

Sub No. 13

**Sonja Smith**

**From:** David Hugh-Jones [david@oysters.co.uk]  
**Sent:** 28 October 2009 21:52  
**To:** Sonja Smith  
**Cc:** Ann Marie Donlon  
**Subject:** FW: Env. Licensing programme Midleton WWTP D0056-01 (1)  
**Attachments:** 091026 EPA WWDL.doc; Image0001.JPG; Image0002.JPG

Dear Sonja,

Thank you very much for getting what I sent you up on to the web so fast. Actually faster than I thought, because I was told my first e-mail didn't go as I had too many attachments with it... and so I took the opportunity to add another table and a few more bits. What I sent you the next morning was as above, which you naturally thought was the same letter. However, I added an interesting table to the updated letter which shows that the hydraulic load is about 3.5 times too large for the plant, which is similar to the 3.6-4.4 times too large for the BOD load.

I would be very grateful if you could replace the first letter with the updated letter above – and I am really sorry for the trouble

Best wishes.

David Hugh-Jones

**From:** David Hugh-Jones [mailto:david@oysters.co.uk]  
**Sent:** 27 October 2009 10:00  
**To:** Sonja Smith; Ann Marie Donlon (a.donlon@epa.ie)  
**Cc:** 'tristan@oysters.co.uk'  
**Subject:** Env. Licensing programme Midleton WWTP D0056-01 (1)

Dear Sonja,

I am hoping that you are still dealing with submissions re WWD Licensing. I would like to comment on the last two letters posted by you on the Midleton WWTP site and attach a letter and the start of copies of references, which I will send on further e-mails as they are 2MB each. I do hope that actually this will save you some scanning, but I apologise for the hassle, but we have the threat of a postal strike in the UK.

I am copying this to Ann Marie Donlon also.

With many thanks.

David Hugh-Jones

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29/10/2009



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Johnstown Castle Estate,  
Co. Wexford,  
Ireland.

26<sup>th</sup> October 2009

Dear Sirs,

## Application by Cork County Council for a Waste Water Discharge Licence for Midleton WWTP, Co. Cork : D0056-01.

I was very grateful to see your two further requests to Cork County Council for more information in regard to their application for a Waste Water Discharge Licence for Midleton WWTP, but was deeply disappointed in the substance of the replies you were given in their two letters of 15<sup>th</sup> (with enclosure of the 4<sup>th</sup>) and 29<sup>th</sup> September. I hope that you will agree with my overview, below, of the County Council's replies to your questions, which I have expanded upon in an Appendix to this letter.

Taking the questions and answers to their Bullet Points (B.Pt.) :

- B.Pt. 3(2) "*% PE to be contributed by non-domestic activities?*" You are advised that these are "negligible" - with no discussion of the loading contribution from commercial, industrial, institutional or tourism sources. **This statement cannot be correct.**
- B.Pt. 5. "*Mass load or PE of waste water lost in storm overflows?*" **This question was not answered - you were just given the hydraulic volumes.**
- B.Pt. 7(1) "*Breakdown by source of flow of primary discharge?*" Two sources only were mentioned. No detail was provided and the large, daily, unknown flow of 3,500m<sup>3</sup>, which I have been drawing to your attention, was **still unaccounted for.**
- 7(2) "*DWF of primary discharge?*" Their answer was. "**No DWF for the primary discharge can be provided**" (!)
- 7(3) "*Mass load calculation of primary discharge?*" **No attempt at any calculation was made** - just theoretical loads based on (wrong) consent standards were given.

B.Pt. 9. "...and advise whether there is gravity flow from storm tanks?" **I do not believe that the County Council are telling the truth** when they say, "there is no gravity flow from the tanks to the river." I offer eight pieces of evidence, including that of my own eyes.

B.Pt. 10(1) "*Whether storm overflows from Bailick No. 2 and Ballinacurra No. 2 pumping stations are pumped (I would add gravitated) to Ballinacurra No.1 and forwarded to the tidal tank at Rathcoursey?*" The discussion about the overflow system at the Rathcoursey Tank has nothing to do with the question and this spurious answer must surely be taken to be **evasion of the question**.

