

This report has been cleared for Submission  
to the Board by the Programme Manager

F.Clinton

Signed: Maire Han

Date: 30/09/09



**OFFICE OF CLIMATE,  
LICENSING & RESOURCE USE.**

**INSPECTORS REPORT ON A WASTE WATER DISCHARGE  
LICENCE APPLICATION**

**To:** Directors

**From:** Úna O'Callaghan **Environmental Licensing  
Programme**

**Date:** 18.09.2009

**RE:** Application for a Waste Water Discharge Licence from **Cork County  
Council Northern Division**, for the agglomeration named  
**Watergrasshill and Environs, REG. NO. D0201-01**

Application Details	
Schedule of discharge licensed:	Discharges from agglomerations with a population equivalent of more than 2,001-10,000
Licence application received:	06.10. 2008
Notices under Regulation 18(3)(b) issued:	14.01.2009
Information under Regulation 18(3)(b) received:	13.03.2009
Site notice check:	17.10.2008
Site visit:	30.06.2009
Submission(s) Received:	None received

### Agglomeration

This application relates to the Watergrasshill and environs agglomeration, which is situated on the R639, 14km from Cork City and 8km south of Rathcormack Village. The wastewater treatment plant (WWTP) is located 800m northeast of Watergrasshill village in the townland of Meenane.

The wastewater from the Watergrasshill agglomeration is collected in a partially combined sewerage network. Within the village a fully separated storm water system is constructed. The WWTP was up-graded and commissioned in 2002 with a design capacity of 3,000 population equivalent (p.e.) and it currently serves 1,800 p.e. The p.e. load consists of both domestic and commercial wastewaters. At design capacity, domestic wastewaters are projected to contribute some 2,150 p.e., and commercial and trade wastewaters 750 p.e. The WWTP does not accept waste waters containing leachate.

Influent arriving at the Watergrasshill WWTP undergoes primary, secondary and tertiary treatment. The plant infrastructure consists of an automatic screen (6mm) at the inlet works, circular aeration tank, settling tank, sand filtering tanks, sludge removal and thickening. A picket fence thickener was installed in 2009. Phosphorus removal also occurs at the WWTP and this is achieved with the addition of ferric sulphate. The WWTP is designed to achieve a 10/10mg/l Biological Oxygen Demand/Suspended Solids (BOD/SS) standard. There are no further upgrades planned. The WWTP is operated by Cork County Council Northern Division. A caretaker is on duty from 8.00am to 5.30pm Monday to Friday.

There are two pumping stations within the agglomeration located at Ard Cashel and Priory Court Housing Estate. Private developers operate both pumping stations. Cork County Council has not taken these pumping stations in charge. There are no overflows associated with the private pumping stations in the agglomeration.

The agglomeration consists of one primary discharge point (SW-01 WGH) and one storm water overflow (SW-02 WGH) into the River Flesk South Branch (receiving water). There are no secondary discharge points within the agglomeration. Please see **Figure 1** on page 9 of this report for an outline of the Watergrasshill area and its receiving waters.

The legislation under which the discharges from the wastewater works are licensed does not provide any regulatory powers with regard to odour, noise or management of the wastewater works infrastructure. Therefore, this report and the recommended licence (RL) do not specifically refer to, or set operating conditions in relation to, these issues.

### **Site Visit**

As part of the assessment of this application, a site visit was conducted on the 30.06.09. I met with both the engineer involved in putting together the application and the WWTP caretaker. On the morning of the site visit, heavy rain was experienced in the area. This rain event did not result in a large increase of flows into the WWTP or activation of the storm water overflow.

### **Discharges to waters**

The primary discharge SW01-WGH is to the River Flesk South Branch (receiving water) via a 300mm concrete open pipe which discharges to an open drain, 3m in length before it enters the river. The River Flesk South Branch joins the main River Flesk circa 1.5km downstream. The main River Flesk joins the River Bride approximately 8km downstream of the discharge point of the WWTP. There is one storm water overflow (SW-02 WGH) in the agglomeration.

There are no secondary discharge points within the agglomeration. The design dry weather flow (DWF) for the plant is 605m<sup>3</sup>/day, which is based on a population equivalent of 3,000 p.e. This equates to an average flow of 25m<sup>3</sup>/hr. The WWTP is capable of handling flows up to 90m<sup>3</sup>/hr (3.5 DWF).

