Natura Impact Statement

Baggot Estate, Limerick

Doherty Environmental

January 2011

Limerick City Council

Baggot Estate Natura Impact Statement

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For and on behalf of
Doherty Environmental

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Signed: 

Date: January 2011

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1 Introduction

Doherty Environmental has been commissioned by Limerick City Council to undertake a Screening Assessment and Natura Impact Statement, under Article 6 of the EU Habitats Directive, of proposals to upgrade walkways in the Baggot Estate, Ballinacurra, Limerick. The aim of this assessment is to screen for likely significant effects to the Lower River Shannon Special Area of Conservaton (SAC) and River Shannon and River Fergus Special Protection Area (SPA) arising from the proposed upgrade to the walkway.

1.1 Background & Requirements for HDA

1.1.1 Project Description

The project involves the resurfacing of existing walkways and the establishment of new walkways within the parkland setting of the Baggot Estate. The proposed walkways, both the new and resurfaced sections will be a minimum of 2m in width and will be constructed with compacted dust or equivalent material. No bituminous materials or concrete will be used for walkway surfacing. Small amounts of concrete will be required to secure signage and security cameras at four localised areas within the Estate.

Informal walkway thread-line currently exist throughout the park and the proposed new walkway section broadly follows the path of an existing thread-line. The construction of the new section of walkway through the park will be restricted to the pruning of some trees along the walkways so that large scale tree removal will be avoided.

The construction of the new walkway and the re-surfacing of existing walkways will involve the use of light machinery such as a Terex compact excavator and roller and will be completed over XX days.

1.1.2 Requirement for Screening Assessment

The transposition of the EU Habitats Directive Assessment by the European Communities (Natural Habitats) Regulations 1997 – 2005 (referred to as the Habitat Regulations) provide the legal basis for the protection of habitats and species of European importance in Ireland. The legislative protection of habitats and species provided by the Habitats Directive has been implemented in Ireland and throughout Europe through the establishment of a network of designated conservation areas known as the Natura 2000 (N2K) network (with individual sites being referred to as Natura 2000 Sites). The N2K network includes sites designated as SACs, under the EU Habitats Directive and SPAs designated under the EU Birds Directive. SACs are designated in areas that support habitats listed on Annex I and/or species listed on Annex II of the Habitats Directive. SPAs are designated in areas that support: 1% or more of the all-Ireland population of bird species listed on Annex I of the EU Birds Directive; 1% or more of the population of a migratory species; and more than 20,000 waterfowl. Under the National Habitat Regulations all designated Natura 2000 Sites are referred to as Natura 2000 Sites. It is noted that, under

the Habitats Regulations, the term Natura 2000 Site includes cSACs as well as SACs. (All sites throughout this report will be referred to as Natura 2000 Sites).

Articles 6(1) & (2) of the Habitats Directive set out provisions for the conservation management of Natura 2000 Sites. Articles 6(3) and 6(4) of this Directive set out a series of procedural steps that test whether or not a plan or project is likely to affect a Natura 2000 Site. Article 6(3) also establishes the requirement for a HDA:

"*any plan or project not directly connected with or necessary to the management of the (Natura 2000) site but likely to have a significant effect thereon, either individually or in combination with other plans and projects, shall be subjected to 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 implication for the site and subject to the provisions of paragraph 4* (i.e Article 6(4))*, the competent national authorities shall agree to the plan or project only after having ascertained that it will not affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public*".

As such any project likely to have a significant effect, either individually or in combination with other plans or projects, upon the conservation objectives of a Natura 2000 site must undergo an assessment of its implications on relevant Natura 2000 sites. In order to establish whether or not a likely significant effect will arise as a result of the implementation of a project a Screening Assessment should be undertaken.

As the location of the proposed new walkway construction and resurfacing is situated in the vicinity of the Ballinacurrra Creek and immediately adjacent to a drainage ditch which discharges water to the Ballinacurrra Creek it was deemed necessary by Limerick City Council to screen the project for its potential to result in significant effects to the conservation objectives of the Lower River Shannon SAC. The River Shannon and River Fergus Estuary SPA is located approximately 1.5km to the west of the proposed walkway.

1.1.3 Stages of the Habitats Directive Assessment

European Guidance[1] has outlined a staged process for the completion of a HDA.

- Stage 1 – Screening: This stage defines the proposed plan, establishes whether the proposed plan is necessary for the conservation management of the Natura 2000 site and assesses the likelihood of the plan to have a significant effect, alone or in combination with other plans or projects, upon a Natura 2000 site.
- Stage 2 – Appropriate Assessment: If a plan or project is likely to have a significant effect, an Appropriate Assessment must be undertaken. In this stage the impact of the plan or project to the Conservation Objectives of the Natura 2000 site is assessed and measures are proposed to avoid or reduce impacts so that they do not result in significant effects to Natura 2000 sites. The

[1] European Commission Environment DG 2001: Assessment of plans and projects significantly affecting Natura 2000 sites

outcome of this assessment will establish whether the plan will have an adverse effect upon the integrity of the Natura 2000 site.

- Stage 3 – Assessment of Alternative Solutions: If it is concluded that, subsequent to the implementation of measures, a plan has an adverse impact upon the integrity of a Natura 2000 site it must be objectively concluded that no alternative solutions exist before the plan can proceed.
- Stage 4 – Where no alternative solutions exist and where adverse impacts remain but imperative reasons of overriding public interest (IROPI) exist for the implementation of a plan or project an assessment of compensatory measures that will effectively offset the damage to the Natura site 2000 will be necessary.

Following on from Article 6(3) of the Habitats Directive the objective of this Natura Impact Statement is to screen for Likely Significant Effects and to conclude whether or not the proposed activities are likely to result in significant adverse effects to the integrity of the Lower River River Shannon SAC and River Shannon and River Fergus Estuary SPA. The appraisal of adverse effects to the integrity of this Site will be established by assessing the potential impacts the proposal will have on the conservation objectives of the Sites.

