



## SCREENING FOR APPROPRIATE ASSESSMENT

Proposed Bus Stop and Roundabout Development at Ros Mór,  
Old Cork Road (R512), Limerick

Version 16/06/22

**ecofact**   
Environmental Consultants

*Tait Business Centre,  
Dominic Street,  
Limerick City, Ireland  
(061) 419477*

[info@ecofact.ie](mailto:info@ecofact.ie)  
[www.ecofact.ie](http://www.ecofact.ie)



## EXECUTIVE SUMMARY

<b>Project Name</b>	Bus Stop and Roundabout Development at Ros Mór, Limerick
<b>Project Description</b>	The proposed development comprises the removal of existing boundary wall and railings, removal of recently planted ornamental vegetation and four ash trees, construction of a roundabout, bus stop lay-bye and footpaths, replacement boundary wall and railing, upgrading existing lighting, replacement tree/scrub planting.
<b>Potentially Affected Natura 2000 Sites</b>	None
<b>Pathways for Significant Effects (Yes/No)</b>	No
<b>Source(s) of Potential Impacts</b>	No potential sources of significant impacts
<b>Pathway(s) for Potential Impacts</b>	No pathways for significant effects
<b>Receptor(s) for Potential Impacts</b>	No receptors for potential significant impacts
<b>Pre-assessment Screening</b>	<p>The proposed development is outside the boundary of any designated site. The nearest sites are the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA. These sites are located c. 2.6km and c. 3.6km north of the proposed development. No qualifying interests of sites are expected to occur at the proposed development site. For this reason, there is no potential for direct impacts.</p> <p>There is no interaction between the proposed bus stop and roundabout development and any designated site or qualifying interest. There is no watercourse or drain on the site. No potential pathways for indirect impacts have been identified. The closest watercourse is c. 385m north of the proposed development. There are several residential houses, a railway line, commercial units and a road between the proposed development and this stream. There is no potential for impacts to reach this stream and be carried to any Natura 2000 Site.</p> <p>Regarding cumulative impacts, no potential for direct or indirect impacts has been identified and therefore there is no potential for cumulative impacts to occur.</p> <p>It is noted that a Biodiversity Management Plan is being carried out for the proposed development. The proposed development does include for some vegetation removal and lighting. The site visit also highlighted that Rabbits were using the adjacent fields. There may be some minor impacts on bat species which are listed under Annex IV of the Habitats Directive. This will be covered in the Biodiversity Management Plan.</p>
<b>Mitigation Required (Yes/No)</b>	No
<b>Stage 2 (AA) is required (Yes/No)</b>	No
<b><i>If Yes – a Natura Impact Statement must be prepared</i></b>	