10(2) "*confirmation that the primary discharge point is also a storm overflow?*" **This was also just not answered.**

I am quite certain that you will not be satisfied with anything that might be taken to be evasion, or deliberate mis-answering of the questions you have posed, but, because we are dealing with information that has a direct impact on human health via the contamination of these oyster beds, I hope you will now insist on a level of clarity and truthfulness that Local Authorities may not have been accustomed to providing in the past. Irish shellfish farmers also need to know that you are prepared to champion the cause of water quality in designated shellfish areas, where the standards that you set for WWTP performance have to be nothing short of, "*entirely effective at all times.*"

I don't know how much guidance you may have received from the FSAI in relation to the microbiological standards required for shellfish waters. The quote I have taken in the paragraph above, comes from the Food Standards Agency, Scotland in relation to the Loch Ryan Oyster Fishery in Scotland, which we manage, and I enclose a copy (1). It was made about a proposal to discharge the treated effluent of Stanraer (pop. 12,000) into the middle of the loch. SEPA took the stand that such a discharge could never be made in such a way that, "*any managed risk level must be determined to be entirely effective at all times*" and Scottish Water, with the full support of the Scottish Government, will now pipe the treated effluent 8 miles overland to the open sea.

As you know, norovirus, which is responsible for the food poisoning caused by shellfish, cannot be easily deputed in our UV systems and can remain viable in shellfish tissue for many weeks. The EU requires 2 months relaying in clean water to make contaminated shellfish saleable, but the latest FAO/WHO Codex Committee on Food Hygiene (July 2009) advises that viruses "*have been observed to persist in contaminated bivalve molluscs for at least 8-10 weeks.*" Thus a just a single polluting incident every 6-10 weeks such as, very commonly, a storm or emergency overflow, or sludge carry-over event, will mean that consumption of shellfish from the receiving water will be permanently hazardous to public health. "*Entirely effective treatment at all times*" thus equates, unfortunately, to a standard of zero-tolerance to WWTP failure.

It would appear that Cork County Council are not prepared to accept that their plant has to meet such a high standard, or that this obligation carries over into the standard of clarity and truthfulness required in all things to do with waste water discharges to shellfish waters, including the keeping of accurate records on all aspects of the collection system and treatment plant.

By their refusal to answer your questions above, which I elaborate on later, I believe the County Council are guilty of deliberately attempting to conceal that further large volumes of untreated sewage are being discharged to the estuary. In the case of their denial of deliberately shedding load via unrecorded, gravity overflows from the storm tanks, I believe that they are being untruthful.

I believe that the County Council have contravened Section 35 of the Waste Water Discharge (Authorisation) Regulations, 2007, (S.I. No. 684 of 2007), which states:

35.(1) *A person shall not furnish information or documentation in support of an application or in response to any notice issued by the Agency for the purposes of these Regulations which he or she knows to be false or misleading in a material respect and any person who does so commits an offence.*

(2) *A person who fails to comply with a notice issued by the Agency or to provide information that the Agency requires under these Regulations commits an offence.*

Furthermore, knowing all that the Agency has been advised of in our many letters and submissions, about this grossly over-loaded plant, I believe that the Agency should **not** now grant any authorisation for the Midleton WWTP discharges. I am relying on Section 6 (3) *“The Agency shall not grant an authorisation for a waste water discharge which, in the opinion of the Agency, will-*

- (a) *cause a deterioration in the chemical or ecological status (or ecological potential as the case may be) in the receiving water.* The Owenacurra and North Channel estuaries (“Marloag Point upstream to Dungourney River confluence” (i.e. Bailick 1)) have been downgraded from intermediate to eutrophic status (S.I. No. 440/2004).
- (c) *exclude or compromise the achievement of ..... environmental quality standards established under national Regulations in relation to designated.... shellfish waters.....* The North Channel Oyster Fishery, above the primary discharge, and parts of the Lower Harbour Oyster Fishery, below the primary discharge, were designated as shellfish waters under the European Communities (Quality of Shellfish Waters) (Amendment) Regulations, 2009, (S.I. No. 55 of 2009) on 10<sup>th</sup> February 2009. The poor virological quality of these waters caused by the poor treatment and numerous untreated sewage discharges to these two oyster fisheries, gave rise to 152 reports of illness between the opening of the plant on 1<sup>st</sup> July 2000 and the closure of the fisheries on 15<sup>th</sup> October 2002.

I trust that you will now be asking Cork County Council to furnish replies to the questions you have posed and I hope this letter and its appendix have been useful.

I would be grateful if I may reserve the right to present further evidence, should this be necessary, when I have seen the replies that you elicit from the County Council.

I am copying this letter to all those bodies, listed after your meeting in early September with the Irish Shellfish Association, as being responsible for discharges to designated shellfish waters and to the Legal Unit in the Commission.