1.2 Guidance Documents

The Screening Assessment was undertaken with reference to the following guidance documents on Appropriate Assessments:

- Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (2009). DEHLG.
- Managing Natura 2000 Sites – The provisions of Article 6 of the Habitats directive 92/43/EEC. European commission (2000). (To be referred to as MN 2000).
- Assessment of Plans and Projects Significantly Affecting Natura 2000 sites – Methodological Guidance of the Provisions of Article 6(3) and (4) of the Habitats directive 92/43/EEC. European Commission (2001). (To be referred to as the APP Guidelines).
- Guidance on Article 6(4) of the Habitats Directive 92/43/EEC – Clarification of the Concepts of: Alternative Solutions, Imperative reasons of Overriding Public Interest, Compensatory Measures, Overall coherence, Opinion of the Commission. European Commission (2007).
- Appropriate Assessment of Plans. Scott Wilson, Levett-Therivel sustainability Consultants, Treweek Environmental Consultants and Land Use Consultants (2006).
- Department of the Environment Heritage and Local Government (DEHGL) Circular letter SEA 1/08 & NPWS 1/08 dated 15 February, 2008.

2 Screening Methodology

1.3 Introduction

The function of the Screening Assessment is to identify whether or not the proposal will have a likely significant effect on Natura 2000 Sites. In this context "likely" refers to the presence of doubt with regard to the absence of significant effects (ECJ case C-127/02) and "significant" means not trivial or inconsequential but an effect that has the potential to undermine the site's conservation objectives (English Nature, 1999; ECJ case C-127/02). In other words any effect which would compromise the functioning and viability of a site and interfere with achieving the conservation objectives of the site would constitute a significant effect.

The nature of the likely interactions between the proposal and the integrity of the Site will depend upon the sensitivity of the Site's qualifying features to potential impacts arising from the proposal; the current conservation status of the site; and the likely changes to water quality that will result from activities associated with the proposal, in combination with other plans and projects.

The APP Guidelines (2001) outline the stages involved in undertaking a Screening Assessment of a project that has the potential to have likely significant effects on Natura 2000 Sites. The methodology adopted for this Screening Assessment is informed by these guidelines and is undertaken in the following stages:

1. Define the project and determine whether it is necessary for the conservation management of Natura 2000 Sites;
2. Identify Natura 2000 Sites likely to be influenced by the project;
3. Review the project to determine if it has the potential to affect Natura 2000 Sites and determine whether the Natura 2000 Sites are vulnerable to the effects; and
4. Identify other plans or projects that, in combination with the project, have the potential to affect Natura 2000 Sites.

3 The Project and N2K Baseline

1.4 Definition of the Project

The project has been defined in *Section 1.1.1* and it is clear from the description of the project that it is not necessary for the nature conservation of the Lower River Shannon cSAC or the River Shannon and river Fergus Estuary SPA.