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16-06-22	1	Draft	GW	WOC



## 1. INTRODUCTION

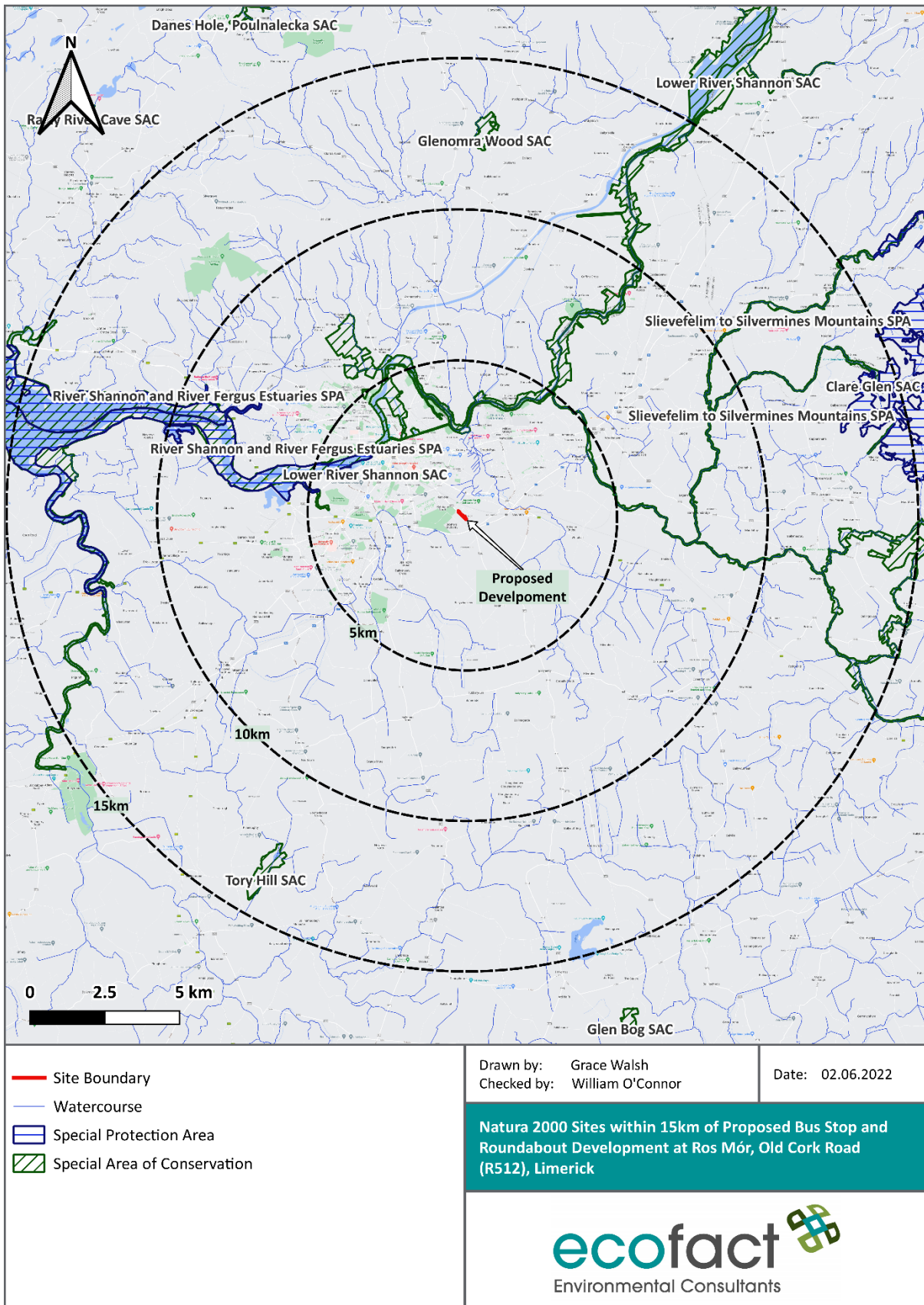
Ecofact Environmental Consultants Ltd. have been commissioned to carry out a Screening for Appropriate Assessment (AA) for a proposed Bus Stop and Roundabout Development at Ros Mór, Old Cork road (R512), Limerick. This screening determines whether an NIS is required for the project. A Screening for Environmental Impact Assessment was carried out for the proposed development which concluded that an Environmental Impact Assessment is not required (Ecofact, 2022).

Appropriate Assessment is required under Article 6 of the Habitats Directive (92/43/EEC), in instances where a plan or project may give rise to significant effects upon a Natura 2000 site. Natura 2000 sites are those identified as sites of European Community importance designated under the Habitats Directive (1992) (SACs) or the Birds Directive (2009) (SPAs). Screening is a pre-assessment procedure which considers whether an assessment (i.e. appropriate assessment) is required or not.

### 1.1 Legislation

Part XAB of the 2000 Act and SI. No 477 of 2011 transpose into Irish law, Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (the Birds Directive) and Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive). The 1997 Regulations were updated in 1998 by The European Communities (Natural Habitats) (Amendment) Regulations 1998 (S.I. No. 233/1998) to include the updated Council Directive 97/62/EC. The 1997 regulations were again updated in 2005, by The European Communities (Natural Habitats) (Amendment) Regulations 2005 (S.I. No. 378/2005). This amendment served to consolidate the main nature conservation legislation enacted in Ireland, meaning The Wildlife Act 1976, The Wildlife (Amendment) Act 2000, The European Communities (Natural Habitats) Regulations 1997, The European Communities (Natural Habitats) (Amendment) Regulations 1998, and to draw direct reference upon Council Directive (2009/147/EC) on the conservation of wild birds – ‘*The Birds Directive*’.

These Directives require Ireland to establish protected sites as part of a European wide network of sites (known in Ireland as European sites) for habitats and species that are of international importance for conservation. In Ireland, European sites include Special Areas of Conservation (SACs, including candidate SACs) and Special Protection Areas (SPAs). The Birds Directive (2009/147/EC) seeks to protect birds of special importance by the designation of Special Protection Areas (SPAs) whereas the Habitats Directive does the same for habitats and other species groups with Special Areas of Conservation (SACs). It is the responsibility of each member state to designate SPAs and SACs, both of which will form part of Natura 2000, a network of protected areas throughout the European Community.



