

This Report has been cleared
for submission to the Board by
the Senior Inspector, Karen Creed
Signed: K. Creed Date: 7/10/10



OFFICE OF CLIMATE,
LICENSING & RESOURCE USE.

INSPECTOR'S REPORT ON A WASTE WATER DISCHARGE LICENCE APPLICATION

To:	DIRECTORS
From:	Loretta Joyce Environmental Licensing Programme
Date:	7 October 2010
RE:	Application for a Waste Water Discharge Licence from Meath County Council, for the agglomeration named Ballivor and environs Reg. No. D0254-01.

Application Details	
Schedule of discharge licensed:	Discharges from agglomerations with a population equivalent of between 1,001 and 2,000.
Licence application received:	27 February 2009
Notice under Regulation 12 issued:	26 March 2009
Information under Regulation 12 received:	21 April 2009
Notice under Regulation 18(3)(b) issued:	3 June 2009
Information under Regulation 18(3)(b) received:	30 July 2009, 10 November 2009
Site notice check:	20 March 2009
Site visit:	10 June 2010
Submission(s) Received:	None

1. Agglomeration

This application relates to the Ballivor and environs agglomeration. The waste water treatment plant (WWTP) was upgraded and subsequently commissioned in 2005. Extensive rehabilitation and expansion of the foul sewer network was also undertaken in 2006 and again in 2010. The design capacity of the current WWTP is 2,000 p.e. with a possible Phase 2 expansion to 4,000 p.e.. The current load to the plant is estimated to be 1,792 p.e. with a projected p.e. in 2015 of 1,986 p.e. The WWTP at Ballivor includes screening, grit removal, two extended aeration basins, one anoxic chamber upstream of the aeration tanks, ferric dosing for phosphate removal, four clarifiers, a sand filter, sludge thickening and dewatering facilities and a storm water tank.

2. Discharges to waters

There are two discharges to water from the works, i.e., the primary discharge and one storm water overflow. The application refers to a secondary discharge from the NEC emergency overflow. However, the former NEC Semiconductors facility is no longer operational in Ballivor and the pumping plant has been removed from the NEC pumping station located at the Ballivor WWTP. Meath County Council has no future plans for this pumping station and so there is no secondary discharge from the agglomeration.

Primary Discharge

The primary discharge (labelled SW1) is to a tributary of the Stonyford River (known locally as the Ballivor River) which flows east and then north-east towards the Stonyford River 2km downstream (see arrows in Figure 1, Appendix I). The direction of flow differs from the EPA GIS map in Figure 1 below but was confirmed with the Agency's Office of Environmental Assessment, Hydrometric section (Brendan Magennis) who stated, that there was no evidence of river diversion and the correct flow is shown with arrows.

The primary discharge from the agglomeration was compliant in 2008 and 2007 but was non compliant in 2006 with the Urban Waste Water Regulations, 2001 (S.I. No. 254 of 2001 and amendments), in terms of compliance with effluent emission limit of, 25:125:35 (BOD: COD: SS). In 2006, the agglomeration failed three BOD and five suspended solids samples out of twelve samples taken. It should be noted however that there is no requirement for compliance with the absolute limits in the Regulations for plants serving less than 2,000 p.e.

Storm water overflow

There is one designated Storm Water Overflow (SW2) located at Ballivor WWTP. The applicant states that SW2 complies with the design criteria as per '*Procedures and Criteria for Storm Water Overflows*', published by the DEHLG (1995).

Emergency Overflows

There are no pumping stations on the network.

Site Inspection

An inspection of the agglomeration was carried out on 10th June 2010. The inspection focused on the WWTP, the primary discharge point and the receiving waters. The WWTP seemed to be operating satisfactorily at the time of the inspection. The River Ballivor is small and slow-flowing. The applicant advised that there are plans to replace the double channel sand filter by a silo type unit due to operational and maintenance difficulties.

3. Receiving waters and impact

The following table summarises the main considerations in relation to the River Stonyford and its tributary, the River Ballivor where the primary discharge is located.