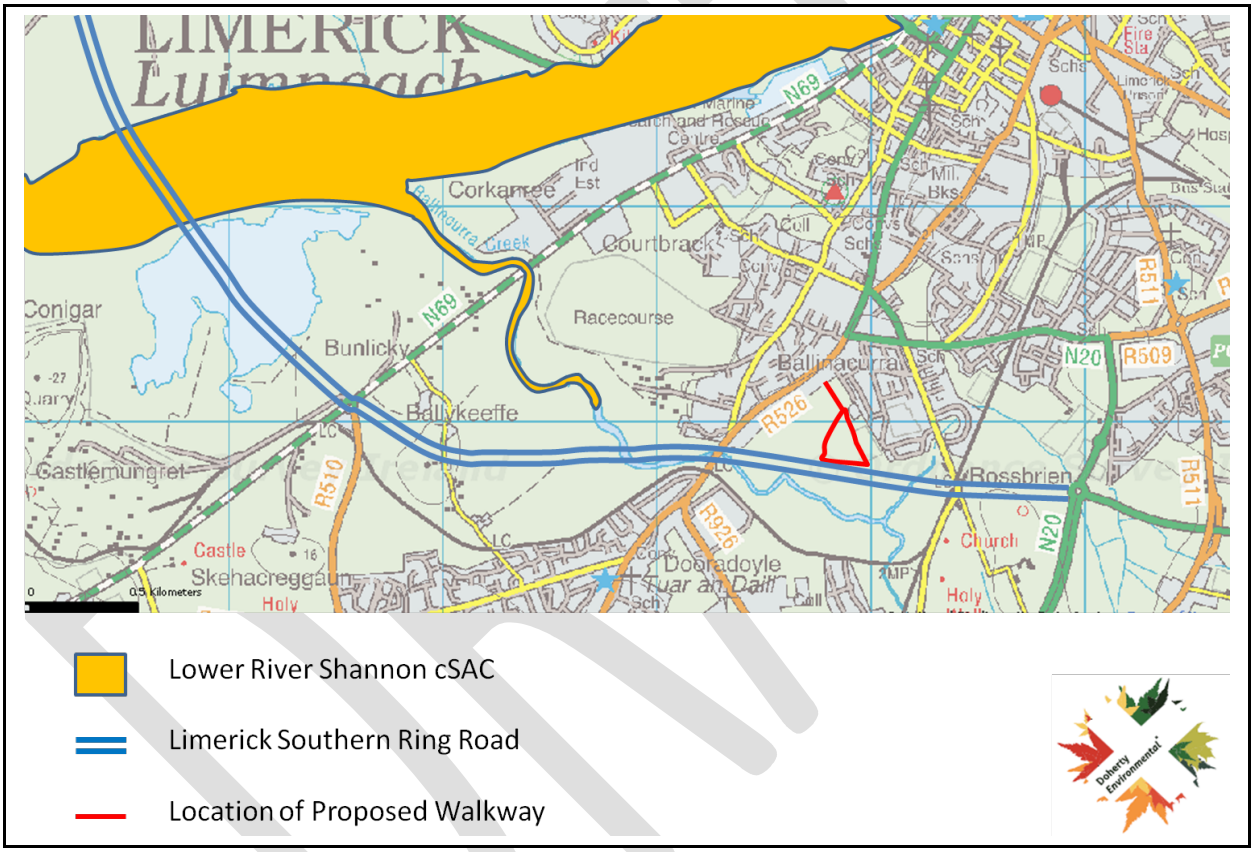
1.5 Identification of Natura 2000 Sites

Current guidance on undertaking Habitats Directive Assessments advises that all Natura 2000 Sites occurring within a 15km radius of the proposed site should be included within the Screening Assessment. However considering the nature, size and location of the project it is unlikely that Natura 2000 Sites not hydrologically linked to the project area will be effected by the proposals. Consequently,

it is considered that the area of influence of the proposed project is restricted to the stretches of the Ballinacurra Creek and River Shannon downstream from the confluence of the drainage ditch occurring adjacent to the walkway and the Ballinacurra Creek. The Natura 2000 Sites occurring within this area of influence include the Lower River Shannon cSAC (Site Code: IE0002165) and the River Shannon and River Fergus Estuary SPA (Site Code: IE0004077).

Figure 3.1 & 3.2 shows the location and extent of the Lower River Shannon cSAC and the River Shannon and River Fergus Estuary SPA (respectively) which occur adjacent to and downstream of the project area.

Figure 3-1: Map of the nearest section of the River Shannon SAC to the proposed Walkway



1.5.1 Characteristics of Natura 2000 Sites

Lower River Shannon cSAC (Site Code: IE0002165)

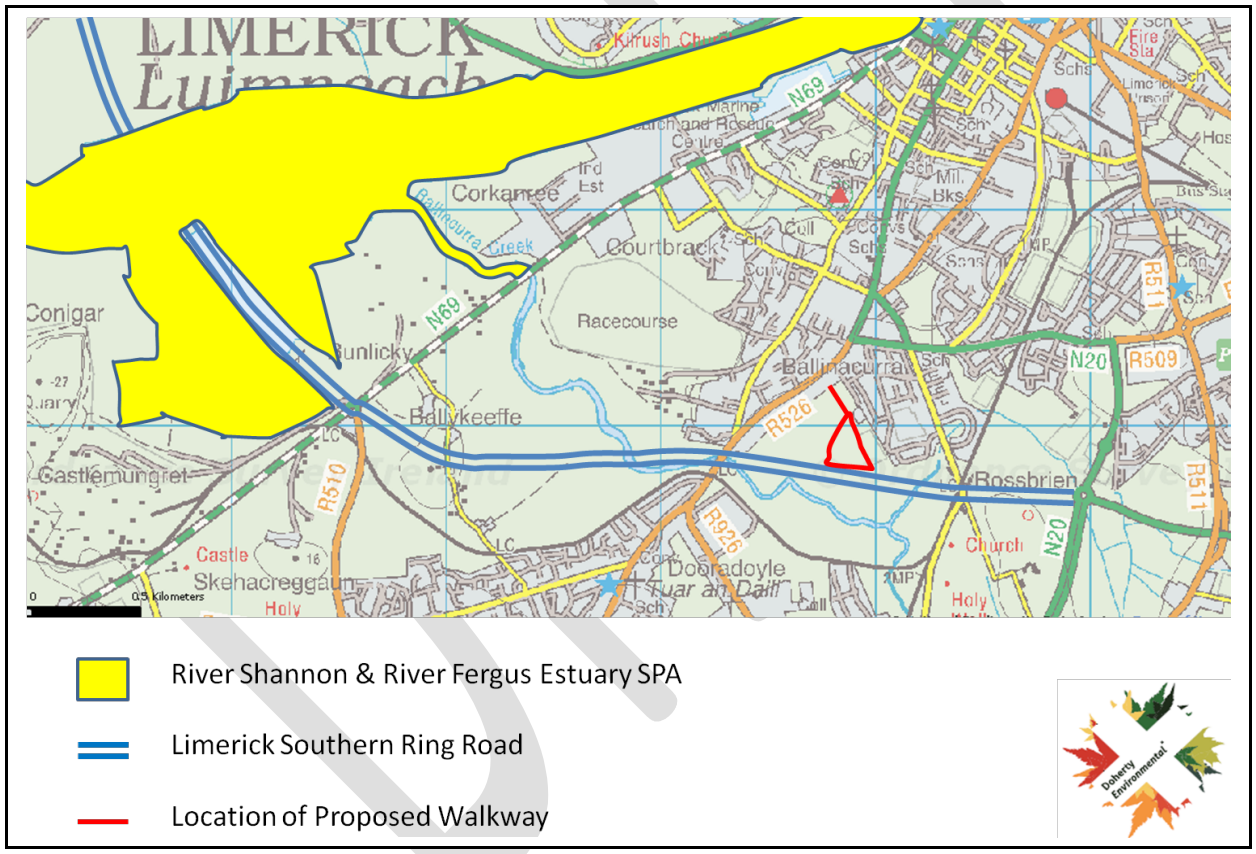
The study area is located adjacent to the Lower River Shannon cSAC. This very large site stretches along the Shannon valley from Killaloe to Loop Head/Kerry Head, a distance of some 120km. This site supports a range of habitats and species and includes the lower freshwater stretches of a number of major tributaries such as the Mulkear, Feale catchments. This large site supports up to fifteen habitats listed on Annex I of the EU Habitats Directive and seven species listed on Annex II of the Directive. The complete NPWS site synopsis characterising this Natura 2000 Site is reproduced in Appendix 1.

