



Wexford County Council

Appropriate Assessment for the purposes of the Waste Water  
Discharge (Authorisation) Regulations, 2007  
(S.I. No 684 of 2007)

Covering Agglomerations of 2001-10,000 P.E.

For

Slaney River Valley Nature Conservations Sites

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## Introduction

This document is an "appropriate assessment" for waste water discharges occurring from Wexford County Council Agglomerations of size of 2001 to 10,000 P.E., which either directly discharge or ultimately discharge to Slaney River Valley Nature Conservation Sites.

This appropriate assessment is prepared in accordance with EPA guidance notes and Department of Environment Heritage and Local Government Circular Letter L8/08 with data from the NPWS web Site and the SERBD, in combination with Wexford County Council data.

As this report is a commutative report covering all agglomerations from 2001 to 10,000 P.E. within the catchments of the Slaney River Valley Nature Conservation Sites, the locations of the agglomerations and discharge points in relation to the receiving waters and designated sites are outlined in the Maps attached in appendix 1.

Note:

As there are 4 agglomerations of size 2001 to 1000 P.E. of interest within the catchment(s) of the Slaney River Valley Nature Conservation Sites, each agglomeration's individual screening process is outlined in section A.1 below. However, as each agglomeration shares 'common' Nature Conservation Sites, 'common' details of the characteristics of the Nature Conservation Sites are provided in Section A.2 below.

## **Section A.1 Individual site screening**

### **A.1.1 Bunclody and Environs**

#### **Management of Site**

The Bunclody agglomeration and its discharge are neither directly connected nor necessary to the management of the Slaney River Valley Nature Conservation Sites.

#### **Description of Project**

##### **A Description of the Waste Water Works and the Activities Carried Out Therein**

Bunclody is situated at the confluence of the Rivers Clody and Slaney. The main part of Bunclody Town lies within the administrative area of County Wexford. The area of Bunclody Town to the north west of the River Clody is known as Carrigduff. This area is in County Carlow and, as such, is under the control of Carlow County Council. This application has been prepared with the co-operation of Carlow County Council.

The existing Bunclody Waste Water Treatment Plant is located on the south bank of the River Slaney, between the river and Ryland Road, and downstream of the Slaney Bridge.

The existing Bunclody Waste Water Treatment Plant consists of a Primary Settlement Tank, which provides primary treatment of the effluent. The effluent then discharges to a series of drainage ditches, from where the effluent percolates into the ground. The area containing the drainage ditches is planted with Willow Trees to help polish the effluent.

There is an overflow pipe located just before the Primary Settlement Tank and another located at the corner of Ryland Road. During high flows, the excess untreated effluent is discharged from the overflows into a small land drainage ditch, which leads directly to the River Slaney.

Works will commence in the next 2 to 3 months to replace this Waste Water Treatment Plant with a pumping station and storm holding tank with a discharge of excess storm water to the River Slaney at IG 291587E 156570N.

The pumping station will be sized to pump forward three times Dry Weather Flow (3 DWF) to full tertiary treatment at a new Waste Water treatment plant. The storm tank will be sized and provided in accordance with the Urban Waste Water Treatment Directive to hold 3 times Dry Weather Flow for 1 hour.

A new Bunclody Waste Water Treatment Plant will be constructed on Ryland Road to the south east of the town centre (approximately 1.2 Kilometres from the existing plant). The plant is being procured via a Design, Build and Operate (DBO) contract. The operational phase of the contract is for a period of 20 years and the successful contractor is Response Engineering.

The new Waste Water Treatment Plant will treat sewage from the town of Bunclody and discharge effluent to the River Slaney at a discharge standard of 25mg/l Biochemical Oxygen Demand (BOD) and 35mg/l Total Suspended Solids (TSS) for the treated effluent. This standard will lead to a very marginal (0.04mg/l) increase in the BOD level for the river under 95 percentile flows conditions, to 1.37 mg/l, which is well below the allowable concentration of 4 mg/l as stated in the River Slaney Water Quality Management Plan which was referred to by the Consultants (J.B. Barry's) as

part of the Planning Report for the new Waste Water Treatment Plant (Attachment C.1. (a)). The ultimate design loading for this new plant will be 6,500 P.E.

### **The sources of Emissions/Nature of emissions from the Waste Water Works**

The sources of emissions at present are the discharge from the existing primary tank Waste Water treatment plant (SW3) and the combined storm outfalls. One CSO (SW5) is located at the corner of Ryland Road (IG 291458E 156761N) and discharges to a small stream. The second CSO (SW4) is located at the last manhole before the primary tank plant (IG 291531E 156585N) and discharges to the same stream. These outfalls will cease operation once the new plant is commissioned and will be replaced by a new primary discharge of treated effluent from the new Waste Water treatment plant location (SW1) and a new secondary discharge at the existing Waste Water treatment plant site (SW2).

### **Quantities of discharge**

The existing Bunclody Waste Water Treatment Plant is not equipped with any form of flow measurement. However, the new Bunclody Waste Water Treatment Plant will be equipped with flow measurement and a telemetry recording system.

### **Effect of emissions**

The EPA Reports "River Water Quality in County Wexford" for 2006 and 2007 classifies the overall receiving water quality for the River Slaney as

"reasonably satisfactory", however, nitrates levels are "moderately elevated in the lower reaches".

However, the two reports clearly demonstrate that the existing secondary discharge (SW3) has no effect on the receiving water quality at the downstream station (Clohamon Br, 2000), which is at least equal in quality to that found at the station upstream of the discharge (Bunclody Br, 1800). A visual inspection of the River Slaney at the point of the existing discharge (SW3) shows a slight plume in the river 5 to 10 metres downstream from the discharge point.

Once the new Bunclody Waste Water Treatment Plant is commissioned, effluent will be treated to a far higher standard which will greatly reduce the impact on the receiving water.

### **Technologies**

Please refer to process description of the new plant contained below.

### **Techniques**

Please refer to process description of the new plant contained below.

### **Prevention of Pollution**

The new Bunclody Waste Water Treatment Plant is designed to meet a far higher quality discharge standard (25mg/l Biochemical Oxygen Demand and 35mg/l Total Suspended Solids for the treated effluent). The new Bunclody Waste Water Treatment Plant will be designed and equipped with all necessary telemetry etc., to ensure correct operation by the contractors (Response Engineering).

## **Toxic Substances**

Analysis of the samples taken from the receiving waters upstream and downstream of the discharge point, and of the final effluent from the existing Bunclody Waste Water Treatment Plant, shows levels of dangerous substances that are below the limits specified in the Dangerous Substances Regulations. The agglomeration discharges are therefore compliant with the requirements.

## **Measures planned to monitor emissions into the environment**

Wexford County Council will monitor the final effluent, in accordance with our monitoring regime. This work is undertaken on behalf of Wexford County Council by an independent ILAB accredited laboratory. The contract for this testing is renewed every three years by open procurement. The current contract is with Environmental Services Limited, Acorn Business Campus, Mahon Industrial Park, Blackrock, Co. Cork. The current contract is in its first year of operation and thus the contract will have to be re-tendered under open procurement regulations in January of 2012.

The new Bunclody Waste Water Treatment Plant site will be equipped with flow proportional sampling.

## Process Description

### C.1 (A) Description of Plants

#### Existing Bunclody Waste Water Treatment Plant

The existing Bunclody Waste Water Treatment Plant is a small primary settlement tank, which has reached the end of its serviceable life, both in terms of its capacity and level of treatment provided. The treated final effluent is also having an impact on the receiving water, the Slaney River.

The existing Bunclody Waste Water Treatment Plant will be replaced by a pumping station and storm holding tank with a discharge of storm water in excess of 6 times Dry Weather Flow for 1 hour to the River Slaney. A new Bunclody Waste Water Treatment Plant is currently under construction on a new site, approximately 1.2 kilometres south of the existing site and is due for completion in June 2010.

#### New Bunclody Waste Water Treatment Plant

The new Bunclody Waste Water Treatment Plant is due to start construction at the end of this year and due to be operational during the middle of 2010.

The design criteria for this new plant are as follows:

The maximum flow rate to treatment at 3 times Dry Weather Flow is 49.20 l/sec. The daily Biochemical Oxygen Demand load for the plant is 60gms/persons/day. The Total Daily Biochemical Oxygen Demand load is 390 kgs and the pumping rate to the Treatment Works will be 49.20 l/sec.

The New Bunclody Waste Water Treatment Plant will treat a final effluent to the standard of 25mg/litre Biochemical Oxygen Demand, 35mg/litre Suspended Solids, 15mg/l Total Nitrogen and 2mg/l Total Phosphorous.

The new Bunclody Waste Water Treatment Plant will provide treatment for a design population of 6,500. The Bunclody Waste Water Treatment Plant will comprise of inlet works, with a screening and grit removal system, aeration tanks, final settlement tanks, outlet flow measurement and sampling, and sludge thickening and dewatering.

### **Inlet Works**

The inlet works will comprise of a screening unit complete with a by-pass bar-screen. A pump unit located in the conditioning tank adjacent to the screen plate will discharge and deliver the conditioned screenings/liquid mixture up to the liquid separator. The screenings will be collected, washed, compacted and delivered to skips or wheelie bins for disposal off the site.

The grit removal system is designed to remove grit from raw unscreened sewage and to deposit the grit into a collection receptacle which will be removed off site for ultimate disposal.

An electromagnetic flow-meter will be installed on the rising main from the pumping station (at the existing Bunclody Waste Water Treatment Plant), which will record all flows forwarded to the new treatment plant. A flow proportional sampler will be provided at the inlet works to sample incoming Waste Water.

A flow splitting chamber located after the inlet works will provide an even distribution of flows to both aeration tanks. The Flow Splitting Chamber will act as a collection and distribution point for process return flows (i.e. return activated sludge and supernatant return).

## **Aeration Process**

The aeration system will comprise 2 No. rectangular cast in situ concrete tanks. Air will be induced into the aeration tanks by means of 4 no. Aerators (2 No. in each tank) partially submerged in the tank. The aerators provide flow direction and symmetry through the aeration tank. Each aerator will be driven by a geared motor with variable speed drives provided to control the level of the oxygen in the aeration tank.

Dissolved Oxygen controllers will monitor the level of dissolved oxygen in each tank and control the variable speed drive on the aerators. Mixed liquor suspended solids controllers will monitor mixed liquor levels in the aeration tank.

Phosphate reduction to a standard of 2 mg/l will be provided by chemical precipitation. The dosage of ferric sulphate or equivalent is calculated to reach a concentration of 1.5 mg/l Total Phosphorous in the final effluent.

## **Settlement Tanks**

Response Engineering (the Design, Build and Operate Contractors) have proposed 2 No. new final settlement tanks to be operated with each capable of dealing with 50% of the design hydraulic loading of the plant.

A flow splitting chamber adjacent to the outlet of the aeration tanks will be installed to provide even distribution of flows to both Settlement Tanks. The Splitter Chamber will be set up to allow the flow ratios to each Settlement Tank to be set up to match the sizes of the Settlement Tank.

For each Settlement Tank, sludge will be drawn from the bottom of the tank with the return activated sludge (microbial mass) being pumped back to the

head of the aeration chamber and excess sludge pumped to the Picket Fence Thickener.

Clarified effluent will be discharged to the final outfall chamber over a peripheral overflow weir incorporating a scum baffle.

### **Outlet Flow Measurement and Sampling**

The flow from the outlet from each settlement tank will be measured by means of an ultrasonic flow sensor as it passes through the open channel outlet flume. A flow proportional refrigeration sampler will be provided at this location to sample the effluent prior to discharge.

### **Sludge Return Sump**

Sludge will be returned to the Aeration Basin or alternatively pumped to the sludge holding tank by two 2 No. sludge pumps with each pump designated to pump sludge from one of the Settlement Tanks. An actuated valve will be installed on the rising main of each pump, set to control the return and wasting of sludge.

### **Picket Fence Thickener**

Excess sludge will be wasted from the system to the Picket Fence Thickener tank. The Picket Fence Thickener tank will be 7 metres in diameter. There will be a series of supernatant draw off pipes, with valves, to provide optimum thickening and draw off capabilities.

### **Sludge Dewatering Plant**

Response Engineering proposes to use a belt press system to dewater the sludge to 15% dry solids. Sludge will be fed to the belt press by means of progressive cavity feed pumps located in the dewatering building which will be setup as duty/standby. Dewatered sludge will be pumped to a sludge skip by the sludge cake pump.

The sludge will be removed from site for treatment at the sludge treatment facility.

### **Supernatant Pumping**

Response Engineering proposes to install supernatant pumps to pump the supernatant from the dewatering buildings and the Picket Fence Thickener tank back to the initial flow distribution chamber. The pumps would be controlled by an ultrasonic level sensor and a sampler will be provided to sample the return liquors to the Picket Fence Thickener tank.

### **Welfare Facilities**

There will be a small control building on site housing welfare facilities, a small laboratory and electrical control equipment including a generator. A Diesel Generator at the treatment works will provide standby power in the event of a power failure.

### **Summary of results**

Outlined below are summary of results (effluent / upstream and down stream results for the existing Bunclody WWTP. As the new plant is not operational (expected to be on line by mid 2010), no results are available.

		Chemical Oxygen Demand	Suspended Solids	Total Phosphorous	BOD	Total Oxidised Nitrogen(TON)	Ortho Phosphate	Total Nitrogen	Ammonia	Total Kejdahl Nitrogen
Location	Sample Date	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
D/S	13-May-09	< 8	< 1	< 0.03	< 2	3.8	< 0.01	4.7	0.068	< 1
D/s	24-Jun-09	< 8	< 5	0.031	< 2	5.46	0.02	4.6	0.126	< 1
Effluent	19-Jan-09	107	291	3.9	155	< 1.38	0.93	22	8.08	13.9
Effluent	18-Feb-09	154	519	8.2	297	1.38	4.33	36.3	20.3	16
Effluent	13-May-09	475	138	7	195	0.72	4.29	38.6	27.8	10.1
Effluent	24-Jun-09	751	182.5	9.4	302	1.73	6.64	56.7	50.5	4.5
Inlet	13-May-09	606	208	5.9	244	< 0.14	3.37	38.4	31	7.4
Inlet	24-Jun-09	848	245	8.1	105	0.7	5.83	52.2	30.9	20.6
u/s.	13-May-09	< 8	< 1	< 0.03	< 2	3.86	< 0.01	4.6	0.031	< 1
u/s	24-Jun-09	< 8	< 5	0.02	< 2	4.53	0.01	4.4	0.038	< 1

As can be seen from results above, there is slight increase in levels of nutrient levels, however no increase in BOD or suspended solids is detected.

### Additional comments

This application does not propose nor seek approval for any additional civil works (excavation, construction, intrusion works etc) nor modification of the treatment process or site activities, nor expansion of the discharge beyond its current capacity and committed loading.

Therefore, the only potential source of any possible impact on Slaney River Valley Bay Nature Conservation Sites is solely from the discharges to the aquatic environment.

The existing discharge SW3 will cease once the new treatment plant has come on line (mid 2010) with an appropriate level of treatment.

Additionally, the discharge, as outlined above, is pre-existing, with the current discharge point in position since the 1950's. Therefore, it would be

fair to infer that, as the original discharge preceded the site designation, requirements for knowledge of the existence of the development by, and consultation with, all interested parties have been met.

## **Assessment of Significance**

Assessment as per Circular Letter L8/08 Appendix 1

**1. Is the development in a nature conservation site? Yes.**

The Primary, Secondary and storm water overflow discharge points, receiving water and agglomeration, are all within a Designated Special Area of Conservation (SAC). The Slaney River Valley SAC (Site code 000781) is also a Natural Heritage Area (NHA).

**2a. Is the development in the surface catchment of a nature conservation site? Yes.**

As outlined above.

**2b. Is the development in the groundwater catchment or within 5Km of a nature conservation site? N/A**

Discharges are to surface waters.

**3. Are the qualifying habitats and species of the site water dependant? Yes.**

**4. Is there a WFD sub-basin plan for the site or its protected habitats/species? Yes.**

South East River Basin District (SERBD) Sub Basin Plan for receiving waters - Slaney sub basin plan.

Additionally, a species specific Sub Basin Plan - Freshwater Pearl Mussel- is under preparation By SERBD.

## 5 Conclusion

Notwithstanding the following points

- That the only possible source of impact from discharge on designated areas would be as a result of impact on water quality.
- That monitoring only indicates a slight increase in nutrient levels downstream of discharge.
- The existence of relevant sub basin plans from South East River Basin District.

The precautionary principle must apply in this case and further assessment is required, an appropriate assessment for the Bunclody agglomeration is contained in stage 2 of this report.

## **A.1.2 Castlebridge and Environs**

### **Management of Site**

The Castlebridge agglomeration and its discharge are neither directly connected nor necessary to the management of the Slaney River Valley Nature conservation sites.

### **Description of the Project:**

#### **A Description of the Waste Water Works and the Activities Carried Out Therein**

Castlebridge and Environs Waste Water Agglomeration is currently served by two Waste Water treatment plants; Castlebridge Waste Water Treatment Plant which is owned, operated and maintained by Wexford County Council and a second Waste Water treatment plant which treats a domestic effluent from a development of 97 houses which is privately owned, operated and maintained by Noonan Developments Ltd., Ballytramon, Castlebridge.

Castlebridge Waste Water Treatment Plant treats approximately 2,150 P.E., while Noonan Developments Ltd. Waste Water Treatment Plant treats approximately 290P.E. with a design capacity of 404 P.E.

There are three pumping stations on the network operated by Wexford County Council that are within this agglomeration.

The existing Castlebridge Waste Water Treatment Plant is located to the north west of the village in the townland of Fairyhill and east of the River

Sewer into which it discharges treated effluent. The plant was commissioned in 1990 with a Design Population Equivalent (PE) of 1,250, and was subsequently upgraded in 2004 which increased the treatment capacity of the plant to 2,000 PE.

The Castlebridge and Environs foul sewage collection system discharges to a pumping station located in the centre of the village adjacent to the bridge. This pumping station pumps foul sewage via a 200mm diameter rising main to the existing Castlebridge Waste Water Treatment Plant (WWTP).

The Castlebridge Waste Water Treatment Plant is operated as a bundle with Blackwater Waste Water Treatment Plant. The plant is manned on a 7 days per week basis.

The plant consists of an aeration ditch and a final settlement tank. The treated effluent from the final settlement tank passes into the plant outlet channel, which is fitted with an ultrasonic flow meter, upstream of a Venturi weir and discharges to the receiving water via a 300mm precast concrete pipe.

The plant has a discharge standard of 25mg/l Biochemical Oxygen Demand, 125mg/l Chemical Oxygen Demand and 35mg/l Total Suspended Solids.

The existing Noonan Developments Ltd. Waste Water Treatment Plant is located to the south west of the village in the townland of Ballytramon. The plant has a discharge standard of 5mg/l Biochemical Oxygen Demand,

20mg/l Chemical Oxygen Demand and 5mg/l Total Suspended Solids. Additionally, the plant has a Total Nitrogen discharge standard of 10mg/l and a Total Phosphate standard of 1mg/l.

### **The sources of Emissions/Nature of emissions from the Waste Water Works**

There are three sources of emissions within the agglomeration. The Primary Discharge point (SW1) of the treated effluent, from Castlebridge Waste Water Treatment Plant is through the outfall pipe, which is located on the bank of the River Sow which is treated to meet the required standard.

The second discharge point is located at the Village Pumping station which is the Secondary Discharge point (SW2) discharging to a tributary of the River Sow.

The third discharge point is located at Noonan Developments Ltd., Ballytramon, which is a Secondary Discharge point (SW3) with a treated effluent discharging to a Stream which enters the Slaney Estuary/Wexford Harbour.

There are no reports of unusual or abnormal noise and/or odour emissions from the plant, either from operational personnel, other agencies or the general public.

### Quantities of discharge

The average quantities of discharge (SW1) from the Castlebridge Waste Water Treatment Plant are:

Plant Flow	Month	Average m <sup>3</sup> /hr	Min m <sup>3</sup> /hr	Max m <sup>3</sup> /hr	Flow Total This Month m <sup>3</sup> /hr
Outlet Flow	August	17.02	0.84	82.52	12662.88
Outlet Flow	September	13.37	0	90.15	9626.4
Outlet Flow	November	10.79	0	65.07	7768.8
Outlet Flow	December	10.77	0	80.57	8012.88

The most recent average daily flows for the discharge (SW3) at Noonan Developments Waste Water Treatment Plant was 32m<sup>3</sup>/day for August 2008, 28m<sup>3</sup>/day for the month of September 2008 and 32m<sup>3</sup>/day for the month of October.

