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ROSCOMMON COUNTY COUNCIL
STROKESTOWN WASTE WATER DISCHARGE LICENCE
ANNEX A
NON TECHNICAL SUMMARY

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SECTION A: NON-TECHNICAL SUMMARY

A.1 General

This application refers to the Strokestown Waste Water Works which serves an agglomeration including Strokestown Town and Environs. The Strokestown WWTP in Cloonradoon townland, Strokestown is the primary discharge point and discharges to the tributary of the River Scramoge just east of Strokestown Town. There are also two secondary discharges within the Waste Water network discharging into the tributary of the River Scramoge. Refer to drawing 11.

The town of Strokestown is located in the east of County Roscommon. It is also located along the N5 National Primary Route and the River Scramoge. The natural drainage for the town is such the land generally slopes to the northeast and is drained by the tributary of the River Scramoge.

The town is served by a foul system which is partially combined sewerage system. The various branch sewers with peripheral pumping station eventually discharge to the Strokestown waste water treatment plant. This is located on a site adjacent to Strokestown house. The peripheral pumping station are at Lisroyne townland.

The Department of Environment, Heritage and Local government has approved funding for the Design Build Operate contract upgrade of Strokestown waste water treatment plant. The DBO contract is scheduled to start during 2010. The proposed design PE for Strokestown WWTP is 3,060.

A.2 Wastewater Treatment Works

The treatment process is Preliminary and Secondary. The plant is currently designed to serve a population equivalent (p.e) of 2,076.

3 Design Dry Weather Flow (DWF) flows to the inlet works for treatment. Flows in excess of 3 DWF are overflowed through a manually raked screen with 50mm aperture spacings to stormwater overflow chamber. The screenings are raked from the screen back into a bin for disposal to landfill. The stormwater from the overflow chamber flows via a pipe to the tributary of the River Scramoge.

The plant is made up of the following elements:-

ANNEX 3: TABLES / ATTACHMENTS

- Inlet Works

The influent enters Strokestown WWTP at the inlet works where it first passes through a manually raked screen (50mm apertures). Floating solids, paper, plastic, etc are all removed. The removed solids, known as screenings are very unhygienic due to faecal matter. The screenings are removed from the flow, washed, compacted, and deposited in a bin for removal off site.

After screening the influent next flows through a grit trap. The grit is removed to prevent silting and pump damage. The grits are settled out of flow, removed, washed and deposited to a skip for removal off site. The influent then flow through a flow measurement flume where the volume of influent is measured by means of an ultrasonic sensor. The final element of the inlet works is the Mono Muncher unit. The purpose of this is to reduce the particle size of wastewater solids. From here, the wastewater flows via gravity to the circular oxidation basin. For maintenance purposes or in the event of operational problems with the Mon Muncher, there is a by-pass around the unit. There is no form of primary treatment provided on site.

- Biological Treatment

From the preliminary treatment units, the influent gravitate to the top of the aeration basin. The circular oxidation basin has an outer radius of 11m and an inner radius of 4.55m, with a measured depth of 2.0m thus providing a volume of 630m³..

The bio-reactor consists of an aeration basin divided into four equal compartments. The aeration basin is designed as a subsurface diffused air tank. Oxygen levels in each compartment are controlled by dissolved oxygen probes which regulates the air input to each disc diffuser.

- Sedimentation

From the outlet chamber of the aeration basin, the mixed liquor can be distributed via a 200mm diameter pipe evenly between two sedimentation tanks to a central bellmouth feed.

Flow from the aeration tank exits the aeration tank via an adjustable weir located on the inner wall of the aeration basin

ANNEX 3: TABLES / ATTACHMENTS

and passes to an inner clarifier (9.1m diameter). The inner clarifier has a side wall depth of 2.3m with a 15 degree slope to the central sludge collection hopper. The TWL within the inner clarifier is approximately 46.50m OD malin. In the clarifier tank, the sludge is settled out. The floor slopes into a central sump, where the sludge is gathered by a rotating scraper. The sludge is pumped from this sump to the Sludge Return Pump chamber via a 100mm diameter pipe. Any suspended matter which is less than dense than water will rise to the surface and form a scum. There is no scum removal system and any scum/rags that rise to the surface of the clarifier overflows into the receiving waters.

The supernatant liquid from these tanks is decanted off the top through the notch overflow weir and baffle plate. The overflow weir and baffle runs around the periphery of the clarifier tank. The final treated effluent gravitates through a 225mm pipeline to the Tributary of the River Scramoge. There is no flow measurement flume or flow proportional sampler of the final treated effluent.

The design of the settling tank has been based on an upward flow rate of 0.9m/hour for 3 times the Dry Weather Flow. Activated sludge is removed from a central hopper in the tank and returned under hydrostatic head at a rate of 1 D.W.F. to the sludge Return Pump Chamber where sludge is pumped to the head of the aeration tanks.

The plant is designed such that the concentrations form BOD and suspended solids do not exceed 25 mg/l o₂ and 35 mg/l in accordance with Table 1 of the Urban Wastewater Directive 91/271/EEC.

- Sludge Treatment

There is no sludge treatment on site. Excess sludge from the settlement tank is pumped to the sludge holding tank. Sludge enters at the top of the tank via a 100mm rising main from the sludge sump chamber. There is a 100mm supernatant draw off pipe which returned the supernatant liquid directly to the aeration tank.

A private service provider removes the sludge from the sludge holding tank by a suction tanker and transported offsite for further treatment at Roscommon WWTP.

- Plant Controls

There is one building at the WWTP. This building houses the control panel at the WWTP. The treatment plant does not have computer based Supervisory Control And Data Acquisition (SCADA) telemetry system installed at the WWTP.

A.3 Sources of Emissions

All effluent from the WWTP discharges through a dedicated outfall line to the Tributary of the River Scramoge. This is the primary discharge point (SW1) and discharges effluent along a 225mm diameter gravity pipeline, 250m northeast of treatment plant. Refer to drawing 03. The incoming effluent is treated in the wastewater plant through a series of Preliminary and Secondary processes.

There are also 2 no. potential secondary discharge overflows to the Tributary of the River Scramoge on the wastewater collection system at the following locations in Strokestown town;

- SW2 located on the tributary of the River Scramoge in Farnbeg Pumping station, Farnbeg Townland, Strokestown. Refer to drawing 04 and drawing 09.
- SW3 located on the tributary of the River Scramoge in Farnbeg Townland, Strokestown. Refer to drawing 05 and drawing 10.

A.4 Nature and Quantities of Foreseeable Emissions Technology for prevention or reduction of emissions. Further measures planned to eliminate or reduce emissions.

All effluent from the Strokestown WWTP discharges to the Tributary of the River Scramoge through a single discharge point (SW1). The treatment plant collects sewage from agglomerations highlighted in drawing 01. The incoming untreated effluent entering the works is consistent with a predominantly domestic source with some commercial and industrial loadings included. There is no loading that would be considered radically different from what would be considered normal municipal sewage.

The potential loadings to the receiving waters would be BOD, COD, Suspended Solids, Phosphorus, Nitrates and Ammonia. These potential loadings to the aquatic environment are greatly reduced by the process and levels leaving the works are well below levels indicated in the Urban Waste Water Directive and the parameters indicated for the plant.

ANNEX 3: TABLES / ATTACHMENTS

The tributary of the River Scramoge is not designated a salmonoid river under S.I No. 293-1998. The plant is designed to achieve an effluent of BOD5 = 25 mg/l and suspended solids = 35 mg/l as per EC Directive No. 91/271/EEC. The treated effluent is currently meeting the required parameters.

The plant is designed to provide preliminary and secondary treatment for a population equivalent (PE) of 2,076 (1 PE = 0.06kg BOD/d excluding industrial loads).

A DBO contract is scheduled to start during 2010 for the upgrade of Strokestown WWTP. The proposed design PE for Strokestown WWTP is 3,060.

A.5 Supervision, Control and Emissions Monitoring

The Strokestown treatment plant is run by a team of two i.e. an Executive Technician and a caretaker. The Executive Technician and caretaker report to the Senior Executive Engineer in the Strokestown Area office. The Senior Executive Engineer – Strokestown area reports to the Senior Engineer, Water Services. The Executive Technician will also report to the Chief Technician (Laboratory) Senior Executive Engineer, Water Services. The Senior Executive Engineer reports to the Senior Engineer, water Services. The plant is manned from Monday to Friday from 8.00am to 4.30pm.

A contract is in place with a service provider to carry out maintenance to the plant on a regular basis. The contract is awarded through a tendering process. The contract includes rates for rapid response to emergency situations and call out rates for breakdowns.

The current monitoring and sampling programme on the Tributary of the River Scramoge is carried out on a monthly basis at the location on Drawing 12. The EPA have two biological quality rating (Q values) sampling point near Strokestown WWTP. The results are published every three years in the EPA's report on Water Quality in Ireland. Refer to attachment E.2 for a summary of the current environmental programme out by Roscommon County Council.

Strokestown Waste Water plant is provided with two monitoring points and three sampling points. Sampling and testing procedures are carried out by Roscommon County Council in accordance with Standard Operating Procedure No. 900, a copy of which is provided in Attachment No. E.2.

ANNEX 3: TABLES / ATTACHMENTS

The Executive technician from Roscommon County Council Environment Department takes samples more than 12 times a year at the following locations (refer to drawing 12) with the waste water treatment plant:

1. Treatment plant inlet works 1
2. Aeration tank 1
3. Outlet flume 1

(1 = grab sample)

The grab inlet sample ES1 is taken once a month. Analysed for BOD, COD, Suspended Solids, PH, ammonia, Nitrate, Nitrite, Total Oxidized Nitrogen, Ortho P and Total P.

Each month a grab sample ES2 is taken from the aeration tank in Strokestown. The samples are analysed for PH and MLSS. The Caretaker also carries out cone tests.

The grab outlet sample ES3 is taken once a month. The sample are analysed for BOD, COD, Suspended Solids, PH, Ammonia, Nitrate, Nitrite, Total Oxidized Nitrogen, Ortho P and Total P, fluoride, Conductivity and Temperature.

The treated effluent is discharged into the Tributary of the River Scramoge (see Table D.2 for monitoring locations). On a monthly basis, the Executive technician takes grab samples at a upstream station aSW1u and a down stream aSW1d station of the plants discharge point (SW1) to the Tributary of the River Scramoge. The grab samples are analysed for dissolved oxygen, temperature, PH, BOD, ammonia, nitrate, nitrite, total oxidized nitrogen, Ortho P, fluoride, sulphate, conductivity and hardness.

The samples are tested and results for the BOD, COD, Suspended Solids, ammonia and total phosphorous are noted. The plant is designed to produce a final standard effluent of 25mg/l BOD5 and 35mg/l suspended solids.

A.6 Conclusion

The Wastewater Treatment Plant at Strokestown provides treatment for the sewerage effluent generated by the agglomeration of Strokestown Town and Environs. The agglomeration also includes two secondary discharge points.

STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

Waste Water Plant	Sample Date	BOD ₅ (mg/l)	Suspended Solids (mg/l)	Phosphorous Total (mg/l)
Strokestown	January 2008	10	40	1.8
Strokestown	February 2008	23	8	0.27
Strokestown	March 2008	2.63	6	0.661
Strokestown	April 2008	2.29	3	RNV
Strokestown	May 2008	2.26	4	1.21
Strokestown	June 2008	1.14	3	2.18
Strokestown	July 2008	1.62	7	2.33
Strokestown	August 2008	3.38	2	RNV
Strokestown	September 2008	3.27	2	0.718
Strokestown	October 2008	1.64	5	0.631
Strokestown	November 2008	1.37	8	0.935
Strokestown	December 2008	2.34	5	0.786
Strokestown	January 2009	2.03	40	1.8

Table A6.1 : Effluent results for Strokestown WWTP

The WWTP currently complies with standards. Refer to table A6.1 Strokestown WWTP is included in the Water Services Investment Programme Assessment of Needs. The DBO contract is scheduled to start during 2010 for the upgrade of Strokestown WWTP. The proposed design PE for Strokestown WWTP is 3,060. These additional treatment processes proposed at the new WWTP will improved the standards of emissions to the aquatic environment and comply with the objectives of the Water Framework Directive.

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ROSCOMMON COUNTY COUNCIL
STROKESTOWN WASTE WATER DISCHARGE LICENCE
ANNEX B
GENERAL

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SECTION B: GENERAL: - ATTACHMENT B8.

SITE NOTICE

APPLICATION TO THE ENVIRONMENTAL PROTECTION
AGENCY FOR A WASTE WATER DISCHARGE LICENCE

Applicant: Roscommon County Council,
Courthouse,
Roscommon.

The Strokestown Waste Water Works comprises of the existing treatment plant at Cloonradoon Td. and the associated collection network.

Roscommon County Council intends to apply to the Environmental Protection Agency for a waste water discharge licence, in accordance with the Waste Water Discharge (Authorisation) Regulations 2007, for discharges from the Strokestown Waste Water Works.

The treatment works is located in Cloonradoon Td., Strokestown, County Roscommon (National Grid Reference 193805E, 280558N).

The treatment plant includes preliminary and secondary treatment units with sludge holding tank. The primary discharge from the works discharges treated effluent to the Tributary of the River Scramoge.

The discharges to be covered by this application are the primary discharge point from the treatment plant to the Tributary of the River Scramoge at 194021E, 280777N in the townland of Cloonradoon and the secondary discharge points located in Lisroyne Td. (192809E, 280167N), and Lisroyne / Farnbeg Td. (193375E, 280689N).

A copy of the application, information relating to the application and any further information relating to the application as may be furnished to the Agency will be available for inspection or purchase at the headquarters of the Agency and at Roscommon County Council, Courthouse, Roscommon, after the 28th February 2009.

Submissions in relation to the application may be made to the Agency at its headquarters.

Roscommon People Friday 20 February 2009

...sle in volunteers

...re, the national holiday centre for ... Association, in Dongmon, is cur- ... volunteers and a recruitment evening ... Monday next, February 23rd between ...

...Centre will be hosting an open- ... nity volunteers to participate.



COMHAIRLE CHONTAE ROS COMÁIN
ROSCOMMON COUNTY COUNCIL

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTE WATER DISCHARGE LICENCE

Applicant: Roscommon County Council,
Courthouse,
Roscommon.

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Submissions in relation to the application may be made to the Agency at its headquarters.

ATTACHMENT B8: - A Copy of the "Roscommon People" advertisement for Strokestown WWTP - 20th February 2009.

Annex B: - General

**B.9 (i) Population Equivalent of Agglomeration
Strokestown**

Existing Population Equivalent

Description	Typical Loading (g BOD/d)	Typical Loading (m ³ /d)	Strokestown			
			No. of	(m ³ /d)	Kg BOD/d	PE
Residential						
Houses	178.7	0.67	352	235.84	62.89	1048
Institutional						
Schools (no. pupils)	10.7	0.04	551	22.04	5.88	98
Nursing Homes (per bed)	112	0.42		0	0	0
Garda station	53.3	0.2	1	0.2	0.05	1
Commercial						
Shop (retail)	53.3	0.2	5	1	0.27	4
Shop (chemist)	53.3	0.2	6	1.2	0.32	5
Laundrette	1200	4.5	1	4.5	1.20	20
Library	133.3	0.5	1	0.5	0.13	2
Restaurant	800	3	2	6	1.6	27
Business (trade)	666.7	2.5		0	0	0
Butcher	186.7	0.7	1	0.7	0.19	3
Public House	880	3.3	9	29.7	7.92	132
Funeral Home	133.3	0.5	1	0.5	0.13	2
Hairdresser	746.7	2.8	2	5.6	1.49	25
Bank	373.3	1.4	1	1.4	0.37	6
Garage	666.7	2.5	3	7.5	2.00	33
Hotel (per bed)	112	0.42	11	4.62	1.23	21
B&B (per bed)	112	0.42	6	2.52	0.67	11
Church	186.7	0.7	2	1.4	0.37	6
Hall	213.3	0.8	1	0.8	0.21	4
Office	186.7	0.7	2	1.4	0.37	6
Health centre	133.3	0.5		0	0	0
Sports club	480	1.8	1	1.8	0.48	8
Total Existing PE						1463

Notes:

1PE = 0.225 m³/day or 60gBOD/day.

A housing occupancy of 2.97 person per household was used in the calculations. This figure was based on CSO data on house occupancy rates in County Roscommon from 1986 to 2004.

STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

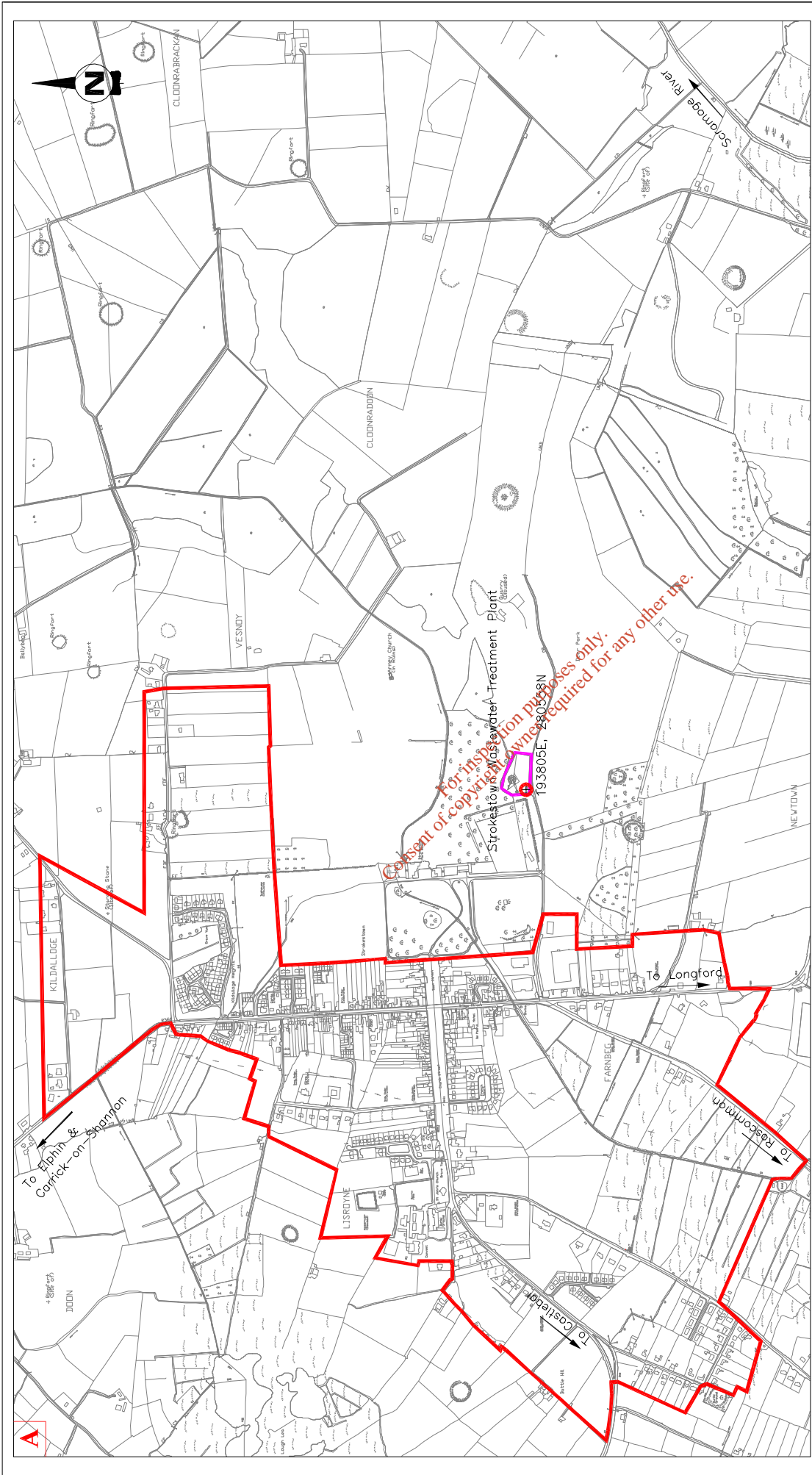
Overall Growth Rate									
Town	2004 PE	Growth rate				Population 2029			
		Low	Medium	High	LA	Low	Medium	High	VSGR
Strokestown	1463	0.6	1.8	3	1.8	1699	2285	3063	2285

Domestic Growth Rate									
Town	2004 PE	Growth rate				Population 2029			
		Low	Medium	High	LA	Low	Medium	High	VSGR
Strokestown	1048	0.6	1.8	3	1.8	1217	1637	2194	1637

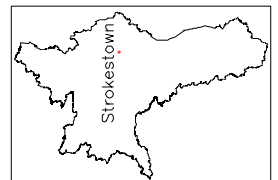
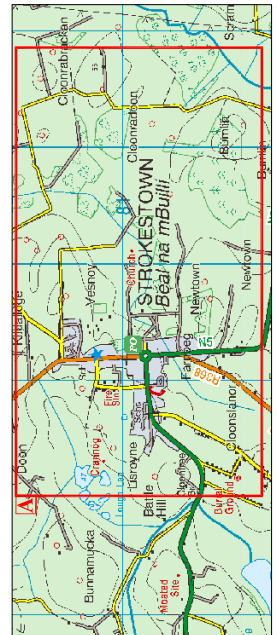
Commercial Growth Rate									
Town	2004 PE	Growth rate				Population 2029			
		Low	Medium	High	LA	Low	Medium	High	VSGR
Strokestown	316	0.6	1.8	3	1.8	367	494	662	494

Institutional Growth Rate									
Town	2004 PE	Growth rate				Population 2029			
		Low	Medium	High	LA	Low	Medium	High	VSGR
Strokestown	99	0.6	1.8	3	1.8	115	155	207	155

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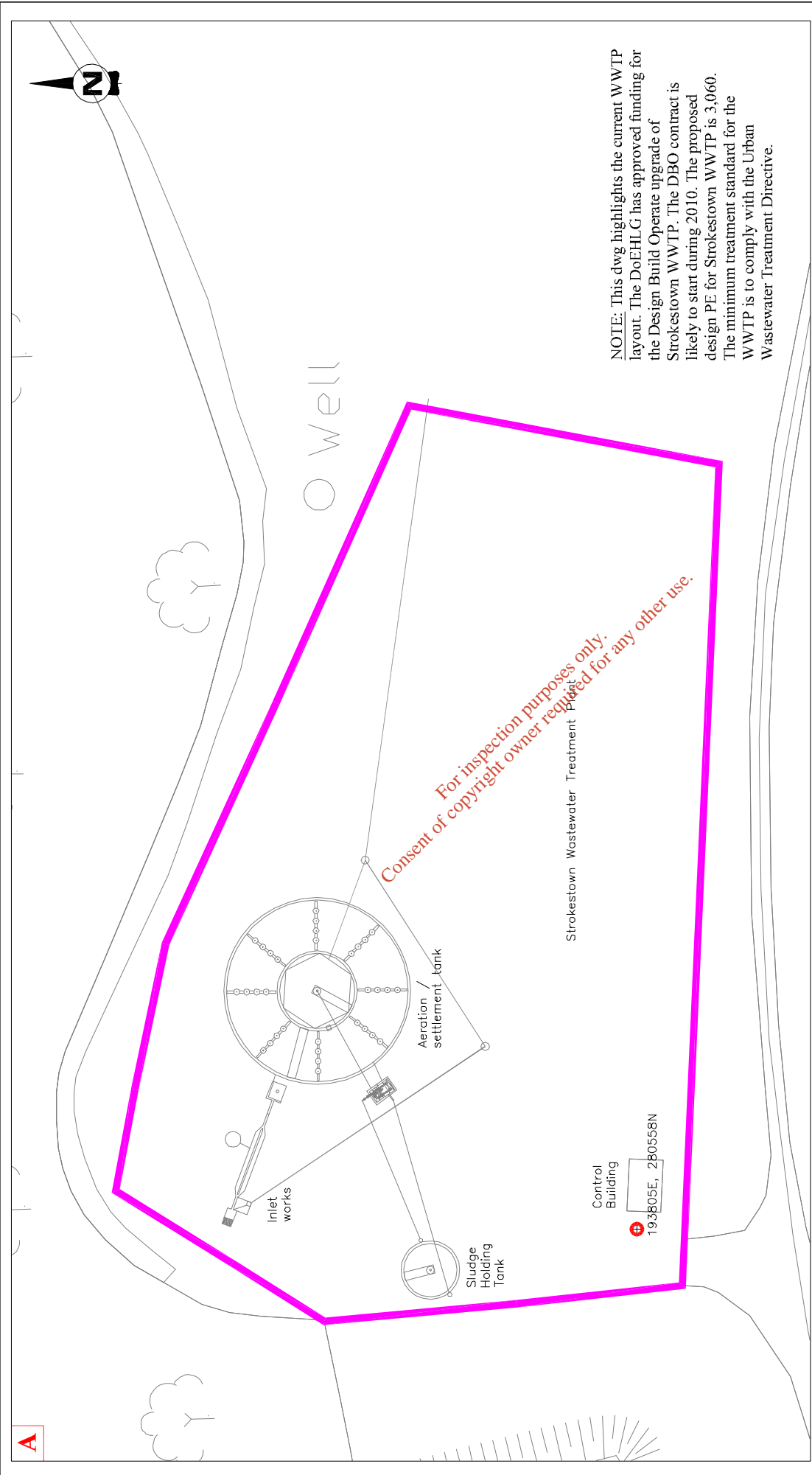


 COMHAIRE CHONTAE ROSCOMMON ROSCOMMON COUNTY COUNCIL	DRAWING TITLE: Agglomeration Served by Strokesown WWTP	
	DRAWN: P. Fleming	DRAWING No. 01
PROJECT: Strokesown Waste Water Discharge Licence Application	SCALES: 1:10000	
	DATE: 28th FEB 2009	APPROVED: V. Walsh
	CHECKED: P. Fleming	APPROVED: V. Walsh

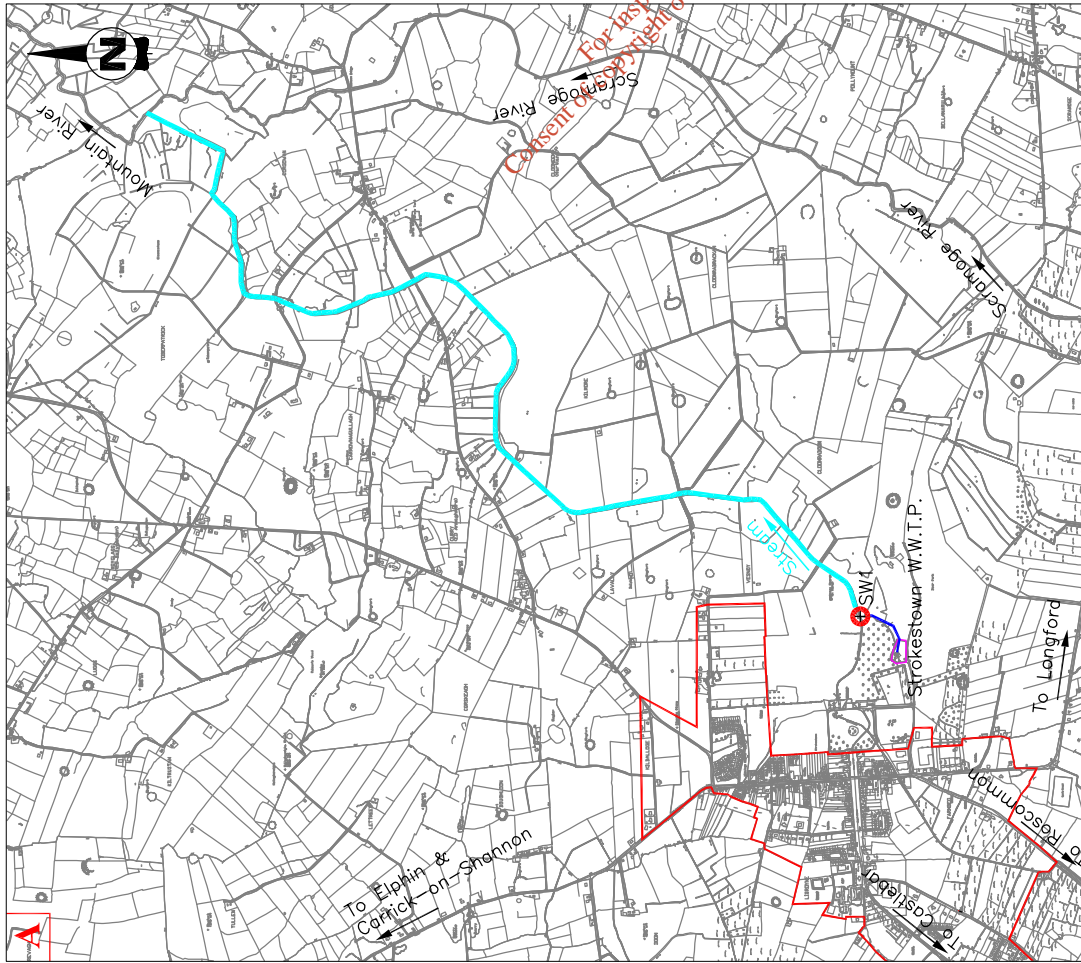


LEGEND

- WWTW BOUNDARY
- AGGLOMERATION BOUNDARY
- Location of Strokesown WWTP



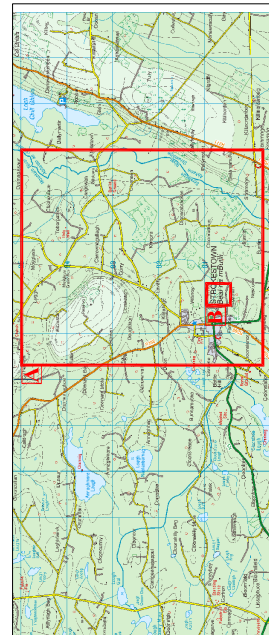
LEGEND WWTP BOUNDARY Location of Strokestown WWTP				COMHAIRLE CHONTAE ROSCOMMON ROSCOMMON COUNTY COUNCIL	DRAWING TITLE: Strokestown WWTP Site Plan & Boundary
				PROJECT: Strokestown Waste Water Discharge Licence Application	DRAWN: P. Fleming
				SCALES: N.T.S.	CHECKED: P. Fleming
				DATE: 28th FEB 2009	APPROVED: V. Walsh



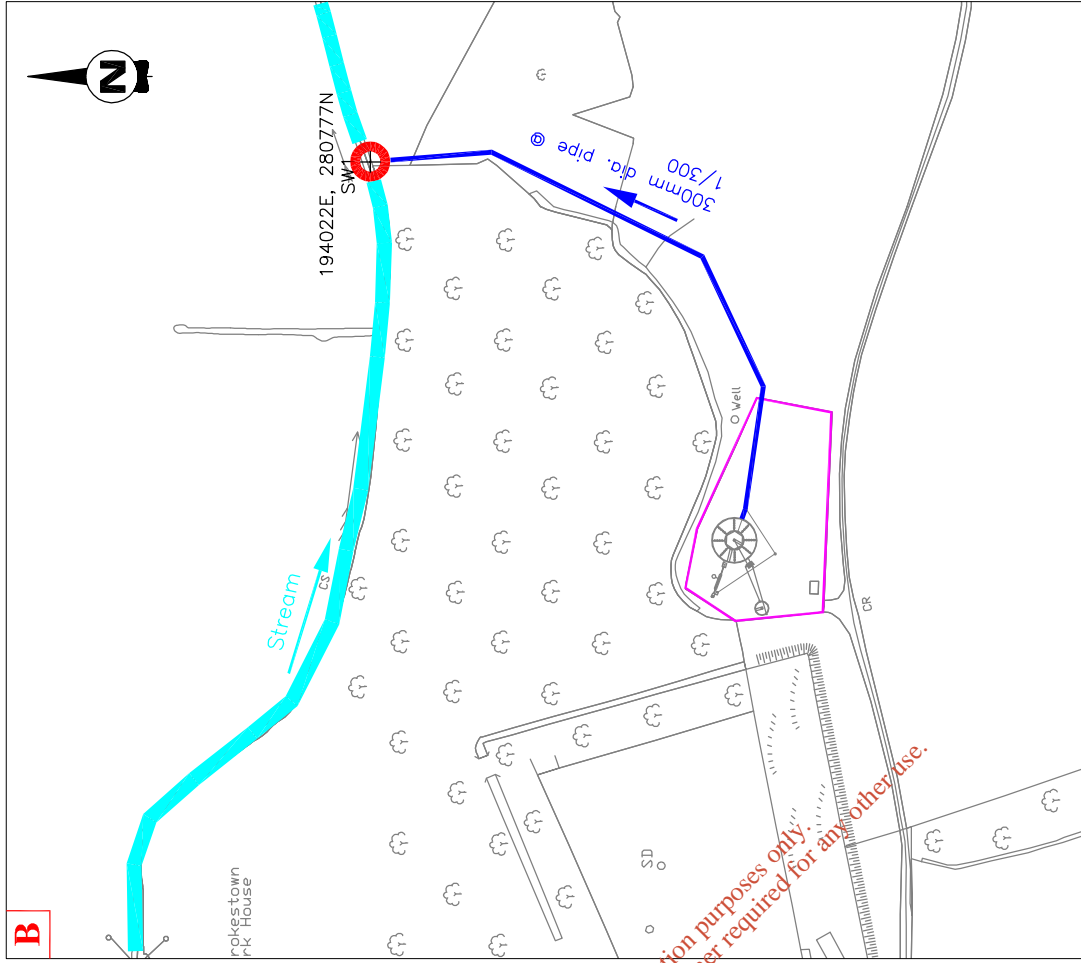
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LEGEND