Will not listed as a qualifying interest for the SAC, the lower Ballinacurra Creek and the stretch of the River Shannon between the mouth of the Ballinacurra Creek and Tervoe supports nationally and internationally important (in the context of Britain and Ireland) population of the triangular club rush (*Schoenoplectus triqueter*). This plant species, which occurs on mud banks along the lower reaches of tidal rivers, is listed on the Irish Flora Protection Order and as such is legally protected in Ireland under national legislation.

River Shannon and River Fergus Estuaries SPA (Site Code: IE0004077)

The River Shannon and River Fergus estuaries form the largest estuarine complex in Ireland. The site comprises all of the estuarine habitats 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

3-2 Map of the nearest sections of the River Shannon and River Fergus SPA to the proposed Walkway



distance of some 25km from east to west). The site has vast expanses of intertidal mudflats which provides a rich food resource for wintering birds.

The site is the most important coastal wetland site in the country and regularly supports in excess of 50,000 wintering waterfowl, a concentration of international importance. For several bird species it is the top site in the country. Also of note is that three of the species which regularly occur are listed on

Annex I of the EU Birds Directive i.e. Whooper Swan, Golden Plover and Bar-tailed Godwit. (See full reproduction of NPWS Site Synopsis for this site in Appendix 1)

Table 3.1 provides information on the following elements associated with the above Natura 2000 Sites:

- Qualifying interests;
- Site sensitivity/vulnerability;
- Current Conservation Status; and
- Threats.

As noted above the qualifying interests are the features for which each site has been designated as a Natura 2000 Site under the Habitats Regulations i.e. listed habitats, species and bird populations.

Site sensitivity/vulnerability is based on the sensitivities of the qualifying interests for which the site is designated. For instance the Lower River Shannon has been designated for the presence of Atlantic salt marsh, among other habitats. This habitat is typically dependent on adequate grazing levels and salinity levels and is highly sensitive to hydrological changes and changes in grazing regimes.

Table 3-1: Description of N2K Sites occurring within the Projects Sphere of Influence

N2K Site	Location	Qualifying Interests	Site Sensitivity	Conservation Status	Threats
2165 – Lower River Shannon	Immediately adjacent to project area	Estuaries	Surface and marine water dependent. Moderately sensitive to hydrological change. Moderate sensitivity to pollution. Sensitive to changes in salinity and tidal regime as well as coastal development	Poor	The main threats to this habitat relate to impacts arising from aquaculture; fishing; coastal development and water pollution.
		Mudflats and sandflats not covered by seawater at low tide	Surface and marine water dependent. Moderately sensitive to hydrological change. Moderate sensitivity to	Poor	The most serious threats to this habitat arise from aquaculture, fishing, bait digging, removal of fauna, reclamation of land, coastal protection works and invasive species, particularly cord-grass. In addition, there is some concern over the potential impact that hard coastal defence structures may have, in combination with sea-level rise, for the long-term extent of this habitat.

			pollution. Sensitive to changes in salinity and tidal regime as well as coastal development		
		Coastal Lagoons	Surface, ground and marine water dependent. Highly sensitive to hydrological changes. Highly sensitive to pollution. Sensitive to changes in salinity and tidal regime	Bad	The most damaging activity is the deliberate drainage of the largest lagoons for agricultural reasons and smaller lagoons for safety reasons. Further loss of habitat has occurred as a result of natural silting-up. The quality of the habitat has been impacted by water pollution in the form of excessive nutrient enrichment mostly from agricultural sources, but also due to effluents arising from increased urbanisation and industrial activities.
		Vegetated sea cliffs of the Atlantic and Baltic coasts	Coastal development. Erosion, over-grazing and recreation	Poor	Threats to this habitat include erosion; grazing; recreational pressures; development of golf courses and housing; dumping and cutting of peat. In some cases coastal protection works interfere with the natural functioning of sea cliffs, particularly those of the soft variety, which are prone to erosion. The impacts of climate change are likely to result in more cliffs being artificially consolidated or stabilised.
		Salicornia and other annuals colonizing mud and sand	Marine water dependent. Medium sensitivity to hydrological change. Sensitive to changes in	Poor	Main threats and impacts: Invasive Species, Erosion and accretion.

			salinity and tidal regime as well as infilling, reclamation, invasive species		
		Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Marine and groundwater dependent. Medium sensitivity to hydrological change. maritimae) Sensitive to changes in salinity and tidal regime as well as overgrazing, erosion and accretion	Poor	The main impacts to this habitat are overgrazing by sheep and cattle and erosion. The presence of alien species, particularly common cordgrass (*Spartina anglica*) is also a prevalent threat to this habitat throughout Ireland. There has been minor losses of this habitat due to infilling and reclamation.
		Mediterranean salt meadows (Juncetalia maritimi)	Marine and groundwater dependent. Medium sensitivity to hydrological change. Sensitive to changes in salinity and tidal regime as well as coastal development and reclamation.	Poor	The most common impact to this habitat is over-grazing by cattle or sheep. There has been some minor losses of habitat due to infilling and reclamation.