### Effect of emissions

The Castlebridge Waste Water Treatment Plant average results for the past 2 years show that the plant performance is within the plant design specification standards, with an average discharge of 16mg/l Biochemical Oxygen Demand, 49mg/l Chemical Oxygen Demand and 19mg/l Total Suspended Solids.

Results obtained from Fay Environmental Ltd., for Noonan Developments Ltd. Plant (SW3) show that the results are within the specified standards required for the plant.

## **Technologies**

The Primary Discharge is compliant with the design standards and is having no effect on the receiving waters.

There is no further upgrade proposals for the Castlebridge Waste Water Treatment Plant, however there is a proposal, which is at design review stage, for the provision of additional capacity in the Castlebridge Agglomeration. The proposal involves a pumping station and rising main, which will divert additional flows to the Wexford Agglomeration for treatment and disposal. If and when these works proceed, they will be the subject of a Licence Review Application for the Wexford Agglomeration. However, the two current plants in Castlebridge will remain in operation, but will become secondary discharges to the Wexford Agglomeration.

Additionally, there are no complaints or incidents in relation to other discharges to the general environment. Therefore, there is neither a demonstrated need nor plans to reduce or mitigate discharges from the plants.

## **Techniques**

Not Applicable.

## **Prevention of Pollution**

The operation of the Castlebridge Waste Water Treatment Plant produces a treated effluent in compliance with the designed performance standards set out for the plant. The discharge is shown to have no polluting effect on

the receiving water body. It is the intention of Wexford County Council, to continue to operate and manage Castlebridge Waste Water Treatment Plant to the current standard of performance.

The operation of Noonan Developments Ltd. Waste Water Treatment Plant produces a treated effluent in compliance with the designed performance standards set out for the plant.

### **Toxic Substances**

Analysis of the samples taken from the receiving waters upstream and downstream of the discharge point, and of the final effluent from the Castlebridge Waste Water Treatment plant and Noonan Developments Ltd. Plant shows levels of dangerous substances that are below the limits specified in the Dangerous Substances Regulations. The agglomeration discharges are therefore compliant with the requirements.

### **Measures planned to monitor emissions into the environment**

Wexford County Council will monitor the final effluent, in accordance with our monitoring regime. This work is undertaken on behalf of Wexford County Council by an independent ILAB accredited laboratory. The contract for this testing is renewed every three years by open procurement. The current contract is with Environmental Services Limited, Acorn Business Campus, Mahon Industrial Park, Blackrock, Co. Cork. The current contract is in its first year of operation and thus the contract will have to be re-tendered under open procurement regulations in January of 2012.

The Secondary Discharge (SW3) located at Noonan Developments Ltd., Ballytramon, is monitored in accordance with the Section 4 Discharge Licence issued by Wexford County Council. Monitoring is conducted on behalf of Noonan Developments Ltd by Euro Environmental Services, Unit 35, Boyle Business Park, Drogheda, County Louth.

## **Process description**

### **Castlebridge Waste Water Treatment Plant**

#### **Plant Process**

The overall Castlebridge Waste Water Treatment Plant design capacity is 2,000 PE. The plant currently treats approximately 2,150PE while still achieving the required effluent design standards.

The Daily Biological design load of the Castlebridge Waste Water Treatment Plant is 120Kg of BOD (60g/person/day). The Castlebridge Waste Water Treatment Plant maximum hydraulic design capacity is 450m<sup>3</sup>/day at 1 DWF. Thus the calculated forward flow rate for the clarifier at 4 DWF (3 DWF inlet flow plus 1 DWF sludge return flow), is 0.66m<sup>3</sup>/m<sup>2</sup>/hr. This forward feed rate is well within the guide maximum forward feed rate of 1.0 to 1.2m<sup>3</sup>/m<sup>2</sup>/hr.

#### **Village Pumping Station**

Prior to forward feeding of sewage to the Castlebridge Waste Water Treatment Plant, pre-treatment and maceration is carried out at the Village Pump station.

The station is equipped with 2 No. pumps operated in duty/stand-by mode.

Each pump has a forwarding capacity of 16 l/sec. In cases of extreme weather conditions, excess flows are directed via SW2 to the receiving waters. Maximum capacity of plant is 450m<sup>3</sup>/d at 1xDWF. Plant designed for 3xDWF (1350m<sup>3</sup>/d or 15.6l/sec).

### **Aeration Ditch**

The influent is aerated in 1 no. Aeration Ditch. The purpose of the Aeration Ditch is to allow the activated sludge break down the raw sewage. This is assisted by the presence of oxygen which is introduced by the 2 no. Cage Rotors in the Aeration Ditch. The two cage rotors operate in duty/ assist depending on the Dissolved Oxygen (D.O.) level, which is monitored by a floating ball D.O. sensor. The level in the aeration ditch is controlled via an actuated weir penstock located on the outlet of the aeration ditch.

### **Settling Tank**

The site is equipped with one settling tank. The purpose of the settling tanks is to physically separate the treated effluent from the mixed liquor suspended solids, which has been biologically treated in the aeration ditch.

Influent from the Aeration Ditch gravitates to the diffusion drum mounted in the centre of the settling tank, and is discharged via a bell mouth just below the top water level. The solids settle to the sloped floor of the tank via

gravity and treated effluent is displaced over the saw tooth weir to the outlet channel on the surface of the tank.

A rotating half bridge scraper is installed in the settlement tank. This rotating bridge has a floor scraper assembly in addition to a scum scraper. The floor scraper directs settled sludge to a central hopper from which sludge is drawn off to the sludge sump. The surface scum scraper collects scum and floating solids, which are removed via a scum bucket at each bridge rotation to the sludge return sump.

Located around the perimeter of the Settlement Tank is the scum baffle and overflow weir. Clarified effluent overflows to the outlet channel.

### **Sludge Return**

The Settlement Tank is equipped with a sludge return sump. The sludge from the Settlement Tank flows to the sludge sump by gravity. The sump is equipped with 2 no. Submersible pumps, which operate in duty/stand by mode and return the contents of the sump to the aeration ditch.

### **Outlet Channel**

The outlet channel is equipped with an ultrasonic flow measurement device, which is installed upstream of a V-notch weir. Additionally the outlet channel is equipped with a flow proportional refrigerated sampler. The sample point is located just upstream of the V-notch weir.

## **Sludge Press Room**

Excess sludge in the Castlebridge Waste Water Treatment Plant is drawn from the sludge return sump to the sludge press room. The sludge is dewatered to approximately 11% Dry Matter (D.M.) by means of single belt sludge press and removed from site for treatment at the Sludge Treatment Centre, Wexford Town Waste Water Treatment Plant, Kerlogue.

## **Noonan Developments Waste Water Treatment Plant (Ballytramon)**

### **Plant Process**

The Waste Water Treatment Plant is an activated sludge, utilising the Sequencing Batch Reactor (SBR), process with tertiary treatment comprising sand filtration and disinfection by UV.

### **Inlet Pump Sump/Screen**

Raw sewage enters the Waste Water Treatment Plant via a 225mm diameter foul sewer to the inlet pump sump and from there it is pumped up to an inlet screen before it enters a balancing tank, which is operated by 2 no. pumps working on a duty/standby basis for forward feed to the Sequencing Batch Reactor Tank.

### **Sequencing Batch Reactor (SBR) Tank**

This tank operates as an aeration and oxidation system. It works as a three phase system: fill, aerate and decant. Sewage only enters this tank when it is in the fill stage. Aeration is intermittent so that anoxic and aerated systems can develop. The aeration system removes Biochemical Oxygen Demand (BOD),

oxidised nitrogen and ammonia. The anoxic system converts the oxidised nitrogen into nitrogen gas (de-nitrification). The plant is equipped with tertiary chemical phosphate removal.

### **Equalisation Tank**

The equalisation tank allows a constant volume flow to the settlement and filtration systems so that they can operate to their optimum.

### **Sand Filtration**

The treated effluent after settlement is passed to a sand filtration system. The backwash is recycled for treatment back to the inlet pumping station where any remaining solids are removed, with automatic backwashing facility.

### **Disinfection Unit**

The treated effluent is then passed through an Ultra Violet unit, where it treats any remaining bacteria.

After UV disinfection, the plant is equipped with an inline flowmeter which monitors the plant discharge rate. Following the flow meter, treated effluent enters a recycling water storage tank prior to discharge to the receiving waters.

### **Summary of results**

Outlined below is summary of Castlebridge WWTP effluent results, these results indicate that the plant is performing well within its design standards.

Wexford County Council  
Appropriate Assessment for  
Slaney Valley for Agglomerations of 2001–10000 P.E.

Date Of Sampling	BOD	COD	TSS	Total P	Ortho P	Total N	NH3-N	TON	TKN
	Mg/l	Mg/l	Mg/l	Mg/l	Mg/l	Mg/l	Mg/l	Mg/l	Mg/l
09/01/2007	19.00	70.00	6.00	4.40	2.02	15.00	9.56	0.67	14.33
09/01/2007	39.00	113.00	38.00	1.90	1.36	10.00	<0.0067	9.28	0.72
21/02/2007	<3	<8	<1	4.70	1.56	11.00	1.04	6.87	3.09
21/02/2007	<3	15.00	8.00	2.50	1.58	10.00	0.24	6.48	3.28
22/03/2007	9.00	23.00	55.00	2.50	1.81	8.00	2.45	3.52	2.03
22/03/2007	9.00	38.00	55.00	0.40	0.37	4.00	<0.07	0.13	3.87
10/05/2007	29.00	80.00	24.00	4.10	2.05	55.00	46.99	6.27	1.74
10/05/2007	72.00	244.00	76.00	17.40	7.09	66.00	48.40	5.18	12.42
18/06/2007	19.00	49.00	22.00	9.70	9.52	33.00	31.40	<1.38	1.60
18/07/2007	33.00	51.00	8.00	5.61	5.15	18.00	17.87	1.07	<1.0
09/08/2007	14.00	42.00	4.00	0.60	0.38	22.00	8.07	1.40	12.53
12/09/2007	9.00	11.00	8.00	2.50	2.41	2.00	0.26	2.34	<1.0
30/10/2007	9.00	11.00	18.00	4.30	4.11	15.00	5.02	9.00	0.98
16/01/2008	4.00	27.00	2.00	3.10	2.00	9.00	4.66	1.21	3.13
19/02/2008	5.00	<8	2.00	6.20	1.86	23.00	1.35	2.53	19.10
19/02/2008	5.00	<8	2.00	6.20	1.86	23.00	1.35	2.53	19.10
14/05/2008	7.00	31.00	8.00	3.70	3.21	11.00	1.52	8.44	1.00
09/06/2008	5.00	11.00	2.00	3.70	2.64	10.00	2.20	2.41	5.40
14/07/2008	9.00	20.00	14.00	5.60	3.38	32.00	0.52	23.40	8.08
13/08/2008	9.00	24.00	24.00	5.80	3.10	18.00	1.47	15.70	0.80
16/09/2008	4.00	13.00	1.00	5.10	2.47	15.00	0.22	14.40	<1.0
AV-	<b>16.30</b>	<b>48.50</b>	<b>18.90</b>	<b>4.80</b>	<b>2.90</b>	<b>19.50</b>	<b>9.70</b>	<b>6.10</b>	<b>6.30</b>

### Additional comments

This application does not propose nor seek approval for any additional civil works (excavation, construction, intrusion works etc) nor modification of the treatment process or site activities, nor expansion of the discharge beyond its current capacity and committed loading.

Therefore, the only potential source of any possible impact on Slaney River Valley Bay Nature Conservation Sites is solely from the discharges to the aquatic environment.

Additionally, the discharge, as outlined above, is pre-existing, with the discharge points SW1 and SW2 in place since 1994 and the SW3 discharge

point having been granted a discharge licence in 2005. It would be fair to infer that requirements for knowledge of the existence of the development by, and consultation with, all interested parties have been met.

## **Assessment of Significance**

Assessment as per Circular Letter L8/08 Appendix 1:

**1. Is the development in a nature conservation site? No.**

The development is not within a nature conservation site, as the Waste Water Treatment Plant Sites are not within a Special Protection Area, Special Area of Conservation nor a Natural Heritage Area.

**2a. Is the development in the surface catchment of a nature conservation site? Yes.**

The discharges from the 2 WWTPs are within the catchment of a nature conservation site, as the River Sow and its tributaries discharge to the Slaney Estuary and ultimately to Wexford Harbour, which forms part of the northern boundary of both the Slaney River Valley, SAC (Site code 000781), and the Wexford Harbour and Slobs SPA/NHA (Site code 004076).

**2b. Is the development in the groundwater catchment or within 5Km of a nature conservation site? No.**

**3 Are the qualifying habitats and species of the site water dependant? Yes.**

**4. Is there a WFD sub-basin plan for the site or its protected habitats/species? Yes**

SERBD Sub Basin Plan for receiving waters - Water Body Sow.

SERBD Sub Basin Plan - Designated Area - Lower Slaney Estuary

Additional A species specific Sub Basin Plan - Freshwater Pearl Mussel- is under preparation By SERBD.

**6 Conclusion**

Therefore, in line with L8/08, as there is a potential for impact on designated areas and qualifying interests and as such under the precautionary principle further assessment is required at this stage, an appropriate assessment for the Castlebridge and Environs agglomeration is outlined in stage 2 of this report.

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### **A.1.3 Ferns and Environs**

#### **Management of Site**

The Ferns agglomeration and its discharge are neither directly connected nor necessary to the management of the Slaney River Valley Bay Nature conservation sites.

#### **Project Description**

##### **A Description of the Waste Water Works and the Activities Carried Out Therein**

Ferns and Environs Waste Water Agglomeration is currently served by two Waste Water treatment plants, Ferns South and Ferns North. Ferns South treats approximately 2,150 P.E. and Ferns North treats approximately 100 P.E. The Ferns and Environs collection network consists of a partially combined system receiving both foul and surface water flows. There is one pumping station on the network in public ownership with possibly a number of private pumping stations also within the agglomeration.

The existing Ferns South Waste Water Treatment Plant is located to the south east of the town in the townland of Ferns Lower. The Ferns South Waste Water Treatment Plant discharges treated effluent to the River Bann. The original plant was commissioned in 1999 with a Design Population Equivalent (PE) of 1,250. The Ferns South Waste Water Treatment Plant consisted of primary settlement tanks and 2 No. 5,800 m<sup>2</sup> reed beds. Due to

development pressures in the area, the plant needed to be extended in 2006. An additional package treatment plant was constructed on the existing site to treat an additional 1,000 PE in parallel to the existing reed bed plant. This additional second stream plant is now designed to only accept flows up to 3 times Dry Weather Flow for 1,000 PE (using a hydrobrake) and any flows in excess of this are directed via the old Primary Settlement Tanks into the reed beds.

The Storm water emergency overflow is directed to the reed beds and all flows are combined prior to sampling/flow measurement prior to the treated effluent discharging to the River Bann. It is proposed that the Ferns South Waste Water Treatment Plant will be upgraded as part of the 11 Villages Bundle scheme to accept all Waste Water generated in Ferns Village and Environs in the long term.

The Ferns North Waste Water Treatment Plant consists of a Primary Tank. All influent to the plant is by gravity and enters the Primary Tank via a 225mm vitrified clay pipe. Primary treated effluent is then discharged from the tank to a tributary stream which enters the River Bann.

It is proposed that the Ferns North Waste Water Treatment Plant will be replaced by a Pump Station, delivering flows to the existing gravity sewer network for forwarding to the proposed new plant, as part of the 11 Villages Bundle scheme.

## **The sources of Emissions/Nature of emissions from the Waste Water Works**

The Primary discharge point of the treated effluent discharges through the outfall pipe, which is located on the bank of the River Bann. This is the only discharge point from the Ferns South Waste Water Treatment Plant.

The Secondary discharge point of primary treated effluent discharges through the outfall pipe, to a Tributary of the River Bann. This is the only discharge point from the Ferns North Waste Water Treatment Plant.

There are no reports of unusual or abnormal noise and/or odour emissions from either plants, either from operational personnel, other agencies or the general public.

### **Quantities of discharge**

Details of the quantities of emissions are not available due to technical difficulties with the flow meter at Ferns South Waste Water Treatment Plant. There is no meter at Ferns North Waste Water Treatment Plant and there is no proposal to install one.

### **Effect of emissions**

The Ferns South Waste Water Treatment Plant average results for the past 2 years show that the plant performance is within the plant design specification standards, with an average discharge of 23mg/l Biochemical Oxygen Demand (BOD), 33mg/l Chemical Oxygen Demand (COD), and 10mg/l Total Suspended Solids (TSS).

While the EPA "River Water Quality in County Wexford" reports for 2006 and 2007 classifies overall receiving water quality as "reasonably satisfactory/acceptable". The reports also indicate that "nitrates have elevated slightly" in the water quality in 2007 and 2006. However, the two reports clearly demonstrate that the discharge has no effect on the receiving water quality at the downstream station (Doran's Br, 0900), which is at least equal in terms of quality to that found at the station upstream of the discharge (Milltown Br 0800).

The EPA reports "River Water Quality in County Wexford" for 2006 and 2007 do not show any recordings or analysis for the Stream in which the secondary discharge (Ferns North Waste Water Treatment Plant) is released to. Effluent quality from the plant is poor, and a visual inspection of the Stream shows that there is a plume where the final effluent is discharged. There are no reports of complaints with regard to odour or noise emission.

### **Technologies**

The primary discharge at Ferns South Waste Water Treatment Plant is compliant with the design standards and is having no effect on the receiving water. Additionally, there are no complaints or incidents in relation to other discharges to the general environment. Therefore, there is neither a demonstrated need nor plans to reduce or mitigate discharges from the plant.

It is proposed that the Ferns North Waste Water Treatment Plant will be replaced by a Pump Station and the existing secondary discharge outfall will cease to exist.

**Techniques:**

Not Applicable.

**Prevention of Pollution:**

The operation of the Ferns South Waste Water Treatment Plant produces a treated effluent in compliance with the designed performance standards set out for the plant. The discharge is shown to have no polluting effect on the receiving water body. It is the intention of Wexford County Council, to continue to operate and manage Ferns South Waste Water Treatment Plant to at least the current standard of performance.

As previously stated it is proposed that the Ferns North Waste Water Treatment Plant will be replaced by a Pump Station as a result all discharges will cease at this site.

**Toxic Substances:**

Analysis of the samples taken from the receiving waters upstream and downstream of the discharge points, and of the final effluent from the Ferns South and Ferns North Waste Water Treatment Plants shows levels of dangerous substances that are below the limits specified in the Dangerous Substances Regulations. The agglomeration discharges are therefore compliant with the requirements.

### **Measures planned to monitor emissions into the environment:**

Wexford County Council will monitor the final effluent, in accordance with our monitoring regime. This work is undertaken on behalf of Wexford County Council by an independent ILAB accredited laboratory. The contract for this testing is renewed every three years by open procurement. The current contract is with Environmental Services Limited, Acorn Business Campus, Mahon Industrial Park, Blackrock, Co. Cork. The current contract is in its first year of operation and thus the contract will have to be re-tendered under open procurement regulations in January of 2012.

### **Process Description**

#### **Description of Plants**

The existing treatment facilities in Ferns consist of two Waste Water Treatment Plants. Ferns North Waste Water Treatment Plant lies to the north of Ferns village and Ferns South Waste Water Treatment Plant is located to the south-east of Ferns village.

#### **Ferns South Treatment Plant:**

The Ferns South Waste Water Treatment Plants current design capacity is 2,250p.e. The daily Biological design load is estimated to be 120Kg of BOD (60g BOD/p.e./day).

#### **Inlet works**

All influent flows to the plant by gravity. The influent enters the Waste Water Treatment Plant through the inlet channel and is directed via a 5mm

bar screen to the splitter Chamber. Screened gross solids are discharged to a chamber at the rear of the screen and are periodically macerated with the macerated screenings returning to the influent upstream of the screen. The screenings then, either pass the screen or else are further macerated until they pass the screen.