- W.W.T.P. BOUNDARY
- Primary Discharge Point SW1
- Final Effluent Pipe
- Watercourse



1 : 2500

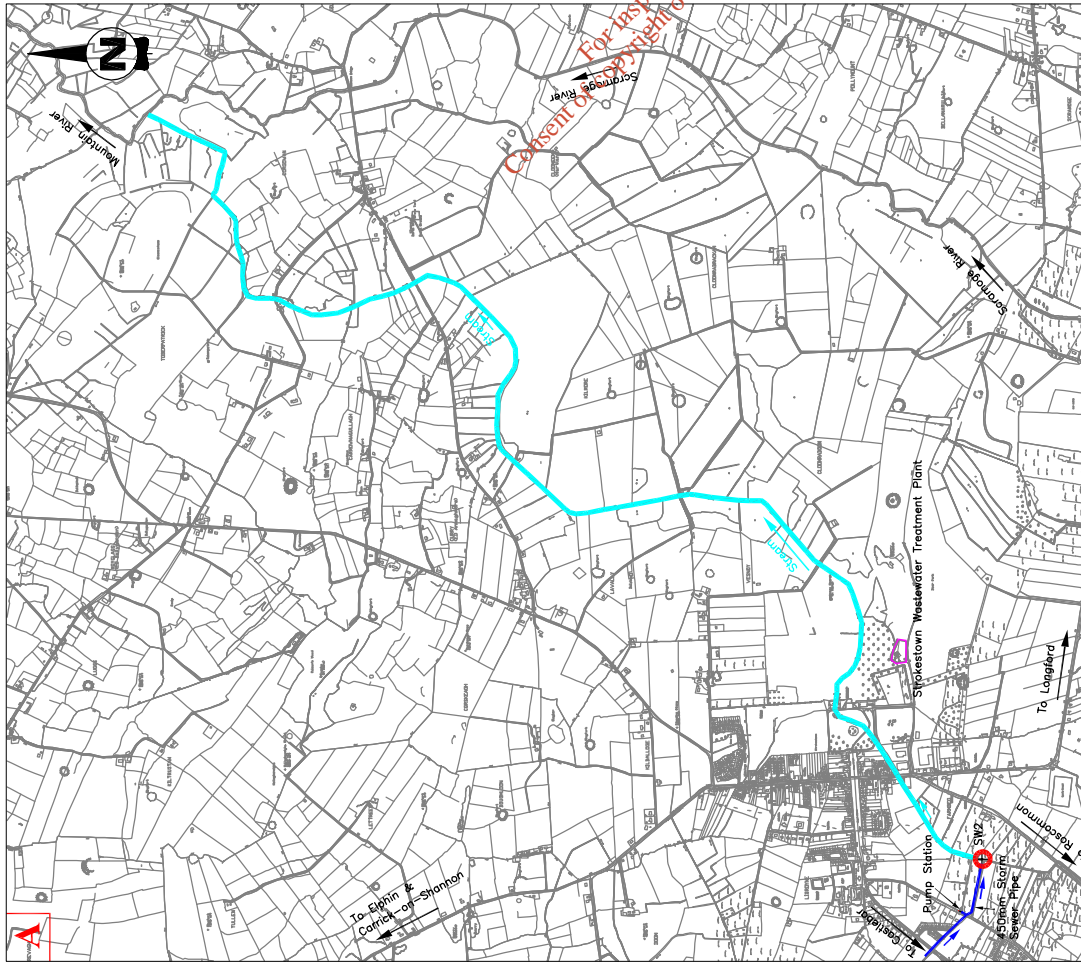


COMHAIRLE CHONTAE ROSCOMMON
ROSCOMMON COUNTY COUNCIL

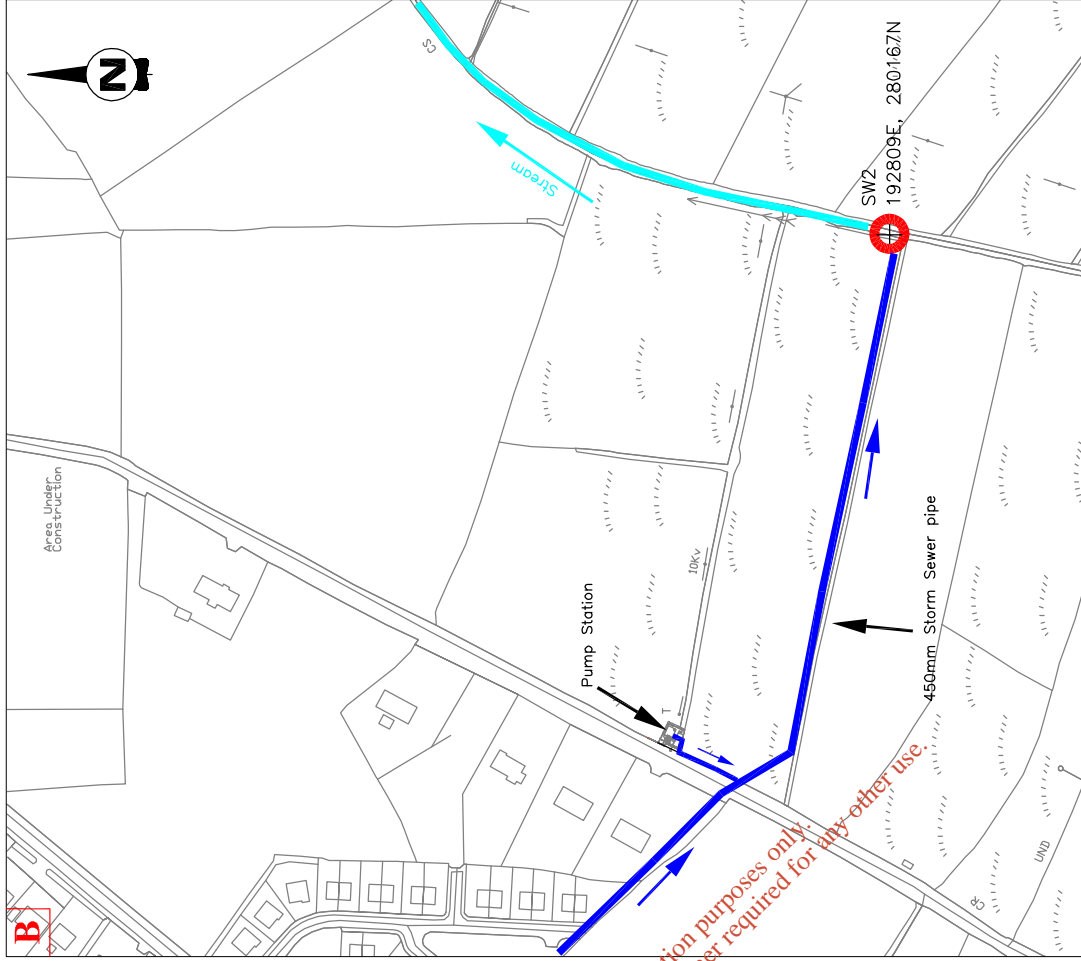
PROJECT:
 Strokestown Waste Water Discharge
 Licence Application

DRAWING TITLE:
 Location of Primary Discharge
 Point - SW1

DRAWN: P. Fleming	DRAWING No.: 03
SCALES: As Shown	
DATE: 24th OCT 2008	APPROVED: P. Fleming
CHECKED: P. Fleming	



1 : 25000



1 : 2500

LEGEND

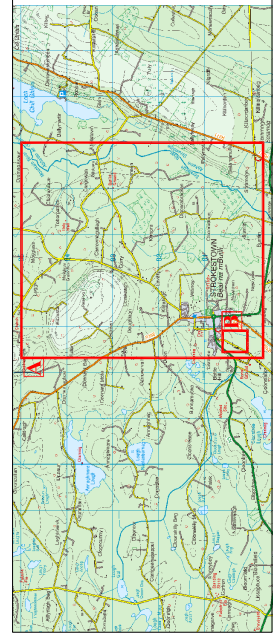
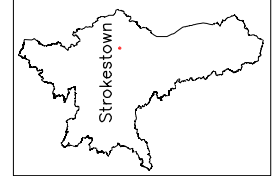
WMTP BOUNDARY

Secondary Discharge Point SW2

Storm Sewer Pipe

Watercourse

Note: This pumping station is at construction stage. No monitoring and sampling point data is available.



COMHAIRÉ CHONTAE ROSCOMAIN
ROSCOMMON COUNTY COUNCIL

PROJECT

Strokestown Waste Water Discharge
Licence Application

DRAWING TITLE

Location of Secondary Discharge
Point - SW2

DRAWN:
P Fleming

DRAWING No.

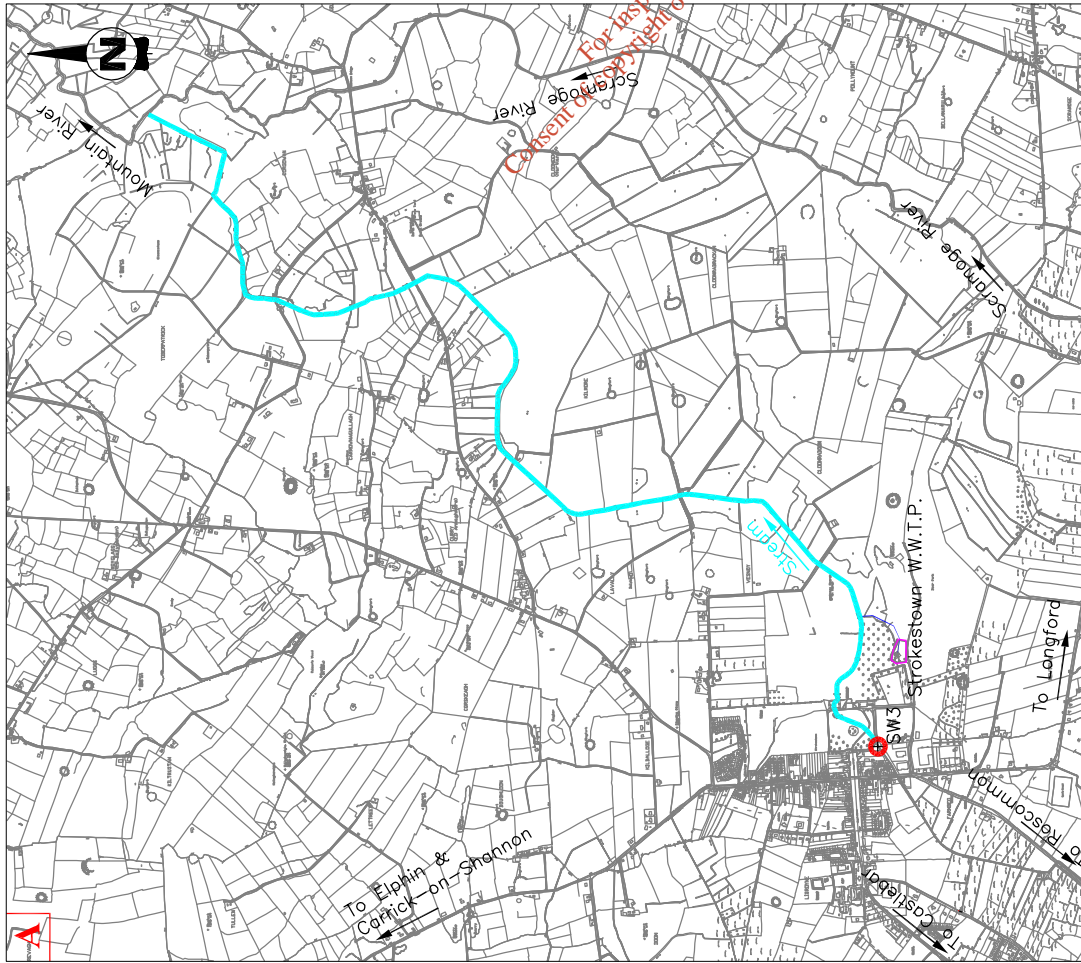
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SCALES:
As Shown

DATE:
28th FEB 2009

CHECKED:
P. Fleming

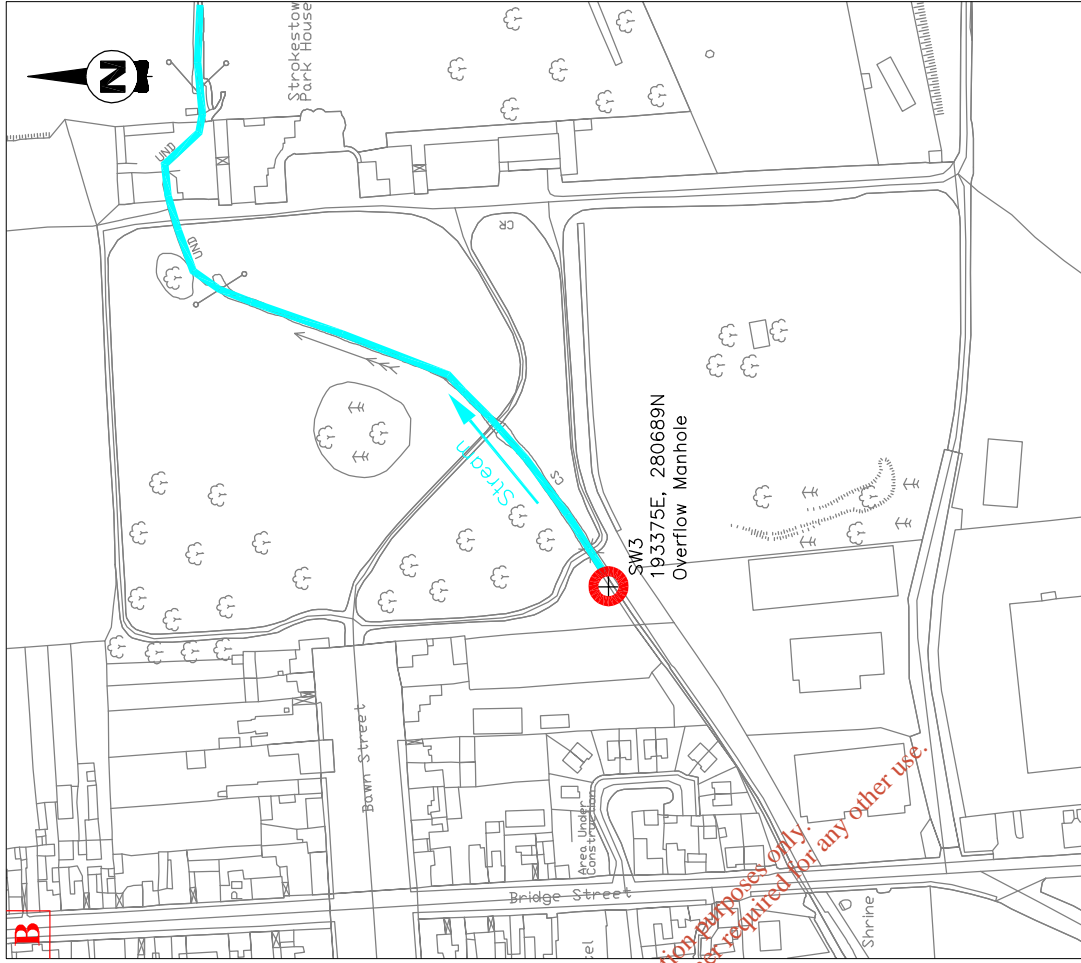
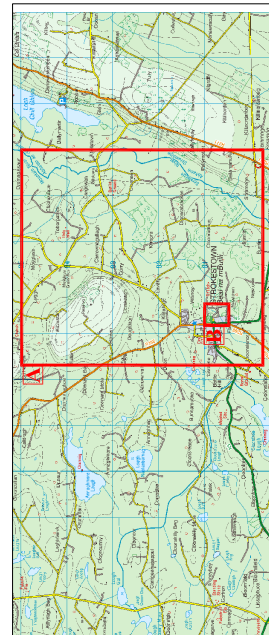
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P. Fleming



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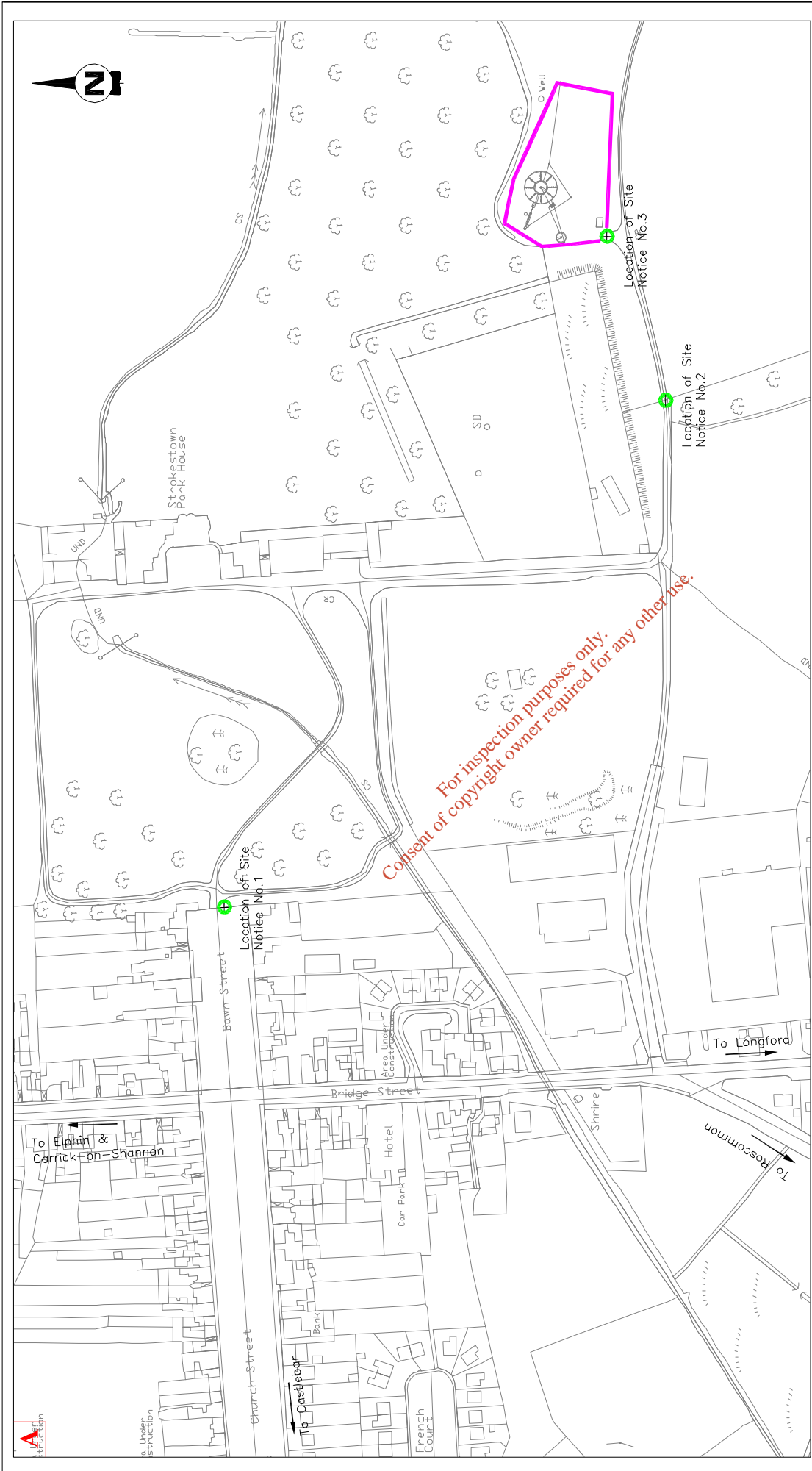
LEGEND

- WWTp BOUNDARY
- Secondary Discharge Point SW3
- Watercourse

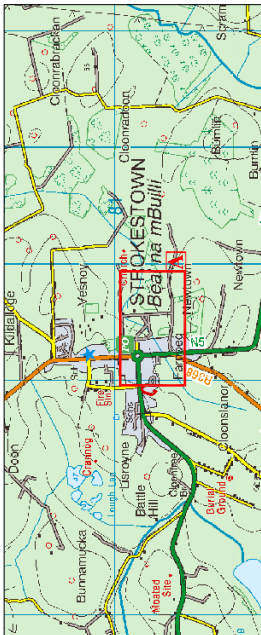


1 : 2500

<p>COMHAIRLE CHONTAE ROSCOMAIN ROSCOMMON COUNTY COUNCIL</p> <p>PROJECT: Strokestown Waste Water Discharge Licence Application</p>	<p>DRAWING TITLE: Location of Secondary Discharge Point - SW3</p>	
	<p>DRAWN: P. Fleming</p> <p>DATE: 28th FEB 2009</p>	<p>DRAWING No. 05</p> <p>SCALES: As Shown</p> <p>CHECKED: P. Fleming</p> <p>APPROVED: V. Walsh</p>



COMHAIRE CHONTAE ROSCOMMON ROSCOMMON COUNTY COUNCIL	DRAWING TITLE: Location of Site Notices	
	DRAWN: P. Fleming	DRAWING No. 06
PROJECT: Strokestown Waste Water Discharge Licence Application	SCALES: 1 : 2,500	
	DATE: 28th FEB 2009	APPROVED: V. Walsh
LEGEND		CHECKED: P. Fleming
WTP BOUNDARY		APPROVED: V. Walsh
Location of Site Notice		



STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

ROSCOMMON COUNTY COUNCIL

STROKESTOWN WASTE WATER DISCHARGE LICENCE

ANNEX C

INFRASTRUCTURE & OPERATION

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Annex C: - INFRASTRUCTURE & OPERATION

ANNEX 3: TABLES / ATTACHMENTS

SECTION C: OPERATIONAL INFORMATION REQUIREMENTS

Treatment Process Description**C.1.0 Design Criteria**

The Strokestown Wastewater Treatment Plant is a preliminary and secondary treatment processes. Refer to Drawing 02. The plant is designed to produce a final standard effluent of 25mg/l BOD5 and 35mg/l suspended solids.

All effluent collected by the collection network in Strokestown is conveyed to the preliminary treatment units of Strokestown WWTP. At this site, influent flows up to 3 DWF is pumped from the inlet sump chamber to the treatment units of the works. Screened flow in excess of this overflows to the storm water chamber and discharges by gravity to the tributary of the River Scramoge at SW1. Refer to Drawing 03.

Allow for 60 grams/head/day of B.O.D. in a volume of 230 litres. The plant is designed to treat a hydraulic load of 3DWF as set out in table C.1.0.

Volume m ³ /d	BOD kg/d	Population Equivalent
1432	373	2,076

Table C.1.0 Strokestown Treatment Plant Design Loading total

C.1.0.1 Flow Monitoring and Primary Treatment

The influent flows to the inlet works via gravity where it first passes through a manually raked screen (50mm apertures). The screen is capable of passing the design flow of 3DWF. Floating solids, paper, plastic, etc are all removed. The removed solids, known as screenings are very unhygienic due to faecal matter. The screenings are manually removed from the flow, washed and compacted and deposited in a skip for removal off site.

After screening the influent next flows through a grit trap. The grit is removed to prevent silting and pump damage. The grits are settled out of flow, removed, washed and deposited to a skip for removal off site. The influent then flow through a flow measurement flume where the volume of influent is measured by means of an ultrasonic sensor. The final element of the inlet works is the Mono Muncher unit. The purpose of this is to reduce the particle size of wastewater solids. From here, the wastewater flows via gravity to the circular oxidation basin. For

ANNEX 3: TABLES / ATTACHMENTS

maintenance purposes or in the event of operational problems with the Mon Muncher, there is a by-pass around the unit. There is no form of primary treatment provided on site. There is no automatic composite sampler located at the inlet works.

C.1.0.2 Secondary Biological Treatment

Flow from the inlet work flows directly by gravity to the aeration tank. The aeration system is fine bubble diffused aeration whereby air is induced into a reinforced concrete aeration tank by means of an air blower and membrane disk diffusers. Here, the influent is mixed with returned activated sludge from the settlement tank.

For a population equivalent of 1000 at 60 grams B.O.D./head/day the volume required is 519m³ based on the conventional criterion of 240 mg/litre for extended aeration. The physical outer diameter of aeration tank is 11m and an inner radius of 4.55m with a depth of 2m gives a total tank volume of 630m³. The volume provided in the aeration tank is approximately 596m³. The basis on which the aeration tanks are designed are set out in table C.1.0.2.

Population Equivalent (P.E.)	2,076
Incoming BOD5 Load	60 kg/day
Design B.O.D. loading	240mg./litre volume
MLSS Concentration	3800 mg/l
F/M Ratio	0.05
Required Volume Aeration Tank	519 m ³
Tank volume provided	596 m ³

Table C.1.0.2.1 Aeration tank Design Parameter

Flow from the aeration tank exits the aeration tank via an adjustable weir located on the inner wall of the aeration basin and passes to an inner clarifier (9.1m diameter). The inner clarifier has a side wall depth of 2.3m with a 15 degree slope to the central sludge collection hopper. The sludge is settled out to a central sump and suspended solids less dense than water is collected in a scum box. The TWL within the inner clarifier is approximately 46.50m OD malin. In the clarifier tank, the sludge is settled out. The floor slopes into a central sump, where the sludge is gathered by a rotating scraper. The sludge is pumped from this sump to the Sludge Return Pump chamber via a 100mm diameter pipe. The supernatant liquid from these tanks is decanted off the top through the overflow weir and baffle plate to the Tributary of the River Scramoge. The physical size of the sedimentation tank is 9.1m

ANNEX 3: TABLES / ATTACHMENTS

diameter with a tank depth of 2.3m gives a total tank area of 65m². The basis on which the sedimentation tank are designed are set out in table C.1.0.2.2

Population Equivalent (P.E.)	2,076
Design Basis (Sedimentation)	3 DWF upward velocity of 0.9m/hr
3 DWF	1,432m ³ /day or 59.69m ³ /hr
Required tank area	65m ²
8m tank area provided	65m ²
Sidewall depth	2.3m
Retention time	1.11 hour
Return Sludge to Aeration	1DWF

Table C.1.0.2.2 Sedimentation tank Design Parameter

The design of the settling tank has been based on an upward flow rate of 0.9m/hour for 3 times the Dry Weather Flow. Activated sludge is removed from a central hopper in the tank and returned under hydrostatic head at a rate of 1 D.W.F. to the sludge Return Pump Chamber where sludge is pumped to the head of the aeration tanks. There is no continuous flow monitoring or flow proportional sampler of the treated effluent discharging from the WWTP.

C.1.0.3 Phosphorous Removal

There is no facility for the removal of phosphorus from Strokestown WWTP.

C.1.0.4 Sludge Treatment

There is no sludge treatment on-site. A portion of the sludge is returned to the aeration tank in order to maintain the activated sludge process. There is a supernatant draw off pipe which returns the supernatant liquid directly to the inlet sump at the WWTP. The excess sludge is stored in the sludge holding tank until it is removed off site for further treatment. The physical size of the sludge holding tank is 6.5m diameter with a maximum tank depth of 5.3m. The Sludge Management Plan for County Roscommon (November 2001) designated Roscommon WWTP to dewater sludge produced at Strokestown WWTP. The plan predicts that the Strokestown WWTP will produce approximately 39tds/year by the year 2021.

C.1.0.5 Sampling Data

The results from the last 12 month sampling indicates that the treatment plant is operating within its design standards.

ANNEX 3: TABLES / ATTACHMENTS**C.1.1 Storm Water Overflow**

3 x Design Dry Weather Flow (DWF) flows by gravity to the inlet works for treatment. Screened flows in excess of 3 DWF are conveyed to the Tributary of the River Scramoge.

C.1.2 Pumping Stations

Unique Code #	Pump Station	Duty & Standby Pump	Storage Capacity (m ³)	Frequency and duration of activation emergency overflow	Connect to SCADA
SW2	Lisroyne Pumping Station	YES	7.75x5.0x3.3= 127.88m ³	None. (No record of power failure)	NO

Power Failure Procedure

The pumping stations at SW2 Lisroyne pumping station are inspected daily by the caretaker. Refer to drawing 04 and drawing 09. (Scheduled to be constructed during 2009.)

There is adequate storage in pump station until caretaker arrives. For long power failure, the tanks are empty by tanker and empty at the treatment plant.

C.2.0 Outfall Design and Construction

Final effluent from Strokestown waste water treatment works currently discharge to the tributary of the River Scramoge via a 300mm gravity outfall pipeline. The primary discharge point SW1 is located east of the boundary of treatment plant. Refer to Drawing 03.

The secondary discharge point at Lisroyne pumping station, Lisroyne Townland, (SW2) is a reinforced concrete structure. The plan area of the pump chamber is 7.75m x 5.0m with a maximum liquid depth of 3.3m. The emergency overflow pipe (SW2) from the pump station connects with the 450mm storm sewer and discharges to a tributary of the Tributary of the River Scramoge. The pump chamber has adequate capacity to deal with any malfunction. SW2 is not connected to SCADA. Refer to drawing 04 and drawing 09.

The secondary discharge point is a manhole adjacent to the entrance of Strokestown house in the Lisroyne / Farnbeg townland, (SW3) is a precast concrete manhole. The plan diameter of the manhole is 1.35m

STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

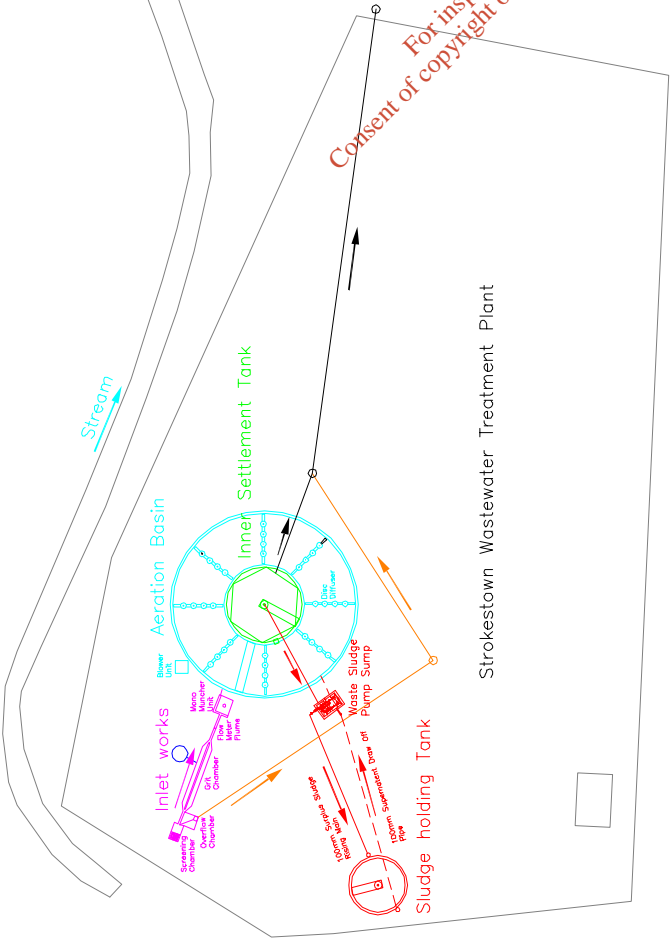
ANNEX 3: TABLES / ATTACHMENTS

with a maximum liquid depth of 1.5m. A 300mm waste water pipeline passes through it. It includes a 225mm diameter emergency overflow pipe from the manhole to the Tributary of the River Scramoge. The discharges are too infrequent to gauge (less than once per year if at all). SW3 is not connected to SCADA. Refer to drawing 05 and drawing 10.

