Administration
Environmental Protection Agency
Office of Climate,
Licensing and Resource Use,
PO Box 3000
Johnstown Castle Estate,
Wexford

Your Ref D0075-01

29th October 2010

RE: NOTICE IN ACCORDANCE WITH REGULATION 18(3)(B) OF THE WASTE WATER DISCHARGE (AUTHORISATION) REGULATIONS 2007

Dear Sir/Madam

Further to your letter re: Article 16 Compliance Requirements for Kilrush Wastewater Treatment Plant please find attached:

1. Kilrush WWTP Appropriate Assessment with the following attachments:

Attachment 1: Description of the Lower River Shannon cSAC (European Site Code 2165)

Attachment 2: Water Quality data for the Shannon Estuary (EPA publication extract)

Attachment 3: Bathing water quality data for Cappagh Pier, Kilrush

Attachment 4: Lower Shannon Estuary water body status report IE_SH_060_0300

Attachment 5: Water Services Investment Programme for 2010-2012

The above has been submitted on one original + one copy + one CD-ROM

Regards

_____
Myles Carey
Administrative Officer

WASTE WATER DISCHARGE LICENSING
APPROPRIATE ASSESSMENT for D0075-01

WASTE WATER DISCHARGE LICENSING
APPROPRIATE ASSESSMENT for D0075-01

1. Introduction

This "appropriate assessment" (AA) is undertaken in accordance with the Wastewater Discharge Authorisation Note on Appropriate Assessments, issued by the EPA. Due regard is given to the EC Guidance "Managing Natura 2000 Sites". In compliance with the requirements of Article 6 of the directive, and following the guidelines, this AA has been structured in stages as set out hereunder:

Stage 1 Screening:

This includes a description of the activity and the discharge; identification of the Natura 2000 sites potentially affected; identification of cumulative impacts on the Natura 2000 site in the vicinity of the discharge; assessment of the significance of the impacts identified on the site integrity

Stage 2 Appropriate Assessment

This includes a description of elements of the Natura 2000 site which will be considered further; a description of significant impacts on the conservation features of the site likely to occur from the discharge; and, recommendations regarding necessary measures to be taken to ensure the protection of the site and its conservation objectives

Stage 3 Assessment of Alternatives

This examines the current provisions regarding the treatment plant and its discharge and future provisions to ensure the ongoing protection of the Natura 2000 site

Stage 4 Assessment where no alternatives exist

This examines reasons (if they exist) of overriding public interest for continuation of a discharge which has a negative impact on the Natura 2000 site.

2. Stage 1 Screening:

Is the Kilrush WWTP directly connected with or necessary to the management of the site? No

2.1 Description of the treatment plant

The end of pipe treatment unit, associated with the agglomeration of Kilrush, is located in the Townland of Leadmore West, County Clare. The unit comprises of a collection system, main pumping station and a primary settlement tank with discharge control by a tidal flap valve.

There is no secondary treatment provided for the agglomeration at present and all effluent is collected in a main pumping station in Francis Street and pumped 1.5km to the primary settlement tank which discharges into the Shannon Estuary at Skagh Point on the ebb tide.

There are two pumping stations located in the agglomeration, and these are indicated on Map No 3 in Attachment B2 of the application. Each pumping station is equipped with emergency overflow facilities. Overflows from the pumping stations, as described in the original application in the sewer catchment, were inadvertently named as secondary discharge points. There is no record of overflow from the pumping stations during the period since their installation, and taking account of the design of the stations, it is unlikely that any overflow from the stations is occurring.
The current scheme is designed for 4000P.E with potential for expansion to 8000P.E.
Clare County Council have no regular monitoring programme in place as there is no treatment associated with this wastewater treatment plant.

2.2 Description of the Natura 2000 site[1]

The discharge is made to the Lower River Shannon cSAC (European Site Code 2165), which has been selected for the conservation of Annex 1 habitats and Annex II species, which include *inter alia*: *Salmon, Sea Lamprey, Brook Lamprey, River Lamprey, Otter, Atlantic Salt Meadows, Estuaries, Mudflats and sandflats not covered by seawater at low tide, Mediterranean Salt Meadows*
A copy of the site description is provided as an attachment to this **report (Attachment 1)**

. [1](Site synopsis from www.npws.ie)

2.3 Identification of potential impacts

Only those features of the operation of the wastewater treatment plant or the discharge, which have the potential to impact on interests and conservation objectives of the Lower River Shannon cSAC are considered. A number of factors were examined and then dismissed, or, carried forward for appropriate assessment, as relevant. The main issue examined in relation to potential impact on the designated site was the water quality associated with the area of the discharge from the WWTP.

The potential impacts on the river water quality associated with the wastewater treatment plant are:

- Organic pollution of the receiving waters with untreated or poorly treated sewage
- Microbial pollution of the receiving waters to the extent that natural marine habitats or populations would suffer direct or indirect effects
- Pollution of the receiving waters by other pollutants associated with wastewater (organic compounds or heavy metals)

A deterioration of water quality could affect some habitats or species for which the site has been designated, either directly by impacting on water quality or indirectly by impacting on the food chain for various species of flora or fauna.

The discharge is made to the Lower River Shannon cSAC (European Site Code 2165), which has been selected for the conservation of Annex 1 habitats and Annex II species, which include *inter alia*: *Salmon, Sea Lamprey, Brook Lamprey, River Lamprey, Otter, Atlantic Salt Meadows, Estuaries, Mudflats and sandflats not covered by seawater at low tide, Mediterranean Salt Meadows*

Water quality data for the Shannon Estuary, published by the EPA in their 2006 report is used as a statement of overall impact of the discharge (including the impact of all other discharges to the estuary) from the treatment plant (See **Attachment 2** to this document). No assimilative capacity data is available for the Shannon Estuary at this location. The section of the estuary into which the discharge is made is largely dominated by the marine or saline influences of the Atlantic ocean, with the Wood river being the only freshwater discharge in the vicinity. Environmental quality in this part of the estuary is generally good with no elevated coliform levels.

Clare County Council also undertake monitoring of marine waters in the area during the period May-September every year, in compliance with the requirements of the EU Bathing Water Regulations. This monitoring is undertaken on a fortnightly basis, during the season, by Clare County Council at Cappagh Strand, located approximately 0.5km due east (along the shore line) of the Kilrush wastewater discharge location. Monitoring data indicates 100% compliance with the Guide Limit values imposed for Blue Flag Bathing areas (significantly more stringent than the limit values of the Bathing Water Regulations 1992, as amended by the 2008 Regulations). (See **Attachment 3**)

A Blue Flag is also awarded to the Kilrush Creek Marina, which is a further indicator of the good water quality status of this area.