### **Primary Settlement Tanks**

The influent from the splitter chamber is divided via a hydraulic break system which limits forward feed flows to the old stream. In extreme high flow conditions (Storm conditions), excess flows to the old primary settlement tank are diverted to the reed beds via a storm water emergency bypass pipe.

This site was upgraded in 2007 with the installation of a second stream package treatment plant, Rotating Biological Contactor (RBC) and Primary tank.

### **Reed Bed**

From the old primary settlement tank, flow is directed to the head of the first reed bed. The flows pass across the full length of the two reed beds before the final effluent discharges via a 300mm precast concrete pipe to the River Bann. Immediately after the reed bed an automated sampler continuously samples the effluent.

### **RBC/Final Settlement tank**

On the second, (newer) stream, flow from the primary settlement tank is directed to a Rotating Biological Contactor (RBC) and from there is directed to a settlement tank.

### **Sludge Return Pump Station**

Sludge is taken from the bottom of the settlement tank and directed to a sludge pump sump where the return activated sludge is diverted back to the primary settlement tank.

### **Outlet Channel**

From the settlement tank the final effluent combines with the effluent from the old stream and enters flow measurement and sampling channel before being discharged to the River Bann.

### **Ferns North Treatment Plant**

The Ferns North Waste Water Treatment Plant consists of a large Primary tank. All influent to the plant is by gravity and enters the Primary tank via a 225mm vitrified clay pipe. Primary treated effluent is then discharged from the tank to a tributary stream which enters the River Bann. The tributary stream joins the River Bann at the secondary discharge point just upstream of Milltown Bridge (IG 303207E 149478N).

It is proposed that this Waste Water Treatment Plant will be replaced by a Pump Station as part of the 11 Villages Bundle Scheme.

### Summary of Plant effluent Results:

		Chemical Oxygen Demand	Suspended Solids	Total Phosphorous	BOD	Total Oxidised Nitrogen(TON)	Ortho Phosphate	Total Nitrogen	Ammonia	Total Kejdahl Nitrogen
		O2		P	O2	N03-N	P	N	NH3-N	N
Location	Sample Date	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Downstream	14-Apr-09	8	1	0.03	2	4.67	0.01	5.3	0.033	1
Downstream	24-Jun-09	< 8	9	0.026	2	6.18	0.01	6	0.044	< 1
Downstream	11-Aug-09	< 8	< 5	0.01	< 2	4.72	< 0.01	5.14	0.188	< 1
Effluent	19-Jan-09	18	4	4.8	9	225.5	4.37	34	8.29	
Effluent	18-Feb-09	37	21	4	37	3.81	4.92	16.1	12	1
Effluent	26-Mar-09	26	12	3.3	31	11.3	3.38	28.1	17.2	< 1
Effluent	09-Apr-09	53	1	6.2	12	14.3	3.36	29.1	15.5	1
Effluent	13-May-09	50	85		7	28.1	2.77	28.5	0.069	< 1
Effluent	24-Jun-09	49	61	4	9	18.3	3.53	20.3	1.3	< 1
Effluent	15-Jul-09	61	26	4.43	< 4	20.2	4.25	18.9	0.574	< 2
Effluent	11-Aug-09	27	25	4.4	8	20.2	3.39	19.06	0.635	< 2
Inlet	14-Apr-09	1447	5540	17.6	937	1.38	14.6	46.5	39.7	6.8
Inlet	24-Jun-09	1185	826.7	7.4	> 778	0.42	4.62	49	38.9	9.7
Inlet	11-Aug-09	217	317	12.8	449	0.63	9.65	79.52	67.1	11.8
Upstream	14-Apr-09	8	1	0.08	2	4.03	0.01	4.6	0.037	1
Upstream	24-Jun-09	< 8	< 5	0.01	< 2	5.8	< 0.01	6.2	0.067	< 1
Upstream	11-Aug-09	< 8	< 5	0.01	< 2	4.55	< 0.01	5.32	0.036	< 1

### Additional comments/clarification

This application is being made under the Waste Water Discharge (Authorization) Regulations 2007 and is solely for the pre-existing Discharge Points discharging secondary treated effluent and Primary treated effluent.

This application does not propose nor seek approval for any additional civil works (excavation, construction, intrusion works etc) nor modification of the treatment process or site activities, nor expansion of the discharge beyond its current capacity and committed loading.

Therefore, the only potential source of any possible impact on Nature Conservation Sites is solely from the discharges to the aquatic environment. Additionally, the discharges as outlined above, is pre-existing, since the early 1980's and as such pre-dates the site designation and it would be fair to infer that requirements for knowledge of the existence of the development by, and consultation with, all interested parties have been met.

### ***Assessment of Significance***

Assessment under Circular Letter L8/08, Appendix 1

- 1) Is the development in a nature conservation site? **No.**
  
- 2) Is the development in the surface water catchments of a nature conservation site? **Yes.**

The Primary and secondary discharge points, and the receiving water, are all within a Designated Special Area of Conservation (SAC), The Slaney River Valley SAC (Site code 000781) is also a Natural Heritage Area (NHA).

3) Are the qualifying habitats and species of the site water dependant?

**Yes.**

4) Is there a WFD sub-basin plan for the site or its protected habitats/species? **Yes**

Eastern River Basin District (SERBD) Sub Basin Plan - Bann Tri Slaney.  
Additionally a species specific sub basin plan is under Preparation by SERBD for - Fresh Water Pearl Mussel.

5) Conclusion

In line with L8/08 assessment, a full appropriate assessment is required; as such a full appropriate assessment for Ferns and Environs is outlined in stage 2 of this report.

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## Characteristics of Site

### *Details of Slaney Valley and its designation status*

The Slaney Valley Nature Conservation Site status extends from the Wicklow mountains south, to the inner Wexford Harbour, encompassing both fresh water and estuarine waters. Additionally, it is acknowledged as an internationally renowned Salmon Fishery.

### *Special Protected Area*

The Slaney Valley as such is not a designated SPA, from upper tidal zone located down stream of Enniscorthy, there is an SPA designation as part of Wexford Harbour and Slob SPA (Site Code IE00004076), due to the existence of wetlands and its associated wintering bird life.

### *Special Area of Conservation*

Slaney Valley is designated as a Special Area of Conservation (Site Code IE0000697) under the EU Habitats Directive (92/43/EEC) due to the existence of alluvial wetlands, floating river vegetation (Pond Water crowfoot, Broad Leaf Pondweed, Canadian Pondweed), listed under Annex 1 of the Habitats Directive. In addition to the Short-leaved Water-Starwort (a very rare plant found no where else in Ireland), there is the Opposite Leafed Pondweed and both of these are legally protected under the Flora Protection order 1999.

The site supports many mammal species listed in the Irish Red Data Book, including Badger Common Flog, Pine Marten, Irish Hare and Daubenton's Bat.

Additionally, the site supports a number of species from the list in Annex 2 of the EU Habitats Directive, namely Lamprey (Sea, Brook and River), Fresh Water Pearl Mussel and Twaite Shad.

### ***National Heritage Area***

Slaney Valley is designated as an NHA; as yet no detailed site synopsis is available from the NPWS website. Designation is due to large eco-diversity, including the existence of a large variety of Habitats and supported wildlife, at the lower reaches of the NHA the predominance of wetlands, mudflats and the supporting wintering water birds.

### ***European Communities (Quality of Shellfish Waters) Regulations***

Both Wexford Harbour Inner and Outer have been designated Shellfish waters, under SI 55 of 2009 - European Communities (Quality of Shellfish Waters) (Amendment) Regulations 2009.

## Stage 2 Appropriate Assessment

### *Introduction*

Under stage 1 of this report, three sites (Bunclody, Castlebridge and Ferns) were screened in line with Circular L8/08, following screening under L8/08 it was deemed that all 3 required full appropriate assessments, as such the appropriate assessment is outlined below.

As all 3 sites "share" Nature Conservation sites", common "Qualifying Interests" and "Conservation objectives", outlined below, with individual impact predictions (direct and cumulative), and mitigation measures for each site.

### **Qualifying Interests**

The NPWS Slaney Valley SAC Site Synopsis states that *"This site supports populations of several species listed in Annex 11 of the E.U. Habitats Directive, and habitats listed in Annex 1 of this Directive, as well as important numbers of wintering wildfowl including species listed in Annex 1 of the EU Birds Directive. The presence of wet and broad-leaved woodlands increases the overall habitat diversity and the occurrence of Red Data Book plant and animal species adds further importance to the Slaney River Site."*

## ***Habitats:***

The following Habitats occur within the Site, all of which are listed in Annex 1 of the EU Habitats Directive.

- Floating River Vegetation

This habitat is to be found along large sections of fresh water zones of the site. Species of flora present include Common Club Rush (*Scirpus lacustris*), Canadian Pondweed (*Elodea Canadensis*), Water-crowfoot (*Ranaculus*), Pond Water-crowfoot (*Ranaculus peltatus*), Broad-leaved Pondweed (*Potamogeston natans*) Water-starwort (*Callitriche* spp.), Yellow Water -lily (*Nuphar lutea*) and Water Milfoil (*Myriosphyllum* spp.).

Additionally, Opposite-leaved Pondweed (*Groenlandia densea*), which is a protected species under the Flora Protection Act 1999, has been recorded within the site and also present is the small aquatic herb Short-leaved Water-Starwort (*Callitriche truncate*) which has not been recorded anywhere else in Ireland.

- Old Oak Wood lands

Patches of old Oak woodlands are dispersed throughout the site, with a prime example to be found at Tomnafinnoge Wood, which is dominated by mature widely space Sessile Oak (*Quercus petraea*), with examples dating from the 1700's.

- Alluvial wet woodlands

Alluvial wetlands within the site are primarily associated with Macmine marshes located south of Enniscorthy, along the banks of the Slaney River and its tributaries and within reed swamps.

The predominant ground flora of the wetlands include Horse-tail (*Equisetum* spp.), Meadowsweet (*Filipendula ulmaria*), Angelica (*Angelica Sylvestris*) and Yellow Iris, with a top canopy of Grey Willow (*Salix cinerea*) scrub and pockets of wet woodland dominated by Alder (*Alnus glutinosa*).

These woodland areas can be divided into two areas; firstly, one which is quite eutrophic, which is tidal influenced and dominated by Willow. Secondly, areas which are dominated by Alder and Ash fed by springs and are subject to water lodging, but not to flooding.

- Tidal Mudflats

Expanses of tidal mudflats are to be found south of Macmine, in addition to interspersed sand flats and single shore, which are often fringed with salt marsh and brackish vegetation.

Upslope vegetation includes Saltmarsh Rush (*Juncus gerardi*), Cord-grass (*Spartina townsendii*), Sea Aster (*Aster tripolium*) and Common Salt marsh grass (*Puccinellia maritima*).

Additionally, in Wexford Harbour and the lower reaches of the Sow River, at low tides, extensive expanses of mudflats and sandflats are exposed due to the shallow nature of the estuary.

The species Water mint (*Mentha aquatica*), Soft Rush (*Juncus effusus*), Yellow Iris (*Iris pseudacris*) and Purple Loosestrife (*Lythrum salicaria*) are to be found in species rich, extensive marshes, located west of Castlebridge in

the tidal areas of the Sow River, the predominant species area sedge varieties.

## ***Fauna***

There a number of species listed under Annex 11 of the Habitats Directive found within the site, namely

- Lamprey species

The site contains 3 species of Lamprey: Brook Lamprey (*Lampetra planeri*), Sea Lamprey (*Petromyzon marinus*) and River Lamprey (*Lampetra salar*).

- Twait Shad (*Alosa fellas fallax*)

Twait Shad are to be found in the tidal stretches of the site.

- Otter (*Lutra lutra*)

To be found throughout the site, where favourable habitats are located.

- Salmon (*Salmo salar*)

NPWS site Synopsis - Slaney Valley - Site Code 000781 - states that "*The Slaney Rive is primarily a spring salmon fishery and is regarded as one of the top rivers in Ireland for early spring fishing. The upper Slaney and tributary headwaters are very important for spawning*".

- Freshwater Pearl Mussel (*Margaritifera margaritifera*)

While The Slaney Valley is designated for the Freshwater Pearl mussel its distribution is limited to the area of the Dereen River (tributary of the River Slaney), stretching north east of Tullow, Co. Carlow to south east of Balltinglass, Co. Wicklow.

- Red Data Book Species

In addition to list Annex 1 species above a number of Irish Red Data Book species namely Pine Martin, Irish Hare, Badger, Daubenton's Bat and Common Frog (*Rana temporaria*).

## ***Wildfowl***

The area of the Slaney Valley SAC, from tidal zone south of Enniscorthy to outer Wexford Harbour encompassing the north and south slobbs are additionally classified as Special Protected Area (SPA)

The NPWS Site Synopsis Wexford Harbour and Slobbs - site code 004076 states that " *This site is a Special Protected Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Little Grebe, Great Crested Grebe, Cormorant, Bewick's Swan, Whopper Swan, Grenland White fronted Goose, Light Bellied Brent Goose, Shelduck, Wigeon, Teal, Mallard, Pintail, Scaup, Goldeneye, Red-breasted Meganser, Hen Harrier, Coot, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Knot, Sanderling, Dunlin, Blacktailed Godwit, Bar Tailed Godwit, urlew, Redshank, Black-header Gull, and little Tern. This site is also of special conservation interest for holding an assemblage of over 20,000 wintering water birds. The EU Bird Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated water birds are of special conservation for wet lands and water birds.*"

In addition to list Bird's Directive Annex 1 species listed above, the site is also host to in excess of 20 species whose numbers are of national importance.

## ***Site Conservation Objects***

Unfortunately NPWS as yet have not completed and issued a Conservation Management Plan for Slaney River Valley.

However, this report envisages that the possible conservation objects of this site can be summarised as follows:

1. Maintain the range of habitats within the Site.
2. Prevent loss of surface area of habitats within the site.
3. Prevent any reduction in floral and faunal species arising from human activity.
4. Ensure no reduction in area or distribution of habitats.
5. Ensure that individual operations or activities, combined with other operations or activities, do not cause a change in typical species composition in more than 25% of the area occupied by each of the principle community types.
6. Ensure that the water quality in the site is of sufficient quality to maintain the integrity of the principle aquatic community type and ensure a sufficiently large habitat of suitable quality is available to support the long term survival of the species associated with the habitat.

As this report is solely for discharges from the agglomerations, the only potential conflict with the above assumed conservation objects is the possible effects of discharge on the aquatic environment and its dependant qualifying habitats and their supported Floral and Faunal species.

## **Bunclody and Environs**

### ***Impact prediction***

#### **Background data**

#### **Receiving Waters Quality**

Discharge from current Bunclody WWTP discharges to River Slaney south of Bunclody Bridge:

The EPA reports "River Water Quality in Wexford" for 2007 and 2008 for station No 1800 Bunclody Bridge located upstream of the current discharge cites a Q value of 4, while station No 2000 - 1km downstream of Clohamon, cites a Q value of 3-4 (station 2000 is also downstream of both Bunclody WWTP discharge and the discharge from Slaney Foods International). The biological Q value rating returns to 4 at station 2200 located at Scarawalsh Bridge.

The South East River Basin District (SERBD) sub basin plan for the Slaney assesses overall status as Moderate, with an objective of "Restore" and an overall risk assessment of "1a at risk". They also assess overall ecological status as "moderate".

#### **Measured impacts on receiving water quality from Bunclody WWTP**

As outlined above in stage 1 of this report, while there is no measured increase in BOD and suspended solids levels resulting from discharge, there is a moderate increase in nutrient levels (Phosphate, organic and inorganic nitrogen levels).

## Direct Impacts

### Protected habitats

- Old Oak woodlands

As these are terrestrial habitats and as such are not impacted by the aquatic environment and therefore there is no potential for impact at all by the discharge from the Bunclody Agglomeration to this habitat or its supported species.

- Floating River Vegetation

This is a fresh water Habitat and as such can be impacted on if there was a substantial increase in nutrient levels within receiving water, as the measured increase is only moderate, the potential for impact on this habitat is minimal.

- Alluvial wet woodlands

While those sections of this habitat type, which are subject to tidal influence could possibly be impacted on due to a very substantial increase in nutrient levels, to such a degree as impact on growth rates and substrate condition, there is only a moderate increase in parameter levels in the region of the discharge and as the discharge is in excess of 15km upstream of the tidal region of the site, it would be reasonable to state that there is no potential for impact on this habitat.

- Tidal Mudflats

These are aquatic habitats and as such could be potentially impacted on by water quality of the aquatic environment, if there was a substantial increase in nutrient levels. There is only a moderate increase in parameter levels in the region of the discharge and as the discharge is in excess of 15km upstream of the tidal region of the site, there is no potential for impact on this habitat.

## Protected Fauna

- Lamprey species (Brook, Sea and River)

These species could be impacted on if there was a noticeable impact in water quality resulting from the discharge from the Bunclody Agglomeration. However, as there is only moderate impact on water quality and no impact on suspended solids (impacting on gravel beds habitats/gill) level, there is very limited potential for impact on this species.

- Salmon (*Salmo salar*)

There is a very low probability of any impact on this species from the Bunclody Agglomeration Discharge as there is only a minor reduction in water quality measured in the region of the discharge and no impact on spawning grounds resulting from suspended solids increase.

- Twait Shad (*Alosa fellas fallax*)

Twait Shad enters the estuary in late May and early June to migrate to spawning grounds located in the upper tidal region of site. However, the discharge is located in the freshwater section of the site in excess of 15km

upstream of the tidal region and as there is only a moderate reduction in water quality predicted in the region of the discharge, it would be fair to state there is no predicted impact on this species arising from the Bunclody agglomeration discharges.

- Fresh Pearl mussel (*Margaritifera margaritifera*)

As this species is a fresh water species and its distribution is limited to a section of the Derren River in excess of 15Km upstream of the discharge point to the River Slaney, there is no potential for impact from Bunclody Agglomeration discharge to the species.

- Otter (*Lutra lutra*)

The potential impact on the Otter species from the Bunclody agglomeration is a possible major reduction in food supply i.e. if prey species were to be greatly reduced as a result of substantial reduction in general water quality.

As there is only a moderate reduction in nutrient levels and no measured increase in BOD water quality in the region of the outfall, the predicted potential for an impact on this species is very minimal.

- Irish Red Book Species

Irish Hare (*Lepus timidus hibernicus*), Badger (*Meles meles*) and Daubenton's Bat (*Myotis meles*).

As these species are terrestrial, there is no potential for impact from Bunclody agglomeration discharges.

Additionally the species Frog (*Rana temporaria*) is a fresh water species and could be impacted on as a result of substantial reduction in water quality, however, the measured reduction in the region of the discharge is only

moderate with no reduction in BOD quality, there is minimal potential for impact on this species.

## **Wildfowl**

The only potential for impact from the Bunclody discharges on the site wildfowl species is a substantial reduction in water quality to such a degree as to reduce/impair supporting habitats (wet woodlands) and/or food stocks. As there is no substantial impact on water quality within the site predicted and as the regions of interest with regard to wildfowl are confined to the SPA designated area, some 15km downstream of the discharges, there is no potential for impact on the wildfowl population resulting from Bunclody agglomeration discharges.

## ***Cumulative Impacts***

The NPWS Site synopsis states that *"Waste water outflows, runoff from intensive agricultural enterprises, a meat factory at Clohamon and a landfill site adjacent to the river and further industrial developments upstream in Enniscorthy. And other towns could all have potential for adverse impacts on water quality unless they are carefully managed. The spreading of exotic species is reducing the quality of the woodlands."*

Additionally, the EPA report "River Water Quality in County Wexford" 2008 states under the River Slaney Assessment" (please note report only covers fresh water sections of the River).

