Re: Screening for Appropriate Assessment for Dromcollogher (D0316-01) and Hospital (D0314-01)

Dear Sir/Madam

I refer to previous correspondence from Sean O’Donoghue, Inspector, requesting screenings for Appropriate Assessment to be carried out for the Dromcollogher and Hospital Wastewater Discharge Licensing applications.

I now enclose two hard copies of the screening reports as requested. A CD-Rom copy is also enclosed.

Should you have any further queries, please do not hesitate to contact the undersigned.

Yours faithfully

TREVOR MCKECHNIE
SENIOR EXECUTIVE ENGINEER
WATER SERVICES DEPARTMENT
Hospital Wastewater Discharge Licensing

Screening for Appropriate Assessment (Rev 1)

January 2011
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Client: Limerick County Council
Project Title: Hospital Wastewater Discharge Licensing
Location: Hospital, Co. Limerick
Document Title: Screening for Appropriate Assessment

Date: January 2011
Project No: 0486
Rev: 1
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**Appendix A**
EPA Letter Reference D0314-01

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Lower River Shannon SAC Site Synopsis

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Area Location Map
1. INTRODUCTION

Murnane Consulting Engineers in conjunction with IE Consulting/GES Ltd. were requested by Limerick County Council to undertake screening for appropriate assessment for a waste water discharge licence for the Hospital agglomeration in south County Limerick. This screening assessment is required to comply with the requirements of an EPA letter dated 19th April 2010, ref. No. D0314-01 (Appendix A).

Under the European Communities (Natural Habitats) Regulations 1997, appropriate assessments are legally required for any plans or projects likely to have any significant impacts on Natura 2000 sites. This includes both Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). The screening process is undertaken to determine whether or not an appropriate assessment is necessary for a particular project or plan, and involves the following steps:

- Step 1 – Management of the Site;
- Step 2 – Description of the Plan or Project;
- Step 3 – Characteristics of the Site;
- Step 4 – Assessment of Significance.

2. STEP 1 – MANAGEMENT OF THE SITE

The Hospital Wastewater Treatment Plant (WWTP) is not situated within any conservation sites, nor is it in the immediate vicinity of any such sites. The nearest conservation sites to the WWTP are; Glen Bog SAC (001430), situated approximately 7.5km to the West of the WWTP, Tory Hill SAC (000439), approximately 12.4km to the North West, the Moanour Mountains SAC (002257), approximately 13.3km to the South East of the site. The WWTP discharges to the River Mahore, ultimately flowing into the Lower River Shannon SAC, which is approximately 30km downstream. The existing WWTP discharge is not connected with or necessary to the management of any of these sites.

3. STEP 2 – DESCRIPTION OF HOSPITAL WWTP

The Hospital WWTP is located to the northwest of Hospital town on the banks of the River Mahore. Constructed in the 1940’s, it provides primary and secondary treatment to sewage from the town and surrounding area. The primary discharge point is located on the Mahore River, approximately 0.3km downstream of Hospital Bridge, Barry’s Farm, Hospital Co. Limerick.
The Glen Bog, Tory Hill and Moanour Mountains SACs are not thought to be impacted upon by the Hospital WWTP and so are not considered further as part of this assessment. The Lower River Shannon SAC does eventually receive wastewater discharge from the WWTP and although it is unlikely that this would have any measurable negative impacts on the site, it is possible that in combination with other plants or projects it may produce an adverse environmental effect.

4. **STEP 3 – CHARACTERISTICS OF THE SITE**

A detailed description of the Lower River Shannon SAC is provided in Appendix B, and the SAC site location relative to the WWTP is outlined in Appendix C. The SAC site contains a high number of habitats and species listed on Annexes 1 and 2 of the Habitats Directive, including the only known resident population of Bottle-nosed Dolphin in Ireland, as well as all three Irish lamprey species.Were the water quality within the Lower River Shannon SAC to be reduced by the Hospital WWTP through a cumulative effect in combination with other projects or plans, it is assumed that this could have a significant detrimental impact on rare or protected species present at the site.
5. **STEP 4 – ASSESSMENT OF SIGNIFICANCE**

a) Circular L8/08 ‘Water Services Investment and Rural Programmes – Protection of Natural Heritage and National Monuments’

In accordance with EPA guidelines, the screening process was followed based on the following flow diagram, contained in circular L8/08 ‘Water Services Investment and Rural Programmes – Protection of Natural Heritage and National Monuments’ issued by the Department of Environment.

![Flow Diagram for Screening Process](image-url)

**Figure 1: Flow Diagram for Screening Process (NPWS Circular L8/08, 2008)**
ASSESS IMPACTS

Figure 2: Results of Flow Diagram for Screening Process

b) Assessment of Impacts

The Lower River Shannon SAC, to which Hospital WWTP ultimately discharges to, is approximately 30km downstream of the WWTP discharge point.

The River Mahore, to which the WWTP discharges to, has a DWF\(^1\) of 0.004m\(^3\)/s. The River Maigue, to which the River Mahore eventually combines with, has a DWF of 0.62m\(^3\)/s upstream of the Lower River Shannon SAC. The River Maigue provides a dilution ratio of 1:155 of the River Mahore at DWF.