**Figure 1** Natura 2000 Sites within 15km of Proposed Bus Stop and Roundabout Development at Ros Mór, Old Cork Road (R512), Limerick.



## 2. METHODOLOGY

### 2.1 Screening for Appropriate Assessment

The current Screening for Appropriate Assessment follows this guidance as relevant:

- DoEHLG, (2010). *'Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities'*
- Office of the Planning Regulator, (2021). *'Appropriate Assessment Screening for Development Management.'*
- European Commission, (2001). *'Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.'*
- 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, (2018). *'Managing Natura 2000 Sites. The Provisions of Article 6 of the Habitats Directive 92/43/EEC.'*

The European Commission guidance (2001) prescribes a staged process and the need for each stage being dependent on the outcomes of the preceding stage. These stages are: (1) Screening for Appropriate Assessment; (2) Appropriate Assessment; (3) Assessment of Alternative Solutions and (4) Imperative Reasons of Overriding Public Interest test, and compensatory measures (EC, 2001).

According to DoEHLG (2010), Stage 1 Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3) of the EU Habitats Directive: (1) Whether a plan or project is directly connected to or necessary for the management of the site, and; (2) Whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a Natura 2000 site in view of its conservation objectives.

A project or plan may only pass at the Screening stage if there is no reasonable scientific doubt remaining as to the absence of impacts on the Natura 2000 network. DoEHLG (2010) states that any Natura 2000 site within a likely zone of impact should be considered, with a distance of 15km recommended, but this is evaluated on a case-by-case basis with reference to the nature, size and location of the project, sensitivities of receptors and potential for in-combination effects. The threshold at the first stage is a very low one (as per Finlay Geoghegan J. in *Kelly -v- An Bord Pleanála 2013/802 JR*). Screening must be approached on a precautionary basis with the safeguards set out in Article 6(3) and (4) of the Habitats Directive triggered not by certainty - but by the possibility of significant effects.

DoEHLG (2010) outlines that there are 3 potential outcomes of a Screening for Appropriate Assessment, as outlined in Table 1 below.

**Table 1** DoEHLG (2010) potential findings and outcomes for Screening for Appropriate Assessment.

Finding	Outcome
Project is directly connected to or necessary for the management of a designated site	Stage 2 (AA) is not required
No potential for significant effects	Stage 2 (AA) is not required
Potential for significant effects identified, or potential for impacts is uncertain	Stage 2 (AA) is required and a Natura Impact Statement will be prepared



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## 2.2 Desk Study

A desktop study was undertaken to identify the extent and scope of the potentially affected designated Natura 2000 sites within the current study area. A full bibliography of information sources reviewed is provided in the reference section. Information sources reviewed include:

- National Parks and Wildlife Service (NPWS) site synopses
- NPWS Conservation Objectives and Natura 2000 Forms
- Protected species data on NPWS/National Biodiversity Data Centre (NBDC) online databases
- Environmental Sensitivity Mapping (ESM) Tool
- Environmental Protection Agency (EPA) mapping tools (including AAGeoTool)
- Catchments.ie
- Online aerial imagery (Bing, Google Satellite).

## 2.3 Site Visit

The development site was visited on the 7<sup>th</sup> of June 2022. The entire length of the proposed development was walked and inspected for evidence of ecological features of high conservation concern, such as those flora and fauna that occur in the closest Natura 2000 sites.

## 3. DESCRIPTION OF PROJECT CHARACTERISTICS

The proposed development comprises the removal of existing boundary wall and railings, removal of recently planted ornamental vegetation and four Ash (*Fraxinus Excelsior*) trees, construction of a roundabout, bus stop lay-bye and footpaths, replacement boundary wall and railing, upgrading existing lighting, replacement tree/scrub planting.



**Figure 2** Location of Proposed Bus Stop and Roundabout Development at Ros Mór, Old Cork Road (R512), Limerick.





## 4. IDENTIFICATION OF RELEVANT NATURA 2000 SITES

The location of the development in the context of the Natura 2000 network is indicated in Figure 1 above. The SACs and SPAs within 15km of the development are considered in the current screening and are listed in Table 2. The closest Natura 2000 Sites are the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA.