With many thanks for your help.

Yours sincerely,

D.L.L.Hugh-Jones

## APPENDIX

Dealing with the County Council's replies to your letters of 18<sup>th</sup> August 2008 and 28<sup>th</sup> August in their letters of 15<sup>th</sup> and 29<sup>th</sup> September, mainly contained in their document of 4<sup>th</sup> September:

**Bullet point 3(1).** I note that your enquiries have now elicited rises for the PE of Midleton from 10,000 in the first application of 14<sup>th</sup> December 2007 (because this is what the WWTP was designed for), to a domestic PE of 15,000 in the second application of 26<sup>th</sup> May 2008 (because this is what is planned for the upgraded plant), and, now, 3 months later, to 16,642 based on planning permissions, as you requested.

I would, however, be grateful if you can tell me why it is that the PE of the plant cannot be calculated from more direct measurement as instructed in the UWWT Directive (Article 4.4) and in the Regulations (S.I. No. 254/2001), and as called for by you in your own letter re the Ringsend WWTP dated 27<sup>th</sup> November 2008, from which I quote:

*"Article 16 Compliance Requirements.*

*2. Provide details of the population equivalent (p.e) load in accordance with the definition (provided below) of population equivalent as specified in the Waste Water Discharge (Authorisations) Regulations 2007 and identify trends (historical) in the figures and also identify the predicted future p.e. :-*

*"population equivalent" is a measure of organic biodegradable load and a population of 1 (1 p.e.) means the organic biodegradable load having a five-day biochemical oxygen demand (BOD5) of 60g of oxygen per day: the load being calculated on the basis of the maximum average weekly load entering the waste water works during the year, excluding unusual situations such as those due to heavy rain."*

This seems to be an instruction that is quite clear and, if this is the way you require the PE to be calculated for Ringsend, I do not see why Midleton should be based on planning permissions, which the County Council are still only able to say "could" be correct?

I have collated the maximum weekly loads recorded as being received by Midleton WWTP, using the on-site laboratory (Confidence Grade 1) COD determinations (converting COD to BOD in the ratio 2:1), and external laboratory BOD determinations, in the table below. I have included the maximum daily rainfall in the period, the number of samples and the volume of storm overflows, which would have proportionately reduced the loads recorded as entering the plant. I imagine this method of calculating the maximum BOD load, which could need treating, is not a particularly exact science because of freak loads, so I have included more weeks in a year if they are of the same order as the maximum, to give a feel for their frequency.

**Maximum average weekly load taken from the Plant Operator's Monthly Reports and expressed as average PE/day.**

Date	No. of samples	Max. daily rainfall in this period	Max. weekly load (av. PE/day)	Volume of storm overflows in this period (m3)
2-8 Oct. 2000	6	9.9 mm	105,502	Not available
1-5 Oct. 2001	5	20.9 mm	21,668	Not available
11-17 Dec. 2001	5	0.1 mm	<b>34,004</b>	<b>0</b>
7-11 Jan. 2002	4	2.7 mm	<b>23,340</b>	<b>0</b>
25-30 Mar. 2002	3	3.7 mm	<b>39,244</b>	<b>32</b>
13-17 Jan. 2003	5	9.7 mm	22,334	3,941
17-21 Feb. 2003	5	2.8 mm	<b>27,951</b>	<b>0</b>
23-27 Jun. 2003	5	4.0 mm	<b>21,650</b>	<b>40</b>
16-20 Feb. 2004	5	0.0 mm	<b>20,240</b>	<b>0</b>
8-12 Mar. 2004	5	23.7 mm	22,899	8,006
5-9 Apr. 2004	5	2.2 mm	<b>22,122</b>	<b>0</b>
21-25 May 2007	4	0.0 mm	21,657	814
28 May-1 Jun07	5	16.8 mm	24,945	1,221
4-8 Jun. 2007	4	0.0 mm	<b>26,754</b>	<b>0</b>
16-20 Jul. 2007	5	4.6 mm	21,044	1,367
30 Jun- 4 Jul 08	5	23.4mm	34,245	3,125
24-28 Nov.2008	5	1.5mm	<b>26,402</b>	<b>43</b>

Taking those weeks where there are no storm overflows to speak of (<50m3 in total) and less than 5mm of rain, which I have marked in bold above, we are left with a conservative average for the **maximum weekly load of 26,856 PE/day**. This is 61% higher than the latest determination of 16,642 as the domestic PE; 169% greater than the PE on which this plant was designed and **3.6 times greater than the load, which my consulting engineer advises can be treated in this plant (about 450kg BOD/day or 7,500 PE)**.

