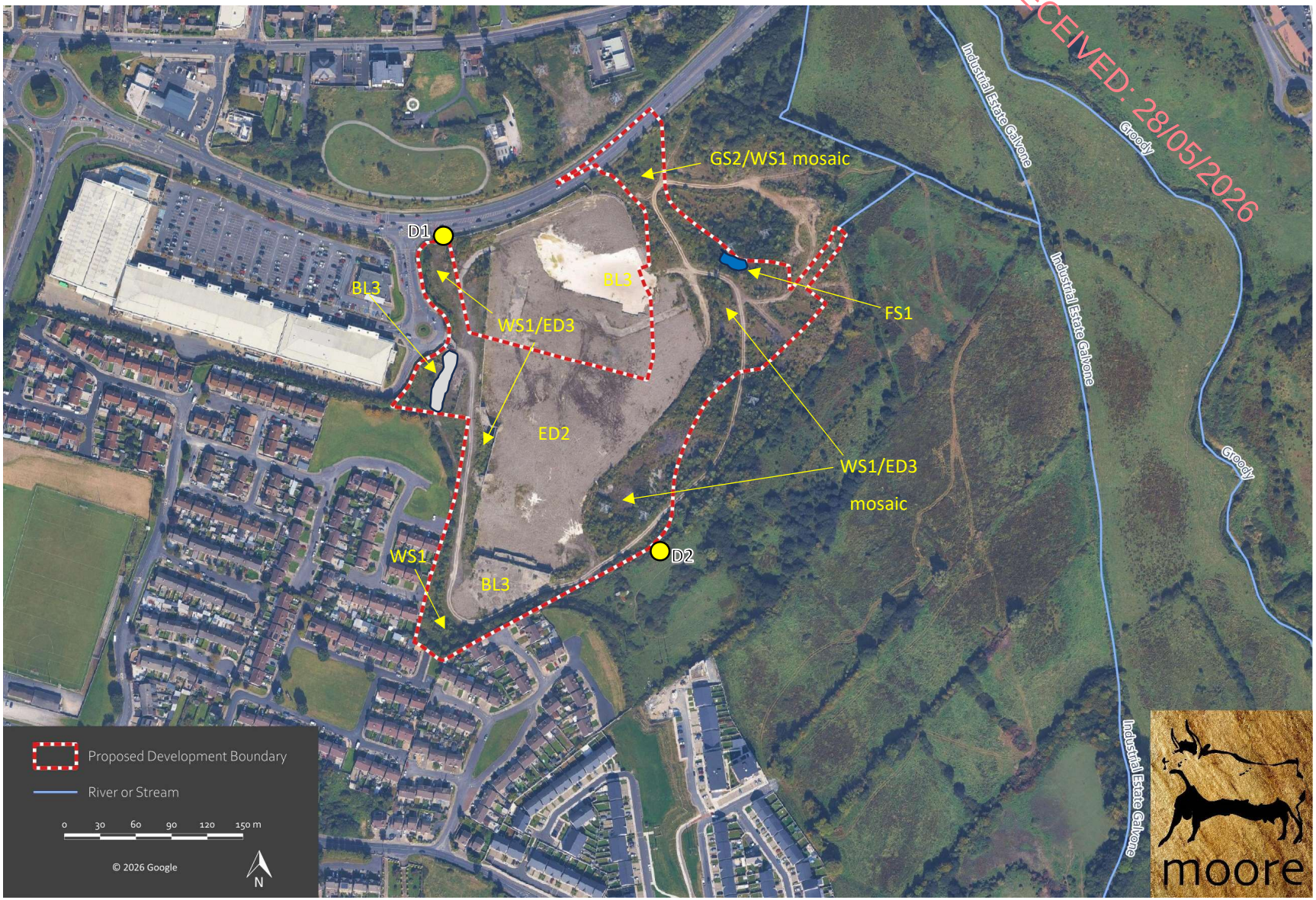

Figure 2. Showing the Proposed Development boundary and habitats present on recent aerial photography (D1& D2 Static Detector locations).

Figure 3. Plan of the Proposed Development.

4. Identification of Natura 2000 Sites

4.1. Description of Natura Sites Potentially Significantly Affected

A Zone of Influence (ZoI) of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. In accordance with the OPR Practice Note (2021), PN01, the ZoI should be established on a case-by-case basis using the Source- Pathway-Receptor framework.

The European Commission's "*Assessment of plans and projects in relation to Natura 2000 sites guidance on Article 6(3) and (4) of the Methodological Habitats Directive 92/43/EEC*" published 28 September 2021 states at section 3.1.3, that:

"Identifying the Natura 2000 sites that may be affected should be done by taking into consideration all aspects of the plan or project that could have potential effects on any Natura 2000 sites located within the zone of influence of the plan or project. This should take into account all of the designating features (species, habitat types) that are significantly present on the sites and their conservation objectives. In particular, it should identify:

- *any Natura 2000 sites geographically overlapping with any of the actions or aspects of the plan or project in any of its phases, or adjacent to them;*
- *any Natura 2000 sites within the likely zone of influence of the plan or project Natura 2000 sites located in the surroundings of the plan or project (or at some distance) that could still be indirectly affected by aspects of the project, including as regards the use of natural resources (e.g. water) and various types of waste, discharge or emissions of substances or energy;*
- *Natura 2000 sites in the surroundings of the plan or project (or at some distance) which host fauna that can move to the project area and then suffer mortality or other impacts (e.g. loss of feeding areas, reduction of home range);*
- *Natura 2000 sites whose connectivity or ecological continuity can be affected by the plan or project".*

The range of Natura 2000 sites to be assessed, i.e. the zone in which impacts from the plan or project may arise, will depend on the nature of the plan or project and the distance at which effects may occur. For Natura 2000 sites located downstream along rivers or wetlands fed by aquifers, it may be that a plan or project can affect water flows, fish migration and so forth, even at a great distance. Emissions of pollutants may also have effects over a long distance. Some projects or plans that do not directly affect Natura 2000 sites may still have a significant impact on them if they cause a barrier effect or prevent ecological linkages. This may happen, for example, when plans affect features of the landscape that connect Natura 2000 sites or that may obstruct the

movements of species or disrupt the continuity of a fluvial or woodland ecosystem. To determine the possible effects of the plan or project on Natura 2000 sites, it is necessary to identify not only the relevant sites but also the habitats and species that are significantly present within them, as well as the site objectives.

The Zone of Influence may be determined by considering the Proposed Development's potential connectivity with European sites, in terms of:

- Nature, scale, timing and duration of all aspects of the proposed works and possible impacts, including the nature and size of excavations, storage of materials, flat/sloping sites;
- Distance and nature of potential pathways (dilution and dispersion; intervening 'buffer' lands, roads etc.); and
- Location of ecological features and their sensitivity to the possible impacts.

The potential for source pathway receptor connectivity is firstly identified through GIS interrogation and detailed information is then provided on sites with connectivity. European sites that are located within a potential Zone of Influence of the Proposed Development are listed in Table 1 and presented in Figures 4 and 5, below. Spatial boundary data on the Natura 2000 network was extracted from the NPWS website (www.npws.ie) on 22 September 2025. This data was interrogated using GIS analysis to provide mapping, distances, locations and pathways to all sites of conservation concern including pNHAs, NHA and European sites.

Table 1 European Sites located within the potential Zone of Influence[1] of the Proposed Development.

Site Code	Site name	Distance (km)[2]
002165	Lower River Shannon SAC	0.705
004077	River Shannon and River Fergus Estuaries SPA	2.97

The Proposed Development is situated on a largely brownfield site in the eastern suburbs of Limerick City. The Groody River, which discharges to the River Shannon to the north, flows past c. 200m to the east.

The nearest European sites to the Proposed Development, and the only sites considered to lie within its potential Zone of Influence are the Lower River Shannon SAC (Site Code 002165), c. 705m to the north, and the River Shannon and River Fergus Estuaries SPA (Site Code 004077), c. 2.97km to the west.

There is no direct source pathway linkage between the Proposed Development site and any Natura 2000 sites. There is indirect source pathway linkage from the Proposed Development through the surface water drainage design which discharges to an open drain which flows into an OPW arterial drainage channel, ultimately discharging to the Groody River and eventually to the River Shannon.

[1] All European sites potentially connected irrespective of the nature or scale of the Proposed Development.
[2] Distances indicated are the closest geographical distance between the Proposed Development and the European site boundary, as made available by the NPWS.

There is an indirect hydrological connection to the River Shannon SAC. The Proposed Development would have a hydrological linkage through the drainage albeit via a long pathway with significant dilution and attenuation factors downstream in the river network. There will also be a hydrological connection via the wastewater drainage although, as mentioned above, the facility is required to operate under a licence which prevents water exceeding the SI threshold concentrations to be discharged.

The Proposed Development has an indirect hydrological linkage to the Upper Shannon Estuary and its associated Natura 2000 site (mentioned above), once operational via the wastewater network and surface water drainage, albeit the source pathway linkage is over a significant distance allowing for significant attenuation and large dilution factor within the river catchment and estuary.

In addition to the identified surface water pathways, a potential indirect hydrogeological linkage to the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA has been considered. During construction, excavation works, including foundation construction and localised bedrock excavation, could provide a pathway for contaminants to enter the underlying aquifer in the absence of control measures. Given the localised nature of groundwater flow, limited aquifer connectivity, attenuation within subsoils and dilution within the receiving river system, any such pathway would be indirect and limited; however, it is considered further on a precautionary basis.

The Qualifying Interests (QIs) and Special Conservation Interests (SCIs) of the European sites in the Zone of influence of the Proposed Development are provided in Table 2 below.

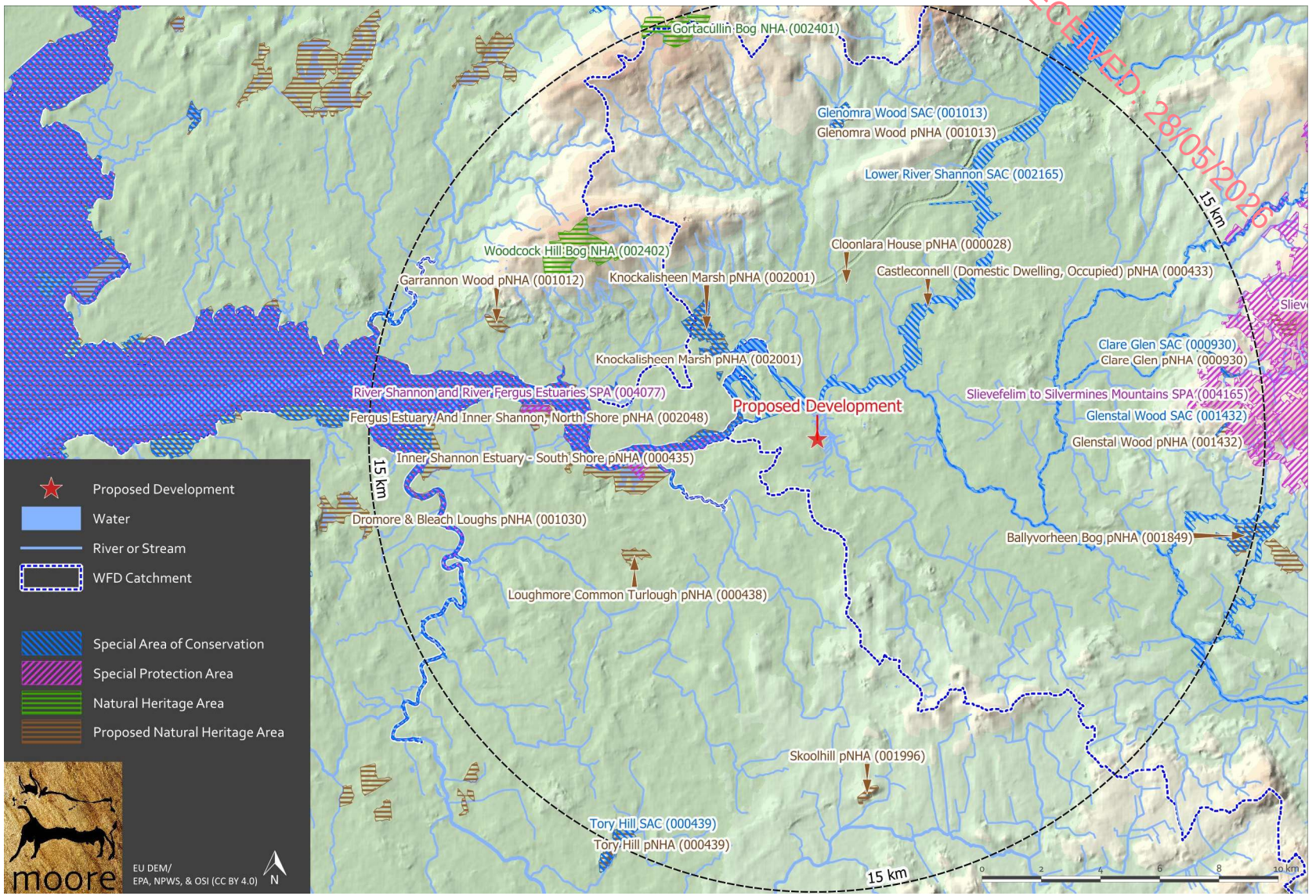

Figure 4. Showing European sites and NHAs/pNHAs within the wider Potential Zone of Influence of the Proposed Development.

Figure 5. Detailed view of European sites in the nearer Potential Zone of Influence of the Proposed Development.

*Table 2 Identification of relevant European sites using Source-Pathway-Receptor model and compilation of information on QIs and conservation objectives. *Priority Habitats*

European Site name, Site code and Conservation Objectives	Location Relative to the Proposed Development Site	Connectivity – Source-Pathway-Receptor	Considered further in Screening – Y/N
Lower River Shannon SAC (002165) The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest: 1029 Freshwater Pearl Mussel *Margaritifera margaritifera* 1095 Sea Lamprey *Petromyzon marinus* 1096 Brook Lamprey *Lampetra planeri* 1099 River Lamprey *Lampetra fluviatilis* 1106 Atlantic Salmon *Salmo salar* (only in fresh water) 1110 Sandbanks which are slightly covered by sea water all the time 1130 Estuaries 1140 Mudflats and sandflats not covered by seawater at low tide 1150 *Coastal lagoons 1160 Large shallow inlets and bays 1170 Reefs 1220 Perennial vegetation of stony banks 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts 1310 *Salicornia* and other annuals colonizing mud and sand 1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae) 1349 Bottlenose Dolphin *Tursiops truncatus* 1355 Otter *Lutra lutra* 1410 Mediterranean salt meadows (*Juncetalia maritimi*) 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation 6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	0.705km to the north of the Proposed Development	Yes. There is indirect source pathway linkage from the Proposed Development through the surface water drainage to the Groody River and eventually to the River Shannon. A CEMP will be required to ensure there are no impacts on this site. There would be a potential pathway to the underlying aquifer through the bedrock via vertical migration following the proposed localised excavation of bedrock. The bedrock will be temporarily unprotected by any overburden subsoil from any localised diesel/fuel oil spills during construction. The site is underlain by an aquifer which is 'moderately productive in local zones', with a combination of 'low', 'moderate' and 'high' vulnerability across the site. This aquifer is characterised by discrete local fracturing with little connectivity. As such, flow paths are generally local. The potential for offsite migration due to any construction discharges is low as there is no significant pathway in the aquifer. Indirect effects could have a negative effect on the aquatic QIs for this site including: 1095 Sea Lamprey, 1096 Brook Lamprey, 1099 River Lamprey, 1106 Atlantic Salmon, 1355 Otter.	Yes, see Table 3 below.

European Site name, Site code and Conservation Objectives	Location Relative to the Proposed Development Site	Connectivity – Source-Pathway-Receptor	Considered further in Screening – Y/N
91E0 *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) NPWS (2012) Conservation Objectives: Lower River Shannon SAC 002165. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.			
River Shannon and River Fergus Estuaries SPA (004077) The overall aim of the Birds Directive is to maintain or restore the favourable conservation status of habitats and species of community interest: A017 Cormorant *Phalacrocorax carbo* breeding + wintering A038 Whooper Swan *Cygnus cygnus* wintering A046 Light-bellied Brent Goose *Branta bernicla hrota* wintering A048 Shelduck *Tadorna tadorna* wintering A050 Wigeon *Anas penelope* wintering A052 Teal *Anas crecca* wintering A054 Pintail *Anas acuta* wintering A056 Shoveler *Anas clypeata* wintering A062 Scaup *Aythya marila* wintering A137 Ringed Plover *Charadrius hiaticula* wintering A140 Golden Plover *Pluvialis apricaria* wintering A141 Grey Plover *Pluvialis squatarola* wintering A142 Lapwing *Vanellus vanellus* wintering A143 Knot *Calidris canutus* wintering A149 Dunlin *Calidris alpina* wintering A156 Black-tailed Godwit *Limosa limosa* wintering A157 Bar-tailed Godwit *Limosa lapponica* wintering A160 Curlew *Numenius arquata* wintering A162 Redshank *Tringa totanus* wintering A164 Greenshank *Tringa nebularia* wintering	2.97km to the west of the Proposed Development	Yes. There is indirect source pathway linkage from the Proposed Development through the surface water drainage to the Groody River and eventually to the River Shannon. A CEMP will be required to ensure there are no impacts on this site. While the site is unsuitable for the listed annexed bird species, the consideration of potential effects on water quality is considered further. There would be a potential pathway to the underlying aquifer through the bedrock via vertical migration following the proposed localised excavation of bedrock. The bedrock will be temporarily unprotected by any overburden subsoil from any localised diesel/fuel oil spills during construction. The site is underlain by an aquifer which is 'moderately productive in local zones', with a combination of 'low', 'moderate' and 'high' vulnerability across the site. This aquifer is characterised by discrete local fracturing with little connectivity. As such, flow paths are generally local. The potential for offsite migration due to any construction discharges is low as there is no significant pathway in the aquifer.	Yes, see Table 3 below.