2.4 Elements of the project which (alone or in combination) with other plans or projects have the potential to have a significant effect on the site.

In so far as discharges to marine waters are concerned, it is critical that discharges are controlled and managed to ensure the impact of any discharge, or combination of discharges does not

- Give rise to any reduction in the diversity of floral and faunal species
- Cause a change in the integrity of the principal community types; and
- Impact on water quality to the extent that the integrity of the principal community types is affected; and
- Giver rise to changes in the extent of any habitat or any population such as to threaten the long term survival of species associated with any habitat.

The National Grid Reference for the Primary Discharge Point P(SW1) at the end of the outfall pipe is (E 098700; N 154065 to the Shannon estuary at Skagh point, within the boundary of the Lower River Shannon cSAC (European Site Code 2165).

This discharge from the Kilrush WWTP, as described in the licence application D0075-01, constitutes the element of the project, which has potential for a significant effect on the adjacent designated site. The discharge does not currently comply with the requirements of the Urban Waste Water Treatment Regulations 2001 &2004. Other discharges which can be identified as having potential to have a significant effect on the site are marked on Figure 1, and include

- Housing developments around Kilrush, with storm water run off to the marine catchment. The public sewerage system currently has adequate collection capacity to accommodate future development but the provision of secondary treatment for the area is identified as a critical requirement for compliance with the Urban Wastewater Regulations, and for the protection of the receiving environment. The provision of this treatment is identified as a priority project in the current Water Services Investment Program.
- Other discharges to waters in the immediate catchment of Kilrush will include storm water discharges from the Kilrush urban area (and associated housing developments) and storm water discharges from the roads network in the immediate catchment. These discharges are already included in the water quality data assessments to date.
- Discharges to the catchment of the Wood River which discharges to the estuary at Kilrush
- Discharges to the Shannon Estuary either from agglomerations, or from industrial installations in the estuary (e.g ESB Moneypoint, Aughinish Alumina)

Other plans and projects considered to have potential to have "in combination" effects are listed hereunder:

- Kilrush Development Plan
- Downstream discharges to Lower Shannon Estuary from dispersed rural housing in the vicinity of the discharge from the Kilrush WWTP
- Diffuse agricultural discharges to the main surface water channels which discharge to the estuary. This may include such facilities as oil storage depots which require careful management to avoid fugitive discharges to waters, and provide for spill management at the facilities

In so far as the impact of the combined discharges (listed above) which exist to date is concerned, can be assessed by the bathing water quality data recorded, (as provided in **Attachment 3** to this report) there is no evidence of any compromised water quality in the receiving waters area of the Kilrush WWTP discharge, or in combination with the existing discharges from developments in this catchment.

Clare County Council engage in consideration of all applications for development liable to impact on the receiving water quality, and in particular those facilities liable to generate substances which could give rise to deterioration in the status of the receiving environment of the estuary. This will be discussed further under Mitigation Measures

2.4 Assessment of Significance of the discharge

The Lower Shannon Estuary cSAC is a designated conservation area on the basis of a diverse range of marine, coastal and terrestrial habitats, including several listed on Annex I of the EU Habitats Directive, occur within the site, making the area of high scientific importance, providing ideal feeding grounds for several bird species, as described in **Attachment 1**. As there is no evidence of a significant difference in water quality in the area of discharge or in the vicinity of the discharge from the Kilrush WWTP, and this water quality is considered to be in the good status range, it is considered that there is no impact associated with the discharge on the designated habitats or the feeding grounds of any birds in the area

Referring to the L8/08 Circular, the following queries are raised and answered:

1. Is the development in or on the boundary of an SAC/NHA etc **Yes**
2. Will nationally protected species be directly impacted? **No**
3. Is the development a surface water discharge or downstream of a conservation site with water dependent qualifying habitats/species **Yes**
4. Is the development a groundwater discharge/abstraction? **No**
5. Is the development in the surface water or groundwater catchment of salmonid waters? **No**
6. Is the treatment plant in an active/former floodplain? **No**
7. Is the development a surface water discharge to/from marine waters and within 3km of a marine conservations site? **Yes**
8. Will the project in combination with other projects (existing and proposed) or changes to such projects affect the hydrology or water levels of sites of conservation interest or habitats of protected species? **No**

L8/08 states that if the conclusion of the screening process above is to "Assess Impacts" then the project must be referred to the DEHLG Developments Application Unit. As the conclusion of the screening process is that there is no discernable impact, the application has not been referred to the DEHLG Developments Application Unit.

2.5 Conclusion

A screening process was undertaken to determine the potential impact, if any, of the Kilrush WWTP discharge on the Lower Shannon Estuary cSAC. No impact is

considered likely taking account of the quality of the receiving waters in the vicinity of the discharge (as set out in **Attachment 3** to this report)

3. Stage 2 Appropriate Assessment

3.1 Introduction

The potential impacts resulting from the effluent discharge from the Kilrush WWTP are discussed in relation to the conservation objectives of the Lower Shannon Estuary cSAC (Site Code 002165) site. A conservation management plan has not yet been published for this site. The general advice from the National Parks and Wildlife Service for those sites which conservation management plan is not prepared is to ensure the features of interest of the site are identified and clear objectives for protection of the status of these features are set out. Any impacts (both positive and negative) on the site needs to be identified , and appropriate management planning needs to be in place to ensure the protection objectives for these sites are met.

3.2 General Description

See **Attachment 1** to this report

3.3 Water Quality

The Lower River Shannon is a large site and stretches along the Shannon Valley from Killaloe to loop Head/Kerry Head, a distance of approximately 120Km. This site encompasses the Shannon and Fergus Estuaries, the lower freshwater reaches of the River Shannon and the marine area between Lodd head and Kerry Head. The site is of high ecological interest, containing a number of habitats listed on Annex I of the EU habitats directive and a range of mammals, fish and invertebrates listed in Annex II of the EU habitats directive. Most of the estuarine part of the SAC has been desiganated as an SPA to protect the large numbers of migratory birds. There is a resident population of Bottlenose Dolphins in the Shannon Estuary, which is the only resident population of this EU Habitats Directive Annex II species in Ireland. It is important that the habitat water quality is maintained to ensure the impact of any discharge, or combination of discharges does not

- Give rise to any reduction in the diversity of floral and faunal species
- Cause a change in the integrity of the principal community types; and
- Impact on water quality to the extent that the integrity of the principal community types is affected; and

- Giver rise to changes in the extent of any habitat or any population such as to threaten the long-term survival of species associated with any habitat.

