South Tipperary County Council
County Hall, Clonmel, Ireland

Telephone 052-6134455
Fax 052-6124355/6123228/6126710

E-mail secretary@southtippcoco.ie
www.southtippcoco.ie

Comhairle Contae Thiobraid Árann Theas
Aras an Chontae, cluain Meala, Eire

Teileafon 052-6134455
Fax 052-6124355/6123228/6126710

Administration,
Environmental Licensing Programme
Office of Climate, Licensing & Resource Use
Environmental Protection Agency
Headquarters
PO Box 3000
Johnstown Castle Estate
County Wexford

18th August 2010 D0453-01

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

Dear Sir or Madame,

I refer to letter dated 15th December 2009 requiring the submission of the outcome of an "appropriate assessment" of the impact of discharges from the agglomeration named Clogheen on the Lower River Suir cSAC.

Please find attached South Tipperary County Council's report in this regard. No information in the report is considered to have impinged on the non-technical summary already submitted, therefore a revised non-technical summary has not been included.

Yours sincerely,

D. Walsh.

Dan Walsh,
Senior Engineer
Water Services Section

Water is a scarce Resource. Be Waterwise - Economise

CLOGHEEN WASTE WATER TREATMENT WORKS

Lower River Suir
Candidate Special Area of Conservation
(Site code 002137)

Article 6 Appropriate Assessment Report

SOUTH TIPPERARY COUNTY COUNCIL

August 2010

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1. Introduction

1.1 General

The following is an assessment of significant effects of the Clogheen Waste Water Treatment plant on the Natura 2000 sites downstream of its discharge point. Clogheen WWTP discharges into the River Tar which is a tributary of the River Suir and is part of Lower River Suir Special Area of Conservation (SAC).

This report assesses the likely significant effects of the ongoing operation of the Waste Water Treatment Plant (WWTP) upon this candidate Special Area of Conservation (SAC). Impacts upon both habitats and species within the SAC are considered. As part of the Appropriate Assessment the water quality designations in place on the River Suir and Rivers Tar which require compliance with standards both national and set out in European legislation are identified.

This document draws upon the information available to South Tipperary County Council and follows consultation with National Parks and Wildlife Service and Southern Regional Fisheries Board. A range of other desk study sources were utilised in this assessment including scientific reports produced by and information on the websites of the EPA, NPWS, South Tipperary County Council and other agencies were also reviewed.

1.2 Legislative Requirement

This "appropriate assessment" (AA) is undertaken in accordance with the Wastewater Discharge Authorisation Note on Appropriate Assessment issued by the EPA, in conjunction with the following:

- Managing Natura 2000 Sites: the provision of Article 6 of the 'Habitats' Directive 92/43/EEC(2000)

- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (2001)
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Clarification of the concepts of: Alterative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission (2007)
- Habitats Directive (92/43/EEC)
- Bird's Directive (79/409/EEC)
- Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007)
- European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94 of 2007) (which has been amended twice, S.I. No. 233 of 1998 & S.I. No. 378 of 2005).

The Habitats Directive and Birds Directive provides the legal framework for the protection of habitats and species of importance to the European Community through the establishment and conservation of an EU Wide network of sites known as Natura 2000. These Natura 2000 sites are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas designated under Conservation of Wild Birds Directive 79/409/EC known as 'The Birds Directive'.

The Habitats Directive' 92/43/EEC on the conservation of natural habitats and of wild fauna and flora has been transposed into Irish law by *The European Community (Natural Habitats) Regulations 1997 (S.I. No. 94 of 1997) and updated in* The European Communities (Natural Habitats) (Amendment) Regulations (S.I. No. 378/2005) to include '*The Birds Directive'*.

T*he Birds Directive* seeks to protect birds of special importance by the designation of Special Protection Areas (SPAs) whereas the Habitats Directive does the same for habitats and other species groups with Special Areas of Conservation (SACs). It lists certain rare habitats (Annex I) and species (Annex II) whose conservation is of community interest.

The requirement for an appropriate assessment is outlined in Article 6 of the Habitats Directive.

Article 6, paragraph 3 and 4 of the Habitats Directive state that

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

6(4) If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.

2. Methodology

2.1 Desk Study methodology

A review of sites designated or sites with potential for designation was carried out by consulting the National Parks and Wildlife Service (NPWS). These included Special Areas of Conservation, Special Protection Areas for birds and proposed Natural Heritage Areas of national importance. Technical files and previous reports prepared for the WWTP construction were obtained and reviewed in the current assessment. A review of the published literature was undertaken in order to collate data on the receiving environment, including aquatic species and habitats of conservation concern in the study area. A range of additional sources of information including scientific reports and information on the websites of the EPA and NPWS and other agencies were also reviewed.

The desk study included a review of relevant information and literature on the Waste Water Treatment plant site and the SAC site. The following was examined:

National Parks and Wildlife Service (NPWS)
Environmental Protection Agency (EPA)
South Eastern River Basin District
Waste Water Discharge Licence Application
South Eastern Fisheries Board website (SRFB)
Office of Public works (OPW)

2.2 Assessment Methodology

The assessment was carried out in accordance with Article 6(3) of the Habitats Directive, which provides a step by step procedure for carrying out the assessment. This four staged approach is as outlined below:

Stage 1 – Screening

The first stage of the appropriate assessment process is screening. This stage identifies the likely impact of European Sites of a plan or projects either alone or in combination and considers whether these effects are likely to be significant.

Stage 2 – Appropriate Assessment

The information required at this stage is a more detailed follow-on from the screening stage. The impact of the project or plan on the site is considered with respect to the conservation objectives of the site. This involves acquiring adequate information on the plan or project, predicting the likely effects and their impacts on the conservation objectives and status of the European Site. Mitigation measures need to be identified and assessed against the adverse effects the plan or project is likely to cause.

Stage 3- Alternatives

This stage examines alternative ways of implementing the plan or project that avoid any significant impact on the European Site. There are two steps at this stage:

- Identifying alterative solutions &
- Assessing alternative solutions

Stage 4 – Imperative Reasons of Overriding Public Interest

Questions set out to be answered in cases, where no alternative solutions exist.

3. Stage 1 Screening

This stage examines whether or not likely effects upon a Natura 200 site will be significant. The screening process adopted follows guidance provided by the EPA in their guidance document (EPA, 2009) and is carried out under the following headings

Step 1 – Management of the site
Step 2 – Description of the project or plan
Step 3 – Characteristics of the site
Step 4 – Assessment of significance

3.1 Management of the Site

The first step in the screening process is to determine whether the project or plan is directly connected with or necessary to the management of the Natura site. In the case of the Ballyporeen WWTP, the waste-water treatment plant is **not** directly connected to or necessary to the management of the SAC. Hence, the screening process must continue.