The County Council have often claimed that only the accredited external laboratory analysis of BOD5 figures should be taken, despite the fact that the NUWW Study of 2006 gave the on-site laboratory "Confidence Grade 1". Only a maximum of 2 samples are taken each week on Thursdays and Fridays, but weeks when only one sample was taken have been included. Presumably there will be many plants around the country with only one sample taken per week, which is assessed for load on the basis of the DOEHLG/EU Regulations. On this basis, the average of those weeks in bold when there were not excessive rainfall or storm overflows, and leaving out the very high figure in October 2000, as shown below, was **33,350 PE**. This is nearly double the latest determination of 16.642 as the domestic PE; 233% greater than the PE for which this plant was designed and **4.4 times greater than the load I am advised can be treated in this plant**.

Figures taken from the external laboratory BOD records.

Date	No. of samples	Max. daily rainfall in this period	Max. weekly load (av. PE/day)	Volume of storm overflows in this period (m3)
4-5 Oct. 2000	2	5.5mm	115,933	0
11-12 Oct. 2000	2	12.2mm	47,745	2.3hrs
9-10 May 2001	2	1.6mm	17,385	0
25-Jun-01	1	9.8mm	34,467	1hr
4-5 Oct. 2001	2	0.0mm	26,411	0
28 Mar. 2002	1	0.0mm	69,190	0
24-25 Apr. 2002	2	3.4mm	23,636	0
20-21 Feb. 2003	2	2.6mm	27,724	5,835
27-28 Mar. 2003	2	0.0mm	28,862	0
11-12 Mar. 2004	2	23.7mm	24,949	8,006
2005	Very few loads were sent to the plant above 10,000 PE this year			
16-Mar-06	1	11.7mm	25,235	0
24-25 May 2007	2	6.6mm	25,536	0
8 Jun. 2007	1	0.0mm	24,782	0
22 Aug. 2007	1	0.0mm	22,412	3,164
21 Nov. 2008	1	0.2mm	29,707	0
19 Dec. 2008	1	1.3mm	35,248	14

For clarity, these are the domestic loads that were measured arriving at the WWTP itself and do not include the 2,100 PE from Irish Distillers, that is allowed down the industrial sewer, to join the treated effluent discharge at Rathcoursey point.

**Bullet point 3(2).** The County Council tell us that the total PE of the agglomeration based on planning permissions is 16,642 + 2,100 from Irish Distillers = 18,742PE. They tell us that this 2,100 from IDL is 11% of the total and that there is no further contribution of non-domestic waste. In fact, they make this statement clear by continuing, "*Examination of the planning applications and knowledge of the local area show that the non-domestic element entering the WWTP is negligible.*" This is unbelievable nonsense. Midleton is a thriving market town, indeed, one of the fastest growing of Cork's satellite towns, with a Main Street of half a kilometre, lined with shops, banks and professional offices on both sides. It requires 4 new super-markets (Tesco, Super-Valu, Lidl and Aldi) and has a large new Omniplex cinema.

The NUWW Study of October 2005 records there are 3 primary and 4 secondary schools in Midleton with an estimated 1,210 students – also a hospital with 30 beds. The Barry Report of June 2006 adds 599 PE for them.

The Non-Technical Summary on p. 7/14 tells us that, "*The sewage from other industries (i.e. excluding IDL and Dawn Meats) is collected via public sewer and treated in conjunction with domestic waste at the waste water treatment plant.*" The J.B. Barry Report of June 2006 says that the Industrial PE of Midleton in 2026 will be 9,286; in 2016 is 5,284; but rather conveniently, in 2006 is zero – is this believable?

You, yourselves, published your Manual on Treatment Systems for Small Business Communities, Business, Leisure Centres and Hotels in 1999 and Table 3 gave typical flow and BOD allowances. This was updated in February 2004, when the DOEHLG published the National Urban Wastewater Study, Volume 2, Part A, entitled Methodology, No. 4 Flow and Load Assessment, Section 5 states, "Existing and future commercial sector wastewater flow and load was generally estimated using the relationship **Commercial loading = 16% of all domestic/residential loading**. This relationship has been used extensively in the estimation of flow and load for design purposes and is widely accepted at a local and national level."