In the event of a storm leading to flows in excess of 3.5 DWF, storm/wastewater arrives at the WWTP, overflows from the inlet works and passes to the old treatment works, which consist of an Imhoff system (limited solid removal takes place) followed by percolating filters. The storm/ wastewater from the old percolating filters is eventually discharged to the river via a 225mmØ outfall pipe. No records have been kept of how often this storm water overflow (SWO) event occurs or on the performance of the old treatment works. The SWO is not in compliance on the basis of the overflow setting. The Recommended Licence (RL) as drafted requires evaluation and upgrading of SWO to the Department of Environment, Heritage and Local Government "*Procedures and Criteria in relation to storm water overflows*", 1995 and also requires ongoing monitoring of performance of the storm water overflow.

## Receiving Waters and Impacts

The following table summarises the main considerations in relation to the River Flesk (receiving water) downstream of the primary discharge.

**Table 1.0 Receiving waters**

Characteristic	Classification	Comment
Receiving water name and type	River Flesk	River Code: IE_SW_18_2264
Resource use	Drinking Water	Drinking water abstraction from River Bride, the Conna Regional Water Supply ~12km downstream
Amenity value	General	
Applicable Regulations	Environmental Objectives Surface Water Regulations <sup>1</sup>	See assimilative capacity issue below
Designations	None	
EPA monitoring stations	Up-Stream :  Down Stream: 18F04 0500 <u>Ballinallig bridge</u>  18F040200 <u>Br.s.Coosane</u>	None (applicant monitoring available)  2.3km d/s of discharge & 0.5 km d/s of the confluence of the Flesk South Branch and the main Flesk River.  1.5 km up stream of the confluence of the Flesk South Branch and the main Flesk.
Biological quality rating (Q value)	18F04 0500 Downstream Q4 (2006) Q3-4 (2003)  18F040200 Down Stream Q4 (2006)	2.3Km d/s of discharge.  1.5 km upstream of the confluence of the Flesk South Branch and the main Flesk.
Target Q	4	
WFD Risk Category		1a - at risk of not achieving good status.
WFD Status	Good	
WFD protected areas	None	

Note 1: The European Communities Environmental Objectives (Surface Water) Regulations 2009 S.I. No.272 of 2009

Approximately 1,136m<sup>3</sup>/day of drinking water is abstracted from the River Bride circa 12km downstream of the WWTP for the Conna Regional Water Supply. The Conna Regional Water Treatment Plant consists of full treatment. The water treatment plant complies with the requirements of the European Communities (Quality of surface water intended for abstraction of drinking water) Regulations, 1989 S.I. No. 294/1989. The Watergrasshill WWTP is one of three WWTP which discharge upstream of this Drinking Water Treatment Plant.

The WWTP discharges into the south branch of the River Flesk, which flows into the main River Flesk. EPA Monitoring undertaken in 2006, upstream (18F040200) and downstream (18F040500) of this confluence point on the main River Flesk indicates that the quality of the receiving water is rated as Q4 (unpolluted).

There is no EPA monitoring up-stream of the WWTP. However, ambient monitoring of the River Flesk (South Branch) upstream and downstream of the WWTP was conducted by the applicant (Cork County Council) for this application. The river quality monitoring data results for 2007 and 2008 are summarised below.

**Table 2.1: Up-stream monitoring results (mg/l) for 2007 and 2008**

Up Stream	2007			2008			Surface Water Standard <sup>1</sup>
	Max	Mean	95%ile	Max	Mean	95%ile	
BOD (mg/l)	4.40	2.03	3.98	1.51	1.17	1.51	≤1.5(mean) ≤2.6 (95%ile)
Conductivity (uS/cm)	NM <sup>2</sup>	NM <sup>2</sup>	NM <sup>2</sup>	201	179	196.8	
Total Nitrogen (mg/l)	6.22	3.64	5.98	5.90	4.20	5.65	
Total P	0.25	0.21	0.24	0.20	0.20	0.20	
MRP Ortho-Phosphate (mg/l P)	0.05	0.05	0.05	0.06	0.05	0.06	≤0.035(mean) ≤0.075 (95%ile)
Total Ammonia as N	1.39	0.51	1.26	0.16	0.10	0.14	≤0.065 (mean) ≤0.14(95%ile)
pH	7.20	7.07	7.19	7.40	7.28	7.39	6<9