Table 1.0 Receiving waters

Characteristic	Classification	Comment
Receiving water name and type Note 5	Stream known locally as the Ballivor River.	A tributary of the River Stonyford, which it joins about 2 km downstream of the primary discharge. The River Stonyford joins the Boyne, a designated salmonid water, about 3.7 km after the tributary (River Ballivor) enters the River Stonyford.
Resource use	Fishing	Wild brown trout fishing.

	Drinking water abstraction points: Trim (Register Code: 2300PUB1009), Kilcarn (Register Code: 2300PUB1016), Roughgrange (Register Code: 2300PUB1019)	Trim <i>circa</i> 20.45km d/s of SW1 Kilcarn <i>circa</i> 33.8km d/s of SW1 Roughgrange <i>circa</i> 56.8km d/s of SW1
Amenity value	Fishing	
Applicable Regulations	UWWT Regulations ^{Note 1} Drinking Water Regulations ^{Note 2} Environmental Objectives Regulations ^{Note 3}	Non Compliant in 2006, Compliant in 2007 and 2008 Compliant Non Compliant
Designations	Candidate Special Area of Conservation (cSAC) (River Boyne and River Blackwater, site code: 2299).	While the River Ballivor is not designated, the River Stonyford (confluence 2km downstream of primary discharge) is part of a designated cSAC. While the River Stonyford is not designated as a nutrient sensitive river, the River Boyne is designated as a nutrient sensitive river starting from the WWTP at Blackcastle, Navan for 6.5km (above the confluence with the River Stonyford)
EPA monitoring stations ^{Note 5}	07S020100 Rathkenna Bridge 07S020300 Shanco Bridge 07S020400 Stonyford Bridge	Approximately 6.9km u/s of confluence of River Ballivor and River Stonyford Approximately 700m d/s of confluence of River Ballivor and River Stonyford Approximately 5.9km d/s of confluence of River Ballivor and River Stonyford
Biological quality rating (Q value)	0100 Q3-4 in 2009 0300 Q4 in 2003 0400 Q3-4 in 2009	Upstream Downstream Downstream
WFD status ^{Note 4}	River Ballivor: Moderate River Stonyford: Moderate	
WFD Risk Category	River Ballivor: 1 a (at risk of not achieving good status) in 2005 River Stonyford: 1 a (at risk of not achieving good status) in 2005	
WFD protected areas		

Note 1: Urban WW Treatment Regulations 2001, S.I. No. 254 of 2001, Urban Waste Water Treatment (Amendment) Regulations 2004, S.I. 440 of 2004 and Urban Waste Water Treatment (Amendment) Regulations 2010, S.I. No. 48 of 2010.

Note 2: European Communities (Quality of Surface Water Intended for the Abstraction of Drinking Water) 1989, S.I. No. 294 of 1989.

Note 3: European Communities Environmental Objectives (Surface Waters) Regulations 2009, S.I. No 272 of 2009

Note 4: Reported to Europe on 22/12/2008, see Water Framework Directive website, www.wfdireland.ie

Note 5: There is no monitoring point upstream of the primary discharge in the River Ballivor, so data for the River Stonyford (upstream and downstream of its confluence with the River Ballivor) is presented.

According to the Eastern River Basin Management Plan, 2009 - 2015, the River Boyne is designated as a *Protected Drinking Water Area*. The River Stonyford is not designated as a *Protected Drinking Water Area*. There are three water abstraction points (Trim, Kilcarn and Roughgrange) located *circa* 20.45km, 33.8km and 56.8km downstream of the primary

discharge point in the River Boyne. No risk analysis has been completed and at these distances it was not considered necessary.

Appropriate Assessment

The applicant conducted an 'appropriate assessment' of the impact of the discharge on key species and habitats in the River Boyne and River Blackwater cSAC, site code 2299.