European Site name, Site code and Conservation Objectives	Location Relative to the Proposed Development Site	Connectivity – Source-Pathway-Receptor	Considered further in Screening – Y/N
A179 Black-headed Gull *Chroicocephalus ridibundus* wintering A999 Wetlands NPWS (2012) Conservation Objectives: River Shannon and River Fergus Estuaries SPA 004077. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.		These Annex 1 bird species are located in the lower River Shannon and Fergus Estuary and predominantly outside zone of influence of the Project. While the site is unsuitable for the listed annexed bird species, the consideration of potential effects on water quality is considered further.	

4.2. Ecological Network Supporting Natura 2000 Sites

A concurrent GIS analysis of the proposed Natural Heritage Areas (pNHA) and designated Natural Heritage Areas (NHA) in terms of their role in supporting the species using Natura 2000 sites was undertaken along with GIS investigation of European sites. These supporting roles mainly relate to mobile fauna such as mammals and birds which may use pNHAs and NHAs as ecological corridors or "stepping stones" between Natura 2000 sites.

Article 10 of the Habitats Directive and the Habitats Regulations 2011 place a high degree of importance on such non-Natura 2000 areas as features that connect the Natura 2000 network. Features such as ponds, woodlands and important hedgerows were taken into account in the decision process and during the preparation of this AA Screening report.

The NHAs and pNHAs identified in Figure 4 are located outside the Zone of Influence, with the exception of those which share the boundaries of European sites; these are considered under their higher conservation status as European sites.

Loughmore Common Turlough, located 6.8km SW from the site is noted as having populations of Lapwing present. Given the Lapwing on site were seen entering from the North and East, and that Limerick City is located between the site and pNHA, it is highly unlikely that birds present on site represent an *ex-situ* population of Lapwing associated with the pNHA.

5. Identification of Potential Impacts & Assessment of Significance

The Proposed Development is not directly connected with or necessary to the management of the sites considered in the assessment and therefore potential impacts must be identified and considered.

5.1. Assessment of Likely Significant Effects

The consideration of all potential direct and indirect impacts that may result in significant effects on the conservation objectives of a European site, taking into account the size and scale of the Proposed Development are presented in Table 3.

Table 3 Assessment of Likely Significant Effects.

Identification of all potential direct and indirect impacts that may result in significant effects on the conservation objectives of a European site, taking into account the size and scale of the project.	
Impacts:	**Significance of Impacts:**
Construction phase e.g. Vegetation clearance Demolition Surface water runoff from soil excavation/infill/landscaping (including borrow pits) Dust, noise, vibration Lighting disturbance Impact on groundwater/dewatering Storage of excavated/construction materials Access to site Pests	There is indirect source pathway linkage from the Proposed Development through the surface water drainage to the Groody River and eventually to the River Shannon. The potential effects on surface water is indeterminable in the absence of construction management. The potential for impact on the aquifer is low based on the absence of any bulk chemical storage on site. Any silt-laden stormwater from construction or hydrocarbon-contaminated water from a construction vehicle leak/tank leak will be attenuated and treated through attenuation and hydrocarbon interception on site. No exceedance of water quality objectives is likely by the time the stormwater reaches the nearest European Sites which would involve a large dilution factor (River Shannon, c. 705 m north downgradient). Hydrocarbons or any hazardous chemicals will be stored in specific bunded areas. Refuelling of plant and machinery will also be carried out in bunded areas to minimise risk of any potential being discharged from the site. As a worst-case scenario, a rupture of a 1,000-litre tank to ground is considered in this analysis which disregards the effect of bunding. This would be a single short-term event. A leakage may occur from site equipment and/or machinery during the construction phase. As a worst-case scenario an unmitigated leak of 300 litres.

	Use of wet cement is a requirement during construction. Run-off water from recent cemented areas will result in highly alkaline water with high pH. As this would only occur during particular phases of work, this is again considered as a single short-term event rather than an ongoing event. The proposed piling methodology (CFA) forms a sealed, in-situ concrete pile that limits groundwater interaction to a very short, localised period. In the event of a leak or spill, hydrogeological connections may exist through lateral migration with the River Shannon. However, the potential for impacts is low given the distance of removal, allowing for significant attenuation and large dilution factor within the river catchment and estuary, should an accidental release occur. Site management/mitigation measures will be required to eliminate/minimise potential for pollution of surface water/ground water during construction, and they be included in a CEMP to which the contractor will be required to adhere.
Operational phase e.g. Direct emission to air and water Surface water runoff containing contaminant or sediment Lighting disturbance Noise/vibration Changes to water/groundwater due to drainage or abstraction Presence of people, vehicles and activities Physical presence of structures (e.g. collision risks)	Foul drainage will be contained on site and discharged to urban drainage systems. Surface drainage will drain through SUDs measures, attenuation and flow control prior to discharge into an open drain which flows into the Industrial Estate/Galvone stream and ultimately discharging to the Groody River. There is no real likelihood of any significant effects on European Sites in the wider catchment area. The facility is located at a distance of removal such that there will be no disturbance to qualifying interest species in any European sites.
Describe any likely changes to the European site:	
Examples of the type of changes to give consideration to include: Reduction or fragmentation of habitat area Disturbance to QI species Habitat or species fragmentation	None. The Proposed Development site is not located adjacent or within a European site, therefore there is no risk of habitat loss or fragmentation or any effects on QI habitats or species directly or ex-situ. However, in the absence of controls during construction the potential for indirect negative effects on aquatic

Reduction or fragmentation in species density Changes in key indicators of conservation status value (water quality etc.) Changes to areas of sensitivity or threats to QI Interference with the key relationships that define the structure or ecological function of the site Climate change	habitats and aquatic based species located downstream in the River Shannon is uncertain.

5.2. Assessment of Potential In-Combination Effects

Cumulative effects are described by the EPA as *the addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects*. In combination effects are considered in the appropriate assessment process as an assessment of the potential adverse effects of a plan or project in combination with other plans or projects. The underlying intention of the in-combination provision is to take account of cumulative effects.

As part of the Screening for an Appropriate Assessment, in addition to the Proposed Development, other relevant plans and projects in the area must also be considered at this stage. This step aims to identify at this early stage any possible significant in-combination effects of the Proposed Development with other such plans and projects on European sites.

A review of the National Planning Application Database was undertaken. The database was then queried for developments granted planning permission within 500m of the Proposed Development within the last three years, these are presented in Table 4 below.

Table 4.Planning applications granted permission in the vicinity of the Proposed Development.

Planning Ref.	Description of development	Comments
2560113	Large-Scale Residential Development (LRD) - development of a Purpose-Built Student Accommodation (PBSA) scheme on land fronting the Groody Road and Dublin Road, Castletroy, in the townland of Newcastle, Limerick for a period of seven years. Vehicular access to the site will be from the Groody Road with pedestrian access to the Dublin Road. Extensive landscaping proposals, including (a) landscaped courtyards; (b) pedestrian and cycle connections from the Groody Road to the Groody Green Wedge; (c) natural landscaping and public walkways within the Groody Green Wedge; and (d) a Wetland area adjacent to the Groody River are also proposed. Planning permission is also sought for use of the accommodation, outside of student term time, for short-term letting purposes. The planning	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.

Planning Ref.	Description of development	Comments
	application is accompanied by a Natura Impact Statement.	
211501	modifications of the existing KFC restaurant located in the southern part of the car park, including the installation of 2no. leader boards c.1.805m high x c.0.34m wide, a free standing menu board c. 2.250m high x 2.400m wide, a banner sign c.2.200m high x 5.000m wide, a speaker post outside of the KFC unit c.1.200m high x c.0.600m wide, 4 entry/exit signs c. 1.805m high x 0.4m wide, and 1no. vehicle height restrictor c.3.000m high x c.3.900m wide, the installation of 6 cycle spaces outside of the KFC unit, and modifications to the existing hard standing outside of the KFC unit to facilitate drive through use of the restaurant(resulting in the loss of 2no. car parking spaces). Minor enhancements to the main internal site access road in the central area of the car park to enhance the priority afforded to traffic entering the Limerick One Shopping Park from the Childers Road and ancillary development to include all works above and below ground to facilitate the development	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
221208	the construction of a new detached dwelling house with connection to existing services and all ancillary site works	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
221216	Large-Scale Residential Development (LRD) on lands (0.53 Ha) at Old Dublin Road, Rhebogue, Limerick City. The proposed development comprises of the construction of a Purpose-Built Student Accommodation (PBSA) scheme consisting of 26 no. apartments with a total of 202 no. student bedspaces distributed across 3 No. multi storey blocks with a gross development area of 5,771 sq. m. 'Block C' located at the southern end of the site addressing the Old Dublin Road provides 7 No. Student apartments and 52 No. Bedspaces and is 4 storeys with the uppermost floor setback. 'Block C' steps down to 2 storeys to the rear providing ancillary space (342 sq. m.) inclusive of a communal lounge, meeting room, reception area and laundry. Two additional Blocks proposed are located to the rear, namely 'Block B', a 5-storey block with 10 No. apartments and 79 No. Bedspaces and 'Block A', a 4/5 storey block with 9 No. Apartments and 71 No. Bedspaces located at the northern end of the site. A total of 1,519 sq. m. of landscaped public open space is provided across the scheme. The site will be accessed via a 4.8m shared surface and dedicated footpath from the old Dublin Road. The proposed development also includes parking for 16 No. cars and 142 No. bicycles, boundary treatments, bin storage, public lighting, EV charging Bays, electrical infrastructure including 1 no. electrical supply sub-station, water supply and foul and surface water drainage infrastructure and all associated and ancillary site and development works. The planning application	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.

Planning Ref.	Description of development	Comments
	may be inspected online at the following website URL setup by the applicant www.olddublinroadstudentvillage.ie	
221231	the raising of the end gable wall and the hip roof to facilitate an attic conversion and all ancillary site works	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
221278	the change of use of part of existing dwelling house to a Personal Training Studio and associated development works	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
2223	the installation of an all-weather training pitch with a 3.0 metre high surrounding fence and floodlighting on masts with ancillary site works	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
22369	'Change of Use' from existing Pub & Restaurant to co-working offices with an internal area of 965m2, external building signage of 7m2, hard & soft landscaping to the front of the building, installation of an EV charging pylon, bicycle shelter & all ancillary site works	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
22683	the construction of a new extension to the side and front of the existing dwelling, alterations to the fenestration of the existing dwelling and all associated site works	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
22718	the installation of solar photovoltaic panels and mounting system (c.2, 528 sqm) on Dunnes Stores roof, including all other associated site works/services	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
22814	the installation of solar photovoltaic panels and mounting system (C.2,794 sq.m) on Dunnes Stores roof, including all other associated site works/services	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
22907	the development of proposed revisions to the previously permitted development granted under planning permission Reg. Ref. 21/1272 to include proposed modifications to the testing and display area including a new outdoor covered canopy structure, proposed revisions to 4 no. internally illuminated signage, proposed additional external signage, and all ancillary site works	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
23205	The development will consist of the construction of a single store Deposit Return Scheme(DRS) Kiosk (Gross Floor Area: 17 sq. m), including 2 no. signage panel areas for branding on the side elevation of the DRS Kiosk (1.0m x 2.0m), and all associated site development works. The development will result in the removal of 3 no. existing car parking spaces in the car park that serves the existing Aldi store	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
23216	the change from permitted office use to student accommodation on floors 6,7, 8 and 9 together with ancillary foyer on ground floor level	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.

Planning Ref.	Description of development	Comments
23240	the renovation of the protected structure No. 1628, known as the 'Groody' Toll House and the construction of a new extension. Connect to public services and carry out all ancillary site works at the above address. Previous permission granted under Planning Ref. No.18/774	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
2360242	the construction of a first floor extension to side of dwelling. I will also be seeking permission to convert the attic space to habitable area over existing two storey house, add three velux windows on the front elevation of the existing roof, a dormer window on the rear elevation of the existing roof and change the profile of the existing roof and carry out all other ancillary site works	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
23605	7no. two storey, 3 bedroom, terraced dwelling houses, all with off street car parking, connection to main sewer, public lighting and associated site works	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
2360797	the construction of a garage and all ancillary site works	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
2360934	a single storey extension to the side and rear of dwelling and construct a domestic store at the rear and all associated site works	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
2360940	the development that will consist of a proposed mezzanine level to provide for additional trading floorspace, proposed internal alterations to facilitate the development, proposed new signages to the front elevation, and all associated site works necessary to facilitate the development	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
24232	the installation of a cold store to the south side of the petrol station and all ancillary site works	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
2438	the demolition & removal of front wall, associated groundworks, internal surface water system and creation of off-road parking	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
2460978	the amalgamation of 4no. existing Ground Floor Retail Units no.s 30, 31/32, 33 & 34 accessed off the existing shopping centre Mall with existing Mall shopfronts and external escape doors on the South side elevation to create one larger Retail Unit with internal and external modifications to widen the escape doors on the South side elevation, new Mall shopfront signage and all associated works necessary to facilitate the development	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.
2560123	the change of use of an existing garage structure to a living space, including minor alterations to the front facade of the garage	The Proposed development will require construction management measures and the potential for in-combination effects will be tested further in Stage 2 AA.

The Limerick County Development Plan in complying with the requirements of the Habitats Directive requires that all Projects and Plans that could affect the Natura 2000 sites in the same potential Zone of Influence of the Proposed Development site would be initially screened for Appropriate Assessment and if requiring Stage 2 AA, that appropriate employable mitigation measures would be put in place to avoid, reduce or ameliorate negative impacts. In this way any, in-combination impacts with Plans or Projects for the proposed development area and surrounding townlands in which the proposed development site is located, would be avoided.

The listed developments have been granted permission in most cases with conditions relating to sustainable development by the consenting authority in compliance with the relevant Local Authority Development Plan and in compliance with the Local Authority requirement with regard to the Habitats Directive. The development cannot have received planning permission without having met the consenting authority requirement in this regard.

Any new applications for the Proposed Development area will be assessed on a case by case basis *initially* by Limerick City and County Council which will determine the requirement for AA Screening as per the requirements of Article 6(3) of the Habitats Directive.

The potential for in-combination effects will be further tested as Stage 2 AA.

6. Conclusion

The potential effects on surface water is indeterminable in the absence of construction management.

The potential for impact on the aquifer is low based on the absence of any bulk chemical storage on site. Any silt-laden stormwater from construction or hydrocarbon-contaminated water from a construction vehicle leak/tank leak will be attenuated and treated through attenuation and hydrocarbon interception on site. No exceedance of water quality objectives is likely by the time the stormwater reaches the nearest European Sites which would involve a large dilution factor (River Shannon, c. 705 m north downgradient).

Site management/mitigation measures will be required to eliminate/minimise potential for pollution of surface water/ground water during construction, and they be included in a CEMP to which the contractor will be required to adhere. It cannot be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on a European site.

Thus, in line with Departmental Guidance and having regard to ECJ and Irish case law and the 'Precautionary Principle', Stage 2 Appropriate Assessment is required.

A final determination will be made by the competent authority in this regard.

7. References

Department of the Environment, Heritage and Local Government (2010) Guidance on Appropriate Assessment of Plans and Projects in Ireland (as amended February 2010).

European Commission (2007) Guidance document on Article 6(4) of the 'Habitats Directive '92/43/EEC: Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interests, compensatory measures, overall coherence and opinion of the Commission. European Commission, Brussels.

European Commission (2018) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.

European Commission (2021) Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Brussels 28.9.21.

European Commission (2021) Guidance document on the strict protection of animal species of Community interest under the Habitats Directive, Brussels 12.10.21.

NPWS (2019) The Status of EU Protected Habitats and Species in Ireland. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin.

NPWS (2026) National Parks and Wildlife Service Metadata available online at https://www.npws.ie/maps-and-data

Office-of-the-Planning-Regulator (2021) Appropriate Assessment Screening for Development Management OPR Practice Note PN01. March 2021

APPENDIX 7.3

Natura Impact Statement

Moore Group

Natura Impact Statement

Parkway Valley Residential Development

Prepared by: Moore Group – Environmental Services

26 May 2026

On behalf of Kirkland Investments

Project Proponent	Kirkland Investments
Project	Parkway Valley LRD
Title	Natura Impact Statement Parkway Valley LRD

Project Number	25012	**Document Ref**	25012 Parkway Valley LRD NIS Rev1	
Revision	**Description**	**Author**		**Date**
Rev2	Updated per LRD Opinion	G. O'Donohoe		26 May 2026
Moore Archaeological and Environmental Services Limited				

Abbreviations

AA	Appropriate Assessment
ACP	An Coimisiún Pleanála
EMP	Environmental Management Plan
EEC	European Economic Community
EPA	Environmental Protection Agency
EU	European Union
FWPM	Freshwater Pearl Mussel
GIS	Geographical Information System
LAP	Local Area Plan
NHA	Natural Heritage Area
NIS	Natura Impact Statement
NPWS	National Parks and Wildlife Service
OSI	Ordnance Survey Ireland
pNHA	proposed Natural Heritage Area
SAC	Special Area of Conservation
SPA	Special Protection Area
SuDS	Sustainable Drainage System
UÉ	Uisce Éireann
WFD	Water Framework Directive

CONTENTS

1. Introduction

1.1. General Introduction

This Natura Impact Statement (NIS) has been prepared by Moore Group – Environmental Services on behalf of Kirkland Investments. This NIS report contains information to assist the competent authority in carrying out an Appropriate Assessment (AA) for the purposes of Article 6(3) of the Habitats Directive in respect of the construction and operation of a large residential development (LRD) at Parkway Valley, located at Singland, Dublin Road (R445), Limerick, Co. Limerick (hereafter referred to as the Project).