**Table 2.2: Down-stream monitoring results (mg/l) for 2007 and 2008**

Downstream	2007			2008			Surface Water Standard <sup>1</sup>
	Max	Mean	95%ile	Max	Mean	95%ile	
BOD (mg/l)	6.10	3.17	5.61	2.97	1.41	2.56	≤1.5(mean) ≤2.6 (95%ile)
Conductivity (uS/cm)	NM <sup>2</sup>	NM <sup>2</sup>	NM <sup>2</sup>	226	186	218.95	
Total Nitrogen (mg/l)	6.20	5.09	6.14	10.40	5.89	9.63	
Total P	0.47	0.27	0.43	0.52	0.26	0.45	
MRP Ortho-Phosphate (mg/l P)	0.05	0.05	0.05	0.41	0.14	0.36	≤0.035(mean) ≤0.075 (95%ile)
Total Ammonia as N	2.71	0.80	2.35	0.16	0.10	0.14	≤0.065 (mean) ≤0.14(95%ile)
pH	7.30	7.17	7.28	7.30	7.23	7.30	6<9

Note 1: The European Communities Environmental Objectives (Surface Water) Regulations 2009 S.I. No.272 of 2009

Note 2: Not Measured

Monitoring data for primary discharge SW-01 WGH was submitted to the Agency as part of the application process. This data was generated as part the monitoring regime imposed by the Urban Wastewater Treatment Regulations, 2001 (S.I. No. 254 of 2001). The Watergrasshill WWTP is compliant with the requirements of these regulations, based on the most recent data available. The River Flesk is not a designated sensitive area under the Urban Waste Water Treatment Regulations 2001 as amended.

The primary discharge was also monitored for a range of dangerous substances. All dangerous substances concentrations were below standards specified in the Dangerous Substances Regulations (S.I. No. 12 of 2001). The RL requires screening of the wastewater discharges for the presence of organic compounds and metals within twelve months of the date of grant of licence.

### Assimilative Capacity

The assessment of the impact of the discharge considered the wastewater composition, quantity, monitoring results and the assimilative capacity (A/C) of the receiving water. Presently the receiving water offers a dilution factor of 17 based on 95% flow in the river (0.0665m<sup>3</sup>/s) and current DWF discharge from the WWTP at a loading of 1800 p.e. (360m<sup>3</sup>/day). This dilution factor is reduced to 10.4 at a loading of 3000 p.e. (605m<sup>3</sup>/day).

**Table 3** below presents the results of assimilative capacity calculations for a number of parameters. The predicted downstream water quality demonstrates reasonable correspondence with actual monitoring results obtained in 2008.

The calculations in the table are based on the typical flow rates from the primary discharge at 1,800 p.e (360m<sup>3</sup>/day) and 3,000 p.e (605m<sup>3</sup>/day) respectively. Background concentrations are based on the results of upstream monitoring conducted for the application. Median flow (0.375m<sup>3</sup>/s) has been used for the Ortho-Phosphate/Total Phosphorous calculation and the 95%ile flow was used for all other parameters.

**Table 3 Assimilative Capacity**

Parameter @1800p.e	Discharge load	Average Background Concentration	Predicted downstream quality	Surface Water standard mg/l <sup>1</sup>
BOD @25mg/l	9kg	1.51mg/l	2.87mg/l	≤2.6 (95%ile)
BOD @15mg/l	5.4 kg	1.51mg/l	2.29mg/l	≤2.6 (95%ile)
BOD @10mg/l	3.6kg	1.51mg/l	2.00mg/l	≤2.6 (95%ile)
O-PO <sub>4</sub> -P@1mg/l	0.36kg	0.05mg/l	0.060mg/l	≤0.035 (mean)
Total P@2mg/l	0.72kg	0.2mg/l	0.22mg/l	
Total Ammonia as N@1mg/l	0.36kg/l <sup>4</sup>	0.14mg/l	0.19mg/l	≤0.14(95%ile)
Parameter @3000p.e				
BOD @25mg/l	15.12kg	1.51mg/l	3.75mg/l	≤2.6 (95%ile)
BOD @15mg/l	9.07kg	1.51mg/l	2.79mg/l	≤2.6 (95%ile)
BOD @10mg/l	6.05kg	1.51mg/l	2.32mg/l	≤2.6 (95%ile)
O-PO <sub>4</sub> -P@1mg/l	0.6kg	0.05mg/l	0.067 mg/l	≤0.035 (mean)
Total P@2mg/l	1.21kg	0.2mg/l	0.23mg/l	
Total Ammonia as N@1mg/l	0.605kg/l	0.14mg/l	0.22mg/l	≤0.14(95%ile)