The River Boyne and River Blackwater cSAC is designated for alkaline fen and alluvial woodlands, both habitats listed on Annex I of the E.U. Habitats Directive 92/43/EEC. It is also designated for Atlantic Salmon, Otter and River Lamprey listed on Annex II of the EU Habitats Directive. The assessment concluded that the discharge will not have an adverse impact on the integrity of this cSAC.

Assimilative Capacity

Table 2.0 summarises the assimilative capacity calculations which are based on the 2015 estimated loading of 1,986 p.e., 95%ile River Ballivor flow, the water quality standards in the European Communities Environmental Objectives (Surface Water) Regulations, 2009 (S.I. No. 272 of 2009) and the primary discharge emission limit values (ELVs) as specified in the RL. Assimilative capacity calculations use both actual background concentrations and the 'notionally clean river' approach (a hypothetically clean stretch of river) provided by the Office of Environmental Assessment.

The receiving water is of very limited scale as the primary discharge volume is 62% greater than the 95%ile flow of the River Ballivor. Therefore, there is inadequate assimilative capacity in the River Ballivor as presented below.

Table 2.0: Assimilative capacity calculations at estimated 2015 loading of 1,986 p.e. for actual background concentrations in the River Ballivor and for a notionally clean river.

Parameter		Background (mg/l)	Proposed ELVs for Primary Discharge (mg/l)	Contribution from primary discharge (mg/l)	Predicted downstream quality (mg/l)	EQOs (mg/l) ^{Note 1}
BOD	Actual Background	2.00 ^{Note 2}	5	3.0747	5.0747	≤2.6
	Notionally Clean	0.26			3.2747	
Orthophosphate	Actual Background	0.03 ^{Note 2}	0.5	0.3075	0.3375	≤0.075
	Notionally Clean	0.005			0.3125	
Ammonia	Actual Background	0.178 ^{Note 2}	1	0.6149	0.7929	≤0.14
	Notionally Clean	0.008			0.6229	

Note 1: European Communities Environmental Objectives (Surface Waters) Regulations 2009, S.I. No. 272 of 20 (95%ile standards presented).

Note 2: Background water quality data for 16/01/09

(i) Biochemical Oxygen Demand

Table 2.0 highlights that there is very little assimilative capacity in the receiving water for BOD based on the water quality standards specified in *S.I. No. 272 of 2009* and the upstream concentration (2.0 mg/l). An ELV of 5mg/l which is the WWTP design discharge limit would contribute 3.0747mg/l BOD (water quality standard is 2.6mg/l) as the background concentration is relatively high and there is no dilution available in the

River Ballivor. One out of twelve samples in 2007 and two out of twelve samples in 2008 did not meet the design discharge limit of 5mg/l indicating that improvements to WWTP operation may be required.

(ii) *Orthophosphate*

Table 2.0 shows that there is some assimilative capacity in the receiving water for orthophosphate based on the water quality standards specified in S.I. No. 272 of 2009 and the upstream concentration of orthophosphate (0.03 mg/l). An ELV of 0.5 mg/l orthophosphate would contribute 0.3075mg/l orthophosphate (water quality standard is 0.075mg/l) as the background concentration is elevated and there is no dilution available in the River Ballivor. The WWTP design discharge limit is 0.5mg/l total phosphorus. However, four out of eight samples in 2007 and eight out of twelve samples in 2008 did not meet the design discharge limit of 0.5mg/l total phosphorus indicating that operational improvements to the WWTP are required in order to meet with ELV.

(iii) *Ammonia*

There is no assimilative capacity in the receiving water for ammonia as the background concentration (0.178mg/l) is greater than the water quality standard specified in S.I. No. 272 of 2009. There is no WWTP design discharge limit for ammonia and the RL sets an ELV of 1mg/l ammonia which would contribute 0.6149mg/l ammonia (water quality standard is 0.14mg/l). The WWTP has an anoxic chamber and there was 3.6mg/l ammonia (one sample) in the primary discharge according to 2009 monitoring data submitted indicating that operational improvements to the WWTP are required in order to meet this ELV. The RL, through the first AER, also requires the licensee to review WWTP performance to reduce Total Ammonia to the maximum practicable extent.