This NIS informs the Appropriate Assessment process in the determination of the significance of potential impacts on the conservation objectives of European sites. It is necessary that the Project has regard to Article 6 of the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) (referred to as the Habitats Directive).

The focus of the assessment is on objectively assessing by reference to the evidence as to whether the Project will adversely affect the integrity of the European sites in light of their conservation objectives.

1.2. Legislative Background

The Habitats Directive (Council Directive 92/43/EEC of 21 May 1992) on the conservation of natural habitats and of wild fauna and flora) is the main legislative instrument for the protection and conservation of biodiversity in the European Union (EU). Under Article 3 of the Habitats Directive, Member States are obliged to designate Special Areas of Conservation (SACs) which contain habitats or species considered important for protection and conservation in an EU context.

The Birds Directive (Council Directive 2009/147/EC) on the conservation of wild birds), transposed into Irish law by the European Communities (Birds and Habitats Directive) Regulations 2011, as amended, and the Wildlife Act 1976, as amended, is concerned with the long-term protection and management of all wild bird species and their habitats in the EU. Among other things, the Birds Directive requires that Special Protection Areas (SPAs) be established to protect migratory species and species which are rare, vulnerable, in danger of extinction, or otherwise require special attention.

SACs designated under the Habitats Directive and SPAs, designated under the Birds Directive, form a pan-European network of protected sites known as Natura 2000. The Habitats Directive sets out a unified system for the protection and management of SACs and SPAs. These sites are also referred to in Irish legislation as ‘European sites’.

Articles 6(3) and 6(4) of the Habitats Directive set out the requirement for an assessment of proposed plans and projects likely to have a significant effect on Natura 2000 sites.

Article 6(3) establishes the requirement to screen all plans and projects and to carry out an appropriate assessment if required (Appropriate Assessment (AA)).

> ***Article 6(3):*** *"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to an appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."*

Article 6(4) establishes requirements in cases of imperative reasons of overriding public interest.

These obligations in relation to Appropriate Assessment have been implemented in Ireland under Part XAB of the Planning and Development Act 2000, as amended, and in particular Section 177T thereof.

Part 1, section 2(1) of the European Communities (Birds and Habitats Directive) Regulations 2011 states as follows with regard to a Natura Impact Statement:

> *"Natura impact statement means a report comprising the scientific examination of a plan or project and the relevant European Site or European Sites, to identify and characterise any possible implications of the plan or project individually or in combination with other plans or projects in view of the conservation objectives of the site or sites, and any further information including, but not limited to, any plans, maps or drawings, scientific information or data required to enable the carrying out of an Appropriate Assessment."*

The EU Water Framework Directive[1] (WFD) is an important piece of environmental legislation which aims to improve our water quality. It applies to rivers, lakes, groundwater, estuaries and coastal waters. The Water Framework Directive was agreed by all individual EU member states in 2000, and its first cycle ran from 2009 – 2015. The Directive runs in 6-year cycles, so the second cycle runs from 2016 – 2021 and the third cycle runs form 2022-2027. It focuses on protection of surface water and groundwater and the consideration of the WFD has been addressed in the Hydrological & Hydrogeological Risk Assessment and WFD Assessment, prepared by AWN Consulting, submitted with

[1] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

the LRD Application. The key conclusions set out in those reports are incorporated into this NIS where the assessment of potential effects on the River Groody and River Shannon were considered along with the effect on surface waters and groundwaters which are potentially linked to the European sites considered in this AA process.

1.3. Methodology

The Commission's methodological guidance (EC, 2002, 2018, 2021 see Section 1.4 below) promotes a four-stage process to complete the AA and outlines the issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

Stages 1 and 2 deal with the main requirements for assessment under Article 6(3). Stage 3 may be part of Article 6(3) or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4).

Stage 1 Screening: This stage examines the likely effects of a project either alone or in combination with other projects upon a Natura 2000 site and considers whether it can be objectively concluded that these effects will not be significant. In order to screen out a project, it must be excluded, on the basis of objective information, that the Project, individually or in combination with other plans or projects, will have a significant effect on a European site.

Stage 2 Appropriate Assessment: This stage considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a Natura 2000 site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. The proponent of the plan or project will be required to submit a Natura Impact Statement, i.e. the report of a targeted professional scientific examination of the plan or project and the relevant Natura 2000 sites, to identify and characterise any possible implications for the site in view of the site's conservation objectives, taking account of in combination effects.

Stage 3 Assessment of Alternative Solutions: This stage examines alternative ways of implementing the project that, where possible, avoid any adverse impacts on the integrity of the Natura 2000 site.

Stage 4 Assessment where no alternative solutions exist and where adverse impacts remain: Where imperative reasons of overriding public interest (IROPI) exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the sites will be necessary.

1.4. Guidance

The NIS has been compiled in accordance with guidance contained in the following documents:

- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities. (Department of Environment, Heritage and Local Government, 2010 rev.) (soon to be superseded by EC Guidance in prep.).
- Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPWS 1/10 & PSSP 2/10.
- Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC (EC, 2018).
- Guidance document on the strict protection of animal species of Community interest under the Habitats Directive (EC, 2021).
- Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EC, 2021).
- Office of the Planning Regulator (OPR) Practice Note PN01 Appropriate Assessment Screening for Development Management (OPR, 2021).

1.5. Data Sources

Sources of information that were used to collect data on the Natura 2000 network of sites, and the environment within which they are located, are listed below:

- The following mapping and Geographical Information Systems (GIS) data sources, as required:
  - National Parks & Wildlife (NPWS) protected site boundary data;
  - Ordnance Survey of Ireland (OSI) mapping and aerial photography;
  - OSI/Environmental Protection Agency (EPA) rivers and streams, and catchments;
  - Digital Elevation Model over Europe (EU-DEM);
  - Google Earth and Bing aerial photography 1995-2026;
- Online data available on Natura 2000 sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie including:
  - Natura 2000 - Standard Data Form;
  - Conservation Objectives;
  - Site Synopses;
- National Biodiversity Data Centre records;
  - Online database of rare, threatened and protected species;
  - Publicly accessible biodiversity datasets.
- Status of EU Protected Habitats in Ireland. (National Parks & Wildlife Service, 2019); and
- Relevant Development Plans;
  - Limerick Development Plan 2022-2028
- Relevant Reports;

- Éire Ecology Bird and Bat Report - appendix to the Project EIAR.

1.6. Statement of Authority

This report has been prepared by Moore Group - Environmental Services to enable the competent authority to carry out AA screening in relation to the Project. The report was compiled by Ger O'Donohoe B.Sc. Applied Aquatic Sciences (ATU Galway, 1993) & M.Sc. Environmental Sciences (TCD, 1999) who has over 30 years' experience in environmental impact assessment and has completed numerous Appropriate Assessment Screening Reports and Natura Impact Statements on terrestrial and aquatic habitats for various development types.

It includes specialist data and determinations by;

- Punch Consulting Engineers providing data on civil engineering, project management, civil structural engineering, and environmental engineering, in particular the Construction Environmental Method Statement (CEMP).
- AWN Consulting on Hydrology and Hydrogeological Impact Assessment and Water Framework Directive Assessment.
- Éire Ecology Environmental Consultants on Birds and Bats.

1.7. Description of the Project

The Proposed Development consists of the construction and operation of a large residential development comprising 403 no. residential units over 5 no. apartment blocks, a crèche and medical centre and all associated and ancillary development.

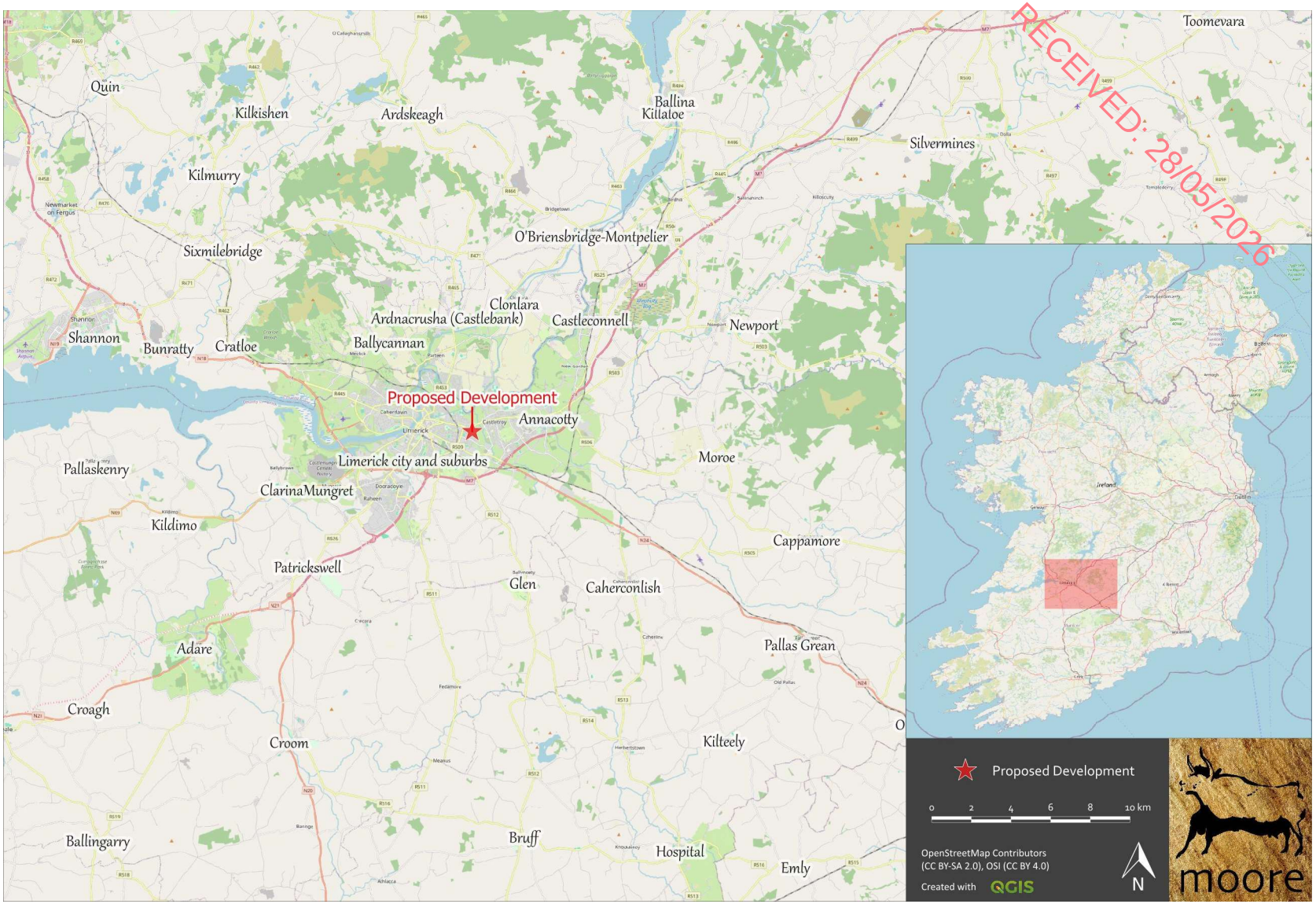

Figure 1. Showing the Project location in eastern Limerick City.

Figure 2. Showing Proposed Development boundary on recent aerial photography.

Figure 3. Layout of Proposed Development.

1.8. Description of the Receiving Environment

1.8.1. Habitats

The site comprises the footprint of a now demolished structure, with some remaining concrete surfaces (BL3) within a large area of Scrub (WS1), bare and recolonising ground (ED2/ED3), with smaller areas of Dry grassland (GS2) and Reed swamp (FS1). Habitats are presented on Figure 4. The following is a description of the flora and fauna of the existing environment in the study area.

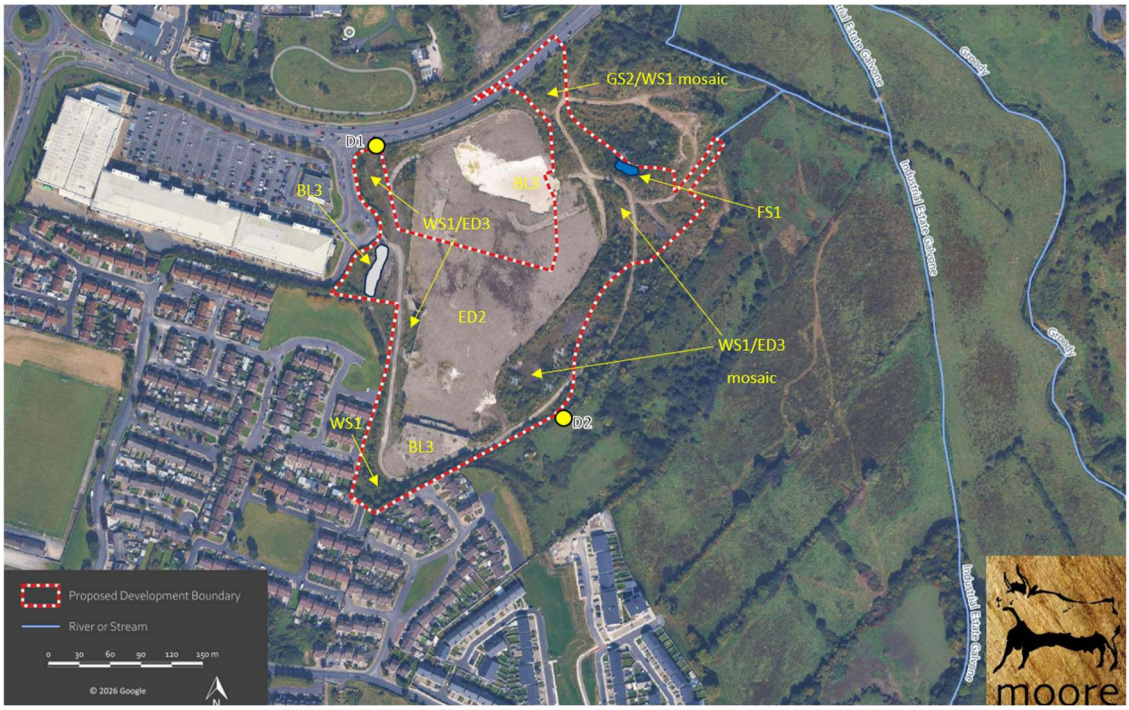

Figure 4 Proposed Development Site Habitat Types

Dry meadows and grassy verges (GS2)

This habitat occurs principally in the northeastern section of the site, adjacent to the Dublin Road (R445), as well as small, scattered patches along tracks. It generally occurs intermixed with scattered Scrub (WS1). Species present includes Cock's Foot (*Dactylis glomerata*), Red Fescue (*Festuca rubra*), Oxeye Daisy (*Leucanthemum vulgare*), Ribwort Plantain (*Plantago lanceolata*) and Bird's foot Trefoil (*Lotus corniculatus*).

Scrub (WS1)

Scrub occurs around the margins of the entire site, both as large stands and scattered patches among other transitional habitats. Where it is longest established, for example along the southwestern boundary, it comprises stands of fast-growing trees and shrubs, including Downy Birch (*Betula pubescens*), Grey Willow (*Salix cinerea*), Goat Willow (*Salix caprea*), Gorse (*Ulex europaeus*), Rowan (*Sorbus aucuparia*), Swedish Whitebeam (*Sorbus intermedia*), and *Buddleia*.

Spoil and bare ground (ED2)

This habitat occurs throughout the site, often in an intimate mosaic with WS1 and ED3 habitats. The substrate is largely crushed stone, with smaller areas of barish earth and spoil heaps. A broad range of species occur on this habitat across the site, including Red Valerian (*Centranthus ruber*), Fox and Cubs (*Pilosella aurantiaca*), Bilbao's Fleabane (*Erigeron floribundus*), Grey Willow saplings and Charlock (*Sinapis arvensis*).

Recolonising bare ground (ED3)

This category refers to habitats with greater vegetation cover than the previous category; however, both habitats are intermixed throughout the site. A large suite of ruderal species occupy this habitat, with Common Centaury (*Centaurium erythraea*), Yellowwort (*Blackstonia perfoliata*), Broad-leaved Willowherb (*Epilobium montanum*), Self Heal (*Prunella vulgaris*), Scarlet Pimpernel (*Lysimachia arvensis*), Cat's Ear (*Hypochaeris radicata*), Hawksbeards (*Crepis* sp.), Creeping Bent (*Agrostis stolonifera*) and Yorkshire Fog (*Holcus lanatus*).

Reed and large sedge swamps (FS1)

This category refers to a small hollow adjacent to a pylon in the northeastern section of the site. Bulrush (*Typha latifolia*) is the dominant species.

Buildings and artificial surfaces (BL3)

This category refers to hard surfaces on site. This includes the paved section of access road on the western side of the site, the concrete retaining walls, and the raised concrete surface at the southwestern section of the site.