*"Nitrate levels are moderately elevated in the low reaches. There is a moderate loss of quality d/s at Tullow and Clohamon at times. Other wise water quality in the River Slaney was reasonably satisfactory in 2008".*

### **Overall ecological status**

The overall biological quality of the river Slaney is moderate, as can be seen by the EPA Q value rating along the freshwater sections of the Slaney River, which are predominately Q4, with a 3-4 Q rating recorded at Clohamon. Water Quality is influenced by point sources and defused source discharges directly to the Slaney and its main tributaries (River Derreen - Co Carlow, Rivers Bann, Urrin and Boro - Co Wexford) which primarily have moderate biological quality (EPA - Q Ratings 4). The South East River Basin District Sub Basin Plan for River Slaney (Water body Slaney - Freshwater section) assesses overall ecological status as "Moderate" and under risk assessment classified the Slaney overall as "1a at Risk" from WWTP and Section 4 point source discharges and overall as "2b at risk" from point source discharges. Additionally, the SERBD in the upper estuary sub basin plan for the Upper Slaney Estuary (section into which Bree agglomeration ultimately discharges) classes the ecological status as "moderate", however, under risk assessment, while overall risk is assessed as "1a at risk", point source discharges (WWTPs/CSOs) are classed as "2b not at risk".

### **Point source discharges**

#### **Waste water treatment plants**

The River flows through 5 major conurbations, namely Balltinglass (Co Wicklow), Tullow (Co Carlow), Bunclody, Enniscorthy and Wexford Town

(County Wexford), all of which discharge from WWTPs to the Slaney. Additionally, in county Wexford alone, some 30 additional WWTPs discharge either to tributaries of the River Slaney or directly or indirectly to the estuarine section of the Slaney Valley designated site. Of these, the site of particular impact is the Bunclody agglomeration (estimated P.E. 2,500), which currently discharges primary treated waste water to the Slaney River (new plant currently under construction - expected to be operational by Q3 2010). Additionally, a number of other agglomerations within the Slaney catchment have plans in progress for either the provision or improvement of treatment standards, subject to funding, notably, Ferns and Camolin Agglomerations on the River Bann and Enniscorthy WWTP on the River Slaney.

These current and proposed works will reduce any impacts arising from WWTPs discharges and reduce any cumulative effects.

Additionally, the implementation of the Discharge (Authorisation) Regulations, 2007 (S.I. No 684 of 2007) and River Basin Districts Sub Basin Plans nationally will focus efforts on maximising operation of current facilities and further enable a strategic approach to investment in water treatment infrastructure further reducing cumulative effects arising from WWTPs.

## **Landfill**

The Land fill site cited in the NPWS site synopsis, has ceased operation for the past 2 years, and is currently being capped. Additionally, it has a leachate collection and handling system in place, thus its impact on the water quality of the site has been greatly reduced.

## **Industrial activities**

The following industrial facilities for Counties Carlow and Wexford have been granted IPPC discharge licences, as detailed on the EPA website.

### Kepak - P0166-01

This facility operates a slaughter house and meat processing facility, at Hacketstown, which discharges treated waste water to the River Dereen a tributary of the River Slaney.

### Richard Keenan and Company Ltd - P0555-01

This is an engineering facility and has no process discharges to surface waters.

### Murray Timber (Ballon) Ltd - P0556-01

This facility is a saw mill and has no process discharge to surface waters.

### Slaney Foods International Limited and Slaney Proteins

This facility operates a slaughter house and meat processing facility at Ryland Rd, Clohamon, Co Wexford, which discharges treated Waste Water directly to the River Slaney at Clohamon.

### Carl Zeiss Vision Ireland LTD - P0062-02

This facility which produces vision care products is located at White Mill Ind Est, Clonard, Co. Wexford, and discharges to Wexford WWTP via the LA sewer network.

Irish Country Meats (Sheepmeat) Ltd - P0177-01

This facility, at Camolin, County Wexford, operates a sheep slaughtering and meat processing operation. Waste Water is treated on site prior to discharge to the River Bann a tributary of the River Slaney.

Kent Manufacturing Wexford Ltd - P0373-01

This facility, at Ardavan Wexford, operates a boiler making and stainless steel fabrication works; there are no process discharges to receiving waters.

Rennard Pig Farms Ltd - P0453-02

This facility, at The Deeps/Cornwall, Crossbeg, Co. Wexford, operates a pig rearing and fattening operation, there are no discharges to surface waters.

Hogg Enterprises Ltd - P0622-01

This facility, at Clohamon Mills, Bunclody, County Wexford, operates an intensive pig farm, there are no stated discharges to surface waters.

Wexford Creamery Ltd - P0794-01

This facility, at Rocklands, Wexford, operates a milk processing plant, Waste Water generated within the site is treated prior to discharge at a plant jointly operated between Wexford Creamery Ltd and a joining company, prior to discharge to Wexford Harbour - Please note this WWTP does form part of IPPC - P0794-01.

### Green Bio Fuels Ireland Ltd

This facility, at Marsh Meadows, New Ross, operates a bio fuels process, all waste water discharge are to be to New Ross WWTP via the LA sewer, with ultimate discharge to the River Barrow. (Pending completion of New Ross WWTP - mid Q4 2009, an interim alternative is in place to Store and transport to Wexford WWTP for Treatment).

As these facilities are licensed, and provided the above relevant facilities comply with the conditions of their licences, there should be no cumulative effect on the conservation objectives of the Slaney Valley SAC, or its qualifying interests.

As there is moderate reduction in nutrient levels and no reduction in BOD levels in the region of discharges, there is minimal impact on the Slaney Valley SAC water quality resulting from the Bunclody Agglomeration, it is considered that the Bunclody agglomeration discharge is not having a cumulative impact on the Slaney Valley nature Conservation Site or its qualifying interests.

### ***Mitigation Measures***

While there is no measured direct or cumulative impacts on the nature conservation site, arising from Bunclody Agglomeration discharge, there are currently a number of mitigation measures in place.

- The initial direct mitigation measure currently in place by Wexford County Council is to limit any further connections to the existing Bunclody WWTP, to insure no decline in the current position.
- There are no technical options to improve performance of the existing infrastructure.
- The Bunclody collection system is currently being upgraded and a new Waste Water treatment plant is under construction. This new plant will replace the current plant and will provide appropriate treatment with nutrient reduction. The new plant is expected to enter commissioning phase by the end of May 2010. The project is being funded by National Government and Wexford County Council, using the DBO method of procurement, with Response Engineering being the lead contractor and plant operator. The commissioning of this plant will greatly reduce discharge loading (both organic and nutrient) into the aquatic environment.
- Additional mitigation measures with regards to cumulative effects have been outlined above.

The above mitigation measures which are either in place and/or underway will have the predicted following implications for the qualifying interests and site conservation objects:

- Old Oak woodlands

These are terrestrial habitats and are not impacted at all by the discharge from the Bunclody Agglomeration and as such no mitigation measures are required.

- Floating River Vegetation

The potential for impact on this habitat is minimal, the above mitigation will address any potential impacts and as such no additional measures are required.

- Alluvial wet woodlands

There is no potential for impact on this habitat, the above mitigation measures will insure same and as such no additional mitigation measures are required.

- Tidal Mudflats

While no potential for impact on this habitat is predicted, the above mitigation measures will insure same and no additional mitigation measures are required.

## Protected Fauna

- Lamprey species (Brook, Sea and River),

It is predicted that there is very limited potential for impact on this species and as there is a species specific sub basin plan, the above mitigation will only reinforce this and it is considered that there is no need for additional mitigation measures at this stage.

- Salmon (*Salmo salar*)

There is a very low probability of any impact on this species from the Bunclody Agglomeration Discharge, and the above mitigation will only

reinforce this and it is considered that there is no need for additional mitigation measures at this stage.

- Twaité Shad (*Alosa fellas fallax*)

As the predicted impact on this species arising from Bunclody agglomeration discharges is considered to be none, no additional mitigation measures from those outlined above are considered necessary.

- Freshwater Pearl mussel (*Margaritifera margaritifera*)

As this species distribution is limited to a section of the Derren River in excess of 15Km upstream of the discharge point to the River Slaney, no additional mitigation measures outside of those outlined above, are considered necessary.

- Otter (*Lutra lutra*)

The predicted potential for an impact on this species is very minimal, as the above mitigation measures will result in improved water quality, no additional mitigation measures apart from those outlined above are considered necessary.

- Irish Red Book Species

Irish Hare (*Lepus timidus hibernicus*), Badger (*Meles meles*) and Daubenton's Bat (*Myotis meles*).

As these species are terrestrial, there is no potential for impact from the Bunclody agglomeration discharges and thus no additional mitigation measures are deemed to be necessary.

## Wildfowl

As there is no predicted potential for impact on the wildfowl population resulting from the Bunclody agglomeration discharges, no additional mitigation measures outside of those outlined above are considered necessary.

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## Castlebridge and Environs

### *Impact prediction*

#### Background data

#### Receiving Waters Quality

Effluent from Castlebridge discharges are to tidal zones of the Sow River, as such there is no routine monitoring is conducted, as part of EPA Wexford River Monitoring in area of discharges.

However, the EPA 2004 report "Water Quality In the Estuary and Wexford Harbour" outlines in its summary of main findings (p37-p38) that "Water Quality was satisfactory at most locations throughout the Estuary, and Harbour", except for a number of problems. These problems primarily relate to nutrient levels in the Harbour, with P being cited as the limiting factor and poor water quality in the region of the southern shore of the harbour in the area of Maudlinstown. There are no cited issues within the area relating to the Sow estuary or confluence of the Sow estuary within the inner Wexford Harbour.

#### **Predicted impacts on receiving water quality from Castlebridge discharges**

The table below outlines the estimated daily discharge loading and predicted increase in parameters levels in the region of the discharge from Castlebridge WWTP, using measured average effluent results and average

daily discharge volume of 311.7 cubic meters plus the estimated 95%ile flows of 0.3291 cubic meters/sec in the receiving water (SERBD).

As the measured discharge rate from plant at Noonan's development is only 32 cubic metres/day and the level of treatment is high, its contribution is deemed to be negligible.

	BOD	COD	TSS	Total P	Ortho P	Total N	NH3-N	TON	TKN
Effluent average Conc mg/l	16.3	48.5	18.9	4.8	2.9	19.5	9.7	6.1	6.3
Daily discharge loading (Kg)	5.08	15.12	5.89	1.50	0.90	6.08	3.02	1.90	1.96
Predicted Parameter increase @95%il flow mg/l	0.18	0.53	0.21	0.05	0.03	0.21	0.11	0.07	0.07

As can be seen from the table above there is only a very slight increase in Parameter levels predicted.

### Direct Impacts

### Protected habitats

- Old Oak woodlands

As these are terrestrial habitats and as such are not are not impacted by the aquatic environment, therefore, there is no potential for impacts at all by the discharge from the Bunclody Agglomeration to neither this habitat nor its supported species.

- Floating River Vegetation

This is a fresh water Habitat and as such can be impacted on if there is a substantial increase in nutrient levels within the receiving water, as the measured increase is only moderate, and the discharge occurs in the tidal influence region of site, the potential for impact on this habitat is minimal.

- Alluvial wet woodlands

Those sections of this habitat type that are subject to tidal influence could possibly be impacted on due to a very substantial increase in nutrient levels, to such a degree as to impact on growth rates and substrate conditions. However, there is only a moderate increase in parameter levels in the region of the discharge, therefore, it would be reasonable to state that there is no potential for impact on this habitat.

- Tidal Mudflats

These are aquatic habitats and as such could potentially be impacted on by the water quality of the aquatic environment, if there was a substantial increase in nutrient levels. There is only a very moderate increase in parameter levels in the region of the discharge; there is no potential for impact on this habitat.

## Protected Fauna

- Lamprey species (Brook, Sea and River),

These species could be impacted on if there was a noticeable impact in water quality resulting from the discharge, however, as there is only a moderate impact on the water quality and no impact on suspended solids (impacting on gravel beds habitats/gill) level, there is very limited potential for any impact on this species.

- Salmon (*Salmo salar*)

There is a very low probability of any impact on this species from the discharge as there is only a minor reduction in the water quality measured in the region of the discharge. Additionally, as spawning grounds are located in the upper regions of the river, there is no potential for impact on these areas.

- Twait Shad (*Alosa fallax*)

Twait Shad enter the estuary in late May and early June, to migrate to spawning grounds located in the upper tidal region of site, however, as there is only very moderate reduction in the water quality predicted in the region of the discharge, it would be fair to state there is minimal potential for impact on this species arising from the Castlebridge agglomeration discharges.

- Fresh Pearl mussel (*Margaritifera margaritifera*)

As this species is a fresh water species, and its distribution is limited to a section of the Derren River in excess of 30Km upstream of the discharge

point on the River Sow, there is no potential for any impact from the Castlebridge Agglomeration discharge to this species.

- Otter (*Lutra lutra*)

The potential impact on the Otter species from the Castlebridge agglomeration is a possible major reduction in food supply, i.e. if prey species were to be greatly reduced as a result of substantial reduction in general water quality.

As there is only a moderate reduction in nutrient levels in the region of the outfall, the predicted potential for an impact on this species is very minimal.

- Irish Red Book species

Irish Hare (*Lepus timidus hibernicus*), Badger (*Meles meles*) and Daubenton's Bat (*Myotis meles*)

As these species are terrestrial, there is no potential for any impact from the Castlebridge agglomeration discharges.

Additionally, the species Frog (*Rana temporaria*) is a fresh water species and could be impacted on as a result of substantial reduction in water quality; however, as the predicted reduction of water quality in the region of the discharge is only moderate, there is minimal potential for impact on this species.

## Wildfowl

The only potential for impact from the Castlebridge discharge on the site wildfowl species is a substantial reduction in water quality to such a degree as to reduce/impair supporting habitats (wet woodlands) and/or food stocks. As there is no substantial impact on water quality within the site predicted, there is very minimal potential for impact on the wildfowl population resulting from Castlebridge agglomeration discharges.

### *Cumulative Impacts*

The NPWS Site synopsis states:

*"Waste water outflows, runoff from intensive agricultural enterprises, a meat factory at Clohamon and a landfill site adjacent to the river and further industrial developments upstream in Enniscorthy and other towns could all have potential for adverse impacts on water quality unless they are carefully managed. The spreading of exotic species is reducing the quality of the woodlands. "*

Additionally, the EPA report "River Water Quality in County Wexford" 2008 states under River Slaney Assessment (please note report only covers fresh water section of River):

*"Nitrate levels are moderately elevated in the lower reaches. There is a moderate loss of quality d/s of Tullow and Clohamon at times. Otherwise water quality in the River Slaney was reasonably satisfactory in 2008"*

## **Overall ecological status**

The overall biological quality of the river Slaney is moderate, as can be seen by the EPA Q value ratings along the freshwater section of Slaney River, which are predominately Q4, with a 3-4 Q rating recorded at Clohamon. Water Quality is influenced by point source and defused source discharges directly to the Slaney and its main tributaries (River Derreen - Co Carlow, Rivers Bann, Urrin and Boro - Co Wexford) which primarily have moderate biological quality (EPA - Q Ratings 4). The South East River Basin District Sub Basin Plan for River Slaney (Water body Slaney - Freshwater section) assesses overall ecological status as "Moderate" and under risk assessment classified Slaney overall as "1a at Risk" from WWTPs and Section 4 point source discharges and overall as "2b at risk" from point source discharges. Additionally, the SERBD in the upper estuary sub basin plan for Upper Slaney Estuary (section into which Bree agglomeration ultimately discharges) classes the ecological status as "moderate", however, under risk assessment, while overall risk is assessed as "1a at risk", point source discharges, WWTPs/CSOs, are classed as "2b not at risk".

## **Point source discharges**

### **Waste water treatment plants**

The River Slaney flows through 5 major conurbations, namely Balltinglass (Co Wicklow), Tullow (Co Carlow) Bunclody, Enniscorthy, and Wexford Town (County Wexford), all of which discharge from WWTPs to the Slaney, additionally, in county Wexford alone, some 30 additional WWTPs discharge either to tributaries of the River Slaney or directly or indirectly to the

estuarine section of the Slaney Valley designated site. Of these, the site of particular impact is the Bunclody agglomeration (estimated p.e. 2,500), which currently discharges primary treated waste water to the Slaney River (new plant currently under construction.- expected operational date Q3 2010). Additionally, a number of other agglomerations within the Slaney catchment have plans in progress for either the provision or improvement of treatment standards, subject to funding, notably, Ferns and Camolin Agglomerations, on the River Bann and Enniscorthy WWTP on the River Slaney.

These current and proposed works will reduce any impacts arising from WWTP discharges and reduce any cumulative effects.

Additionally, the implementation of the Discharge (Authorisation) Regulations, 2007 (S.I. No 684 of 2007) and River Basin Districts Sub Basin Plans nationally will focus efforts on maximising operation of current facilities and further enable a strategic approach to investment in water treatment infrastructure further reducing cumulative effects arising from WWTPs.

### **Landfill**

The Land fill site cited in NPWS site synopsis has ceased operation for the past 2 years and is currently being capped. Additionally, it has leachate collection and handling systems in place, thus its impact on the water quality of the site has been greatly reduced.

### **Industrial activities**

The following industrial facilities for Counties Carlow and Wexford have been granted IPPC discharge licences, as detailed on the EPA website.

Kepak - P0166-01

This facility operates a slaughter house and meat processing facility, at Hacketstown, which discharges treated waste water to The River Dereen, a tributary of the River Slaney.

Richard Keenan and Company Ltd - P0555-01

This is an engineering facility and has no process discharges to surface waters.

Murray Timber (Ballon) Ltd - P0556-01

This facility is saw mill and has no process discharge to surface waters.

Slaney Foods International Limited and Slaney Proteins

This facility operates a slaughter house and meat processing facility at Ryland Rd, Clohamon, Co Wexford, which discharges treated Waste Water directly to the River Slaney at Clohamon.

Carl Zeiss Vision Ireland LTD - P0062-02

This facility which produces vision care products is located at White Mill Ind Est, Clonard, Wexford, and discharges to Wexford WWTP via the LA sewer network.

Irish Country Meats (Sheepmeat) Ltd - P0177-01

This facility, at Camolin, Co. Wexford, operates a sheep slaughtering and meat processing operation. Waste Water is treated on site prior to discharge to the River Bann, a tributary of the River Slaney.

Kent Manufacturing Wexford Ltd - P0373-01

This facility at Ardavan, Wexford, operates a boiler making and stainless steel fabrication works; there are no process discharges to receiving waters.

Rennard Pig Farms Ltd - P0453-02

This facility, at The Deeps/Cornwall, Crossabeg, Co. Wexford, operates a pig rearing and fattening operation, there are no discharges to surface waters.

Hogg Enterprises Ltd - P0622-01

This facility, at Clohamon Mills, Bunclody, County Wexford, operates an intensive pig farm, there are no stated discharges to surface waters.

Wexford Creamery Ltd - P0794-01

This facility, at Rocklands, Wexford, operates a milk process plant, Waste Water generated within site is treated, prior to discharge, at a plant jointly operated between Wexford Creamery Ltd and a joining company prior to discharge to Wexford Harbour - Please note this WWTP forms part of IPPC - P0794-01.

Green Bio Fuels Ireland Ltd

This facility, at Marsh Meadows, New Ross, operates a bio fuels process, all waste water discharges are to be to the new New Ross WWTP via the LA sewer, with ultimate discharge to the River Barrow (pending completion of New Ross WWTP - mid Q4 2009), an interim alternative is in place to Store effluent and transport to Wexford WWTP for Treatment.

As these facilities are licensed and provided the above relevant facilities comply with the conditions of their licences, there should be no cumulative effect on the conservation objectives of the Slaney Valley SAC, or its qualifying interests.

As there is very moderate reduction in nutrient levels and no reduction in BOD levels in the region of the discharge, there is minimal impact on the Slaney Valley SAC water quality resulting from Castlebridge Agglomeration, it is considered that Castlebridge agglomeration discharge is not having a cumulative impact on Slaney Valley nature Conservation Site or its qualifying interests.

### ***Mitigation Measures***

While there is no measured either direct or cumulative impact on the nature conservation site, arising from Castlebridge Agglomeration discharge, there are currently a number of mitigation measures in place:

- The initial direct mitigation measure currently in place by Wexford County Council is to limit any further connections to Castlebridge WWTP, to insure no decline in the current position.
- There are no technical options to improve performance of the existing infrastructure.
- The ultimate proposed mitigation measure is to connect the Castlebridge agglomeration to the Wexford Town Agglomeration, this

will allow excess lading within the agglomeration to be removed and treated in Wexford. This project is subject to both national and local funding, given the current financial situation and current ongoing reviews it is not possible at this stage to give funding and time scale details.

- Additional mitigation measures with regards to cumulative effects have been outlined above.