		Watercourses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	Surface and groundwater dependent. Highly sensitive to hydrological changes. Highly sensitive to pollution.	Bad	The main threats include: eutrophication; overgrazing, excessive fertilisation; afforestation; and the introduction of invasive alien species.
		Sandbanks which are slightly covered by sea water all the time	Marine water dependent. Medium sensitivity to hydrological change. Sensitive to changes in salinity and tidal regime as well as infilling, reclamation, invasive species	Poor	The potential for aggregate extraction, coal extraction and wind farm development remain a threat to the integrity of sandbanks.
		Large shallow inlets and bays	Surface and marine water dependent. Low sensitivity to hydrological changes. Aquaculture, fishing and pollution.	Poor	Impacts arising from aquaculture, fishing, dumping of wastes and water pollution are considered to be the principal threats to this habitat.
		Reefs	Sensitive to disturbance. Pollution.	Poor	Main threats include: professional fishing; taking for fauna; taking for flora; water pollution; climate change; and change in species composition.
		Perennial vegetation of	Marine water	Poor	The main threat to this habitat is the disruption of the

		stony banks	dependent. Low sensitivity to hydrological changes. Sensitive to coastal development, recreation and gravel removal.		sediment supply, owing to the interruption of the coastal processes, caused by developments such as car parks and coastal defence structures including rock armour and sea walls. The removal of gravel is still one of the most widespread and damaging activities directly affecting this habitat. Shingle vegetation is fragile and damage caused by trampling, horse riding and vehicles can be significant.
		Spartina swards (Spartinion maritimae)	Marine water dependent. Medium sensitivity to hydrological change. Considered an invasive species in Ireland.	Poor	As Spartina is considered to be an invasive alien species in Ireland, it is assessed in a different way to other habitats. Increases in the area and extent of this habitat are considered to be unfavourable and future expansion is considered likely.
		Molinia meadows on calcareous, peaty or clay-silt-laden soils (Molinion caerulecae)	Surface and groundwater dependent. Moderately sensitive to hydrological change. Sensitive to changes in management and nutrient status.	Bad	Agricultural intensification over the past century, drainage and more recently, abandonment of pastoral systems, which contributes to rank vegetation and scrub encroachment, all lead to the loss of some typical flora and to a reduction in the area of this habitat.
		Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)*	Surface and groundwater dependent. Highly sensitive to hydrological changes.	Bad	The area of this habitat has declined throughout Ireland. The main threats include Inappropriate grazing levels; invasive species; and clearance for agriculture or felling for timber.

			Sensitive to changes in management.		
		River Lamprey	Surface water dependent. Highly sensitive to hydrological change	Good	The main threats to this species include channel maintenance, barriers, passage obstruction, gross pollution and specific pollutants.
		Brook Lamprey	Surface water dependent. Highly sensitive to hydrological change	Good	The main threats to this species include channel maintenance, barriers, passage obstruction, gross pollution and specific pollutants.
		Sea Lamprey	Surface water dependent. Highly sensitive to hydrological change	Good	The main threats to this species include obstructions, impassable weirs, gross pollution, specific pollutants.
		Atlantic Salmon	Surface water dependent. Highly sensitive to hydrological change	Bad	Numerous threats impact upon this species. Some of these include: cultivation, pesticides; fertilization; pollution; water pollution; biocenotic evolution; accumulation of organic material; eutrophication; over-fishing; forest-related pressures; parasites.
		Bottle-nosed Dolphin	Surface water dependent Highly sensitive to hydrological change	Good	The main threats to this species includes by-catch in fishing gear, pollution of the marine environment and habitat degradation and increased disturbance from dolphin watching boat trips.
		Freshwater Pearl Mussel	Surface water dependent. Highly sensitive to hydrological change.	Bad	The principal threat to this species is poor substrate quality due to increased growth of algal and macrophyte vegetation as a result of severe nutrient enrichment, as well as physical siltation.

			Very highly sensitive to pollution.		
		Otter	Surface and marine water dependent. Moderately sensitive to hydrological change. Sensitivity to pollution	Poor	A diverse range of threats and impacts current affect otters in Ireland. Some of the main threats include: use of pesticides; fertilization; vegetation removal; professional fishing (including lobster pots and fyke nets); hunting; poisoning; sand and gravel extraction; mechanical removal of peat; urbanised areas; human habitation; continuous urbanization; industrial or commercial areas; discharges; disposal of waste; drainage; management of aquatic and bank vegetation for drainage purposes; removal of sediments; and canalization or modifying structures of inland water course.
4077 – River Shannon and River Feargus Estuaries	Downstream of the project area.	The site supports species/populations occurring at levels of international level of: Cormorant; Light-bellied Brent Goose; Shelduck; Wigeon; Teal; Ringed Plover; Golden Plover; Grey Plover; Lapwing; Knot; Dunlin; Black-tailed Godwit; Bar-tailed Godwit; Curlew; Redshank; Greenshank; 20,000 wintering waterbird. Additional SCI include: Whooper Swan; Pintail; Shoveler; Scaup; Black-headed Gull; and	Loss of habitat or fragmentation Highly sensitive to hydrological change. Increased disturbance.	No information is currently available on the threats to the qualifying features of this site	No information is currently available on the threats to the qualifying features of this site

		Wetland & Waterbirds.			

1.5.2 Conservation Management Objectives

At the time this assessment was undertaken, specific Conservation Management Plans for both Natura 2000 Sites were unavailable. In the absence of this plan a list of generic conservation management objectives (CMOs) for SACs and SPAs have been provided by the NPWS. These are:

For SACs

- To maintain the Annex I habitats for which the SAC has been selected at favourable conservation status;
- To maintain the Annex II species for which the SAC has been selected at favourable conservation status;
- To maintain the extent, species richness and biodiversity of the entire site; and
- To establish effective liaison and co-operation with landowners, legal users and relevant authorities.

For SPAs

- To maintain the bird species of special conservation interest, for which the SPA has been designated, at favourable conservation status

Specific information regarding the current conservation status of and threats to the qualifying interests of the Sites are currently unavailable. In the absence of this information an overview of the conservation status of each qualifying interest is provided from the results of Ireland's Article 17 Report to the European Commission "Status of EU Protected Habitats and Species in Ireland" (NPWS, 2008) (see Table 3.1 above). It is noted that the Article 17 report assesses the conservation status and associated threats to Annex-listed habitats and species on a countrywide basis rather than on a site by site basis.

No similar nationally-based assessment of the current conservation status and threats to the qualifying interests of SPAs has been undertaken at the time of writing.