The main consideration regarding the impact of the discharge from the Kilrush WWTP in relation to protection of the conservation status of this site is to ensure the ongoing diversity of aquatic species and plant communities, by ensuring the quality of the waters in the vicinity of the discharge from the treatment plant. In this regard, the monitoring data on receiving water quality up to and including 2010 (provide in Attachment 3 to this report) appears to indicate the receiving waters are of high status, with no detectable deterioration in water quality in this area. However, the Marine Strategy Framework Directive 2008, with the objective to achieve good status for coastal waters by 2020, and setting up of clear targets and monitoring programs for coastal waters is to be in place by 2012. Standards are applied in the European Communities Environmental Objectives Surface Water Regulations 2009 for coastal waters for the parameters dissolved oxygen and dissolved inorganic nitrogen (See Table 9 of these Regulations). Samples were taken of the marine waters in the vicinity of the discharge from Kilrush WWTP in July 2008 (See Annex 1 of the application documents). These samples indicate values of Dissolved Inorganic Nitrogen of 0.5 mg/litre (as N) and 0.44 mg/litre (as N). These values support the classification of the waters as "good status", applying the limit values from the European Communities Environmental Objectives Surface Water Regulations 2009 for coastal waters for dissolved inorganic nitrogen (See Table 9 of these Regulations)

A Pollution Reduction Programme for the shellfish growing waters at West Shannon Poulnasherry Bay, has been established by the Minister for the Environment, Heritage and Local Government in order to protect and improve water quality in the designated shellfish growing areas in West Shannon Poulnasherry Bay. The Results of monitoring of the Shellfish Waters Directive (2006/113/EC) and Schedules 2 and 4 of the Quality of Shellfish Waters Regulations (S.I. No. 268 of 2006) do not indicate any water quality issues within / in the vicinity of this shellfish area.

The results of Water Framework Directive Monitoring do not indicate any water quality issues within / in the vicinity of this shellfish area. Monitoring of shellfish flesh for food hygiene purposes indicates low levels of faecal contamination in this shellfish area, the bivalve mollusc production areas in West Shannon Poulnasherry Bay are classified as 'Class A' and 'Class B' for the purposes of EC Regulation 854/2004. However, the available shellfish samples at this shellfish area are compliant with the shellfish guideline value for faecal coliforms.

The full report for the Lower Shannon Estuary area, a transitional water body numbered IE_SH_060_0300 in the Shannon River Basin Management Plan, is

provided as **Attachment 4** to this report. The overall status of the area is defined as "moderate", based on concentrations of specific relevant pollutants (Annex VII of the Water Framework Directive as defined by subsequent publications). The discharges from Kilrush are municipal and do not contain these substances. The report provided for this water body (See **Attachment 4**) indicates good status for dissolved inorganic nitrogen and molybdate reactive phosphorus. The report indicates high status for dissolved oxygen, biochemical oxygen demand and phytoplankton biomass (chlorophyll).

Figure 1; Designated Shellfish Area No. 6 – West Shannon Poulnasherry Bay

3.3 Organic Pollution

When untreated or poorly treated sewage effluent is introduced to a water body, living conditions for flora and fauna can be affected. Increased turbidity in the water affects light penetration, which reduces the capacity of the water to support photosynthesizing plants. Reduced oxygen levels can also have a significant damaging effect for all aquatic species. Monitoring data for the area in the vicinity of the discharge does not indicate a reduction in the water quality status in the receiving waters. This is supported by the current designation of the high and good status of the receiving waters for the parameters dissolved oxygen, biochemical oxygen demand, chlorophyll, dissolved inorganic nitrogen and molybdate reactive phosphorus (See water body details in Attachment 4 to this report). It is therefore considered that organic pollution is not giving rise to damage to the aquatic habitats. However, ongoing monitoring of this area will be undertaken to ensure the protection of the conservation status of the SAC area and to support the necessary measures required for compliance with the European Communities (Quality of Shellfish Waters) Regulations 2006 and amendment Regulations of 2009.

3.4 Eutrophication

Eutrophication in the marine environment involves the enrichment of waters beyond natural levels with the nutrient nitrogen. This phenomenon typically results in loss of biodiversity and degradation of aquatic habitats. A full suite of ambient water quality standards and monitoring data for the marine environment are to be provided before 2012 to meet the requirements of the Marine Strategy Framework Directive 2008. However, the values presenting in the samples taken on the 14th July 2008 for the waters in the vicinity of the discharge from the Kilrush WWTP are well within the limit value provided for “good status” as defined in Table 9 of the European Communities Environmental Objectives Surface Water Regulations 2009 for coastal waters for dissolved inorganic nitrogen. Monitoring undertaken for designation of water body status, under the Shannon River Basin Management Plan does not indicate eutrophication of these waters (see **Attachment 4** to this report)

3.5 Other potential pollutants

A range of organic compounds with the potential to pollute surface waters are present in municipal wastewater from densely populated, industrial agglomerations. The sources of these chemicals are landfills, industrial effluents, medical products and

personal hygiene chemicals. When municipal wastewater is treated in a conventional sewage treatment plant the average removal of these compounds is in the range 75-95%. There is no industrial component or landfill discharge or other source of organic pollution, or heavy metals in the Kilrush agglomeration. Readings for some parameters in samples taken to date have been shown interferences due to the salinity of the receiving waters. Full sampling of this area is being undertaken by the Marine Institute and details of this monitoring program are not yet available to Clare County Council.

3.6 Estimated impact of wastewater discharges from Kilrush WWTP on receiving water quality

The impact of the discharge from the Kilrush agglomeration on the nutrient status of receiving waters is the main element of consideration in this report. This nutrient input is the most significant element for consideration in the protection of the conservation status of the various habitats and species listed for protection in the cSAC. Water quality status is used as the underlying common denominator to define the potential impact of this discharge on the waters in the area. The concentration of dissolved inorganic nitrogen (DIN) in samples taken in 2008 indicate levels of DIN which are consistent with "good status" for these waters. On this basis, it is considered that the impact of the discharge, in combination with the other existing discharges in the area is not giving rise to any reduction in the water quality status, and does not compromise the achievement of the conservation objectives of the protected area.