The Eastern River Basin Management Plan (ERBMP), 2009 - 2015 recommends an exemption for the Boyne Lower Water Management Unit (which includes the River Ballivor) from the achievement of 'Good Status' until 2027 due to upstream diffuse agricultural, septic tank, landfill pollution and extrapolated sub-catchments. The ERBMP, in the programme of measures, states that key supporting actions include the upgrade of WWTPs serving less than 2,000p.e.

As the ERBMP does not require the restoration of good status within the lifetime of the proposed licence (licences have a maximum duration of six years), it is proposed that the RL (condition 4.16), through the second AER requires the licensee to submit a report which identifies measures to reduce the impact of the primary discharge on the River Ballivor, including an investigation of the relocation of the primary discharge point to the River Stonyford or other surface water, as appropriate. Bimonthly monitoring of the primary discharge is required in the RL, as drafted and samples may be collected on a 24-hour flow or time based composite sampling basis.

Additional measures are required to reduce high background concentrations of BOD, orthophosphate and ammonia in the receiving waters upstream of the WWTP. The Eastern River Basin Management Plan 2009 - 2015 provides details of recommendations and planned measures to reduce pollution in water courses.

It is considered that the above plans, if fully implemented, in addition to the optimisation of the WWTP, as necessary, should address the pollutant loads in the River Ballivor and assist in achieving compliance with the Water Framework Directive requirements, by the relevant date.

4. Ambient Monitoring

The water quality in the River Ballivor downstream of the WWTP discharge is poorer than that upstream indicating that the WWTP (in addition to other sources such as diffuse

agricultural and waste water point source pollution as outlined in the Eastern River Basin Management Plan 2009-2015) is currently adversely affecting water quality. The River Ballivor was monitored on only one date (16/01/09) but the data indicates the water quality downstream of the WWTP is in breach of the water quality standards for BOD and ammonia (for 'Good Status') stipulated in S.I. No. 272 of 2009.

The assimilative capacity calculations above identify that background concentrations of BOD, orthophosphate and ammonia are already elevated and that the WWTP discharge is not the only cause of a breach in water quality standards. The primary discharge was monitored for a range of dangerous substances. All dangerous substances were at concentrations below standard levels.

There is no dilution available in the River Ballivor at the primary discharge point (SW1). The primary discharge is 62% greater than the River Ballivor 95%ile flowrate at 2015 loading. There are 53 dilutions available at 2015 loading and 95-percentile flow of the River Stonyford and conditions 4.16 requires measures to be identified to reduce the impact of the primary discharge on the River Ballivor including an investigation of the relocation of the primary discharge to the River Stonyford or other surface water, as appropriate.

Meath County Council has carried out ambient monitoring of the River Ballivor for the purposes of this licence application (on 16/01/09) and routinely monitors the River Stonyford quarterly. Meath County Council proposed to replace the monitoring on the River Stonyford with monitoring locations on the River Ballivor. Schedule B.4 of the RL sets out the requirements for ambient monitoring on the River Ballivor, upstream and downstream of the primary discharge.

5. 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.

6. Programme of Improvements

Meath County Council has no planned improvement works to the WWTP and there is no specified improvement program in the RL. Monitoring data shows that the design discharge concentrations of 5mg/l BOD and 0.5mg/l Orthophosphate are not being achieved indicating that operational improvements to the WWTP are required. The design capacity of the WWTP is 2,000 p.e. and the current load to the plant is estimated to be 1,792 p.e. indicating that these design limits (which are ELVs in the RL) should be achievable.

Condition 5 of the RL requires the licensee to prepare and submit to the Agency a programme of infrastructural improvements to maximise the effectiveness and efficiency of the waste water works.