The Camoge River, to which the River Mahore combines with, has a water quality\(^2\) (Q) rating of 4 (Good Status) at Gray's Bridge (Code: 24C010400, 2008 Data) downstream of the confluence point of the two rivers. The River Maigue has a water quality (Q) rating of 4 (Good Status) at Castlerobert's Bridge (Code: 24M010900, 2008 Data) downstream of the confluence point with the Camoge River and upstream of the Lower River Shannon SAC.

Due to the large distance between the WWTP discharge point and the Lower River Shannon SAC, the large dilution ratio between the River Mahore and the River Maigue upstream of the Lower River Shannon SAC and the fact that the water quality rating of the receiving waters is Q4 (Good Status) upstream of the Lower River Shannon SAC, it is considered that significant effects from the discharge from Hospital WWTP are not likely and therefore an appropriate assessment is not required to be carried out.

\(^1\) DWF figures were obtained from the EPA's Low Flow Statistics at selected hydrometric stations.
\(^2\) Water quality ratings were obtained from the EPS ENVision website.
6. SCREENING CONCLUSION

Following the screening process, it is determined that Hospital WWTP is within the surface water catchment of the Lower River Shannon SAC but an appropriate assessment is not required for Hospital WWTP as the discharge is not contributing to any significant negative impacts on the Lower River Shannon SAC.
Appendix A

EPA Letter Reference D0314-01
Mr Trevor McKechnie  
Limerick County Council  
County Hall  
Dooradoyle  
Co Limerick

19 April 2010  
D0314-01

re: Notice in accordance with Regulation 18(3)(b) of the Waste Water Discharge (Authorisation) Regulations 2007

Dear Mr. McKechnie,

I am to refer to the above referenced application for a waste water discharge licence relating to agglomeration named Hospital. Having examined the documentation submitted, I am to advise that the Agency is of the view that the documentation does not comply with Regulation 16 of the Waste Water Discharge (Authorisation) Regulations 2007.

You are therefore requested, in accordance with Regulation 18(3)(b) of the regulations, to take the steps to supply the information detailed below:

REGULATION 16 COMPLIANCE REQUIREMENTS

- Assess the likelihood of significant effects of the waste water discharges from the above agglomeration on the relevant European sites by referring to Circular L8/08 ‘Water Services Investment and Rural Water Programmes – Protection of Natural Heritage and National Monuments’ issued by the Department of Environment, Heritage and Local Government. In particular, the flow diagram in Appendix 1 should be completed and the results of each section recorded. If significant effects are likely then an appropriate assessment must be carried out and a report submitted to the Agency. You are advised to provide the requested information in accordance with the ‘Note on Appropriate Assessments for the purposes of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. 684 of 2007)’ which is available at www.epa.ie/downloads/forms/lic/wwda

Your reply to this notice should include a revised non-technical summary which reflects the information you supply in compliance with the notice, insofar as that information impinges on the non-technical summary.

Page 1 of 2
Please supply the information in the form of one original plus one copy within four months of the date of this notice. In addition please submit one copy of the requested information in electronic searchable PDF format on a CD-ROM (no file to exceed 10MB) to the Agency. Please note that all maps/drawings should not exceed A3 in size.

Please note that the application's register number is D0314-01. Please direct all correspondence in relation to this matter to Administration, Environmental Licensing Programme, Office of Climate, Licensing & Resource Use, Environmental Protection Agency, Headquarters, PO Box 3000, Johnstown Castle Estate, County Wexford quoting the register number.

Yours sincerely,

Sean O'Donoghue
Inspector
Office of Climate, Licensing & Resource Use
Appendix B

Lower River Shannon SAC Site Synopsis
SITE SYNOPSIS

SITE NAME: LOWER RIVER SHANNON

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, Allaughanaun, 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 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 Sea-pursery (*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 recurvarum* 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 *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 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 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. fimбриatum*. 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 Ringmoylean 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.

17.05.2005
Appendix C

Area Location Map
Legend:

Special Area of Conservation
Special Protection Area

SAC/SPA Name:
1. Lower River Shannon SAC
2. Glen Bog SAC
3. Moanour Mountain SAC
4. Galtee Mountains SAC
5. Tory Hill SAC
6. Lower River Suir SAC

Murnane Consulting Engineers
Main Street, Nenagh, Co. Tipperary
Tel: 067 35101, Fax: 067 35100
Email: info@murnane.ie

IE Consulting
Innovation Centre, Green Rd.,
Carlow
Ph: 059 9133084
Fax: 059 9140499
Email: info@icec.ie

Project Title: Hospital Wastewater Discharge Licensing
Project Address: Hospital, Co. Limerick
Client: Limerick County Council
Org. Title: SPA & SAC Layout Plan
Dwg. Scale: NTS
Dwg. Title: Limerick County Council
Dwg. Date: 16/12/10
Dwg. No: IE625-001
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