3.6 Analysis of in combination effects

The discharges from the Kilrush WWTP, and the diffuse discharges arising from the catchment of the designated site are taken into account in the assessment of water quality at the Lower Shannon Estuary. The study of water quality data, as provided in Annex 1 of the main application, the extended data on bathing water quality monitoring provided in **Attachment 3**, and the report on the water body from the Shannon River Basin Management Plan (**Attachment 4**) indicates that the operation of the Kilrush WWTP is not having any adverse impact on water quality in the designated site, or any adverse impact on the conservation status of the site. The impact of all discharges in the catchment of the Poulnasherry Bay area are being considered in a separate Pollution Reduction Program by Clare County Council. The characterisation report for this designated shellfish area (Characterisation Report

Number 6) indicates the shellfish in the Poulnasherry Bay area continue to retain Class A and B status, and the overall water quality in the area is compliance with the requirements of the shellfish guideline values for faecal coliforms outlined in Annex I of the Shellfish Directive (2006/113/EC) and Schedule 4 of the Quality of Shellfish Waters Regulations (SI No 268 of 2006) (Table1). Ongoing monitoring will strengthen the assessment of compliance status at this shellfish area.

3.7 Mitigation Measures

The principal mitigation measure set out in the application is the upgrade of the Kilrush WWTP to ensure compliance with the Urban Waste Water Regulations. The full description of the treatment works is provided in the licence application. The Preliminary Report has been completed. The upgrading works are included in the current Water Services Investment Program

Clare County Council is committed to the delivery of the project in the least possible time subject to the constraint of Department of Environment Heritage and local Government approval. Kilrush WWTP included in the current Water Services Investment Programme; a copy of the current Water Services Investment Programme for 2010-2012 is attached (**Attachment 5**).

Clare County Council adopt a multi-disciplinary approach to the consideration of all applications for development in the catchment of the Shannon Estuary, and in particular in the catchment of those designated areas (e.g bathing waters, shellfish waters, recreational waters such as Kilrush Creek Marina). The Clare County Development Plan and West Clare Local Area Development Plan also endorse the protection of these areas and the overall protection of the SAC in the designation of land use. All development liable to impact either directly or indirectly on a designated site is required to undertake an initial screening of potential impacts, leading to a Habitats Directive Assessment if required.

Table 1 hereunder summarises the potential impact arising from discharges from the Kilrush agglomeration on the protected site.

Table 3: Assessment of impact of discharges from Kilrush agglomeration on SAC

Describe any likely changes to the site arising as a result of : **• reduction of habitat area:** **• disturbance to key species;** **• habitat or species fragmentation;** **• reduction in species density;** **• changes in key indicators of conservation value (water quality etc)**	
Reduction of habitat area	The discharge from the agglomeration of Kilrush has been ongoing since the early 1980s. The discharge has not changed significantly in the intervening period. No reduction in habitat area has been linked to the discharge, and water quality data does not indicate any significant impact on receiving waters quality in the area. The proposed improvement works for the agglomeration will provide for ongoing protection of habitats in the area
Disturbance to key species; plants	None
Habitat or species fragmentation	No priority habitat is identified in the vicinity of the discharge. There is no proposal to change the existing discharge location, and (therefore) no potential for the discharge to give rise to fragmentation of the site.
Reduction in species density	No reduction in species density is anticipated, as there is an existing structure in place and this will continue to operate, until the provision of secondary treatment at the site. The discharge from this unit will be improved in so far as its nutrient concentration is concerned.
Changes in key indicators of conservation value	The discharge from the Kilrush agglomeration will not alter the existing conservation status of this site.. The improvement works on the WWTP, coupled with monitoring and management of the unit (under licence) will reduce the potential for pollution events by treatment of the pollution load prior to discharge, prevention of overload of the treatment facility on an ongoing basis, and, management of storm overflows to ensure no untreated wastewater discharges take place. This will have a positive impact on the conservation status of the site
Effects of climate change	Increases in storms and precipitation as a result of climate change are recognised as potential sources of untreated discharges to water courses. The improved treatment works have included containment of storm water overflows to enable flow balancing and treatment of the higher storm flows, therefore reducing the risk of discharge of nutrients to the receiving waters.
Describe any likely impacts on the Natura 2000 site as a whole in terms of any interference with the key relationships that define the structure of the site;	
Interference with the key relationships that define the structure of the site;	The location of the discharge from the agglomeration is in place since the 1980s and will not be altered in any way by the improvement works. The improved treatment of wastewater and collection (and treatment) of storm water overflows will provide ongoing protection of the water quality status of the receiving waters and associated habitats. Loss of species will not occur as a result of the discharge from the WWTP facility
Fragmentation	Fragmentation is not considered to be an indicator as a result of the discharge from the WWTP. The existing discharge is not giving rise to any fragmentation of the site. It is not considered likely that the improved discharge will give rise to any fragmentation of the site
Disruption and disturbance	Disruption is not associated with the discharge from the agglomeration. No change to the drainage regime is proposed, other than interception of untreated storm water and improvement in the treatment of wastewater from the agglomeration. No bypassing of the treatment works is proposed at any time

Describe any likely impacts on the Natura 2000 site as a whole in terms of any interference with the key relationships that define the structure of the site;	
Change to key elements of the site (e.g. water quality etc.)	**Water qualityis not currently showing evidence of impact from the existing discharge. The improvement works for the facility will result in significant additional protection of receiving water quality.** It will result in the removal of the untreated storm overflow , and the reduction in nutrient loading by virtue of secondary treatment of the wastewater load. All discharges will be monitored, as will the loading to the treatment plant in terms of population served and influent monitoring On-going monitoring of water quality will ensure that the discharges from the WWTP will maintain exacting water quality standards. No potentially polluting substances will be permitted to discharge to off-site surface water or storm drains. If analysis or observations of contamination occur, an immediate investigation will be carried out to isolate the source, measures will be put in place to reduce or eliminate the contamination to the environment and it will be reported to the Licensing Authority. Water quality being released into the estuary will therefore be significantly improved with the likelihood of a pollution event occurring being reduced to negligible. This will have a beneficial impact on the SAC.
Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts are not known.	This discharge has no overall perceivable impact on the designated site as it now exists. The improved operation of the facility, including interception and treatment of storm overflow and nutrient reduction by secondary treatment will have positive impact only in the receiving waters. No disruption or disturbance to the protected site is included as an element in the consideration of the discharge

4. Stage 3 Alternatives

The long term works program for the discharge of treated wastewater from this agglomeration has been described in the main body of the application. The timing of the works will be determined by a priority assessment of needs in the county overall, and will take account of the current financial climate. There is unlikely to be a significant investment in the system in the short to medium term period.