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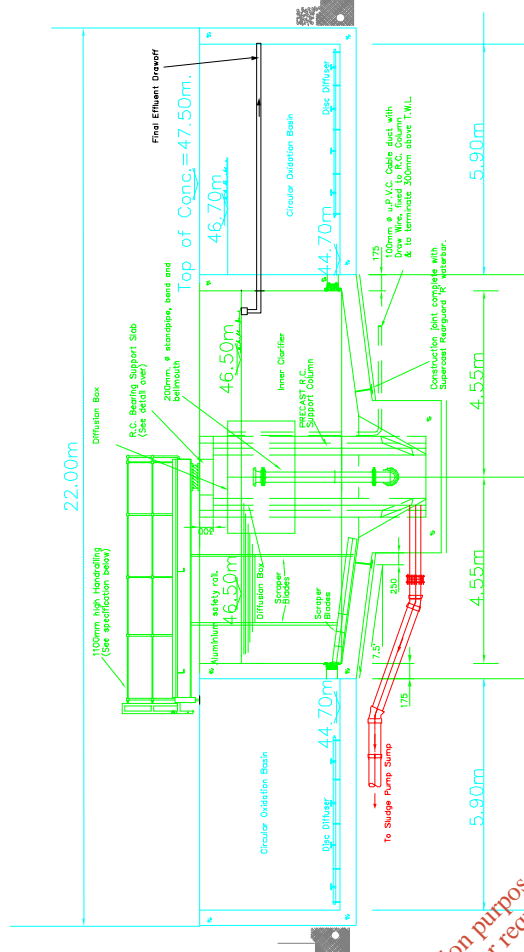
Annex C: - INFRASTRUCTURE & OPERATION

A

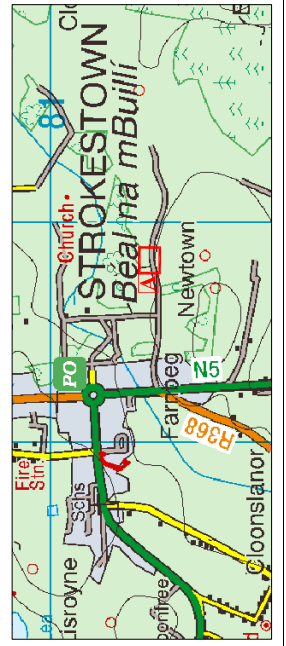
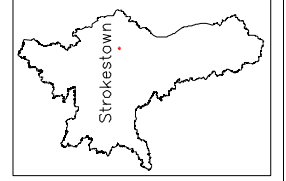


NOTE: This dwg highlights the current WWTP layout. The DoEHLG has approved funding for the Design Build Operate upgrade of Strokestown WWTP. The DBO contract is likely to start during 2010. The proposed design PE for strokestown WWTP is 3,060. The minimum treatment standards for the WWTP is to comply with the Urban Wastewater Treatment Directive.

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Section of Aeration Basin with Inner Clarifier



COMHAIRE CHONTAE ROSCOMMON
ROSCOMMON COUNTY COUNCIL

PROJECT:
 Strokestown Waste Water Discharge Licence Application

DRAWING TITLE:
 Strokestown WWTP Process Plan

DRAWN: P. Fleming
DRAWING No: 07

SCALES: N.T.S.

DATE: 28th FEB 2009
CHECKED: P. Fleming
APPROVED: V. Walsh

A

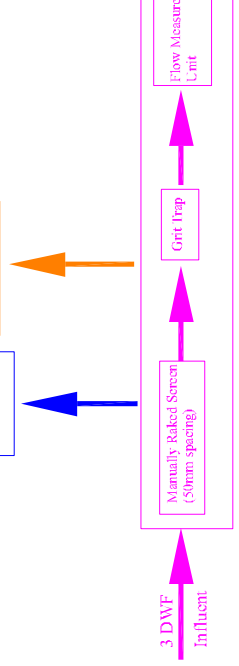
BIOLOGICAL TREATMENT

Note: Aeration tank capacity is for P.E. of 2,076 at 60 grams B.O.D./head/day is based on conventional criterion of 240 mg./litre for extended aeration. Desirable F/M ratio is 0.05kg BOD/kg MLSS. Desirable MLSS is 3800mg/l. Desirable sludge age is 20 to 30days in tank. Outer radius is 11m and inner radius of 4.55m with 2m depth.

Excess screened flow greater than 3 DWF overflow to outlet chamber of WWTP

storm water overflow chamber

screenings washed, compacted and deposited in a skip to landfill

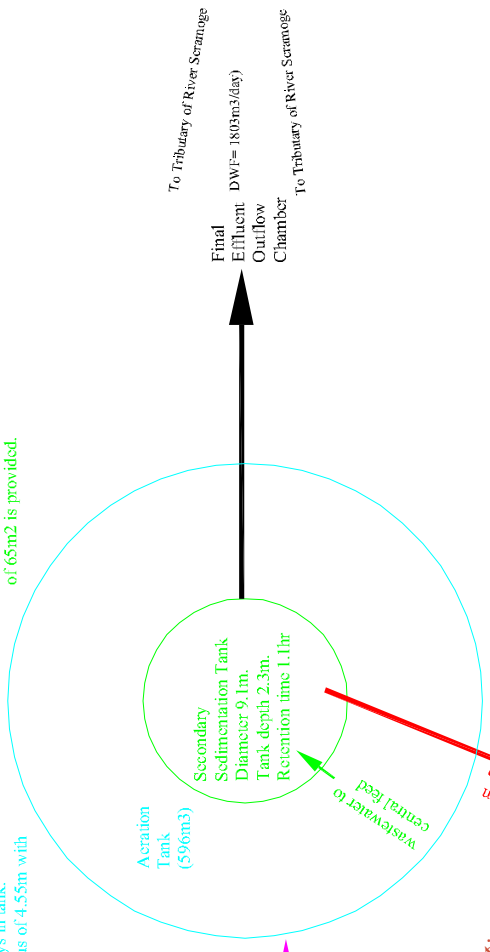


INLET WORKS

Note: Inlet works designed to take 3 D.W.F. for a Ultimate P.E. of 2,076 with a daily load of 373kg/day in a total volume of 1432m³/day.

SECONDARY TREATMENT

Note: Sedimentation tank capacity based on an upflow flow of 0.9m³/hour for 3 D.W.F. For P.E. of 2,076 an area of tank of 65m² is provided.



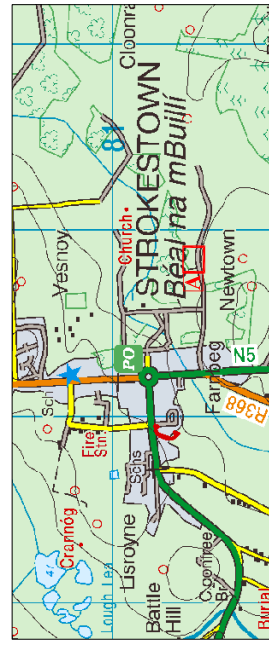
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SLUDGE HOLDING TANK

NOTE: This dwg highlights the current WWTP process. The DoEHLG has approved funding for the Design Build Operate upgrade of Strokestown WWTP. The DBO contract is likely to start during 2010. The proposed design PE for strokestown WWTP is 3,060. The minimum treatment standards for the WWTP is to comply with the Urban Wastewater Treatment Directive.

LEGEND

- RAW WASTEWATER
- STORMWATER
- DISPOSAL TO LANDFILL
- FLOW TO AERATION TANK
- FLOW TO SECONDARY TANK
- SLUDGE
- FINAL EFFLUENT

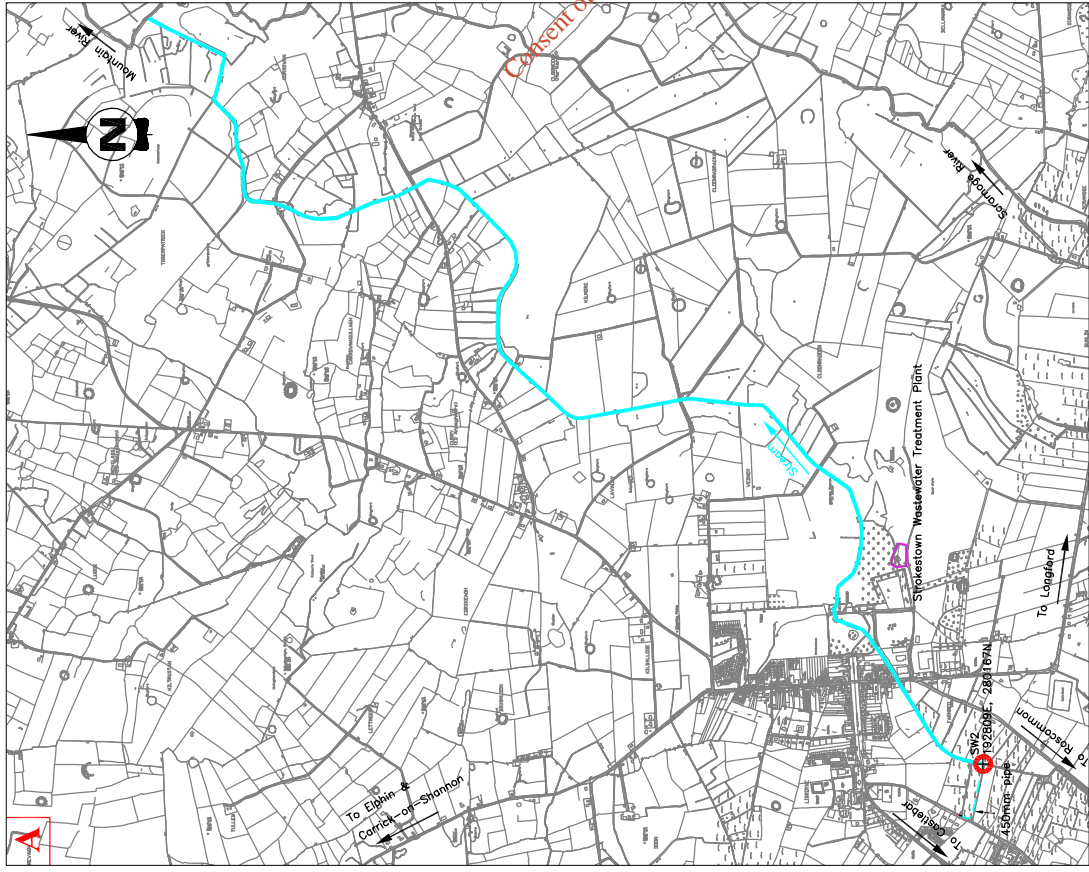


COMHAIRLE CHONTAE ROSCOMMON
ROSCOMMON COUNTY COUNCIL

PROJECT:
Strokestown Waste Water Discharge Licence Application

DRAWING TITLE:
Strokestown WWTP Flow Process Diagram

DRAWN: P. Fleming	DRAWING No. 08
SCALES: Not to Scale	
DATE: 28th FEB 2009	CHECKED: P. Fleming
	APPROVED: V. Walsh



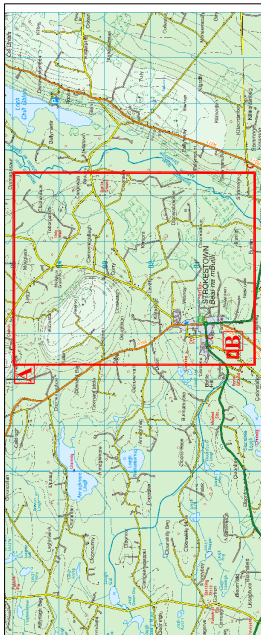
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LEGEND

WWTp BOUNDARY

Secondary Discharge Point SW2

Note: This pumping station is at construction stage 2009. No monitoring and sampling point data is available.



Not To Scale



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ROSCOMMON COUNTY COUNCIL

PROJECT

Strokestown Waste Water Discharge
Licence Application

DRAWING TITLE

Location of Secondary Discharge
Point SW2 - DETAILS

DRAWN: P Fleming

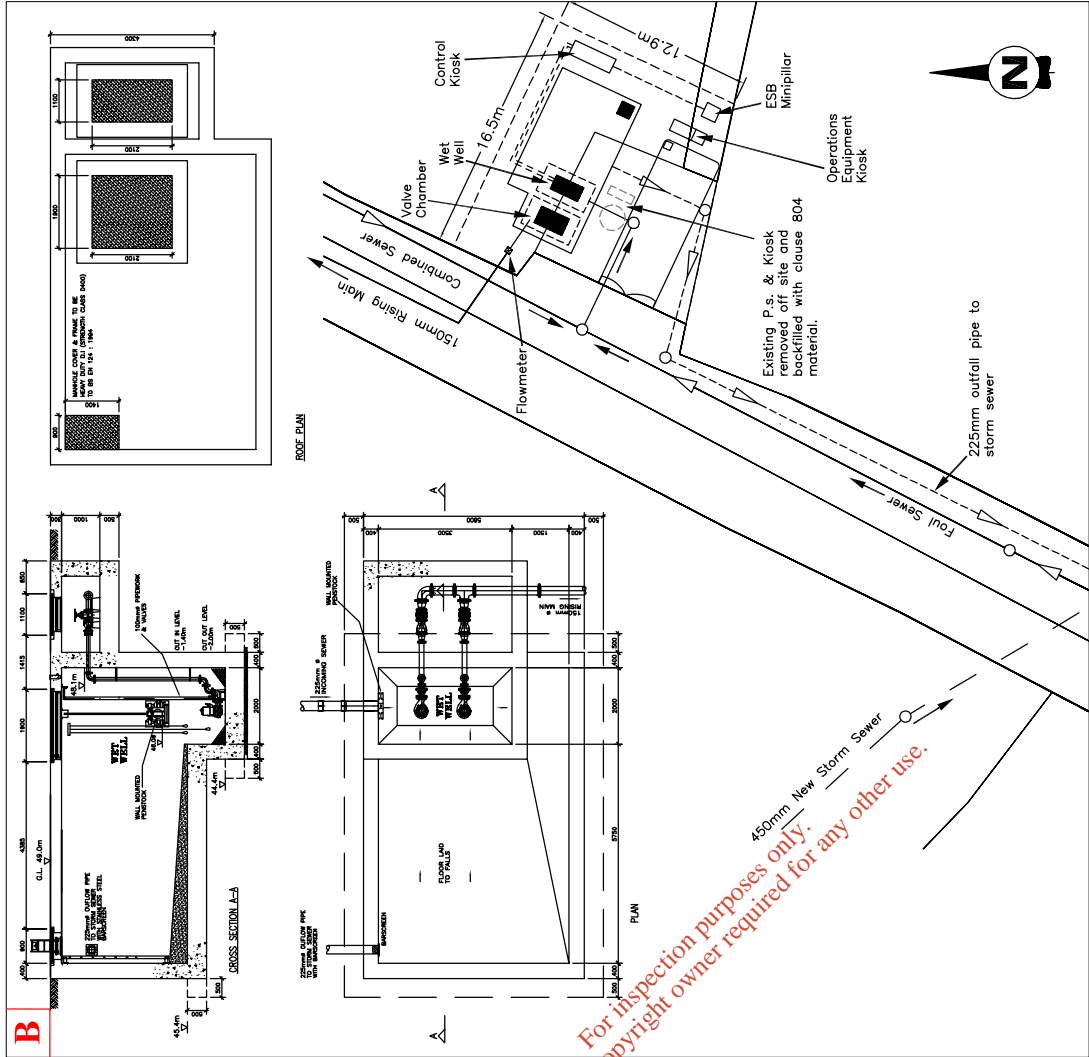
SCALES: As Shown

DATE: 28th FEB 2009

CHECKED: P. Fleming

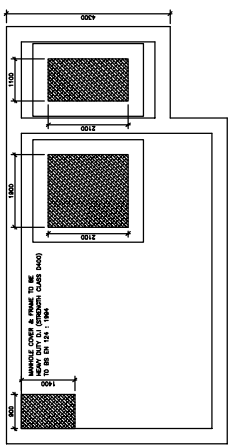
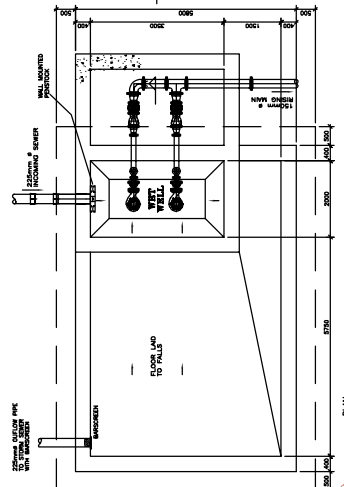
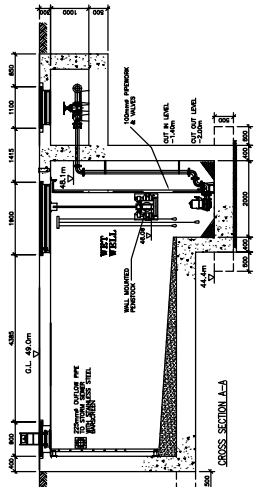
APPROVED: V. Walsh

DRAWING No. 09



B

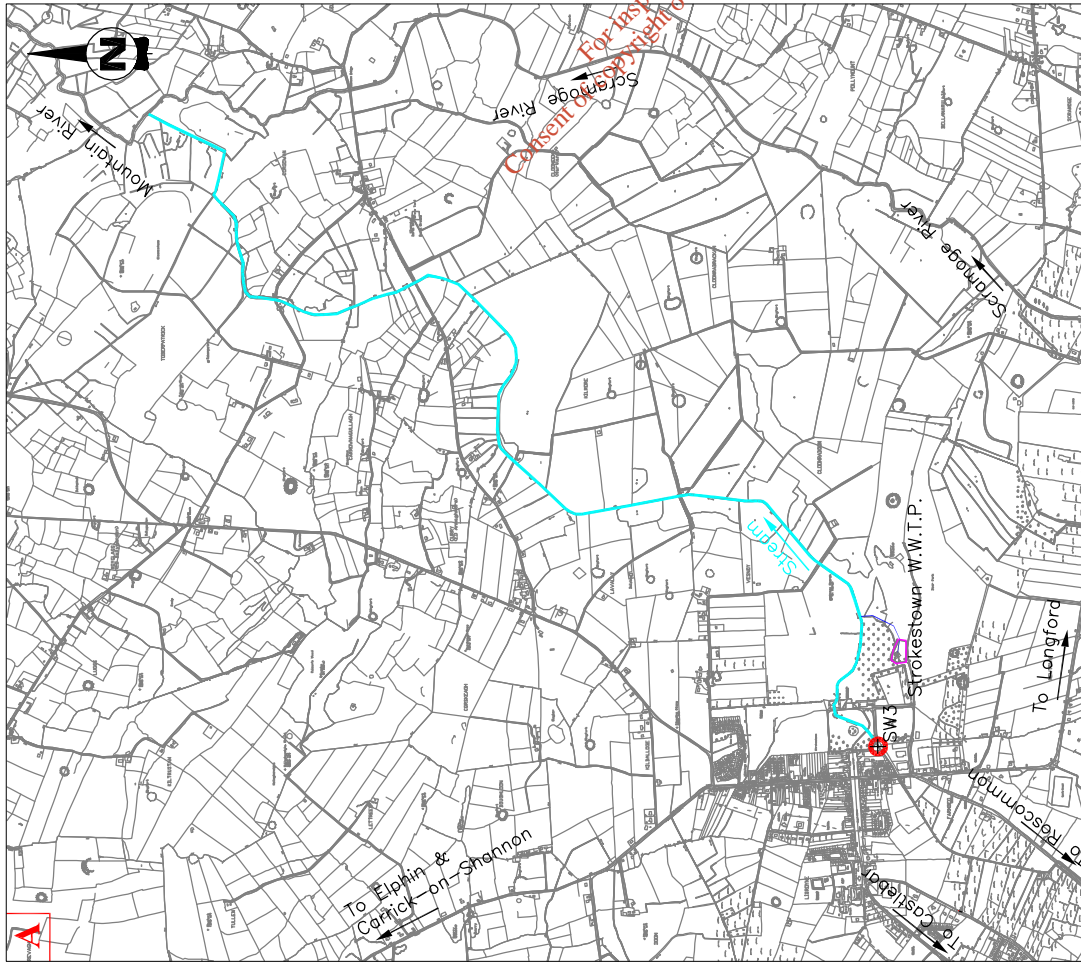
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ROOF PLAN

PLAN

CROSS SECTION A-A



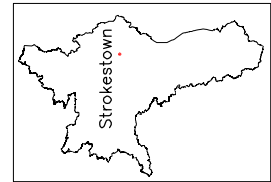
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LEGEND

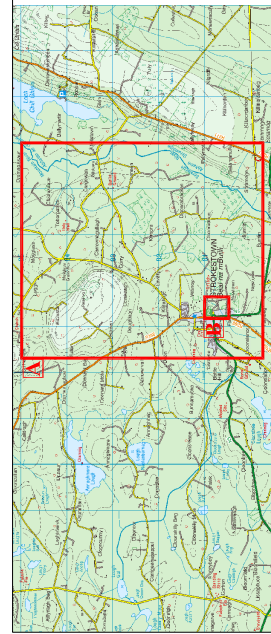
W.W.T.P. BOUNDARY

Secondary Discharge Point SW3

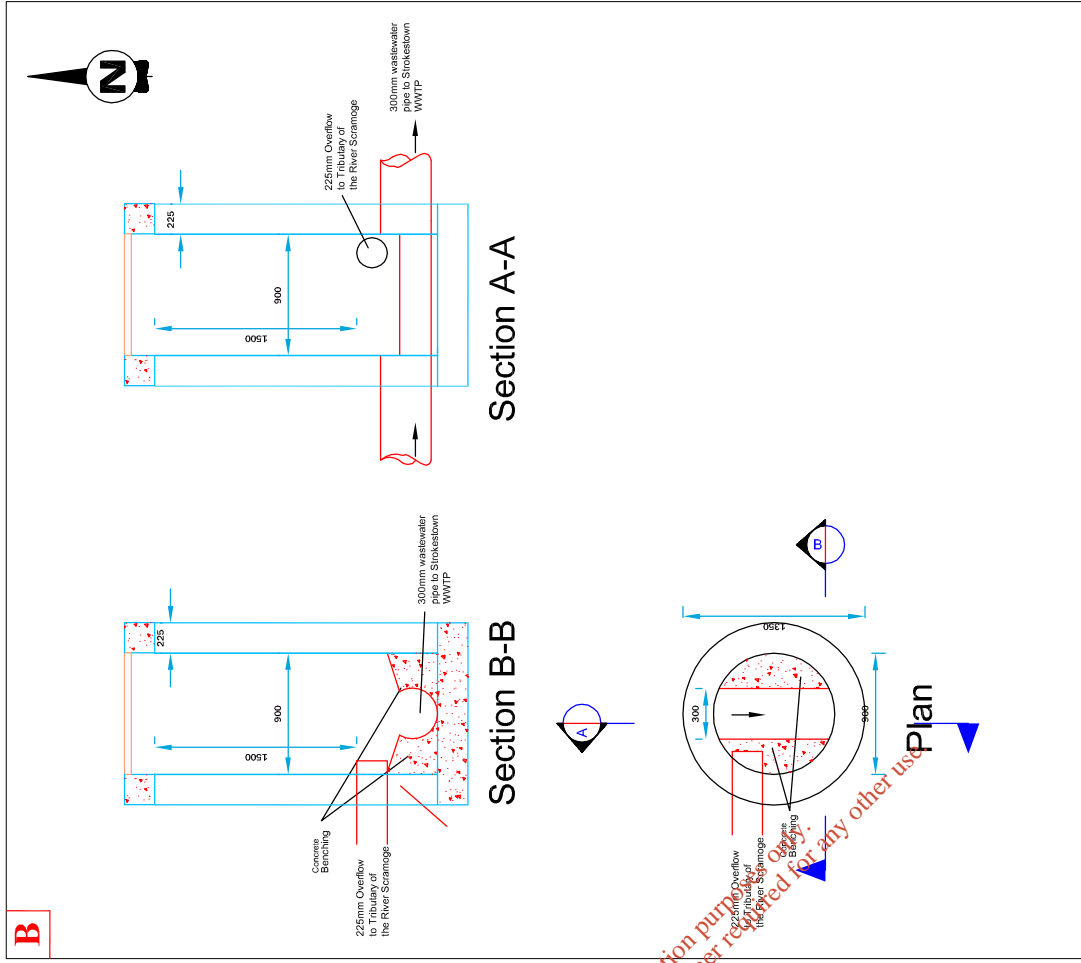
Watercourse



Strokestown



Not to Scale



Section A-A

Section B-B

Plan



COMHAIRLE CHONTAE ROSCOMMON
ROSCOMMON COUNTY COUNCIL

PROJECT:
Strokestown Waste Water Discharge
Licence Application

DRAWING TITLE:
Location of Secondary Discharge
Point SW3 - DETAILS

DRAWN:
P. Fleming

DRAWING No.:

10

SCALES:
As Shown

CHECKED:
P. Fleming

DATE:
28th FEB 2009

APPROVED:
P. Fleming

STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

ROSCOMMON COUNTY COUNCIL

STROKESTOWN WASTE WATER DISCHARGE LICENCE

ANNEX D

DISCHARGES TO AQUATIC ENVIRONMENT

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Annex D: - DISCHARGES TO AQUATIC ENVIRONMENT

5.0 RECEIVING WATER QUALITY

5.1 INTRODUCTION

5.1.1 This Section reports on the existing water quality within the various receiving water bodies within the 16 catchments.

5.1.2 The aim of this Section of the Report is to assess the quality of all existing receiving waters and to identify any trends in the quality of the rivers over recent years. This section will also assess the ability of each of the rivers to assimilate the proposed treated effluent loads from each of the wastewater treatment works.

5.1.3 Of the 16 villages studied in this report, seven have existing WWTP facilities. The treated effluent from the seven existing WWTP discharge into seven different water bodies within the county as follows:

- Ballinlough Lough Flynn
- Ballyleague/Lanesborough Lough Ree.
- Elphin Local Stream.
- Frenchpark Carricknabraher River.
- Knockcroghery Lough Ree via local Stream.
- Loughglynn Treated effluent discharges to local drain which drains to River Francis.
- Strokestown Scramoge River via the Strokestown Stream (also called Town River).

5.1.4 The remaining 9 villages have no WWTP facilities and in most cases wastewater is discharged to a single septic tank for each dwelling within the catchment.

5.1.5 The following receiving waters have been identified as suitable for proposed WWTP discharges from the remaining villages.

- Arigna Arigna River which discharges into lower reaches of Lough Allen
- Brideswell Cross River
- Castleplunkett Local Stream
- Cootehall Boyle River
- Creagh River Suck
- Curraghboy Cross River

- Hodson Bay Lough Ree
- Lisacul Lung River
- Tulsk Ogulla River

5.1.6 All of the receiving waters outlined above ultimately discharge to the River Shannon either directly or via other streams and rivers. The receiving water bodies outlined above all lie within Hydrometric Area No. 26 (Upper Shannon) of the Irish River network system. The Hydrometric Area Description provided by the EPA is the surface catchment drained by the Rivers Shannon and Suck and all tributary streams upstream of their confluence between Shannonbridge and Clonfert.

5.1.7 The Suck is a tributary of the river Shannon draining large areas in Galway and Roscommon. It rises in west Roscommon near Ballinlough upstream of Lough O'Flynn. The river flows east through Castlerea and then continues in a southerly direction through Ballymoe, Castlecoote, Athleague, Mount Talbot, Balyforan, Ballinasloe and onto its confluence with the river Shannon at Shannonbridge. Its main tributaries are the Cloonfower stream, the River Francis, Island River, the River Shiven, the Ahascragh River and the Ballinure River.

5.1.8 The River Shannon is Ireland's largest river, its catchment covering approximately one-fifth of the entire area of the country. The Shannon river rises in the Cuilcagh Mountains in County Cavan and flows southwards through Lough Allen, Lough Ree and Lough Derg, draining the central low-lying plain of Ireland. The total area of the Shannon catchment is approximately 11,700km².

5.2 MONITORING RIVER QUALITY IN IRELAND

5.2.1 The quality status of rivers and streams is routinely monitored by the Environmental Protection Agency (EPA) as part of a Biological River Quality Monitoring Programme. In addition, many of these rivers and streams are monitored for physio-chemical parameters by this agency or by local authorities. The results of these surveys are then published by the EPA.

5.2.2 The data presented in this section is taken from biological and physio-chemical survey reports published by the EPA, recent monitoring data from Roscommon County Council's Environmental Section and recent monitoring carried out by the Shannon Regional Fisheries Board.

5.2.3 The EPA reports used are:

- Water Quality in Ireland 1991 - 1994.
- Water Quality in Ireland 1995 - 1997.
- Water Quality in Ireland 1998 - 2000.

- Interim Report on The Biological Survey of River Quality – Results of the 2002 Investigations.
- Phosphorus Regulations – National Implementation Report 2003.

5.2.4 Flow monitoring was also carried out at certain locations on some of the receiving waters in order to determine assimilative capacities of the rivers.

5.2.5 Figures 5.11 to 5.23 shows the location of the various receiving waters related to the scheme and the location of the EPA sampling stations and flow monitoring stations used in this assessment.

5.3 BIOLOGICAL RIVER QUALITY

5.3.1 The results of the biological surveys (i.e., macroinvertebrate, macrophyte and algal species list) are condensed into a format readily understandable by non-biologists. They are presented as a scale of biotic indices (“Biological Quality Ratings” or “Q Values”) ranging from Q5 to Q1 with intermediate values (i.e. Q1-2, Q2-3, Q3-4, etc.).

5.3.2 The Q5 value represents pristine unpolluted condition whereas Q1 represents grossly polluted conditions. In the interests of simplicity the nine-point scale of Q values may be related to four “Quality Classes” as shown in Table 5.1 below.

Quality Ratings	Quality Class	Pollution Status	Condition (suitability for beneficial uses)
Q5, Q4-5, Q4	Class A	Unpolluted	Satisfactory
Q3-4	Class B	Slightly Polluted	Unsatisfactory
Q3, Q2-3	Class C	Moderately Polluted	Unsatisfactory
Q2, Q1-2, Q1	Class D	Seriously Polluted	Unsatisfactory

5.3.3 The general characteristics of the various quality classes are given in Table 5.2 below.

5.3.4 The receiving waters for each of the 16 villages are outlined in 5.1.3 and 5.1.5 above. The EPA conducted surveys for the majority of rivers relevant to the scheme within four recent time periods; 1991 – 1994, 1995 – 1997, 1998 – 2000 and 2002.

5.3.5 The biological classification for each of these receiving waters is discussed in Section 5.5 and shown in Table 5.4.