As outlined above, the next steps of the screening process are to describe the elements of the project and describe the characteristics of the Natura Site before finally assessing the significance of any impacts of the project on a Natura 2000 site.

3.2 Description of the plan or project

The village of Clogheen is located to the southwest of the County on R665, Clogheen to Ballyporeen Road, having its wastewater treatment plant sited in the townsland of Ballyboy West, approximately 130 meters to the north of Clogheen Bridge on the Eastern side of the road and has a National Grid reference of E200495, N114179.

The Clogheen Wastewater Treatment plant formed part of the Tipperary grouped operational scheme for wastewater and was commissioned in the last

quarter of 2006. Improvement works under the Water Services Investment Programme included a new plant at a cost of approximately €1.2 million.

The sewage generally flows by gravity to a pumping station located within the site of the wastewater treatment plant and from there is pumped to the treatment process. The plant is an Activated Sludge Process comprising, Screening, Storm Treatment, Biological Treatment (diffused air activated sludge process), phosphorus removal, clarification and sludge thickening. The plant has two aeration basins and two final settlement tanks. The outfall from the plant discharges to the River Tar from a primary discharge point at the wastewater treatment plant, located at E200538, N114124 along with associated storm water overflows.

The Clogheen Wastewater Treatment Plant is designed to treat a population equivalent of 1,000pe. As set out in the licence application a capacity assessment for all schemes operated as part of the DBO contract was prepared by Nicholas O'Dwyer in August 2007, the focus of which was to determine the spare capacity available at the plants and to determine when the next phasing of the scheme or plant upgrade/expansion would be required. The report estimated the current population equivalent to be 604pe and determined that the current design population equivalent of 1,000 is sufficient to cater for the village until at least 2020.

3.3 Characteristics of the Site

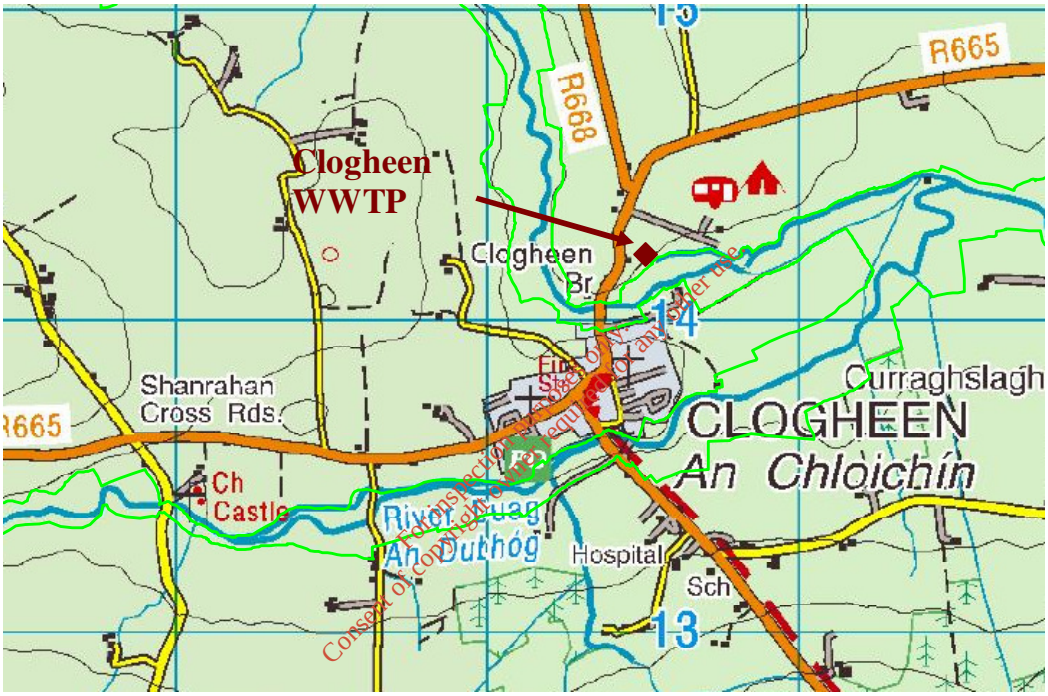
3.3.1 Introduction

Clogheen WWTP discharges into the River Tar downstream of Clogheen Bridge. The plant discharges directly into the River Tar which is a tributary of the River Suir and is part of Lower River Suir Special Area of Conservation (SAC). No other Natura 2000 sites are directly or indirectly affected by the Clogheen WWTP discharge. The River Tar is a significant tributary of the River Suir which traditionally had good water quality.

The Lower River Suir is designated as a candidate Special Area of Conservation (cSAC) under the Habitats Directive (94/43/EEC). The site is a candidate SAC selected for the presence of priority habitats under Annex 1 of the E.U. Habitats Directive. A copy of the Site Synopsis report for the Lower

River Suir cSAC (002137) is outlined in Appendix 1 and the following indicates its location.

Figure 1 - Diagram illustrating location of cSAC



Indicates area identified as cSAC

3.3.2 Overview of the conservation interests of the Lower River Suir SAC

The Lower River Suir cSAC (site code: 002137) is a large site, extending from Cabragh Bridge South of Thurles, to Waterford Harbour with tidal stretches as far as the confluence with the Barrow / Nore immediately east of Cheekpoint in Co. Waterford. It includes many tributaries; Drish, and Clodiagh in North Tipperary, the Lingaun, Anner, Tar, Aherlow, Multeen in South Tipperary and the Nier and Clodiagh in Co. Waterford. It is selected as

a cSAC for the presence of a priority habitat on Annex 1 of the EU Habitats Directive (Alluvial Wet Woodlands) The site is also selected as a candidate SAC for floating river vegetation, Atlantic salt meadow, Mediterranean salt meadows, old oak woodlands and eutrophic tall herbs, 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 - Sea Lamprey, *Peteromyzon marinus*, River *Lamprey Lampetra fluviatilis,* Brook Lamprey *Lampetra planeri*, Freshwater Pearl *Mussel Margaritifera margaritifera*, Crayfish *Austropotamobius pallipes*, Twaite Shad *Alosa fallax*, Atlantic salmon *Salmo salar*, and Otter *Lutra lutra*

Floating river vegetation is evident in the freshwater stretches of the River Suir and along many of its tributaries. Topical species found include Canadian Pondweed *Elodea canadensis*, Milfoil Myriophyllum spp., Fennel Pondweed *Potamogeton pectinatus*, Curled Pondweed *P. crispus*, Perfoliate Pondweed *P. perfoliatus*), Pond Water-crowfoot *Ranunculus peltatus*, other Crowfoots Ranunculus spp. and the moss *Fontinalis antipyretica.* Opposite-leaved Pondweed *Groenlandia densa*, a species protected under the Flora (Protection) Order, 1999, is known from the lower reaches of the Suir around Clonmel and Carrick-on-Suir.