**Table 2** Designated Natura 2000 Sites and associated Qualifying Interests within 15km of the development.

Natura 2000 Site	Distance (km)
Lower River Shannon SAC	2.6km north
River Shannon and River Fergus Estuaries SPA	3.4km north
Glenomra Wood SAC	11.8km north
Tory Hill SAC	12.4km southwest
Slievefelim to Silvermines Mountains SPA	12.7km east
Clare Glen SAC	13.7km east
Glenstal Wood SAC	13.5km east

### 4.1 Lower River Shannon SAC

The Lower River Shannon SAC is designated for lagoons and alluvial wet woodlands, both habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected for floating river vegetation, Molinia meadows, estuaries, tidal mudflats, Atlantic salt meadows, Mediterranean salt meadows, Salicornia mudflats, sand banks, perennial vegetation of stony banks, sea cliffs, reefs and large shallow inlets and bays all habitats listed on Annex I of the E.U. Habitats Directive. In addition, this site is selected for the following species listed on Annex II of the same directive – Bottle-nosed Dolphin, Sea Lamprey, River Lamprey, Brook Lamprey, Freshwater Pearl Mussel, Atlantic salmon and Otter. The NPWS site synopsis for this site is presented in Appendix 1.

The standard data Natura 2000 form for the Lower River Shannon SAC lists the threats and pressures currently having an impact on this protected site. There are no impacts listed that are having a high impact on this SAC. The following are noted as having a medium impact on the SAC: Fertilisation, urbanised areas, human habitation, air pollution, air-borne pollutants, discharges, eutrophication (natural), grazing, polderisation, reclamation of land from sea, estuary or marsh.

### 4.2 River Shannon and River Fergus Estuaries SPA

The River Shannon and River Fergus Estuaries SPA comprises the entire estuarine habitat west from Limerick City and south from Ennis, extending west as far as Killadysert and Foynes on the north and south shores respectively of the River Shannon (a distance of some 25 km from east to west). The site is one of the most important coastal wetland site in the country and regularly supports in excess of 50,000 wintering waterfowl. Other species occurring include Common Cockle (*Cerastoderma edule*), Lugworm (*Arenicola marina*), the polychaete *Nephtys hombergii*, the gastropod *Hydrobia ulvae* and the crustacean *Corophium volutator*. Eelgrass (*Zostera* spp.) is present in places, along with green algae (e.g. *Ulva* spp. and *Enteromorpha* spp.). The site also has vast expanses of intertidal flats, an Annex I habitat on the E.U Habitats Directive (1992). The NPWS site synopsis for this site is presented in Appendix 1.



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The standard data Natura 2000 form for the River Shannon and River Fergus Estuaries SPA notes the following as having a high impact on the SPA: Industrial or commercial areas, Discharges, Fertilisation, Urbanised areas and human habitation.



## 5. POTENTIAL FOR EFFECTS

**Table 3** Designated Natura 2000 Sites within 15km of the development, the location of qualifying interests in relation to the development, potential pathways for impacts and potential for significant impacts.

Natura 2000 Site	Qualifying Interest	Location in relation to development site	Potential pathway for impacts (Yes/No)	Potential Impact & Source			Pre-assessment Screening
				Direct	Indirect	Cumulative	
Lower River Shannon SAC (002165)	Sandbanks which are slightly covered by sea water all the time [1110] Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] <i>Salicornia</i> and other annuals colonising mud and sand [1310]	This SAC along with all qualifying interests, is located at least c. 2.6km north of the proposed development.	No	No potential direct impact	No potential indirect impact	No potential cumulative impact	Site is located outside the boundary of the SAC and no QIs would occur on the site so no potential for direct impacts. There is no pathway between the site and the SAC and its protected habitats or species so no potential for indirect impacts. The closest hydrological connection is c. 385m north of the proposed development. This is a small 1 <sup>st</sup> order stream called the Industrial Estate Galvone (EPA code: 25L26). There are several residential houses, a railway, commercial units and a road between the proposed development and this stream. There is no potential for impacts to reach this stream and be brought to the SAC. There is no potential for indirect impacts. No



Natura 2000 Site	Qualifying Interest	Location in relation to development site	Potential pathway for impacts (Yes/No)	Potential Impact & Source			Pre-assessment Screening
				Direct	Indirect	Cumulative	
	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330]						potential for direct or indirect impacts and therefore no potential for cumulative impacts.
	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]						
	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]						
	Molinia meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> ) [6410]						
	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0]						
	<i>Margaritifera margaritifera</i>						