The above mitigation measures are inline with the assumed conservation objectives of the Slaney Valley Nature Conservation site.

The mitigation measures will have the following predicted effects on the site qualifying interests:

### **Direct Impacts**

#### **Protected habitats**

- Old Oak woodlands

These are terrestrial habitats and as such no mitigation measures are required.

- Floating River Vegetation

As the potential for impact on this habitat is minimal, no additional mitigation measures above those outlined above is considered necessary.

- Alluvial wet woodlands

As the assessment is for no potential for impact on this habitat, no additional mitigation measures apart from those outlined above is considered necessary.

- Tidal Mudflats

As there is no potential for impact on this habitat, no additional mitigation measures apart from those outlined above is considered necessary.

- Lamprey species (Brook, Sea and River)

As the predicted potential for any impact on this species is very limited, it is considered that no mitigation measures apart from those outlined above is required.

- Salmon (*Salmo salar*)

As there is a very low probability of any impact on this species from the discharge, it is considered that no mitigation measures apart from these outlined above is required.

- Twait Shad (*Alosa fallax*)

It would be fair to state that there is minimal potential for an impact on this species arising from the Castlebridge agglomeration discharges; therefore, it is considered that no additional mitigation measures are required apart from those outlined above.

- Fresh Pearl mussel (*Margaritisfera margaritisfera*)

As it is predicted that there is no potential for impact from Castlebridge Agglomeration discharge to the species and a species specific sub basin plan is about to be put in place, it is considered that no additional mitigation measures are required.

- Otter (*Lutra lutra*)

The predicted potential for an impact on this species is very minimal and as such it is not considered that no additional mitigation measures are required apart from those already in place.

- Irish Red Book species -

Irish Hare (*Lepus timidus hibernicus*), Badger (*Meles meles*) and Daubenton's Bat (*Myotis meles*)

As these species are terrestrial, there is no potential for impact from the Castlebridge agglomeration discharges and as such no mitigation measures are required.

There is minimal potential for impact on the species Frog (*Rena temporaria*); as such no additional mitigation measures are considered necessary apart from those outlined above.

## **Wildfowl**

As there is no predicted potential for impact on the wildfowl population, no additional mitigation measures outside of those outlined above are considered necessary.

## Ferns and Environs

### *Impact prediction*

#### Back ground data

#### Receiving Waters Quality

Effluent from the Ferns agglomeration WWTP discharges to the River Bann. The EPA reports "River Water Quality in Wexford" for 2008 for station No. 12B010800 (Milltown Bridge), located upstream of the Ferns discharges cites a Q value of 3 to 4, while station No. 12B010900 - 1km downstream of the Ferns discharges cites a Q value of 4. (A meat processing plant is located upstream of station No. 12B010800 (Milltown Bridge)).

The report additionally states under assessment:

*"There was a slight loss of quality w/s of Camolin in 2008 and nitrates are elevated. Otherwise quality is satisfactory"*

The South East River Basin District (SERBD) sub basin plan for the River Bann, tributary of the Slaney, assesses overall status as "Moderate", with an objective of "Restore" and an overall risk assessment of "1a at risk". They also assess overall ecological status as moderate.

#### **Measured impacts on receiving water quality from Ferns discharges**

Based on results from the EPA monitoring reports for stations upstream and downstream of discharges show a very slight increase in nutrients levels, however, the Biological Q value improves from 3-4 to 4.

## Direct Impacts

### Protected habitats

- Old Oak woodlands

These are terrestrial habitats and as such are not impacted by the aquatic environment and therefore there is no potential for impacts at all by the discharge from the Ferns Agglomeration to either this habitat or its supported species.

- Floating River Vegetation

This is a fresh water Habitat and as such could be impacted on if there was a substantial increase in nutrient levels within the receiving water, as the measured increase is only very moderate the potential for impact on this habitat is very minimal.

- Alluvial wet woodlands

While the sections of this habitat type that are subject to tidal influence could possibly be impacted on due to a very substantial increase in nutrient levels, to such a degree as to impact on growth rates and substrate condition, there is only a very moderate increase in parameter levels in the region of the discharge and as the discharge is in excess of 15km upstream of the tidal region of the site, it would be reasonable to state that there is no potential for impact on this habitat.

- Tidal Mudflats

These are aquatic habitats and as such could be potentially impacted on by water quality of the aquatic environment, if there was a substantial increase in nutrient levels. There is only a very moderate increase in parameter levels in the region of the discharge and as the discharge is in excess of 15km upstream of the tidal region of the site, there is no potential for impact on this habitat.

### **Protected Fauna**

- Lamprey species (Brook, Sea and River)

These species could be impacted on if there was a noticeable impact in water quality resulting from the discharge from Ferns Agglomeration, however, as there is only moderate impact on water quality and the biological quality improves downstream of the discharge, there is very limited potential for impact on this species.

- Salmon (*Salmo salar*)

There is a very low probability of any impact on this species from the Ferns Agglomeration Discharge as there is only a minor reduction in water quality measured in the region of discharge and no impact on the spawning grounds resulting from the suspended solids increase.

- Twait Shad (*Alosa fellas fallax*)

Twait Shad enter the estuary in late May and early June to migrate to spawning grounds located in the upper tidal region of the site, however, the discharge is located in the freshwater section of the site in excess of 15km upstream of the tidal region and as there is only a very moderate reduction

in water quality measured in the region of the discharge, it would be fair to state there is no predicted impact on this species arising from the Ferns agglomeration discharges.

- Fresh Pearl mussel (*Margaritisfera margaritisfera*)

As this species is a fresh water species, and its distribution is limited to a section of the Derren River and as the discharge is to River Bann some 20km upstream of the confluence of the Rivers Bann and Slaney, it is fair to state that there is no potential for any impact from the Ferns Agglomeration discharge to this species.

- Otter (*Lutra lutra*)

The potential impact on the Otter species from the Ferns agglomeration is a possible major reduction in food supply, i.e. if prey species were to be greatly reduced as a result of substantial reduction in general water quality. As there is only a very moderate reduction in nutrient levels and measured increase in Q values downstream of the discharges, the predicted potential for an impact on this species is very minimal.

- Irish Red Book species -

Irish Hare (*Lepus timidus hibernicus*), Badger (*Meles meles*) and Daubenton's Bat (*Myotis meles*)

As these species are terrestrial, there is no potential for impact from the Ferns agglomeration discharges

Additionally, the species Frog (*Rena temporaria*) is a fresh water species and could be impacted on as a result of a substantial reduction in water quality, however, the measured reduction in the region of the discharge is only moderate with no increase in biological quality, there is minimal potential for impact on this species.

## **Wildfowl**

The only potential for impact from the Ferns discharges on the site wildfowl species is a substantial reduction in water quality to such a degree as to reduce/impair supporting habitats (wet woodlands) and/or food stocks. As there is no substantial impact on water quality within the site predicted and as the regions of interest with regard to wildfowl are confined to the SPA designated area some 20km downstream of the discharge, there is no potential for impact on the wildfowl population resulting from the Ferns agglomeration discharges.

## ***Cumulative Impacts***

The NPWS Site synopsis states

*"Waste water outflows, runoff from intensive agricultural enterprises, a meat factory at Clohamon and a landfill site adjacent to the river and further industrial developments upstream in Enniscorthy and other towns could all have potential for adverse impacts on water quality unless they are*

*carefully managed. The spreading of exotic species is reducing the quality of the woodlands. "*

Additionally, the EPA report "River Water Quality in County Wexford" 2008 states under the River Slaney Assessment (please note report only covers fresh water section of River)

*"Nitrate levels are moderately elevated in the lower reaches. There is a moderate loss of quality d/s of Tullow and Clohamon at times. Other wise water quality in the River Slaney was reasonably satisfactory in 2008"*

### **Overall ecological status**

The overall biological quality of the river Slaney is "moderate", as can be seen by the EPA Q value rating along the freshwater sections of the Slaney River, which are predominately Q4, with a 3-4 Q rating recorded at Clohamon. Water Quality is influenced by point source and defused source discharges directly to the Slaney and its main tributaries (River Derreen - Co Carlow, Rivers Bann, Urrin and Boro - Co Wexford) which primarily have moderate biological quality (EPA - Q Ratings 4). The South East River Basin District Sub Basin Plan for the River Slaney (Water body Slaney - Freshwater section) assesses the overall ecological status as "Moderate" and under risk assessment classified the Slaney overall as "1a at Risk" from WWTPs and Section 4 point source discharges and overall "2b not at risk" from point source discharges.

Additionally, the SERBD in the upper estuary sub basin plan for the Upper Slaney Estuary (section into which Bree agglomeration ultimately discharges)

classes the ecological status as "moderate", however, under risk assessment, while overall risk is assessed as "1a at risk", point source discharges from WWTPs/CSOs are classed as "2b not at risk".

### **Point source discharges**

#### **Waste water treatment plants**

The River Slaney flows through 5 major conurbations, namely Balltinglass (Co Wicklow), Tullow (Co Carlow) Bunclody, Enniscorthy, and Wexford Town (County Wexford), all of which discharge from WWTPs to the Slaney, additionally, in county Wexford alone, some 30 additional WWTPs discharge either to tributaries of the River Slaney or directly or indirectly to the estuarine section of the Slaney Valley designated site. Of these, the site of particular impact is the Bunclody agglomeration (estimated p.e. 2,500), which currently discharges primary treated waste water to the Slaney River (new plant currently under construction.- expected operational date Q3 2010). Additionally, a number of other agglomerations within the Slaney catchment have plans in progress for either the provision or improvement of treatment standards, subject to funding, notably, Ferns and Camolin Agglomerations, on the River Bann and Enniscorthy WWTP on the River Slaney.

These current and proposed works will reduce any impacts arising from WWTP discharges and reduce any cumulative effects.

Additionally, the implementation of the Discharge (Authorisation) Regulations, 2007 (S.I. No 684 of 2007) and River Basin Districts Sub Basin Plans nationally will focus efforts on maximising operation of current facilities and further enable a strategic approach to investment in water

treatment infrastructure further reducing cumulative effects arising from WWTPs.

### **Landfill**

The Land fill site cited in NPWS site synopsis has ceased operation for the past 2 years and is currently being capped. Additionally, it has leachate collection and handling systems in place, thus its impact on the water quality of the site has been greatly reduced.

### **Industrial activities**

The following industrial facilities for Counties Carlow and Wexford have been granted IPPC discharge licences, as detailed on the EPA website.

#### Kepak - P0166-01

This facility operates a slaughter house and meat processing facility, at Hacketstown, which discharges treated waste water to The River Dereen, a tributary of the River Slaney.

#### Richard Keenan and Company Ltd - P0555-01

This is an engineering facility and has no process discharges to surface waters.

#### Murray Timber (Ballon) Ltd - P0556-01

This facility is saw mill and has no process discharge to surface waters.

Slaney Foods International Limited and Slaney Proteins

This facility operates a slaughter house and meat processing facility at Ryland Rd, Clohamon, Co Wexford, which discharges treated Waste Water directly to the River Slaney at Clohamon.

Carl Zeiss Vision Ireland LTD - P0062-02

This facility which produces vision care products is located at White Mill Ind Est, Clonard, Wexford, and discharges to Wexford WWTP via the LA sewer network.

Irish Country Meats (Sheepmeat) Ltd - P0177-01

This facility, at Camolin, Co. Wexford, operates a sheep slaughtering and meat processing operation. Waste Water is treated on site prior to discharge to the River Bann, a tributary of the River Slaney.

Kent Manufacturing Wexford Ltd - P0373-01

This facility at Ardavan, Wexford, operates a boiler making and stainless steel fabrication works; there are no process discharges to receiving waters.

Rennard Pig Farms Ltd - P0453-02

This facility, at The Deeps/Cornwall, Crossabeg, Co. Wexford, operates a pig rearing and fattening operation, there are no discharges to surface waters.

Hogg Enterprises Ltd - P0622-01

This facility, at Clohamon Mills, Bunclody, County Wexford, operates an intensive pig farm, there are no stated discharges to surface waters.

### Wexford Creamery Ltd - P0794-01

This facility, at Rocklands, Wexford, operates a milk process plant, Waste Water generated within site is treated, prior to discharge, at a plant jointly operated between Wexford Creamery Ltd and a joining company prior to discharge to Wexford Harbour - Please note this WWTP forms part of IPPC - P0794-01.

### Green Bio Fuels Ireland Ltd

This facility, at Marsh Meadows, New Ross, operates a bio fuels process, all waste water discharges are to be to the new New Ross WWTP via the LA sewer, with ultimate discharge to the River Barrow (pending completion of New Ross WWTP - mid Q4 2009), an interim alternative is in place to Store effluent and transport to Wexford WWTP for Treatment.

As these facilities are licensed and provided the above relevant facilities comply with the conditions of their licences, there should be no cumulative effect on the conservation objectives of the Slaney Valley SAC, or its qualifying interests.

As there is very moderate reduction in nutrient levels and no reduction in BOD levels in the region of the discharge, there is minimal impact on the Slaney Valley SAC water quality resulting from the Ferns Agglomeration, it is considered that the Ferns agglomeration discharge is not having a cumulative impact on Slaney Valley nature Conservation Site or its qualifying interests.

## ***Mitigation Measures***

While there is no measured either direct or cumulative impact on the nature conservation site, arising from Ferns Agglomeration discharge, there are currently a number of mitigation measures in place.

- The initial direct mitigation measure currently in place by Wexford County Council is to limit connections to Ferns WWTP to current capacities, to insure no decline in the current position.
- There are no technical options to improve performance of the existing infrastructure. Plant underwent an upgrade and extension some 2 years ago.
- There is a proposed upgrade scheme for the Ferns Agglomeration, which will amalgamate all treatment at a new WWTP, with the existing plants being decommissioned. This project included as part of the "11 Bundle Scheme" and the Preliminary report is currently being reviewed and ground investigation works are underway. This 11 bundle scheme is subject to both national and local funding being available, and given the current financial review currently underway it is not possible to give exact times scales and when the project will commence and when the plant will be operational.

Additional mitigation measures with regards to cumulative effect have been outlined above.

## Protected habitats

- Old Oak woodlands

These are terrestrial habitats and as such no mitigation measures are required.

- Floating River Vegetation

The assessed potential for impact on this habitat is very minimal, therefore no additional mitigation measures apart from those outlined above is considered necessary.

- Alluvial wet woodlands

As there is no assessed potential for impact on this habitat, no additional mitigation measures apart from those outlined above is considered necessary.

- Tidal Mudflats

As there is no potential for impact on this habitat, no additional mitigation measures apart from those outlined above is considered necessary.

## Protected Fauna

- Lamprey species (Brook, Sea and River)

As there is very limited potential for impact on this species no additional mitigation measures apart from those outlined above is considered necessary.

- Salmon (*Salmo salar*)

There is a very low probability of any impact on this species, therefore no additional mitigation measures apart from those outlined above is considered necessary.

- Twait Shad (*Alosa fellas fallax*)

As there is no predicted impact on this species arising from the Ferns agglomeration discharges, no additional mitigation measures apart from those outlined above is considered necessary.

- Fresh Pearl mussel (*Margaritifera margaritifera*)

As there is no potential for any impact from the Ferns Agglomeration discharge to this species, no additional mitigation measures apart from those outlined above is considered necessary.

- Otter (*Lutra lutra*)

Given that the predicted potential for an impact on this species is very minimal, no additional mitigation measures apart from those outlined above is considered necessary.

- Irish Red Book species -

Irish Hare (*Lepus timidus hibernicus*), Badger (*Meles meles*) and Daubenton's Bat (*Myotis meles*)

As these species are terrestrial, there is no potential for impact from the Ferns agglomeration discharges and no mitigation measures are considered necessary.

Additionally, there is minimal potential for impact on the species Frog (*Rana temporaria*), and as such no additional mitigation measures apart from those outlined above are considered necessary.

## **Wildfowl**

As there is no potential for impact on the wildfowl population resulting from the Ferns agglomeration discharges, no additional mitigation measures are considered necessary.

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## Appendix

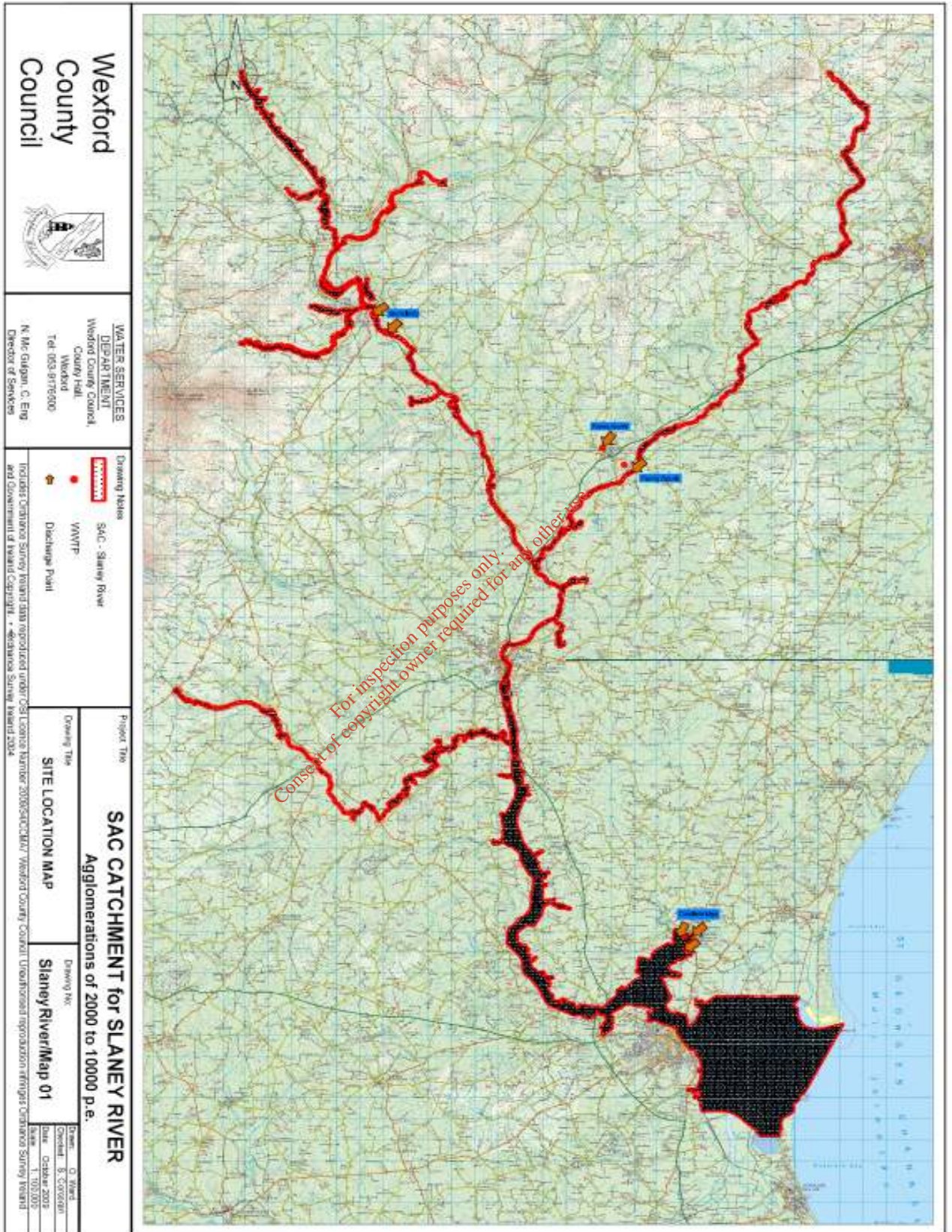
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## ***Catchment Map***

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National Parks and Wildlife Service

***Site Synopsis - Slaney Valley - Special Area of Conservation***

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## SITE SYNOPSIS

**SITE NAME: SLANEY RIVER VALLEY**

**SITE CODE: 000781**

This site comprises the freshwater stretches of the Slaney as far as the Wicklow Mountains; a number of tributaries the larger of which include the Bann, Boro, Glasha, Clody, Derry, Derreen, Douglas and Carrigower Rivers; the estuary at Ferrycarrig and Wexford Harbour. The site flows through the counties of Wicklow, Wexford and Carlow. Towns along the site but not in it are Baltinglass, Hacketstown, Tinahely, Tullow, Bunclody, Camolin, Enniscorthy and Wexford. The river is up to 100 m wide in places and is tidal at the southern end from Edermine Bridge below Enniscorthy. In the upper and central regions almost as far as the confluence with the Derry River the geology consists of granite. Above Kilcarrig Bridge, the Slaney has cut a gorge into the granite plain. The Derry and Bann Rivers are bounded by a narrow line of uplands which corresponds to schist outcrops. Where these tributaries cut through this belt of hard rocks they have carved deep gorges, more than two miles long at Tinahely and Shillelagh. South of Kildavin the Slaney flows through an area of Ordovician slates and grits.