7. Compliance with EU Directives

In considering the application, regard was had 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 are no drinking water abstraction points on the River Ballivor or River Stonyford downstream of the primary discharge. There are, however, three abstraction points on the River Boyne (Trim, Kilcarn and Roughgrange) located *circa* 20.45km, 33.8km and 56.8km downstream of the primary discharge point. No risk analysis has been completed and at these distances it was not considered necessary. However, condition 6.3 of the RL requires the licensee to immediately notify the Water Service Authority and/or other groups responsible for downstream abstraction points of any exceedance of ELV's or storm water overflows.

Sensitive Waters

The primary discharge is to the River Ballivor, a tributary of the River Stonyford, where the confluence of the River Ballivor and the River Stonyford is 2km downstream of this discharge. Neither the River Stonyford nor the River Ballivor are designated as nutrient sensitive. The River Stonyford joins the River Boyne a further 3.8 km downstream. The River Boyne is designated as a sensitive river starting from the WWTP at Blackcastle, Navan for 6.5km. The designation is for a stretch of the River Boyne above the confluence of the River Stonyford and is therefore not influenced by the River Stonyford or River Ballivor. The RL addresses emissions of nutrients under Schedule A: *Discharges*, by setting emission limit values for BOD, COD, suspended solids, ammonia and orthophosphate.

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 discharges to waters while *Schedule A: Discharges* specifies emission limit values for those substances contained within the waste water discharge. Those limits specified in the RL are determined with the aim of contributing towards achieving good water quality status by the end of 2015 in the River Ballivor.

European Communities Environmental Objectives (Surface Water) Regulations 2009, S.I. No. 272 of 2009

The water quality in the River Ballivor downstream of the WWTP is in breach of the water quality standards for BOD and ammonia (for 'Good Status') stipulated in S.I. No. 272 of 2009. The WWTP is adversely affecting water quality (in addition to other sources such as diffuse agricultural and waste water point source pollution as outlined in the Eastern River Basin Management Plan 2009-2015).

The RL, through the first AER, also requires the licensee to review WWTP performance in the light of water quality in the River Ballivor and the river's environmental objectives, and to submit a program of improvements to ensure compliance with these Regulations, as necessary. The RL (condition 4.16), through the second AER requires the licensee to submit a report which identifies measures to reduce the impact of the primary discharge on the River Ballivor, including an investigation of the relocation of the primary discharge point to the River Stonyford or other surface water, as appropriate. The RL, as drafted, has regard to the requirements of S.I. No. 272 of 2009.

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

There is no requirement for compliance with the absolute limits in the Directive for plants serving less than 2,000 p.e. but using the limits as a guide, the agglomeration was not compliant with the Urban Waste Water Treatment Regulations, 2001 (S.I. No. 254 of 2001 and amendments) in 2006, in terms of effluent quality but was compliant in 2007 and 2008.

There is a requirement in the Directive for the provision of appropriate treatment in order to satisfy the quality standards for the receiving water. Ballivor WWTP provides secondary

treatment with nutrient reduction which is considered to be 'appropriate treatment'. The RL, as drafted, has regard to the requirements of the Urban Waste Water Treatment Directive.

EC Freshwater Fish Directive [2006/44/EC]

The River Ballivor and River Stonyford are not designated as salmonid waters. However, the River Stonyford is a tributary of the river Boyne which is designated as a salmonid water, under European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 293 of 1988) and has been considered in the setting of emission limit values.

Dangerous Substances Directive [2006/11/EC]

The applicant has provided sampling results for 19 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 specific pollutant, priority substance and priority hazardous substance limits in the *European Communities Environmental Objectives (Surface Waters) Regulations, S.I. No. 272 of 2009*. There are no IPPC licensed discharges in the agglomeration. The RL specifies monitoring of metals and organic compounds in the primary discharge and receiving waters as required by the Agency.