Natura 2000 Site	Qualifying Interest	Location in relation to development site	Potential pathway for impacts (Yes/No)	Potential Impact & Source			Pre-assessment Screening
				Direct	Indirect	Cumulative	
	(Freshwater Pearl Mussel) [1029] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra planeri</i> (Brook Lamprey) [1096] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Salmo salar</i> (Salmon) [1106] <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349] <i>Lutra lutra</i> (Otter) [1355]						
River Shannon and River Fergus Estuaries SPA (004077)	Cormorant ( <i>Phalacrocorax carbo</i> ) [A017] Whooper Swan ( <i>Cygnus cygnus</i> ) [A038] Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Shelduck ( <i>Tadorna tadorna</i> ) [A048]	This SPA along with all qualifying interests, is located at least c. 3.4km north of the proposed development.	No	No potential direct impact	No potential indirect impact	No potential cumulative impact	Site is located outside the boundary of the SPA and no QIs would occur on the site so no potential for direct impacts. There is no pathway between the site and the SPA and its protected habitat or species so no potential for indirect impacts. The closest hydrological connection is c. 870m southwest of the proposed development. This is a small 1 <sup>st</sup> order



Natura 2000 Site	Qualifying Interest	Location in relation to development site	Potential pathway for impacts (Yes/No)	Potential Impact & Source			Pre-assessment Screening
				Direct	Indirect	Cumulative	
	Wigeon ( <i>Anas penelope</i> ) [A050]						stream called the Dooradoyle (EPA code: 24D36). There are several agricultural grassland fields, the M7 motorway, a school and cemetery. There is no potential for impacts to reach this stream and be brought to the SPA. There is no potential for indirect impacts. No potential for direct or indirect impacts and therefore no potential for cumulative impacts.
	Teal ( <i>Anas crecca</i> ) [A052]						
	Pintail ( <i>Anas acuta</i> ) [A054]						
	Shoveler ( <i>Anas clypeata</i> ) [A056]						
	Scaup ( <i>Aythya marila</i> ) [A062]						
	Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137]						
	Golden Plover ( <i>Pluvialis apricaria</i> ) [A140]						
	Grey Plover ( <i>Pluvialis squatarola</i> ) [A141]						
	Lapwing ( <i>Vanellus vanellus</i> ) [A142]						
	Knot ( <i>Calidris canutus</i> ) [A143]						
	Dunlin ( <i>Calidris alpina</i> ) [A149]						
	Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156]						



Natura 2000 Site	Qualifying Interest	Location in relation to development site	Potential pathway for impacts (Yes/No)	Potential Impact & Source			Pre-assessment Screening
				Direct	Indirect	Cumulative	
	Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Curlew ( <i>Numenius arquata</i> ) [A160] Redshank ( <i>Tringa totanus</i> ) [A162] Greenshank ( <i>Tringa nebularia</i> ) [A164] Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179] Wetland and Waterbirds [A999]						
Glenomra Wood SAC	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	This site is located c. 11.8km north of the proposed development site	No	No potential direct impact	No potential indirect impact	No potential cumulative impact	Site is located outside the boundary of the SAC and no Old sessile oak woods would occur on the site so no potential for direct impacts. There is no pathway or interaction between the site and the Old sessile oak woods designated in the SAC, with a large geographical separation, so there is no potential for indirect impacts. As there is no potential for direct or indirect impacts there is also



Natura 2000 Site	Qualifying Interest	Location in relation to development site	Potential pathway for impacts (Yes/No)	Potential Impact & Source			Pre-assessment Screening
				Direct	Indirect	Cumulative	
							no potential for significant cumulative impacts
Tory Hill SAC	Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210]	This site is located c. 12.4km southwest of the proposed development site	No	No potential direct impact	No potential indirect impact	No potential cumulative impact	Site is located outside the boundary of the SAC and no QIs would occur on the site so no potential for direct impacts. There is no pathway or interaction between the site and the SAC and it's QIs, with a large geographical separation, so there is no potential for indirect impacts. As there is no potential for direct or indirect impacts there is also no potential for significant cumulative impacts
	Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]						
	Alkaline fens [7230]						
Slievefelim to Silvermines Mountains SPA	Hen Harrier ( <i>Circus cyaneus</i> ) [A082]	This site is located c. 12.7km east of the proposed development site	No	No potential direct impact	No potential indirect impact	No potential cumulative impact	Site is located outside the boundary of the SPA and no Hen harrier would occur on the site so no potential for direct impacts. There is no pathway or interaction between the site and the Hen harrier designated in the SPA, with a large geographical separation, so there is no potential for indirect impacts. As there is no potential for direct or indirect impacts there is also