1.8.2. Fauna

Badgers

The NBDC database was consulted for details on badger records held for the Proposed Development area. The database was consulted on the 22nd September 2025 for details on historical records from the site. There is a single record for a roadkill badger on the Dublin Road (R445) immediately north of the proposed development site (McLoughlin, 2012). There were no signs of badgers or setts within the proposed development area. The area is heavily disturbed brownfield, curtailed by intervening wire mesh fences and road development restricting badger movement into the site.

Otters

There were no signs of otters in the study area. The nearest NBDC records refer to records on the River Shannon 1km to the north downstream dated 13th December 2012.

Bats

Six species of bat were positively identified during the various bat surveys: Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Nathusius Pipistrelle (*Pipistrellus nathusii*), Brown Long-eared bat (*Plecotus auritus*), Leisler's bat (*Nyctalus leisleri*) and Lesser Horseshoe bat (*Rhinolophus hipposideros*). In addition, five unidentified Myotis bat species were recorded, these being either Whiskered, Natterers or Daubenton's bats. Finally, several Pipistrelle calls recorded from the static detectors had a peak frequency of 40kHz thus could be either Common or Nathusius Pipistrelle.

Surveys reveal the site is unsuitable for roosting bats but is used for feeding purposes.

Lesser Horseshoe bat recordings did not occur close to sunset thus suggesting records are not from bats roosting close to the site. At the D1 monitoring point (at the northern boundary of the site, adjacent to the Dublin Road) a recording was made on the 8th of May 2025 at 22:52 while at D2 monitoring point (at the southern boundary of the site), the recording was dated 17th May 2025 at 00:56. While surveys demonstrate the site has very low usage by this species it confirms a corridor for this species does exist in the city, with Lesser Horseshoe likely utilising the Groody River system as a navigational aid.

There are no European sites designated for Lesser Horseshoe bats in the zone of influence of the Proposed Development.

Birds

Bird surveys were conducted in both winter and the breeding season. Overall, low activity was recorded with gull species noted overfly generally not interacting with the site; Herring gull were noted resting on the ground on one occasion. Oystercatchers were recorded during a survey in February 2025. During the breeding season several passerines were recorded as probably breeding, however these were confined to scrub rather than open areas.

Overall, no large flocks of species of interest were noted in the surrounding wet grassland meadows. This is likely due to management and height of vegetation. Short, cropped grass is favoured by wintering waterbirds such as lapwing and golden plover while geese and swans favour improved grassland fields.

Lapwing was the primary species of interest noted in Wintering surveys at the Parkway Valley site. Lapwing was observed 10 times during VP surveys between October 2025 and January 2026. The largest flock observed was made up of 165 individuals was noted in January 2026.

This species was most noted perched on bare, built land south of ponding water located outside the boundary of the current planning proposal. The ponded area is screened from the road by a large fence effectively isolating the site from road traffic.

While this is not a Nationally important flock (c. 850), it can be considered of regional importance. The regionally important numbers were recorded only once and are likely to represent small flocks gathering in preparation to move north. Lapwing was not found to be present on site in February 2025 despite January 2026 showing highest levels of activity. This shows the current site is of highest value at mid-winter.

This Lapwing flock recorded east of Limerick City is unlikely to represent an *ex-situ* component of the River Shannon and River Fergus Estuaries SPA population. The SPA Supporting Document and associated distribution mapping indicate that SPA-linked Lapwing are concentrated west of the city, associated with estuarine margins and adjacent supratidal grasslands. The observed inland flock is therefore best interpreted as a discrete, non-SPA-dependent wintering group.

Loughmore Common Turlough, located 6.8km SW from the site is noted as having populations of Lapwing present. Given the Lapwing on site were seen entering from the North and East, and that Limerick City is located between the site and pNHA, it is highly unlikely that birds present on site represent an *ex-situ* population of Lapwing associated with the pNHA.

Aquatic Species

There are no water courses with flowing water on the site (See Figure 2). The site has large areas of pooled standing water which is ephemeral in nature depending on rainfall. Drainage is generally to ground or diffuse to distant drainage ditches to the east of the site. These drainage ditches were observed in September 2025 to be stagnant, but they have distant connectivity to the Groody River in that they link to the floodplain of the river and/or to more established water courses such as the EPA named Industrial Estate/Galvone Stream, which discharges the Groody c. 200m to the east of the site.

The ditches nearest the site were observed to have shallow stagnant stands of water with no instream flora and heavy/dense vegetation cover. They do not have fisheries value and have sub-optimal value to amphibians such as newts and frogs.

There are no plans to directly affect these drainage ditches. The proposed development does include surface water drainage design to link to one drainage ditch in the east to discharge treated surface water. Thus, the primary concern for aquatic species is upholding good water quality. Information from the Hydrological and Hydrogeological Risk Assessment, prepared by AWN and presented in the Project EIAR is included as follows with regard to groundwater. There would be a potential pathway to the underlying aquifer through the bedrock via vertical migration following the proposed localised excavation of bedrock. The bedrock will be temporarily unprotected by any overburden subsoil from any localised diesel/fuel oil spills during construction. The site is underlain by an aquifer which is 'moderately productive in local zones', with a combination of 'low', 'moderate' and 'high' vulnerability across the site. This aquifer is characterised by discrete local fracturing with little connectivity. As such, flow paths are generally local. The potential for offsite migration due to any construction discharges is low as there is no significant pathway in the aquifer.

2. Stage 1 – AA Screening

A Report for AA Screening was compiled and is presented as a stand-alone document in the LRD application. The following is a summary of the Screening process.

The Zone of Influence may be determined by considering the Proposed Development's potential connectivity with European sites, in terms of:

- Nature, scale, timing and duration of all aspects of the proposed works and possible impacts, including the nature and size of excavations, storage of materials, flat/sloping sites;
- Distance and nature of potential pathways (dilution and dispersion; intervening 'buffer' lands, roads etc.); and

- Location of ecological features and their sensitivity to the possible impacts.

The potential for source pathway receptor connectivity is firstly identified through GIS interrogation and detailed information is then provided on sites with connectivity. European sites that are located within a potential Zone of Influence (ZoI) of the Project are listed in Table 2 and presented in Figures 4 and 5, below. Spatial boundary data on the Natura 2000 network was extracted from the NPWS website (www.npws.ie) on 19 May 2026. This data was interrogated using GIS analysis to provide mapping, distances, locations and pathways to all sites of conservation concern including pNHAs, NHA and European sites.

Table 1 European Sites located within the potential Zone of Influence[2] of the Project.

Site Code	Site name	Distance (km)[3]
002165	Lower River Shannon SAC	0.705
004077	River Shannon and River Fergus Estuaries SPA	2.97

The Proposed Development Site is situated on a largely brownfield site in the eastern suburbs of Limerick City. The Groody River, which discharges to the River Shannon to the north, flows past the Proposed Development Site approximately 200m to the east.

The nearest European sites to the Proposed Development, and the only sites considered to lie within its potential Zone of Influence are the Lower River Shannon SAC (Site Code 002165), 705m to the north, and the River Shannon and River Fergus Estuaries SPA (Site Code 004077), 2.97km to the west.

There is no direct source pathway linkage between the Proposed Development site and any Natura 2000 sites. There is indirect source pathway linkage from the Proposed Development through the surface water drainage design which discharges to an open drain which flows into the OPW arterial drainage channel, ultimately discharging to the Groody River and eventually to the River Shannon.

There is an indirect hydrological connection to the River Shannon SAC. The Proposed Development would have a hydrological linkage through the drainage albeit via a long pathway with significant dilution and attenuation factors downstream in the river network. There will also be a hydrological connection via the wastewater drainage although, as mentioned above, the facility is required to operate under a licence which prevents water exceeding the SI threshold concentrations to be discharged.

[2] All European sites potentially connected irrespective of the nature or scale of the Proposed Development.
[3] Distances indicated are the closest geographical distance between the Proposed Development and the European site boundary, as made available by the NPWS.

The Proposed Development has an indirect hydrological linkage to the Upper Shannon Estuary and its associated Natura 2000 site (mentioned above), once operational via the wastewater network and surface water drainage, albeit the source pathway linkage is over a significant distance allowing for significant attenuation and large dilution factor within the river catchment and estuary.

In addition to the identified surface water pathways, a potential indirect hydrogeological linkage to the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA has been considered. During construction, excavation works, including foundation construction and localised bedrock excavation, could provide a pathway for contaminants to enter the underlying aquifer in the absence of control measures. Given the localised nature of groundwater flow, limited aquifer connectivity, attenuation within subsoils and dilution within the receiving river system, any such pathway would be indirect and limited; however, it is considered further on a precautionary basis.

The identification of relevant European sites compilation of information QIs and conservation objectives using Source-Pathway-Receptor model and determination of potential effects is presented in Table 2 below.

It cannot be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on the following European sites:

- Lower River Shannon SAC Site code 002165
- River Shannon and River Fergus Estuaries SPA Site code 004077

Thus, in line with Departmental Guidance and having regard to ECJ and Irish case law and the 'Precautionary Principle', Stage 2 Appropriate Assessment is required.

The Qualifying Interests (QIs) and Special Conservation Interests (SCIs) of the European sites in the Zone of influence of the Project are provided in Table 2 below.

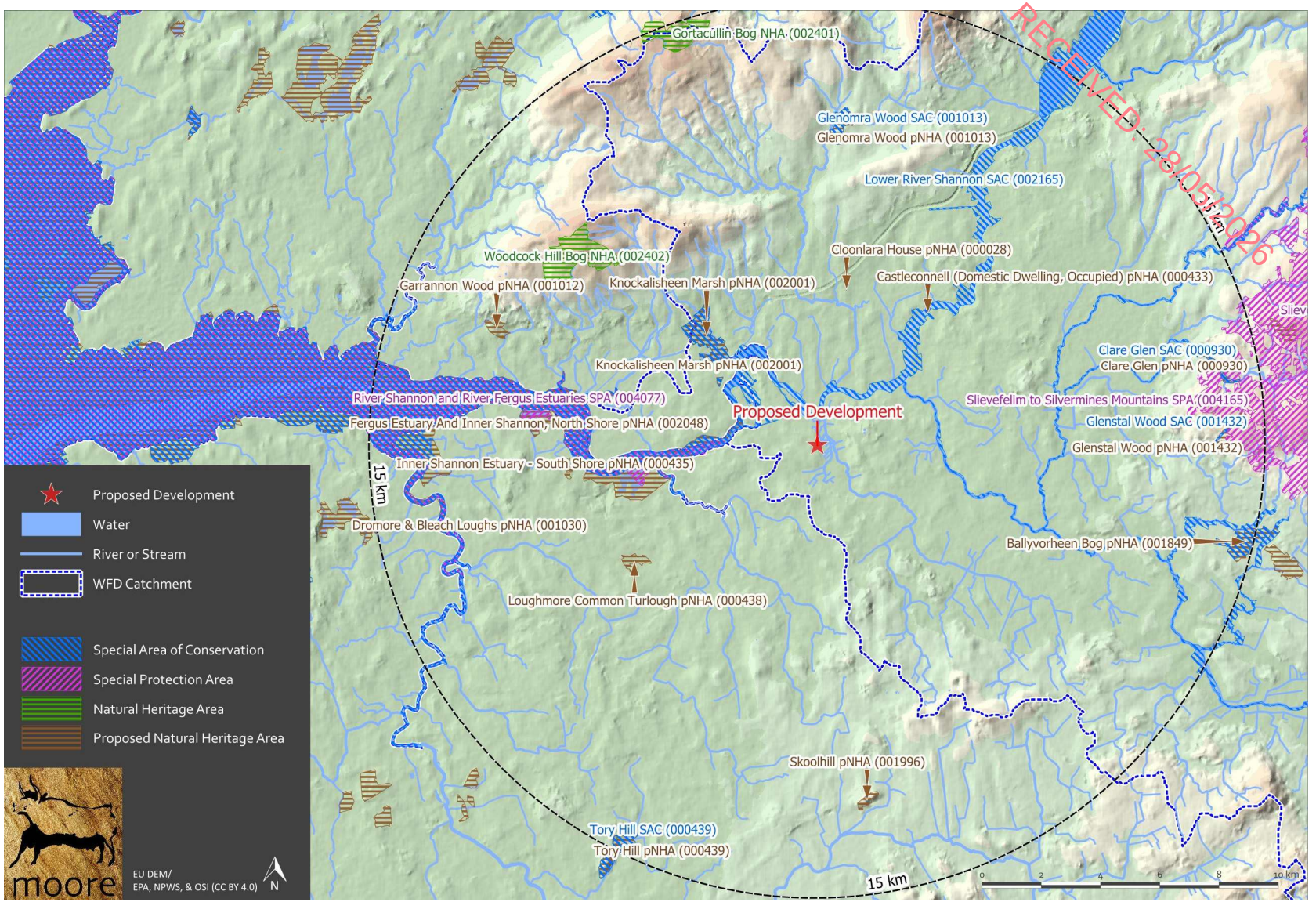

Figure 5. Showing European sites and NHAs/pNHAs within the wider Potential Zone of Influence of the Project.

Figure 6. Showing European sites within the nearer Potential Zone of Influence of the Project.

Table 2 Identification of relevant European sites using Source-Pathway-Receptor model and determination of potential effects.

Site Name	QI/SCI	Habitat Loss	Water Quality	Disturbance	Displacement	Rationale	Possibility of Significant Effects
Lower River Shannon SAC (002165)	1029 Freshwater pearl mussel *Margaritifera margaritifera*	None	Unlikely	None	Unlikely	This conservation objective applies to the freshwater pearl mussel population in the Cloon River, Co. Clare only. This species and supporting habitat is located outside the zone of influence of the Project.	None
	1095 Sea lamprey *Petromyzon marinus*	None	Unlikely	None	Unlikely	There will be no direct effects on this species located downstream in the Lower River Shannon. However, best practice construction management measures will be included in a CEMP.	Uncertain in the absence of environmental management.
	1096 Brook lamprey *Lampetra planeri*	None	Unlikely	None	Unlikely	There will be no direct effects on this species located downstream in the Lower River Shannon. However, best practice construction management measures will be included in a CEMP.	Uncertain in the absence of environmental management.
	1099 River lamprey *Lampetra fluviatilis*	None	Unlikely	None	Unlikely	There will be no direct effects on this species located downstream in the Lower River Shannon. However, best practice construction management measures will be included in a CEMP.	Uncertain in the absence of environmental management.
	1106 Atlantic salmon (*Salmo salar*) (only in fresh water)	None	Unlikely	None	Unlikely	There will be no direct effects on this species located downstream in the Lower River Shannon. However, best practice construction management measures will be included in a CEMP.	Uncertain in the absence of environmental management.
	1110 Sandbanks which are slightly covered by sea water all the time	None	Unlikely	None	Unlikely	This habitat is located outside the zone of influence of the Project in the outer Shannon Estuary.	None
	1130 Estuaries	None	Unlikely	None	Unlikely	This habitat is located outside the zone of influence of the Project in the outer Shannon Estuary.	None

	1140 Mudflats and sandflats not covered by seawater at low tide	None	Unlikely	None	Unlikely	This habitat is located outside the zone of influence of the Project in the outer Shannon Estuary.	None
	1150* Coastal lagoons	None	Unlikely	None	Unlikely	This habitat is located outside the zone of influence of the Project in the outer Shannon Estuary.	None
	1160 Large shallow inlets and bays	None	Unlikely	None	Unlikely	This habitat is located outside the zone of influence of the Project in the outer Shannon Estuary.	None
	1170 Reefs	None	Unlikely	None	Unlikely	This habitat is located outside the zone of influence of the Project in the outer Shannon Estuary.	None
	1220 Perennial vegetation of stony banks	None	Unlikely	None	Unlikely	This habitat is located outside the zone of influence of the Project in the outer Shannon Estuary.	None
	1230 Vegetated sea cliffs of the Atlantic and Baltic coasts	None	Unlikely	None	Unlikely	This habitat is located outside the zone of influence of the Project in the outer Shannon Estuary.	None
	1310 Salicornia and other annuals colonizing mud and sand	None	Unlikely	None	Unlikely	This habitat is located outside the zone of influence of the Project in the outer Shannon Estuary.	None
	1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	None	Unlikely	None	Unlikely	This habitat is located outside the zone of influence of the Project in the outer Shannon Estuary.	None
	1349 Bottlenose Dolphin *Tursiops truncatus*	None	Unlikely	None	Unlikely	This species is located outside the zone of influence of the Project in the outer Shannon Estuary	None
	1355 Otter *Lutra lutra*	None	Unlikely	Unlikely	Unlikely	There were no signs of otters in the study area. The nearest NBDC records refer to records on the River Shannon 1km to the north downstream	Uncertain in the absence of environmental management.