Table 5.2 – General Characteristics of the various Biological Quality Classes

Quality Classes	Class A		Class B	Class C		Class D
Quality Ratings (Q)	Q5	Q4	Q3-4	Q3	Q2	Q1
Pollution Status	Pristine, Unpolluted	Unpolluted	Slight Pollution	Moderate Pollution	Heavy Pollution	Gross Pollution
Organic Waste Load	None	None	Light	Considerable	Heavy	Excessive
Maximum B.O.D.	Low (< 3 mg/l)	Low (< 3 mg/l)	Occasionally elevated	High at times	Usually high	Usually very high
Dissolved Oxygen	Close to 100% at all times	80%-120%	Fluctuates from <80% to >120%	Very unstable Potential fish-kills	Low, sometimes zero	Very low, often zero
Annual Median ortho-phosphate	0.015 mg P/l	0.030 mg P/l	0.045 mg P/l	0.070 mg P/l	> 0.1 mg P/l	> 0.1 mg P/l
Siltation	None	May be light	May be light	May be considerable	Usually heavy	Usually very heavy and anaerobic
Water Quality	Highest quality	Fair quality	Variable quality	Doubtful Quality	Poor quality	Bad quality
Abstraction Potential	Suitable for all	Suitable for all	Potential problems	Advanced treatment	Low grade abstractions	Extremely limited
Fishery Potential	Game fisheries	Good game fisheries	Game fish at risk	Coarse Fisheries	Fish usually absent	Fish absent
Amenity value	Very high	High	Considerable	Reduced	Low	Zero
Condition	Satisfactory	Satisfactory	Transitional	Unsatisfactory	Unsatisfactory	Unsatisfactory

5.4 PHYSICO-CHEMICAL SURVEYS

5.4.1 The EPA also performs a range of Physico-Chemical surveys. The determinants measured include alkalinity, hardness, pH, Dissolved Oxygen (DO), Biological Oxygen Demand (BOD), ortho-phosphate and ammonia.

5.4.2 The EPA sets down upper, lower and median threshold values for the determinants. These values are shown in Table 5.3 below. The values are not legal limits but are intended to highlight where there may be water quality problems.

Table 5.3 – Threshold Values for Physio-Chemical Parameters			
Determinant	Minimum	Median	Maximum
PH	<6.6 or >9.5	<6.6 or >9.5	<6.6 or >9.5
Conductivity ($\mu\text{S cm}^{-1}$)	None	None	None
Temperature ($^{\circ}\text{C}$)	>21.5	>21.5	>21.5
Dissolved Oxygen (%)	<70 or >130	<70 or >130	<70 or >130
Dissolved Oxygen ($\text{mg O}_2 \text{ l}^{-1}$)	<7	<9	<9
BOD ($\text{mg O}_2 \text{ l}^{-1}$)	>3	>3	>5
Cl (mg l^{-1})	>50	>999 (saline)	>999 (saline)
Total ammonia (mg N l^{-1})	>0.1	>0.1	>0.3
Un-Ionised ammonia ($\text{mg NH}_3 \text{ l}^{-1}$)	>0.01	>0.01	>0.02
Oxidised N (mg N l^{-1})	>5.65	>5.65	>5.65
Ortho-Phosphate (mg P l^{-1})	>0.02	>0.03	>0.15
Colour (Hazen)	>50	>50	>100

5.4.3 Results of the EPA physio-chemical surveys (1998-2000) for each of the receiving waters are given in Appendices 2.5 and discussed in Section 5.5.

5.5 EXISTING WATER QUALITY WITHIN THE 16 VILLAGES

5.5.1 Arigna

5.5.1.1 The proposed WWTP at Arigna will discharge to the Arigna River. There are salmonid (trout) populations here. The surveyed length of the Arigna River is recorded as 18km. Of this length the following quality classifications were apportioned to the river by the EPA during the last three monitoring periods:

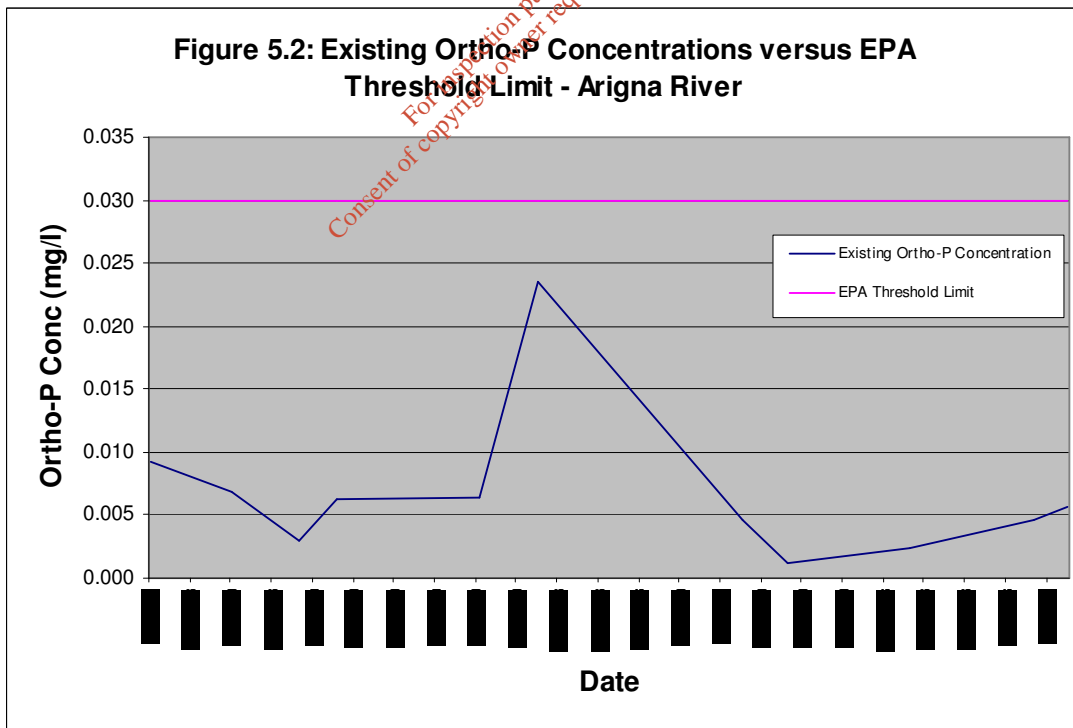
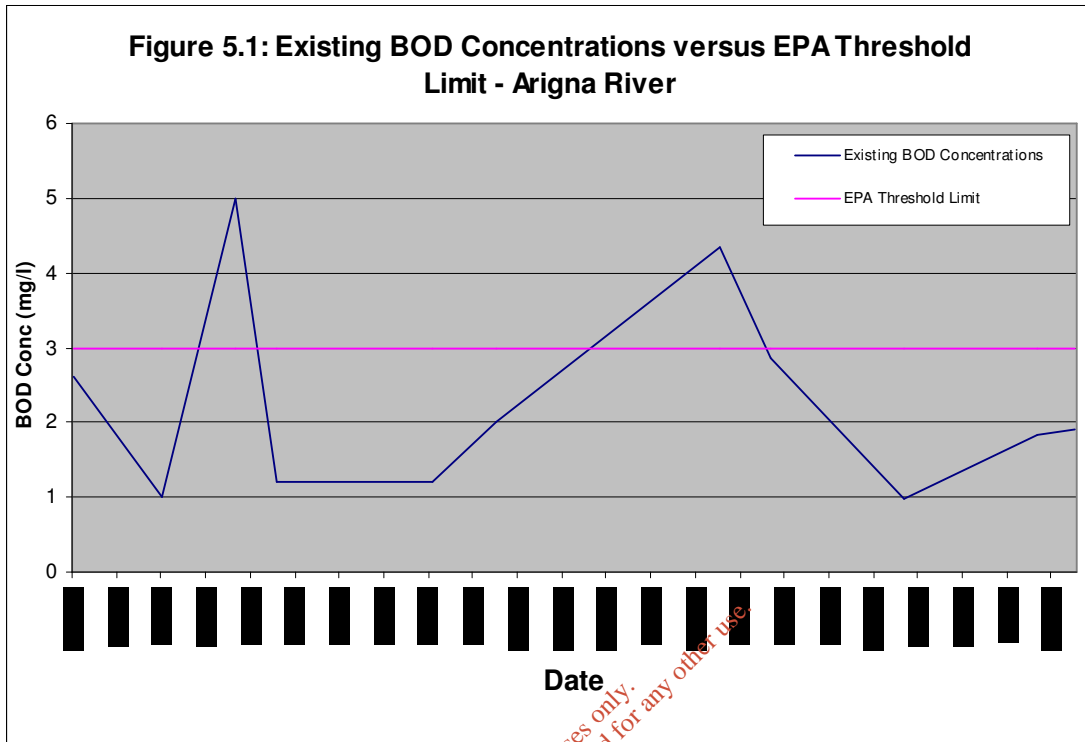
- 1991-1994: 12.5km Class A, 0km Class B, 5.5km Class C
- 1995-1997: 1.5km Class A, 3.0 km Class B, 13.5 km Class C
- 1998-2000: 12.5km Class A, 5.5km Class B

5.5.1.2 According to the EPA, the Arigna River has undergone a significant improvement in water quality between 1995-97 and 1998-2000. A major contributor to this has been the prevention of pollution from the old mines in Arigna.

5.5.1.3 The water quality of the Arigna River (according to the most recent year – 2002) at Derreenavoggy Bridge close to the site of the proposed WWTP is unpolluted (Biological Q Rating of 4). According to the EPA document “The biological survey of River Quality 2002 – Interim Report” (hereafter referred to as the “2002 EPA Report”, the water quality of the Arigna River has improved significantly on the previous assessment (see Table 5.4), particularly in the area of the old mines (station 0200) where there was no indication of toxicity, which had been previously recorded at this location.

5.5.1.4 Roscommon County Council also carry out water quality monitoring of the Arigna River. Water quality analysis results were obtained for the River Arigna at Derreenavoggy Bridge for the year 2003. Figures 5.1 & 5.2 below show the BOD and Ortho Phosphate concentration at this location on the Arigna River and compares it with the EPA’s guideline threshold value for BOD and Ortho-P. The EPA threshold limit for BOD and Ortho-P are 3mg/l and 0.03mg/l respectively. Levels above these are indicative of pollution within the river.

5.5.1.5 The analysis results depicted in Figures 5.1 and 5.2 would indicate that the water quality of the Arigna River at Derreenavoggy Bridge is satisfactory. Ortho-phosphate concentrations were below the recommended 0.03mg/l throughout the year and it would appear that there is some assimilative capacity in the river for phosphates. BOD concentrations were generally below 3mg/l except for two occasions.



Based on EPA and local authority data the water quality of the Arigna River at Derreenavoggy Bridge can be described as good.

5.5.2 Ballinlough

5.5.2.1 The Existing WWTP at Ballinlough discharges to Lough O'Flynn. Lough O'Flynn is a 600 acre rich limestone lake located in north of Ballinlough village. There are good stocks of wild and stocked brown trout averaging about 1.5 lbs. This Lough was developed as a trout fishery by the Inland Fisheries Trust and development work continues under the Shannon Regional Fisheries Board.

5.5.2.2 The lake is not monitored by the EPA, however there is an EPA monitoring station on the River Suck 50-100m downstream of Lough O'Flynn (Station No. 0050 - Bridge 100m downstream of Lough O'Flynn). According to the latest EPA data available at this station (2002 data), the quality of the water at this location is very good (biological Q rating assigned to this location is Q 4-5 which indicates unpolluted waters). Roscommon County Council use Lake O'Flynn in drought conditions as a drinking water source.

5.5.2.3 Roscommon County Council carry out water quality analysis of the lake and data was obtained for the years 1999 to 2003. Examination of the data would indicate that the current water quality within the lake is very good. Chlorophyll concentrations within the lake ranged from 1mg/m³ to 4mg/m³. According to the Trophic classification scheme for lake waters proposed by the Organization For Economic Co-Operation And Development (OECD) and used by the EPA to define the trophic status of lakes, lake water quality samples with chlorophyll concentrations of <8mg/m³ are indicative of Oligotrophic Lakes (i.e. good water quality). Oligotrophic lakes are described by the EPA as having a very low level of pollution.

5.5.2.4 Examination of both water quality samples from the lake and water quality samples 100m downstream of the lake shows that the existing water quality within Lough O'Flynn is very good.

5.5.3 Ballyleague/Lanesborough

5.5.3.1 The existing WWTP at Ballyleague discharges to Lough Ree. Lough Ree is the second largest lake on the River Shannon system. It is a large rich limestone Lough of 10,500 hectares in area and classed as a mixed fishery with good stocks of trout, pike and coarse fish present. Ballyleague and Lanesborough lie on either side of the River Shannon as it enters Lough Ree. The lake is over 25 kilometres in length.

5.5.3.2 In recent years Lough Ree has seen a dramatic improvement in water quality. In 1995 the lake was classified as strongly eutrophic which indicates a lake of poor water quality. In 2002 according to the EPA, Lough Ree is classified as a Mesotrophic Lake, which indicates a lake of satisfactory water quality.

5.5.3.3 The lake is not monitored by the EPA, however there is an EPA monitoring station on the River Shannon just downstream of the lake, (Station No. 1720 – Athlone: Burgess Park). The physico-chemical data found for this station, is used as an indicator of the water quality for Lough Ree. According to the latest EPA data available at this station the biological Q rating assigned to this location is Q3 which indicates moderately polluted water. The median BOD value is 3 mg/l O₂, the orthophosphate value is .03 mg/l P, and the ammonia level is .11 mg/l N.

5.5.4 Brideswell

5.5.4.1 The proposed WWTP at Brideswell will discharge to the River Cross upstream of Milltown Pass. There are salmonid populations of salmon and trout here. The surveyed length of the River Cross is recorded as 16km. Of this length the following quality classifications were apportioned to the river by the EPA during the last three monitoring periods:

- 1991-1994: 8.5km Class A, 6.5km Class B, 1.0km Class C
- 1995-1997: 13km Class A, 2.0km Class B, 1.0km Class C
- 1998-2000: 11km Class A, 4 km Class B, 1.0km Class C

5.5.4.2 A slight decrease in the water quality of the Cross river occurred between 1995-97 and 1998-2000. Overall the River Cross is described by the EPA as slightly polluted.

5.5.4.3 The upper catchment is almost entirely high productivity grassland devoted to cattle and sheep grazing and this may be the biggest factor in the slightly polluted status assigned by the EPA. The uppermost EPA station sampled on the Cross river (station number: 0060 Br. East of Eskerbaun – 1 km upstream of potential WWTP outfall) was apparently impacted by a groundwater flow which is relatively rich in nutrients and the water quality in this area was described as slightly polluted (Q rating = 3-4, 2002 data).

5.5.4.4 The middle section of the River Cross is described as been in satisfactory condition (Station 0100 Br at Corrantotan, 1.5km downstream of potential outfall). In 2002, a Q rating of 4 was assigned to this station (unpolluted), although dissolved oxygen levels are suppressed due to groundwater influence.

5.5.5 Castleplunket

5.5.5.1 The proposed treatment plant at Castleplunkett will discharge to a local stream running south of the village centre.

5.5.6 Cootehall

5.5.6.1 The proposed WWTP at Cootehall will discharge to the River Boyle downstream of Cootehall Lough. There are salmonid (trout) and cyprinid species in the River Boyle. The surveyed length of the River Boyle is recorded as 16.5km. Of this length the following quality classifications were apportioned to the river:

- 1991-1994: 12.5km Class A, 4km Class B
- 1995-1997: 16.5km Class A
- 1998-2000: 14.5km Class A, 2km Class B
- 16.5km Class A

5.5.6.2 In 1995-97 period, the entire river was classified as unpolluted. In the 1998-2000 monitoring period, the water quality within the river has deteriorated and 12% of the river was classed as slightly polluted.

5.5.6.3 According to the 2002 EPA Report on River Quality, the Boyle River is classified as unpolluted and overall has seen a significant improvement on the 1999 assessment. In 2002, the water quality of the Boyle River at Cootehall Bridge (500m upstream of preferred WWTP site) was rated as Q4 (unpolluted).

5.5.7 Creagh

5.5.7.1 The proposed WWTP at Creagh will discharge to the River Suck. There are salmonid populations (salmon and trout) in the River Suck. The surveyed length of the River Suck is 15.5km. Of this length the following quality classifications were apportioned to the river:

- 1991-1994: 9.5 km Class A, 13.5 km Class B, 6.5 Class C
- 1995-1997: km Class B
- 1998-2000: km Class A, km Class B

5.5.7.2 According to the 2002 EPA Report, the River Suck between Mount Talbot and upstream of Ballinasloe Bridge (Station 1300) is described as unpolluted (Q Rating = 4). Downstream of Ballinasloe Bridge (Poolboy - Station 1400) is described as slightly polluted (Q Rating = 3-4) but has shown an improvement on the 1999 monitoring. Previously, discharges from a rendering plant upstream of Poolboy caused quite serious water pollution particularly in view of the size of the River Suck at this point. The EPA's licensing division has taken over responsibility for the licensing of this plant and it is hoped to see ongoing improvements in the lower Suck between Poolboy and the Shannon Confluence.

5.5.7.3 Overall, the water quality of the River Suck at the preferred outfall location is slightly polluted.

5.5.8 Curraghboy

5.5.8.1 The proposed WWTP at Curraghboy will discharge to the River Cross upstream of Eskerbaun. There are salmonid populations of salmon and trout here.

5.5.8.2 The surveyed length of the River Cross is recorded as 16km. Of this length the following quality classifications were apportioned to the river by the EPA during the last three monitoring periods:

- 1991-1994: 8.5km Class A, 6.5km Class B, 1.0km Class C
- 1995-1997: 13km Class A, 2.0km Class B, 1.0km Class C
- 1998-2000: 11km Class A, 4 km Class B, 1.0km Class C

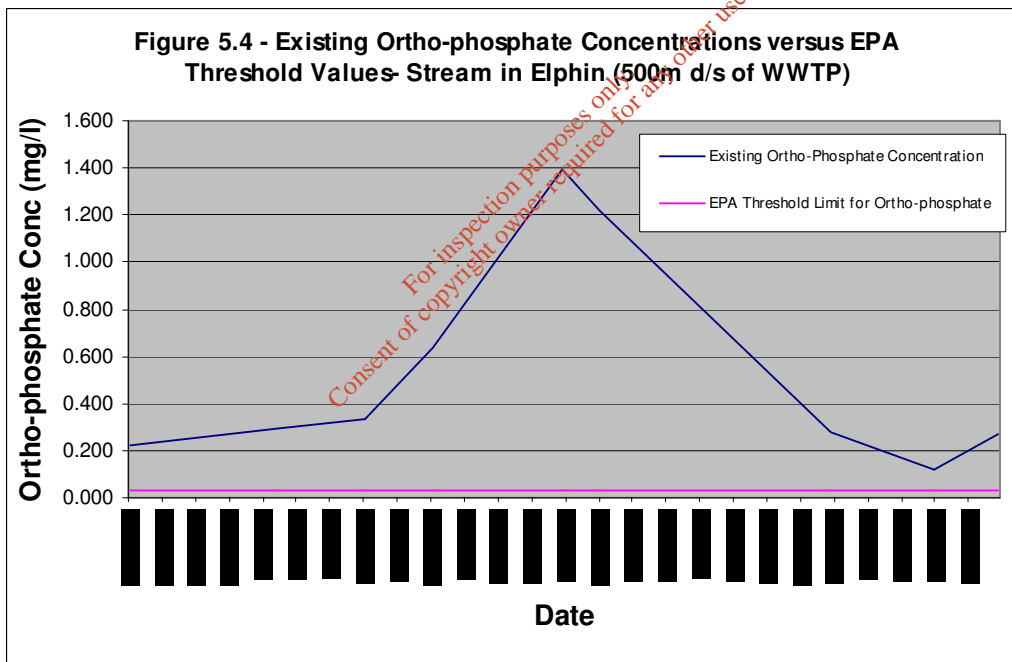
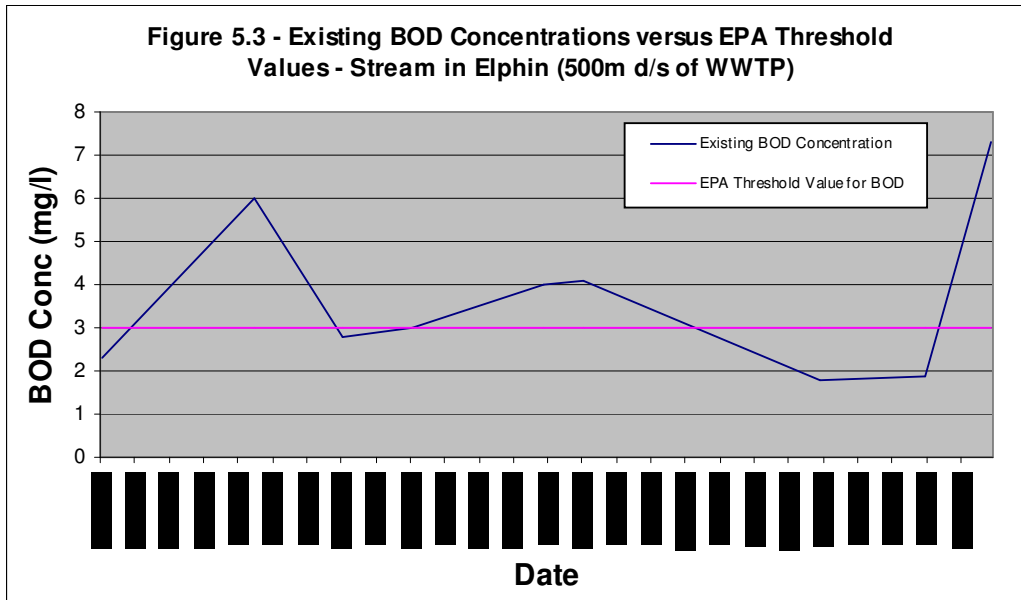
5.5.8.3 A slight decrease in the water quality of the Cross river occurred between 1995-97 and 1998-2000. Overall the River Cross is described by the EPA as slightly polluted.

5.5.8.4 The upper catchment of the River Cross is almost entirely high productivity grassland devoted to cattle and sheep grazing and this may be the biggest factor in the slightly polluted status assigned by the EPA. The uppermost EPA station sampled on the Cross river (station number: 0060 Br. East of Eskerbaun – 2 km downstream of potential WWTP outfall) was apparently impacted by a groundwater flow which is relatively rich in nutrients and the water quality in this area was described as slightly polluted (Q rating = 3-4, 2002 data).

5.5.9 Elphin

5.5.9.1 The existing WWTP at Elphin discharges to a local stream. There are salmon populations here. This stream is not monitored by the EPA but local authority monitoring 500m downstream of the WWTP outfall indicates that this stream is seriously polluted (equivalent to a Q rating 2-3 or lower).

5.5.9.2 The Roscommon County Council 2003 water quality analysis data was obtained for the receiving waters in Elphin approximately 500m downstream of the existing WWTP outfall. Figures 5.3 and 5.4 below shows the BOD and Ortho Phosphate concentration at this location on the Stream and compares it with the EPA's guideline threshold value for BOD and Ortho-P.



5.5.9.3 It is clear from Figures 5.3 and 5.4 that the existing stream is seriously polluted. The BOD levels within the stream were consistently above 3mg/l and on occasions were as high as 7.3 mg/l which is indicative of a high pollutant load within the stream. Ortho-phosphate levels were also extremely high and exceeded the EPA guide threshold concentration on all sampling occasions. There does not appear to be any available assimilative capacity in the stream for either BOD or Ortho-Phosphate.

5.5.9.4 One of the main reasons for the poor water quality at this location is the discharge from the existing Elphin WWTP. While the WWTP generally

discharged a treated effluent below 25mg/l BOD, on occasions the WWTP effluent analysis result revealed that treated effluent with a BOD of 40mg/l was being discharged to the stream. Because of the low flows in the stream, such discharges would have a significant impact on the water quality of the stream. An improvement in the quality of final effluent being discharged into the stream could result in an increase the water quality within the stream.

- 5.5.9.5 Because of the existing poor water quality within the stream, alternative receiving waters within the study area were identified. There are two other potential receiving waters, into which the proposed WWTP in Elphin could discharge were identified, (i) the Elphin Stream and (ii) the Owenur River.
- 5.5.9.6 The Elphin stream is a tributary of the Owenur River and is located within 500m of the existing WWTP site. There was no water quality data available for this stream as neither the EPA or Roscommon County Council monitor the water quality of this stream. A visual inspection of the stream in September 2004 revealed that there was no flow in the stream. As a result, this option was dismissed as unsuitable.
- 5.5.9.7 The second option, the Owenur River, is located approximately 1.5 km south of the existing WWTP. The option of a 1.5 km outfall discharging to the Owenur at Ballyslish Bridge was assessed.
- 5.5.9.8 Water Quality data for the river was available from the EPA. The water quality of Owenur River is described in the 2002 EPA Report as having experienced deterioration in the upper stations (0100, 0300 – in the vicinity of Elphin) in comparison with the 1999 data. The existing Q rating on the Owenur River at station 0300 (Ballyslish Br downstream of Elphin tributary confluence) which was the most likely outfall location is 3-4 and is described by the EPA as slightly polluted.
- 5.5.9.9 Similar to the Elphin Stream, a visual inspection of the stream at Ballyslish Bridge in September 2004 revealed that there was no flow in the river at this point.
- 5.5.9.10 As a result of this, it is recommended that the most suitable receiving water would be the local stream into which the existing Elphin WWTP discharges. Stringent final effluent discharge standards (discussed later in this section) should result in an improvement in the water quality within the stream.

5.5.10 Frenchpark

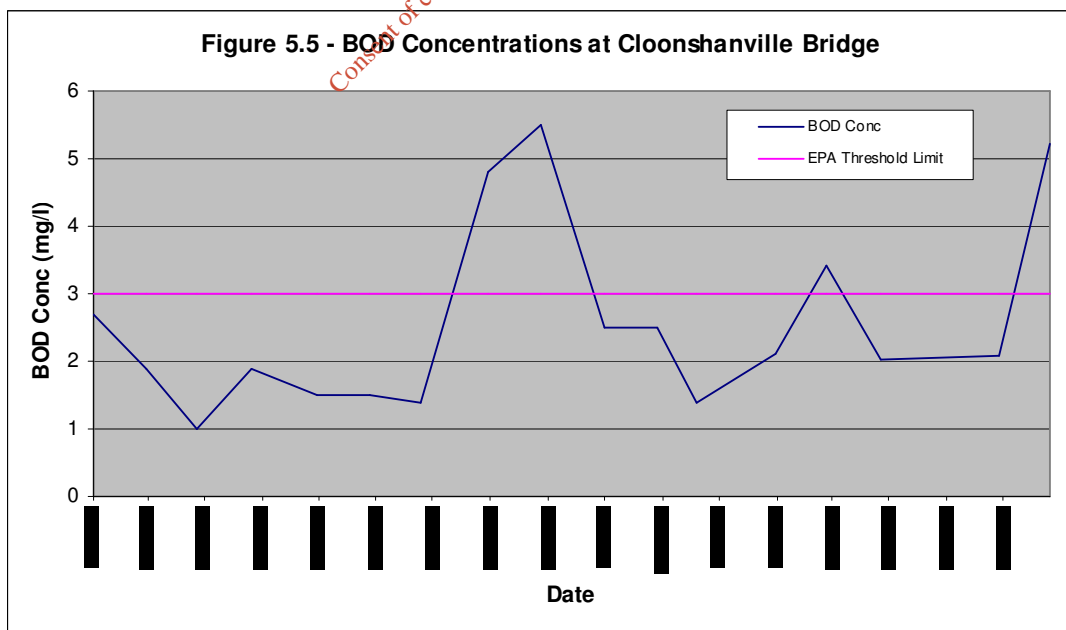
- 5.5.10.1 The existing WWTP at Frenchpark discharges to the Carricknabraher River. There are salmonid populations in the Carricknabraher River. The surveyed length of the Carricknabraher River is 5.5km. Of this length the following quality classifications were apportioned to the river:

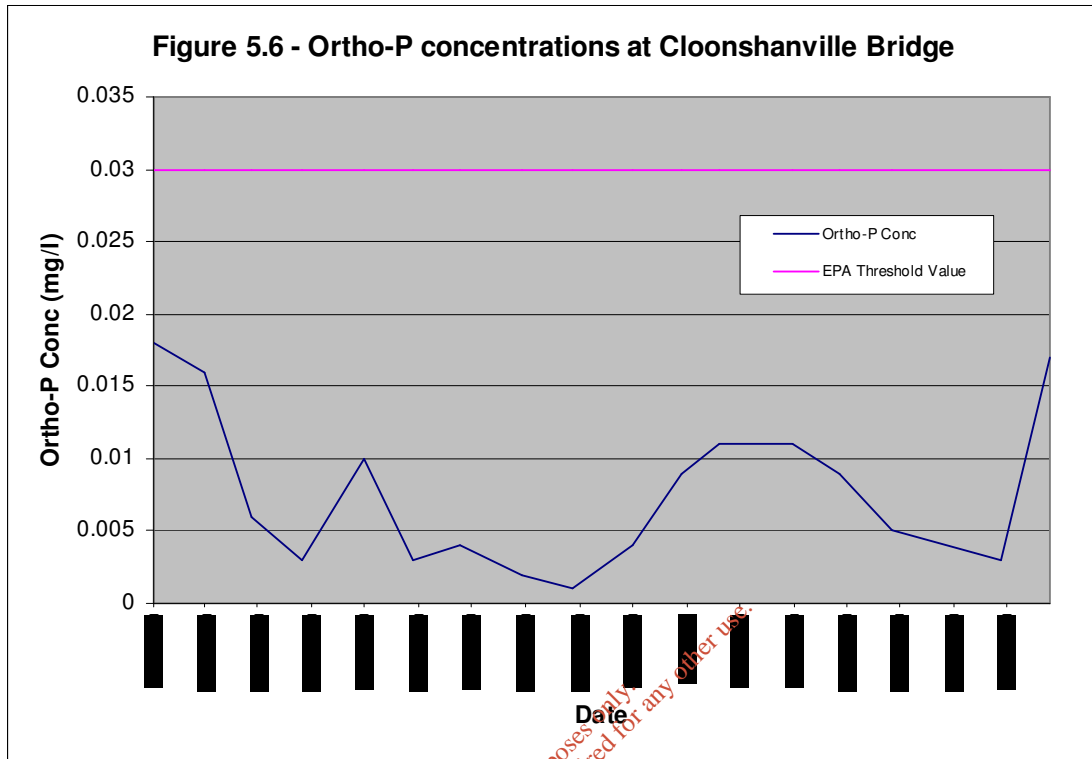
- 1991-1994: 4 km Class A, 1.5km Class B
- 1995-1997: 5.5km Class B
- 1998-2000: 4 km Class A, 1.5km Class B

5.5.10.2 According to the 2002 EPA Report, the Water Quality in the Carricknabraher River has deteriorated since 1999. The uppermost EPA sampling station (0100 – Cloonshanville Bridge – 100m upstream of the proposed outfall location) is located in predominately an agricultural catchment and while much of the upper catchment is not intensively farmed the combination of poorly drained gley and peat soils with some 35% of the catchment upstream of station 0100 under intensive pasture this may contribute to the eutrophic condition of the river at Cloonshanville Bridge. The River was assigned Biological Q-Rating of 3-4 (slightly polluted) at Cloonshanville Bridge.

5.5.10.3 The lower Carricknabraher (0200) joins the Owennaforeesha to form the Breedoge River. This station (0200) is significantly more polluted than the corresponding Owennaforeesha station located just upstream of the confluence where the two rivers join to form the Breedoge River. The River was assigned Biological Q-Rating of 3 (moderately polluted) at Station 0200.

5.5.10.4 Water Quality Analysis data at Cloonshanville Bridge was obtained from Roscommon County Council. Figures 5.5 and 5.6 below show the BOD and Ortho Phosphate concentration at Cloonshanville Bridge and compares it with the EPA's guideline threshold value for BOD and Ortho-P.