The site is a candidate SAC selected for alluvial wet woodlands, a priority habitat on Annex I of the E.U. Habitats Directive. The site is also selected as a candidate SAC for floating river vegetation, estuaries, tidal mudflats and old oak woodlands, all habitats listed on Annex I of the E.U. Habitats Directive. The site is further selected for the following species listed on Annex II of the same directive - Sea Lamprey, River Lamprey, Brook Lamprey, Freshwater Pearl Mussel, Twait Shad, Atlantic Salmon and Otter.

Floating river vegetation is found along much of the freshwater stretches within the site. Species present here include Pond Water-crowfoot (*Ranunculus peltatus*), Water-crowfoot (*Ranunculus* spp.), Canadian Pondweed (*Elodea canadensis*), Broad-leaved Pondweed (*Potamogeton natans*), Water Milfoil (*Myriophyllum* spp.), Common Club-rush (*Scirpus lacustris*), Water-starwort (*Callitriche* spp.), Hemlock Water-dropwort, Fine-leaved Water-dropwort (*Oenanthe aquatica*), Common Duckweed (*Lemna minor*), Yellow Water-lily (*Nuphar lutea*), Unbranched Bur-reed (*Sparganium emersum*) and the moss *Fontinalis antipyretica*. Two rare aquatic plant species have been recorded in this site: Short-leaved Water-starwort (*Callitriche truncata*), a very rare, small aquatic herb found nowhere else in Ireland; and Opposite-leaved Pondweed (*Groenlandia densa*), a species that is legally protected under the Flora Protection Order, 1999.

Good examples of wet woodland are found associated with Macmine marshes, along banks of the Slaney and its tributaries and within reed swamps. Grey Willow (*Salix cinerea*) scrub and pockets of wet woodland dominated by Alder (*Alnus glutinosa*) have become established in places. Ash (*Fraxinus excelsior*) and Birch (*Betula pubescens*) are common in the latter and the ground flora is typical of wet woodland with Meadowsweet (*Filipendula ulmaria*), Angelica (*Angelica sylvestris*), Yellow Iris, Horsetail (*Equisetum* spp.) and occasional tussocks of Greater Tussock-sedge (*Carex paniculata*). These woodlands have been described as two types: one is quite eutrophic, is dominated by Willow and is subject to a tidal influence. The

other is flushed or spring-fed subject to waterlogging but not to flooding and is dominated by Alder and Ash.

Old oak woodlands are best represented at Tomnafinnoge though patches are present throughout the site. At Tomnafinnoge the wood is dominated by mature, widely spaced Sessile Oak (*Quercus petraea*), which were planted around 1700, with some further planting in 1810. There is now a varied age structure with overmature, mature and young trees; the open canopy permits light to reach the forest floor and encourages natural regeneration of Oak. As well as Oak, the wood includes the occasional Beech (*Fagus sylvatica*), Birch (*Betula* sp.), Rowan (*Sorbus aucuparia*) and Scots Pine (*Pinus sylvestris*).

The shrub layer is well-developed with Hazel (*Corylus avellana*) and Holly (*Ilex aquifolium*) occurring. The ground layer consists of Great Wood-rush (*Luzula sylvatica*) and Bilberry (*Vaccinium myrtillus*), with some Bracken (*Pteridium aquilinum*) and Brambles (*Rubus fruticosus* agg.). Herbaceous species in the ground layer include Primrose (*Primula vulgaris*), Wood-sorrel (*Oxalis acetosella*), Common Cow-wheat (*Melampyrum pratense*) and Bluebell (*Hyacinthoides non-scripta*). Many of the trees carry an epiphytic flora of mosses, Polypody Fern (*Polypodium vulgare*), and lichens such as *Usnea comosa*, *Evernia prunastri*, *Ramalina* spp. and *Parmelia* spp.

Tomnafinnoge Wood is a remnant of the ancient Shelburne Oak woods, and it appears that woodland has always been present on the site. In the past, the wood was managed as a Hazel coppice with Oak standards, a common form of woodland management in England but not widely practised in Ireland. The importance of the woodland lies in the size of the trees, their capacity to regenerate, their genetic continuity with ancient woodland and their historic interest. The nearest comparable stands are at Abbeyleix, Co. Laois and Portlaw, Co. Waterford.

Below Enniscorthy there are several areas of woodland with a mixed canopy of Oak, Beech, Sycamore (*Acer pseudoplatanus*), Ash and generally a good diverse ground flora. Near the mouth of the river at Ferrycarrig is a steep south facing slope covered with Oak woodland. Holly and Hazel are the main species in the shrub layer and a species-rich ground flora typical of this type of Oak woodland has abundant ferns - *Dryopteris filix-mas*, *Polystichum setiferum*, *Phyllitis scolopendrium* - and mosses - *Thuidium tamariscinum*, *Mnium hornum*, *Eurynchium praelongum*.

North of Bunclody, the river valley still has a number of dry woodlands though these have mostly been managed by the estates with the introduction of Beech and occasional conifers. The steeper sides are covered in a thick scrub from which taller trees protrude. At the southern end of the site, the Red Data Book species Yellow Archangel (*Lamiastrum galeobdolon*) occurs. Three more Red Data Book species have also been recorded from the site: Basil Thyme (*Acinos arvensis*), Blue Fleabane (*Erigeron acer*) and Small Cudweed (*Filago minima*). A nationally rare species Summer Snowflake (*Leucojum aestivum*) is also found within the site.

Mixed woodlands occur at Carrickduff and Coolaphuca in Bunclody. Oak trees, which make up the greater part of the canopy, were originally planted and at the present time are not

regenerating actively. In time, if permitted, the woodland will probably go to Beech. A fair number of Yew (*Taxus baccata*) trees have also reached a large size and these, together with Holly give to the site the aspect of a south-western Oak wood.

The site is considered to contain a very good example of the extreme upper reaches of an estuary. Tidal reedbeds with wet woodland are present in places. The fringing reed communities support Sea Club-rush (*Scirpus maritimus*), Grey Club-rush (*S. tabernaemontani*) and abundant Common Reed (*Phragmites australis*). Other species occurring are Bulrush (*Typha latifolia*), Reed Canary-grass (*Phalaris arundinacea*) and Branched Bur-reed (*Sparganium erectum*). The reed-swamp is extensive around Macmine, where the river widens and there are islands with swamp and marsh vegetation.

Further south of Macmine are expanses of intertidal mudflats and sandflats and shingly shore often fringed with a narrow band of salt marsh and brackish vegetation. Narrow shingle beaches up to 10 m wide occur in places along the river banks and are exposed at low tide. Upslope the shingle is sometimes colonised by Saltmarsh Rush (*Juncus gerardi*), Townsend's Cord-grass (*Spartina townsendii*), Common Saltmarsh-grass (*Puccinellia maritima*), Sea Aster (*Aster tripolium*), Hemlock Water-dropwort (*Oenanthe crocata*) and Himalayan Balsam (*Impatiens glandulifera*).

Wexford Harbour is an extensive, shallow estuary which dries out considerably at low tide exposing large expanses of mudflats and sandflats. The harbour is largely sheltered by the Raven Point to the north and Rosslare Point in the south.

Other habitats present within the site include species-rich marsh in which sedges such as *Carex disticha*, *Carex riparia* and *Carex vesicaria* are common. Among the other species found in this habitat are Yellow Iris (*Iris pseudacorus*), Water Mint (*Mentha aquatica*), Purple Loosestrife (*Lythrum salicaria*) and Soft Rush (*Juncus effusus*). Extensive marshes occur to the west of Castlebridge associated with the tidal areas of the River Sow.

The site supports populations of several species listed on Annex II of the EU Habitats Directive including the three Lampreys - Sea Lamprey (*Petromyzon marinus*), River Lamprey (*Lampetra fluviatilis*) and Brook Lamprey (*Lampetra planeri*), Otter (*Lutra lutra*), Salmon (*Salmo salar*), small numbers of Freshwater Pearl Mussel (*Margaritifera margaritifera*) and in the tidal stretches, Twaite Shad (*Alosa fallax fallax*). A survey of the Derreen River in 1995 estimated the population of Freshwater Pearl Mussel at about 3,000 individuals. This is a significant population, especially in the context of eastern Ireland. The Slaney is primarily a spring salmon fishery and is regarded as one of the top rivers in Ireland for early spring fishing. The upper Slaney and tributary headwaters are very important for spawning.

The site supports important numbers of birds in winter. Little Egret are found annually along the river. This bird is only now beginning to gain a foothold in Ireland and the south-east appears to be its stronghold. Nationally important numbers of Black-tailed Godwit, Teal, Tufted Duck, Mute Swan, Little Grebe and Black-headed Gull are found along the estuarine stretch of the river. The mean of the maximum counts over four winters (1994/98) along the stretch between Enniscorthy and Ferrycarrig is: Little Egret (6), Golden Plover (6), Wigeon (139), Teal (429), Mallard (265), Tufted Duck (171), Lapwing (603), Shelduck (16), Black-tailed Godwit (93), Curlew (81), Red-breasted Merganser (11), Black-headed Gull (3030), Goldeneye (45), Oystercatcher (19), Redshank (65), Lesser Black-backed Gull (727), Herring

Gull (179), Common Gull (67), Grey Heron (39), Mute Swan (259) and Little Grebe (17). Wexford Harbour provides extensive feeding grounds for wading birds and Little Terns, which are listed on Annex I of the E.U. Birds Directive have bred here in the past.

The Reed Warbler, which is a scarce breeding species in Ireland, is regularly found in Macmine Marshes but it is not known whether or not it breeds in the site. The Dipper also occurs on the river. This is a declining species nationally.

The site supports many of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Pine Marten, Badger, Irish Hare and Daubenton's Bat. Common Frog (*Rana temporaria*), another Red Data Book species, also occurs within the site.

Agriculture is the main landuse. Arable crops are important. Improved grassland and silage account for much of the remainder. The spreading of slurry and fertiliser poses a threat to the water quality of this salmonid river and to the populations of Annex II animal species within it. Run-off is undoubtedly occurring, as some of the fields slope steeply directly to the river bank. In addition, cattle have access to the site in places. Fishing is a main tourist attraction along stretches of the Slaney and 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. There are some gravel pits along the river below Bunclody and many of these are active. There is a large landfill site adjacent to the river close to Hacketstown and at Killurin. Boating, bait-digging and fishing occur in parts of Wexford Harbour.

Waste water outflows, runoff from intensive agricultural enterprises, a meat factory at Clohamon and a landfill site adjacent to the river and further industrial development upstream in Enniscorthy and in other towns could all have potential adverse impacts on the water quality unless they are carefully managed. The spread of exotic species is reducing the quality of the woodlands.

The site supports populations of several species listed on Annex II of the EU Habitats Directive, and habitats listed on Annex I of this directive, as well as important numbers of wintering wildfowl including some species listed on Annex I of the EU Birds Directive. The presence of wet and broad-leaved woodlands increases the overall habitat diversity and the occurrence of a number of Red Data Book plant and animal species adds further importance to the Slaney River site.

07.12.2005

## National Parks and Wildlife Service

### ***Site Synopsis - Wexford Harbour and Slobs - Special Protected Area***

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## SITE SYNOPSIS

**SITE NAME: WEXFORD HARBOUR AND SLOBS SPA**

**SITE CODE: 004076**

Wexford Harbour is the lowermost part of the estuary of the River Slaney, a major river that drains much of the south-east region. The site is divided between the natural estuarine habitats of Wexford Harbour, the reclaimed polders known as the North and South 'Slobs', and the tidal section of the River Slaney. The seaward boundary extends from the Rosslare peninsula in the south to the area just west of The Raven Point in the north. Shallow marine water is a principal habitat, but at low tide extensive areas of intertidal flats are exposed. These vary from rippled sands in exposed areas to sandy-muds in the more sheltered areas, especially at Hopeland and the inner estuary to the west of Wexford bridge. The flats support a rich macro-invertebrate fauna, including the bivalves Cockle (*Cerastoderma edule*), Baltic Tellin (*Macoma balthica*) and Peppery Furrow-shell (*Scrobicularia plana*), the polychaetes Lugworm (*Arenicola marina*), Catworm (*Nephtys hombergi*) and Ragworm (*Hediste diversicolor*) and the crustacean *Corophium volutator*. Beds of mussels (*Mytilus edulis*) also occur. Salt marshes fringe the intertidal flats, especially in the sheltered areas such as Hopeland and towards Castlebridge. The Slobs are two flat areas of farmland, mainly arable and pasture grassland, established behind 19<sup>th</sup> century sea-walls. The lands are drained by a network of channels which flow into two central channels, in parts several hundred metres in width. Water from the channels is pumped into the sea with electric pumps. The channels often support swamp vegetation. The river section of the site is extensive, extending to Enniscorthy, a distance of almost 20 km from Wexford town. It is noticeably tidal as far as Edermine Bridge but with tidal influence right up to Enniscorthy. In places, such as the Macmine marshes, it is several hundreds metres wide and here reedswamp is well developed.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Little Grebe, Great Crested Grebe, Cormorant, Bewick's Swan, Whooper Swan, Greenland White-fronted Goose, Light-bellied Brent Goose, Shelduck, Wigeon, Teal, Mallard, Pintail, Scaup, Goldeneye, Red-breasted Merganser, Hen Harrier, Coot, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Knot, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Black-headed Gull, Lesser Black-backed Gull and Little Tern. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The site is of international importance for several species of waterbirds but also because it regularly supports well in excess of 20,000 waterbirds (average peak of 49,030 for the 5 winters 1996/97-2000/01). Wexford Harbour and Slobs is one of the top three sites in the country for numbers and diversity of wintering birds. The

combination of estuarine habitats, including shallow waters for grebes, diving duck and seaduck, and the farmland of the polders, which include freshwater drainage channels, provides optimum feeding and roost areas for a wide range of species. Of particular importance is that it is one of the two most important sites in the world for Greenland White-fronted Goose (9,353) (all given figures for species are average peaks for the 5 winters 1995/96-1999/00). The geese feed almost entirely within the Slobs and roost at The Raven (a separate SPA). The site also has internationally important populations of Mute Swan (519), Light-bellied Brent Goose (1,469), Bar-tailed Godwit (1,843) and Black-tailed Godwit (768).

There are at least a further 25 species of wintering waterbirds which occur in numbers of national importance, i.e. Great Crested Grebe (123), Little Grebe (77), Cormorant (443), Whooper Swan (120), Bewick's Swan (191), Shelduck (903), Wigeon (2,838), Gadwall (37), Teal (1,601), Mallard (3,121), Pintail (78), Scaup (416), Goldeneye (151), Red-breasted Merganser (226), Coot (353), Oystercatcher (1,800), Golden Plover (5,590), Grey Plover (1,412), Lapwing (11,944), Knot (566), Sanderling (262), Dunlin (3,037), Curlew (1,924), Redshank (535), Black-headed Gull (6,136) and Lesser Black-backed Gull (1,036). Other species that use the site include Ringed Plover (69), Turnstone (41), Greenshank (12), Shoveler (24), Tufted Duck (114), Pochard (218), Common Gull (100+) and Little Egret. Several of the above populations represent substantial proportions of the national totals, especially Shelduck (6.2%), Scaup (6.6%), Red-breasted Merganser (6.2%), Grey Plover (21.9% and the top site in the country) and Black-headed Gull (6.1%). The Slobs is the most important and indeed one of the few sites in the country which supports a regular flock of Bewick's Swan. Numbers of wintering birds are often swelled by hard-weather movements from Britain and Europe, notably Golden Plover and Lapwing.

The site is a regular location for scarce passage waders such as Ruff, Spotted Redshank and Green Sandpiper, as well as Curlew Sandpiper in varying numbers. The rare Wood Sandpiper is seen each year, mainly in autumn.

Short-eared Owl and Hen Harrier are regular visitors in small numbers to the Slobs during winter. Of particular note is the presence of the Hen Harrier communal roost site.

The site is important for Little Tern as it has can hold a nationally important breeding colony (30 pairs were recorded in 2000). The Slobs support a nesting colony of Tree Sparrow, a very localised species in Ireland that is listed in the Irish Red Data Book. Another very localised breeding species, Reed Warbler, is well established within the swamp vegetation along the River Slaney and on the South Slob (estimated as at least 10 pairs).

A range of duck species breed, including Teal, Tufted Duck and, probably in most years, Shoveler.

The site supports populations of Borrer's Saltmarsh-grass (*Puccinellia fasciculata*) and Short-leaved Water-starwort (*Callitriche truncata*), both protected, Red Data Book species. The Slobs are well known for their population of Irish Hare.

Part of the North Slob is a Nature Reserve and much of this slob is managed for the benefit of the wintering geese. Monitoring of the wintering birds of the Slob extends back to the 1960s and nowadays there is an ongoing monitoring and research programme. The North Slob has a wildfowl collection and an interpretative centre.

There are no imminent significant threats to the wintering bird populations. In the long-term, however, projected increases in sea level could cause problems in maintaining the Slob as farmland. In recent times, the South Slob has become less suitable due to changes in landuse, including forestry operations, and a sustained programme of scaring. An increase in the amount of new housing in the vicinity of the North Slob has led to increased levels of disturbance in recent times. Localised reclamation has occurred in Wexford Harbour and any further reclamation of estuarine habitat is undesirable. Aquaculture occurs in Wexford Harbour though it is not known what effects, if any, this has on the bird populations.

Wexford Harbour and Slob SPA is one of the most important ornithological sites in the country. It is of world importance for Greenland White-fronted Goose, and supports internationally important populations of a further four species (Mute Swan, Light-bellied Brent Goose, Black-tailed Godwit and Bar-tailed Godwit). In addition, it has 25 species of wintering waterbirds with populations of national importance. Also of significance is that several of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Little Egret, Whooper Swan, Bewick's Swan, Greenland White-fronted Goose, Hen Harrier, Golden Plover, Bar-tailed Godwit, Ruff, Wood Sandpiper, Little Tern and Short-eared Owl. The site is an important centre for research, education and tourism.

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29.5.2007

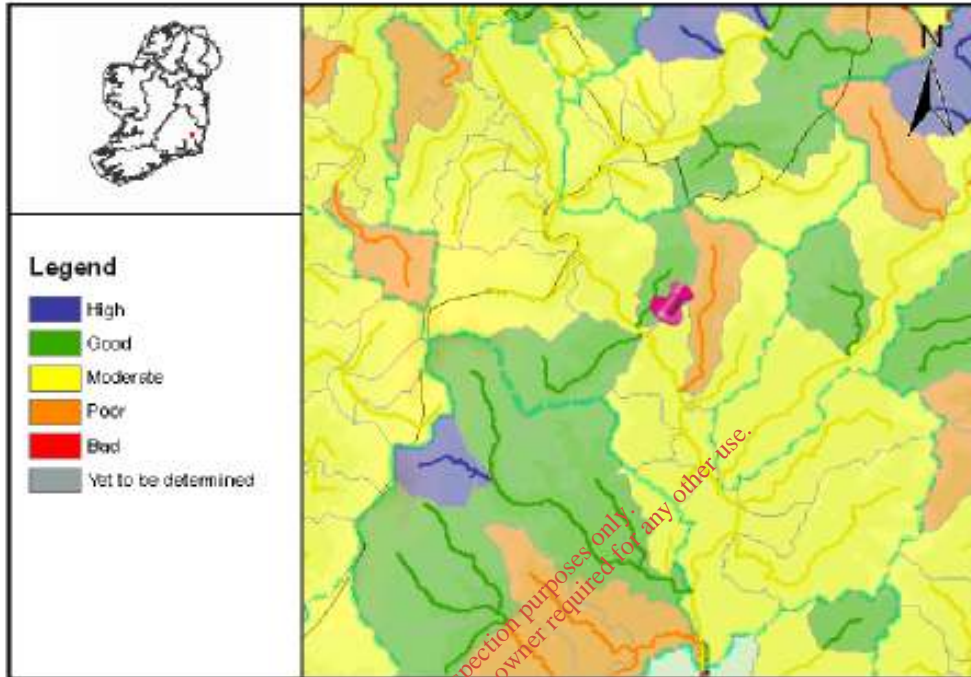
## South East River Basin District

### *Slaney Sub Basin Plan*

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### Full Report for Waterbody Slaney



Date Reported to Europe: 22/12/2008

Date Report Created 30/07/2009

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**Summary Information:**

<b>WaterBody Category:</b>	Subbasin Waterbody
<b>WaterBody Name:</b>	Slaney
<b>WaterBody Code:</b>	IE_SE_12_924
<b>Overall Status:</b>	Moderate
<b>Overall Objective:</b>	Restore
<b>Overall Risk:</b>	1a At Risk
<b>Applicable Supplementary Measures:</b>	Unsewered; Urban & Industrial; Morphology; Forestry; Report data based upon Draft RBMP, 22/12/2008.