**Note 1:** The European Communities Environmental Objectives (Surface Water) Regulations 2009 S.I. No.272 of 2009

Ambient monitoring results of the receiving water downstream of the WWTP taken over eight months in 2008 indicate a BOD level of 2.56mg/l (95%ile). In the assimilative capacity table above BOD was calculated at both the Urban Waste Water Regulations emission limit value (ELV) of 25mg/l, in addition 15mg/l and 10mg/l limits were also calculated in order to demonstrate the predicted downstream concentration at each ELV. The European Communities Environmental Objectives (Surface Water) Regulations 2009, requires the BOD level in the receiving water to achieve ≤2.6mg/l (95%ile) for waters of good status. At the design capacity of 3,000 p.e. with a 25mg/l loading, the river would struggle to achieve this target. From the eight results supplied in 2008, the WWTP attained a BOD concentration of 12.22mg/l (95%ile). Seven out of eight of these samples achieved a BOD below 10mg/l; one sample was recorded at 15mg/l.

The RL requires a BOD concentration in the primary discharge of 10mg/l, which is achievable, based on the monitoring data and the design specification on the WWTP. The Department of Environment, Heritage, and Local Government (DoEHLG) inspector for the County Cork area was consulted in relation to the Watergrasshill discharges. The proposed ELV will ensure that the discharge will not contribute to an exceedance of the European Communities Environmental Objectives (Surface Water) Regulations for BOD.

There is no assimilative capacity for Ortho-Phosphate in the immediate receiving waters as the ambient monitoring levels of 0.05mg/l exceeds the 0.035mg/l (mean) required by the European Communities Environmental Objectives (Surface Water) Regulations 2009. However this has not affected the biological quality of the water at the nearest EPA monitoring station 2.3 km downstream of the discharge in achieving a Q4 rating. This Q4 rating is consistent with 'good status', which is required to be maintained under the Water Framework Directive.

The discharge values (kg/day) for Ortho-Phosphate in Table 3 are calculated for both 1,800 p.e. and 3,000 p.e., using the median receiving water flow data (0.375m<sup>3</sup>/s). It is predicted that the discharge at a concentration of 1mg/l for 1,800 p.e., and 3,000 p.e., increases the background level for Ortho-Phosphate by 0.010mg/l and 0.017mg/l respectively. At present there is no observed deterioration in the down stream water quality at the current average load of 0.38kg/day. To ensure no further deterioration a daily loading limit of 0.36kg/day for Ortho-Phosphate is specified in the RL. Results of the discharge monitoring for the first eight months of 2008 indicate the average discharge value of 1.08mg/l for Ortho-Phosphate and 1.36mg/l for Total Phosphorus. The WWTP has nutrient removal in place and will be required to maximise nutrient reduction to achieve the recommended ELV's. The recommended licence (RL) requires the discharge to meet an ELV of 1mg/l for Ortho-phosphate with a daily load limit set at 0.36kg/day and 2mg/l for Total Phosphorus.

There is no assimilative capacity for Total Ammonia (as N) in the immediate receiving waters. In 2008, the ambient monitoring upstream and downstream of the WWTP recorded 0.148mg N/l (95%ile). This indicates that the WWTP does not contribute significantly to the Total Ammonia levels in the receiving water. Previous phosphorous implementation reports have identified agricultural activity as a contributing factor to water quality. Cork County Council have an intensive farm survey programme to ensure compliance with the European Communities (Good Agricultural Practice for Protection of Waters) Regulations, which will assist in improving water quality.

The European Communities Environmental Objectives (Surface Water) Regulations require a value of ≤0.14mg N/l (95%ile) for Total Ammonia to achieve good status. In 2008 monitoring results of the WWTP discharge achieved Total Ammonia of 0.135mg N/l (95%ile). To ensure no further deterioration the RL specifies an ELV of 1mg N/l for Total Ammonia (as N) with a daily load limit set at 0.36kg/day.

*Schedule A: Discharges* of the RL specifies ELVs to which the discharge must conform. The ELV's are aimed at providing a high degree of protection to the receiving water body, and are based on data supplied in the application concerning the performance of the WWTP. Monitoring of the discharge will take place as per *Schedule B: Monitoring* at emission point SW-01 WGH.

### **Ambient Monitoring**

The RL requires monitoring of the receiving water for a range of parameters both upstream and downstream of the primary discharge. This is to verify that no deterioration of the receiving water quality is occurring due to the discharge.