5. Stage 4 Imperative Reasons of Overriding Public Interest

1. Are there imperative reasons of overriding public interest? **No**
2. Are there human health or safety considerations or important environmental benefits? **No**

List of Attachments

1. Description of the Lower River Shannon cSAC (European Site Code 2165)
2. Water Quality data for the Shannon Estuary (EPA publication extract)
3. Bathing water quality data for Cappagh Pier, Kilrush
4. Lower Shannon Estuary water body status report IE_SH_060_0300
5. Water Services Investment Programme for 2010-2012

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 sub-catchment of the Feale include the Galey, Smearlagh, Oolagh, Allaughaun, Owveg, Clydagh, Caher, Breanagh and Glenacarney. Rivers within the sub-catchment of the Mulkear include the Killeenagarriff, Annagh, Newport, the Dead River, the Bilboa, Glashacloonaraveela, Gortnageragh and Cahernahallia.

The site is a 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 Sea-spurrey (*Spergularia marina*) and Sea Arrowgrass (*Triglochin maritima*). Areas of Mediterranean salt meadows, characterised by clumps of Sea Rush (*Juncus maritimus*) occur occasionally. Two scarce species are found on saltmarshes in the vicinity of the Fergus Estuary: a type of robust Saltmarsh-grass (*Puccinellia foucaudii*), sometimes placed within the 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. Semi-natural habitats, such as wet grassland, wet woodland and marsh occur by the rivers, however, improved grassland is most common. One grassland type of particular

conservation significance, *Molinia* meadows, occurs in several parts of the site and the examples at Worldsend on the River Shannon are especially noteworthy. Here are found areas of wet meadow dominated by rushes and sedges and supporting 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 over-grazing and poaching. Much of the land adjacent to the rivers and estuaries has been improved or reclaimed and is protected by embankments (especially along the Fergus Estuary). Further, reclamation continues to pose a threat as do flood relief works (e.g. dredging of rivers). Gravel extraction poses a major threat on the Feale.

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

Domestic and industrial wastes are discharged into the Shannon, but water quality is generally satisfactory - except in the upper estuary, 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 IV.1

The 2004-2006 Survey of Tidal Waters

Trophic Classification of Tidal Water Bodies in the Periods 1999-2003 and 2002-2006

Appendix IV.1

Trophic classification of tidal water bodies in the periods 1999-2003 and 2002-2006, and indication of change between these periods: No change (NC), improvement (+) or disimprovement in status (-)

Water Body	Assessment 2002 - 2006	Assessment 1999 - 2003	Change from 1999-2003
Argideen Estuary	Eutrophic	Eutrophic	NC
Broadmeadow Estuary (Inner)	Eutrophic	Eutrophic	NC
Castletown Estuary	Eutrophic	Eutrophic	NC
Lower Bandon Estuary	Eutrophic	Eutrophic	NC
Lower Blackwater Estuary	Eutrophic	Eutrophic	NC
Lower Slaney Estuary	Eutrophic	Eutrophic	NC
Owenacurra Estuary	Eutrophic	Eutrophic	NC
Rogerstown Estuary (Inner)	Eutrophic	Eutrophic	NC
South Wexford Harbour	Eutrophic	Eutrophic	NC
Upper Bandon Estuary	Eutrophic	Eutrophic	NC
Upper Blackwater Estuary	Eutrophic	Potentially Eutrophic	(-)
Upper Lee (Tralee) Estuary	Eutrophic	Eutrophic	NC
Wexford Harbour	Eutrophic	Intermediate	(-)
Barrow Estuary	Potentially Eutrophic	Potentially Eutrophic	NC
Upper Suir Estuary	Potentially Eutrophic	Intermediate	(-)
Avoca Estuary	Intermediate	Intermediate	NC
Barrow Nore Estuary	Intermediate	Intermediate	NC
Boyne Estuary	Intermediate	Potentially Eutrophic	(+)
Broadmeadow Estuary (Outer)	Intermediate	Intermediate	NC
Cashen Feale Estuary	Intermediate	Intermediate	NC
Colligan Estuary	Intermediate	Intermediate	NC
Cork Harbour	Intermediate	Intermediate	NC
Deel Estuary	Intermediate	Intermediate	NC
Dungarvan Harbour	Intermediate	Unpolluted	(-)
Erne Estuary Adjacent Coastal	Intermediate	Not previously assessed	NC
Garavoge Estuary	Intermediate	Intermediate	NC
Inner Dundalk Bay	Intermediate	Intermediate	NC
Killybegs Harbour	Intermediate	Intermediate	NC
Kinsale Harbour	Intermediate	Intermediate	NC
Lee Estuary	Intermediate	Intermediate	NC
Liffey Estuary	Intermediate	Intermediate	NC
Lough Mahon	Intermediate	Eutrophic	(+)
Lower Lee (Tralee) Estuary	Intermediate	Unpolluted	(-)
Lower Suir Estuary	Intermediate	Intermediate	NC
Maigue Estuary	Intermediate	Intermediate	NC
McSwyne's Bay	Intermediate	Intermediate	NC
Nore Estuary	Intermediate	Intermediate	NC
North Channel Great Island	Intermediate	Intermediate	NC
Rogerstown Estuary (Outer)	Intermediate	Intermediate	NC
Sligo Harbour	Intermediate	Unpolluted	(-)
Upper Slaney Estuary	Intermediate	Intermediate	NC
Upper Swilly Estuary	Intermediate	Intermediate	NC
Youghal Harbour	Unpolluted	Unpolluted	NC
Avoca Estuary Adjacent Coastal	Unpolluted	Unpolluted	NC

Ballysadare Bay	Unpolluted	Unpolluted	NC
Barrow Nore Suir Estuary (Outer)	Unpolluted	Unpolluted	NC
Boyne Estuary Plume Zone	Unpolluted	Unpolluted	NC
Broadmeadow Estuary Adjacent Coastal	Unpolluted	Unpolluted	NC
Corrib Estuary	Unpolluted	Unpolluted	NC
Dublin Bay	Unpolluted	Unpolluted	NC
Dublin Bay Adjacent Coastal	Unpolluted	Unpolluted	NC
Erne Estuary	Unpolluted	Not previously assessed	NC
Fergus Estuary	Unpolluted	Unpolluted	NC
Inner Galway Bay North	Unpolluted	Unpolluted	NC
Killala Bay	Unpolluted	Unpolluted	NC
Lower Lough Swilly	Unpolluted	Unpolluted	NC
Lower Shannon Estuary	Unpolluted	Unpolluted	NC
Lower Swilly Estuary	Unpolluted	Unpolluted	NC
Moy Estuary	Unpolluted	Unpolluted	NC
Outer Dundalk Bay	Unpolluted	Unpolluted	NC
Outer Waterford Harbour	Unpolluted	Unpolluted	NC
Rogerstown Estuary Adjacent Coastal	Unpolluted	Unpolluted	NC
Sligo Bay	Unpolluted	Unpolluted	NC
Tidal Shannon River	Unpolluted	Intermediate	NC
Tralee Bay	Unpolluted	Unpolluted	NC
Upper Feale Estuary	Unpolluted	Intermediate	(+)
Upper Shannon Estuary	Unpolluted	Unpolluted	NC
Waterford Harbour Adjacent Coastal	Unpolluted	Unpolluted	NC
Wexford Harbour Adjacent Coastal	Unpolluted	Unpolluted	NC