5.5.10.5 Figure 5.5 shows that BOD concentrations within the river at Cloonshanville Bridge fluctuate throughout the year. On a number of occasions the BOD concentration with the river was greater than the guideline threshold value used by the EPA. This would indicate a slightly polluted water quality.

5.5.10.6 Ortho-P concentrations in the river were below the guideline EPA threshold value throughout the year and there would appear to be some assimilative capacity within the river for phosphates.

5.5.10.7 Overall, the water quality within the river at the vicinity of the proposed outfall is slightly polluted.

5.5.11 Hodson Bay

5.5.11.1 The existing WWTP at Hodson Bay discharges to Lough Ree which is the second largest lake on the River Shannon system. It is a large rich limestone Lough of 10,500 hectares in area and classed as a mixed fishery with good stocks of trout, pike and coarse fish present. Ballyleague and Lanesborough lie on either side of the River Shannon as it enters Lough Ree. The lake is over 25 kilometres in length.

5.5.11.2 In recent years Lough Ree has seen a dramatic improvement in water quality. In 1995 the lake was classified as strongly eutrophic which indicates a lake of poor

water quality. In 2002, according to the EPA, Lough Ree is classified as a Mesotrophic Lake, which indicates a lake of satisfactory water quality.

5.5.11.3 The water quality for Lough Ree is monitored at station no. 1720, the results which are shown in section 5.5.3.

5.5.12 Knockcroghery

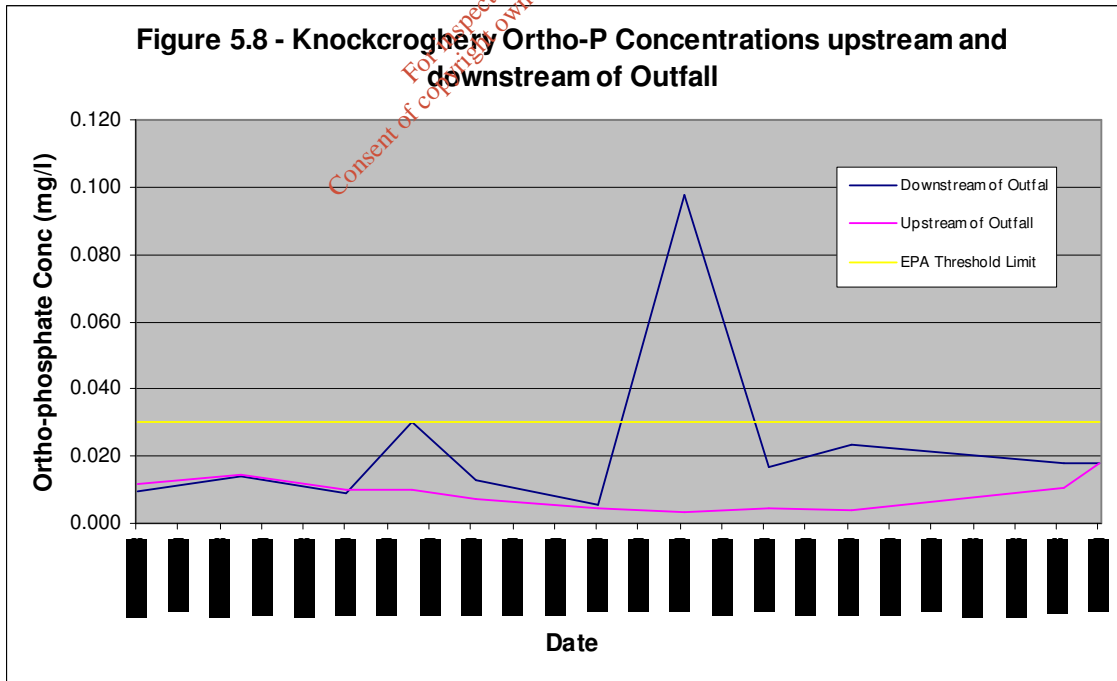
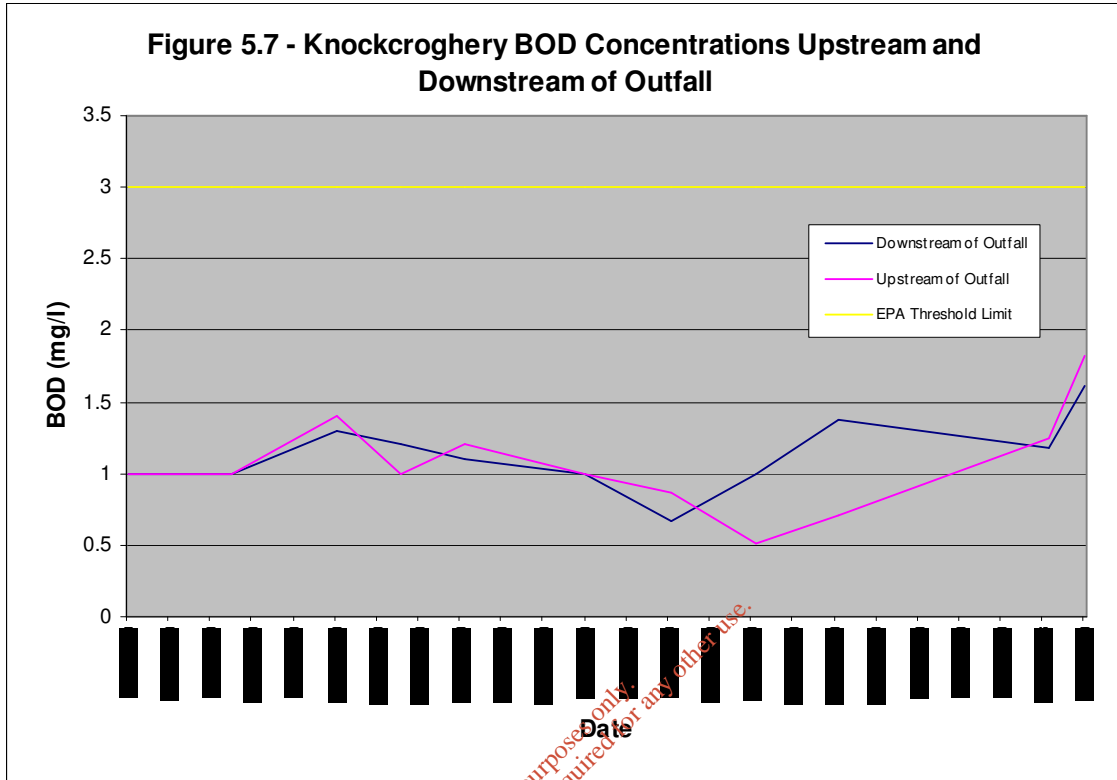
5.5.12.1 The existing WWTP at Knockcroghery discharges to a local stream. This stream is classified as a salmonid(trout) stream. The EPA does not have any monitoring stations located on this stream and therefore no biological quality rating data is available for this stream. Roscommon County Council do, however, carry out monitoring of this stream both upstream and downstream of the WWTP outfall. A review of this data would indicate that the water quality of this stream is similar to that of a Q 4 waters under the EPA quality rating system, although a slight deterioration in water quality is evident downstream of the existing outfall indicating that the current discharge is having a slightly negative impact on the stream.

5.5.12.2 Roscommon County Councils water quality analysis data was obtained for the receiving water in Knockcroghery both upstream and downstream of the existing WWTP outfall and is shown in Figures 5.7 and 5.8.

5.5.12.3 As indicated in Figure 5.7, there does not appear to be a significant difference between upstream and downstream BOD concentrations which would indicate that the WWTP is not having a significant effect on the pollutant load of the river in terms of BOD. The BOD concentrations both upstream and downstream of the WWTP outfall were also below the EPA threshold value for BOD and indicated that the stream is of satisfactory quality (unpolluted).

5.5.12.4 Figure 5.8 shows the Ortho-phosphate concentration upstream and downstream of the WWTP outfall. Unlike BOD, there appears to an increase in the level of Ortho-phosphate downstream of the WWTP outfall indicating the WWTP is having a slight negative effect on the water quality of the stream. However, the river appears to have adequate assimilative capacity to handle this load as the concentration of Ortho-phosphate was below the EPA's threshold limit in all but one sampling occasion. It should be noted that this exceedence occurred during the month of July when flows within the stream would be low.

5.5.12.5 Overall, the existing water quality within the stream can be described as satisfactory.



5.5.13 Lisacul

5.5.13.1 The proposed WWTP at Lisacul will discharge to the Lung River. There are primarily populations of cyprinid species but there are also salmonid (trout) populations. The surveyed length of the River Lung is 21km. Of this length the following quality classifications were apportioned to the river:

- 1991-1994: 15km Class A, 6 km Class D
- 1995-1997: 18km Class A, 1.5km Class B, 1.5km Class C
- 1998-2000: 19.5km Class A, 1.5km Class C
- 2000-2002: 21km Class A

5.5.13.2 As can be seen from the above data, the River Lung has experienced a continued increase in water quality since 1991-94 to 1998-2000.

5.5.13.3 In the 2002 EPA Report, the Lung River is described as unpolluted at all EPA monitoring stations along the length of the River. At Figh Bridge (Station 0100) the EPA have assigned a Q Rating of 4-5, which indicates a river of clean, pristine water quality.

5.5.13.4 The median BOD concentration within the river at Figh Bridge was 1.5 mg/l. The median Ortho-Phosphate concentration within the river at Figh Bridge was 0.2 - mg/l. Both of these values meet the EPA's guideline threshold for BOD and Ortho-phosphate.

5.5.14 Loughglynn

5.5.14.1 The existing WWTP in Loughglynn discharges to a land drain running adjacent to the existing WWTP site. There is no water quality data available for this drain. There is little or no flow in this drain for long periods of the year. This land drain eventually discharges to the River Francis which is located approximately 4km downstream of the WWTP. There exists salmonid populations of trout in the River Francis.

5.5.14.2 Alternative receiving waters were examined. The option of relocating the WWTP to the north of the village beside Loughglynn and discharging into Lough Glynn was examined. This was ruled out after discussions with both RCC and the EPA. The EPA were opposed to any wastewater discharge into Lough Glynn. The reason for this was because the current outflow from the lake is controlled and during dry periods there is little or no flow from the Lake. In effect, the lake would act as a large retention pond for the WWTP discharge.

5.5.14.3 Two other rivers were examined as suitable receiving waters, (i)The River Anaderryboy and (ii) the River Francis. The two options involved pumping the

final treated effluent a number of kilometres to the proposed discharge location. After examining the existing water quality, rivers flows and the length of outfall required, it was decided that the preferred option was to discharge to the River Anaderryboy at Driney Bridge. The existing water quality at this location is good, rivers flows were significant and a shorter outfall would be required.

5.5.14.4 The proposed WWTP for Loughglynn would discharge into the Anaderryboy River at Driney Bridge, 2km upstream of its confluence with the Lung River. The surveyed length of the Anaderryboy river is 17km. Of this length the following quality classifications were apportioned to the river.

- 1991-1994: 17km Class A
- 1995-1997: 17km Class A
- 1998-2000: 17km Class A
- 2000-2002: 17km Class A

5.5.14.5 In the 2002 EPA Report, the Anaderryboy River is described as been unpolluted at all EPA monitoring stations along the length of the River. At Cloontowart Bridge (Station 0500 - 1.5km upstream of proposed outfall location) the EPA have assigned a Q rating of 4-5, which indicates unpolluted river conditions. At the proposed discharge location, Driney Bridge (station 0600), the EPA also assigned a Q rating of 4-5.

5.5.14.6 The Anaderryboy River becomes part of the Lung River approximately 2km downstream of Driney Bridge. At Figh Bridge, the first EPA monitoring station along the Lung River (Station 0100 – approximately 2.5km downstream of Driney Bridge), the EPA have assigned a Q Rating of 4-5, which indicates a river of clean unpolluted water quality.

5.5.14.7 According to the EPA, the median BOD concentration within the Anaderryboy River upstream of Driney Bridge was 1.3 mg/l. The median Ortho-Phosphate concentration within the river upstream of Driney Bridge was 0.1 -mg/l. Both of these values meet the EPA's guideline threshold for BOD and Ortho-phosphate.

5.5.15 Strokestown

5.5.15.1 The existing WWTP in Strokestown discharges to the Strokestown Stream. This Stream contains salmonid (trout) populations. The surveyed length of the Strokestown Stream is 6km. Of this length, the following quality classifications were apportioned to the river:

- 1991-1994: 2.0km Class A, 1.0 km Class B, 1.0 km Class C
- 1995-1997: 2.5km Class A, 2.0km Class B, 1.5 km Class C
- 1998-2000: 2km Class A, 1.0km Class B, 3.0km Class C

5.5.15.2 Over 50% of the Strokestown Stream was classed as polluted in 1998-2000 monitoring period. The WWTP at Strokestown is thought to contribute to this.

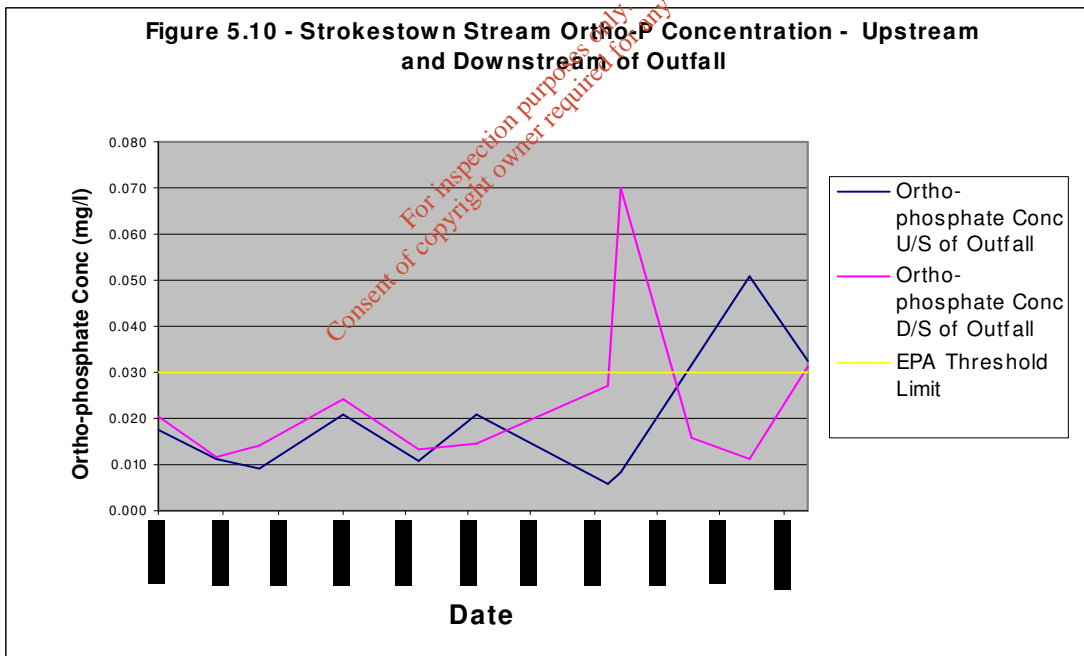
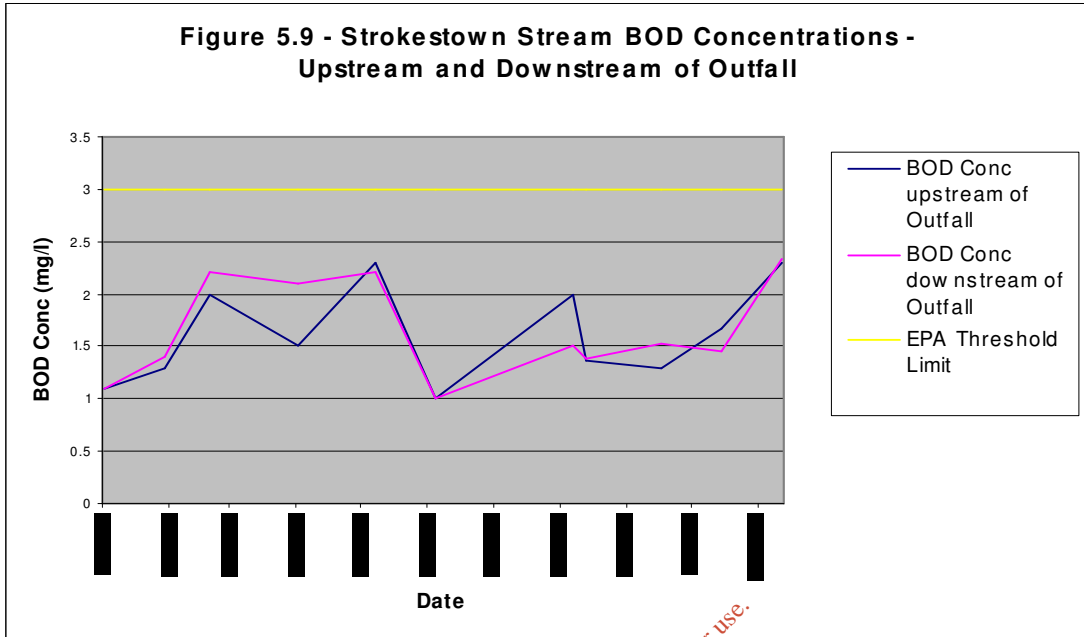
5.5.15.3 The 2002 EPA water quality data for the Strokestown stream indicates that the river has undergone a slight improvement in water quality since 1999. At stations 0050 (upstream of the existing WWTP) and 0100 (downstream of the existing WWTP), the water quality improved from a Q-rating of 2-3 at both stations in 1999 to a Q Rating of 3 at both stations in 2002. The water quality at both sites is described as moderately polluted and both Strokestown WWTP and a local landfill have been highlighted in the 2002 EPA Report as contributing factors for the poor water quality at these locations. It is noted that this landfill has now closed.

5.5.15.4 Roscommon County Council also carry out water quality analysis on the Strokestown Stream at points upstream and downstream of the existing WWTP outfall. Figures 5.9 and 5.10 show the BOD and Ortho-phosphate concentrations in the Strokestown Stream upstream and downstream of the existing WWTP outfall.

5.5.15.5 As indicated in Figure 5.9, there appears to be a slight increase between upstream and downstream BOD concentrations which would indicate that the WWTP is having a slight negative effect on the pollutant load of the river in terms of BOD. The BOD concentrations both upstream and downstream of the WWTP outfall were also below the EPA threshold value for BOD which is indicative of a stream of satisfactory condition.

5.5.15.6 Figure 5.10 shows Ortho-phosphate concentrations within the receiving waters were generally slightly higher downstream of the WWTP outfall. On all but one sampling occasion, the Ortho-phosphate concentration was below the EPA's threshold value for Ortho-phosphate.

5.5.15.7 Overall, the water quality of the Strokestown stream can be described as slightly polluted in the vicinity of the WWTP Outfall.



5.5.16 Tulsk

5.5.16.1 The preferred discharge regime for the proposed WWTP in Tulsk is to discharge treated effluent to the Ogulla River. The Ogulla River has salmonid (trout) populations. The Ogulla River has no EPA monitoring stations along its length and therefore no data on existing EPA water quality for this river is available.

- 5.5.16.2 Water Quality monitoring data was obtained from the Lough Derg and Lough Ree monitoring and management system for the last three years. According to these results the water quality within the Ogulla River is unpolluted (Equivalent to a Biological Q-Rating of 4). The maximum BOD concentration within the River was 1.8mg/l.
- 5.5.16.3 It is noted that Lough Nafulla, which is located 1.5 km downstream of the proposed WWTP site is used as drinking water source for the Shad Lough group water scheme. The proposed discharge from the WWTP outfall must not interfere with the quality of the water in this lake.
- 5.5.16.4 Water quality data for Lough Nafulla was obtained from Roscommon County Council. Examination of this data would indicate that this water source is not an A1 water as defined in the European Communities (Quality of Surface Water Intended for the Abstraction of Drinking Water) Regulations, 1989. The quality of the water in Lough Nafulla is more likely an A2/A3 quality.
- 5.5.16.5 As stated in section 5.3, the EPA has assigned a Biological Quality Rating (Q-Rating) for the majority of rivers outlined in above. Table 5.4 overleaf shows the Q-Rating for the period 1987-2002 for each of the proposed receiving waters.
- 5.5.16.6 Figure 5.11 to 5.23 overleaf shows the location of the various receiving waters related to the scheme and the location of the EPA sampling stations (indicated by red circle) and flow monitoring locations (indicated by blue circle) used in this assessment.

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Table 5.4 – Biological Quality Rating for the period 1987 to 2002

Village/Receiving Water		Sampling Stations			Biological Quality Ratings				
Village	River	Station No.	Location	U/S or D/S of Study Area/WWTP Site	1987	1993	1996	1999	2002
Arigna	Arigna River	0200	Derreenavoggy Bridge	100m u/s of WWTP Site	3	3	3	3-4	4
		0300	Mount Allen Bridge	2km d/s of WWTP Site	4	3	4	3-4	4
Ballinlough	Lough O'Flynn	No data	Discharges to Lough O'Flynn		-	-	-	-	-
Ballyleague	Lough Ree	No Data	Discharges to Lough Ree		-	-	-	-	-
Brideswell	River Cross	0100	Bridge at Corrantotan	2km d/s of proposed outfall	4	4-5	4	3-4	4
Castleplunket	Local Drains	No data	Not monitored by the EPA		-	-	-	-	-
Cootehall	River Boyle	0600	Cootehall Bridge		-	4	4	4	4
Creagh	River Suck	1300	Ballinasloe Bridge	Upstream of WWTP Site	3-4	3-4	3-4	4	4
		1400	3km d/s of Ballinasloe Bridge	Downstream of WWTP site	3	3	2-3	2-3	3-4
Curraghboy	River Cross	0060	Bridge east of Eskerbaun	3.5km d/s of proposed outfall	-	-	4	4	3-4
Elphin	Local Stream	0100	Not monitored by EPA – Available RCC Data would indicate a Q Rating of 2 (seriously polluted). RCC data relates to 500m d/s of outfall.		-	-	-	-	-
Frenchpark	Carricknabraher	0100	Cloonshanville Bridge	100m u/s of WWTP Site	4-5	4	3-4	4	3-4
		0200	U/S of Owennaforeesha River	2km d/s of WWTP Site	-	3	3-4	3-4	3
Hodson Bay	Lough Ree	No Data	Discharges to Lough Ree		-	-	-	-	-
Knockcroghery	Local Stream	No data	Not monitored by EPA – Available RCC Data would indicate a Q Rating of 4 both upstream and downstream of existing outfall		-	-	-	-	-

Table 5.4 – Biological Quality Rating for the period 1987 to 2002

Village/Receiving Water		Sampling Stations			Biological Quality Ratings				
Village	River	Station No.	Location	U/S or D/S of Study Area/WWTP Site	1987	1993	1996	1999	2002
Lisacul	Lung River	0100	Figh Bridge		4-5	4-5	4	4	4-5
Loughglynn	Anaderryboy River	0500	Cloontowart Bridge	U/S of WWTP Outfall	4	4-5	4-5	4	4-5
		0600	Driney Bridge	D/S of WWTP Outfall	-	-	4-5	4	4-5
Strokestown	Strokestown Stream	0050	Br. At South end of Strokestown	U/S of WWTP Site	3	2-3	2-3	2-3	3
		0100	D/S of Strokestown Standing Stone	D/S of WWTP Site	3	2-3	4	2-3	3
Tulsk	Ogulla River	No data	Not monitored by EPA – Available RCC Data would indicate a Q Rating of 4.		-	-	-	-	-

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5.6 RELEVANT LEGISLATION

5.6.1 General

5.6.1.1 In order to determine the assimilative capacity of the various receiving waters, the maximum concentration of pollutants/nutrients, which are legally permitted must be determined from the relevant Water Quality Standards. The target water quality standards for the receiving waters were determined by reference to the following Regulations:

- Urban Waste Water Treatment Regulations (S.I. No. 254 of 2001).
- European Communities (Water Policy) Regulations (S.I. 722 of 2003)
- Local Government (Water Pollution) Act, 1977 (Water Quality Standards for Phosphorus) Regulations (S.I. No. 258 of 1998).
- European Communities (Quality of Surface Water Intended for the Abstraction of Drinking Water) Regulations, 1989.
- Council Directive 80/68/EEC Protection of Groundwater

5.6.1.3 It should be noted that none of the proposed receiving waters outlined in this section fall under the European Communities (Quality of Salmonid Waters) Regulations, 1988.

5.6.2 Urban Waste Water Treatment Regulations (S.I. No. 254 of 2001)

5.6.2.1 Under Statutory Instrument No. 254 of 2001, Urban Wastewater Treatment Regulations, appropriate treatment shall be provided by 31 December 2005 in respect of all discharges to freshwater and estuaries from agglomerations with a population equivalent of less than 2,000. All of the villages are within this range and appropriate treatment must be provided.

5.6.2.2 Appropriate treatment is defined in the regulations as “treatment of urban waste water by any process and/or disposal system which after discharge allows, the receiving waters to meet the relevant quality objectives and relevant provisions of the directive and of other community directives”.

5.6.2.3 It is therefore considered that the appropriate treatment for the villages would be to adopt the treatment systems which would result, as a **minimum**, in compliance with the treatment standards outlined below.

5.6.2.4 The treatment standards adopted as per the Second Schedule of the Directive for each of the sixteen villages are as follows:

- Biochemical Oxygen Demand (BOD) 25 mg/l

- Chemical Oxygen Demand (COD) 125 mg/l
- Total Suspended Solids (TSS) 35 mg/l

5.6.2.5 The Urban Wastewater Treatment Regulations also specifies a list of “sensitive waters” for which additional limits are placed on the discharged treated effluent Total Phosphorus and Total Nitrogen concentrations. A limit of 2mg/l and 15mg/l is imposed on the concentration of Total phosphorus and Total Nitrogen respectively.

5.6.2.6 In an addition to the EU UWWTD requirement, other legislation and also the assimilative capacity of the receiving waters has an effect on the target water quality standards for the receiving waters. It may therefore be necessary to impose more stringent treatment standards than those outlined in 5.6.2.4 above.

5.5.3 European Communities (Water Policy) Regulations (S.I. 722 of 2003)

5.6.3.1 Regulations were made on the 22 December 2003 which transpose the Water Framework Directive into national law. Under Statutory Instrument No. 722 of 2003, the protection of the status of all waters (i.e. no deterioration to be allowed) and the achievement of at least “good status” by 22 December 2015 for all waters.

5.6.3.2 Good status of rivers with respect to fish fauna means “there are slight changes in species composition and abundance from the type-specific communities attributable to anthropogenic impacts on physicochemical and hydromorphological quality elements. The age structures of the fish communities show signs of disturbance attributable to anthropogenic impacts on physicochemical or hydromorphological quality elements, and, in a few instances, are indicative of a failure in the reproduction or development of a particular species, to the extent that some age classes may be missing.”

5.6.3.3 Good status of lakes with respect to general conditions means “There are slight changes in species composition and abundance from the type-specific communities attributable to anthropogenic impacts on physicochemical or hydromorphological quality elements. The age structures of the fish communities show signs of disturbance attributable to anthropogenic impacts on physicochemical or hydromorphological quality elements, and, in a few instances, are indicative of a failure in the reproduction or development of a particular species, to the extent that some age classes may be missing.”

5.6.3.4 These regulations require attention be paid to ammonia concentrations in the receiving water in order that fish fauna are not adversely affected. Whilst none of the proposed receiving waters are designated salmonid waters, in line with the Water Framework Directive requirements as outlined above, the European Communities (Quality of Salmonid Waters) Regulations, 1988 figure of mg/l ammonia in receiving waters is used.

5.6.4 Water Quality Standards for Phosphorus Regulations (S.I. No. 258 of 1998).

- 5.6.4.1 In addition to the EU UWWTD requirement, other legislation has an effect on the target water quality standards for the receiving waters. Under the Local Government (Water Pollution) Act, 1977 (Water Quality for Phosphorus) Regulations (S.I. 258 of 1998), standards are set for water quality within rivers.
- 5.6.4.2 The regulations require that water quality be maintained or improved by reference to the biological quality rating (rivers) or trophic status (lakes) assigned by the EPA in the 1995-97 review period or at the first occasion thereafter. This represents the baseline water quality data. For example, the River Arigna was assigned a Q Rating of 3 in the 1995-97 review period (see table 5.3) at Derreenavoggy Bridge (EPA Station number 0200) and therefore the target Q-Rating for this stretch of the Arigna River is 3-4, to be achieved by 31st December 2006.
- 5.6.4.3 Where the water quality is deemed unpolluted (i.e. a river biological quality rating of Q4, Q4-5 or Q5, or an oligotrophic/mesotrophic lake status has been assigned by the EPA), the regulations require that the existing water quality be maintained. Where the quality has been found to be unsatisfactory, the regulations require that the water be improved by 2007 at the latest for waters surveyed by the EPA in the 1995-97 period and within a maximum of 10 years for waters first surveyed after 1997. The degree of improvement is based on the baseline water quality and on the standards prescribed by the regulations.
- 5.6.4.4 In the case of rivers, the standards prescribed in the regulations may be met by achieving either the target biological quality rating or the target median Molybdate-reactive phosphorus (MRP) concentration (see Table 5.5 below). In the case of lakes, the standards prescribed in the regulations may be met by either achieving the target trophic status classification or the target average total phosphorus concentration (see Table 5.6).

Baseline Biological Quality Rating*	Minimum Target Biological Quality Rating	Molybdate-Reactive Phosphate Median Concentration (µg/l)
5	5	15
4-5	4-5	20
4	4	30
3-4	4	30
3	3-4	50
2-3	3	70
≤ 2	3	70

*Assigned by the EPA in the 1995-97 review period or at the first occasion thereafter.

Table 5.6 – Quality Standards for Lakes (W.Q. Standards for Phosphorus)		
Baseline Trophic Status*	Minimum Target Trophic Status	Average Total Phosphorus Concentration (µg P/l)
Satisfactory		
Ultra-Oligotrophic	Ultra-Oligotrophic	<5
Oligotrophic	Oligotrophic	>5<10
Mesotrophic	Mesotrophic	>10<20
Unsatisfactory		
Eutrophic	Mesotrophic	>10<20
Hypertrophic	Eutrophic	>20<50

*Assigned by the EPA in the 1995-97 review period or at the first occasion thereafter.

5.6.4.5 As discussed above, ten of the proposed receiving waters have been assigned a Q rating within a reasonable distance upstream or downstream of the study area (see table 5.4). For the purpose of complying with the quality standards prescribed in the 1998 regulations, it will be necessary to maintain/improve the river quality to a biological quality rating or meet the phosphate concentration as listed in Table 5.7 below by the end of year 2007.

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Table 5.7 – Quality Standards for Rivers (W.Q. Standards for Phosphorus)				
Town	River, Station	Existing Quality Rating (Q)*	Min Target Q Rating	Target Ortho-Phosphate Concentration (µg P/l)
Arigna	Arigna River - Mount Allen Bridge	4	4	30
Ballyleague	Lake	Not Applicable	-	-
Ballinlough	Lake	Not Applicable	-	-
Brideswell	River Cross – Bridge at Corrantotan	4	4	30
Castleplunket	Local Drain	Not Applicable	-	-
Cootehall	River Boyle – Cootehall Bridge	4	4	30
Creagh	River Suck – 3km d/s of Ballinasloe Bridge	3-4	4	70
Curraghboy	River Cross – Bridge east of Eskerbaun	3-4	4	30
Elphin	Local Stream	Not Applicable	-	-
Frenchpark	Carricknabraher River – U/S of Owennaforeesha River	3	4	30
Hodson Bay	Lake	Not Applicable	-	-
Knockcroghery	Local Stream	Not Applicable	-	-
Lisacul	Lung River – Figh Bridge	4-5	5	20
Loughglynn	Anaderryboy River	4-5	4-5	30
Strokestown	Strokestown Stream – D/S of Strokestown Standing Stone	3	4	30
Tulsk	Ogulla River	Not Applicable	-	-

*Taken from the EPA's interim report "The Biological Survey of River Quality 2002"

5.6.4.6 Of the nine receiving waters monitored by the EPA, six are currently compliant with the standards set in Regulations. The water quality in the remaining 3 rivers have until 31st December 2006 to achieve compliance.