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**Status Report**

**WaterBody Category:** Subbasin Waterbody  
**WaterBody Name:** Slaney  
**WaterBody Code:** IE\_SE\_12\_924  
**Overall Status Result:** Moderate



	Status Element Description	Result
EX	Status from Monitored or Extrapolated Waterbody	
	<b>Biological Elements</b>	
Q	Macroinvertebrates (Q-Value)	Moderate
F	Fish	n/a
DI	Phytobenthos (Diatoms)	High
FPM	Status value as determined by Margartifera	n/a
	<b>Supporting Elements</b>	
MOR	Hydromorphology	Good
SP	Specific Pollutants	Pass
PC	General Physico-Chemical	Pass
	<b>Chemical Status</b>	
PAS	Chemical Status	High
	<b>Overall Ecological Status</b>	
O	Overall Ecological Status	Moderate

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### Risk Report

**WaterBody Category:** Subbasin Waterbody  
**WaterBody Name:** Slaney  
**WaterBody Code:** IE\_SE\_12\_924  
**Overall Risk Result:** **1a** At Risk



Risk Test Description	Risk
<b>Point Risk Sources</b>	
RP1 WWTPs (2008)	<b>1a</b> At Risk
RP2 CSOs	<b>2b</b> Not At Risk
RP3 IPPCs (2008)	<b>1a</b> At Risk
RP4 Section 4s (2008)	<b>2b</b> Not At Risk
RPO Overall Risk from Point Sources - Worst Case (2008)	<b>1a</b> At Risk
<b>Diffuse Risk Sources</b>	
RD1 EPA diffuse model (2008)	<b>1b</b> Probably At Risk
RD2a Road Wash - Soluble Copper	<b>2b</b> Not At Risk
RD2b Road Wash - Total Zinc	<b>2b</b> Not At Risk
RD2c Road Wash - Total Hydrocarbons	<b>2b</b> Not At Risk
RD3 Railways	<b>2b</b> Not At Risk
RD4a Forestry - Acidification (2008)	<b>2b</b> Not At Risk
RD4b Forestry - Suspended Solids (2008)	<b>2b</b> Not At Risk
RD4c Forestry - Eutrophication (2008)	<b>2a</b> Probably Not At Risk
RD5a Unsewered Areas - Pathogens (2008)	<b>2a</b> Probably Not At Risk
RD5b Unsewered Phosphorus (2008)	<b>2b</b> Not At Risk
RD5 Overall Unsewered (2008)	<b>2b</b> Not At Risk
RD6a Arable	<b>2a</b> Probably Not At Risk
RD6b Sheep Dip	<b>2a</b> Probably Not At Risk
RD6c Forestry - Dangerous Substances	<b>2b</b> Not At Risk
RDO Diffuse Overall -Worst Case (2008)	<b>1b</b> Probably At Risk

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<b>Morphological Risk Sources</b>		
RM1	Channelisation (2008)	2b Not At Risk
RM2	Embankments (2008)	2b Not At Risk
RM3	Impoundments	2b Not At Risk
RM4	Water Regulation	2b Not At Risk
RMO	Morphology Overall - Worst Case (2008)	2b Not At Risk
<b>Q/RDI or Point/Diffuse</b>		
QPD	Q class/EPA Diffuse Model or worst case of Point and Diffuse (2008)	1a At Risk
<b>Hydrology</b>		
RHY1	Water balance - Abstraction	2b Not At Risk
<b>Overall Risk</b>		
RA	Rivers Overall - Worst Case (2008)	1a At Risk

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**Objectives Report**

**WaterBody Category:** Subbasin Waterbody  
**WaterBody Name:** Slaney  
**WaterBody Code:** IE\_SE\_12\_924  
**Overall Objective:** Restore



	<b>Objectives Description</b>	<b>Result</b>
	<b>Objectives</b>	
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	Not Applicable
OBO	Overall Objective	Restore
	<b>Deadline</b>	
YR	Default Year by which the objective must be met	2015
EX	Revised Objective Deadline	2015
OBO	Overall Objective and Deadline	Restore - 2015

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**Basic Measures Report**

**WaterBody Category:** Subbasin Waterbody  
**WaterBody Name:** Slaney  
**WaterBody Code:** IE\_SE\_12\_924



	<b>Basic Measures Description</b>	<b>Applicable</b>
	<b>Key Directives</b>	
BA	Bathing Waters Directive	No
BI	Birds Directive	No
HA	Habitats Directive	Yes
DW	Drinking Waters Directive	Yes
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	Yes
PL	Plant Protection Products Directive	Yes
NI	Nitrates Directive	Yes
IP	Integrated Pollution Prevention Control Directive	Yes
	<b>Other Stipulated Measures</b>	
CR	Cost recovery for water use	Yes
SU	Promotion of efficient and sustainable water use	Yes
DWS	Protection of drinking water sources	Yes
AB	Control of abstraction and impoundments	Yes
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

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**Urban and Industrial Discharges Supplementary Measures Report**

**WaterBody Category:** Subbasin Waterbody  
**WaterBody Name:** Slaney  
**WaterBody Code:** IE\_SE\_12\_924



	<b>Point discharges to waters from municipal and industrial sources</b>	<b>Result</b>
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?	Yes
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.	Yes
PB3	Basic Measure 3 - Revise existing Section 4 license conditions and reduce allowable pollution load.	Yes
PB4	Basic Measure 4 - Review existing IPPC license conditions and reduce allowable pollution load.	Yes
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.	Yes
PS4	Supplementary Measure 4 - Initiate research to verify risk assessment results and determine the impact of the discharge.	Yes
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.	Yes
PS9	Supplementary Measure 9 - Install ultra-violet or similar type treatment.	No
PS10	Supplementary Measure 10 - Relocate the point of discharge.	No

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### Unsewered Properties Supplementary Measures Report

**WaterBody Category:** Subbasin Waterbody

**WaterBody Name:** Slaney

**WaterBody Code:** IE\_SE\_12\_924



	<b>Supplementary Measures for Unsewered Properties</b>	<b>Applicable</b>
SP1	Amend building regulations	Yes
SP2	Establish certified expert panels for site investigation and certification of installed systems	Yes
SP3	Assess applications for new unsewered systems by applying risk mapping/decision support systems and codes of practice	Yes
SP4	Carry out an inspection programme in prioritised locations for existing systems and record results in an action tracking system	No
SP5	Enforce requirements for percolation	No
SP6	Enforce requirements for de-sludging	Yes
SP7	Consider connection to municipal systems	No

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**Forestry Measures Report**

**WaterBody Category:** Subbasin Waterbody

**WaterBody Name:** Slaney

**WaterBody Code:** IE\_SE\_12\_924



	<b>Forestry Measures for</b>	<b>Applicable</b>
	Forestry	
SF1	Management Instruments - Ensure regulations and guidance are cross referenced and revised to incorporate proposed measures	No
SF2	Acidification - Avoid or limit afforestation on 1st and 2nd order stream catchments in acid sensitive areas	No
SF3	Acidification - Revise the Acidification Protocol to ensure actual minimum alkalinities are detected and revise boundary conditions for afforestation in acid sensitive areas	No
SF10	Pesticide Use - Pre-dip trees in nurseries prior to planting out	No
SF11	Pesticide Use - Maintain registers of pesticide use	No
SF12	Acidification - Restructure existing forests to include open space and structural diversity through age classes and species mix, including broadleaves	No
SF13	Acidification - Mitigate acid impacts symptomatically using basic material	No
SF14	Acidification - Manage catchment drainage to increase residence times and soil wetting	No
SF15	Acidification - Implement measures to increase stream production.	No
SF16	Eutrophication - Establish riparian zone management prior to clearfelling	No
SF17	Eutrophication and Sedimentation - Enhance sediment control	No
SF18	Eutrophication - Manage catchment drainage to increase residence times and soil wetting, including no drainage in some locations	No
SF19	Sedimentation - Establish riparian zone management prior to clearfelling	No
SF20	Sedimentation - Enhance sediment control	No
SF21	Sedimentation - Manage catchment drainage to increase residence times and soil wetting, including no drainage in some locations	No
SF22	Hydromorphology - Enhance drainage network management, minimise drainage in peat soils	No
SF23	Pesticide Use - Develop biological control methods	No

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SF4	Eutrophication and Sedimentation - Avoid or limit forest cover on peat sites	No
SF5	Eutrophication and Sedimentation - Change the tree species mix on replanting	No
SF6	Eutrophication and Sedimentation - Limiting felling coup size	No
SF7	Eutrophication and Sedimentation - Establish new forest structures on older plantation sites	No
SF8	Hydromorphology - Audit existing drainage networks in forest catchments	No
SF9	Pesticide Use - Reduce pesticide usage	No

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Wexford County Council  
Appropriate Assessment 2001-10,000 p.e  
Slaney Valley Nature Conservation Site

***Extracts from EPA "River Water Quality In County Wexford"  
Report 2008 - Slaney***

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Wexford County Council  
Appropriate Assessment 2001-10,000 p.e  
Slaney Valley Nature Conservation Site

Environmental Protection Agency, Regional Water Laboratory, Kilkenny - River Water Quality Monitoring Data

**River** **Slaney**

**Code** 12S02

**Tributary of:**

**Station No. 0800** Br duw W of Kilmurry/Redwells X roads - d/s Ballinglass STW **Latest Biological Quality Rating ( 2007 ) = Q4** Grid Ref: S 808 855

Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity ‰	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amn mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Coll /100ml	E-Coll /100ml	Flow m3/sec
02/01/2008	11:10	7.7	98	11.7	1.3	30	7.8	236			0.03	0.0004	0.006	2.9	11			
27/02/2008	11:05	6.6	101	12.4	1.0	10	8.1	312		0.10	0.0024	0.010	4.5	18	6887	766		
28/07/2008	10:50	17.5	102	9.8	2.5	30	8.0	266		0.01	0.00	0.0001	0.014	2.3	12			
01/10/2008	10:20	11.0	96	10.6	1.6	72	7.3	180		0.01	0.04	0.0002	0.006	2.0	10			
18/11/2008	10:55	8.7	96	11.2	1.1	41	7.7	238		0.03	0.03	0.0003	0.007	2.7	11			

Q4 at station 1000 (2007)

**Station No. 0950** 200 m u/s Rathvilly Br - Abs. for Carlow North Regional WS **Latest Biological Quality Rating ( ) =** Grid Ref: S 878 823

Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity ‰	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amn mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Coll /100ml	E-Coll /100ml	Flow m3/sec
02/01/2008	11:25	7.7	97	11.6	1.0	20	7.9	250			0.03	0.0004	0.007	3.2	12	2126	282	
27/02/2008	10:50	6.4	100	12.3	0.9	20	8.0	289		0.02	0.03	0.0004	0.007	4.2	14	1236	295	
16/04/2008	11:00	9.0	93	10.8	1.3	30	8.0	295		0.01	0.01	0.0001	0.004	3.9	13	462	82	
12/06/2008	11:30	14.6	100	10.2	1.3	30	8.0	319		0.01	0.02	0.0006	0.030	3.6	13	6932	542	
29/07/2008	11:15	17.6	108	10.3	1.8	30	8.0	282		0.01	0.00	0.0001	0.023	2.6	13	>48384	16328	
26/08/2008	13:00	13.9	95	9.8	1.5					0.02	0.04		0.008	3.3	12	7746	402	
01/10/2008	10:35	11.1	97	10.7	1.1	63	7.5	195		0.01	0.02	0.0002	0.006	2.2	10			
18/11/2008	11:15	8.7	95	11.1	1.1	42	7.8	250		0.03	0.03	0.0004	0.007	2.9	11	728	104	

**Station No. 1100** Rathmore Br - d/s Rathvilly STW **Latest Biological Quality Rating ( 2007 ) = Q4** Grid Ref: S 856 709

Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity ‰	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amn mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Coll /100ml	E-Coll /100ml	Flow m3/sec
02/01/2008	11:35	7.8	100	11.9	0.9	20	7.9	278			0.03	0.0004	0.010	3.4	12			
27/02/2008	10:40	6.3	97	12.0	0.8	20	8.0	307		0.03	0.03	0.0005	0.007	4.6	14			
29/07/2008	11:30	17.7	100	9.5	1.5	30	8.0	311		0.01	0.00	0.0002	0.015	2.7	13			
01/10/2008	10:55	11.0	97	10.7	1.3	42	7.7	220		0.01	0.03	0.0004	0.008	2.5	11			
18/11/2008	11:30	8.8	96	11.2	1.1	40	7.8	279		0.03	0.03	0.0003	0.008	3.1	12			

Q value refers to stn 1290

**Station No. 1300** Tullow Br - Abstraction for Tullow water supply **Latest Biological Quality Rating ( 2004 ) = Q4** Grid Ref: S 852 731

Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity ‰	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amn mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Coll /100ml	E-Coll /100ml	Flow m3/sec
02/01/2008	11:50	7.9	114	13.5	1.4	20	8.0	299			0.04	0.0008	0.011	3.8	13	4126	426	
27/02/2008	10:25	6.4	101	12.4	0.9	30	7.9	281		0.03	0.03	0.0003	0.007	3.9	13		nm	
16/04/2008	10:45	9.0	97	11.2	1.3	30	8.0	333		0.02	0.01	0.0002	0.004	4.3	14	4374	886	
12/06/2008	11:45	15.5	95	9.5	1.7	20	8.0	363		0.01	0.01	0.0004	0.030	4.1	14	9677	992	
29/07/2008	11:55	18.3	101	9.5	1.5	30	8.2	326		0.01	0.01	0.0004	0.010	2.9	14	39726	3912	
28/08/2008	14:50	14.5	94	9.6	2.2					0.03	0.05		0.010	3.7	13	17328	1300	
01/10/2008	11:10	11.8	100	10.9	0.9	21	8.0	287		0.01	0.02	0.0004	0.009	3.4	12			
18/11/2008	11:45	8.7	96	11.2	1.3	46	8.0	295		0.03	0.03	0.0007	0.009	3.4	12	8212	1056	

**Station No. 1400** Ford 7 km d/s Tullow - d/s Tullow STW **Latest Biological Quality Rating ( 2007 ) = Q4** Grid Ref: S 851 712

Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity ‰	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amn mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Coll /100ml	E-Coll /100ml	Flow m3/sec
11/02/2008	10:35	7.4	97	11.7	0.5	30	8.2	531			0.02	0.01	0.0003	0.013	4.4	14		
16/04/2008	11:30	9.5	93	10.6	1.1	30	8.1	341		0.02	0.03	0.0007	0.006	4.5	14			
29/07/2008	12:15	18.6	106	10.1	3.0	30	8.3	346		0.03	0.21	0.0170	0.025	3.0	14			
18/11/2008	12:00	8.7	97	11.3	1.2	46	8.0	301		0.04	0.04	0.0008	0.011	3.5	12			

**Station No. 1600** Kilkenny Br **Latest Biological Quality Rating ( 2007 ) = Q4** Grid Ref: S 893 624

Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity ‰	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amn mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Coll /100ml	E-Coll /100ml	Flow m3/sec
02/01/2008	12:10	8.2	110	13.9	1.2	20	8.1	331			0.03	0.0007	0.021	4.7	15			
11/02/2008	11:00	8.0	100	11.8	0.6	20	8.1	366		0.02	<0.01		0.012	5.3	15			
27/02/2008	12:00					20	8.1			0.05	0.01			5.8				
16/04/2008	11:55	9.5	94	10.7	0.8	30	8.1	344		0.02	<0.01		0.006	5.4	16			
12/06/2008	12:15	16.4	106	10.4	1.5	30	8.2	371		0.03	0.02	0.0010	0.048	5.3	18			
29/07/2008	12:45	18.3	98	9.2	1.9	40	8.1	352		0.01	0.04	0.0023	0.015	4.4	16			
28/08/2008	11:50	15.5	96	9.8	1.9					0.04	0.05		0.009	4.6	15			
01/10/2008	11:40	11.9	105	11.3	1.3	22	8.1	349		0.02	0.03	0.0008	0.008	4.9	15			

Wexford County Council  
Appropriate Assessment 2001-10,000 p.e  
Slaney Valley Nature Conservation Site

Environmental Protection Agency, Regional Water Laboratory, Kilkenny - River Water Quality Monitoring Data