						Potential negative effects on Water Quality status could affect the food sources for Otters and pose a threat to prey species. A CEMP will be required to ensure there are no impacts on this site.	
	1410 Mediterranean salt meadows (*Juncetalia maritimi*)	None	Unlikely	None	Unlikely	This habitat is located outside the zone of influence of the Project in the outer Shannon Estuary	None
	3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation	None	Unlikely	None	Unlikely	This habitat is located outside the zone of influence of the Project in the upper River Shannon	None
	6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	None	Unlikely	None	Unlikely	This habitat is located outside the zone of influence of the Project in the upper River Shannon	None
	91E0* Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, *Alnion incanae*, *Salicion albae*)	None	Unlikely	None	Unlikely	This habitat is located outside the zone of influence of the Project in the upper River Shannon.	None
River Shannon and River Fergus Estuaries SPA (004077)	A017 Cormorant *Phalacrocorax carbo* breeding + wintering A038 Whooper Swan *Cygnus cygnus* wintering A046 Light-bellied Brent Goose *Branta bernicla hrota* wintering A048 Shelduck *Tadorna tadorna* wintering A050 Wigeon *Anas penelope* wintering A052 Teal *Anas crecca* wintering A054 Pintail *Anas acuta* wintering A056 Shoveler *Anas clypeata* wintering A062 Scaup *Aythya marila* wintering A137 Ringed Plover *Charadrius hiaticula* wintering	None	Unlikely	None	Unlikely	These Annex 1 bird species are located in the lower River Shannon and Fergus Estuary and predominantly outside zone of influence of the Project. While the site is unsuitable for the listed annexed bird species, the consideration of potential effects on water quality is considered further A CEMP will be required to ensure there are no impacts on this site.	None

	A140 Golden Plover *Pluvialis apricaria* wintering A141 Grey Plover *Pluvialis squatarola* wintering A142 Lapwing *Vanellus vanellus* wintering A143 Knot *Calidris canutus* wintering A149 Dunlin *Calidris alpina* wintering A156 Black-tailed Godwit *Limosa limosa* wintering A157 Bar-tailed Godwit *Limosa lapponica* wintering A160 Curlew *Numenius arquata* wintering A162 Redshank *Tringa totanus* wintering A164 Greenshank *Tringa nebularia* wintering A179 Black-headed Gull *Chroicocephalus ridibundus* wintering						
	A999 Wetlands	None	Unlikely	None	Unlikely	While the site is unsuitable for the listed annexed bird species, the consideration of potential effects on water quality is considered further A CEMP will be required to ensure there are no impacts on this site.	Uncertain in the absence of environmental management.

3. Stage 2 – Appropriate Assessment

This stage considers whether the Project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a European site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. The Stage 2 Appropriate Assessment comprises a scientific examination of the plan / project and the relevant European site; to identify and characterise any possible implications for the site in view of the site's conservation objectives, structure and function; taking account of in combination effects.

3.1. Description of European Sites Potentially Affected

Potential impacts on the following European sites have been identified**:**

Lower River Shannon SAC [002165]

The NPWS Site Synopsis in relation to the Lower River Shannon SAC (Version date: 16 December 2013) is presented in Appendix 1. The following excerpt is pertinent here.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (= priority; numbers in brackets are Natura 2000 codes):*

[1110] Sandbanks
[1130] Estuaries
[1140] Tidal Mudflats and Sandfiats
*[1150] Coastal Lagoons**
[1160] Large Shallow Inlets and Bays
[1170] Reefs
[1220] Perennial Vegetation of Stony Banks
[1230] Vegetated Sea Cliffs
[1310] Salicornia Mud
[1330] Atlantic Salt Meadows
[1410] Mediterranean Salt Meadows
[3260] Floating River Vegetation
[6410] Molinia Meadows
*[91E0] Alluvial Forests**
[1029] Freshwater Pearl Mussel (Margaritifera margaritifera)
[1095] Sea Lamprey (Petromyzon marinus)
[1096] Brook Lamprey (Lampetra planeri)
[1099] River Lamprey (Lampetra fluviatilis)
[1106] Atlantic Salmon (Salmo salar)
[1349] Bottle-nosed Dolphin (Tursiops truncatus)
[1355] Otter (Lutra lutra)

This site is of great ecological interest as it contains a high number of habitats and species listed on Annexes I and II of the E.U. Habitats Directive, including the priority habitats lagoon and alluvial woodland, the only known resident population of Bottle-nosed Dolphin in Ireland and all three Irish lamprey species. A good number of Red Data Book species are also present, perhaps most notably the thriving populations of Triangular Club-rush. A number of species listed on Annex I of the E.U. Birds Directive are also present, either wintering or breeding. Indeed, the Shannon and Fergus Estuaries form the largest estuarine complex in Ireland and support more wintering wildfowl and waders than any other site in the country. Most of the estuarine part of the site has been designated a Special Protection Area (SPA), under the E.U. Birds Directive, primarily to protect the large numbers of migratory birds present in winter.

River Shannon and River Fergus Estuaries SPA [004077]

The NPWS Site Synopsis in relation to the River Shannon and River Fergus Estuaries SPA (Version date: 30 May 2015) is presented in Appendix 1. The following excerpt is pertinent here.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Cormorant, Whooper Swan, Light-bellied Brent Goose, Shelduck, Wigeon, Teal, Pintail, Shoveler, Scaup, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Knot, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Greenshank and Black-headed Gull. It is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The River Shannon and River Fergus Estuaries SPA is an internationally important site that supports an assemblage of over 20,000 wintering waterbirds. It holds internationally important populations of four species, i.e. Light-bellied Brent Goose, Dunlin, Black-tailed Godwit and Redshank. In addition, there are 17 species that have wintering populations of national importance. The site also supports a nationally important breeding population of Cormorant. Of particular note is that three of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Golden Plover and Bar-tailed Godwit. Parts of the River Shannon and River Fergus Estuaries SPA are Wildfowl Sanctuaries.

3.2. Conservation Objectives of European Sites

3.2.1. Lower River Shannon SAC [002165]

Specific Conservation Objectives and Target Notes are set by the NPWS (Version 1. 7 August 2012) for the Lower River Shannon SAC (002165). Specific objectives are included for the aquatic species identified in the zone of influence of the Project as follows:

1095 Sea Lamprey *Petromyzon marinus*

To restore the favourable conservation condition of Sea Lamprey in the Lower River Shannon SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution: extent of anadromy	% of river accessible	Greater than 75% of main stem length of rivers accessible from estuary	Artificial barriers can block or cause difficulties to lampreys' upstream migration, thereby limiting the species to lower stretches and restricting access to spawning areas. See Gargan et al. (2011). Specific barriers serve to constrain the up-river migration of sea lamprey. The upper extent of the SAC in the R. Fergus is delineated by a barrier to migration. Barriers are also present in the Mulkear and Feale
Population structure of juveniles	Number of age/size groups	At least three age/size groups present	Attribute and target based on data from Harvey and Cowx (2003) and O'Connor (2007)
Juvenile density in fine sediment	Juveniles/m^2	Juvenile density at least 1/m^2	Juveniles burrow in areas of fine sediment in still water. Attribute and target based on data from Harvey and Cowx (2003)
Extent and distribution of spawning habitat	m^2 and occurrence	No decline in extent and distribution of spawning beds	Lampreys spawn in clean gravels. Surveys by Inland Fisheries ireland (IFI) commonly indicated accumulations of redds downstream of major weirs. (See also Gargan et al., 2011)
Availability of juvenile habitat	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	Despite observed spawning activity, sampling for ammocoetes consistently fails to find these in many samplling stations and never in any great numbers

1096 Brook Lamprey *Lampetra planeri*

To maintain the favourable conservation condition of Brook Lamprey in the Lower River Shannon SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution	% of river accessible	Access to all water courses down to first order streams	Artificial barriers can block or cause difficulties to brook lampreys' migration, both up- and downstream, thereby possibly limiting the species to specific stretches and creating genetically isolated populations (Espanhol et al., 2007)
Population structure of juveniles	Number of age/size groups	At least three age/size groups of brook/river lamprey present	Attribute and target based on data from Harvey and Cowx (2003). It is impossible to distinguish between brook and river lamprey juveniles in the field (Gardiner, 2003), hence they are considered together in this target
Juvenile density in fine sediment	Juveniles/m^2	Mean catchment juvenile density of brook/river lamprey at least 2/m^2	Juveniles burrow in areas of fine sediment in still water. Attribute and target based on data from Harvey and Cowx (2003) who state 10/m^2 in optimal conditions and more than 2/m^2 on a catchment basis
Extent and distribution of spawning habitat	m^2 and occurrence	No decline in extent and distribution of spawning beds	Spawning site and redd attributes established by IFI (Rooney et al., in press)
Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	Many sites with suitable larval attributes i.e. fine sediment in low velocity habitat, are found not to contain larval lamprey. This may be a function of chance or probability, or may be a consequence of insufficient recruitment to fill all spatial niches. Occupancy in excess of 50% of sites would be 'reasonable' for the Irish catchments examined to date (King et al., unublished data)

1099 River Lamprey *Lampetra fluviatilis*

To maintain the favourable conservation condition of River Lamprey in the Lower River Shannon SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution	% of river accessible	Access to all water courses down to first order streams	Artificial barriers can block or cause difficulties to river lampreys' migration, both up- and downstream, thereby possibly limiting species to specific stretches and creating genetically isolated populations (Espanhol et al., 2007)
Population structure of juveniles	Number of age/size groups	At least three age/size groups of river/brook lamprey present	Attribute and target based on data from Harvey and Cowx (2003). It is impossible to distinguish between river and brook lamprey juveniles in the field (Gardiner 2003), hence they are considered together in this target
Juvenile density in fine sediment	Juveniles/m^2	Mean catchment juvenile density of river/brook lamprey at least 2/m^2	Juveniles burrow in areas of fine sediment in still water. Attribute and target based on data from Harvey and Cowx (2003) who state 10/m^2 in optimal conditions and more than 2/m^2 on a catchment basis
Extent and distribution of spawning habitat	m^2 and occurrence	No decline in extent and distribution of spawning beds	
Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	Many sites with suitable larval attributes i.e. fine sediment in low velocity habitat, are found not to contain larval lamprey. This may be a function of chance or probability, or may be a consequence of insufficient recruitment to fill all spatial niches. Occupancy in excess of 50% of sites would be 'reasonable' for the Irish catchments examined to date (King et al., unpublished data)

1106 Atlantic Salmon *Salmo salar* (only in fresh water)

To restore the favourable conservation condition of Salmon in the Lower River Shannon SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution: extent of anadromy	% of river accessible	100% of river channels down to second order accessible from estuary	Artificial barriers block salmons' upstream migration, thereby limiting the species to lower stretches and restricting access to spawning areas. The large hyrdo-electric station at Ardnacrusha and the Parteen regulating weir present considerable obstructions to upstream passage of salmon on the Shannon main channel. While both have fish passes installed, upstream migration of salmon is still problematical. Further weirs upstream on the Shannon also restrict access to spawning habitat. No such obstacles, causing significant fish passage issues for salmon are present on the Feale and Mulkear rivers
Adult spawning fish	Number	Conservation Limit (CL) for each system consistently exceeded	A conservation limit is defined by the North Atlantic Salmon Conservation Organisation (NASCO) as "the spawning stock level that produces long-term average maximum sustainable yield as derived from the adult to adult stock and recruitment relationship". The target is based on the Standing Scientific Committee of the National Salmon Commission's annual model output of CL attainment levels. See SSC (2010). Stock estimates are either derived from direct counts of adults (rod catch, fish counter) or indirectly by fry abundance counts. The salmon stocks in the Shannon above the impoundments are significantly below their Conservation Limits. Salmon stocks in the Feale and Mulkear rivers are above CL
Salmon fry abundance	Number of fry/5 minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling	Target is threshold value for rivers currently exceeding their conservation limit (CL). The abundance of salmon fry at monitored sites on the Shannon main channel, above the hydro-electric station, is significantly below this target
Out-migrating smolt abundance	Number	No significant decline	Smolt abundance can be negatively affected by a number of impacts such as estuarine pollution, predation and sea lice (*Lepeophtheirus salmonis*). On the Shannon main channel, salmon smolt abundance may be significantly affected by mortality passing through hydro-electric turbines
Number and distribution of redds	Number and occurrence	No decline in number and distribution of spawning redds due to anthropogenic causes	Salmon spawn in clean gravels. Artificial barriers are currently preventing salmon from accessing suitable spawning habitat on the Shannon main channel
Water quality	EPA Q value	At least Q4 at all sites sampled by EPA	Q values based on triennial water quality surveys carried out by the Environmental Protection Agency (EPA)

1355 Otter *Lutra lutra*

To restore the favourable conservation condition of Otter in the Lower River Shannon SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique. FCS target, based on 1980/81 survey findings, is 88% in SACs. Current range in Shannon catchment estimated at 70.5% (Bailey and Rochford 2006)
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 596.8ha above high water mark (HWM); 958.9ha along river banks/ around ponds	No field survey. Areas mapped to include 10m terrestrial buffer along shoreline (above HWM and along river banks) identified as critical for otters (NPWS, 2007)
Extent of marine habitat	Hectares	No significant decline. Area mapped and calculated as 4,461.6ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (HWM) (NPWS, 2007; Kruuk, 2006)
Extent of freshwater (river) habitat	Kilometers	No significant decline. Length mapped and calculated as 500.1km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982)
Extent of freshwater (lake/lagoon) habitat	Hectares	No significant decline. Area mapped and calculated as 125.6ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (NPWS, 2007)
Couching sites and holts	Number	No significant decline	Otters need lying up areas throughout their territory where they are secure from disturbance (Kruuk, 2006; Kruuk and Moorhouse, 1991)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006) and wrasse and rockling in coastal waters (Kingston et al., 1999)
Barriers to connectivity	Number	No significant increase. For guidance, see map 17	Otters will regularly commute across stretches of open water up to 500m. e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed

3.2.2. River Shannon and River Fergus Estuaries SPA [004077]

Generic Conservation Objectives and Target Notes are set by the NPWS (Version 1. 17th September 2012) for the River Shannon and River Fergus Estuaries SPA (004077). Specific objectives are included for the aquatic species identified in the zone of influence of the Project as follows:

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

• its natural range, and area it covers within that range, are stable or increasing, and
• the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
• the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

• population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
• the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
• there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Objective: To maintain or restore the favourable conservation condition of the bird species listed and Wetlands as Special Conservation Interests for this SPA

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

Bird Code	Common Name	Scientific Name
A017	Cormorant	Phalacrocorax carbo
A038	Whooper Swan	Cygnus cygnus
A046	Light-bellied Brent Goose	Branta bernicla hrota
A048	Shelduck	Tadorna tadorna
A050	Wigeon	Anas penelope
A052	Teal	Anas crecca
A054	Pintail	Anas acuta
A056	Shoveler	Anas clypeata
A062	Scaup	Aythya marila
A137	Ringed Plover	Charadrius hiaticula

A140	Golden Plover	Pluvialis apricaria
A141	Grey Plover	Pluvialis squatarola
A142	Lapwing	Vanellus vanellus
A143	Knot	Calidris canutus
A149	Dunlin	Calidris alpina
A156	Black-tailed Godwit	Limosa limosa
A157	Bar-tailed Godwit	Limosa lapponica
A160	Curlew	Numenius arquata
A162	Redshank	Tringa totanus
A164	Greenshank	Tringa nebularia
A179	Black-headed Gull	Chroicocephalus ridibundus

Separately, a conservation objective for Wetlands and Waterbirds is also listed:

Conservation objectives for: River Shannon and River Fergus Estuaries SPA [004077]

A999 Wetlands

To maintain the favourable conservation condition of the wetland habitat in the River Shannon and River Fergus Estuaries SPA as a resource for the regularly-occurring migratory waterbirds that utilise it. This is defined by the following attribute and target:

Attribute	Measure	Target	Notes
Wetland habitat area	hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 32,261ha, other than that occurring from natural patterns of variation	The wetland habitat area was estimated as 32,261ha using OSi data and relevant orthophotographs. For further information see part three of the conservation objectives supporting document

3.3. Consideration of Effects on Qualifying Interests

This section concentrates on the biology of Qualifying Interests and addresses the susceptibility of habitats first land then each species to potential effects from the Project.

3.3.1. Annex I Habitats Directive Habitats

The nearest European sites to the Project are the Lower River Shannon SAC (Site Code 002165), which is located c. 705m to the north.

There would be no direct impacts on the Lower River Shannon SAC and there would be no habitat loss or fragmentation as a result of the Project. Having considered direct impacts and ruling them out, indirect impacts are then considered in terms of source pathway vectors.

A worst-case scenario may be considered whereby the Project would be the source of a significant detrimental change in water quality in the watercourses connecting the site to the River Shannon, either alone or in combination with other projects or plans as a result of indirect pollution. The effect would have to be considered in terms of changes in water quality which would negatively affect the aquatic species or food sources for those species for which the Lower River Shannon SAC is designated.

3.3.2. Annex I Birds Directive Birds

The Proposed Development site contains a mix of brownfield, rank grassland and scrub, and is generally unsuitable for the species listed as conservation objectives of the Shannon and River Fergus Estuaries, principally waterfowl, gulls and waders.

There will be no direct impacts on any bird species listed as conservation objectives of the River Shannon and River Fergus Estuaries SPA and so the main concern is with regard to water quality and indirect impacts on water quality and prey species.

3.3.3. E.U. Habitats Directive Annex II Species

The following Annex II Habitats Directive species listed in the Lower River Shannon SAC are considered as sensitive receptors having been brought forward from Stage 1 screening for further consideration.

Lamprey Species

All three species of Lamprey Sea Lamprey (*Petromyzon marinus*), River Lamprey (*Lampetra fluviatilis*) and Brook Lamprey (*Lampetra planeri*) have potential to occur in the River Shannon downstream of the Project site.

A worst-case scenario may be considered whereby the Project would be the source of a significant detrimental change in water quality in the Groody River and River Shannon. The effect would have to be considered in terms of changes in water quality which would affect Lamprey species.