		Microbiological analysis			Physico-chemical analysis					
Sample No.	**Sample Date**	**Coliform Bacteria per 100 ml sample**	**Faecal Coliforms per 100 ml sample**	**Faecal Streptococci per 100 ml sample**	**Colour**	**Mineral Oils**	**Phenols**	**Surfactants**	**Tarry Residues/ Floating Matter**	**Transparency**
Bathing Water Quality Directive 76/160/EEC guideline limits		500	100	100	No abnormal change	No film visible. No odour	No odour	No lasting foam	Absent	>2m
Quality of Bathing Water Regulations, 1992 Mandatory limits		5000 10000	1000 2000	300						
2005										
052201103	16/05/2005	11	1	0	<5	ND		ND	Absent	>2
052202034	31/05/2005	172	7	0	<5	ND		ND	Absent	>2
052202121	07/06/2005	84	0	0	15	ND		ND	Absent	>2
052202196	14/06/2005	242	31	5	5	ND		ND	Absent	>2
052202286	21/06/2005	190	21	0	15	ND		ND	Absent	>2
052202364	28/06/2005	54	0	0	<5	ND		ND	Absent	>2
052202433	05/07/2005	236	7	1	10	ND		ND	Absent	>2
052202496	12/07/2005	166	29	0	<5	ND		ND	Absent	>2
052202634	26/07/2005	78	16	0	<5	ND		ND	Absent	>2
052202732	09/08/2005	478	29	1	5	ND		ND	Absent	>2
052202835	17/08/2005	40	2	0	<5	ND		ND	Absent	>2
052202998	30/08/2005	179	17	1	<5	ND		ND	Absent	>2
052203096	06/09/2005	41	1	0	<5	ND		ND	Absent	>2
2006										
062201025	16/05/2006	45	0	0	50	ND		ND	Absent	>2
062201165	30/05/2006	107	0	0	30	ND		ND	Absent	>2
062201214	07/06/2006	80	6	0	30	ND		ND	Absent	>2
062201259	13/06/2006	276	16	<10	2.5	ND		ND	Absent	>2
062201329	20/06/2006	30	6	<10	10	ND		ND	Absent	>2
062201381	27/06/2006	290	53	<10	2.5	ND		ND	Absent	>2
062201443	04/07/2006	148	20	<10	10	ND		ND	Absent	>2
062201554	18/07/2006	261	66	10	10	ND		ND	Absent	>2
062201618	25/07/2006	326	61	10	15	ND		ND	Absent	>2
062201731	09/08/2006	270	78	<10	10	ND		ND	Absent	>2
062201774	15/08/2006	325	44	41	20	ND		ND	Absent	>2
062201843	23/08/2006	267	72	<10	15	ND		ND	Absent	>2
062201874	29/08/2006	179	30	<10	10	ND		ND	Absent	>2
2007										
072200772	22/05/2007	19	3	10	10	ND		ND	Absent	>2
072201051	26/06/2007	131	32	20	10	ND		ND	Absent	>2
072201137	10/07/2007	68	1	10	7.5	ND		ND	Absent	>2
072201166	16/07/2007	89	4	40	20	ND		ND	Absent	>2
072201242	23/07/2007	91	3	<10	10	ND		ND	Absent	>2
072201329	01/08/2007	93	3	<10	15	ND		ND	Absent	>2
072201375	08/08/2007	144	3	<10	10	ND		ND	Absent	>2
072201421	14/08/2007	250	7	<10	7.5	ND		ND	Absent	>2
072201474	21/08/2007	57	6	<10	10	ND		ND	Absent	>2
072201531	28/08/2007	201	30	10	15	ND		ND	Absent	>2
07220823	28/05/2007	47	<1	<10	10	ND		ND	Absent	>2
07220906	05/06/2007	123	10	<10	15	ND		ND	Absent	>2
07220982	14/06/2007	117	50	10	7.5	ND		ND	Absent	>2
2008										
082201323	20/05/2008	79	<1	10	5	ND		ND	Absent	>2
082201471	03/06/2008	107.9	10	<10	10	ND		ND	Absent	>2
082201542	10/06/2008	58	7	<10	<5	ND		ND	Absent	>2
082201634	16/06/2008	99	4	<10	<5	ND		ND	Absent	>2
082201717	24/06/2008	9	<1	10	<5	ND		ND	Absent	>2
082201794	01/07/2008		<1	<10	<5	ND		ND	Absent	>2
082201881	08/07/2008	3	<1	30	5	ND		ND	Absent	>2
082201986	22/07/2008	2	2	10	5	ND		ND	Absent	>2
082202056	28/07/2008	43	9	<10	<5	ND		ND	Absent	>2
082202129	06/08/2008	21	1	<10	<5	ND		ND	Absent	>2
082202188	12/08/2008	410	16	10	<5	ND		ND	Absent	>2
082202266	18/08/2008	25	0	<10	5	ND		ND	Absent	>2
082202343	26/08/2008	189	11	<10	40	ND		ND	Absent	>2
2009										
092201178	18/05/2009	63	63	0	88	ND		ND	Absent	>2
092201245	25/05/2009	62	4	10	46	ND		ND	Absent	>2
092201326	02/06/2009	11	3	<10	19	ND		ND	Absent	>2
092201429	08/06/2009	5	2	<10	<5	ND		ND	Absent	>2
092201472	15/06/2009	<1	<1	<10	9	ND		ND	Absent	>2
092201613	29/06/2009	2	1	<10	20	ND		ND	Absent	>2
092201721	13/07/2009	4	2	<10	14	ND		ND	Absent	>2
092201795	27/07/2009	2	<1	10	40	ND		ND	Absent	>2
092201934	11/08/2009	138	20	<10	8	ND		ND	Absent	>2
092202030	24/08/2009	11	1	63	28	ND		ND	Absent	>2
2010										
102200794	18/05/2010	31	31	31	12	ND		ND	Absent	>2
102200886	01/06/2010	31	<10	<10	37	ND		ND	Absent	>2
102200965	14/06/2010	20	20	<10	20	ND		ND	Absent	>2
102201110	23/06/2010	50	10	<10	8	ND		ND	Absent	>2
102201128	28/06/2010	97	63	10	5	ND		ND	Absent	>2
102201234	12/07/2010	20	10	<10	<5	ND		ND	Absent	>2
102201318	26/07/2010	62	31	31	44	ND		ND	Absent	>2
102201409	09/08/2010	31	31	10	13	ND		ND	Absent	>2
102201530	23/08/2010	<10	<10	<10	57	ND		ND	Absent	>2