5.6.4.7 Of the 16 villages included in this study, three will discharge to lakes. Ballyleague and Hodson Bay will discharge to Lough Ree while Ballinlough will discharge to Lough O'Flynn. The existing trophic status and target water quality standards for these lakes are shown in Table 5.8 below.

Table 5.8 – Quality Standards for Lakes (W.Q. Standards for Phosphorus)					
Town	Lake	Existing Trophic (Q)	Min Target Trophic Status	Molybdate-Reactive Phosphate Median Concentration (ug/l)	
				Existing	Target
Ballinlough	Lough O'Flynn	Not Applicable			
Ballyleague	Lough Ree	Mesotrophic	Mesotrophic	13	>10<20
Hodson Bay	Lough Ree	Mesotrophic	Mesotrophic	13	>10<20

5.6.4.8 Lough Ree is currently compliant with the Water Quality requirements of the Phosphorus regulations. The water Quality of Lough Ree has improved from Eutrophic (1995-97 monitoring) to Mesotrophic. It should be noted that the improved water quality in Lough Ree may be due in part to infestation of the lake with the Zebra mussel, as well as improvement in wastewater treatment.

5.6.4.9 Lough O'Flynn is not monitored by the EPA and therefore EPA data on the trophic status of this lake was not available. However, an assessment was made of water quality data received from Roscommon county Council. Examination of the data would indicate that the current water quality within the lake is very good. Chlorophyll concentrations within the lake ranged from 1mg/m³ to 4mg/m³. According to the O.E.C.D. lake classification scheme (used by the EPA to define the trophic status of lakes), lake water quality samples with chlorophyll concentrations of <8mg/m³ are indicative of Oligotrophic Lakes (i.e. good water quality). Oligotrophic lakes are described by the EPA as having a very low level of pollution.

5.6.4.10 The existing background phosphorus levels were examined from the EPA records to determine whether specific phosphorus reduction measures were needed to meet the regulations. Examination of the data presented in Table 5.7 above indicates that there would be a need for phosphorus reduction measures at Elphin, Frenchpark, Curraghboy and Strokestown in order to ensure that the water quality objectives of the Phosphorus regulations are complied with.

5.6.4.11 After discussion with Roscommon County Council it was decided to incorporate phosphorus reduction measures at all WWTP's included in the scheme. A final effluent phosphorus concentration of 2mg/l will be imposed at all proposed WWTP's.

5.6.5 Quality of Surface Water Intended for the Abstraction of Drinking Water Regulations, 1989

5.6.5.1 The aim of this legislation is to reduce and prevent pollution of surface water intended for the abstraction of drinking water. Surface water intended for abstraction of drinking water is divided into three categories (A1, A2 & A3 waters) and different levels of water treatment are specified depending on the classification of the water body. The regulations set the following minimum quality requirements to be met by surface fresh water:

- parameters defining the physical, chemical and microbiological characteristics;
- limit values for these parameters;
- the minimum frequency of sampling and analysis; and
- common non-mandatory reference methods for measuring the parameters.

5.6.5.2 The following are some of the water quality standards as set out in these regulations:

Parameter	A1	A2	A3
BOD (mg/l)	5	5	7
Total Suspended Solids (mg/l)	50	50	50
Total Ammonia (mg/l)	0.2	1.5	4.0
Nitrate (mg/l)	50	50	50
Phosphates (mg/l)	0.5	0.7	0.7

5.6.5.3 Presently there are three surface water bodies, which are used as a drinking water source, which could be directly impacted on by the Roscommon 16 Villages Sewerage Scheme. Lough Nafulla is a source of water for the Shad Lough group water scheme is located 1.5km downstream of proposed WWTP in Tulsk. Lough O'Flynn is used as a drinking water source on certain occasions for Ballinlough. Lough Garra is also used as drinking water. It is important that the treatment standard set for these WWTPs ensure that the resultant discharge has no negative impact on the quality of these waters.

5.6.6 Council Directive 80/68/EEC Protection of Groundwater

- 5.6.6.1 The above European Council Directive is transposed into Irish Law in S.I. No. 41 of 1999 Protection of Groundwater Regulations.
- 5.6.6.2 The issue of receiving waters for the treated effluent from a number of the proposed waste water treatment plants to be constructed in this project is quite difficult. A number of the proposed sites do not have receiving waters which have adequate assimilative capacity in close proximity. Therefore, it was considered that there was a need to examine the possibility of using reed beds as a form of additional treatment, downstream of secondary treatment, prior to percolation through ground, in order that an alternative to pumping over long distances could be assessed.
- 5.6.6.3 However, this is a sensitive issue in Co. Roscommon since a significant amount of Roscommon's water supply is sourced from groundwater and it would have to be proven that any discharge to ground would not adversely affect any existing sources.
- 5.6.6.4 Therefore, a detailed investigation was carried out into existing legislation, proposed legislation and discussions were had with the Environmental Protection Agency, the Department of the Environment, Heritage and Local Government and the Geological Survey of Ireland. The significant point was to ascertain what the prospects would be of Roscommon Co. Co. obtaining the necessary approvals/permits required for discharge to groundwater, bearing in mind the objectives of the Water Framework Directive and the proposed new Ground Water Directive.
- 5.6.6.5 As a result of the legislation review and discussions held it was agreed not to consider indirect discharge to ground as an option for the disposal of treated effluent. The reasons for this are summarised in Section 10.3.

5.7 ASSIMILATIVE CAPACITY OF RECEIVING WATERS

5.7.1 General

- 5.7.1.1 The discharge of waste to a river channel must of necessity alter the quality of the water in that river to some extent. The limits within which such a change in quality must be controlled are governed by the river water quality standards specified for the protection of the beneficial uses of those waters.
- 5.7.1.2 The waste assimilative capacity of a river at any particular location may be defined as the maximum quantity of wastewater which may be discharged under set conditions of river flow that does not lead to any significant exceedence of the relevant water quality standards outside the mixing zone of the discharge location.

5.7.1.3 This capacity for waste assimilation provides the link between water quality standards and effluent discharge limits and thereby determines the level of treatment, which must be provided before any discharge to the receiving waters takes place.

5.7.1.4 The assimilative capacity of each receiving water is calculated to determine if the receiving waters can absorb the wastewater discharge and still comply with relevant legislation and the receiving waters water quality objectives. The parameters used when calculating the assimilative capacity of a river are BOD and ortho-phosphate.

5.7.1.5 To estimate the assimilative capacity of a freshwater river in terms of the relevant parameters, the following formula is used:

$$\text{Assimilative capacity in kg/day} = (C_{\max} - C_{\text{back}}) \times F_{95} \times 86.4$$

Where:

C_{\max} = maximum permissible concentration in the receiving water expressed in mg/l (based on the current water quality legislation)

C_{back} = background (upstream) concentration expressed in mg/l

F_{95} = 95 percentile flow expressed in m³/s

86.4 = Numerical Constant

5.7.1.6 This formula was used in calculating the assimilative capacity of the relevant receiving waters in this study.

5.7.2 Relevant Water Quality Limits for Receiving Waters

5.7.2.1 The maximum permissible concentration of a water quality parameter should be taken as the lowest concentration specified by the applicable relevant legislation above. A review of the relevant legislations governing the various receiving water was carried out and the maximum permissible concentration of both BOD and Ortho-Phosphate was determined.

5.7.2.2 For BOD, the most stringent BOD limit specified in the Quality of Surface Water Intended for the Abstraction of Drinking Water Regulations is a limit of 5mg/l BOD for A1 waters. The Quality of Salmonid Waters regulations 1988, although not directly relevant to any of the receiving waters in this scheme, specify a limit of <5mg/l.

5.7.2.3 The Water Quality Standards for Phosphorus Regulations do not specify a mandatory limit for BOD. However, it does outline indicative BOD concentrations for the different water classes. Pristine unpolluted waters are described in these regulations as having a BOD concentration of less than 3mg/l. It was decided to use the 3 mg/l BOD guideline limit outlined in the Phosphorus regulations as the maximum permissible concentration of BOD.

5.7.2.4 It should also be noted that in all circumstances effluent discharges which are calculated to raise the BOD of the receiving waters (outside the mixing zone) by more than 1 mg/l should be discouraged. For this reason, when the background concentration of BOD in the receiving water was below 2mg/l, the maximum permissible concentration of BOD used in the calculations was equal to the median upstream concentration (mg/l) plus 1 (i.e. if the median upstream concentration of BOD was 1.5 mg/l, then the maximum permissible concentration used in the assimilative capacity calculation was 2.5mg/l).

5.7.2.5 The maximum permissible concentrations of Ortho-Phosphate was determined by reference to the Water Quality Standards for Phosphorus Regulations. These are set out in Table 5.8 above.

5.7.2.6 The background upstream concentration for both BOD and Ortho-Phosphate were taken from the latest EPA data available for the receiving water. Where EPA data was unavailable or considered to be out-of date, data from Roscommon County Council Environmental monitoring programme was used.

5.7.2.7 These values are used in determining the assimilative capacity of the receiving waters, and consequently the treated effluent discharge standards.

5.7.2.8 The maximum permissible ammonia concentration were determined as outlined in Section 5.6.3.4 above.

5.7.3 Assimilative Capacity of Roscommon 16 Villages Sewerage Scheme Receiving Waters - Rivers

5.7.3.1 As already stated in previous sections of this report, the proposed WWTP's will discharge to various receiving water bodies throughout Roscommon.

5.7.3.2 In three of the villages, wastewater from three proposed WWTPs will discharge to a lake. These are:

- Ballinlough – Lough O’Flynn
- Ballyleague/Lanesborough – Lough Ree
- Hodson Bay – Lough Ree

5.7.3.3 The proposed WWTP’s from the remaining villages will discharge to various rivers and streams throughout the county. These are summarised as follows:

- Arigna – River Arigna
- Brideswell – River Cross
- Castleplunkett – Local Stream
- Cootehall – River Boyle
- Creagh – River Suck
- Curraghboy – River Cross
- Elphin – Local Stream
- Frenchpark – Carricknabraher River
- Knockcroghery – Existing Stream adjacent to WWTP
- Lisacul – River Lung
- Loughglynn – Anaderryboy River
- Strokestown – Strokestown Stream
- Tulsk – Ogulla River

5.7.3.4 The assimilative capacity for the rivers outlined above has been calculated and are summarised in Table 5.10. The Assimilative capacity has been calculated for BOD, Ortho-phosphate and ammonia at locations close to the proposed discharge locations.

Table 5.10 – Theoretical Wastewater Assimilative Capacity of Discharges to River for BOD, ortho-phosphate and ammonia

Village	River	Location***	95 Percentile Flow (m3/sec)	Median U/s Conc (mg/l)			Max Permissible Concentration			Assimilative Capacity		
				BOD (mg/l O2)	Ortho-P (mg/l P)	Ammonia (mg/l N)	BOD (mg/l O2)	Ortho-P (mg/l P)	Ammonia (mg N/l)	kg/BOD/ day	kg/P/ day	kg/N/ day
Arigna*	River Arigna	Derreenavoggy Bridge	0.15	0.7	0.02	0.14	3	0.03	1	29.81	0.13	11.15
Brideswell*	River Cross	1km U/S of Milltown Pass	0.025	0.7	0.02	0.01	3	0.03	1	4.97	0.02	2.14
Cootehall*	River Boyle	Cootehall Bridge	3.8	1.7	0.02	0.02	3	0.03	1	426.82	3.28	321.75
Creagh*	River Suck	Ballinasloe Bridge	3.64	1.5	0.03	0.03	3	0.07	1	471.71	0	305.06
Curraghboy*	River Cross	Bridge 1km SE of village	0.014	0.7	0.02	0.01	3	0.03	1	2.78	0.01	1.2
Elphin**	Local Stream	500m D/S of WWTP	0.018	3.0	0.294	0.274	3	0.07	1	0.16	0	1.13
Frenchpark*	Carricknabraher River	Cloonshanville Bridge	0.383	1.4	0.01	0.02	3	0.03	1	52.95	0.66	32.43
Knockcroghery**	Local Stream	U/S of WWTP Outfall	0.016	1.0	0.01	0.024	3	0.03	1	2.76	0.03	1.35
Lisacul*	Lung River	Figh Bridge	1.0	1.5	0.02	0.14	3	0.03	1	129.6	0.86	74.3
Loughglynn**	Anaderryboy	Driney Bridge	0.8	1.3	0.01	0.14	3	0.02	1	117.5	1.38	59.44
Strokestown**	Strokestown Steam	U/S of WWTP Outfall	0.33	1.5	0.018	0.046	3	0.03	1	42.77	0.34	27.2
Tulsk*	Ogulla River	Br 1km WSW of Tulsk	0.21	0.8	0.02	0.14	3	0.03	1	39.92	0.18	15.6

* EPA Data used for BOD and Ortho-P medians

**Roscommon County Council data used for BOD and Ortho-P medians

5.7.4 Assimilative Capacity Of Lakes

5.7.4.1 Three of the proposed WWTPs will discharge treated effluent to a lake. These are as follows:

- Ballinlough - Lough O'Flynn
- Ballyleague/Lanesborough - Lough Ree
- Hodson Bay - Lough Ree

5.7.4.2 The villages of Ballinlough and Ballyleague are currently served by WWTPs which discharges treated effluent to Lough O'Flynn and Lough Ree respectively. There is also an existing WWTP in Hodson Bay which serves a Hotel and discharges treated effluent to Lough Ree. Wastewater from Lanesborough receives minimal treatment prior to discharge to Lough Ree.

5.7.4.3 Examination of water quality data for both Lough Ree and Lough O'Flynn indicates that the existing discharges do not appear to be having a negative impact on the water quality of the lakes.

5.7.4.4 Currently, Ballinlough WWTP discharges a treated effluent with an average BOD concentration of 22.3mg/l, an average suspended solids concentration of 30.6mg/l and an average total phosphorus concentration of 1.6mg/l (2003 treated effluent analysis results). The WWTP was designed to discharge a treated effluent quality of 25mg/ BOD, 35mg/l Suspended Solids and 2mg/l Total P.

5.7.4.5 Examination of water quality data obtained for Lough O'Flynn for the years 2001-2003 indicates that the current water quality within the lake is very good. Chlorophyll concentrations within the lake ranged from 1mg/m³ to 4mg/m³. According to the O.E.C.D. lake classification scheme (used by the EPA to define the trophic status of lakes), lake water quality samples with chlorophyll concentrations of <8mg/m³ are indicative of Oligotrophic Lakes (i.e. good water quality). Oligotrophic lakes are described by the EPA as having a very low level of pollution.

5.7.4.6 This is further reinforced by examination of water quality data from the River Suck 100m downstream of Lough O'Flynn. According to the latest EPA data available at this location (2002 data), the quality of the water at this location is very good (biological Q rating assigned to this location is Q 4-5 which indicates unpolluted waters).

5.7.4.7 This indicates that the current discharge from Ballinlough WWTP does not appear to be adversely affecting the quality of Lough O'Flynn. There appears to be adequate assimilative capacity within the lake to cope with the current loads.

- 5.7.4.8 Lough Ree, according to the EPA, has seen a dramatic improvement in water quality over recent years. In 1995 the lake was classified as strongly eutrophic which indicates a lake of poor water quality. In 2002, according to the EPA, Lough Ree was classified as a Mesotrophic Lake, which indicates a lake of satisfactory water quality.
- 5.7.4.9 Currently, Ballyleague WWTP discharges a treated effluent with an average BOD concentration of 5mg/l, an average suspended solids concentration of 7mg/l and an average total phosphorus concentration of 1.8mg/l (2003 treated effluent analysis results). The WWTP was designed to discharge a treated effluent quality of 25mg/ BOD and 35mg/l Suspended Solids.
- 5.7.4.10 Lanesborough WWTP currently discharges a treated effluent with an average BOD concentration of 301mg/l, an average suspended solids concentration of 174mg/l (2203 effluent analysis results). The existing WWTP provides little or no reduction in the pollutant load of the wastewater and is currently overloaded hydraulically and organically.
- 5.7.4.11 Despite the current discharge from Ballyleague WWTP and the obvious failure of Lanesborough WWTP, the water quality of Lough Ree has improved significantly over the last 9 years. This would indicate that the lake has adequate assimilative capacity to handle the existing loads from both Lanesborough and Ballyleague.
- 5.7.4.12 Under the proposals of this scheme, it is intended to expand the existing WWTP in Ballyleague to accept wastewater from the town of Lanesborough. As the existing Lanesborough wastewater treatment facilities are effectively providing little or no treatment, this should reduce the overall level of nutrients entering the lake from the Ballyleague/Lanesborough Catchment.
- 5.7.4.13 The discharges from the three WWTP can be assessed initially by reference to the assimilative capacity of the outflow from the lake.
- 5.7.4.14 This should ensure that the overall impact of the new WWTP in Ballyleague/Lanesborough would contribute to a further improvement in the water quality of Lough Ree.

Table 5.11 – Theoretical Wastewater Assimilative Capacity of Discharges to Lake for BOD, ortho-phosphate and ammonia

Village	Location	Lake	95 Percentile Flow (m3/sec)	Median U/s Conc (mg/l)			Max Permissible Concentration			Assimilative Capacity		
				BOD (mg/l O ₂)	Ortho-P (mg/l P)	Ammonia (mg N/l)	BOD (mg/l O ₂)	Ortho-P (mg/l P)	Ammonia (mg N/l)	kg/BOD / day	kg/P/ day	kg/N/ day
Ballinlough	Willsbrook	Lough O'Flynn	.0165*	2	.02	.5**	3	.03	1	1.43	.01	0.71
Ballyleague/ Lanesborough / Hodson Bay	Athlone Burgess Park (LHS)	Lough Ree	22.4	2.9 ***	.029***	1.7***	3	.03	1	193.5	1.94	1722

*95 percentile flow estimated from the 95% flow recorded at Willsbrook (EPA station no. 26006) by means of relative catchment areas at Willsbrook and Lough O'Flynn. Catchment area at Willsbrook is 192 km³, area at Lough O'Flynn is estimated at 12 km³.

**No data available at Lough O'Flynn. Nominal figure used for purposes of illustration.

*** When the recorded median BOD value of 3 mg/l O₂ or ortho-P value of .03 mg/l P. is placed in the assimilative capacity equation, it indicates that the river has no assimilative capacity. However, when a slightly smaller nominal value of 2.9 or 0.029 respectively is put in the equation, some indication is available regarding the assimilative capacity available in the river based on minor fluctuations in the measured median concentration of the particular parameter.

5.8 ESTIMATED DISCHARGE FROM PROPOSED WWTPs

5.8.1 General

5.8.1.1 The proposed design PE's for the various WWTPs are outlined below:

• Arigna	- 585
• Ballinlough	- 1,340
• Ballyleague/Lanesborough	- 3,200
• Brideswell	- 470
• Castleplunkett	-420
• Cootehall	- 940
• Creagh	- 1,220
• Curraghboy	- 430
• Elphin	- 1,810
• Frenchpark	- 1,260
• Hodson Bay	- 1,300
• Knockcroghery	- 730
• Lisacul	- 490
• Loughglynn	- 620
• Strokestown	- 3,060
• Tulsk	- 820

5.8.1.2 The 2029 design PE for each of the WWTP was taken from Table 3.16 in Section 3 of this report. In most cases, the figure was rounded up to the nearest round number, e.g. Brideswell, in Table 3.16 is 469 and was rounded up to 470.

5.8.1.3 The estimated BOD and Ortho-P discharges from each of the WWTP'S at different final effluent standards are show below in table 5.12. The calculations are based on a hydraulic discharge of 225litres per PE. Applying a treated effluent discharge standard of 2mg/l on Phosphorus and various different treated effluent standards for BOD, the total discharge of BOD and Ortho-phosphate at can be calculated.

5.8.1.4 Where relevant the assimilative capacity of the receiving water is also shown. In determining suitable discharge standards for the various WWTP's, a comparison between the assimilative capacity of the river and estimated discharge from the WWTP was made.

- 5.8.1.5 In determining the relevant treated effluent BOD standard the following was taken into account.
- 5.8.1.6 Where adequate assimilative capacity (more than a factor of 2) was available at a discharge of 25mg/l BOD (see table 5.12 below), a treated effluent standard of 25mg/l was applied to the WWTP.
- 5.8.1.7 In certain cases situation (e.g. Brideswell), there was available assimilative capacity within the river at a discharge of 20mg/l, however, this would leave little or no remaining assimilative capacity within the river downstream of the WWTP. In such cases, a lower final effluent BOD concentration was applied to ensure that the WWTP discharge would not consume the entire available assimilative capacity of the receiving waters (in the case of Brideswell a final effluent standard of 10 mg/l was applied).
- 5.8.1.8 Where little or no assimilative capacity was available (e.g. Elphin), the lowest treated Effluent BOD concentration was applied (5mg/l).
- 5.8.1.9 The 5 mg/l standard has been adapted as being a standard which is compatible with the objectives of the Salmonid Regulations and the Water Framework Directive.
- 5.8.1.10 The selection of the appropriate discharge standard for total P was determined by reference to the implementation report prepared by Roscommon County Council in accordance with the phosphorous regulations.
- 5.8.1.11 The determination of the appropriate discharge standard for ammonia was carried out in a similar manner to the BOD assessment. No standard was applied where large assimilative capacities were available and the lower standard of 1 mg/l was applied in situations where there was limited assimilative capacity.

Table 5.12 – Theoretical discharges of BOD from proposed WWTP's versus assimilative capacity

WWTP	Design PE	Hydraulic Load (based on 225 litres per PE)	Estimated Discharge					Assimilative Capacity kg/BOD/ day
			kg/day of BOD @ 25mg/l	kg/day of BOD @ 20mg/l	kg/day of BOD @ 15mg/l	kg/day of BOD @ 10mg/l	kg/day of BOD @ 5mg/l	
Arigna	585	131,625	3.29	2.63	1.97	1.32	0.66	12.96
Ballinlough	1,340	301,500	7.54	6.03	4.52	3.02	1.51	1.43
Ballyleague/ Lanesborough	3,200	720,000	18.00	14.40	10.80	7.20	3.60	193.54
Brideswell	470	105,750	2.64	2.12	1.59	1.06	0.53	2.16
Castleplunkett	420	94,500	2.36	1.89	1.42	0.94	0.47	-
Cootehall	940	21,1500	5.29	4.23	3.17	2.12	1.06	328.32
Creagh	1,220	274,500	6.86	5.49	4.12	2.75	1.37	314.50
Curraghboy	430	96,750	2.42	1.94	1.45	0.97	0.48	1.21
Elphin	1,810	407,250	10.18	8.15	6.11	4.07	2.04	0.16
Frenchpark	1,260	283,500	7.09	5.67	4.25	2.84	1.42	33.09
Hodson Bay	725	163,125	4.08	3.26	2.45	1.63	0.82	193.54
Knockcroghery	730	164,250	4.11	3.29	2.46	1.64	0.82	1.38
Lisacul	490	110,250	2.76	2.21	1.65	1.10	0.55	86.40
Loughglynn	620	139,500	3.49	2.79	2.09	1.40	0.70	69.12
Strokestown	3,060	688,500	17.21	13.77	10.33	6.89	3.44	28.51
Tulsk	820	184,500	4.61	3.69	2.77	1.84	0.92	18.14

Table 5.13 – Theoretical discharges of ortho-P and ammonia from proposed WWTP's versus assimilative capacity							
WWTP	Design PE	Hydraulic Load (based on 225 litres per PE)	Estimated discharge			Assimilative Capacity of river	
			kg/day Ortho-P @ 2 mg/l	kg/day ammonia @ 5 mg N/l	kg/day ammonia @ 1 mg N/l	kg/P/day	kg/ammonia / day
Arigna	585	131,625	0.26	0.66	0.13	0.13	11.15
Ballinlough	1,340	301,500	0.60	1.51	0.30	0.01	0.71
Ballyleague/ Lanesborough	3,200	720,000	1.44	3.60	0.72	1.94	1722
Brideswell	470	105,750	0.21	0.53	0.11	0.02	2.14
Castleplunkett	420	94,500	0.18	0.47	0.09	-	-
Cootehall	940	21,1500	0.42	1.06	0.21	3.28	321.75
Creagh	1,220	274,500	0.55	1.37	0.27	0	305.06
Curraghboy	430	96,750	0.19	0.48	0.10	0.01	1.2
Elphin	1,810	407,250	0.81	2.04	0.41	0	1.13
Frenchpark	1,260	283,500	0.57	1.42	0.28	.66	32.43
Hodson Bay	725	163,125	0.32	0.81	0.16	1.94	1,722
Knockcroghery	730	164,250	0.33	0.82	0.16	0.03	1.35
Lisacul	490	110,250	0.22	0.55	0.11	0.86	74.3
Loughglynn	620	139,500	0.28	0.70	0.14	1.38	59.44
Strokestown	3,060	688,500	1.38	3.44	0.69	0.34	27.2
Tulsk	820	184,500	0.92	1.40	0.18	0.18	15.6

5.9 RECOMMENDED DISCHARGE STANDARDS

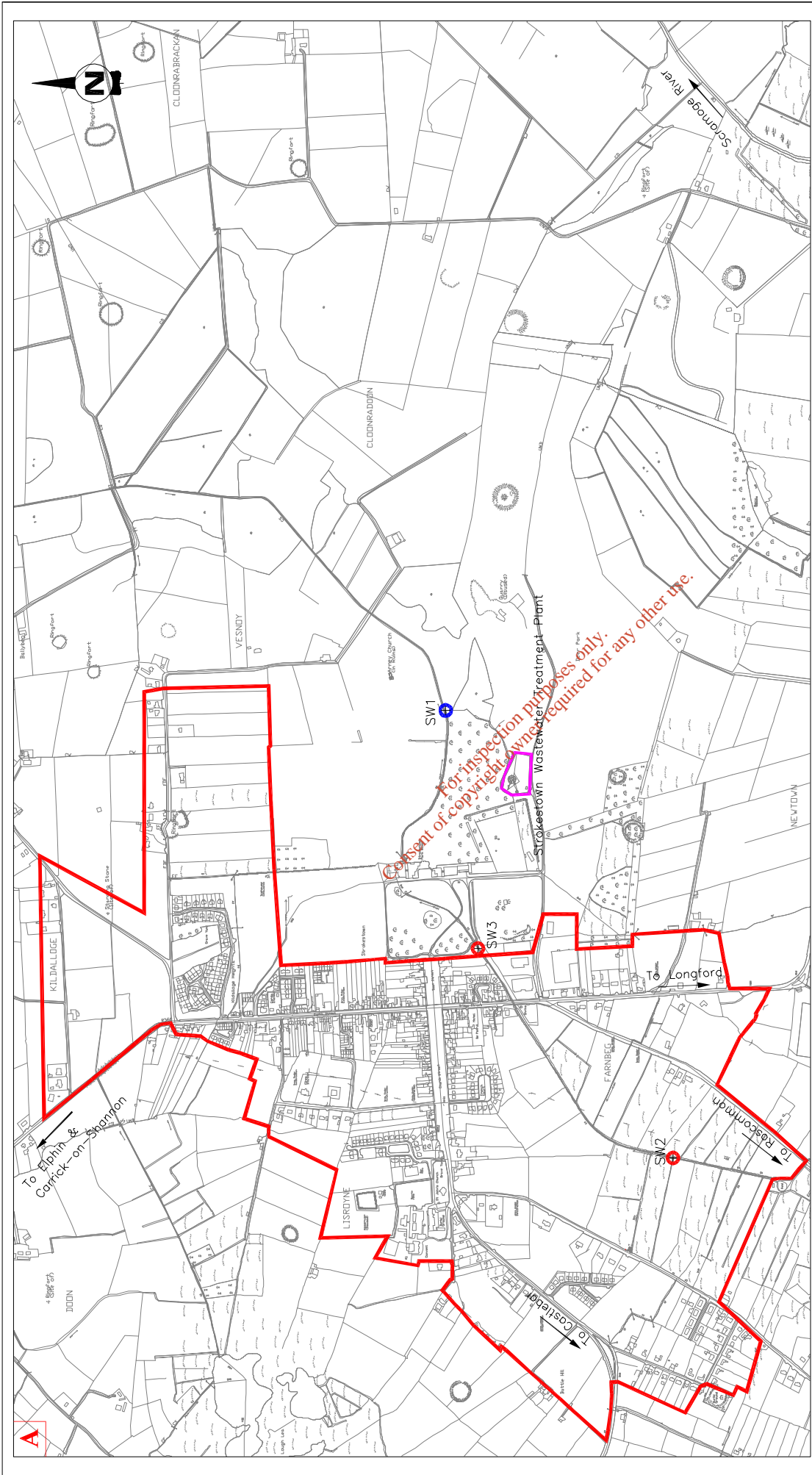
5.9.1.1 The recommended discharge standards for the 16 WWTP's included in the scheme are set out in Table 5.14 below:

5.9.1.2 A phosphorus limit of 2mg/l is imposed on all WWTP's as agreed with Roscommon County Council.

Table 5.14 – Recommended discharge standards for WWTP's				
WWTP	BOD (mg/l)	Suspended Solids (mg/l)	Total Phosphorus (mg/l)	Ammonia (mg/l)
Arigna	25	35	2	5
Brideswell	10	10	2	5
Ballinlough	5	5	2	1
Ballyleague/ Lanesborough	25	35	2	N/A
Castleplunkett*	5	5	2	1
Cootehall	25	35	2	N/A
Creagh	25	35	2	N/A
Curraghboy	5	5	2	1
Elphin	5	5	2	1
Frenchpark	25	35	2	5
Hodson Bay	25	35	2	N/A
Knockcroghery	5	5	2	1
Lisacul	25	35	2	5
Loughglynn	25	35	2	5
Strokestown	25	35	2	5
Tulsk	25	35	2	5

* Wastewater from Castleplunkett discharging to local stream, no water quality or flow data was available for the stream.

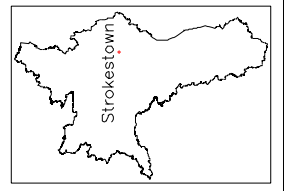
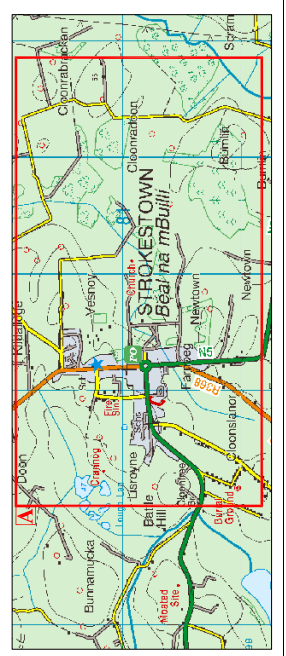
5.9.1.3 The above standards are considered necessary to ensure that the treated effluent discharge will not negatively affect the quality of the receiving waters.