The Suir cSAC also supports populations of several animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat *Myotis daubentonii,* Nattererer's Bat *M. nattereri*, Pipistrelle *Pipistrellus pipistrellus*, Pine Marten *Martes martes*, Badger *Meles meles*, the Irish *Hare Lepus timidus hibernicus*, Smelt *Osmerus eperlanus* and the Frog *Rana temporaria*.

Kingfisher, a species that is listed on Annex I of the EU Birds Directive, occurs along some of the many tributaries throughout the site. Notable populations of other bird species are recorded from the Lower reaches of the site, as well as at Cabragh marshes where there is abundant food for surface feeding wildfowl. Widgeon, Teal and Mallard are numerous and the latter has a large breeding population - with up to 400 in summer. In addition, less frequent

species like Shoveler and Pintail occur and there are records for both Whooper and Bewick's swans. The legally protected species Meadow Barley (Hordeum secalinum) occurs in the Suir estuary near Waterford. The full site synopsis for this conservation site is presented in Appendix 1.

The faunal conservation interests of this SAC are dependant on the aquatic environment and as Clogheen WWTP discharges to the River Suir within the SAC designation, there is a connection between this facility and the ecological receptors in the River Suir.

In Table 1, the qualifying interests for the River Suir SAC are listed, and it is indicated whether these habitats and species would be present in the River Suir in the general vicinity of the Ballyporeen WWTP. Some of the species listed in Table 1 would occur only in the lower reaches of the river (i.e. twaite shad and sea lamprey). Other species are non-aquatic so would not be affected directly or indirectly by the operation of a sewage treatment plant at Ballyporeen. Freshwater pearl mussels recorded as a qualifying interest of the River Suir SAC is recorded in the River Clodiagh catchment and is not affected by the Clogheen WWTP discharge.

Table 1 - the qualifying interests for the River Suir SAC

Species	Natura Code	Item Description	Present in River Suir at Kilsheelan
	1095	Sea lamprey *(Petromyzon marinus*	Yes
	1099	River Lamprey *Lampetra fluviatilis*	Yes
	1106	Atlantic salmon *(Salmo salar)*	Yes
	1103	Twaite shad *(Alosa alosa)*	Yes
	1096	Brook lamprey *(Lampetra planeri)*	Yes
	1029	Freshwater pearl mussel *(Margaritifera margaritifera)*	(R. Clodiagh Only)
	1355	Otter *(Lutra lutra)*	Yes
	1092	White-clawed crayfish *(Austropotamobius pallipes)*	Yes
Havitats	91J0	Yew woodland	
	6430	*Hydrophilous* tall herb fringe communities of plains and of the montane to alpine levels	Yes
	1330	Atlantic salt meadows *(Glauco-Puccinellietalia*	Yes
	1410	Mediterranean salt meadows *(Juncetalia maritimi)*	Yes
	3260	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	Yes
	91E0	Alluvial woodland	Yes
	91A0	Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles	Yes

3.3.3 Conservation Objectives for Lower River Suir, cSAC

The Conservation Management Plan for the lower River Suir SAC is yet to be prepared by National Parks and Wildlife Service (NPWS) of the Department of the Environment, Heritage and Local Government. In the absence of a completed management plan for any designated site, the conservation objectives are taken to include maintaining or restoring the favourable conservation status' (defined in the EU Habitats Directive for habitats and species) of habitats and species for which the site has been selected, including the habitats of the annexed species. The conservation objectives of the Lower River Suir SAC have been summarised in Table 2.

According to the EU Habitats Directive, favourable conservation status of a habitat is achieved when *"its natural range, and area it covers within that range, is stable or increasing, and the ecological factors that are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and the conservation status of its typical species is favourable"*. The favourable conservation status of a species is achieved when *"population data on the species concerned indicate that it is maintaining itself, and the natural range of the species is neither being reduced or likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis"*.

Table 2 The conservation objectives of the Lower River Suir SAC, in relation to the qualifying interests of the site.

	Objective
Objective 1	To maintain the Annex 1 habitats for which the SAC has been selected at favourable conservation status.
Objective 2	To maintain the Annex II species for which the SAC has been selected at favourable conservation status.
Objective 3	To maintain the extent, species richness and biodiversity of the entire site
Objective 4	To establish effective liaison and co-operation with landowners, legal users and relevant authorities.

3.3.4 River Suir Catchment

The River Suir rises in the Devils Bit Mountain in North Tipperary and flows south and enters the sea at Waterford Harbour together with River Barrow and River Nore. The Suir is 182 km long and has a catchment area of 3,610km2. The river is tidal to a point above Carrick-on-Suir and has a mean discharge of 47 m3/sec (Lucey, 1998). The river has a total of 34 tributaries, the largest of which are the Drish, Clodiagh (North Tipperary), Multeen, Aherlow, Ara, Anner, (South Tipperary) Clodiagh (Waterford) and Blackwater (Kilmacow).

The Suir Catchment Rivers are mostly influenced by Carboniferous limestone. The River Suir and the bulk of its tributaries exhibit relatively hard waters.

Agriculture and related agri-based industries comprise one of the main activities in the catchment and the organic waste resulting from these has a negative impact on water quality in some areas. Most of the fish species present in Irish river catchments, such as the River Suir, have colonized from the sea or have been artificially introduced. Native fish species in the Suir catchment include the three Irish lamprey species (brook lamprey *Lampetra planeri*, river lamprey *Lampetra fluviatilis*, and sea lamprey *Petromyzon marinus*) (Kurz & Costello, 1999), the Atlantic salmon *Sa/mo sa/ar*, (O'Grady & Caffrey, 1987) and the rare Twaite Shad *Alos fallax*, (Lucey, 1998) all of which are listed under Annex II of the EU Habitats Directive. The European eel *Anguilla anguilla*, brown trout *Salmo trutta*, and three-spined stickleback *Gasterosteous aculeatus*, are other common native species present in the Suir catchment, while introduced fish species in the catchment include northern pike *Esox lucius*, stone loach *Barbatula barbatula*, dace *Leuciscus leuciscus*, and minnow *Phoxinus phoxinus* (Lucey, 1998). The smelt *Osmerous eperlanus*, a species listed as vulnerable in the red data list (Whilde, 1993), is common in the Suir estuary (King, 2002).