Salmon (Salmo salar)

The Lower River Shannon SAC is designated for Atlantic Salmon. A conservation limit is defined by the North Atlantic Salmon Conservation Organisation (NASCO) as "*the spawning stock level that produces long term average maximum sustainable yield as derived from the adult to adult stock and recruitment relationship*". The target is based on the Standing Scientific Committee of the National Salmon Commission's annual model output of CL attainment levels. Stock estimates are either derived from direct counts of adults (rod catch, fish counter) or indirectly by fry abundance counts. The River Shannon is currently below its CL. Smolt abundance can be negatively affected by a number of impacts such as estuarine pollution, predation and Sea lice (*Lepeophtheirus salmonis*). The conservation Limit (CL) for each system in regard to spawning fish should be consistently exceeded. The mean catchment-

wide abundance threshold value should maintain or exceed 0+ fry (currently set at 17 salmon fry /5min sampling). There should be no significant decline in out-migrating smolt. There should be no decline in number and distribution of spawning redds due to anthropogenic causes and a value of at least Q4 at all sites sampled by EPA should persist.

While direct impacts may be ruled out, impacts on water quality and indirect impacts on salmonids are a consideration.

Otter (Lutra lutra)

The otter is listed under Annex II of the EU Habitats Directive and under Annex II of the Berne Convention; it is also a legally protected species under the Wildlife Act, 1976 (and Wildlife (Amendment) Act, 2000). Otters are found throughout Ireland and tend to occupy linear territories along watercourses and are rarely found far away from water.

There were no signs of otters in the study area. The nearest NBDC records refer to records on the River Shannon c. 1km to the north downstream dated 12th December 2012.

A worst-case scenario may be considered whereby the Project may result in a significant detrimental change in water quality in the Groody River and River Shannon, either alone or in combination with other projects or plans as a result of indirect pollution. The effect would have to be considered in terms of changes in water quality which would affect the habitats or food sources for otters.

3.3.4. Ecological Network Supporting Natura 2000 Sites

An analysis of the proposed Natural Heritage Areas and designated Natural Heritage Areas in terms of their role in supporting the species using Natura 2000 sites was undertaken. These supporting roles mainly relate to mobile fauna such as mammals and birds which may use pNHAs and NHAs as "stepping stones" between Natura 2000 sites.

Article 10 of the Habitats Directive and the Habitats Regulations 2011 place a high degree of importance on such non-Natura 2000 areas as features that connect the Natura 2000 network. Features such as ponds, woodlands and important hedgerows were taken into account during the AA process.

The NHAs and pNHAs identified in Figure 4 are located outside the Zone of Influence, with the exception of the Fergus Estuary and Inner Shannon, North Shore pNHA, which overlaps with the two European sites considered above, and is assessed under its higher conservation status as European sites.

Loughmore Common Turlough, located 6.8km SW from the site is noted as having populations of Lapwing present. Given the Lapwing on site were seen entering from the North and East, and that Limerick City is located between the site and pNHA, it is highly unlikely that birds present on site represent an *ex-situ* population of Lapwing associated with the pNHA.

3.4. Potential Impacts on European Sites

The Project is not directly connected with or necessary to the management of the European sites considered in the assessment and therefore potential downstream impacts must be identified and considered.

There will be no direct impacts on the Lower River Shannon SAC or the River Shannon and River Fergus Estuaries SPA as a result of the Project. Direct impact refers to physical impacts defined in the Departmental Guidance as 'Loss of habitat area' and/or 'Habitat Fragmentation'. Having established this, the assessment emphasis is placed on potential indirect and cumulative impacts.

The potential for impact is considered whereby the Project would result in a significant detrimental change in water quality either alone or in combination with other projects or plans as a result of indirect pollution of surface water. The effect would have to be considered in terms of changes in water quality which would affect the habitats or species for which Lower River Shannon SAC or the River Shannon and River Fergus Estuaries SPA are designated.

3.4.1. Direct Impacts

There will be no direct impacts on the Lower River Shannon SAC (Site Code 002165) or the River Shannon and River Fergus Estuaries SPA (Site Code 004077) as a result of the implementation of the Project. Direct impact refers to physical impacts defined in the Departmental Guidance as 'Loss of habitat area' and/or 'Habitat Fragmentation'. The Project will have **no direct impacts** upon the integrity or the site structure of the Lower River Shannon SAC or the River Shannon and River Fergus Estuaries SPA.

3.4.2. Indirect Impacts

Construction

Consideration of impacts on Surface Water

The potential for impact is considered whereby the Project would result in a significant detrimental change in water quality either alone or in combination with other projects or plans as a result of indirect pollution of surface water. The effect would have to be considered in terms of changes in water quality which would affect the species for which the Lower River Shannon SAC (Site Code 002165), is designated; Otter, Salmon, Sea Lamprey, River Lamprey and Brook Lamprey.

Consideration of impacts on Groundwater

Fuels or any hazardous chemicals will be stored in specific bunded areas. Refuelling of plant and machinery will also be carried out in bunded areas to minimise risk of any potential being discharged from the site. As a worst-case scenario, a rupture of a 1,000-litre tank to ground is considered in this analysis which disregards the effect of bunding. This would be a single short-term event.

A leakage may occur from site equipment and/or machinery during the construction phase. As a worst-case scenario an unmitigated leak of 300 litres. It should be noted that Hydrotreated Vegetable Oil (HVO) will be used to fuel vehicles and plant including generators and cranes. The use of HVO, rather than diesel, means that there will be minimal potential for impact for contamination of surface water or groundwater bodies in the event of a spill / leak. HVO is considered less harmful than traditional fossil oils when it spills on the ground due to its renewable nature and biodegradability. When HVO spills, it tends to degrade rapidly through natural processes involving microorganisms, which can metabolize it into less harmful substances. This quick degradation helps minimize its impact on the hydrological environment, reducing the risk of contamination in water sources and soil. Additionally, HVO has a lower toxicity profile compared to fossil oils, making it less harmful to aquatic life and groundwater systems.

Use of wet cement is a requirement during construction. Run-off water from recent cemented areas will result in highly alkaline water with high pH. As this would only occur during particular phases of work, this is again considered as a single short-term event rather than an ongoing event.

With regard to the construction of foundations, the CEMP submitted with the planning application states that the piles will be bored displacement (CFA methodology) which will have an average depth of 5 m below ground level. This foundation construction method extracts a core of soil and replaces it with concrete cast in-situ; a continuous helical auger drills into the subsoil/rock to the required depth; concrete is then pumped steadily through the hollow stem, forming a continuous cast-in-place concrete pile. Since the core is never left open, CFA piling effectively prevents soil collapse and groundwater ingress. Reinforcement cages are installed immediately after concreting while the concrete remains workable, since the in-situ casting creates a water-tight seal against the geology over the length of the pile. This methodology ensures that the contact time between the concrete and any potential groundwater is minimal and, given the low connectivity of the underlying bedrock aquifer, this contact is limited to the duration of the concrete seal and spatially, only to the potential groundwater in contact with the hollow stem during this brief period. Any interaction between fresh concrete and groundwater would be highly localised and short-lived during placement. The surrounding soils and bedrock provide buffering and dilution, and the low permeability means migration beyond the immediate pile location is considered highly unlikely. On this basis, impacts to groundwater quality from piling are considered negligible, and consequently there would be no likely impact on the River Shannon SAC.

In the event of a leak or spill, hydrogeological connections may exist through lateral migration with the River Shannon. However, the potential for impacts is low given the distance of removal, allowing for significant attenuation and large dilution factor within the river catchment and estuary, should an accidental release occur. Also, the use of HVO for vehicles and plant means reduces the risk of contamination of receiving waters, as it degrades rapidly when spilled and is less harmful to aquatic life and groundwater systems, than fossil fuels.

Operation

Consideration of impacts on Surface Water

The design has taken account of the potential impacts of the development on surface water and groundwater quality; measures have been incorporated in the design to mitigate these potential impacts.

The proposed surface water management design establishes a hydrological connection to the Groody River, where discharge from the site will be controlled via a hydrobrake located upstream of the stormwater outfall, conveying flows by gravity to the Industrial Estate/Galvone Stream, which discharges to the Groody River, c. 200 m to the east of the site.

To mitigate potential contamination from surface water runoff, which may originate from roads, car parks, and hardstanding areas, a sustainable drainage system (SuDS) will be implemented. This system is designed to minimize the risk of contaminants, such as hydrocarbons, entering the stormwater drainage network and subsequently impacting the hydrological and hydrogeological environment.

The proposed drainage system has been designed using Causeway Flow software, in line with Recommendations for Site Development Works for Housing Areas (DoEHLG), the GDSDS, CIRIA guidance (C644 and C753), and Limerick City & County Council requirements.

A new fully separated surface water sewer network is proposed for the development. In accordance with the Limerick Development Plan 2022–2028 and the Greater Dublin Strategic Drainage Study (GDSDS), surface water discharge will be restricted to the greater of 2 l/s/ha or Qbar. The system has been designed to manage the 1% AEP (1:100-year) storm event, with an additional 30% climate change allowance and 10% urban creep allowance, providing robust long-term resilience under future climate scenarios.

Refer to the Engineering Report, prepared by Punch Consulting Engineers (May 2026) submitted as part of the planning application for further information on the proposed surface water management and design.

Consideration of impacts on Groundwater

During the operational phase, the introduction of additional hardstanding has the potential to marginally reduce local groundwater recharge and increase surface water runoff if not appropriately controlled. However, the majority of the site is already capped with existing hardstanding and made ground, meaning that the Proposed Development will not significantly alter current infiltration patterns. As a result, any further reduction in recharge to the underlying Locally Important Aquifer (Limerick City East GWB) will be very minor and not hydrologically significant.

In the absence of mitigation, increased surface water runoff could potentially contribute to downstream hydraulic pressures or localised flooding. However, the site is predominantly located within Flood Zone C, where the probability of fluvial flooding is low. All elements of the Proposed Development have been positioned outside areas identified as susceptible to localised flooding, other than the outfall pipe from the nature-based attenuation pond, effectively eliminating residual flood risk to the development itself.

To ensure runoff is properly managed and does not exceed pre-development conditions, the proposed drainage system incorporates a suite of Sustainable Drainage Systems (SuDS) and attenuation features. These measures regulate, treat, and attenuate flows before discharge, ensuring that:

- Runoff rates remain restricted to greenfield-equivalent conditions;
- Peak flows are contained on-site;
- Downstream drainage networks are not hydraulically overloaded; and
- Groundwater recharge patterns remain broadly unchanged.

No surface water or groundwater abstractions are proposed during the operational phase. Therefore, no impacts on the quantity of local water resources are anticipated.

Overall, with the proposed SuDS measures, attenuation systems, and the fact that the site is already predominantly hardstanding / made ground, no significant operational impacts on surface water or groundwater flow or quantity are expected.

3.5. Mitigation

The following mitigation measures for the control of surface water and prevention of pollution of downstream surface waters is presented in the Project CEMP by Punch Consulting Engineers. The contractor will be required to implement and adhere to the CEMP and update the CEMP to include any further provisions required by the grant of permission.

3.5.1. Surface Water Management

Run-off into excavations/earthworks cannot be prevented entirely and is largely a function of prevailing weather conditions. Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts. All run-off will be prevented from directly entering any water courses.

During the construction phase as part of standard practice, appropriate measures to prevent water pollution to any watercourses near the site will be implemented during the construction phases and will include referral to:

a) Control of Water Pollution from construction Sites, Guidance for consultants and contractors (C532).

b) Environmental Good Practice on site guide (5th edition) (C811).

c) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016).

Pollution Control

Reduction and Prevention of Suspended Solids

Prior to the commencement of earthworks operations, the following site-specific surface water management measures will be put in place:

a) Silt fencing will be installed around the perimeter of the site. The purpose of the silt fencing is to prevent silt laden water leaving the site with the potential to impact nearby watercourses. A typical silt fence detail is shown below in Figure 5. It will consist of a double layer of geotextile membrane fixed to wooden stakes approximately 600mm high. The membrane will be anchored into the ground to form a continuous barrier to silt laden water from the works site. Silt fences will be monitored via a silt inspection log to be maintained by the construction manager and periodically maintained during the construction period. Typical maintenance will consist of repairs to damaged sections of membrane and removal of a build-up of silt on the upslope side of the fence. Daily silt fence inspections are recommended as part of their operation ensuring that any necessary repairs can be expedited.

b) Drainage ditches will be installed to intercept surface water where there is a risk of significant water flow into excavations or on to adjoining lands. All collected surface water will have to be treated prior to discharge. The run-off will be directed through appropriately sized settlement ponds to remove suspended solids.

Figure 7. Example of Silt fencing.

c) The settlement ponds will be designed/constructed in accordance with Ciria Document C532 "Control of water pollution from Construction Sites" (Ciria 2001) and Ciria Document C648 "Control of water pollution from linear construction projects" (Ciria 2006).

d) Each pond will contain a forebay equivalent to 10% of the overall plan area of the pond. The forebay receives incoming surface water into the pond and provides settlement of the larger sediment material from the runoff. The forebay prevents these larger sediment materials progressing further in the pond. The ponds will contain a permanent water level below the outfall location allowing sediment to settle to the bottom while allowing the clean water at the top of the pond to discharge to the existing surface water sewer. Settlement tanks by Siltbuster or similar may be utilised.

e) Work involving moving of soil during heavy rainfall will be avoided to minimise potential for entrainment of silt. Where forecasts indicate heavy rainfall events, works should be rescheduled accordingly.

f) Where stockpiling is required, temporary stockpiles will be located a minimum of 20m from any temporary or permanent surface water drainage features. Three sides will be surrounded with silt fencing with access from the fourth (uphill) side. Sides will be smoothened, and runoff directed toward drainage ditches. Stockpiles shall be stored on level terrain and be covered during heavy rainfall periods. To prevent run off from stripped ground, banks are to be placed on the downstream side of stockpiles.

g) Emergency contact numbers for the Local Authority Environmental Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.

h) Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same.

i) The construction manager will be responsible for the implementation of these measures. They will be inspected on at least a daily basis for the duration of the works, and a record of these inspections will be maintained.

j) Emergency contact numbers for the Local Authority Environmental Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.

k) Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same.

l) The construction manager will be responsible for the implementation of these measures. They will be inspected on at least a daily basis for the duration of the works, and a record of these inspections will be maintained.

Flooding

The site is at low risk of flooding during the 0.1%AEP or 1 in 1000-year return period fluvial event. Therefore, the statistical likelihood of flooding during the construction period is very low. It is impractical to provide silt management measures that could remain operational during such a flood event, protection of life and critical infrastructure will be the overriding concerns. The following measures will be required:

a) An Emergency Response plan shall be developed for the site and shall consider the following:

i. Flood warning shall be used to determine the probability of the site being flooded.

ii. Met Éireann weather warnings alert service which is available on the Met Éireann app or through its website.

iii. Tidal levels around the coast of Ireland are currently monitored by OPW who issue high tide advisories, which are then widely broadcast on mainstream and social media. Warnings are usually given several days in advance with updates regularly provided in the media as the weather event approaches. This ensures there will be sufficient warning of any extreme tidal events likely to impact on the proposed development.

iv. Emergency evacuation routes will be included in the plan to ensure that flooding does not threaten the safety of construction personnel and/or residents.

v. In the event of a forecasted flood event, all fuels, material stockpiles and construction equipment and materials that may be a cause for pollutants will be stored in areas above a level of 9.5mAOD (MRFS 0.5%AEP flood level with 300mm freeboard.

vi. No construction works will take place during orange or red rain weather warnings issued by Met Eireann.

b) Silt fences shall be inspected as part of the daily inspection regime. Trapped silt shall be removed from silt fencing at regular intervals.

c) Earthworks shall be left exposed for the minimum time possible. Earthworks formations shall be protected by a layer of imported granular fill.

d) Landscaping and seeding in accordance with the Landscaping Plan shall be carried out as early as possible

e) Compound shall not be located within Flood Zone A or B.

Ground Water Vulnerability

There is a high water table within the site and the site is partially located in an area where the groundwater vulnerability varies from low to moderate to high.

Control measures are to be implemented on site to minimise the risk of contamination from fuels, chemicals and hazardous materials to prevent accidental spills and leaks.

Control of cement run-off

As stated in Section 3.4.2, the piles will be bored displacement (CFA methodology) The methodology (CFA) forms a sealed, in-situ concrete pile that limits groundwater interaction to a very short, localised period, meaning any potential effects on groundwater (and therefore downstream Natura 2000 sites) are negligible.

Works with concrete shall be done during dry conditions for a period sufficient to cure the concrete (at least 48 hours). Concrete pours shall occur in contained areas.

The washing out of concrete delivery vehicles is a potential source of pollution and shall be carried out in designated wash out areas only.

Wash-out areas on site will be located greater than 50m from any natural watercourse and properly designed with an impermeable liner to contain all cement laden water. No wash-out of ready-mix concrete vehicles shall be located within 20 metres of any temporary or permanent drainage features. Signage shall be erected to clearly identify the wash-out areas. Sufficient wash-out areas shall be

provided to cater for all vehicles at peak delivery times. Wash water shall be disposed of appropriately off site.

Accidental Spills and Leaks

No bulk chemicals will be stored within the active construction areas. Temporary oil and fuel storage tanks may be kept in the material storage area (within site compound) in suitable containers and will be stored on appropriately bunded spill pallets as required. HVO will be used to fuel vehicles and plant on site. Any fuel and oil stored onsite shall be stored on bunded spill pallets approved under BS EN 1992-3:2006. All bunds will be impermeable and capable of retaining a volume of equal to or greater than 1.1 times (>110%) capacity of the containers stored on them. In the event of a spillage, excess oil or fuel will be collected in the bund.