As you know, the consulting engineer's omission of any sort of allowance for commercial loading, was one of the key findings in the Fehilly Report for the reasons for the under-design of Ringsend WWTP, so much so that the design load for 2020 was actually exceeded in 1997. I note, incidentally, that M.C. O'Sullivan's were involved in Midleton and Ringsend at exactly the same time for both the Preliminary Reports (1993) and EIS's (1997).

By the time all these components are added up, together with a little tourism for the Jameson Centre, a current PE requirement of 27,000 – 33,000, as calculated from the tables of maximum PE's above, according to DOEHLG guidelines, is getting closer to the mark. Because the original design does not include the oxygen requirement for oxidation of the nitrogen component of the sewage, as my consulting engineer has argued on your website, the plant's maximum capacity is currently 450kg BOD/day (7,500 PE). This figure is agreed by the Mr. Ruddy, Technical Director of EPS, the Plant Operator. Thus it would appear that the treatment capacity of Midleton WWTP is, at present, something like 3.6 – 4.4 times too small.

**Bullet point 3(3).** The County Council say that the plant is "currently treating waste effectively for a population of on average 12,000 per month", but how much organic load is being shed in the 800-1,000m<sup>3</sup> average daily storm overflows and where are some of the large loads going, which are recorded as entering the WWTP, but which then do not appear in the MLSS, as I queried in my letter of 4<sup>th</sup> September?

If the DOE guidelines for the load capacity of the WWTP are to be followed, as detailed above, then increasing the plant's capacity to 15,000 PE will still leave a shortfall of 12,000 – 18,000 PE per day. This must be unacceptable when the receiving waters are designated shellfish waters and any untreated effluent can pose a well-understood threat to human health.

**Bullet point 4.** I am glad that you now have a copy of the Addendum to the EIS, which was prepared for the application for the required foreshore licence, and you can read on pages 10, 11 and Appendix 1, how we were assured that storm overflows would not amount to more than 2.973m<sup>3</sup> p.a., occurring on not more than 5-6 occasions. When CSO's are such a well-known source of contamination of shellfish waters and this plant was specifically built under High Court Order to protect the receiving water so that shellfish could be grown in it safely, to get the calculations wrong, so that the volume overflowing is a hundred times greater and the number of overflows p.a. sixty times greater than was predicted, must surely mean that that this plant cannot be licensed.



**Bullet point 5.** You ask for “*the current estimate of untreated waste water lost from the agglomeration via storm water overflows in terms of mass load or PE.*”

This is an important question and the County Council have refused to answer it. I trust that you will continue to ask them to estimate the size of the mass load or PE that they believe is lost via the storm water overflows.

Instead, they give you the storm overflow volumes - and then invite you to see how well the “*repair of substantial leaks within the catchment draining to Bailick 1 PS*” has gone. They must honestly think you very simple, as they ask you to compare the effect of similar rainfall amounts on the infiltration into the sewers in mid-winter, with a high water-table, with mid-summer conditions after 2 dry months in May (54mm) and June (85mm) and a low water-table. They advise that a comparison of the overflow figures for these two months show that, following the repairs, the “*amounts overflowing are reduced substantially.*” The other problem with this is that the repairs to the sewers were not made between January and July 2009, but were mainly completed by the end of 2007. Various passages in the Revision state that Dwyer’s Road pumping station was not completed until mid-2008, but the Plant Diary record is that it began pumping to the WWTP at 5.30 p.m. on 12<sup>th</sup> September 2007.

To compare like with like, I will give you the overflows for all the months of January and July since the storm pumps came on stream in October 2001. At the least, you will see that you cannot compare January overflows with July overflows.

#### **Comparison of overflow volumes in January and July for the years 2002-2009.**

January	Rainfall	Overflows total m3	July	Rainfall	Overflows total m3
2002	187.5	34,684	2002	34.8	0
2003	57.1	57,359	2003	103.1	3,965
2004	94.4	21,723	2004	58.4	172
2005	94.1	44,230	2005	82.6	10,368
2006	50.2	19,065	2006	36.9	3,045
2007	70.0	52,888	2007	106.8	13,871
2008	155.4	76,128	2008	124.6	17,608
2009	179.6	63,577	2009	223.8	13,338

Whether there has, in fact, been an improvement due to the infiltration remediation works may depend on how much use was being made of unrecorded, gravity overflows out of both Bailick 1 & 2 storm tanks. This is discussed below.