The Suir River is one of Ireland's premier game fisheries and is widely recognized as being the most important river for brown trout angling in Ireland (O'Reilly, 2002). Southern Regional Fisheries Board are in the process

of obtaining quantitative information on fish stocks in the catchment but little information is currently available.

A survey of fish storks in the catchment carried out between 1983 to 1985 by the Fisheries Board showed that fish stocks in the Suir catchment were dominated by salmonids, with salmon chiefly occupying the main channels and trout the tributaries.

One of the conclusions of this report was that the Suir was of national significance in terms salmon and trout production. This report also described the lower Suir main channel as 'probably the single largest and most valuable trout angling riverine fishery in Ireland'. Important salmonid sub-catchments mentioned in the report were the Multeen, Aherlow, Tar, Anner and Lingaun. Lampreys are widely distributed in the Suir catchment, and all three of the Irish species occur downstream of Clogheen.

3.4 Assessment of significance

3.4.1 Introduction

According to the EPA (2008), a discharge from a WWTP would be considered to have a significant adverse effect on the receiving water if it were to:

1. Cause a deterioration in the chemical status or ecological status (or ecological potential as the case may be in the receiving body of surface water;

2. Cause a deterioration in the chemical status in the receiving body of groundwater;

3. Cause the input into groundwater of hazardous substances, except where it is established that the input concerned is in a quantity and concentration so small as to obviate any present or future danger of deterioration in the quality of the receiving groundwater;

4. Cause deterioration or result in significant and sustained upward trends in the concentrations of pollutants in groundwater in the case of pollutants that are not hazardous;

5. Permanently exclude or compromise the achievement of the objectives established for protected species and natural habitats in the case of European sites where the maintenance or improvement of the status of water is an important factor in their protection or which is inconsistent with the achievement of environmental quality standards established under national Regulations in relation to designated bathing waters, designated shellfish waters, areas designated for the protection of freshwater fish and designated nutrient sensitive areas.

In assessing the significance of impact of the wastewater treatment plant at Clogheen on the Lower River Suir cSAC the following is examined:

- The performance of the wastewater treatment plant
- Current receiving water quality
- Assimilative Capacity
- Description of effects and potential effects
- The combined effect of all existing discharges.

3.4.2 The performance of the wastewater treatment plant

The Clogheen Wastewater Treatment Plant is designed to treat a population equivalent of 1,000pe. As set out in the licence application a capacity assessment for all schemes operated as part of the DBO contract was prepared by Nicholas O'Dwyer in August 2007, the focus of which was to determine the spare capacity available at the plants and to determine when the next phasing of the scheme or plant upgrade/expansion would be required. The report estimated the current population equivalent to be 604pe.

The ability of the wastewater works to accommodate the hydraulic and organic loading was also examined in the capacity assessment report and is outlined in more detail in the application. Data used was taken from the monthly reports generated by Earthtech from January to December 2006

The design DWF for the plant is 225m^3/day and the average flow 143 m^3/day, a multiple of 0.63 of the design flow.

The capacity assessment indicates that the plant was at 43.7% capacity in terms of biological load during this period, i.e. Design capacity is 60kg/day and current average for that period was 26.19kg/day.

The operational performance of the plant is satisfactory and generally within contract specifications.

The report concluded that the current design population equivalent of 1,000 is sufficient to cater for the village until 2020 and no further upgrades works were recommended.

The Urban Waste Water Treatment Regulations, 2001 (S.I. No. 254 of 2001), and S.I. No. 440 of 2004, Urban Waste Water Treatment (Amendment) Regulations 2004 sets out the treatment standards required of municipal waste water treatment plants.

The quality of the effluent discharged from Clogheen is good and consistently compliant with the Urban Wastewater Treatment Regulations 2001. The influent and effluent quality of Clogheen WWTP is monitored on a weekly basis using flow proportional composite samples obtained over a 24 hour period. This monitoring shows that Clogheen WWTP is in compliance with the requirements of the Urban Wastewater Treatment Directive. The results of effluent monitoring for the year 2009 are presented in Table 3.

Table 3 Effluent results Clogheen WWTP 2009

Scheme	Date	Ammonia Nitrogen (as N) mg/l	Suspended Solids mg/l	BOD 5d with nitrification inhibit mg/l	Chemical Oxygen Demand (COD) mg/l	pH Value pH unit	Total Phosphorus (as P) mg/l	Total Nitrogen (as N) mg/l
Clogheen	14/07/2009	Effluent		3	1.2	39	7.08	0.28
Clogheen	25/08/2009	Effluent		1	0.93	26	7.02	0.2
Clogheen	15/04/09	Effluent	9.2	6	3	15	7.3	0.33
Clogheen	14/07/09	Effluent	0.1	5	3	19	7.1	0.28
Clogheen	09/08/2009	Effluent	0.4	5	3	25	6.5	0.26
Clogheen	12/08/2009	Effluent	2.9	13	4	25	7.5	0.41
Clogheen	06/09/2009	Effluent	0.2	5	2	27	7.5	0.34
Clogheen	02/10/2009	Effluent	1.7	5	2	15	7.5	0.03
Clogheen	03/10/2009	Effluent	0.4	5	2	22	7.4	0.15
Clogheen	11/10/2009	Effluent	0.4	5	2*	15	7.2	0.13
Clogheen	13/10/09	Effluent	0.3	6	2	15	6.6	0.38
Clogheen	08/11/2009	Effluent	0.6	5	3*	18	7.2	0.69
Clogheen	05/12/2009	Effluent	2.3	8	2	26	6.7	0.44
Clogheen	13/01/09	Effluent	0.1	5	2	19	7.3	0.33

3.4.3 Current Receiving Water Quality

The biological quality of the river suir is assessed on a triannual basis under the Water Framework Directive biological monitoring programme undertaken by the EPA Kilkenny Inspectorate on behalf of the local authorities in the South east. The latest biological Q Rating was carried out in 2008 and results of relevance to Clogheen WWTP i.e. upstream and downstream of the sewage works are presented in Table 4.