1.6 Receiving Environment

The proposed walkway is located within the wooded parkland setting of the Baggot Estate in Ballinacurra to the south of Limerick City. As shown on *Figure 3.1* and *3.2* the River Shannon-based Natura 2000 Sites are located to the west of the project area. A drainage ditch (the most southerly drainage ditch, orientated east to west as shown on *Figure 3.3:* Habitat Map below) establishes a hydrological link between an area of the proposed walkway (the southwest corner) and the Ballinacurra Creek. The Limerick Southern Ring Road occurs approximately 10m to the south of the proposed walkway at the nearest point and this road creates a terrestrial barrier between the proposed walkway and the Ballinacurra Creek to the south.

The Baggot Estate (also referred to as Portland Park) consists of a mix of woodland habitats and wetlands. The remainder of this *Section* describes these habitats with references to Fossit's Guide to Habitats in Ireland (2000).

The woodlands are characterised by immature and semi-mature broadleaved and conifer plantations along with an established, mature area of mixed broadleaved/coniferous woodland. The plantations consist of Sitka Spruce (*Picea stitchensis*) (WD4), oak (*Quercus petraea*) and ash (*Fraximus excelsior*). The oak and ash plantations are best described as immature woodlands (WS2)

Two areas of mixed broadleaved/conifer woodland (WD2) occur within the estate; one within the project area and another to the west of the project area (as shown on Figure 3.3 below).The mixed broadleaved/conifer woodland within the project area consists of a range of mature trees such as cedars, pine (*Pinus* spp.), sycamores (*Acer pseudoplatanus*), beech (*Fagus sylvatica*), and oak (*Q. Petraea*) with hazel (*Corylus avellana*) and willow (*Salix* spp.) in the lower shrub layer. The ground flora is dominated by a dense cover of ivy with typical woodland mosses such as *Isothecium myosuroides* and *Brachythecium rutabulum* also present.

A mature beech and sycamore treeline borders the established track where resurfacing is proposed to talk place (WL2).

A network of informal walkways in the form of thread-lines currently run through the woodland habitats and a large amount of litter, generally in the form of alcohol containers were noted throughout.

Playing fields (amenity grassland GA2) are located to the east of the area of the proposed walkway and the woodland habitats.

High value wetland habitats are located to the west of the proposed walkway area. The Sitka Spruce plantation which forms the western boundary of the woodland habitats is separated from the wetland habitats by a drainage ditch (FW4) which is up to 1m deep in places. The wetland habitats include reed and large sedge swamps (FS1), marsh (GM1) and wet willow (*Salix* spp.), alder (*Alnus glutinosa*), birch (*Betula pubescens*) woodland (which is best described as WN6 woodland). In places the wet woodland is well established with alder and birch trees over 25m in height. Wet willow scrub is likely to be spreading throughout the swamp and marsh habitats which occupy the majority of the wetlands to the west of the walkway.

The large sedge swamp dominates the south of the Baggot Estate to the west of the woodland habitats. This habitat is dominated by common reed (*Phragmites australis*) with marsh thistle (*Cirsium palustre*) also frequent. Other tall herbs commonly associated with swamp and marsh habitats also occur here. These include meadowsweet (*Filipendula ulmaria*), great willowherb (*Epilobium hirsutum*), purple-loosestrife (*Lythrum salicaria*) along with marsh bedstraw (*Galium palustre*) and wild angelica (*Angelica sylvestris*). The extent of this habitat is largely restricted by drainage ditches which form the boundary to the swamp.

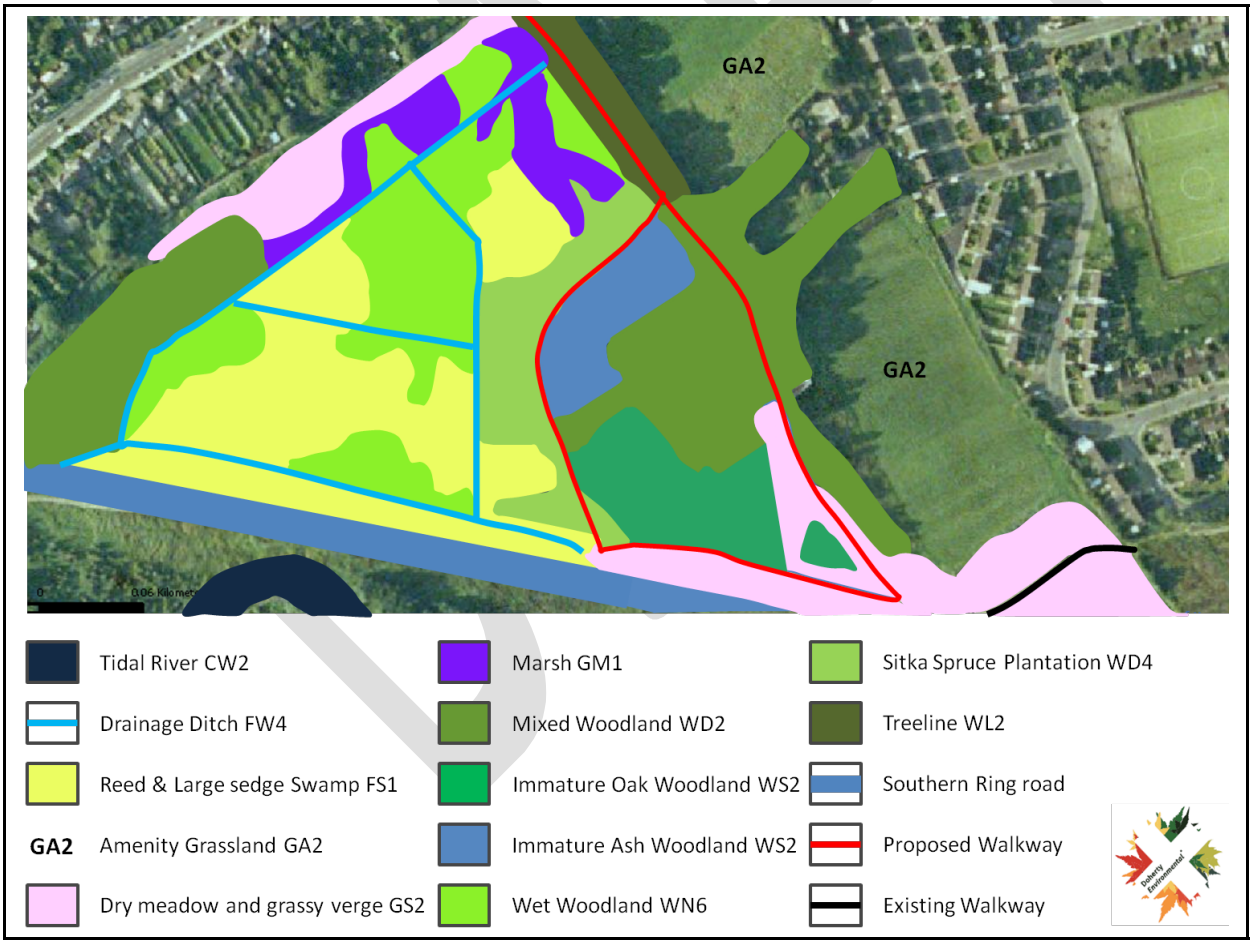
The eastern extent of the southern drainage ditch (FW4) which borders the swamp habitat is located adjacent to the southwest corner of the proposed new section of walkway. As noted above an established, albeit informal, path in the form of a thread-line already exists at this location. This drainage ditch was choked with vegetation throughout and no noticeable flows were noted towards the eastern end of the ditch adjacent to the proposed new section of walkway. The emergent and aquatic vegetation associated with this drainage ditch include common reed, great willow-herb, purple-loosestrife, fool's water-cress (*Apium nodiflorum*) and water-cress (*Rorrripa nasturtium-aquaticum* agg.).