#### **Bullet point 7.**

**With reference to D.1(i)(a)**, tables were given in the County Council’s letter of 29<sup>th</sup> September. You ask for “*a breakdown by source of the flow and give the dry weather flow of the primary discharge.*” You are not given a calculation for the dry weather flow. The County Council originally asked for more time to answer this and then, in their letter of 29<sup>th</sup> September say in the last paragraph on p. 2 that, “*no overall DWF for the primary discharge can be given.*” If the County Council really does not know what the hydraulic load is to be catered for, it is hardly

surprising that this WWTP is in such a mess. As you will be aware from the IPPC Returns that are made to you, Irish Distillers have been recording their total discharge to the industrial sewer (their own treated effluent, together with process effluent) since 3<sup>rd</sup> March 2008, which is 18 months of daily records. Nor do the County Council give you the breakdown by source of the flow, that you asked for. You are advised that the flow contains effluent from two sources, but, as I have told you in numerous submissions, the two sources to which the County Council alludes i.e. the treated flow from the WWTP and the industrial flow, do NOT add up to the final effluent flow discharged to the sea between our oyster fisheries. They are joined by an unknown flow of about 3,500m<sup>3</sup>/day, which has NOT passed through the treatment plant. This is far too large a flow to be ignored. It is 50% of the current flow to the plant and adds up to over 1 million cubic metres, or 1 million tons, of untreated effluent p.a.

Nor is the maximum flow figure that is given by them of much relevance, if the storm overflows are not taken into account. For instance, the maximum flow per day from the primary discharge at Rathcoursey Point was on 3<sup>rd</sup> December 2006 when 19,032m<sup>3</sup> was recorded. On that day the storm pumps at Bailick 1 & 2 recorded a further 16,769m<sup>3</sup> pumped to the estuary. The total flow from the sewerage system discharged to the estuary was therefore 35,801m<sup>3</sup> and, as about 5,709m<sup>3</sup> was industrial, the remaining **30,092m<sup>3</sup> was domestic sewage**. Of this, only 7,693m<sup>3</sup> went through the WWTP, but, as you know, the Plant Operator would not stand over the treatment process of even that small fraction of the load that day, with such a gross hydraulic over-loading of the plant – i.e. already c. 3.3 DWF continuously throughout the day. You will remember that he cannot be held responsible for treatment performance, if he is forced to accept flows greater than 3,248m<sup>3</sup>/day, nor flows of greater than 3DWF if they have to be accepted for more than 30 minutes every 3 hours.

I have referred to the largest flow recorded from the system, but the daily flow of domestic sewage can be calculated by taking off the industrial component of the final flow through Ballinacurra No.1 pumphouse and adding the storm overflows. The average daily flow of domestic sewage in the Midleton catchment each year can then be shown from 1989 when records for the 1988 sewage scheme started.

### Annual analysis of flows throughout the sewerage system - expressed as average daily flows (m<sup>3</sup>)

Year	Industrial	B1	B2	B 1+2	Flow to sea via Bal.1	Storm overflows	Total flow to sea Bal1 + st.	Domestic flow (Bal.1 + st. less Industrial.)
1989	3610	3027	not built		6217		6217	2607
1990	2828	3186	not built		6086	There were no storm overflows in this period as all flows of domestic and industrial waste were pumped directly to Rathcoursey Pt.	6086	3258
1991	2413	3157	not built		5800		5800	3387
1992	2836	2862	not built		5996		5996	3160
1993	2929	4033	not built		7191		7191	4262
1994	3659	5014	not built		9148		9148	5489
1995	3685	4348	not built		8530		8530	4845
1996	3896	5747	not built		10095		10095	6199
1997	3182	4914	not built		8475		8475	5293
1998	3099	5265	not built		10213		10213	7114
1999	2830	5545	not built		10097		10097	7267
2000	2539	5260	not built		9413	9413	6874	

Year	Industrial	B1	B2	B 1+2	Flow t sea via Bal.1	St. overflow	Total flow to sea Ball+ st.	Domestic flow (Bal.1 + st. less Industrial.)
The WWTP came into operation on 1st July 2000								
2000	2427	*3468	no data	data n/a	8286	record in hrs	8286	5859
2001	2465	4811	132?	data n/a	10511	record in hrs	10511	8046
2002	2316	5818	872	**6687	12273	913	13186	10870
2003	1607	5592	780	**6371	11047	323	11370	9763
2004	1548	5357	784	**6137	10599	510	11109	9561
2005	1632	5261	720	**5976	10903	861	11764	10132
2006	1989	5464	721	**6177	11738	1082	12820	10831
2007	2044	5363	647	**5999	11605	759	12364	10320
2008	1559	5755	1079	6834	11851	885	12736	11177

\* very small flows for first 6 months at start

\*\*note drop in av. flow through WWTP despite the growth of the town at such a huge rate.