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

While the River Ballivor is not designated, the River Stonyford (confluence 2km downstream of primary discharge) is part of a designated cSAC. The applicant conducted an 'appropriate assessment' of the impact of the discharge on key species and habitats in the River Boyne and River Blackwater cSAC, site code 2299. The River Boyne and River Blackwater cSAC is designated for alkaline fen and alluvial woodlands, both habitats listed on Annex I of the E.U. Habitats Directive 92/43/EEC. It is also designated for Atlantic Salmon, Otter and River Lamprey listed on Annex II of the EU Habitats Directive. The assessment concluded that the discharge will not have an adverse impact on the integrity of this cSAC.

It is considered that the RL as drafted will provide a high level of protection to the River Stonyford as it will ensure that all discharges from the agglomeration will be provided with an appropriate level of treatment, as per Condition 3: *Discharges*. By ensuring that all waste water is treated to a high standard the RL will act to ensure no deterioration of the receiving water quality, as a result of the discharge from the agglomeration, and contribute to the Water Framework Directive's objective of safeguarding Protected Areas.

Environmental Liabilities Directive (2004/35/EC)

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

Cross Office Liaison

The Agency's Office of Environmental Assessment, Hydrometric section (Brendan Magenis) was consulted in relation to the flow of the River Ballivor.

Advice and guidance issued by the Technical Working Group (TWG) was followed in my assessment of this application. Advice and guidance issued by the TWG is prepared through a detailed cross-office co-operative process, with the concerns of all sides taken into account. The Board of the Agency has endorsed the advice and guidance issued by the TWG for use by licensing Inspectors in the assessment of wastewater discharge licence applications.

Submissions

No submissions have been received in relation to this application.

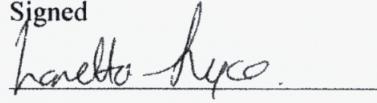
Charges

The RL sets an annual charge for the agglomeration at €2,316 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

A handwritten signature in black ink, appearing to read 'Loretta Joyce', is written over a horizontal line.

Loretta Joyce

Office of Climate, Licensing and Resource Use

1. The first part of the paper is devoted to a review of the literature on the effects of the 1997 Asian financial crisis on the real economy of the Asian countries.

2. The second part of the paper is devoted to a review of the literature on the effects of the 1997 Asian financial crisis on the financial markets of the Asian countries.

3. The third part of the paper is devoted to a review of the literature on the effects of the 1997 Asian financial crisis on the financial markets of the Asian countries.

4. The fourth part of the paper is devoted to a review of the literature on the effects of the 1997 Asian financial crisis on the financial markets of the Asian countries.

5. The fifth part of the paper is devoted to a review of the literature on the effects of the 1997 Asian financial crisis on the financial markets of the Asian countries.

6. The sixth part of the paper is devoted to a review of the literature on the effects of the 1997 Asian financial crisis on the financial markets of the Asian countries.

7. The seventh part of the paper is devoted to a review of the literature on the effects of the 1997 Asian financial crisis on the financial markets of the Asian countries.

8. The eighth part of the paper is devoted to a review of the literature on the effects of the 1997 Asian financial crisis on the financial markets of the Asian countries.

9. The ninth part of the paper is devoted to a review of the literature on the effects of the 1997 Asian financial crisis on the financial markets of the Asian countries.

10. The tenth part of the paper is devoted to a review of the literature on the effects of the 1997 Asian financial crisis on the financial markets of the Asian countries.

11. The eleventh part of the paper is devoted to a review of the literature on the effects of the 1997 Asian financial crisis on the financial markets of the Asian countries.

12. The twelfth part of the paper is devoted to a review of the literature on the effects of the 1997 Asian financial crisis on the financial markets of the Asian countries.

13. The thirteenth part of the paper is devoted to a review of the literature on the effects of the 1997 Asian financial crisis on the financial markets of the Asian countries.

14. The fourteenth part of the paper is devoted to a review of the literature on the effects of the 1997 Asian financial crisis on the financial markets of the Asian countries.

15. The fifteenth part of the paper is devoted to a review of the literature on the effects of the 1997 Asian financial crisis on the financial markets of the Asian countries.