## **Combined Approach**

The Waste Water Discharge Authorisation Regulations, 2007 (S.I. No. 684 of 2007) specify that a 'combined approach' in relation to licensing of waste water works must be taken, whereby the emission limits for the discharge are established on the basis of the stricter of either or both, the limits and controls required under the Urban Waste Water Treatment Regulations (S.I. No. 254 of 2001) and the limits determined under statute or Directive for the purpose of achieving the environmental objectives established for surface waters, groundwater or protected areas for the water body into which the discharge is made. The RL as drafted gives effect to the principle of the Combined Approach as defined in S.I. No. 684 of 2007. The ELV set for BOD is tighter than the limit set in the Urban Waste Water Regulations; this is required to ensure the Environmental Objectives (Surface Water) Regulations are met.

## **Programme of Improvements**

The WWTP was commissioned in 2002. In 2008 a 6mm automatic screen was installed at the inlet works. A picket fence thickener was installed in 2009, to improve sludge removal. No further improvements are planned.

## **Compliance with EU Directives**

In considering the application, regard was made to the requirements of Regulation 6(2) of the Waste Water (Discharge) Authorisation, Regulations, 2007 (S.I. No. 684 of 2007) notably:

### Drinking Water Abstraction Regulations

There is a drinking water abstraction point for Conna Regional water supply (0500PUB1204) on the River Bride circa 12km downstream of the discharge. Condition 6.3 of RL specifies the licensee shall immediately notify the Water Services Authority and/or other groups responsible for the downstream abstraction of drinking water, of any exceedance of an ELV associated with the discharge or any other relevant incident as defined by the licence.

### Sensitive Waters

The River Flesk is not designated as sensitive under the Urban Waste Water Treatment Regulations 2001 as amended.

### Water Framework Directive [2000/60/EC]

The RL, as drafted, transposes the requirements of the Water Framework Directive. In particular, *Condition 3 Discharges* provides conditions regulating discharge to waters while *Schedule A: Discharges* specifies limit values for those substances contained with the wastewater discharge. The limits specified in the RL are determined with the aim of achieving good water quality status by 2015.

### Urban Waste Water Treatment Directive [91/271/EEC]

Watergrasshill & Environs Agglomeration complies with the requirements of the Urban Waste Water Treatment Directive. The RL, as drafted, has regard to the requirements of the Urban Waste Water Treatment Directive. In particular, *Condition 3 Discharges* provides conditions regulating discharges to waters while *Schedule A: Discharges* specifies limit values for those substances contained with the wastewater discharge.

### Bathing Water Directive [2006/7/EC]

There are no bathing waters in the vicinity of the receiving water.

EC Freshwater Fish Directive [2006/44/EC]

The River Flesk is not a designated Salmonid river.

Shellfish Waters Directive [2006/113/EC]

There are no shellfish waters in the vicinity of the receiving water.

Dangerous Substances Directive [2006/11/EC]

The applicant has provided sampling results for all of the 19 dangerous substances in the primary discharge for the purposes of the licence application. The measured concentrations are not considered significant. Monitoring of receiving waters has shown compliance with the Dangerous Substances Regulations (S.I. No. 12 of 2001). However, to ensure compliance with the requirements of the Dangerous Substances Directive, condition 4.10 of the RL requires screening of the primary discharge for the presence of organic compounds and metals within twelve months of the date of grant of licence.

Birds Directive [79/409/EEC] & Habitats Directive [92/43/EEC]

The WWTP does not discharge directly into a designated site (SPA or SAC) however, 3km downstream of the discharge area, the River Flesk becomes part of the Blackwater catchment SAC Site Code: 002170. The River Flesk flows into the River Bride (8km downstream of the WWTP). This is a RPA (registered protected area) Habitat river and part of the Blackwater SAC. The site synopsis for this SAC identifies some of the main threats to the site as agricultural run off and several municipal wastewater treatment plants. Cork County Council have stated that the plant is performing satisfactorily at present and meeting relevant treatment standards. The National Parks and Wildlife Service (NPWS) were notified of the application and invited to make a submission. NPWS did not comment on this application. In considering the application and any impact the WWTP may have on this SAC, both the discharge quality and quantity, the dilution factor of the main River Flesk and the biological rating downstream of the WWTP (Q4) were taken into consideration. An "appropriate assessment" of the impact of the discharge has been deemed unnecessary on the basis of these considerations. By ensuring all waste water is treated to a high standard the RL will act to improve the quality of the receiving water environment.

Environmental Liabilities Directive [2004/35/EC]

Condition (7.2) satisfies the requirements of the Environmental Liabilities Directive in particular those requirements outlined in Article 3(1) and Annex III of 2004/35/EC.

**Submissions**

No submissions were received in relation to this application.