Unrecorded gravity flows will have been adding to the average daily flows of domestic sewage, shown in the right-hand column for some years, but even with the recorded figures above, you can see that the domestic sewerage flow has increased by 4.3 times since 1989. The average flow through the domestic sewer in 1989 was close to the DWF taken for the plant design in 1993 of 2.560m<sup>3</sup>/day (given to us by M.C. O'Sullivan's, who designed the plant) and thus the current average daily flow is also about 4.3 times the DWF on which this plant was designed, or, if a safe working level of 1.25DWF/day is accepted, then **the domestic sewerage flow is currently about 3.5 times what this plant was designed to receive.**

**With reference to D.1(i)(b)**, you ask quite clearly for details of the mass load calculations. No calculations are given. The figures given are purely theoretical – based on a consent standard that is actually wrong. The consent for Middleton is 30:20 not 35:25.

**Bullet point 8.** Clearly the microbiological standards set in the foreshore licence should have been applied to the point of discharge to the sea, as it is this discharge that affects the environment. We would, however, suggest that it is quite easy to take samples from the Rathcoursey tank on both spring and neap tides by simply using tide tables and sampling in morning or afternoon accordingly. The Department of Communications, Marine and Natural Resources asked for the sampling programme to include Rathcoursey, at a meeting in the Area Office, Middleton in 2001.

With regards to the f.c. content of the industrial discharge from Irish Distillers, you have been getting these figures for some time now as part of their IPPC returns and you will know that their contribution to the f.c. count of the combined discharge is close to zero. Any other contribution is the responsibility of the County Council.

I would also like to add that since your request that the County Council monitor the Owenacurra River, they have stopped sampling the industrial sewer at Bailick 1; the storm tanks at Bailick 1; and most important of all, the final sump at Ballinacurra No.1. Thus, for 12 months now, we have no regular monitoring of the final discharge to Rathcoursey Point.

**Bullet point 9.** I trust that you can understand all that you are being told, but I agreed with the Council's revised figure. However, if they are determined to maintain their outfall so close to shellfish, they must realise that there is no room for any sort of "human error", which they blame on this occasion. They have deliberately chosen to do without the 4.5km of buffering which the estuary used to provide up to 1988 and they must realise that the task of their treatment plant turning out effluent that is the required to be "*entirely effective at all times*", gives them no room for any error whether human, design, mechanical, or weather. Failure of the process on a single occasion, unfortunately means that shellfish are likely to stay contaminated with norovirus for the following 6 -10 weeks.

**Gravity flow.** The County Council state categorically that, "*There is no gravity flow from the tanks to the river.*"

I believe that this is not truthful, for the following eight reasons:

1. The photographic evidence in Prof. O'Kane's Objective Study, "Modelling the Norovirus contamination of an Oyster Farm in Cork Harbour" November 2007. (Original WWDL Application Form Part 5 [http://www.epa.ie/licences/lic\\_eDMS/090151b2801f5e2d.pdf](http://www.epa.ie/licences/lic_eDMS/090151b2801f5e2d.pdf)). Fig 4.14 shows the modus operandi of the final pump sump of Bailick 1 storm tank and both figs. 4.16 Photo 1 and 4.18 Photo 3 show the four gravity openings of 600mm pipes with a high-water mark, in the pump chamber, some 500mm above them. As the report says on p. 105, "*on at least one previous occasion the diluted sewage discharged from the pumping chamber through the openings.*"
2. Flow over the entry weirs to the Bailick 1 and Bailick 2 storm tanks is measured in terms of hours of flow during the day by the Hydromer monitors. Very often the flow can last for the full 24 hours, or it may last for at least half the day. If the storm cells are already full – and we have had this record as well as "weir hours" for Bailick 1 since March 2005 - and the storm pumps have not been used, then we can be sure that there was some other unrecorded flow out of the storm tanks, which can only have been via the gravity opes. To be absolutely sure of my facts, I have not, in the past, quoted you days when there was any pumping whatsoever by the storm pumps, which would have masked any flows by gravity.
3. Since November 2008, I have asked for the instantaneous Hydromer record of the storm cell depths in both Bailick 1 and 2 and, at last, I can see for how long the levels in the final cell 3 of Bailick 1 have been higher than the invert of the opes to the river. I enclose part of Drawing 128 Rev. 4 (2) to show that this invert level is set at a depth of the storm cells of 3.84m. If this depth is exceeded, even by a small amount, I am told by the manufacturer that there will be flow by gravity through the Tideflex non-return valves to the river. I have given you the Tideflex flow diagrams previously.