Natura 2000 Site	Qualifying Interest	Location in relation to development site	Potential pathway for impacts (Yes/No)	Potential Impact & Source			Pre-assessment Screening
				Direct	Indirect	Cumulative	
							no potential for significant cumulative impacts
Clare Glen SAC	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] <i>Trichomanes speciosum</i> (Killarney Fern) [1421]	This site is located c. 13.7km east of the proposed development site	No	No potential direct impact	No potential indirect impact	No potential cumulative impact	Site is located outside the boundary of the SAC and no QIs would occur on the site so no potential for direct impacts. There is no pathway or interaction between the site and the SAC and it's QIs, with a large geographical separation, so there is no potential for indirect impacts. As there is no potential for direct or indirect impacts there is also no potential for significant cumulative impacts
Glenstal Wood SAC	<i>Trichomanes speciosum</i> (Killarney Fern) [1421]	This site is located c. 13.5km east of the proposed development site	No	No potential direct impact	No potential indirect impact	No potential cumulative impact	Site is located outside the boundary of the SAC and no QIs would occur on the site so no potential for direct impacts. There is no pathway or interaction between the site and the SAC and it's QIs, with a large geographical separation, so there is no potential for indirect impacts. As there is no potential for direct or indirect impacts there is also no



Natura 2000 Site	Qualifying Interest	Location in relation to development site	Potential pathway for impacts (Yes/No)	Potential Impact & Source			Pre-assessment Screening
				Direct	Indirect	Cumulative	
							potential for significant cumulative impacts



## 6. CONCLUSION

**Table 4** DoEHLG (2010) potential findings and outcomes for Screening for Appropriate Assessment with Conclusions for Proposed Castlematrix footpath.

Finding	Potential Outcome	Conclusion
Project is directly connected to or necessary for the management of a designated site	Stage 2 (AA) is not required	
No potential for significant effects	Stage 2 (AA) is not required	✓
Potential for significant effects identified, or potential for impacts is uncertain	Stage 2 (AA) is required and a Natura Impact Statement will be prepared	

From examination of the information available, it is concluded that there is no potential for significant direct, indirect or cumulative impacts to arise from the proposed Bus Stop and Roundabout development at Ros Mór, Old Cork Road, Limerick. This is due to the distance from the Natura 2000 network, lack of potential pathways for significant effects, and absence of potential for significant cumulative effects. Therefore, a Natura Impact Statement is not required for the proposed Bus Stop and Roundabout development at Ros Mór, Old Cork Road, Limerick.



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## PLATES



**Plate 1** Western extent of the proposed works area. This will be a two-way shared use facility for pedestrians and cyclists.



**Plate 2** Scrub area to the south of the proposed development.



**Plate 3** Existing road at the proposed development site. There is a treeline here which may provide suitable commuting and / or foraging habitat for bats.



**Plate 4** Recently planted ornamental vegetation and retaining wall which will be removed as part of the proposed development. This vegetation will be replanted.



**Plate 5** Proposed location of new roundabout at the entrance to Ros Mór housing estate.



**Plate 6** European Rabbit (*Oryctolagus cuniculus*) recorded north south of the proposed development site.



## APPENDIX 1 NPWS SITE SYNOPSES

### SITE NAME: LOWER RIVER SHANNON SAC

### SITE CODE: 002165

This very large site stretches along the Shannon valley from Killaloe to Loop Head/ Kerry Head, a distance of some 120km. 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. The Shannon and Fergus flow through Carboniferous limestone as far as Foynes, but west of Foynes Namurian shales and flagstones redominate (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 Pallasgreen, passes through an area of Rhyolites, Tuffs and Agglomerates. Rivers within the subcatchment 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 Killeenagarraiff, Annagh, Newport, the Dead River, the Bilboa, Glashacloonaraveela, Gortnageragh and Cahernahallia.

The site is a candidate SAC selected for lagoons and alluvial wet woodlands, both habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected for floating river vegetation, *Molinia* meadows, estuaries, tidal mudflats, Atlantic salt meadows, Mediterranean salt meadows, *Salicornia* mudflats, sand banks, perennial vegetation of stony banks, sea cliffs, reefs and large shallow inlets and bays all habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected for the following species listed on Annex II of the same directive – Bottle-nosed Dolphin, Sea Lamprey, River Lamprey, Brook Lamprey, Freshwater Pearl Mussel, Atlantic salmon and Otter.