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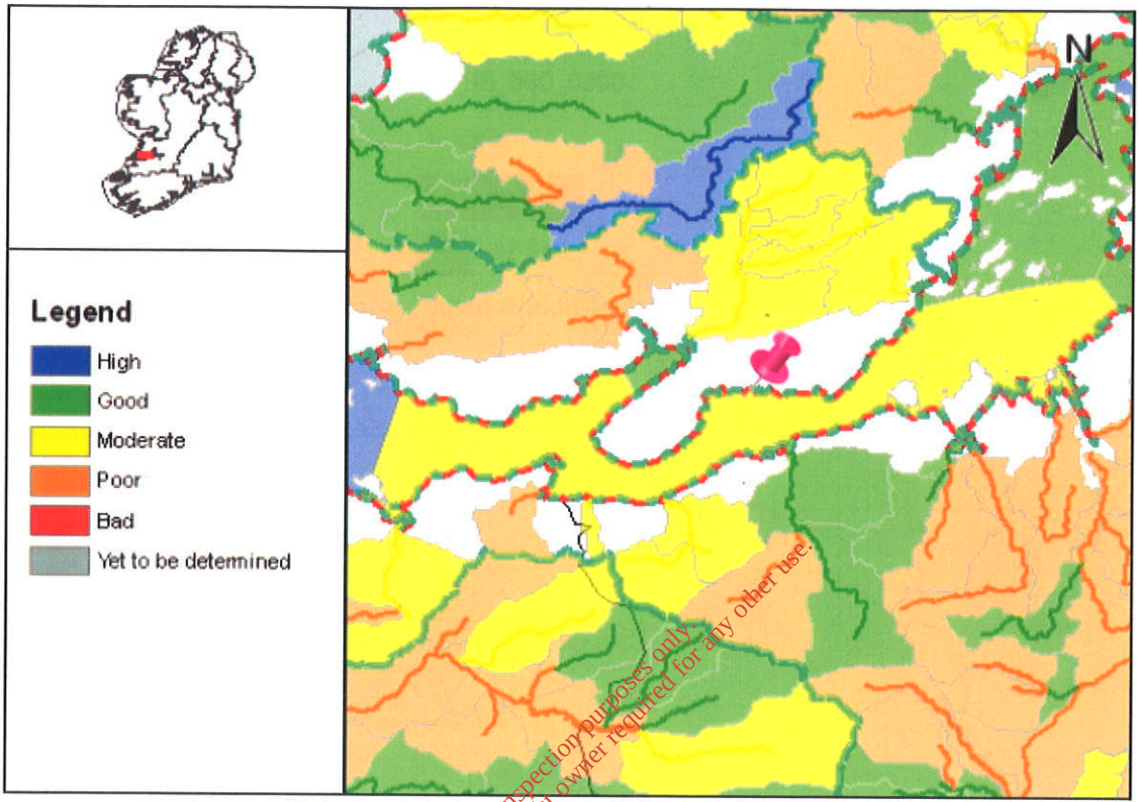
Full Report for Waterbody Lower Shannon Estuary



Date Reported to Europe: 22/12/2008

Date Report Created 12/07/2010

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Summary Information:

WaterBody Category:	Transitional Waterbody
WaterBody Name:	Lower Shannon Estuary
WaterBody Code:	IE_SH_060_0300
Overall Status:	Moderate
Overall Objective:	Restore
Overall Risk:	1a At Risk
Applicable Supplementary Measures:	Urban & Industrial;
	Report data based upon Draft RBMP, 22/12/2008.

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Date Reported to Europe: 22/12/2008

Date Report Created 12/07/2010

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Status Report

WaterBody Category: Transitional Waterbody

WaterBody Name: Lower Shannon Estuary

WaterBody Code: IE_SH_060_0300

Overall Status Result: Moderate

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	Status Element Description	Result
EX	Status from Monitored or Extrapolated Waterbody	True
	General Conditions	
DIN	Dissolved Inorganic Nitrogen	Good
MRP	Molybdate Reactive Phosphorus	Good
DO	Dissolved Oxygen as percent saturation	High
BOD	Biochemical Oxygen Demand	High
T	Temperature	Pass
	Biological Elements	
PB	Phytoplankton - Phytoblooms	
PBC	Phytoplankton - PhytoBiomass (Chlorophyll)	High
MA	Macroalgae	
RSL	Reduced Species List	
SG	Angiosperms - Seagrass and Saltmarsh	
BE	Benthic Invertebrates	
FI	Fish	Good
	HydroMorphology	
HY	Hydrology	
MO	Morphology	Good
	Specific Pollutants	
SP	Specific Relevant Pollutants (Annex VII)	Fail
	Conservation Status	
CN	Conservation Status (Expert Judgement)	Good
	Protected Area Status	
PA	Overall Protected Area Status	At least good

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	Overall Status	
ES	Ecological Status	Moderate
CS	Chemical Status	Fail
O	Overall Ecological Status	Moderate

Date Reported to Europe: 22/12/2008

Date Report Created 12/07/2010

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Risk Report

WaterBody Category: Transitional Waterbody

WaterBody Name: Lower Shannon Estuary

WaterBody Code: IE_SH_060_0300

Overall Risk Result: 1a At Risk

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	Risk Test Description	Risk
	Point Risk Sources	
TP1	WWTPs (2008)	1a At Risk
TP2	CSOs	2b Not At Risk
TP3	IPPCs (2008)	2b Not At Risk
TP4	Section 4s (2008)	2b Not At Risk
TPO	Overall Risk from Point Sources - Worst Case (2008)	1a At Risk
	Hydrology	
THY1	Water balance - Abstraction	2b Not At Risk
	Marine Direct Impacts	
TMDI 1	Dangerous Substances	1b Probably At Risk
TMDI 2	OSPAR	
TMDI 3	UWWT Regs Designations	
TMDI O	Marine Direct Impacts Overall - Worst Case	1b Probably At Risk
	Point / MDI Worst Case	
TPOL	Worst case of Point Overall and MDI OverallOverall (MIMAS) Morphological Risk - Worst Case (2008)	1a At Risk
	Overall Risk	
RA	Transitional Overall - Worst CaseOverall (MIMAS) Morphological Risk - Worst Case (2008)	1a At Risk