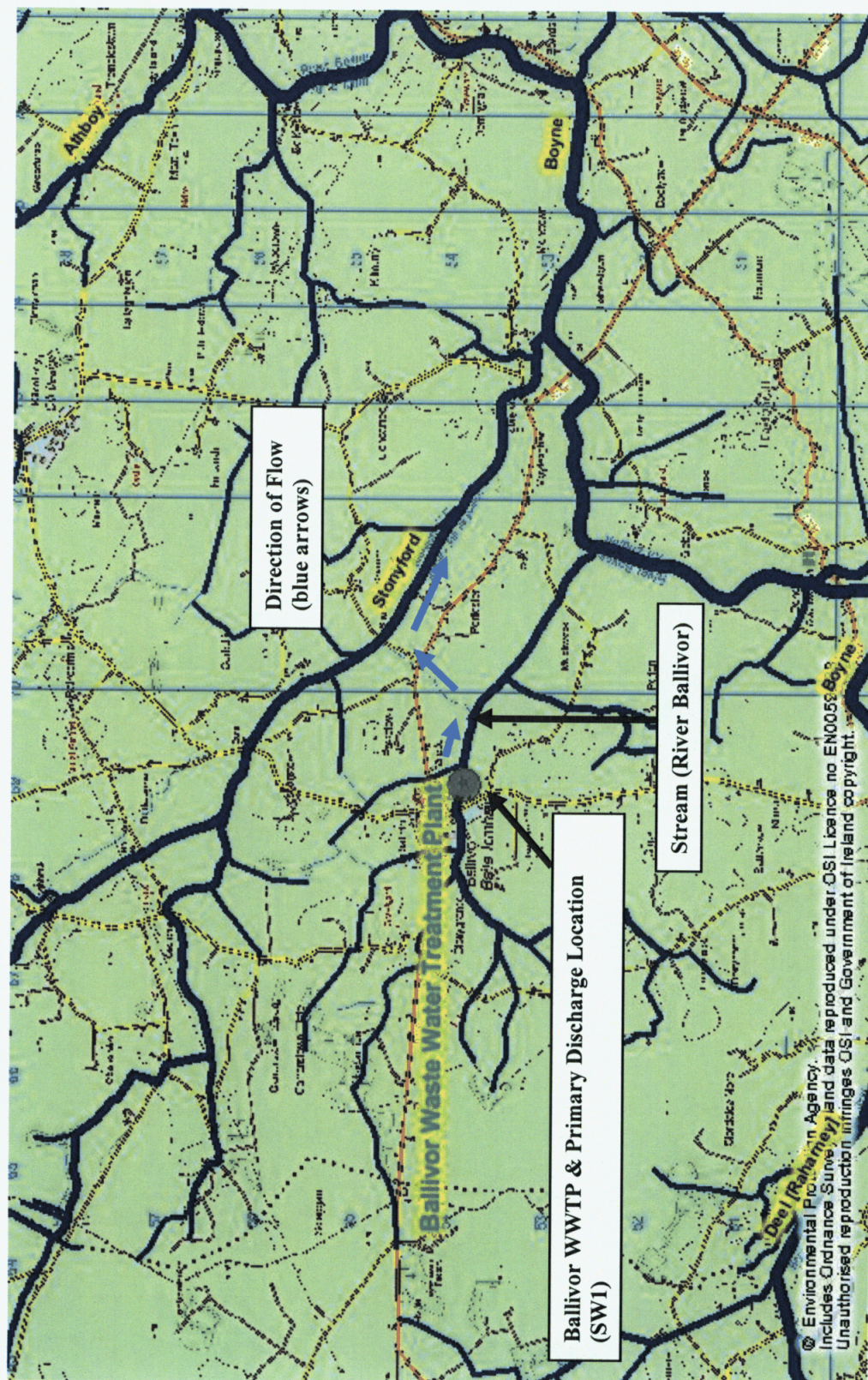


Figure 1.0 Ballivor, Reg. No. D0254-01