DRAWING TITLE: Overview of Discharge Points		DRAWING No. 11
DRAWN: P. Fleming	SCALES: 1:10000	DATE: 28th FEB 2009
CHECKED: P. Fleming	APPROVED: V. Walsh	

COMHAIRLE CHONTAE ROSCOMMON
ROSCOMMON COUNTY COUNCIL

PROJECT:
Strokestown Waste Water Discharge Licence Application



LEGEND

- WWTB BOUNDARY (pink line)
- AGGLOMERATION BOUNDARY (red line)
- ⊕ Primary Discharge Point
- ⊕ Secondary Discharge Point

STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

ROSCOMMON COUNTY COUNCIL

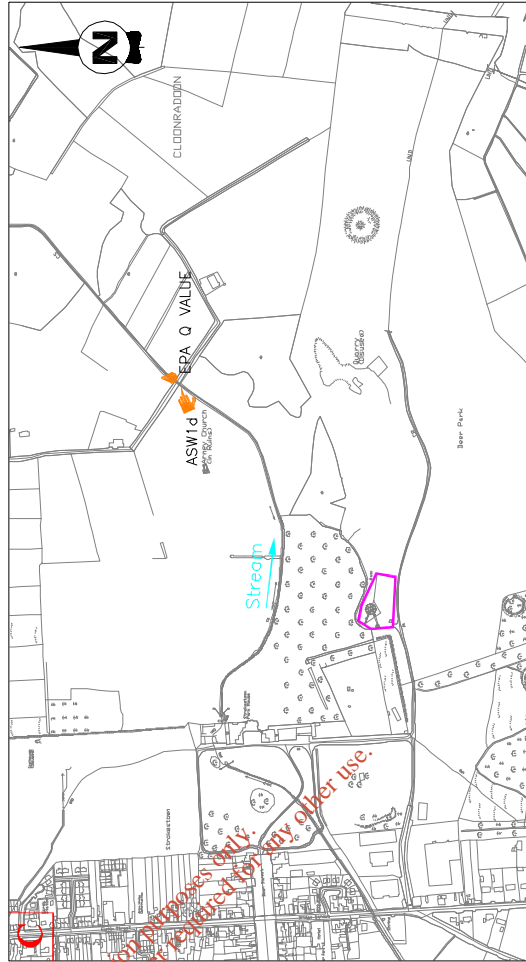
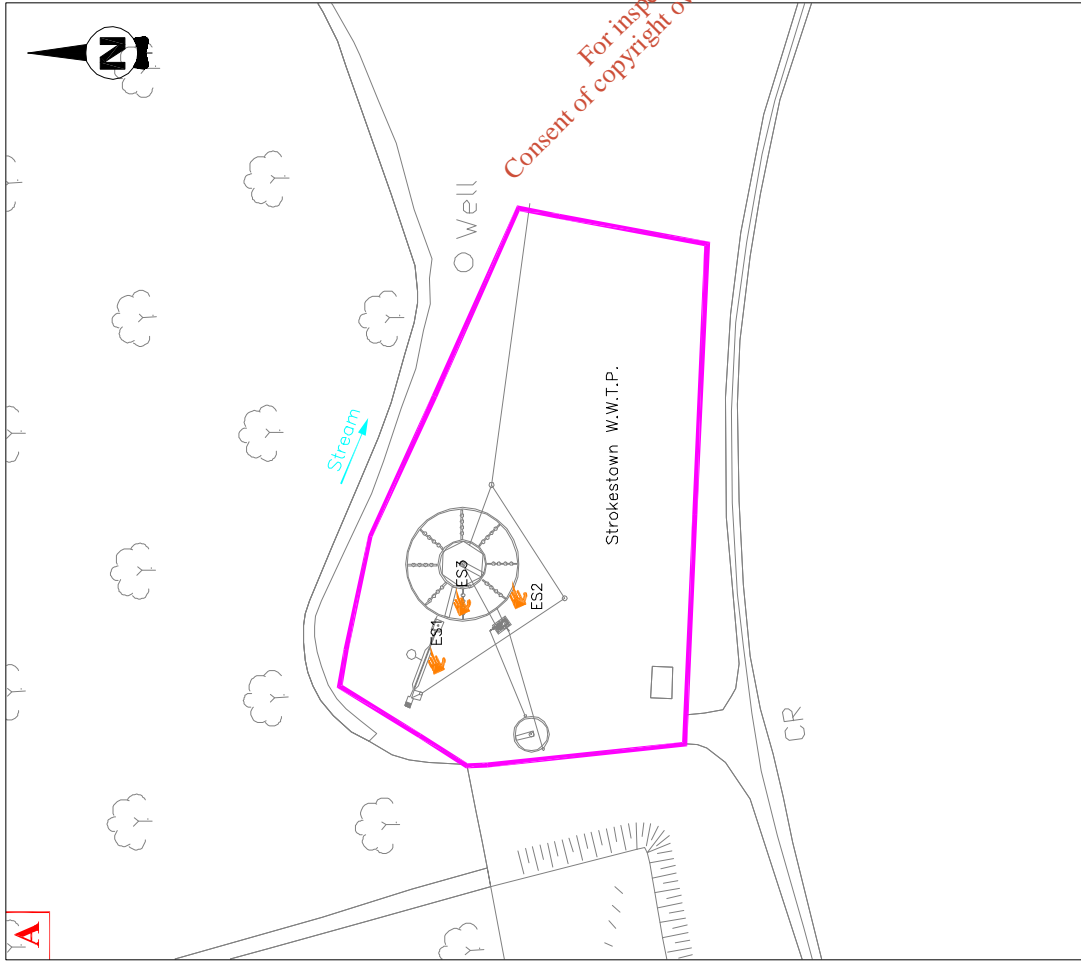
STROKESTOWN WASTE WATER DISCHARGE LICENCE

ANNEX E

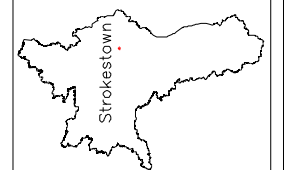
MONITORING

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Annex E: - MONITORING



- LEGEND**
- WWTP BOUNDARY
 - MONITORING LOCATIONS (EPA River Water Quality Q-Values)
 - Q4-5, Q5-High Status
 - Q4-Food Status
 - Q3-4-Moderate Status
 - Q2-3, Q3-Poor Status
 - Q1, Q1-2, Q2-Bad Status
 - SAMPLING LOCATIONS (ES-Effluent Sampling)
 - Grab Sample
 - Influent/Effluent Sample



COMHAIRE CHONTAE ROSCOMMON ROSCOMMON COUNTY COUNCIL	DRAWING TITLE: Location of Sampling & Monitoring Points	
	DRAWN: P. Fleming	DRAWING No. 12
PROJECT: Strokestown Waste Water Discharge Licence Application	SCALES: As Shown	
	DATE: 28th FEB 2009	CHECKED: P. Fleming
	APPROVED: V. Walsh	

STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

ROSCOMMON COUNTY COUNCIL

STROKESTOWN WASTE WATER DISCHARGE LICENCE

ANNEX F

**EXISTING ENVIRONMENT & IMPACT OF THE
DISCHARGES**

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Annex F: - EXISTING ENVIRONMENT & IMPACT OF THE DISCHARGES

ANNEX 3: TABLES / ATTACHMENTS

F.1. Assessment of Impact on Receiving Surface or Ground Water

An Assessment of the Impact on the Receiving Surface Water – Tributary of the River Strokestown / Scramoge.

The primary outfall (SW1) from the Strokestown Waste Water Treatment works discharges to the tributary of the river Strokestown / Scramoge.

There are two secondary discharge points with emergency overflows on the Strokestown network. These emergency discharge points have potential to overflow directly to the tributary of the river Strokestown / Scramoge. Details of the Secondary Discharge point are presented in attachment C2.

The River Strokestown / Scramoge is not designated Salmonid water (under the European Communities (Quality of Salmonid Waters) Regulations, 1998) nor is it identified as sensitive water in terms of the Urban Waste Water Treatment Regulations 2001. In addition, River Strokestown / Scramoge is not designated a proposed Natural Heritage Area, Special Protection Area and Special Area of Conservation.

The Development Applications Unit of the Department of the Environment, Heritage and Local Government commented that Roscommon County Council follow the guidance in DoEHLG Circular L8/08. There is no impact on any nature conservations. Drawing 13 highlights, the water abstraction point for Northeast Regional Water supply RWSS.

The 95%ile Flow in the stream adjacent to WWTP is given as 0.33m³/sec.

The normal daily flow from the plant is in the region of 1803m³/day or 0.021m³/sec.

Therefore, on a normal day, the flow in the river is 16 times that being discharged from the plant (based on a 95%ile flow of 0.33m³/sec), thus there is no dilution of the effluent stream in the river. Refer to Annex D Attachment D.1 for further detail.

Biological surveys are carried out by the EPA in the summer-autumn period (June-September) when flows are likely to be relatively low and water temperatures highest. Surveys during this period are likely;

Annex F: - EXISTING ENVIRONMENT & IMPACT OF THE DISCHARGES

STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

therefore, to coincide with the worst conditions to be expected in those reaches affected by waste inputs. Material for examination is obtained by a "kick" sampling technique in the faster-flowing areas of the river and examination and assessment of water quality is made on site. Measurements of DO saturation and water temperature, as well as observations on macrophyte and algal abundance, substratum type, water appearance and other biological and physical features are also recorded. The EPA has a "biological" monitoring site upstream of SW1 outfall at station number 0050 "Br at s. end of Strokestown" and station number 0500 "D/s Strokestown SSE of Standing St" is downstream of SW 1.

Biological Quality Rating (Q Values)										
River Strokestown		Code 26/S/08. Tributary of Scramoge / Mountain								
Station No.					1984	1987	1992	1996	1999	2002
0050	-	-	-	-	-	3	2-3	2-3	2-3	3
0100	-	-	-	-	3-4	3	2-3	4	2-3	3

Roscommon County Council monitors the Strokestown River upstream and downstream of the discharge from the Waste Water Works. These locations are shown on drawing 12 of attachment E3. Samples are collected every month and analyzed for suite of parameters as outlined table D.1(i)(b).

The results of treated effluent indicate generally good water quality with average levels outline in table F.1.

Parameter Substance	Maximum (mg/l)	Value	Max. daily average (mg/l)
Suspended Solids	35		7.75
Ammonia (as N)			1.45
Biochemical Oxygen Demand	25		3.91
Chemical Oxygen Demand	125		33.6
Total Nitrogen (as N)	15		8.61
Nitrite (as N)	0.50		0.43
Nitrate (as N)	50		8.17
Total Phosphorus (as P)	2		1.15
Orthophosphate (as P) ^{Note 1}			1.03
Phenols (sum) ^{Note 2} (ug/l)			<1.05

Table F1.0 Results of January 2008 – January 2009 emissions to surface waters

Annex F: - EXISTING ENVIRONMENT & IMPACT OF THE DISCHARGES

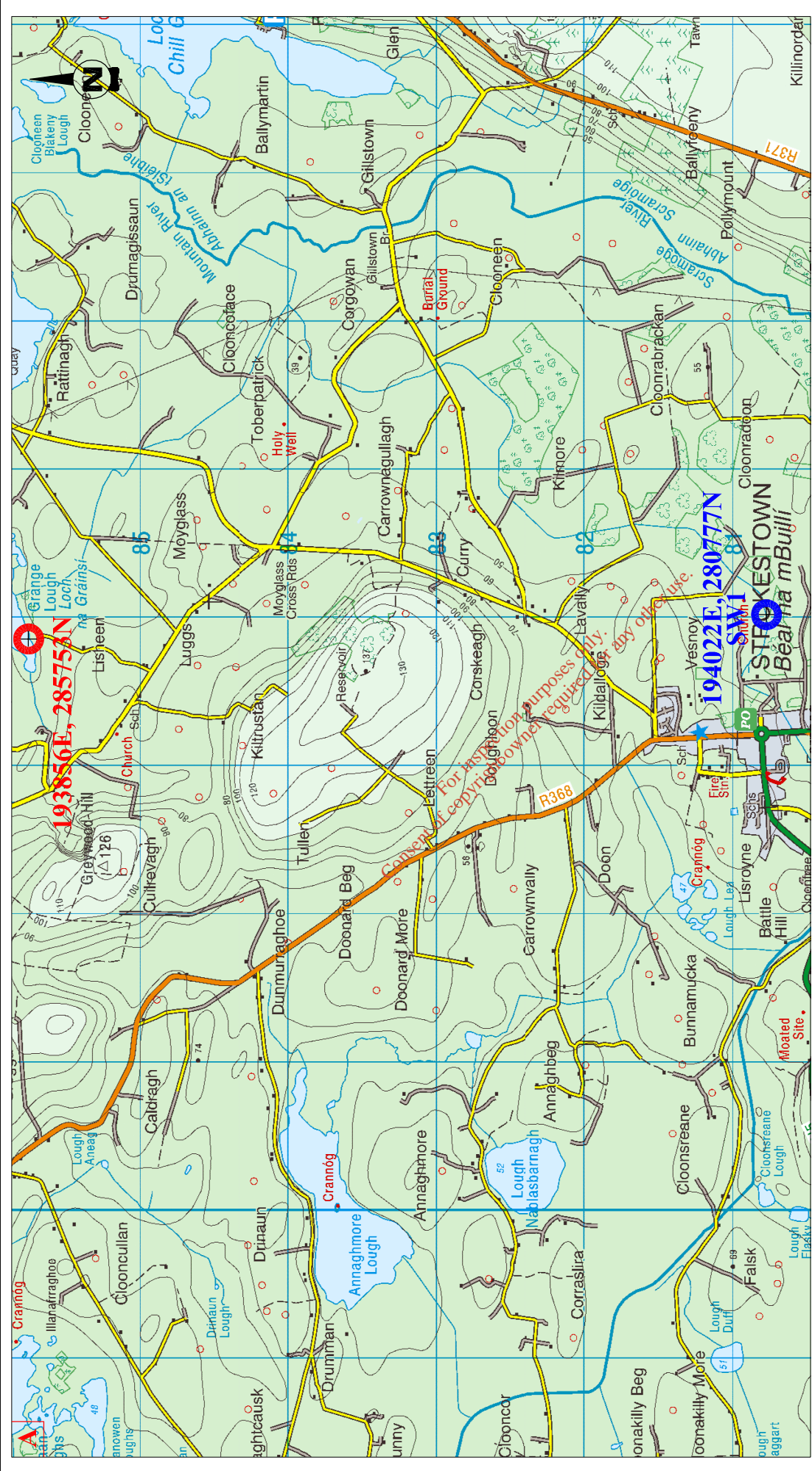
STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

In summary, there is significant dilution capacity within the receiving water, even at low flows, to assimilate discharges from the Waste Water Works. Physiochemical water quality monitoring in the River Strokestown both upstream and downstream of the primary and secondary discharges from the waste Water works indicates that the discharges from the works are not having a detrimental impact on the receiving environment.

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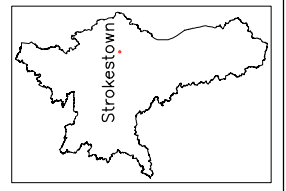
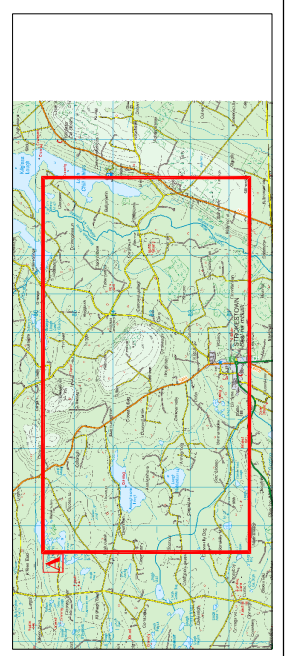
Annex F: - EXISTING ENVIRONMENT & IMPACT OF THE DISCHARGES



DRAWING TITLE:		Water Abstraction Point Northeast RWSS	
DRAWN:	P. Fleming	DRAWING No.:	13
DATE:	28th FEB 2009	CHECKED:	P. Fleming
		APPROVED:	V. Walsh

COMHAIRLE CHONTAE ROSCOMMON
 ROSCOMMON COUNTY COUNCIL

PROJECT:
 Strokestown Waste Water Discharge
 Licence Application



LEGEND

WTP Primary Discharge Point (SW1)	
Water Abstraction Point	

ROSCOMMON COUNTY COUNCIL
STROKESTOWN WASTE WATER DISCHARGE LICENCE
ANNEX G
PROGRAMME OF IMPROVEMENTS

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SECTION G: PROGRAMMES OF IMPROVEMENTS

G.1. Compliance with Council Directives

Programme of Improvements

The DoEHLG have approved the Design Build Operate contract for the upgrade of Strokestown WWTP. The DBO contract is likely to commence during 2010. The Strokestown Waste Water treatment Plant and Agglomeration is to be designed in such a way by the DBO contractor that the emissions from the agglomeration would comply with/not result in the contravention of all relevant Council directives at that time.

All upgrades, expansion and improvements to the Strokestown Waste Water Treatment Plant and agglomeration in the future will ensure that the emissions from the agglomeration would comply with/not result in the contravention of; the Dangerous substances Directive 2006/11/EC, the Water Framework Directive 2000/60/EC, the Birds Directive 79/409/EEC, the Groundwater Directives 80/68/EEC & 2006/118/EC, the Drinking Water Directives 80/778/EEC, the urban Waste Water Treatment Directive 91/271/EEC, the Habitats Directive 92/43/EEC, the Environmental Liabilities Directive 2004/35/EC and the Bathing Directive 76/160/EEC.

Urban Waste Water Treatment Directive

The Urban Waste Water Treatment Regulations, 2001 give effect to the EC Directive 91/271/EEC concerning waste water treatment. The regulations set out the requirements of a sanitary authority to provide treatment plants and the effluent quality required. The plant is to increase in size to a design PE of 3,060. The wastewater treatment works upgrade is to be designed to and complies with the Urban Wastewater Treatment Directive.

Water Framework Directive (WFD)

The WFD sets a framework for comprehensive management of water resources in the European Community, within a common approach and with common objectives, principles and basic measures. It addresses inland surface waters, estuarine and coastal waters and groundwater. The fundamental objective of the Water Framework Directive aims at maintaining "high status" of waters where it exists, preventing any deterioration in the existing status of waters and achieving at least "good status" in relation to all waters by 2015. The proposed outfall pipeline is within the Shannon River Basin District. Whilst the WFD do not set effluent standards for discharges to the river basin district, the

ANNEX 3: TABLES / ATTACHMENTS

proposed discharge must be sustainable in allowing the River Shannon to achieve/maintain "high status" under the WFD.

Current discharge levels are having negligible impacts on the receiving waters.

Habitats Directive 92/43/EEC and Birds Directive 79/409/EEC

The receiving water strokestown stream and tributary of river scamoge is not designated under the Habitats Directive 92/43/EEC and Birds Directive 79/409/EEC.

Also attached is the letter to the Development Application Unit in relation to habitat sites and Birds Directive.

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STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

24th October 2008
PF/NPWS-01

Development Application Unit,
Department of the Environment Heritage and Local Government,
Dunsceine,
Harcourt Lane,
Dublin 2.

A Chara,

We are in the process of preparing a Waste Water Discharge Licence Application for Ballinlough, Ballyleague, Elphin and Strokestown Wastewater Treatment Works in County Roscommon. As set out in Regulation 5 (1) and Schedule 2 of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007), the final date of submission of the application to the EPA is the 28th February 2009.

There is one primary discharge point from the Ballyleague waste water treatment works. The receiving water to which this discharge takes place is the Lough Ree via a 225mm gravity outfall pipe.

There is one primary discharge point from the Elphin waste water treatment works. The receiving water to which this discharge takes place is a tributary of Owenur River.

There is one primary discharge point from the Strokestown waste water treatment works. The receiving water to which this discharge takes place is a tributary of Scramoge / Mountain River.

In order to assess the likely effect of discharges on the receiving watercourse, tributary of Lough O'Flynn - Ballinlough, Lough Ree – Ballyleague, tributary of Owenur River – Elphin, tributary of Scramoge / Mountain River – Strokestown. I would like to request a pre-application consultation with the NPWS at your earliest convenience. If you require further information, please do not hesitate to contact me on 09066 37312 or p Fleming@roscommoncoco.ie or 087 9943517.

Please find enclosed four drawings highlighting the location of Ballinlough, Strokestown, Elphin and Strokestown Wastewater treatment plants.


Mise le meas,

Philip Fleming
Executive Engineer
Roscommon County Council, Water Services

Annex G: - PROGRAMME OF IMPROVEMENTS

STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION



ANNEX 3: TABLES / ATTACHMENTS


Comhshool, Oidhreacht agus Rialtas Áitiúil
Environment, Heritage and Local Government

14 January 2009

Our Ref: E2008/152
Your Ref: PF/NPWS-01

Mr. Philip Fleming
Executive Engineer
Water Services Division
Roscommon County Council
Courthouse
Roscommon






Re: Discharge Licence Applications for Ballinlough, Bballyleague, Elphin, and Strokestown Wastewater Treatment Works

A Chara,

We refer to the application for a discharge licence for the above-mentioned developments. The Department of the Environment, Heritage and Local Government recommends that the County Council follow the guidance in the attached Circular L8/08 of 2 September 2008, issued to each Director of Services with direct responsibility for water services, when assessing or making a decision on this application in each local authority from a nature conservation point of view.

Mise le meas


Mary Boothman
Development Application Unit


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Circular L8/08
September 2008

2

**Water Services Investment and Rural Water Programmes –
Protection of Natural Heritage and National Monuments**

1. The purpose of this Circular is to provide local authorities with basic guidance on identifying potential issues relating to protection of natural heritage (including sites, habitats and species) and archaeological heritage in order to prevent avoidable delays in the planning and implementation of individual schemes under the Water Services Investment and Rural Water Programmes. Where necessary, local authorities may secure professional ecological or archaeological advice and related costs may be charged to the individual scheme involved.
2. Ireland's natural heritage is afforded legal protection through the network of NATURA 2000 or European sites, Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Natural Heritage Areas (NHAs) and through the protection of species and their habitats, including those listed in Annexes to the Habitats and Birds Directives in Schedules to the Wildlife Acts, 1976-2000, and in the Flora Protection Order 1999.
3. The Department advocates a general policy of not building treatment plants in active floodplains. It is also inadvisable to build such plants in former floodplains because of possible future needs to re-activate same.
4. Ireland's archaeological heritage is protected through the National Monuments Acts, 1930 – 2004, and through the various Planning and Development Acts. The policy of the Department in relation to the protection of archaeological heritage is set out in *Framework and Principles for the Protection of the Archaeological Heritage* (published by the former Department of Arts, Heritage, Gaeltacht and the Islands in 1999). The Department's policy with regard to excavation is outlined in *Policy and Guidelines on Archaeological Excavation* (D.A.H.G.I., 1999). Both documents may be downloaded from the Departmental Website

www.archaeology.ie.

5. In order to identify potential ecological or archaeological constraints, all water services projects, including pipework proposals, should be subjected to initial screening in accordance with:

- the checklist in Appendix 1 for natural heritage, and
- the checklist in Appendix 2 for archaeological heritage.

Where initial screening reveals, or cannot exclude with certainty, a likely significant ecological or archaeological impact, an assessment of impacts will need to be undertaken. For natural heritage in general, this will involve an ecological impact assessment. In the case of potential impacts on Natura 2000 or European sites (SACs and SPAs, including any candidate sites), AA (appropriate assessment) is required under Article 6(3) of the Habitats Directive. Consideration should also be given to alternative sites at an early stage.

6. AA will entail preparing a full assessment and statement of the potential direct, indirect and cumulative impacts on any Natura 2000 site and its conservation objectives - It must include measures to avoid or mitigate the impact. In addition to professional ecological expertise, which will be necessary in this context, other expertise may also be required (e.g. hydrological or hydrogeological).

In the event that the potential effect of such an impact on a Natura 2000 site cannot be avoided or fully mitigated, a further process may apply under Article 6.4 of the Habitats Directive and would include examining all available alternatives, communication with the EU Commission and preparation of compensatory measures. Such measures will inevitably result in significant delay. Early identification and avoidance of potential impacts is, therefore, the best option. Useful guidance is available from the EU Commission's website:

http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/guidance_art_6_4_en.pdf

To avoid as far as possible further delays where the impacts of a selected site cannot be avoided or fully mitigated, alternative sites/options need to be examined so there can be confidence the site selected has the least environmental impacts. A cost and design analysis of the alternative sites and their environmental impacts should be undertaken.

7. In the case of archaeology, assessment will entail preparing a full statement of the potential impact on known and previously

unrecorded archaeological material. Firstly recommendations should be made on how to avoid impacts on the archaeological resource. If it is not possible to re-align or redesign to avoid impacting on archaeological material, proposed mitigation measures, including geophysical analysis, test excavation, preservation-by record, post-excavation and publication of the results of excavation, should be detailed. Professional archaeological expertise would be necessary in this context.

Known monuments can be identified from the record of monument and places for each county and from the website www.archaeology.ie. National monuments that are in State ownership or guardianship, and monuments subject to preservation orders or temporary preservation orders, should be identified and zones of visual amenity defined for them. It should be noted that indirect and direct impact on national monuments in State or local authority care, or subject to a preservation order, will require the consent of the Minister for the Environment, Heritage and Local Government under section 14 of the National Monuments Act, 1930, as amended by Section 5 of the National Monuments (Amendment) Act, 2004.

Areas of previously unrecorded archaeological potential, i.e. within or adjacent to constraint areas for known monuments, wetland locations, areas with a distinctive topography indicative of high archaeological potential, should be identified.

The primary aim of all recommendations for mitigation should be to minimise further archaeological excavation while preserving archaeological material.

8. Following initial assessment in accordance with Appendix 1 or 2, as appropriate, any proposal likely to have an impact on protected habitats or species or on a national monument should immediately be notified to:

*Development Applications Unit
Department of the Environment, Heritage and Local Government
Dùn Scóine
Harcourt Lane
Dublin 2*

and copied to the Department's Water Services Section.

DAU will endeavour to make a co-ordinated response to the Planning Authority within a period five weeks from date of receipt of the proposal.

9. More detailed procedural guidance is

being prepared and will be notified to local authorities as soon as possible. In the meantime, enquiries in relation to this Circular may be addressed, as appropriate, to:

- Tom Walsh, Water Services Section, Tel 01-8882168, e-mail tom.walsh@environ.ie

or

- Dr Elizabeth Sides, NPWS Conservation Systems & Marine Tel 01-8883288, e-mail olizabeth.sides@environ.ie

Terry Allen
Principal Officer
Water Services Section
Bl. 1 Fl. 2
Irish Life Centre
Lr. Abbey St.
Dublin 1

To: Directors of Services (Water Services)

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APPENDIX 1

Water Services Schemes - Natural Heritage Checklist for Local Authorities

This screening methodology is designed to assist those planning and designing water services solutions when determining whether AA for Natura 2000/European sites or habitats & species listed in the annexes of the EU Birds and Habitats Directives is necessary or not. It should also be applied to NHAs

Water Services infrastructure projects relate to the provision, operation and management of drinking water and wastewater services. These projects hold a high health and safety value for the public as well as being of benefit for biodiversity - it is therefore essential that such projects are screened at the earliest stage to avoid situations where nature conservation and human health and safety are pitched as competing interests.

This screening methodology will be reviewed regularly to ensure it remains consistent with the programmes of measures and River Basin Management Plans (RBMPs) currently being developed under the Water Framework Directive (WFD).

What projects must be screened?

For new projects and significant changes to any existing operations, if the answer is 'yes' to any of the following, the project (i.e. construction, operation and maintenance) must be screened for its impacts:

1. Is the development in or on the boundary of a nature conservation site NHA/SAC/SPA?
2. Will nationally protected species be directly impacted? Wildlife Acts (1976 and 2000), Flora Protection order (S.I. 94 of 1998)?
3. Is the development a surface water discharge or abstraction in the surface water catchment¹ or immediately downstream of a nature conservation site with water dependant qualifying habitats/species²?
4. Is the development a groundwater discharge or abstraction in the ground water catchment¹ or within 5 km of a nature conservation site with water-dependant qualifying habitats/species²?
5. Is the development in the surface water or groundwater catchment of salmonid waters?
6. Is the treatment plant in an active or former floodplain or flood zone of a river, lake, etc?
7. Is the development a surface discharge or abstraction to or from marine waters³ and within 3km of a marine nature conservation site?
8. Will the project in combination with other projects (existing and proposed) or changes to such projects affect the hydrology or water levels of sites of nature conservation interest or the habitats of protected species?

NB Please use the Diagram below to work through the screening requirements.

ANNEX 3: TABLES / ATTACHMENTS

Note 1. If there is a WFD sub basin plan for the sites or its protected habitats and the plan covers all potential receptors, i.e. habitats and species, this plan can be used as the basis for screening and impact assessment.

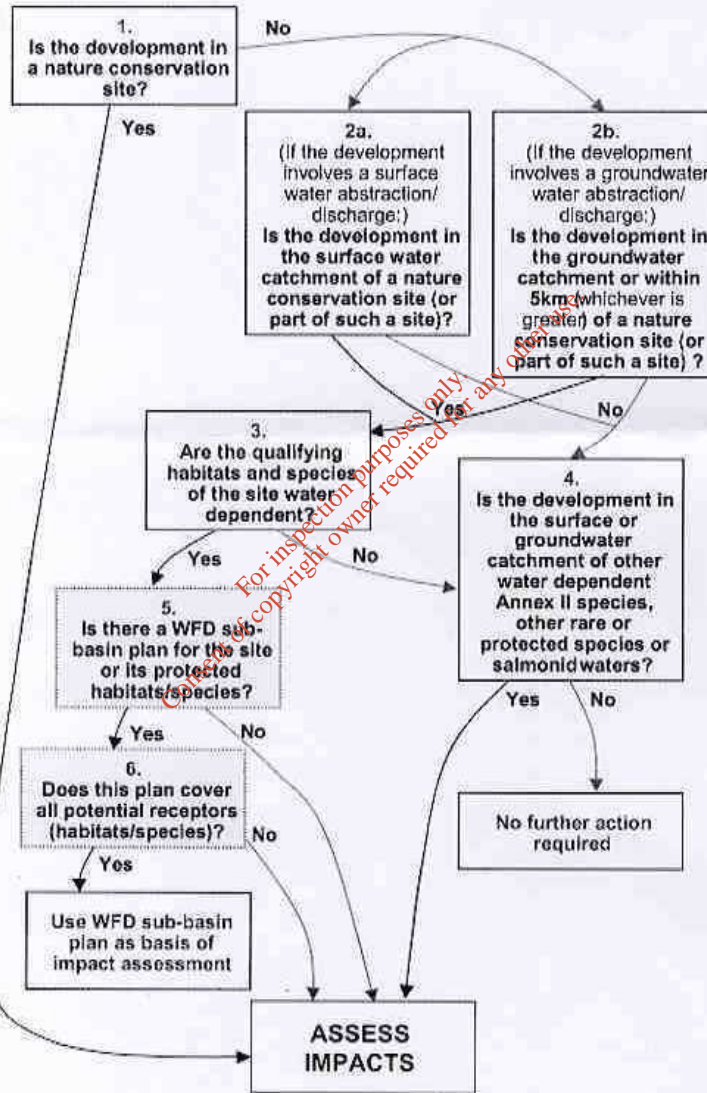
Note 2. Estuaries are considered part of a catchment.

Note 3. Any marine area including estuaries

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Below is a flow diagram for screening water services infrastructure projects, followed by explanatory notes on the diagram and other points of information. If the conclusion of the screening outlined in this **Natura 2000 Screening Protocol** is to "ASSESS IMPACTS", then the plan or project must be referred to the Department of the Environment, Heritage and Local Government's Development Applications Unit.

NB Catchments of habitats and species of conservation value are addressed here as it is only through examining catchment-wide pressures that hydrological, water pollution and cumulative impacts can be properly assessed.