Refuelling of vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in the compound, away from watercourses. Emergency procedures and spill protection equipment such as oil booms, oil soakage pads, socks and sand will be available in clearly marked bins/silos and in construction vehicles to be used in the event of an accidental release during refuelling. This equipment will be checked weekly to ensure there is sufficient supply for the site. Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil removed from the site and disposed of in accordance with all relevant waste management legislation. Training will be given to site workers in how to manage a spill event.

Prior to any work commencing on site, all construction equipment will be checked to ensure that it is mechanically sound, to avoid leaks of oil, hydraulic fluids and grease.

The following measures will be put in place to prevent any spillages to ground of fuels during machinery activities and prevent any resulting soil and/or groundwater quality impacts:

a) Where mobile fuel bowsers are used the following measures will be taken:

i. Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use.

ii. Any pump or valve will be fitted with a lock and will be secured when not in use.

iii. All bowsers to carry a spill kit and operatives must have spill response training; and Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

iv. Weekly checks of spill kits will be carried out to ensure they are sufficiently stocked.

Monitoring

Daily checks will be carried out and recorded in a Surface Water Management Log to ensure pollution control measures are being adhered to. A daily log of inspections will be maintained, and any significant

blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur.

Contingency Plan

a)The measures will be implemented prior to the relevant works being carried out.

b)During the construction stage the following procedures will be undertaken in response to any pollution incident at the site:

i. The source and/or activities relating to the incident will be stopped immediately.

ii. Adequate steps will be taken to filter and/or slow down the rate of discharge/slippage.

iii. The relevant authorities will be contacted immediately.

The Construction Environmental Management Plan sets out the overall management strategy for construction works for the proposed site works. It includes the mitigation measures set out in the EIAR and will be updated to include additional measures required by the planning conditions, subject to grant of permission for the Proposed Development. The CEMP aims to ensure the management of construction activity is carried out in a planned, structured, and considerate manner which minimises the impacts of the works on the local environment, residents and commercial activities in the vicinity of the site. The project team are committed to ensuring that the construction activities to be carried out are pro-actively managed to minimise potential impacts.

3.6. Assessment of Cumulative & In-Combination Effects

Cumulative effects are described by the EPA as *the addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects*. In combination effects are considered in the appropriate assessment process as an assessment of the potential adverse effects of a plan or project in combination with other plans or projects. The underlying intention of the in-combination provision is to take account of cumulative effects.

As part of the Screening for an Appropriate Assessment, in addition to the Proposed Development, other relevant plans and projects in the area must also be considered at this stage. This step aims to identify at this early stage any possible significant in-combination effects of the Proposed Development with other such plans and projects on European sites.

A review of the National Planning Application Database was undertaken. The database was then queried for developments granted planning permission within 500m of the Proposed Development within the last three years, these are presented in Table 3 below.

Table 3. Planning applications granted permission in the vicinity of the Proposed Development.

Planning Ref.	Description of development	Comments
2560113	Large-Scale Residential Development (LRD) - development of a Purpose-Built Student Accommodation (PBSA) scheme on land fronting the Groody Road and Dublin Road, Castletroy, in the townland of Newcastle, Limerick for a period of seven years. Vehicular access to the site will be from the Groody Road with pedestrian access to the Dublin Road. Extensive landscaping proposals, including (a) landscaped courtyards; (b) pedestrian and cycle connections from the Groody Road to the Groody Green Wedge; (c) natural landscaping and public walkways within the Groody Green Wedge; and (d) a Wetland area adjacent to the Groody River are also proposed. Planning permission is also sought for use of the accommodation, outside of student term time, for short-term letting purposes. The planning application is accompanied by a Natura Impact Statement.	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
211501	modifications of the existing KFC restaurant located in the southern part of the car park, including the installation of 2no. leader boards c.1.805m high x c.0.34m wide, a free standing menu board c. 2.250m high x 2.400m wide, a banner sign c.2.200m high x 5.000m wide, a speaker post outside of the KFC unit c.1.200m high x c.0.600m wide, 4 entry/exit signs c. 1.805m high x 0.4m wide, and 1no. vehicle height restrictor c.3.000m high x c.3.900m wide, the installation of 6 cycle spaces outside of the KFC unit, and modifications to the existing hard standing outside of the KFC unit to facilitate drive through use of the restaurant(resulting in the loss of 2no. car parking spaces). Minor enhancements to the main internal site access road in the central area of the car park to enhance the priority afforded to traffic entering the Limerick One Shopping Park from the Childers Road and ancillary development to include all works above and below ground to facilitate the development	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
221208	the construction of a new detached dwelling house with connection to existing services and all ancillary site works	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
221216	Large-Scale Residential Development (LRD) on lands (0.53 Ha) at Old Dublin Road, Rhebogue, Limerick City. The proposed development comprises of the construction of a Purpose-Built Student Accommodation (PBSA) scheme consisting of 26 no. apartments with a total of 202 no. student bedspaces distributed across 3 No. multi storey blocks with a gross development area of 5,771 sq. m. 'Block C' located at the southern end of the site	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.

	addressing the Old Dublin Road provides 7 No. Student apartments and 52 No. Bedspaces and is 4 storeys with the uppermost floor setback. 'Block C' steps down to 2 storeys to the rear providing ancillary space (342 sq. m.) inclusive of a communal lounge, meeting room, reception area and laundry. Two additional Blocks proposed are located to the rear, namely 'Block B', a 5-storey block with 10 No. apartments and 79 No. Bedspaces and 'Block A', a 4/5 storey block with 9 No. Apartments and 71 No. Bedspaces located at the northern end of the site. A total of 1,519 sq. m. of landscaped public open space is provided across the scheme. The site will be accessed via a 4.8m shared surface and dedicated footpath from the old Dublin Road. The proposed development also includes parking for 16 No. cars and 142 No. bicycles, boundary treatments, bin storage, public lighting, EV charging Bays, electrical infrastructure including 1 no. electrical supply sub-station, water supply and foul and surface water drainage infrastructure and all associated and ancillary site and development works. The planning application may be inspected online at the following website URL setup by the applicant www.olddublinroadstudentvillage.ie	
221231	the raising of the end gable wall and the hip roof to facilitate an attic conversion and all ancillary site works	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
221278	the change of use of part of existing dwelling house to a Personal Training Studio and associated development works	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
2223	the installation of an all-weather training pitch with a 3.0 metre high surrounding fence and floodlighting on masts with ancillary site works	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
22369	'Change of Use' from existing Pub & Restaurant to co-working offices with an internal area of 965m2, external building signage of 7m2, hard & soft landscaping to the front of the building, installation of an EV charging pylon, bicycle shelter & all ancillary site works	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
22683	the construction of a new extension to the side and front of the existing dwelling, alterations to the fenestration of the existing dwelling and all associated site works	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
22718	the installation of solar photovoltaic panels and mounting system (c.2, 528 sqm) on Dunnes Stores roof, including all other associated site works/services	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
22814	the installation of solar photovoltaic panels and mounting system (C.2,794 sq.m) on Dunnes Stores roof, including all other associated site works/services	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.

22907	the development of proposed revisions to the previously permitted development granted under planning permission Reg. Ref. 21/1272 to include proposed modifications to the testing and display area including a new outdoor covered canopy structure, proposed revisions to 4 no. internally illuminated signage, proposed additional external signage, and all ancillary site works	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
23205	The development will consist of the construction of a single store Deposit Return Scheme(DRS) Kiosk (Gross Floor Area: 17 sq. m), including 2 no. signage panel areas for branding on the side elevation of the DRS Kiosk (1.0m x 2.0m), and all associated site development works. The development will result in the removal of 3 no. existing car parking spaces in the car park that serves the existing Aldi store	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
23216	the change from permitted office use to student accommodation on floors 6,7, 8 and 9 together with ancillary foyer on ground floor level	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
23240	the renovation of the protected structure No. 1628, known as the 'Groody' Toll House and the construction of a new extension. Connect to public services and carry out all ancillary site works at the above address. Previous permission granted under Planning Ref. No.18/774	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
2360242	the construction of a first floor extension to side of dwelling. I will also be seeking permission to convert the attic space to habitable area over existing two storey house, add three velux windows on the front elevation of the existing roof, a dormer window on the rear elevation of the existing roof and change the profile of the existing roof and carry out all other ancillary site works	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
23605	7no. two storey, 3 bedroom, terraced dwelling houses, all with off street car parking, connection to main sewer, public lighting and associated site works	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
2360797	the construction of a garage and all ancillary site works	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
2360934	a single storey extension to the side and rear of dwelling and construct a domestic store at the rear and all associated site works	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
2360940	the development that will consist of a proposed mezzanine level to provide for additional trading floorspace, proposed internal alterations to facilitate the development, proposed new signages to the front elevation, and all associated site works necessary to facilitate the development	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
24232	the installation of a cold store to the south side of the petrol station and all ancillary site works	No potential for in-combination effects given that with proposed construction management, the

		Proposed Development will have no effect on any European site.
2438	the demolition & removal of front wall, associated groundworks, internal surface water system and creation of off-road parking	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
2460978	the amalgamation of 4no. existing Ground Floor Retail Units no.s 30, 31/32, 33 & 34 accessed off the existing shopping centre Mall with existing Mall shopfronts and external escape doors on the South side elevation to create one larger Retail Unit with internal and external modifications to widen the escape doors on the South side elevation, new Mall shopfront signage and all associated works necessary to facilitate the development	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.
2560123	the change of use of an existing garage structure to a living space, including minor alterations to the front facade of the garage	No potential for in-combination effects given that with proposed construction management, the Proposed Development will have no effect on any European site.

The Limerick County Development Plan in complying with the requirements of the Habitats Directive requires that all Projects and Plans that could affect the Natura 2000 sites in the same potential Zone of Influence of the Proposed Development site would be initially screened for Appropriate Assessment and if requiring Stage 2 AA, that appropriate employable mitigation measures would be put in place to avoid, reduce or ameliorate negative impacts. In this way any, in-combination impacts with Plans or Projects for the proposed development area and surrounding townlands in which the proposed development site is located, would be avoided.

The listed developments have been granted permission in most cases with conditions relating to sustainable development by the consenting authority in compliance with the relevant Local Authority Development Plan and in compliance with the Local Authority requirement with regard to the Habitats Directive. The development cannot have received planning permission without having met the consenting authority requirement in this regard.

Any new applications for the Proposed Development area will be assessed on a case-by-case basis *initially* by Limerick City and County Council which will determine the requirement for AA Screening as per the requirements of Article 6(3) of the Habitats Directive.

4. Natura Impact Statement & Conclusion

This NIS has reviewed the predicted impacts arising from the Project and found that with the implementation of appropriate measures during the Construction Phase implemented through a

Construction Environment Management Plan, there will be no adverse effects on the integrity of the Lower River Shannon SAC or the River Shannon and River Fergus Estuaries SPA.

It is the conclusion of this NIS, on the basis of the best scientific knowledge available, and with the implementation of the mitigation and restriction measures set out under Section 3.5, that the possibility of any adverse effects on the integrity of the European Sites considered in this NIS (having regard to their conservation objectives), arising from the Project, either alone or in combination with other plans or projects, can be excluded beyond reasonable scientific doubt.

A final determination will be made by the competent authority in this regard.

5. References

Department of the Environment, Heritage and Local Government (2010) Guidance on Appropriate Assessment of plans and projects in Ireland (as amended February 2010).

European Commission (2007) Guidance document on Article 6(4) of the 'Habitats Directive '92/43/EEC: Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interests, compensatory measures, overall coherence and opinion of the Commission. European Commission, Brussels.

European Commission (2018) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.

European Commission (2021) Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Brussels 28.9.21.

European Commission (2021) Guidance document on the strict protection of animal species of Community interest under the Habitats Directive, Brussels 12.10.21.

NPWS (2019) The Status of EU Protected Habitats and Species in Ireland. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

NPWS (2012) Conservation Objectives: Lower River Shannon SAC [002156]. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

NPWS (2012) Conservation Objectives: River Shannon and River Fergus Estuaries SPA 004077 . Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

NPWS (2026) National Parks and Wildlife Service Metadata available online at https://www.npws.ie/maps-and-data

Office-of-the-Planning-Regulator (2021) Appropriate Assessment Screening for Development Management OPR Practice Note PN01. March 2021.

Appendix 1

NPWS Site Synopses

Lower River Shannon SAC [002165]

The NPWS provides the following Site Synopsis in relation to the Lower River Shannon SAC (Version date: 16 December 2013):

This very large site stretches along the Shannon valley from Killaloe in Co. Clare to Loop Head/ Kerry Head, a distance of some 120 km. The site thus encompasses the Shannon, Feale, Mulkear and Fergus estuaries, the freshwater lower reaches of the River Shannon (between Killaloe and Limerick), the freshwater stretches of much of the Feale and Mulkear catchments and the marine area between Loop Head and Kerry Head. Rivers within the sub-catchment of the Feale include the Galey, Smearlagh, Oolagh, Allaughaun, Owveg, Clydagh, Caher, Breanagh and Glenacarney. Rivers within the sub-catchment of the Mulkear include the Killeenagarriff, Annagh, Newport, the Dead River, the Bilboa, Glashacloonaraveela, Gortnageragh and Cahernahallia.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (= priority; numbers in brackets are Natura 2000 codes):*

[1110] Sandbanks
[1130] Estuaries
[1140] Tidal Mudflats and Sandfiats
*[1150] Coastal Lagoons**
[1160] Large Shallow Inlets and Bays
[1170] Reefs
[1220] Perennial Vegetation of Stony Banks
[1230] Vegetated Sea Cliffs
[1310] Salicornia Mud
[1330] Atlantic Salt Meadows
[1410] Mediterranean Salt Meadows
[3260] Floating River Vegetation
[6410] Molinia Meadows
*[91E0] Alluvial Forests**
[1029] Freshwater Pearl Mussel (Margaritifera margaritifera)
[1095] Sea Lamprey (Petromyzon marinus)
[1096] Brook Lamprey (Lampetra planeri)
[1099] River Lamprey (Lampetra fluviatilis)
[1106] Atlantic Salmon (Salmo salar)
[1349] Bottle-nosed Dolphin (Tursiops truncatus)
[1355] Otter (Lutra lutra)

The Shannon and Fergus Rivers flow through Carboniferous limestone as far as Foynes, but west of Foynes Namurian shales and flagstones predominate (except at Kerry Head, which is formed from Old Red Sandstone). The eastern sections of the Feale catchment flow through Namurian rocks and the western stretches through Carboniferous limestone. The Mulkear flows through Lower Palaeozoic rocks in the upper reaches before passing through Namurian rocks, followed by Lower Carboniferous shales and Carboniferous limestone. The Mulkear River itself, immediately north of Pallas Green, passes through an area of Rhyolites, Tuffs and Agglomerates.

The Shannon and Fergus Estuaries form the largest estuarine complex in Ireland. They form a unit stretching from the upper tidal limits of the Shannon and Fergus Rivers to the mouth of the Shannon Estuary (considered to be a line across the narrow strait between Kilcredaun Point and Kilconly Point). Within this main unit there are several tributaries with their own 'sub-estuaries' e.g. the Deel River, Mulkear River, and Maigue River. To the west of Foynes, a number of small estuaries form indentations in the predominantly hard coastline, namely Poulnasherry Bay, Ballylongford Bay, Clonderalaw Bay and the Feale or Cashen River estuary.

Both the Fergus and inner Shannon Estuaries feature vast expanses of intertidal mudflats, often fringed with saltmarsh vegetation. The smaller estuaries also feature mudflats, but have their own unique characteristics, e.g. Poulnasherry Bay is stony and unusually rich in species and biotopes. Plant species are typically scarce on the mudflats, although there are some eelgrass (Zostera spp.) beds and patches of green algae (e.g. Ulva sp. and Enteromorpha sp.). The main macro-invertebrate community which has been noted from the inner Shannon and Fergus estuaries is a Macoma- Scrobicularia-Nereis community.

In the transition zone between mudflats and saltmarsh, specialised colonisers of mud predominate. For example, swards of Common Cord-grass (Spartina anglica) frequently occur in the upper parts of the estuaries. Less common are swards of Glasswort (Salicornia europaea agg.). In the innermost parts of the estuaries, the tidal channels or creeks are fringed with species such as Common Reed (Phragmites australis) and club-rushes (Scirpus maritimus, S. tabernaemontani and S. triquetrus). In addition to the nationally rare Triangular Club-rush (Scirpus triqueter), two scarce species are found in some of these creeks (e.g. Ballinacurra Creek): Lesser Bulrush (Typha angustifolia) and Summer Snowflake (Leucojum aestivum).

Saltmarsh vegetation frequently fringes the mudflats. Over twenty areas of estuarine saltmarsh have been identified within the site, the most important of which are around the Fergus estuary and at Ringmoylan Quay. The dominant type of saltmarsh present is Atlantic salt meadow occurring over mud. Characteristic species occurring include Common Saltmarsh-grass (Puccinellia maritima), Sea Aster (Aster tripolium), Thrift (Armeria maritima), Sea-milkwort (Glaux maritima), Sea Plantain (Plantago maritima), Red Fescue (Festuca rubra), Creeping Bent (Agrostis stolonifera), Saltmarsh Rush (Juncus gerardi), Long-bracted Sedge (Carex extensa), Lesser Sea-spurrey (Spergularia marina) and Sea Arrowgrass (Triglochin maritima). Areas of Mediterranean salt meadows, characterised by clumps of Sea Rush (Juncus maritimus) occur occasionally. Two scarce species are found on saltmarshes in the vicinity of the Fergus estuary: a type of robust saltmarsh-grass (Puccinellia foucaudii), sometimes placed within the species Common Saltmarsh-grass (P. maritima) and Hard-grass (Parapholis strigosa).