Table 4 – 2008 Biological Q Rating

	River Tar Station No. 0300 Br u/s Clogheen WWTP	River Tar Station 0600 - d/s Clogheen WWTP
Q Rating 2008	**Q4**	**Q 4**

The Kilkenny EPA Inspectorate carries out chemical water quality monitoring in the River Tar on behalf of South Tipperary County Council. Monitoring of the River Tar at Station no. 0300 Clogheen Bridge u/s Clogheen WWTP and at Station 0600 Ford u/s Tar Bridge a station d/s Clogheen WWTP demonstrates that the wastewater plant and storm water discharge points are not causing any impact on the water quality of the Tar River or the cSAC. The discharge from the treatment plant is consistently of a good quality and the waste water plant is in compliance with the requirements of the Urban wastewater Treatment Directive.

The chemical water quality monitoring data for the stations upstream and downstream of the Clogheen WWTP are presented in Table 5 and Table 6 below.

Table 5 – River Tar Station No. 0300, Bridge in Clogheen 2007, 2008, 2009 (*Source EPA River Water Quality)*

Date	o-Phos mg/IP	BOD mg/l O2	DO mg/l	Do %sat	Ammonia mg/l N	Un-ion Amm , mg/NH3
03-Apr-07	<0.006	1.7	12.42	109	0.013	0.0003
29-May-	<0.006	1.1	11.29	105	0.036	0.0009
13-Aug-07	0.018	1.8	9.83	95	0.007	0.0000
01-Oct-07	0.015	2.2	10.51	98	0.012	0.0003
06-Nov-07	<0.006	1	10.81	96	0.047	0.0004
22-Jan-08	0.029	0.6	10.89	94	0.004	0.0000
05-Mar-08	0.01	0.7	11.55	98	<0.003	<0.0001
12-May-	0.007	0.7	13.05	130	0.006	0.0002
14-Jul-08	0.015	0.6	9.88	98	0.003	0.0001
18-Sep-08	0.014	0.5	10.3	96	0.012	0.0001
03-Dec-08	0.027	0.9	12.36	99	0.009	0.0001
09-Feb-09	0.04	0.4	12.7	101	0.01	0.0001
02-Apr-09	0.016	0.3	13.67	120	0.026	0.0006
01-Jul-09	0.028	0.6	10.39	101	0.005	0.0001
07-Sep-09	0.02	0.9			<0.01	<0.0001
03-Nov-09	<0.006	2.5	10.34	92	0.013	0.0003
Average	**0.0199**	**1.03**	**11.3**	**102.1**	**0.014**	**0.00024**

Table 6 - EPA River Tar Station No. 0600, Ford u/s Tar Bridge 2007, 2008, 2009

	o-Phos mg/IP	BOD mg/l O2	: -DO mg/l	Do %sat;	Ammonia mg/l N	Un-ion Amm , mg/NH3
03-Apr-07	<0.006	0.9	12.22	107	0.012	0.0003
29-May-07	<0.006	1.7	12.56	120	0.031	0.0017
13-Aug-07	0.021	1.2	10.33	98	0.016	0.0001
01-Oct-07	0.021	1.3	10.34	97	0.03	0.0010
06-Nov-07	0.006	0.7	11.49	103	0.025	0.0005
22-Jan-08	0.033	0.9	10.56	92	<0.003	<0.0001
05-Mar-08	0.015	2.2	11.67	100	0.023	0.0004
12-May-08	0.009	0.9	13.01	131	0.008	0.0005
14-Jul-08	0.018	1.9	9.64	96	<0.003	<0.0001
18-Sep-08	0.014	0.6	10.27	97	0.011	0.0002
03-Dec-08	0.041	0.8	12.29	100	0.008	
09-Feb-09	0.041	0.6	12.05	98	0.008	0.0000
02-Apr-09	0.011	0.5	14.36	129	0.023	0.0010
01-Jul-09	0.027	0.7	11	110	0.01	0.0004
07-Sep-09	0.01	0.8			<0.01	<0.0001
03-Nov-09	0.01	1.6	9.37	84	0.02	0.0001
Average	**0.0197**	**1.08**	**11.34**	**103**	0.01775	0.000537

This water body, code IE_16_567 has a current water quality status of 'Good' and the Draft South East River Basin District has set the Water Quality Objective as 'Maintain Good Status'. The risk classification code is "2a"or "Probably Not At Risk". Table 7 below is an extract from the River Basin District River status report.

Table7 – River Basin District Summary Information

Summary Information:

WaterBody Category:	Subbasin Waterbody
WaterBody Name:	Tar, Trib of SuirTar
WaterBody Code:	IE_SE_16_565
Overall Status:	Good
Overall Objective:	Protect
Overall Risk:	2a Probably Not At Risk
Applicable Supplementary Measures:	Unsewered; Urban & Industrial; Morphology; Forestry;
	Report data based upon Draft RBMP, 22/12/2008.

3.4.4 Assimilative Capacity

The primary regulatory guideline for effluent standards is the EU Urban Wastewater Treatment Regulations, 2001 which is implemented in Ireland through S.I. 254 of 2001 and the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI 272 of 2009). The Urban Wastewater Treatment Regulations requires the provision of secondary treatment for all discharges to freshwaters and estuaries from towns with a population equivalent of between 2,000 and 10,000. While the requirements of the Urban Wastewater Treatment Regulations are set, water quality requirements are dependent on the background values and flow in the river (i.e. assimilation capacity).

The assimilation capacity assessment was prepared based on the above Regulations and standards set for BOD, Orthophosphorous and ammonia in surface waters. Hydrometric data was obtained from the EPA for the receiving water at Ballyporeen as follows: DWF, 95%ile and 50%ile flow of 0.125, 0.25 and 2.37 m^3/sec. The measured flow recordings of daily discharge flow rate and effluent quality was obtained from wastewater plant monitoring in 2009

Waste Assimilation Capacity (WAC) is defined as:

$$WAC = (C_{max} - C_{back}) \times F_{95} \times 86.4 \text{ kg BOD/day}$$

Where:
C_{max} = maximum permissible BOD concentration
C_{back} = background (upstream) BOD concentration
F_{95} = 95 percentile flow (m^3/s)
86.4 = conversion factor

Biological Oxygen Demand (BOD) and Orthophosphate and Ammonia were assessed due to their key importance in biological systems, particularly in relation to eutrophication, the major concern in relation to surface water quality of Irish rivers.

The mean background BOD concentration is based on results from the EPA between 2007 and 2009 inclusively. The BOD input from the plant (kg/day) is the product of the flow and the mean BOD concentration between January and December 2009.