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 Maigne 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 Eel-grass beds (*Zostera* spp.) 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: 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 triquetrus*), 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 (*Glauca maritima*), Sea Plantain (*Plantago maritima*), Red Fescue (*Festuca rubra*), Creeping Bent (*Agrostis stolonifera*), Saltmarsh Rush (*Juncus gerardi*), Long-bracted Sedge (*Carex extensa*), Lesser Seaspurrey (*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 compass of Common Saltmarsh-grass (*Puccinellia maritima*) and Hard-grass (*Parapholis strigosa*).

Saltmarsh vegetation also occurs around a number of lagoons within the site. The two which have been surveyed as part of a National Inventory of Lagoons are Shannon Airport Lagoon and Cloonconeen Pool. 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*), Sea Campion (*Silene maritima*), Thrift and Plantains (*Plantago* spp.). A rare endemic Sea Lavender (*Limonium recurvum* subsp. *pseudotranswallinum*) 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 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 in the cSAC.

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 *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 18m. Below this it becomes rare and the community is characterised by coralline crusts and red foliose algae. Flowing into the estuaries are a number of tidal rivers.

Other coastal habitats that occur within the site include the following:

- Stony beaches and bedrock shores - these shores support a typical zonation of seaweeds (*Fucus* spp., *Ascophyllum nodosum* and kelps).
- Shingle beaches - the more stable areas of shingle support characteristic 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 – there is a known occurrence of sand/gravel beds in the area from Kerry Head to Beal Head.
- Sand dunes - a small area of sand dunes occurs at Beal Point. The dominant species is Marram Grass (*Ammophila arenaria*).

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 being broad, generally slow-flowing and naturally eutrophic; the Fergus being 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, however, improved grassland is most common. 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 and sedges and supporting diverse and species-rich vegetation, including such uncommon species as Blue-eyed Grass (*Sisyrinchium bermudiana*) and Pale Sedge (*Carex pallescens*).

Floating river vegetation characterised by species of Water-crowfoot (*Ranunculus* spp.), Pondweeds (*Potamogeton* spp.) and the moss *Fontinalis 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 county 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 25m 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 sally (*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 riverside 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 Oak (*Quercus robur*), Elm (*Ulmus glabra*, *U. procera*), Hazel (*Corylus avellana*), Hawthorn (*Crataegus monogyna*) and the shrubs Guelder-rose (*Viburnum opulus*) and willows. The ground flora is species-rich.



Woodland is infrequent within the site; however Cahiracon Wood contains a strip of old Oak woodland. Sessile Oak (*Quercus 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 telmateia*) 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 2km 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 feature prominent Greater wood-rush and Bilberry (*Vaccinium myrtillus*) with a typical range of woodland herbs. Where there is more light available, Bracken (*Pteridium aquilinum*) features.

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 approx. 5km north west of Cappamore Co. Limerick. The bog contains some wet areas with good moss (*Sphagnum*) cover. Species of particular interest include the Cranberry (*Vaccinium oxycoccos*) and the White Sedge (*Carex curta*) along with two other regionally rare mosses including *S. fimbriatum*. The site is being invaded by Birch (*Betula pubescens*) scrub woodland. Both commercial forestry and the spread of rhododendron has greatly reduced the overall value of the site.

A number of plant species that are Irish Red Data Book species occur within the site; several are protected under the Flora (Protection) Order, 1999:

- Triangular Club-rush (*Scirpus triquetrus*) - in Ireland this protected species is only found in the Shannon Estuary, where it borders creeks in the inner estuary.
- Opposite-leaved Pondweed (*Groenlandia densa*) - this protected pondweed is found in the Shannon where it passes through Limerick City.
- Meadow Barley (*Hordeum secalinum*) - this protected species is abundant in saltmarshes at Ringmoylan and Mantlehill.
- Hairy Violet (*Viola hirta*) - this protected violet occurs in the Askeaton/Foynes area.
- Golden Dock (*Rumex maritimus*) - noted as occurring in the River Fergus Estuary.
- Bearded Stonewort (*Chara canescens*) - a brackish water specialist found in Shannon Airport lagoon.
- Convergent Stonewort (*Chara connivens*) - presence in Shannon Airport Lagoon to be confirmed.

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 (1062; 1995/96), Curlew (1504; 1995/96), Redshank (3228; 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 Peregrine 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 (4010 individuals at Loop Head, 1987)

There is a resident population of Bottle-nosed Dolphin in the Shannon Estuary consisting of at least 56-68 animals (1996). This is the only known resident population of this E.U. Habitats Directive Annex II species in Ireland. 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 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 landuses within the site. The most common use of the terrestrial parts is grazing by cattle and some areas have been damaged through overgrazing 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, reflecting the sewage load from Limerick City. Analyses for trace metals suggest a relatively clean estuary with no influences by 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 habitat lagoon, 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.