Saltmarsh vegetation also occurs around a number of lagoons within the site, two of which have been surveyed as part of a National Inventory of Lagoons. Cloonconeen Pool (4-5 ha) is a natural sedimentary lagoon impounded by a low cobble barrier. Seawater enters by percolation through the barrier and by overwash. This lagoon represents a type which may be unique to Ireland since the substrate is composed almost entirely of peat. The adjacent shore features one of the best examples of a drowned forest in Ireland. Aquatic vegetation in the lagoon includes typical species such as Beaked Tasselweed (Ruppia maritima) and green algae (Cladophora sp.). The fauna is not diverse, but is typical of a high salinity lagoon and includes six lagoon specialists (Hydrobia ventrosa, Cerastoderma glaucum, Lekanesphaera hookeri, Palaemonetes varians, Sigara stagnalis and Enochrus bicolor). In contrast, Shannon Airport Lagoon (2 ha) is an artificial saline lake with an artificial barrier and sluiced outlet. However, it supports two Red Data Book species of stonewort (Chara canescens and Chara cf. connivens).

Most of the site west of Kilcredaun Point/Kilconly Point is bounded by high rocky sea cliffs. The cliffs in the outer part of the site are sparsely vegetated with lichens, Red Fescue, Sea Beet (Beta vulgaris subsp. maritima), Sea Campion (Silene vulgaris subsp. maritima), Thrift and plantains (Plantago spp.). A rare endemic type of sea- lavender, Limonium recurvum subsp. pseudotranswallianum, occurs on cliffs near Loop Head. Cliff-top vegetation usually consists of either grassland or maritime heath. The boulder clay cliffs further up the estuary tend to be more densely vegetated, with swards of Red Fescue and species such as Kidney Vetch (Anthyllis vulneraria) and Common Bird's-foot-trefoil (Lotus corniculatus).

The site supports an excellent example of a large shallow inlet and bay. Littoral sediment communities in the mouth of the Shannon Estuary occur in areas that are exposed to wave action and also in areas extremely sheltered from wave action. Characteristically, exposed sediment communities are composed of coarse sand and have a sparse fauna. Species richness increases as conditions become more sheltered. All shores in the site have a zone of sand hoppers at the top, and below this each of the shores has different characteristic species giving a range of different shore types.

The intertidal reefs in the Shannon Estuary are exposed or moderately exposed to wave action and subject to moderate tidal streams. Known sites are steeply sloping and show a good zonation down the shore. Well developed lichen zones and littoral reef communities offering a high species richness in the sublittoral fringe and strong populations of the Purple Sea Urchin Paracentrotus lividus are found. The communities found are tolerant to sand scour and tidal streams. The infralittoral reefs range from sloping platforms with some vertical steps, to ridged bedrock with gullies of sand between the ridges, to ridged bedrock with boulders or a mixture of cobbles, gravel and sand. Kelp is very common to about 18 m. Below this it becomes rare and the community is characterised by coralline crusts and red foliose algae.

Other coastal habitats that occur within the site include stony beaches and bedrock shores (these support a typical zonation of seaweeds such as Fucus spp., Ascophyllum nodosum and kelps), shingle beaches (with species such as Sea Beet, Sea Mayweed Matricaria maritima, Sea Campion and Curled Dock - Rumex crispus), sandbanks which are slightly covered by sea water at all times (e.g. in the area from Kerry Head to Beal Head) and sand dunes (a small area occurs at Beal Point, where Marram — Ammophila arenaria is the dominant species).

Freshwater rivers have been included in the site, most notably the Feale and Mulkear catchments, the Shannon from Killaloe to Limerick (along with some of its tributaries, including a short stretch of the Kilmastulla River), the Fergus up as far as Ennis, and the Cloon River. These systems are very different in character: the Shannon is broad, generally slow flowing and naturally eutrophic; the Fergus is smaller and alkaline; while the narrow, fast flowing Cloon is acid in nature. The Feale and Mulkear catchments exhibit all the aspects of a river from source to mouth. Semi-natural habitats, such as wet grassland, wet woodland and marsh occur by the rivers, but improved grassland is the most common habitat type. One grassland type of particular conservation significance, Molinia meadows, occurs in several parts of the site and the examples at Worldsend on the River Shannon are especially noteworthy. Here are found areas of wet meadow dominated by rushes (Juncus spp.) and sedges (Carex spp.), and supporting a diverse and species-rich vegetation, including such uncommon species as Blue-eyed Grass (Sisyrinchium bermudiana) and Pale Sedge (C. pallescens).

Floating river vegetation characterised by species of water-crowfoot (Ranunculus spp.), pondweeds (Potamogeton spp.) and the moss Fontinalius antipyretica are present throughout the major river systems within the site. The rivers contain an interesting bryoflora with Schistidium alpicola var. alpicola recorded from in-stream boulders on the Bilboa, new to Co. Limerick.

Alluvial woodland occurs on the banks of the Shannon and on islands in the vicinity of the University of Limerick. The woodland is up to 50 m wide on the banks and somewhat wider on the largest island. The most prominent woodland type is gallery woodland where White Willow (Salix alba) dominates the tree layer with occasional Alder (Alnus glutinosa). The shrub layer consists of various willow species with Rusty Willow (Salix cinerea ssp. oleifolia) and what appear to be hybrids of S. alba x S. viminalis. The herbaceous layer consists of tall perennial herbs. A fringe of bulrush (Typha sp.) occurs on the river side of the woodland. On slightly higher ground above the wet woodland and on the raised embankment remnants of mixed oak-ash- alder woodland occur. These are poorly developed and contain numerous exotic species but locally there are signs that it is invading open grassland. Alder is the principal tree species, with occasional Pedunculate Oak (Quercus robur), elm (Ulmus glabra and U. procera), Hazel (Corylus avellana), Hawthorn (Crataegus monogyna) and the shrubs Guelder-rose (Viburnum opulus) and willows. The ground flora is species-rich.

While woodland is infrequent within the site, however Cahiracon Wood contains a strip of old oak woodland. Sessile Oak (Q. petraea) forms the canopy, with an understorey of Hazel and Holly (Ilex aquifolium). Great Wood-rush (Luzula sylvatica) dominates the ground flora. Less common species present include Great Horsetail (Equisetum telmeteia) and Pendulous Sedge (Carex pendula).

In the low hills to the south of the Slievefelim Mountains, the Cahernahallia River cuts a valley through the Upper Silurian rocks. For approximately 2 km south of Cappagh Bridge at Knockanavar, the valley sides are wooded. The woodland consists of birch (Betula spp.), Hazel, oak, Rowan (Sorbus aucuparia), some Ash (Fraxinus excelsior) and willow (Salix spp.). Most of the valley is not grazed by stock, and as a result the trees are regenerating well. The ground flora features prominent Great wood-rush and Bilberry (Vaccinium myrtillus), along with a typical range of woodland herbs. Bracken (Pteridium aquilinum) is a feature in areas where there is more light available.

The valley sides of the Bilboa and Gortnageragh Rivers, on higher ground north-east of Cappamore, support patches of semi-natural broadleaf woodland dominated by Ash, Hazel, oak and birch. There is a good scrub layer with Hawthorn, willow, Holly and Blackthorn (Prunus spinosa) common. The herb layer in these woodlands is often open, with a typically rich mixture of woodland herbs and ferns. Moss species diversity is high. The woodlands are ungrazed. The Hazel is actively coppiced in places.

There is a small area of actively regenerating cut-away raised bog at Ballyrorheen. It is situated approximately 5 km north-west of Cappamore in Co. Limerick. The bog contains some wet areas with good cover of bog mosses (Sphagnum spp.). Species of particular interest include Cranberry (Vaccinium oxycoccos) and White Sedge (Carex curta), along with two regionally rare mosses, including the bog moss S. fimbriatum. The site is being invaded by Downy Birch (Betula pubescens) scrub woodland. Both commercial forestry and the spread of Rhododendron (Rhododendron ponticum) has greatly reduced the overall value of the site.

A number of plant species that are listed in the Irish Red Data Book occur within the site, and several of these are protected under the Flora (Protection) Order, 1999. These include Triangular Club-rush (Scirpus triquetrus), a species which is only found in Ireland only in the Shannon Estuary, where it borders creeks in the inner estuary. Opposite-leaved Pondweed (Groenlandia densa) is found in the Shannon where it passes through Limerick City, while Meadow Barley (Hordeum secalinum) is abundant in saltmarshes at Ringmoylan and Mantlehill. Hairy Violet (Viola hirta) occurs in the Askeaton/Foynes area. Golden Dock (Rumex maritimus) is noted as occurring in the River Fergus estuary. Finally, Bearded Stonewort (Chara canescens), a brackish water specialist, and Convergent Stonewort (Chara connivens) are both found in Shannon Airport Lagoon.

Overall, the Shannon and Fergus Estuaries support the largest numbers of wintering waterfowl in Ireland. The highest count in 1995-96 was 51,423 while in 1994-95 it was 62,701. Species listed on Annex I of the E.U. Birds Directive which contributed to these totals include: Great Northern Diver (3; 1994/95), Whooper Swan (201; 1995/96), Pale-bellied Brent Goose (246; 1995/96), Golden Plover (11,067; 1994/95) and Bar- tailed Godwit (476; 1995/96). In the past, three separate flocks of Greenland White-fronted Goose were regularly found, but none were seen in 1993/94.

Other wintering waders and wildfowl present include Greylag Goose (216; 1995/96), Shelduck (1,060; 1995/96), Wigeon (5,976; 1995/96), Teal (2,319; 1995-96), Mallard (528; 1995/96), Pintail (45; 1995/96), Shoveler (84; 1995/96), Tufted Duck (272; 1995/96), scaup (121; 1995/96), Ringed Plover (240; 1995/96), Grey Plover (750; 1995/96), Lapwing (24,581; 1995/96), Knot (800; 1995/96), Dunlin (20,100; 1995/96), snipe (719, 1995/96), Black-tailed Godwit (1,062; 1995/96), Curlew (1,504; 1995/96), Redshank (3,228; 1995/96), Greenshank (36; 1995/96) and Turnstone (107; 1995/96). A number of wintering gulls are also present, including Black-headed Gull (2,216; 1995/96), Common Gull (366; 1995/96) and Lesser Black-backed Gull (100; 1994/95). This is the most important coastal site in Ireland for a number of the waders including Lapwing, Dunlin, Snipe and Redshank. It also provides an important staging ground for species such as Black-tailed Godwit and Greenshank.

A number of species listed on Annex I of the E.U. Birds Directive breed within the site. These include Peregine Falcon (2-3 pairs), Sandwich Tern (34 pairs on Rat Island, 1995), Common Tern (15 pairs: 2 on Sturamus Island and 13 on Rat Island, 1995), Chough (14-41 pairs, 1992) and Kingfisher. Other breeding birds of note include Kittiwake (690 pairs at Loop Head, 1987) and Guillemot (4,010 individuals at Loop Head, 1987).

There is a resident population of Bottle-nosed Dolphin in the Shannon Estuary. This is the only known resident population of this E.U. Habitats Directive Annex II species in Ireland. The population is estimated (in 2006) to be 140 ± 12 individuals. Otter, a species also listed on Annex II of this Directive, is commonly found on the site.

Five species of fish listed on Annex II of the E.U. Habitats Directive are found within the site. These are Sea Lamprey (Petromyzon marinus), Brook Lamprey (Lampetra planeri), River Lamprey (Lampetra fluviatilis), Twaite Shad (Allosa fallax fallax) and Salmon (Salmo salar). The three lampreys and Salmon have all been observed spawning in the lower Shannon or its tributaries. The Fergus is important in its lower reaches for spring salmon, while the Mulkear catchment excels as a grilse fishery, though spring fish are caught on the actual Mulkear River. The Feale is important for both types. Twaite Shad is not thought to spawn within the site. There are few other river systems in Ireland which contain all three species of lamprey.

Two additional fish species of note, listed in the Irish Red Data Book, also occur, namely Smelt (Osmerus eperlanus) and Pollan (Coregonus autumnalis pollan). Only the former has been observed spawning in the Shannon.

Freshwater Pearl Mussel (Margaritifera margaritifera), a species listed on Annex II of the E.U. Habitats Directive, occurs abundantly in parts of the Cloon River.

There is a wide range of land uses within the site. The most common use of the terrestrial parts is grazing by cattle, and some areas have been damaged through over-grazing and poaching. Much of the land adjacent to the rivers and estuaries has been improved or reclaimed and is protected by embankments (especially along the Fergus estuary). Further, reclamation continues to pose a threat, as do flood relief works (e.g. dredging of rivers). Gravel extraction poses a major threat on the Feale.

In the past, cord-grass (Spartina sp.) was planted to assist in land reclamation. This has spread widely, and may oust less vigorous colonisers of mud and may also reduce the area of mudflat available to feeding birds.

Domestic and industrial wastes are discharged into the Shannon, but water quality is generally satisfactory, except in the upper estuary where it reflects the sewage load from Limerick City. Analyses for trace metals suggest a relatively clean estuary with no influences of industrial discharges apparent. Further industrial development along the Shannon and water polluting operations are potential threats.

Fishing is a main tourist attraction on the Shannon and there are a large number of angler associations, some with a number of beats. Fishing stands and styles have been erected in places. The River Feale is a designated Salmonid Water under the E.U. Freshwater Fish Directive. Other uses of the site include commercial angling, oyster farming, boating (including dolphin-watching trips) and shooting. Some of these may pose threats to the birds and dolphins through disturbance. Specific threats to the dolphins include underwater acoustic disturbance, entanglement in fishing gear and collisions with fast moving craft.

This site is of great ecological interest as it contains a high number of habitats and species listed on Annexes I and II of the E.U. Habitats Directive, including the priority habitats lagoon and alluvial woodland, the only known resident population of Bottle-nosed Dolphin in Ireland and all three Irish lamprey species. A good number of Red Data Book species are also present, perhaps most notably the thriving populations of Triangular Club-rush. A number of species listed on Annex I of the E.U. Birds Directive are also present, either wintering or breeding. Indeed, the Shannon and Fergus Estuaries form the largest estuarine complex in Ireland and support more wintering wildfowl and waders than any other site in the country. Most of the estuarine part of the site has been designated a Special Protection Area (SPA), under the E.U. Birds Directive, primarily to protect the large numbers of migratory birds present in winter.

River Shannon and River Fergus Estuaries SPA [004077]

The NPWS provides the following Site Synopsis in relation to the River Shannon and River Fergus Estuaries SPA (Version date: 30 May 2015):

The estuaries of the River Shannon and River Fergus form the largest estuarine complex in Ireland. The site comprises the entire estuarine habitat from Limerick City westwards as far as Doonaha in Co. Clare and Dooneen Point in Co. Kerry.

The site has vast expanses of intertidal flats which contain a diverse macro-invertebrate community, e.g. Macoma-Scrobicularia-Nereis, which provides a rich food resource for the wintering birds. Salt marsh vegetation frequently fringes the mudflats and this provides important high tide roost areas for the wintering birds. Elsewhere in the site the shoreline comprises stony or shingle beaches.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Cormorant, Whooper Swan, Light-bellied Brent Goose, Shelduck, Wigeon, Teal, Pintail, Shoveler, Scaup, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Knot, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Greenshank and Black-headed Gull. It is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The site is the most important coastal wetland site in the country and regularly supports in excess of 50,000 wintering waterfowl (57,133 - five year mean for the period 1995/96 to 1999/2000), a concentration easily of international importance. The site has internationally important populations of Light-bellied Brent Goose (494), Dunlin (15,131), Black-tailed Godwit (2,035) and Redshank (2,645). A further 17 species have populations of national importance, i.e. Cormorant (245), Whooper Swan (118), Shelduck (1,025), Wigeon (3,761), Teal (2,260), Pintail (62), Shoveler (107), Scaup (102), Ringed Plover (223), Golden Plover (5,664), Grey Plover (558), Lapwing (15,126), Knot (2,015), Bar-tailed Godwit (4601), Curlew (2,396), Greenshank (61) and Black-headed Gull (2,681) - figures are five year mean peak counts for the period 1995/96 to 1999/2000. The site is among the most important in the country for several of these species, notably Dunlin (13 % of national total), Lapwing (6% of national total) and Redshank (9% of national total).

The site also supports a nationally important breeding population of Cormorant (93 pairs in 2010).

Other species that occur include Mute Swan (103), Mallard (441), Red-breasted Merganser (20), Great Crested Grebe (50), Grey Heron (38), Oystercatcher (551),

Turnstone (124) and Common Gull (445) - figures are five year mean peak counts for the period 1995/96 to 1999/2000.

Apart from the wintering birds, large numbers of some species also pass through the site whilst on migration in spring and/or autumn.

The River Shannon and River Fergus Estuaries SPA is an internationally important site that supports an assemblage of over 20,000 wintering waterbirds. It holds internationally important populations of four species, i.e. Light-bellied Brent Goose, Dunlin, Black-tailed Godwit and Redshank. In addition, there are 17 species that have wintering populations of national importance. The site also supports a nationally important breeding population of Cormorant. Of particular note is that three of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Golden Plover and Bar-tailed Godwit. Parts of the River Shannon and River Fergus Estuaries SPA are Wildfowl Sanctuaries.