Date Reported to Europe: 22/12/2008

Date Report Created 12/07/2010

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Objectives Report

WaterBody Category: Transitional Waterbody

WaterBody Name: Lower Shannon Estuary

WaterBody Code: IE_SH_060_0300

Overall Objective: Restore

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	Objectives Description	Result
	Objectives	
OB1	Objective 1 - Protected Areas	Restore
OB2	Objective 2 - Protect High and Good Status	Not Applicable
OB3	Objective 3 - Restore Less Than Good Status	Not Applicable
OB4	Objective 4 - Reduce Chemical Pollution	Restore
OBO	Overall Objective	Restore
	Deadline	
YR	Default Year by which the objective must be met	2015
OBO	Overall Objective and Deadline	Restore - 2015

Date Reported to Europe: 22/12/2008

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Basic Measures Report

WaterBody Category: Transitional Waterbody

WaterBody Name: Lower Shannon Estuary

WaterBody Code: IE_SH_060_0300

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	Basic Measures Description	Applicable
	Key Directives	
BA	Bathing Waters Directive	No
BI	Birds Directive	Yes
HA	Habitats Directive	Yes
DW	Drinking Waters Directive	No
SEV	Major Accidents and Emergencies (Seveso) Directive	Yes
EIA	Environmental Impact Assessment Directive	Yes
SE	Sewage Sludge Directive	Yes
UW	Urban Waste Water Treatment Directive	No
UW	Urban Waste Water Treatment Directive	No
PL	Plant Protection Products Directive	Yes
NI	Nitrates Directive	Yes
IP	Integrated Pollution Prevention Control Directive	Yes
	Other Stipulated Measures	
CR	Cost recovery for water use	Yes
SU	Promotion of efficient and sustainable water use	No
DWS	Protection of drinking water sources	No
AB	Control of abstraction and impoundments	No
PT	Control of point source discharges	Yes
DI	Control of diffuse source discharges	Yes
GWD	Authorisation of discharges to groundwater	No
PS	Control of priority substances	Yes
MOR	Control of physical modifications to surface waters	Yes
OA	Controls on other activities impacting on water status	Yes
AP	Prevention or reduction of the impact of accidental pollution incidents	Yes

Date Reported to Europe: 22/12/2008

Date Report Created 12/07/2010

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Urban and Industrial Discharges Supplementary Measures Report

WaterBody Category: Transitional Waterbody

WaterBody Name: Lower Shannon Estuary

WaterBody Code: IE_SH_060_0300

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	Point discharges to waters from municipal and industrial sources	Result
PINDDIS	Is there one or more industrial discharge (Section 4 licence issued by the local authority or IPPC licence issued by the EPA) contained within the water body?	Yes
PINDDISR	Are there industrial discharges (Section 4 licence issued by the local authority or IPPC licence issued by the EPA) that cause the receiving water to be 'At Risk' within the water body?	No
PB1	Basic Measure 1 - Measures for improved management.	Yes
PB2	Basic Measure 2 - Optimise the performance of the waste water treatment plant by the implementation of a performance management system.	No
PB3	Basic Measure 3 - Revise existing Section 4 license conditions and reduce allowable pollution load.	No
PB4	Basic Measure 4 - Review existing IPPC license conditions and reduce allowable pollution load.	No
PB5	Basic Measure 5 - Investigate contributions to the collection system from unlicensed discharges.	Yes
PB6	Basic Measure 6 - Investigate contributions to the collection system of specific substances known to impact ecological status.	Yes
PB7	Basic Measure 7 - Upgrade WWTP to increase capacity.	Yes
PB8	Basic Measure 8 - Upgrade WWTP to provide nutrient removal treatment.	No
PS1	Supplementary Measure 1 - Measures intended to reduce loading to the treatment plant.	Yes
PS2	Supplementary Measure 2 - Impose development controls where there is, or is likely to be in the future, insufficient capacity at treatment plants.	Yes
PS3	Supplementary Measure 3 - Initiate investigations into characteristics of treated wastewater for parameters not presently required to be monitored under the urban wastewater treatment directive.	No
PS4	Supplementary Measure 4 - Initiate research to verify risk assessment results and determine the impact of the discharge.	No
PS5	Supplementary Measure 5 - Use decision making tools in point source discharge management.	No
PS6	Supplementary Measure 6 - Install secondary treatment at plants where this level of treatment is not required under the urban wastewater treatment directive.	No
PS7	Supplementary Measure 7 - Apply a higher standard of treatment (stricter emission controls) where necessary.	No

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PS8	Supplementary Measure 8 - Upgrade the plant to remove specific substances known to impact on water quality status.	No
PS9	Supplementary Measure 9 - Install ultra-violet or similar type treatment.	No
PS10	Supplementary Measure 10 - Relocate the point of discharge.	No

Date Reported to Europe: 22/12/2008

Date Report Created 12/07/2010

Clare

Water Services Investment Programme 2010-2012

Scheme Name	Contract Name	W/S	Estimated Cost €
Contracts at Construction			
Corofin Sewerage Scheme	▪ Contract 1 (Civil Works)	S	2,849,000
	▪ Contract 2 (Wastewater Treatment Plant - DBO)	S	2,410,000
Lisdoonvarna Water Supply Phase 2 (ext. to Ballyvaughan)	▪ Contract 1 (Civil Works)	W	4,236,000
	▪ Contract 2 (M&E Works)	W	918,000
Quilty, Scarriff & Feakle Sewerage Scheme	▪ Contract 1 (Network)	S	8,806,000
	▪ Contract 2 (Wastewater Treatment Plant - DBO)	S	5,443,000
Water Conservation Stages 1 & 2 Works	▪ Water Conservation Stages 1 & 2 Works	W	4,889,000
			29,551,000
Contracts to Start			
Clonlara Sewerage Scheme (SLI)	▪ Network	S	2,418,000
			2,418,000
Water Conservation Stage 3 Works	▪ Rehabilitation Contract No. 1 (Ennis) - Advance	W	200,000
	▪ Rehabilitation Contract No. 2 (Ennis)	W	6,067,000
			6,267,000
	Contracts Total		**38,236,000**

Schemes at Planning 1.5m 2.5m

Ennis/Clarecastle Sewerage Scheme Phase 1 (Clareabbey & Clonroadmore Wastewater Treatment Plants) (H) outfall 7.5m	S	4.0
Ennis/Clarecastle Sewerage Scheme Phase 2 (H) Ennis 1.0m	S	10.0
Kilrush & Kilkee Sewerage Scheme €15m Clarecastle 1.0 €10	S	15.0
Shannon Sewerage Scheme (G) €20m S.Sep 0.5	S	20.0
Water Conservation Stage 3 Works c. €19m	W	19.0
		68.0