**SITE NAME: RIVER SHANNON AND RIVER FERGUS ESTUARIES SPA**

**SITE CODE: 004077**

The estuaries of the River Shannon and River Fergus form the largest estuarine complex in Ireland. The site comprises the entire estuarine habitat west from Limerick City and south from Ennis, extending west as far as Killadysert and Foynes on the north and south shores respectively of the River Shannon (a distance of some 25 km from east to west). Also included are several areas in the outer Shannon estuary, notably Clonderalaw Bay and Poulnasherry Bay, as well as the intertidal areas on the south shore of the Shannon between Tarbert and Beal Point.

The site has vast expanses of intertidal flats. The main macro-invertebrate community present is a *Macoma-Scrobicularia-Nereis* community which provides a rich food resource for the wintering birds. Other species occurring include Common Cockle (*Cerastoderma edule*), Lugworm (*Arenicola marina*), the polychaete *Nephtys hombergii*, the gastropod *Hydrobia ulvae* and the crustacean *Corophium volutator*. Eelgrass (*Zostera* spp.) is present in places, along with green algae (e.g. *Ulva* spp. and *Enteromorpha* spp.).

Salt marsh vegetation frequently fringes the mudflats and this provides important high tide roost areas for the wintering birds. 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*) and Saltmarsh Rush (*Juncus gerardi*). 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. lacustris* subsp. *tabernaemontani*). Also found is the nationally rare Triangular Club-rush (*Scirpus triqueteter*).



Elsewhere in the site the shoreline comprises stony or shingle beaches. The site is the most important coastal wetland site in the country and regularly supports in excess of 50,000 wintering waterfowl (mean of 59,183 for the 4 seasons 1996-97 to 1999/00), a concentration easily of international importance. The site has internationally important populations of Dunlin (14,987), Black-tailed Godwit (706) and Redshank (1,983) - all figures are average peaks for 3 of the 5 seasons in the 1995/96-1999/00 period. A further 16 species have populations of national importance, i.e. Cormorant (148), Whooper Swan (141), Greylag Goose (88), Shelduck (895), Wigeon (3,025), Teal (1,558), Pintail (40), Shoveler (56), Scaup (76), Golden Plover (4,073), Grey Plover (564), Lapwing (13,007), Knot (686), Bar-tailed Godwit (481), Curlew (1,231) and Greenshank (33). The site is among the most important in the country for several of these species, notably Dunlin (11% of national total), Grey Plover (7.5% of total), Lapwing (6.5% of total), Redshank (6% of total) and Shelduck (6.0% of total). The site is also used by Oystercatcher (363), Ringed Plover (70), Brent Goose (135), Great Crested Grebe (47), Red-breasted Merganser (14), Mallard (247), Turnstone (71), Mute Swan (54), Grey Heron (25), Black-headed Gull (1,233) and Common Gull (194). The Shannon / Fergus system was formerly frequented by a Greenland Whitefronted Goose population but this declined during the 1980s and 1990s and the birds now appear to have abandoned the area. The site provides both feeding and roosting areas for the wintering birds. Habitat quality for most of the estuarine habitats is good. Some species, particularly Whooper Swan and Greylag Goose, utilise areas outside of the site for feeding. Apart from the wintering birds, large numbers of some species also pass through the site whilst on migration in spring and/or autumn. Regular species include Blacktailed Godwit, Whimbrel and Greenshank. Much of the land adjacent to the rivers and estuaries has been reclaimed and improved for agriculture and is protected by embankments (especially along the River Fergus estuary). Further reclamation, especially near to the urbanised and industrial areas continues to pose a threat. The site receives pollution from several sources, including industry and agriculture, but it is not known if this has any significant impacts on the wintering birds.

Aquaculture occurs in some areas of the site – future increases in this activity could cause disturbance to the habitats and the associated birds. Common Cord-grass (*Spartina anglica*) is well-established and may threaten some of the estuarine habitats. Some disturbance occurs from boating activities. This site is of great ornithological interest, being of international importance on account of the numbers of wintering birds it supports. It also supports internationally important numbers of three species, i.e. Dunlin, Black-tailed Godwit and Redshank. In addition, there are 16 species that have populations of national importance. For several of the bird species, it is the top site in the country. Also of 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. The site is most effectively censused from the air and this is carried out in most winters.