River	Code 12S02										Tributary of:							
<b>Slaney</b>																		
19/11/2008	12:30	9.0	97	11.2	1.1	63	8.0	298	0.04	0.03	0.0005	0.010	4.0	13				
<b>Station No. 1800 Bunclody Br</b>													Latest Biological Quality Rating ( 2007 ) = Q4			GIS Ref: S 91		
Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity ‰	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amm mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Col /100ml	E-Col /100ml	Flow m3/sec
02/01/2008	12:40	8.2	107	12.8	1.0	20	8.1	294			0.03	0.0006	0.014	4.7	16			
03/01/2008	11:25	5.8	98	12.2	0.8	30	8.2	291			0.04	0.0010	0.013	4.8	15			
11/02/2008	11:16	8.1	99	11.7	1.2	20	8.0	309		0.01	<0.01		0.011	5.3	18			
19/02/2008	12:25	4.2	98	12.8	0.5	20	7.8	314			0.03	0.0003	0.010	6.6	18			
27/02/2008	12:30	7.4	103	12.4	0.7	20	8.2	302					0.012					
05/03/2008	12:40	9.0	121	14.0	0.6	16	8.0	315		0.02	<0.01		0.015	5.8	18			
08/04/2008	10:23	6.7	100	12.2	0.8	30	7.3	303		0.02	0.01	0.0000	0.004	5.4	17			
16/04/2008	12:10	9.5	94	10.7	1.0	30	8.1	298		0.04	0.01	0.0003	0.005	5.3	17			
15/05/2008	09:50	13.6	91	9.5	0.8	16	8.1	320		<0.01	<0.01		0.010	4.6	17			
12/06/2008	11:05	14.9	91	9.2	1.3	30	8.0	323		0.03	0.02	0.0007	0.036	5.1	17			
12/06/2008	12:30	16.1	109	10.7	4.0	20	8.1	294		0.03	0.02	0.0007	0.033	5.1	17			
15/07/2008	11:15	15.2	112	11.2	0.8	30	7.3	273		0.03	0.02	0.0001	0.009	4.6	16			
29/07/2008	13:50	17.5	100	9.6	2.4	40	8.0	275		0.01	<0.01		0.004	3.8	17			
25/08/2008	13:40	15.3	95	9.5	0.8	60	7.9	266		0.02	0.02	0.0004	0.005	3.9	14			
28/08/2008	15:70	15.7	97	9.6	1.0					0.03	0.02		0.007	4.6	16			
11/09/2008	10:45	13.8	98	9.9	1.1	80	7.7	249		0.04	0.03	0.0004	0.007	3.9	13			
01/10/2008	12:10	12.0	102	11.0	1.4	24	8.1	317		0.02	0.03	0.0011	0.007	5.1	16			
09/10/2008	12:45	11.7	99	10.7	0.9	73	7.7	274		0.03	0.02	0.0003	0.007	4.1	12			
12/11/2008	13:15	7.9	98	11.6	0.8	38		288		0.03	0.01		0.006	4.7	14			
19/11/2008	12:55	9.3	98	11.2	1.2	57	7.9	260		0.04	0.02	0.0003	0.008	4.0	14			
<b>Station No. 1900 Clohamon Br - dis Bunclody STW + Slaney Meats</b>													Latest Biological Quality Rating ( ) =			GIS Ref: S 93		
Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity ‰	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amm mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Col /100ml	E-Col /100ml	Flow m3/sec
27/02/2008	13:50	8.0	102	12.1	0.9	20	8.1	299		0.02	0.03	0.0007	0.011	5.7	17			
29/07/2008	13:05	17.1	100	9.6	4.4	40	7.9	290		0.02	<0.01		0.011	3.8	17			
01/10/2008	12:45	11.7	101	11.0	1.0	27	8.1	312		0.02	0.02	0.0005	0.007	4.7	15			
19/11/2008	13:25	9.3	98	11.2	1.2	57	7.9	260		0.04	0.02	0.0004	0.008	4.0	14			
<b>Station No. 2000 1 km dis Clohamon Br</b>													Latest Biological Quality Rating ( 2007 ) = Q3-4			GIS Ref: S 93		
Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity ‰	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amm mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Col /100ml	E-Col /100ml	Flow m3/sec
02/01/2008	14:05	8.2	103	12.1	0.9	20	8.1	288			0.03	0.0008	0.013	4.7	16			
11/02/2008	11:40	8.4	100	11.7	0.8	30	8.0	302		0.01	<0.01		0.011	5.2	16			
27/02/2008	12:50	7.7	101	12.1	0.8	15	8.1	301		<0.01	0.02	0.0005	0.011	5.7	17			
16/04/2008	12:30	9.0	88	10.2	1.1	30	8.0	293		0.02	0.00	0.0001	0.004	5.1	17			
12/06/2008	12:50	16.1	102	10.0	1.5	30	8.0	316		0.03	0.04	0.0013	0.032	4.9	17			
29/07/2008	13:40	17.2	97	9.3	2.2	30	7.9	254		0.02	0.00	0.0001	0.010	3.7	17			
28/08/2008	15:40	15.4	98	9.8	1.6					0.03	0.04		0.008	4.4	16			
01/10/2008	12:50	11.8	99	10.7	1.7	23	8.1	313		0.02	0.05	0.0016	0.008	5.0	16			
19/11/2008	13:35	9.4	98	11.2	1.4	56	7.9	253		0.04	0.03	0.0006	0.008	4.0	14			
<b>Station No. 2100 Ballycarney Br</b>													Latest Biological Quality Rating ( 2007 ) = Q3-4			GIS Ref: S 93		
Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity ‰	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amm mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Col /100ml	E-Col /100ml	Flow m3/sec
02/01/2008	14:35	8.3	97	11.4	1.0	20	8.1	285			0.02	0.0006	0.013	4.7	16			
27/02/2008	10:05	7.1	100	12.1	0.7	15	8.1	302		<0.01	0.02	0.0004	0.010	5.9	18			
29/07/2008	10:40	17.3	92	8.8	2.4	40	7.9	279		0.01	0.00	0.0001	0.011	4.0	19			
01/10/2008	10:50	11.6	103	11.2	0.8	21	8.1	303		0.01	0.01	0.0003	0.008	5.0	16			
19/11/2008	10:50	9.3	98	11.2	0.7	66	7.9	245		0.04	0.03	0.0006	0.009	3.9	16			
<b>Station No. 2200 Scarawalsh Br</b>													Latest Biological Quality Rating ( 2007 ) = Q4			GIS Ref: S 93		
Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity ‰	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amm mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Col /100ml	E-Col /100ml	Flow m3/sec
02/01/2008	14:30	8.5	97	11.3	1.0	20	8.0	285			0.02	0.0004	0.014	4.9	17			
11/02/2008	12:00	8.1	99	11.6	0.7	30	7.9	298		0.01	<0.01		0.010	5.3	16			
27/02/2008	10:20	7.0	101	12.3	0.6	15	8.0	301		<0.01	0.02	0.0004	0.009	6.0	18			25
16/04/2008	12:45	9.3	93	10.5	0.7	30	8.1	284		0.01	<0.01		0.004	5.2	17			30

Wexford County Council  
Appropriate Assessment 2001-10,000 p.e  
Slaney Valley Nature Conservation Site

Environmental Protection Agency, Regional Water Laboratory, Killinney - River Water Quality Monitoring Data

River		Code 12502										Tributary of:				
Slaney																
12/06/2008	13:00	16.4	119	11.6	1.8	30	8.1	312	0.02	0.07	0.0033	0.029	5.1	18		9
29/07/2008	10:50	17.7	94	9.0	2.2	40	7.8	275	0.02	0.01	0.0002	0.012	4.1	19		19
28/08/2008	16:00	16.0	101	10.0	2.2				0.03	0.02		0.008	4.5	16		
01/10/2008	11:10	11.6	106	11.5	0.7	18	8.2	678	0.01	0.01	0.0003	0.006	5.1	16		
19/11/2008	11:05	9.5	99	11.3	0.9	64	7.9	235	0.04	0.02	0.0004	0.008	4.0	14		40

Station No. 2250 N of Greenmount Hse. - Abs. for Enniscorthy water supply															Latest Biological Quality Rating ( ) =		Grid Ref: S 906 417	
Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity ‰	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amm mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Cell /100ml	E-Cell /100ml	Flow m3/sec
27/02/2008	10:40	7.0	100	12.1	0.5	20	8.0	288		<0.01	0.01	0.0002	0.007	6.0	19	9208	669	
29/08/2008	15:20	15.2	101	10.1	3.4					0.03	0.04		0.007	4.9	17			
01/10/2008	11:30	11.5	105	11.4	0.6	16	8.1	278		0.01	0.01	0.0004	0.006	5.5	18			
19/11/2008	11:25	9.5	99	11.3	0.6	56	7.8	232		0.04	0.04	0.0006	0.009	4.3	16	2678	590	

Station No. 2300 Enniscorthy Br - tidal effects															Latest Biological Quality Rating ( ) =		Grid Ref: S 972 400	
Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity ‰	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amm mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Cell /100ml	E-Cell /100ml	Flow m3/sec
02/01/2008	14:10	8.4	95	11.1	0.9	20	8.0	277			0.02	0.0004	0.013	5.0	17			
11/02/2008	12:20	8.7	100	11.8	0.3	30	7.9	284		0.01	<0.01		0.010	5.5	17			
27/02/2008	10:55	7.1	100	12.1	0.6	20	8.0	290		<0.01	0.01	0.0002	0.008	6.1	19			
16/04/2008	13:00	9.8	93	10.5	0.7	30	8.1	273		0.01	<0.01		0.005	5.3	18			
12/06/2008	13:15	16.2	131	12.9	1.5	30	8.3	303		0.02	0.01	0.0005	0.032	5.1	20			
29/07/2008	11:00	17.5	93	8.9	2.3	30	7.8	267		0.03	0.03	0.0007	0.017	4.5	19			
28/08/2008	15:70	15.7	102	10.1	0.9					0.03	0.03		0.008	4.9	17			
01/10/2008	11:45	11.6	105	11.4	0.6	18	8.1	276		0.01	0.02	0.0005	0.006	5.4	17			
19/11/2008	11:40	9.5	99	11.3	0.8	55	7.8	227		0.03	0.03	0.0003	0.008	4.2	15			

Station No. 2400 d/s Enniscorthy - tidal															Latest Biological Quality Rating ( ) =		Grid Ref: S 972 399	
Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity ‰	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amm mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Cell /100ml	E-Cell /100ml	Flow m3/sec
09/01/2008	14:00	9.7	94	10.9	1.0	20	8.0	277			0.02	0.0005	0.014	5.0	17			
27/02/2008	11:05	7.1	99	12.0	0.5	15	8.0	290		<0.01	0.02	0.0004	0.008	6.1	19			
29/07/2008	11:10	17.7	94	9.0	2.0	30	7.8	266		0.02	0.03	0.0007	0.017	4.3	19			
01/10/2008	11:50	11.5	104	11.3	0.5	18	8.1	276		0.01	0.02	0.0006	0.006	5.4	17			
19/11/2008	11:55	9.8	99	11.2	0.7	56	7.8	227		0.04	0.02	0.0003	0.008	4.2	15			

Station No. 2500 Edermine Br - d/s Enniscorthy STW - tidal															Latest Biological Quality Rating ( ) =		Grid Ref: S 977 345	
Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity ‰	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amm mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Cell /100ml	E-Cell /100ml	Flow m3/sec
02/01/2008	13:50	9.0	92	10.6	0.7	20	7.9	261			0.02	0.0004	0.015	5.0	17			
11/02/2008	12:30	9.1	95	11.0	1.0	16	7.9	266		0.01	<0.01		0.010	5.4	17			
27/02/2008	11:20	7.5	96	11.5	0.6	15	7.9	273		<0.01	0.02	0.0003	0.009	6.1	19			
16/04/2008	13:15	10.0	86	9.7	0.7	30	7.9	258		0.02	0.02	0.0004	0.007	5.3	18			
12/06/2008	13:30	16.6	113	11.0	1.4	30	7.9	281		0.02	0.05	0.0015	0.036	5.0	19			
29/07/2008	11:20	17.5	94	9.0	2.6	40	7.7	249		0.02	0.03	0.0006	0.016	4.4	19			
19/11/2008	12:10	9.7	95	10.8	0.8	54	7.8	215		0.03	0.02	0.0003	0.007	4.2	15			

River Slaney Code 12S02

**Notes:**

- (a) The river Slaney is 121 km in length and has a catchment area of 1763 km<sup>2</sup>. It rises in the Wicklow Mountains and then flows through Counties Carlow and Wexford. It discharges into Wexford Harbour.
- (b) This report refers only to the freshwater reaches of the Slaney in Counties Carlow & Wexford. The Kilkenny Laboratory does not monitor the upper reaches of the Slaney in County Wicklow.
- (c) Station 800 is in Co Wicklow, stations 900 to 1800 are in Co. Carlow and stations 1900 to 2800 are in Co. Wexford.
- (d) The Slaney flows mainly through agricultural areas – but also flows through the towns of Baltinglass, Tullow, Bunclody, Enniscorthy and Wexford.
- (e) The Slaney is a Designated Salmonid river in accordance with the EU Freshwater Fish Directive (78/659/EEC).
- (f) Sample stations No 1200, 1500, 1700 & 1900 were abandoned in 2007 – following the implementation of the monitoring programme for the Water Framework Directive. Station No 1900 was reinstated in 2008.
- (g) Stations 2600, 2700 & 2800 continue to be monitored – however these are tidal/brackish and, under the Water Framework Directive (i.e. since 2007 inclusive), these are now included with the Transitional Waters Monitoring (Slaney Estuary).
- (h) Graphs are used to summarise the Slaney monitoring data for 2006 to 2008 (see bar graphs for DO, BOD, total ammonia, un-ionised ammonia, o-Phosphate, nitrate, nitrite & chloride).

**R Slaney - Assessment**

Nitrates levels are moderately elevated in the lower reaches. There is a moderate loss of quality d/s Tullow and Clohamon at times. Otherwise water quality in the River Slaney was reasonably satisfactory in 2008.

**Change from 2007**

No significant change observed.

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***Extracts from EPA "River Water Quality In County Wexford"  
Report 2008 - Bann***

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 Appropriate Assessment 2001-10,000 p.e  
 Slaney Valley Nature Conservation Site

Environmental Protection Agency, Regional Water Laboratory, Kilkenny - River Water Quality Monitoring Data

River **Bann**

Code **12B01**

Tributary of: **Slaney**

Station No. **0100** **Pallis Br - Abstraction for Gorey water supply**

Latest Biological Quality Rating ( 2007 ) = **Q4-5** Grid Ref: **T 116 681**

Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity also	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amm mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Col /100ml	E-Col /100ml	Flow m3/sec
3/01/2008	13:25	6.9	100	12.2	0.7	10	7.2	97		0.11	0.01	0.0000	<0.001	2.4	12	24192	41	
1/03/2008	12:40	8.3	101	11.9	2.6	70	7.1	206		0.04	0.05	0.0001	0.011	4.5	22	441	21	1.2
3/06/2008	11:50	11.5	100	10.9	0.7	10	7.9	97		<0.01	0.02	0.0003	0.001	1.7	12	1153	226	0.2
3/08/2008	13:00	14.6	91	9.3	0.7	10	7.3	97		0.01	0.00	0.0004	0.001	1.8	12	808	122	0.6
4/11/2008	12:25	9.1	100	11.5	0.8	10	7.0	94		0.01	0.00	0.0000	0.001	2.1	11	688	26	

Station No. **0300** **Killichael Br - Abstraction for Gorey water supply**

Latest Biological Quality Rating ( 2007 ) = **Q4** Grid Ref: **T 119 616**

Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity also	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amm mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Col /100ml	E-Col /100ml	Flow m3/sec
10/1/2008	13:10	7.1	97	11.7	0.7	10	7.1	148		0.10	0.03	0.0001	0.010	4.7	15	5172	170	
1/03/2008	12:25	7.0	101	12.3	1.3	40	7.5	148		0.01	0.02	0.0001	0.003	3.1	16	4604	829	
3/06/2008	11:35	11.1	98	10.8	1.4	30	7.8	145		0.01	0.01	0.0002	0.007	3.1	16	>24192	5172	
3/08/2008	12:45	13.9	95	9.8	1.2	10	7.3	148		0.01	0.02	0.0001	0.005	3.9	14	2442	244	
4/11/2008	12:10	9.3	98	11.2	0.9	11	7.7	142		0.02	0.01	0.0001	0.005	4.2	14	1049	67	

Station No. **0400** **Margery's Br**

Latest Biological Quality Rating ( 2007 ) = **Q4-5** Grid Ref: **T 114 593**

Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity also	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amm mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Col /100ml	E-Col /100ml	Flow m3/sec
10/1/2008	12:50	6.8	96	11.7	0.6	10	7.1	161		0.09	0.02	0.0001	0.002	5.0	15			
1/03/2008	12:10	7.0	100	12.1	1.2	40	7.6	149		0.01	0.01	0.0001	0.003	3.3	16			
3/06/2008	11:20	11.5	98	10.7	2.0	30	7.7	153		0.01	0.01	0.0001	0.009	3.2	16			
3/08/2008	12:35	13.7	95	9.9	0.8	10	7.2	153		0.01	0.02	0.0001	0.004	4.2	14			
4/11/2008	11:55	9.3	98	11.2	0.7	10	7.9	148		0.02	0.00	0.0001	0.004	4.6	14			

Station No. **0500** **Ballydaniel Br**

Latest Biological Quality Rating ( 2007 ) = **Q4** Grid Ref: **T 079 549**

Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity also	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amm mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Col /100ml	E-Col /100ml	Flow m3/sec
01/1/2008	12:20	7.0	95	11.5	0.9	5	7.1	184		0.10	0.03	0.0001	0.004	6.4	17			
03/1/2008	11:35	7.1	99	12.0	1.5	40	7.6	181		0.01	0.01	0.0001	0.005	4.5	18			
06/1/2008	10:50	11.7	98	10.6	1.2	30	7.7	190		<0.01	0.02	0.0002	0.013	5.3	18			
08/1/2008	11:55	13.7	97	10.1	0.8	5	7.3	181		0.01	0.01	0.0001	0.008	5.5	16			
11/1/2008	11:25	9.5	97	11.1	0.7	9	7.7	189		0.02	0.01	0.0001	0.006	6.0	16			

Station No. **0600** **Millshoge Br (d/s Camolin)**

Latest Biological Quality Rating ( 2007 ) = **Q4** Grid Ref: **T 074 532**

Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity also	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amm mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Col /100ml	E-Col /100ml	Flow m3/sec
01/1/2008	12:10	7.0	96	11.7	0.8	10	7.2	187		0.11	0.03	0.0001	0.005	6.3	17			
03/1/2008	11:30	7.3	100	12.0	3.2	60	7.6	190		0.03	0.00	0.0000	0.007	4.4	19			
06/1/2008	10:45	11.9	97	10.5	2.9	20	7.7	192		0.01	0.03	0.0003	0.014	5.2	18			
08/1/2008	11:35	13.9	95	9.8	1.0	10	7.3	193		0.02	0.01	0.0001	0.005	5.5	16			
11/1/2008	11:15	9.4	97	11.1	0.7	10	7.5	184		0.02	0.01	0.0001	0.007	5.9	16			

Station No. **0800** **Br at Milltown, E of Ferns - d/s Irish Country Meats**

Latest Biological Quality Rating ( 2007 ) = **Q3-4** Grid Ref: **T 031 494**

Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity also	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amm mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Col /100ml	E-Col /100ml	Flow m3/sec
11/1/2008	11:50	7.1	95	11.5	0.8	15	7.2	196		0.09	0.03	0.0001	0.009	6.5	19			
13/1/2008	11:10	7.0	99	12.0	1.6	60	7.6	201		0.03	0.02	0.0002	0.006	4.6	21			
16/1/2008	10:30	11.8	93	10.1	1.2	20	7.7	213		0.01	0.02	0.0002	0.011	5.4	22			
18/1/2008	11:20	13.8	94	9.7	0.6	10	7.3	198		0.01	0.02	0.0001	0.008	6.3	17			
11/2/2008	11:00	9.4	97	11.1	0.7	5	7.3	204		0.02	0.01	0.0001	0.007	6.2	21			7

Station No. **0900** **Doran's Br, S of Ferns**

Latest Biological Quality Rating ( 2007 ) = **Q4-5** Grid Ref: **T 022 484**

Date	Time	Temp °C	D.O %Sat	DO mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity also	o-Phos mg/l P	Ammonia mg/l N	Un-ion-amm mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Col /100ml	E-Col /100ml	Flow m3/sec
1/1/2008	11:40	7.1	94	11.4	0.8	10	7.2	197		0.10	0.04	0.0001	0.009	6.4	19			
3/1/2008	10:25	7.2	100	12.1	1.9	60	7.6	203		0.04	0.02	0.0002	0.005	4.6	22			
6/1/2008	10:20	12.1	96	10.3	1.1	15	7.8	223		0.02	0.02	0.0004	0.016	5.4	23			

Wexford County Council  
 Appropriate Assessment 2001-10,000 p.e  
 Slaney Valley Nature Conservation Site

Environmental Protection Agency, Regional Water Laboratory, Kilkenny - River Water Quality Monitoring Data

River	Bann	Code 12B01									Tributary of: Slaney				
26/08/2008	11:10	14.0	98	9.9	1.2	15	7.3	210	0.01	0.03	0.0002	0.011	<b>5.8</b>	17	
04/11/2008	10:50	9.4	97	11.1	0.8	10	8.1	200	0.02	0.03	0.0009	0.009	<b>6.3</b>	19	

Station No. 1000 Bann Br, up Slaney confluence										Latest Biological Quality Rating ( 2007 ) = Q4					Grid Ref: S 987			
Date	Time	Temp °C	D.O %Sat	D.O mg/l O2	B.O.D mg/l O2	Colour Hazen	pH	Cond µS/cm	Salinity also	o-PHos mg/l P	Ammonia mg/l N	Un-ion-amm mg/l NH3	Nitrite mg/l N	Nitrate mg/l N	Chloride mg/l Cl	T-Cell /100ml	E-Cell /100ml	Flow m3/sec
16/01/2008	11:05	7.1	95	11.5	0.7	10	7.3	201		<b>0.09</b>	0.03	0.0001	0.009	<b>6.6</b>	19			
11/03/2008	10:30	7.3	100	12.0	0.7	30	7.8	103		0.01	0.01	0.0001	0.001	1.7	13			
06/06/2008	09:55	12.5	95	10.1	1.1	15	7.8	223		0.02	0.02	0.0003	0.023	<b>5.5</b>	22			
04/11/2008	10:25	9.4	96	11.0	0.8	10	8.0	205		0.02	0.02	0.0004	0.008	<b>6.3</b>	18			

**Assessment**

There was a slight loss of quality d/s Camolin in 2008 and nitrates are elevated. Otherwise quality is satisfactory.

**Change from 2007**

Slight deterioration observed d/s Camolin in 2008 (increased BOD levels) – otherwise no significant change observed.

**Note:** Sample station No 200 on the R Bann was discontinued since 2007 – following the implementation of the monitoring programme for the Water Framework Directive.

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