Table 8 presents the results of the waste assimilation capacity assessment for Biological Oxygen Demand (BOD) and Orthophosphate and Ammonia and the predicted levels in the River Tar downstream of Clogheen Wastewater Treatment Plant.

The addition of 0.624 kg BOD/day as a result of the operation of the plant does not result in the river being in breach of the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI 272 of 2009) downstream of the discharge point.

Table 8 presents the results of the waste assimilation capacity assessment for Clogheen.

Table 8 – Assimilative capacity

	Discharge:	Clogheen WWTP	
	Receiving Water:	River Tar	
Receiving water	**Flow rate** Note 1	**m^3/s**	**m^3/d**
	DWF (99 %tile)	0.125	*10800*
	95%tile Flow rate	0.25	*21600*
	50%tile flow rate	2.37	*204768*
	Water quality Note 2	**mg/l**	**kg/d**
	Average BOD of receiving water	1.03	*22.248*
	Average Ortho P of receiving water	0.02	*4.09536*
	Average NH_3 of receiving water	0.01	*0.216*
Effluent Quality	**Flow rate**	**m^3/s**	**m^3/d**
	Discharge volume of effluent	*0.001748*	151.07
	Effluent quality Note 3	**mg/l**	**kg/d**
	Measured BOD	4.13	*0.623919*
	Measured Total P	0.73	*0.110281*
	Measured NH_3	1.46	*0.220562*
AC @ 95%tile flow	No. of dilutions available at 95%tile	***143***	
	Assimilative Capacity for BOD at 95%tile	***33.91***	kg/d
	Assimilative Capacity for Ortho-P at 50%tile	***3.07***	kg/d
	Assimilative Capacity for NH_3-N at 95%tile	***2.81***	kg/d
Impact	**Resulting Concentration downstream**		
	BOD *(>1 mg/l increase is significant)*	***1.05***	mg/l
	Ortho-P *(>0.03 mg/l is significant)*	***0.021***	mg/l
	NH_3-N *(>0.2 mg/l is significant)*	***0.02***	mg/l

3.4.5 Description of effects and potential effects

Direct Impacts

The existing discharges from Clogheen WWTP and associated storm water overflows are directly into the Lower River Suir Special Area of Conservation' (site code 002137). Therefore there would be the potential for direct effects on the designated site as a result of the operation of the WWTP. The current biological and physio-chemical monitoring data from the EPA however shows no deterioration in quality and the receiving water is compliant with the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI 272 of 2009) downstream of the wastewater discharge River Tar Station 0600.

This data confirms the Waste Assimilative Capacity Assessment undertaken which shows that there is not a potential impact to the river with respect to Orthophosphates Biochemical Oxygen Demand or Total Ammonia.

Indirect Impacts

There are no indirect impacts from the WWTP at Clogheen that may be impacting on the River Suir SAC. Impacts to the receiving water i.e. the SAC are limited to the direct impact of the treated wastewater discharge and storm overflow discharges associated with the network.

3.4.6 The combined effect of all existing discharges

Wastewater Treatment Plants located at Ballyporeen and Ballylooby discharge to watercourses upstream of Clogheen. However based on excellent water quality downstream of Clogheen cumulative effects are not a concern. No storm water overflows have been identified on the network.

3.5 Significance of Effects

From existing monitoring data which is comprehensive it can be seen that there is no significant difference between the quality of the Tar River downstream of Clogheen compared to that upstream of the village. Monitoring data for the effluent discharge which is very comprehensive show that the plant is operating within the requirements of the Urban Wastewater Directive.

The WAC of the river Tar at the discharge location (receiving water) has been assessed to determine if there are any specific environmental needs that are more stringent than the generic standards from the UWWTR and the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI 272 of 2009).

The results of water quality monitoring at River Tar Station No. 0300 Clogheen Bridge u/s Clogheen as presented in table 5 have been used to provide background concentrations. 95%ile flows have been used to calculate downstream BOD and ammonia concentrations. Average flows have been used to calculate downstream ortho-phosphorous concentration.

Under the European Communities Environmental Objectives (Surface Waters) Regulations 2009 a concentration of 2.6mg/l of BOD as a 95%ile and 0.14mg/l ammonia as a 95%ile must be met to enable 'good ecological status' to be achieved. Although the River Tar is not designated salmonid water under the European Communities (Quality of Salmonid Waters) Regulations 1988 it is known to support Atlantic salmon. Since the water quality requirements of the European Communities Environmental Objectives (Surface Waters) Regulations 2009 are more onerous than the water quality requirements set out in the salmonid regulations compliance with the former should ensure water quality requirements for the protection of salmon are met. Furthermore because the water quality requirements of Atlantic salmon are more onerous than the water quality requirements of lamprey and brown

trout, compliance would also ensure the water quality requirements of all fish species supported by the Tar River are met.

Similarly as the water quality requirements of the European Communities Environmental Objectives (Surface Waters) Regulations 2009 are more onerous for orthophosphorous (A mean value of 0.035 mg ortho-P per litre must be achieved) than the water quality requirements for floating river vegetation (0.06mg/l target concentration) so that compliance with the former should ensure the water quality requirements of the cSAC for floating vegetation are met.

Therefore all available information assessed during the compilation of this report demonstrate that Clogheen WWTP will not give rise to impacts which could impair the species or habitats listed for protection under the cSAC.

Therefore it is considered that a Stage 2 appropriate assessment is not required.

Appendix 1

SITE NAME: LOWER RIVER SUIR

SITE CODE: 002137

This site consists of the freshwater stretches of the River Suir immediately south of Thurles, the tidal stretches as far as the confluence with the Barrow/Nore immediately east of Cheekpoint in Co. Waterford and many tributaries including the Clodiagh in Co. Waterford, the Lingaun, Anner, Nier, Tar, Aherlow, Multeen and Clodiagh in Co. Tipperary. The Suir and its tributaries flows through the counties of Tipperary, Kilkenny and Waterford. Upstream of Waterford city, the swinging meanders of the Suir crisscross the Devonian sandstone rim of hard rocks no less than three times as they leave the limestone-floored downfold below Carrick In the vicinity of Carrick-on-Suir the river follows the limestone floor of the Carrick Syncline. Upstream of Clonmel the river and its tributaries traverse Upper Palaeozoic Rocks, mainly the Lower Carboniferous Visean and Tournaisian. The freshwater stretches of the Clodiagh River in Co. Waterford traverse Silurian rocks, through narrow bands of Old Red Sandstone and Lower Avonian Shales before reaching the carboniferous limestone close to its confluence with the Suir. The Aherlow River flows through a Carboniferous limestone valley, with outcrops of Old Red Sandstone forming the Galtee Mountains to the south and the Slievenamuck range to the north. Glacial deposits of sands and gravels are common along the valley bottom, flanking the present-day river course.