The occurrence of triangular club-rush was not recorded during the field survey; however it is noted that this species is difficult to identify in the field during winter months. Nevertheless the extensive growth of the competitive common reed and the lack of suitable mud flat habitat (see Deegan & Harrington, 2004) is likely to restrict the occurrence of triangular club-rush in this area of the site.

The drainage ditch orientated north-south, which separates the Sitka Spruce plantation from the wetland habitat contained flowing surface water which discharged into the southern drainage ditch.

To the east of the southern drainage ditch and the south of the oak plantation the proposed new section of walkway passes through rough grassland (best described as wet grassland GS4) which is generally dominated by soft rush (*Juncus effusus*) and hard rush (*J. inflexus*) with common reed also frequently occurring. This grassland grades into discrete areas of dryer grassland adjacent to the established thread-line in this area of the site. Species noted during the field survey include clover (*Trifolium repens; T. pratensis*), plantains (*Plantago lanceolata; P. major*), wild teasel (*Dipsacus fullonum*), buttercups (*Ranunculus repens; R. acris*), tufted vetch (*Vicia cracca*) and common knapweed (*Centaurea nigra*). A second area of rush dominated wet grassland also occurs to the northwest of the site.

Figure 3-3: Habitat Maps of Baggot Estate



Screening of Natura 2000 Sites

1.7 Likely Significant Effects to Qualifying Habitats

Of the fifteen qualifying habitats associated with this cSAC, twelve are estuarine or coastal habitats and do not occur within close proximity to the proposed project area. The remaining three qualifying habitats, not restricted to estuarine or coastal environments, include *Alluvial Woodlands*; *Molinia Meadows;* and *Water Courses of Plain to Montane Levels with the Ranunculion Fluitantis and Callitricho-Batrachion Vegetation*.

These three habitats are sensitive to:

- hydrological change;
- water pollution;
- and changes in nutrient status.

The proposed project involves the resurfacing an existing walkway and the construction of a new walkway on an established thread-line path. The resurfacing and construction of the new section of walkway will be entirely restricted to the terrestrial environment i.e. will not involve any instream works, or directly affect the drainage ditch adjacent to the southwest corner of the proposed new walkway and will not result in increased surface water discharge (as mentioned above permeable compacted dusk, or a suitable equivalent, will be used for surfacing the walkways). Due to the above, it is not considered likely that changes to the hydrology of the drainage ditch or the protected section of the Ballinacurra Creek and River Shannon downstream will arise as a result of the resurfacing and/or construction of the proposed walkway.

As the proposed walkway will be restricted to pedestrian use which will be similar in nature to the current usage of the informal thread-line paths which current exist throughout the Estate it is considered unlikely that the operation of the proposed new walkway will result in adverse impacts to the drainage ditches surrounding the site or the Ballinacurra Creek downstream.

Construction activity associated with the walkway has the potential to result in increases in runoff and inputs of suspended solids to the drainage ditch adjacent to the southwest corner of the proposed new section of walkway. Furthermore the input of oils and fuels associated with plant machinery during the construction phase will also have the potential to lead to decreases in water quality within the drainage ditch adjacent to the southwest corner of the proposed new section of walkway.

However, as the construction phase will be undertaken:

- with light machinery, such as a Terex compact excavator and roller that will be inspected prior to use on site to ensure no fuel leakages occur;
- without the storage of fuels on site; and
- so that any excavated material will be stored a minimum of 5m from the nearest surface watercourse i.e. the southern drainage ditch,

the potential for such negative effects to water quality to arise during the construction phase are not considered to be likely or significant with regard to affecting the integrity and conservation status of habitats associated with the Natura 2000 Sites located downstream of the proposed site.