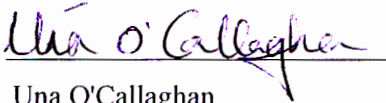
**Charges**

The RL sets an annual charge for the agglomeration at € 4,366 and is reflective of the monitoring and enforcement regime being proposed for the agglomeration.

**Recommendation**

I recommend that a Final Licence be issued subject to the conditions and for the reasons as set out in the attached Recommended Licence.

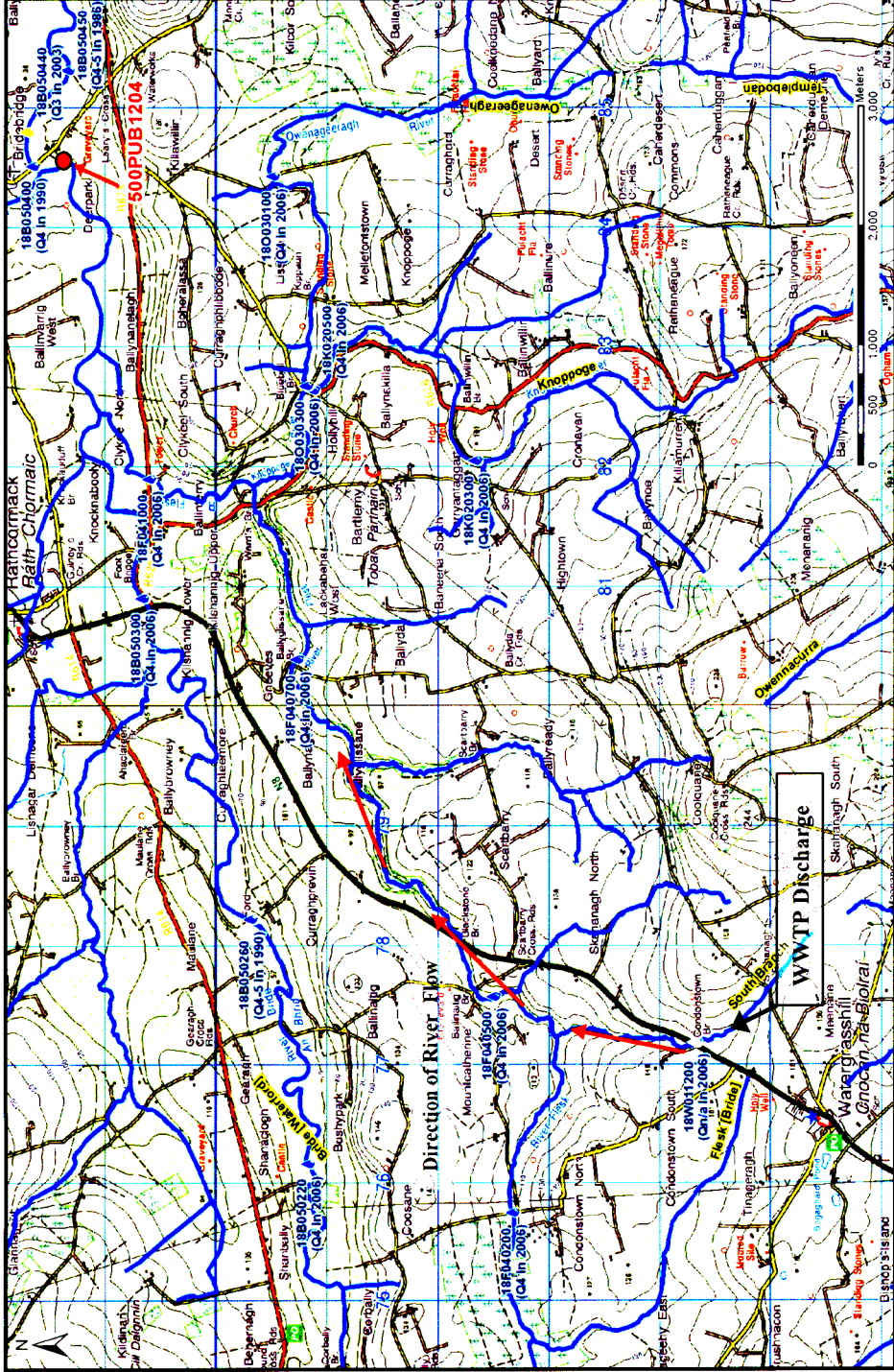
Signed



Una O'Callaghan

Office of Climate, Licensing and Resource Use





Watergrasshill & Environs