The site is a candidate SAC selected for the presence of the priority habitats on Annex I of the E.U. Habitats Directive - alluvial wet woodlands and Yew Wood. The site is also selected as a candidate SAC for floating river vegetation, Atlantic salt meadows, Mediterranean salt meadows, old oak woodlands and eutrophic tall herbs, 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 - Sea Lamprey, River Lamprey, Brook Lamprey, Freshwater Pearl Mussel, Crayfish, Twaite Shad, Atlantic Salmon and Otter.

Alluvial wet woodland is declining habitat in Europe as a result of drainage and reclamation. The best examples of this type of woodland in the site are found on the islands just below Carrick-on-Suir and at Fiddown Island. Species occurring here include Almond Willow *(Salix triandra),* White Willow (S. *alba),* Grey Willow *(S. cinerea),* Osier *(S. viminalis),* with Iris *(Iris pseudacorus),* Hemlock Water-dropwort *(Oenanthe crocata),* Angelica *(Angelica sylvestris),* Pendulus Sedge *(Carex pendula),* Meadowsweet *(Filipenduln ulmaria)* and Valerian *(Valeriana officinalis).* The terrain is littered with dead trunks and branches and intersected with small channels which carry small streams to the river. The bryophyte and lichen floras appear to be rich and require further investigation. A small plot is currently being coppiced and managed by National Parks and Wildlife. In the drier areas the wet woodland species merge with other tree and shrub species including Ash *(Fraxinus excelsior), Hazel (Corylus avellana),* Hawthorn *(Crataegus monogyna)* and Blackthorn *(Prunus spinosa).* This adds further to the ecological interest of this site.

Eutrophic tall herb vegetation occurs in association with the various areas of alluvial forest and elsewhere where the flood-plain of the river is intact. Characteristic species of the habitat include Meadowsweet *(Filipendula ulmaria),* Purple Loosestrife *(Lythrum salicaria),* Marsh Ragwort *(Senecio aquaticus),* Ground Ivy *(Glechoma hederacea)* and Hedge Bindweed *(Calystegia sepium).*

Old oak woodlands are also of importance at the site. The best examples are seen in Portlaw Wood which lies on both sides of the Clodiagh River. On the south-facing side the stand is more open and the Oaks (mainly *Quercus robur)* are well grown and spreading. *Ivy (Hedera helix)* and Bramble *(Rubus fruticosus)* are common on the ground, indicating relatively high light conditions. Oak regeneration is dense, varying in age from 0-40 years and Holly *(Ilex aquifolium)* is fairly common but mostly quite young. Across the valley, by contrast, the trees are much more closely spaced and though taller are poorly grown on average. There are no clearings; large Oaks extend to the boundary wall. In the darker conditions, Ivy is much rarer and Holly much more frequent, forming a closed canopy in places. Oak regeneration is uncommon since there are as yet few natural clearings. The shallowness of the soil on the north-facing slope probably contributes to the poor tree growth there. The acid nature of the substrate has induced a "mountain" type Oakwood community to develop. There is an extensive species list present throughout including an abundance of mosses, liverworts and lichens. The rare lichen *Lobaria pulmonaria,* an indicator of ancient woodlands, is found.

Inchinsquillib Wood consists of three small separate sloping blocks of woodland in a valley cut by the young Multeen River and its tributaries through acidic Old Red Sandstone, and Silurian rocks. Two blocks, both with an eastern aspect, located to the north of the road, are predominantly of Sessile oak *(Quercus petraea)* and Hazel, with Downy Birch *(Betula pubescens),* Ash and Holly. The ground flora is quite mixed with for example Wood sedge *(Carex sylvatica), Bluebell (Hyacinthoides non-scriptus),* Primrose *(Primula vulgaris),* Wood-sorrel *(Oxalis acetosella),* Pignut *(Conopodium majus)* and Hard fern *(Blechnum spicant).* The base poor nature of the underlying rock is, to some extent masked by the overlying drift. The third block, to the south of the road, and with a northern aspect, is a similar although less mature mixture of Sessile Oak, Birch and Holly, the influence of the drift is more marked, with the occurrence of Wood anemone *(Anemone nemorosa)* amongst the ground flora.

Floating river vegetation is evident in the freshwater stretches of the River Suir and along many of its tributaries. Typical species found include Canadian Pondweed *(Elodea canadensis),* Milfoil *(Myriophyllum spp.),* Fennel Pondweed *(Potamogeton pectinatus),* Curled Pondweed *(P. crispus),* Perfoliate Pondweed *(P. perfoliatus),* Pond Water-crowfoot *(Ranunculus peltatus),* other Crowfoots *(Ranunculus* spp.) and the moss *Fontinalis antipyretica.* At a couple of locations along the river, Oppositeleaved Pondweed *(Groenlandia densa)* occurs. This species is protected under the Flora (Protection) Order, 1999.

The Aherlow River is fast-flowing and mostly follows a natural unmodified river channel. Submerged vegetation includes the aquatic moss *Fontinalis antipyretica* and Stream Water-crowfoot *(Ranunculus pencillatus),* while shallow areas support species such as Reed Canary-grass *(Phalaris arundinacea),* Brooklime *(Veronica beccabunga)* and Water

Mint *(Mentha aquatica).* The river bank is fringed in places with Alder *(Alnus glutinosa)* and Willows *(Salix spp.).*

The Multeen River is fast flowing, mostly gravel-bottomed and appears to follow a natural unmodified river channel. Water Crowfoots occur in abundance and the aquatic moss *Fontinalis antipyretica* is also common. In sheltered shallows, species such as Water-cress *(Rorippa nasturtium-aquaticum)* and Water-starworts *(Callitriche spp.)* occur. The river channel is fringed for most of its length with Alder, Willow and a narrow strip of marshy vegetation.