Notes on flow diagram (Numbers correspond to question numbers in the Figure 1):

1. This question relates to direct impacts only and, therefore, all habitats and species of nature conservation value must be considered. If the development is within a Natura 2000 site, there is potential for direct loss of habitats and/or species of conservation value within the footprint of the development. The footprint includes all temporary and permanent access roads, trenching etc. The standard guidelines for the referral of all development applications that are adjacent to SACs to NPWS (i.e. within 500m), should also be followed here.
2. This and subsequent questions relate to indirect impacts, which are transmitted through water and, therefore, only have the potential to impact upon water dependent species. All projects in the catchments of conservation sites (i.e. both within and upstream of the site) have the potential to impact on the site and to contribute to the cumulative impacts on the site. The 5km stipulation is placed in Question 2b as it was used in the groundwater risk assessments for groundwater dependent conservation sites. Groundwater catchments are the zones of a groundwater body that contribute water to a receptor such as a conservation site. These catchments can be altered, however, through very large abstractions in certain aquifer types. Because these groundwater divides can change, the extra protection of 5km was included.
3. Habitats Directive Annex I habitats and Annex II species have been divided into water dependent (see tables 1 and 2 below) and non-water dependent for the purposes of the WFD. The list of water dependent birds will be finalised shortly. Within most conservation sites, particularly the large SAC-complexes, some areas will contain water dependent habitats/species and others will not. This means that the SAC boundary cannot be taken as indicative of the location of the relevant habitat or species. As a result, the local authority will require the specific locations of the habitats and species in order to screen these projects. These data will need to be collected through surveys where the information is not available from NPWS or other sources. NPWS do not generally have the locations of habitats and species on a single GIS, or other readily available formats. Useful information will be available through NPWS monitoring programmes and databases, such as the rare flora database, as well as through NPWS management plans. NPWS has a public mapviewer tool in place at <http://www.npws.ie/en/MapsData> and is planning the development of a GIS that will be accessible to local authorities.
4. The data for Annex II species in the wider countryside and other protected/rare species (outside designated sites) is less complete and requires further field surveys and data collection. Furthermore, as these species could extend even further downstream than the nature conservation sites, the downstream area that would need to be assessed for potential impacts could be significantly extended by this question.
5. No WFD sub-basin plans have yet been developed. However, 27 *Margaritifera* sub-basin plans will be drafted before the end of 2008. Further such catchment plans will be developed for other species and habitats in SACs. These will set specific nature conservation and water quality/quantity targets for the sites and will prescribe the management measures that need to be undertaken within their catchments.
6. These sub-basin plans are likely to be species/habitat specific so that, even when such plans exist, all potential receptors may not be assessed and further assessments may be required for water services projects. Where sub-basin plans exist, it is likely that these can be used in combination with further impact assessments.

Many water services projects are likely to require assessment. This is particularly the case because of the occurrence of Annex II species (EU Habitats Directive 1992) in the wider countryside, other rare/protected species (Wildlife Acts) and salmonid waters.

APPENDIX 2

Water Services Schemes – Archaeological Heritage Checklist for Local Authorities

Any scheme that extends within or impinges upon the confines of the "black line" drawn around a monument on the Record of Monuments and Places map

Any scheme that is likely to have an adverse impact on the setting and amenity of a monument on the Record of Monuments and Places map

Any scheme that may not be in proximity to known monuments but is large in scale

Any scheme that may be unduly close to archaeological complexes

Any scheme that will impact on rivers, lakes, the inter-tidal zone, the foreshore or any underwater area where historic shipwrecks or other other underwater archaeological objects e.g. ships' timbers, may be located

Any scheme that requires an Environmental Impact Statement

Any scheme that may have an adverse impact on the setting and amenity of any national monument in the ownership or guardianship of the Minister for the Environment, Heritage and Local Government or any national monument in the ownership or guardianship of a local authority or any national monument that is subject to a preservation order

ANNEX 3: TABLES / ATTACHMENTS

Dangerous Substances Directive 2006/11/EC

This directive sets out the lists of dangerous substances
The Dangerous Substances Regulations 2001, prescribe water quality standards in relation to certain substances in surface waters, e.g., rivers, lakes and tidal waters. The substances include certain pesticides (atrazine, simazine, tributyltin), solvents (dichloromethane, toluene, xylene), metals (arsenic, chromium, copper, lead, nickel, zinc) and certain other compounds (cyanide and fluoride). The Regulations give further effect to the EU Dangerous Substances Directive (76/464/EC) and give effect to certain provisions of the EU Water Framework Directive (2000/60/EC).

Sampling of these compounds has not been traditionally recorded, however as part of this application Roscommon County Council have tested for dangerous substances listed in Table D.1(i)(c).

Bathing Water Directive 76/160/EEC and The Groundwater Directive 80/68/EEC, 2006/118/EC

Not Applicable

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G.2. Compliance with Water Quality Standards for Phosphorous Regulations (S.I. No. 258 of 1998).

Phosphorus Regulations

The Strokestown Waste Water treatment Plant and Agglomeration currently has no phosphorus treatment process. However, the DoEHLG have approved the Design Build Operate contract for the upgrade of Strokestown. The WWTP is to be designed in such a way that the emissions from the agglomeration would comply with/not result in the contravention of the Water Quality Standards for Phosphorous Regulations (S.I. No.258 of 1998).

All upgrades, expansion and improvements to the Strokestown Waste Water Treatment Plant and agglomeration in the future will ensure that the emissions from the agglomeration would comply with/not result in the contravention of the Water Quality Standards for Phosphorous Regulations (S.I. No.258 of 1998).

We attach a copy in this attachment, G2 of the Phosphorus Implementation Report for Roscommon County Council, which is prepared to show compliance with the Government's interim policy targets adopted by regulation in July 1998 (S.I. No.258 of 1998, Local Government (Water Pollution) Act, 1977 (Water Quality Standards for Phosphorus) Regulations, 1998). The Regulations impose a statutory obligation on Local Authorities to take measures necessary to secure compliance with the established standards to be achieved by the year 2007.

Implementation Report for County Roscommon (July 2006)

Local Government (Water Pollution) Act, 1977 (Water Quality Standards for Phosphorous) Regulations, 1998

SECTION 1

SECTION 1 – WATER QUALITY IN FUNCTIONAL AREA

1.1 WATER QUALITY IN FUNCTIONAL AREA

This report has been prepared in accordance with the requirements of Article 4 (3) of the (Water Quality Standards for Phosphorus) Regulations, 1998. It outlines the specific measures proposed by Roscommon County Council to improve and maintain water quality and the progress made to date in implementing the Phosphorus Regulations. Table 1.1 presents a summary of river water quality standards to be achieved by 2007 for the rivers in the county. The water quality data for July 2004 - June 2006 accompanies the report on CD.

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- 1. Section 1 (Cover page and introduction)**
- 2. Table 1.1**
- 3. Section 2 (including Table 2.1)**
- 4. Table 2.2**
- 5. Section 3**
- 6. Water Quality Data 2004-2006-07-26**

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STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

TABLE 1.1: RIVER WATER QUALITY STANDARDS TO BE ACHIEVED BY 2007																
Roscommon 2006																
River Name	River Code	Biological Monitoring Station	Station Location Name	Grid Reference	Baseline Q-value	Baseline MRP Value ug/l P	Is Baseline Quality Satisfactory? Yes/No	Current Q-Value	Current MRP Value ug/l P	Standard to be Achieved by 2007 Q Value	Standard to be Achieved by 2007 MRP Value	Has Either Standard Been Achieved?	Does an Article 3(9) Extension Apply?	If Yes, What is the revised compliance date	Where Quality is Unsatisfactory What is the Principal Source of Pollution	If there is an identifiable source, please enter details
STROKESTOWN	26S08	0050	Br at S. end of Strokestown	193243 / 280610	2,3		No	3	16	3	70	Yes				
STROKESTOWN	26S08	0100	D/s Strokestrn (Standg Stone)	194342 / 280887	4		Yes	3	19	4	30	Yes				
STROKESTOWN	26S08	0200	Br near Toberpatrick House	195608 / 283792	3,4		No		28	4	30	Yes				
SCRAMOGE	26S01	0050	Bridge d's Lough Conny More	186985 / 282602	4		Yes	4	5	4	30	Yes				
SCRAMOGE	26S01	0100	Bridge d's Lough Gal	188815 / 282257	3,4		No	4	6	4	30	Yes				
SCRAMOGE	26S01	0200	Cloonfree Bridge	191979 / 280426	4		Yes	4,5	5	4	30	Yes				
SCRAMOGE	26S01	0300	Bridge N.E. of Riverdale	191984 / 277522	4		Yes	4	8	4	30	Yes				
SCRAMOGE	26S01	0600	Scramoge Bridge	195384 / 279587	4		Yes	4,5	9	4	30	Yes				
SCRAMOGE	26S01	0700	Bridge u/s Kilglass Lough	196779 / 283822	3		No	4	7	3,4	50	Yes				

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Annex G: - PROGRAMME OF IMPROVEMENTS

SECTION 2:

2.1 IMPLEMENTATION OF MEASURES

Table 2.1 outlines the measures being undertaken in Co. Roscommon to improve and maintain water quality in the county and the progress made on each one. The measures specified for individual rivers and the progress made to date are presented in Table 2.2.

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STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

Article I. Table 2.1: Implementation Programme Summary Table For County Roscommon

Standard	Measures	Targets	Actions	Timeframe	Responsible for Implementation	Progress to Date	Corrective Actions	Action completed within timeframe? (Y/N)	If not, state revised timeframe
i) NAME OF COUNTY: ROSCOMMON									
To improve unsatisfactory water quality and to maintain satisfactory water quality in County Roscommon	Involvement in water quality management planning	Manage water quality using a catchment based approach	Involved in Shannon River Basin District Study. Lab in Rosc CoCo. RBD monitoring program commencing Dec 06	Ongoing	SEO Environment Chief Technician	Involved in Study since Jan 04		To improve unsatisfactory water quality and to maintain satisfactory water quality in County Roscommon	Involvement in water quality management planning
	Preparation of Groundwater Protection Plan	To protect groundwaters by identifying vulnerable areas	Preparation of Groundwater Protection Plan by the Geological Survey of Ireland Specific source protection plans will be considered	Prepared in Dec 2001 Ongoing	SEE SEE	Draft accepted by elected members		Y	

STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

Standard	Measures	Targets	Actions	Timeframe	Responsible for Implementation	Progress to Date	Corrective Actions	Action completed within timeframe? (Y/N)	If not, state revised timeframe
	Preparation of Sludge Management Plan	Effective control of all sludge in the county	Sludge Management Plan prepared		SEE Environment Sanitary Services	Consultants looking at proposed sludge treatment plant. EIS to be advertised before end of 06			2006
	Strengthening liason between Environment and Planning Departments	Control all developments with a potential env impact	More contact between staff	Ongoing	Environment Planning	Increased no of Planning files with an env impact, except domestic dwellings are checked.			

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STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

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Standard	Measures	Targets	Actions	Timeframe	Responsible for Implementation	Progress to Date	Corrective Actions	Action completed within timeframe? (Y/N)	If not, state revised timeframe
	Wastewater Treatment Plants	Reduce P inputs from WWTP's	Construction/ Upgrading of WWTP's P removal to be in place in all STWs	Ongoing	Water Services	13 village sewage schemes progressing through contract document stage and some will commence in Dec06. 1 village scheme being progressed through Serviced Land Initiative. Castlerea STW completed in Dec 05.			

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STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

Standard	Measures	Targets	Actions	Timeframe	Responsible for Implementation	Progress to Date	Corrective Actions	Action completed within timeframe? (Y/N)	If not, state revised timeframe
	Septic Tanks	Reduce P inputs from septic tanks	Control through the planning system and surveys	Ongoing	Planning Environment Laboratory	Direct Discharges dealt with under WPA	Appoint additional staff	NA	
	Farm Surveys	Assess farm management to reduce P inputs from agricultural sources	Farm Surveys in localised risk areas	Ongoing	Laboratory SEE	403 surveys complete to date.			
	Reed Beds	Reduce P inputs from small scale urban agglomerations	Construction of reed bed treatment facilities		SEE Sanitary Services	Four reed beds complete			

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Annex G: - PROGRAMME OF IMPROVEMENTS

STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

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Standard	Measures	Targets	Actions	Timeframe	Responsible for Implementation	Progress to Date	Corrective Actions	Action completed within timeframe? (Y/N)	If not, state revised timeframe
	County Development Plan	Long term control of env issues	Incorporation of County Plans	Ongoing	SEE, Sanitary Services, Environment, County Manager	Regard being taken for Replacement Connaught waste Management Plan, Groundwater Protection Plan, Sludge Management Plan.			

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STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

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Standard	Measures	Targets	Actions	Timeframe	Responsible for Implementation	Progress to Date	Corrective Actions	Action completed within timeframe ? (Y/N)	If not, state revised timeframe
	Quality Control programme in laboratory	To assure accuracy of results	Receive accreditation for laboratory procedures	Ongoing	Laboratory SEE	In-house methods and quality checks in place	Constant level of staff required		
	Studies in specific areas with high P	Reduce P	Farm surveys	Ongoing	Laboratory SEE	Farm surveys ongoing in targeted areas			
	Catchment management consultations	Improve water quality within catchments	Liaisons with all involved parties	Ongoing	SEE Environment Sanitary Services County Manager	Involved in SRBD. Liason with EPA, Local authorities etc			
	Public Education campaigns	Heighten awareness of water quality	Pubic talks	Suspended	Environment	Talks at REPS conferences	May continue depending on resources		

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Annex G: - PROGRAMME OF IMPROVEMENTS

STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

TABLE 2.2 IMPLEMENTATION PROGRAMME SUMMARY TABLE FOR RIVERS IN LOCAL AUTHORITY AREA											
Roscommon 2006											
River	Reach of River	Standard	Measures	Targets	Actions	Timeframe	Responsible for Implementation	Progress to Date	Corrective Actions	Action Completed Within Timeframe Yes/No	If No, State Revised Timeframe
STROKESTOWN	Br at S. end of Strokestown	To ensure continued compliance with the P Regs	Monitoring	Provide up to date information at this station	Monitor Surface Water	Ongoing	Environment/Laboratory				
STROKESTOWN	D/s Strokestn (Standg Stone)	To ensure continued compliance with the P Regs	Monitoring	Provide up to date information at this station	Monitor Surface Water	Ongoing	Environment/Laboratory				
STROKESTOWN	Br near Toberpatrick House	To ensure continued compliance with the P Regs	Monitoring	Provide up to date information at this station	Monitor Surface Water	Ongoing	Environment/Laboratory				
SCRAMOGE	Bridge d/s Lough Conny More	To ensure continued compliance with the P Regs	Monitoring	Provide up to date information at this station	Monitor Surface Water	Ongoing	Environment/Laboratory				
SCRAMOGE	Bridge d/s Lough Gal	To ensure continued compliance with the P Regs	Monitoring	Provide up to date information at this station	Monitor Surface Water	Ongoing	Environment/Laboratory				
SCRAMOGE	Cloonfree Bridge	To ensure continued compliance with the P Regs	Monitoring	Provide up to date information at this station	Monitor Surface Water	Ongoing	Environment/Laboratory				
SCRAMOGE	Bridge N.E. of Riverdale	To ensure continued compliance with the P Regs	Monitoring	Provide up to date information at this station	Monitor Surface Water	Ongoing	Environment/Laboratory				
SCRAMOGE	Scramoge Bridge	To ensure continued compliance with the P Regs	Monitoring	Provide up to date information at this station	Monitor Surface Water	Ongoing	Environment/Laboratory				
SCRAMOGE	Bridge u/s Kilglass Lough	To ensure continued compliance with the P Regs	Monitoring	Provide up to date information at this station	Monitor Surface Water	Ongoing	Environment/Laboratory				

Annex G: - PROGRAMME OF IMPROVEMENTS

Article II. SECTION 3: PROGRESS TO DATE

Each of the measures being implemented in Co Roscommon is examined in this section under the following headings;

Progress during reporting period

(a) Problems Encountered

Future Plans/New Direction

3.1 Planning Control and Enforcement Measures

1. Water Quality Management Planning

(a) Progress during reporting period

Roscommon County Council are involved in water quality management planning by taking an active role in the Shannon River Basin District. The laboratory set up in Roscommon County Council carries out the sampling and analysis of surface waters for local authorities. The data is then submitted to the Local Authorities. The SRBD Characterisation and Analysis Report was completed in 2006 and the Monitoring Programme is to commence by end of 2006.

(b) Problems Encountered

A delay in continuation between the Lough Derg / Ree Catchment Management and Monitoring System and the Shannon River Basin District.

(c) Future Plans/New Directions

Fully implement the sampling programme in place from Dec 2006.

2. Groundwater Protection Plan

(a) Progress during reporting period

Roscommon County Council engaged the Geological Survey of Ireland to prepare a countywide Groundwater Protection Plan. A draft of this plan was completed and submitted to the County Council. The elected members accepted it. The Plan has been included in the County Development Plan.

Farm surveys have commenced in target areas as identified in the Plan

(b) Problems Encountered

(c) Future Plans/New Directions

The Groundwater Protection Plan for the county will be used as part of the planning control process to protect vulnerable aquifers from development, which might be a source of pollution. The plan will also be a guide in identifying works, which should be carried out to protect groundwater sources. Farm surveys will continue to be carried out in targeted areas. Specific plans dealing with source protection areas are being considered.

3. Waste Management Plan

(a) Progress during reporting period

The Connaught Local authorities reviewed and prepared a Replacement Waste Management Plan in 2006 for the region in accordance with Section 22 of the Waste Management Act 1996. The main provisions of the Plan are being put in place. Three out of the five Recycling Centres (Roscommon, Boyle and Ballaghaderreen), outlined in the Plan for Co. Roscommon have been put in place. The recycling centre in Castlerea is due to be in place by the end of 2006. One landfill is operating at the moment as outlined in the Plan.

ANNEX 3: TABLES / ATTACHMENTS

(b) Problems Encountered

Problems are anticipated with regard to the cost of implementing all of the provisions outlined in the Plan and securing DOE approval. Public opposition to aspects of the plan is also expected to be a problem.

(c) Future Plans/New Directions

Bring banks have been placed at 38 locations in the county for the collection of household recyclables. This will be extended to a larger number of locations. A kerbside collection is in place in Roscommon town and two more are proposed.

Ballaghaderreen landfill is the only remaining landfill in Roscommon catering for the county and a portion of the waste arising in Sligo and Leitrim. The County Council have been issued with a licence to extend the present landfill. The new extension is hoped to have capacity for 4-5 years providing a short-term landfill solution. The development of the new cell is to be completed by Oct 2006.

The County Council in the preparation of the County Development Plan is taking regard of the Replacement Connaught Waste Management Plan.

4. Sludge Management Plan

(a) Progress during reporting period

A Sludge Management Plan for County Roscommon was prepared in 2001. The plan assesses current sources, rates of production and final destinations for sludge in the county. At present consultants are appointed to look at a proposed sludge treatment plant. The required EIS will be advertised before the end of 2006.

(b) Problems Encountered

(c)

Awaiting DOE approval

(d) Future Plans/New Directions

The Plan proposes sludge reception centres at Monksland, Boyle, Castlerea, Roscommon and Ballaghadereen. The centre at Roscommon will also form a hub treatment centre.

5. Strengthening liaison between Environment and Planning Departments

(a) Progress during reporting period

There has been an increase in the number of planning applications with a potential environmental impact being checked by the environmental personnel.

(b) Problems Encountered

Insufficient staff to check every planning application with an environmental impact.

(c) Future Plans/New Directions

Additional staff are presently being recruited. It is hoped that planning applications for septic tanks in sensitive areas will be given priority from an environmental point of view with eventually every septic tank application being checked.

6. Review Discharge Licences

(a) Progress during reporting period

One licence has undergone a review and eleven new licences have been issued.

(b) Problems Encountered

Insufficient staff to carry out licence reviews and to follow up on full implementation of the licences.

(c) Future Plans/New Directions

The review and issuing of licences is an ongoing process in the environment section of the County Council

7. Wastewater Treatment Plants

(a) Progress during reporting period

The following is a summary of the works carried out on a number of treatment plants during the reporting period and any further works planned.

Roscommon:

A brief for consultants is currently being approved for further upgrading of the existing plant.

Monksland:

Due to an increase in the amount of industrial and domestic wastewater in the Monksland area an extension of the treatment plant has been planned over the coming years

Tarmonbarry:

Treatment plant is in the process of being upgraded

Cloonfad:

Further improvement planned for 2007

Castlerea:

Installation of treatment plant, extension of pipe network and separation of storm water completed in Dec 2005

Ballyfarnan:

Provision of constructed wetlands and extension of collection system by 2008.

Rooskey:

Upgrading of treatment plant being undertaken by Leitrim Co Co. Contract documents being prepared for the plant upgrade.

Lecarrow:

New treatment plant is under construction.

Cortober:

Upgrading of treatment plant being undertaken by Leitrim Co Co. Contract documents awaiting approval from DEHLG.

Annex G: - PROGRAMME OF IMPROVEMENTS

ANNEX 3: TABLES / ATTACHMENTS

Athleague:

Upgrade of plant and diversion of surface water complete.

Ballinameen:

New treatment plant and collection system complete.

Cloontuskert:

New plant in place, effluent pumped to Strokestown STW.

The following 13 schemes are progressing through the contract document stage of the Water Services Investment Programme and some are due to commence before the end of 2006.

Arigna:	Provision of constructed wetlands
Ballinlough:	Upgrading of treatment plant
Strokestown:	Upgrading of treatment plant and collection system.
Cootehall:	Provision of new sewerage scheme
Creagh:	Provision of new sewerage scheme
Elphin:	Upgrading of treatment plant
Frenchpark:	Network extension, safety measures
Hodson Bay:	Provision of new sewerage scheme
Knockcroghery:	Upgrading of treatment plant and collection system
Lisacul:	Provision of new sewerage scheme
Loughglynn:	Upgrading of treatment plant and collection system
Strokestown:	Upgrading of treatment plant and collection system

(b) Tulsk: Provision of new sewerage scheme

Serviced Land Initiative:

Brideswell village scheme is being progressed through the Serviced Land Initiative.

(b) Problems Encountered

Infiltration still remains a problem at some sites. Low BOD levels evident in influent samples.

(c) Future Plans/New Directions

Roscommon County Council has prepared an assessment of needs and a prioritised list of capital projects for water wastewater infrastructure. The main purpose of the assessment is to develop an overall strategic investment plan for the county for the medium (2007-2009) to long term (2010-2014) and to set out a programme of works to meet the identified water services needs.

The following schemes have been included in the assessment of needs for the future:

Castlecoote:	Provision of new sewerage scheme (may be in connection with private development)
Granlahan:	Provision of new sewerage scheme (may be in connection with private development)
Taughmaconnell:	Provision of new sewerage scheme
Dysart:	Provision of new sewerage scheme
Moore:	Provision of new sewerage scheme
Drum:	Provision of new sewerage scheme
Kilmore:	Provision of new sewerage scheme
Hillstreet:	Provision of new sewerage scheme
Four Roads:	Provision of new sewerage scheme
Knockvicar:	Provision of new sewerage scheme
Portrunny:	Local Area Plan and feasibility study complete which will incorporate proposals for treatment plant.
Croghan:	Provision of new sewerage scheme (may be in connection with private development)

8. Septic Tanks

(a) Progress to date

ANNEX 3: TABLES / ATTACHMENTS

Septic tank discharges are controlled by the Planning system. Direct discharges to watercourses are dealt with under the Water Pollution Acts.

(b) Problems Encountered

Inadequate staffing levels to check all planning applications for septic tanks. The timings outlined in the EPA's "Wastewater Treatment Manuals-Treatment Systems for Single Houses" for carrying out percolation tests will limit staff to only achieve one test per day.

(c) Future Plans/New Directions

New staff are currently being recruited and it is hoped that initially all planning applications for septic tanks in sensitive areas will be checked for environmental impact and eventually all septic tanks will be controlled.

9. Farm Surveys

(a) Progress to date

237 Farm surveys have been completed in risk areas during the reporting period.

(b) Problems Encountered

Inadequate staffing levels to carry out the surveys.

Lack of co-operation from a number of landowners

(c) Future Plans/New Directions

Roscommon County Council intends to continue survey work in targeted areas and to extend the studies throughout the county.

10. Reed Beds

(a) Progress to date

Reed beds have been provided in Arigna, Keadue, Cloonfad and Ballyfarnan.

(b) Problems Encountered

Replanting of reeds was necessary at one of the locations. Further replanting is under review.

(c) Future Plans/New Directions

The County Council will consider the use of reed bed technology for small scale sewerage treatment plants based on the success of those already in place.

3.2 Monitoring Measures

1. Monitoring Points

(a) Progress to date

Roscommon County Councils laboratory and the SRBD laboratory are carrying out river water sampling.

(b) Problems Encountered

Some overlap of sampling points.

(c) Future Plans/New Directions

It is intended to implement the Sampling Programme for the SRBD, which comes into force in Dec 2006, and also to continue the Councils own sampling Programme.

2. Quality Control Programme

(a) Progress to date

The environmental laboratory in Roscommon County Council is actively involved in the intercalibration programme run by the EPA, and the Aquacheck and PHLS proficiency schemes. Standard Operating Procedures and Quality Control Procedures and Checks are also in use.

(b) Problems Encountered

Inadequate staffing levels to fully implement Quality Control Procedures. A constant level of staff is required to attain ILAB accreditation.

(c) Future Plans/New Directions

ILAB accreditation for all core parameters has been suspended due to an inconsistent number of staff.

3. Studies in specific areas

(a) Progress to date

Farm surveys have been completed in the localised risk areas as identified by the Lough Derg/Ree Management Team.

(b) Problems Encountered

Inadequate staff to carry out farm visits
Lack of co-operation from some landowners

(c) Future Plans/New Directions

Technical staff will extend survey work to all targeted areas in the county i.e. catchments areas for drinking water sources and identified risk areas.

3.3 Consultative and Co-operative Measures

1. Catchment Management consultations

- (a) Progress to date

Roscommon County Council are involved in water quality management planning by taking an active role in the SRBD and the Western Rivers Programme.

Liaison with the EPA, other Local Authorities and all interested bodies is ongoing.

- (b) Problems Encountered

- (c) Future Plans/New Directions

The County Council is committed to ongoing liaison with departments and parties interested in water quality

3.4 Public Education and Advisory Measures

1. Public Education Campaigns

- (a) Progress to date

The Environmental Educational Officer also meets with sectoral groups to emphasise the importance of environmental issues including water quality. This work includes measures such as leaflet drops, evening lectures and articles in the local paper.

- (b) Problems Encountered

- (c) Future Plans/New Directions

It is planned to continue to concentrate the efforts of the Environmental Education Officer on informing the public about environmental difficulties.

2. Environmental Education Officer

(a) Progress to date

An Environmental Education Officer was recruited In August 2004. Part of the officer's duties is to provide information to the general public on all areas of the environment.

(b) Problems Encountered

(c) Future Plans/New Directions

It is planned to concentrate the efforts of the Environmental Education Officer on informing the public about environmental difficulties. This will include measures such as leaflet drops, evening lectures and articles in the local paper.

3. Appointment of Staff

(a) Progress to date

At present Roscommon County Council has one member of staff assigned to duties linked to the Phosphorus Regulations with a number of others involved on a part time basis.

(b) Problems Encountered

Inadequate staffing levels.

(c) Future Plans/New Directions

Continue to request adequate staffing levels.

STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

RIVER NAME	RIVER CODE	STATION CODE	LOCATION	DATE	ORTHO-PHOSPHATE ug/L P
Scramoge	26SO1	0050	Br ds Lough Conny	06/04/05	4
				05/05/05	2
				02/06/05	13
				07/07/05	3
				11/08/05	3
				13/8/05	0
				13/10/05	5
				03/11/05	16
				24/11/05	19
				15/12/05	27
				09/02/06	16
				21/3/06	6
				05/05/06	5
				Median	5
				Scramoge	26SO1
05/05/05	33				
02/06/05	44				
07/07/05	0				
11/08/05	4				
13/8/05	3				
13/10/05	6				
03/11/05	17				
24/11/05	14				
15/12/05	23				
09/02/06	12				
21/3/06	0				
05/05/06	4				
Median	6				
Scramoge	26SO1	0200	Cloonfree Br		
				05/05/05	40
				02/06/05	5
				07/07/05	0
				11/08/05	0
				13/8/05	3
				13/10/05	1
				03/11/05	19
				24/11/05	18
				15/12/05	23
				09/02/06	13
				21/3/06	5
				05/05/06	24

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STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

RIVER NAME	RIVER CODE	STATION CODE	LOCATION	DATE	Median	5 ORTHO-PHOSPHATE ug/L P		
Scramoge	26SO1	0300	Br NE Riverdale	04/04/05		3		
				11/05/05		1		
				08/06/05		26		
				06/07/05		23		
				03/08/05		5		
				31/8/05		8		
				28/9/05		8		
				26/10/05		16		
				14/12/05		11		
				13/2/06		10		
				13/3/06		3		
				10/04/06		1		
				08/05/06		1		
						Median		8
				Scramoge	26SO1	0600	Scramoge Br	06/04/05
05/05/05		15						
02/06/05		7						
07/07/05		0						
11/08/05		14						
13/8/05		6						
13/10/05		6						
03/11/05		16						
24/11/05		11						
15/12/05		19						
09/02/06		16						
21/3/06		4						
05/05/06		11						
19/6/06		0						
		Median						9
Scramoge	26SO1	0700	Br us Kilglass Lough	06/07/04		3		
				26/8/04		19		
				22/9/04		13		
				23/11/04		17		
				04/01/05		12		
				02/02/05		11		
				07/03/05		7		
				04/04/05		36		
				06/04/05		6		
				05/05/05		4		
				11/05/05		5		
02/06/05		3						

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STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

RIVER NAME	RIVER CODE	STATION CODE	LOCATION	DATE	ORTHO-PHOSPHATE ug/L
				08/06/05	5
				06/07/05	5
				07/07/05	0
				03/08/05	2
				11/08/05	5
				13/8/05	4
				31/8/05	2
				28/9/05	11
				13/10/05	5
				26/10/05	25
				03/11/05	16
				24/11/05	13
				14/12/05	14
				15/12/05	15
				09/02/06	19
				13/2/06	12
				13/3/06	10
				21/3/06	4
				10/04/06	2
				05/05/06	16
				08/05/06	1
				19/6/06	4
				Median	6.5
Strokestown	26S08	0050	Br S end of S'town		
				27/7/04	38
				19/8/04	16
				28/9/04	15
				27/10/04	38
				23/11/04	15
				16/12/04	17
				27/1/05	8
				30/3/05	16
				12/04/05	6
				17/5/05	39
				07/07/05	0
				17/8/05	0
				23/8/05	65
				29/9/05	44
				25/10/05	47
				17/11/05	19
				13/12/05	15
				13/1/06	15
				21/2/06	19
				15/3/05	15
				25/4/06	2
				26/5/06	12
				21/6/06	23

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STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

RIVER NAME	RIVER CODE	STATION CODE	LOCATION	DATE	ORTHO-PHOSPHATE ug/L P
Strokestown	26S08	0100	Ds S'town standing stone	Median	15.5
				06/07/04	21
				27/7/04	0
				19/8/04	129
				26/8/04	40
				22/9/04	23
				28/9/04	20
				27/10/04	32
				23/11/04	18
				16/12/04	22
				27/1/05	12
				23/11/04	22
				02/02/05	14
				30/3/05	23
				17/3/05	10
				04/04/05	9
				12/04/05	9
				11/05/05	7
				17/5/05	0
				08/06/05	8
				06/07/05	29
				07/07/05	0
				03/08/05	19
				17/8/05	0
				23/8/05	66
				31/8/05	61
				28/9/05	52
				29/9/05	43
				25/10/05	44
				26/10/05	44
				17/11/05	20
				13/12/05	10
14/12/05	19				
01/05/00	14				
13/2/05	13				
21/2/06	40				
13/3/06	11				
15/3/06	26				
10/04/06	4				
25/4/06	16				
08/05/06	11				
26/5/06	13				
21/6/06	45				
Median	19				

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STROKESTOWN WASTE WATER DISCHARGE LICENCE APPLICATION

ANNEX 3: TABLES / ATTACHMENTS

RIVER NAME	RIVER CODE	STATION CODE	LOCATION	DATE	ORTHO-PHOSPHATE ug/L P
Strokestown	26S08	0200	Br near Toberpatrick House	17/2/05	28
				06/04/05	9
				05/05/05	11
				02/06/05	19
				07/07/05	7
				11/08/05	92
				13/8/05	59
				13/10/05	32
				03/11/05	39
				24/11/05	30
				15/12/05	25
				09/02/06	26
				21/3/06	18
				05/05/06	33
				19/6/06	56
				Median	28

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G.3. Impact Mitigation

The Strokestown WWTP and agglomeration were designed in such a way, that discharges from the agglomeration would not result in significant environmental pollution.

All upgrades, expansions and improvements to the Strokestown WWTP and agglomeration in the future will ensure that any further emissions from the agglomeration would continue to not result in significant environmental pollution.

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