As the proposed project will avoid inputs of contaminants and suspended solids to the southern drainage ditch, and will not involve the application of any chemical treatments it is unlikely to effect the nutrient status of the southern drainage ditch or other watercourses downstream. Furthermore, all surface water will drain through the permeable walkway surface where it will be attenuated and allowed to infiltrate the ground layer.

Considering the above it is considered unlikely that any significant effects to the qualifying habitats of the Lower River Shannon cSAC will result from the proposed project.

1.8 Likely Significant Effects to Qualifying Species

1.8.1 Lower River Shannon cSAC Qualifying Species

All the qualifying species of this cSAC are dependent on the aquatic environment and all, with the exception of the Bottle-nosed dolphin, are likely to occur along the Ballinacurra Creek and the River Shannon adjacent to the proposed project area. All of these species are sensitive to changes in hydrology, water pollution and disturbance. It is noted that the majority of the freshwater aquatic species listed as qualifying interests are unlikely to be supported by the drainage ditches which occur throughout the Baggot Estate.

As outlined in *Section 4.1* above it is considered unlikely that changes in hydrology and/or water pollution will arise as a result of the proposed project and therefore do not represent potential risks to the qualifying species of the site.

The principal source of disturbance to qualifying species could arise as a result of noise and vibration during construction activity which may impact mobile species such as birds and otters. As the walkway will be constructed with light machinery and will not involve any activity that will lead to excessive noise levels i.e. rock piling etc. it is not considered likely that noise and vibration will have the potential to impact qualifying species.

Furthermore, as the proposed walkways are currently and regularly used for recreation purposes it is not considered likely that levels of usage will increase to a level that may in turn increase the levels of human disturbance to qualifying and non-qualifying species.

As all construction activity associated with the proposed project will be undertaken during the daytime no disturbance associated with lighting will arise. No additional lighting to the current baseline lighting levels will be installed as part of the proposed project.

1.8.2 River Shannon and River Fergus Qualifying Species

As the project area is located outside of the SPA boundary no direct impacts to the qualifying bird species and their associated habitats will arise as a result of the proposed walkway. Furthermore,

potential indirect impacts to associated habitats reflect those outlined in *Section 4.1* and as such it is not considered likely that such impacts will adversely affect the qualifying bird species of the SPA.

Also, baring in mind the low levels of noise and vibration that are likely to accompany the construction phase it is considered unlikely that bird species associated with the SPA will be adversely effected by disturbance arising during this phase of the project.

As noted in *Section 4.2.1* the proposed project is unlikely to bring about an increase in recreation that will result in adverse impacts to bird species associated with the wetland and woodland habitats of the Baggot Estate.

4 In-Combination Effects

The Limerick Southern Ring Road is the located to the south of the proposed walkway and immediately adjacent to the Ballinacurra Creek. An assessment of the potential impacts this road scheme would have on the Ballinacurra Creek and the River Shannon-based Natura 2000 Sites was undertaken as part of an Environmental Impact Statement (EIS) prior to the construction of the road. Potential negative effects that were identified during the EIS were avoided or reduced by the implementation of mitigation measures which ensured that the road did not have an adverse effect on the integrity of the Natura 2000 Sites during the construction or operation phase.

As the Southern Ring Road does not pose a risk to the integrity of the Natura 2000 Sites and as the proposed walkway are not likely to result in any potential impacts to Natura 2000 Sites it is considered unlikely that these projects will combine to result in significant adverse impacts to the designated sites.

5 Conclusion

Based on the assessment of potential impacts it is concluded that the proposal is not likely to result in significant adverse effects to the conservation objectives of the listed Natura 2000 Sites. As shown in this Screening Assessment all activities associated with the proposal are considered unlikely to result in significant effects to the cSAC/SPA.

This Screening Assessment has resulted in a Finding of No Significant Effect to Natura 2000 Sites and a Stage II Appropriate Assessment is not required.

References

Deegan, B.M. & Harrington, T.J. (2004). The distribution and ecology of *Schoenoplectus triqueter* in the Shannon Estuary. Biology and the Environment: Proceeding of the Royal Irish Academy. Vol 104B(2): pp107 – 117.

Department of the Environment Heritage and Local Government (DEHLG) (2008) Circular letter SEA 1/08 & NPWS 1/08.

Department of the Environment Heritage and Local Government (DEHLG) (2008) Circular letter L8/08.

Dodd, A.M., Cleary, B.E., Dawkins, J.S., Byron, H.J., Palframan, L.J. and Williams, G.M. (2007). *The Appropriate Assessment of Spatial Plans in England: a guide to why, when and how to do it.* The RSPB, Sandy.

English Nature (1999). Habitats *regulations guidance note no. 3 (HRGN No. 3). Determination of Likely Significant Effect under The Conservation (Natural Habitats &c) Regulations 1994*.

European Commission (2000). *Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC*. Luxembourg.

European Communities (2002). *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*. Luxembourg.

European Commission (1992). EU Habitats Directive.

National Parks and Wildlife Service (2007). The status of EU Protected habitats and species in Ireland. DEHLG.

Scott Wilson, Levett-Therivel Sustainability Consultants, Treweek Environmental Consultants & Land Use Consultants (2006). *Appropriate Assessment of Plans*.

Appendix 1: Lower River Shannon SAC Site Synopsis

SITE CODE : 002165

This very large site stretches along the Shannon valley from Killaloe 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. The Shannon and Fergus 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. 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 Killeenagarriff, 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 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 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 (*Glaux 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 pcSAC.

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.

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*).

Flowing into the estuaries are a number of tidal rivers.

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. Seminatural 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 a 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 *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 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 50m 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 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 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 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 (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.
17.05.2005

Appendix 2: River Shannon & River Fergus SPA Site Synopsis

SITE CODE: 004077

The estuaries of the River Shannon and River Fergus form the largest estuarine complex in Ireland. The site comprises all of the 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 *Nepthys 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 triqueter*). 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 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.
1.4.2005