Salt meadows occur below Waterford City in old meadows where the embankment is absent, or has been breached, and along the tidal stretches of some of the in-flowing rivers below Little Island. There are very narrow, non-continuous bands of this habitat along both banks. More extensive areas are also seen along the south bank at Ballynakill, the east side of Little Island, and in three large salt meadows between Ballynakill and Checkpoint. The Atlantic and Mediterranean sub types are generally intermixed. The species list is extensive and includes Red Fescue *(Festuca rubra),* Oraches *(Atriplex* spp.), Sea Aster *(Aster tripolium),* Sea Couch Grass *(Elymus pycnanthus),* frequent Sea Milkwort *(Glaux maritima),* occasional Wild Celery *(Apium graveolens),* Parsley Water-dropwort *(Oenanthe lachenalii),* English Scurvygrass *(Cochlearia anglica),* and Sea Arrowgrass *(Triglochin maritima).* These species are more representative of the Atlantic sub-type of the habitat. Common Cord-grass *(Spartina anglica),* is rather frequent along the main channel edge and up the internal channels. The legally protected (Flora (Protection) Order, 1999) Meadow Barley *(Hordeum secalinum)* grows at the landward transition of the saltmarsh. Sea Rush *(Juncus maritimus),* an indicator of the Mediterranean salt meadows, also occurs.

Other habitats at the site include wet and dry grassland, marsh, reed swamp, improved grassland, coniferous plantations, deciduous woodland, scrub, tidal river, stony shore and mudflats. The most dominant habitat adjoining the river is improved grassland, although there are wet fields with species such as Yellow Flag *(Iris pseudacorus),* Meadow Sweet *(Filipendula ulmaria),* Rushes *(Juncus* spp.), Meadow Buttercup *(Ranunculus acris)* and Cuckoo Flower *(Cardamine pratensis).*

Cabragh marshes, just below Thurles, lie in a low-lying tributary valley into which the main river floods in winter. Here there is an extensive area of Common Reed *(Phragmites australis)* with associated marshland and peaty fen. The transition between vegetation types is often well displayed. A number of wetland plants of interest occur, in particular the Narrow-leaved Bulrush *(Typha angustifolia),* Bottle Sedge *(Carex rostrata)* and Blunt-flowered Rush *(Juncus subnodulosus).* The marsh is naturally eutrophic but it has also the nutritional legacy of the former sugar factory which discharged into it through a number of holding lagoons, now removed. Production is high which is seen in the size of such species as Celery-leaved Buttercup *(Ranunculus sceleratus)* as well as in the reeds themselves.

Throughout the Lower River Suir site are small areas of woodland other than those described above. These tend to be a mixture of native and non-native species, although there are some areas of semi-natural wet woodland with species such as Ash and Willow. Cahir Park Woodlands is a narrow tract of mixed deciduous woodland lying on the flat-

lying floodplain of the River Suir. This estate woodland was planted over one hundred years ago and it contains a large component of exotic tree species. However, due to original planting and natural regeneration there is now a good mix of native and exotic species. About 5km north west of Cashel, Ardmayle pond is a long, possibly artificial water body running parallel to the River Suir. It is partly shaded by planted Lime *(Tilia* hybrids), Sycamore *(Acer pseudoplatanus)* and the native Alder. Growing beneath the trees are shade tolerant species such as Remote sedge *(Carex remota).*

The site is of particular conservation interest for the presence of a number of Annex II animal species, including Freshwater Pearl Mussel *(Margaritifera margaritifera* and *M. m. durrovensis),* Freshwater Crayfish *(Austropotamobius pallipes),* Salmon *(Salmo salar),* Twaite Shad *(Alosa fallax fallcr.x),* three species of Lampreys - Sea Lamprey *(Petromyzon marinus),* Brook Lamprey *(Lampetra planeri)* and River Lamprey *(Lampetra fluviatilis)* and Otter *(Lutra lutra).* This is one of only three known spawning grounds in the country for Twaite Shad.

The site also supports populations of several other animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat *(Myotis daubentoni),* Nattererer's Bat *(M. nattereri),* Pipistrelle *(Pipistrellus pipistrellus),* Pine Marten *(Martes martes),* Badger *(Meles meles),* the Irish Hare *(Lepus timidus hibernicus),* Smelt *(Osmerus eperlanus)* and the Frog *(Rana temporaria).* Breeding stocks of Carp are found in Kilsheelan Lake. This is one of only two lakes in the country which is known to have supported breeding Carp. Carp require unusually high summer water temperatures to breed in Ireland and the site may therefore support interesting invertebrate populations.

Parts of the site have also been identified as of ornithological importance for a number of Annex I (EU Birds Directive) bird species, including Greenland White-fronted Goose (10), Golden Plover (1490), Whooper Swan (7) and Kingfisher. Figures given in brackets are the average maximum counts from 4 count areas within the site for the three winters between 1994 and 1997. Wintering populations of migratory birds use the site. Flocks are seen in Coolfinn Marsh and also along the reedbeds and saltmarsh areas of the Suir. Coolfinn supports nationally important numbers of Greylag Geese on a regular basis. Numbers between 600 and 700 are recorded. Other species occurring include Mallard (21), Teal (159), Wigeon (26), Tufted Duck (60), Pintail (4), Pochard (2), Little Grebe (2), Black-tailed Godwit (20), Oystercatcher (16), Lapwing (993), Dunlin (101), Curlew (195), Redshank (28), Greenshank (4) and Green Sandpiper (1). Nationally important numbers of Lapwing (2750) were recorded at Faithlegg in the winter of 1996/97. In Cabragh marshes there is abundant food for surface feeding wildfowl which total at 1,000 or so in winter. Widgeon, Teal and Mallard are numerous and the latter has a large breeding population - with up to 400 in summer. In addition, less frequent species like Shoveler and Pintail occur and there are records for both Whooper and Bewick's swans. Kingfisher, a species that is listed on Annex I of the EU Birds Directive, occurs along some of the many tributaries throughout the site.

Land use at the site consists mainly of agricultural activities including grazing, silage production, fertilising and land reclamation. The grassland is intensively managed and the rivers are therefore vulnerable to pollution from run-off of fertilisers and slurry. Arable crops are also grown. Fishing is a main tourist attraction on stretches of the Suir and some of its tributaries and there are a number of Angler Associations, some with a

number of beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place on the rivers. The Aherlow River is a designated Salmonid Water under the EU Freshwater Fish Directive. Other recreational activities such as boating, golfing and walking are also popular. Several industrial developments, which discharge into the river, border the site including three dairy related operations and a tannery.

The Lower River Suir contains excellent examples of a number of Annex I habitats, including the priority habitat Alluvial Forest. The site also supports populations of several Annex ll animal species and a number of Red Data Book animal species. The presence of two legally protected plants (Flora (Protection) Order, 1999) and the ornithological importance of the river adds further to the ecological interest of this site.