I enclose instantaneous graphs for cell 3 from October 28<sup>th</sup> to November 25<sup>th</sup> 2008 (3). You will see that cell 3 was at a level equivalent to about 3.9m depth of effluent. The storm pumps were being used all the time to some extent (400-1,000m<sup>3</sup>/day see (4)), but the effluent level was maintained at a constant few centimetres above the invert level of the opes. 14mm of rain on November 6<sup>th</sup> sent the effluent level up to about 4.34m, **which would have had the opes flowing nearly full and this happened several more times. These are records of gravity flows from the Bailick 1 storm tanks to the river.**

By Nov. 11<sup>th</sup> the storm pumps were coming on enough to keep the water level just above ope invert level. On Nov. 14<sup>th</sup> and 15<sup>th</sup>, 58mm of rain fell and on the 16<sup>th</sup> 11.999m<sup>3</sup> of effluent had to be pumped by the storm pumps to the river. It would seem that they handled this easily enough with their huge capacity (550m<sup>3</sup>/hr) and the final effluent level hardly altered.

4. However, if we knew exactly what the flow into the storm tanks was over a period of time, in which we also knew the volume of the pumped storm overflow out, any difference in the two figures would be due to the simultaneous loss of volume by gravity overflow. The sort of situation we need occurred on March 7<sup>th</sup> 2009, when we find that a steady flow from Bailick No.1 pumphouse to the WWTP was suddenly reduced significantly by a pump blockage. The blockage lasted for 16 hours, with flow reduced by about 59 l/s (212m<sup>3</sup>/hr) = 3,400m<sup>3</sup> (5.1, 5.2). Using the Tideflex flow diagrams and estimating the duration and heights of effluent above the ope invert from the instantaneous storm cell graphs (5.3): it now becomes possible to actually apportion flow out of the Bailick 1 storm tanks to pumped flow **and** gravity flow and I attach a worked example. The storm pumps recorded flows of 1,504m<sup>3</sup>, leaving a further amount that could only have been provided by gravity flows of 1,896m<sup>3</sup>. My calculations, using the Tideflex flow diagrams, estimate that gravity overflows in this period were 1,936m<sup>3</sup>, which is as close as 2% from the other estimate.
5. M.C.O'Sullivan's explain the design of the Bailick 1 storm tank in their 1993 Preliminary Report:

4.8.9 "Due to the necessity to protect the low lying areas of Middleton Town against flooding (30 year flood), it is necessary to have quite a low storm overflow level. This level is a mere 600 mm. over existing bed level of the Owenacurra River adjacent to the pumphouse site.

4.8.10 "Because of this, the storm water balancing tank has been designed in such a way that if the capacity of the tank is filled (each of the three compartments fill in series and give the longest possible path to aid settlement) before overflow begins and **if water levels in the receiving waters adjacent are low enough, then this overflow operates by gravity.** If, however, water levels in the receiving waters are too high, then the overflowed liquid will overflow further into a Storm Water Pump Sump from where the storm water will be **lifted** to discharge to the tide. It should be noted that all discharges will receive fine screening."

The fact that gravity flows are currently in operation like this is made clear from the procedure that is in place today for payment for the "Handling of Stormwater from Network Pumping Stations", given in Vol.1 of the Tendering Contract Documents (June 2006) drawn up by J.B.Barry and Partners, para. 3.2.7, "The Service Provider will be paid the volume-based rate provided in the Schedule of Payments for handling stormwater..... the unit rate is assessed as a cubic metre of excessive stormwater pumped/**gravitated** into the nearby river from the stormwater holding facility."

The possibility of gravity overflows could be conveniently ruled out if the storm tank “*outfall pipelines were located below the Ballinacorra River low water mark*”, as stated in the WWDL application and repeated in both its subsequent revisions in the section on Bailick No. 1 Pumping Station, “*Storm overflow to the Ballinacorra River is by 3 No. storm pumps (acting/duty/standby) pumping through 3 No. 525mm diameter outfall pipelines located below the Ballinacorra River low water mark.*” However, that does NOT sit easily with the description of the modus operandi of the storm tank in the 1993 Preliminary Report above, nor with the fact that one can very easily see the pipes resting on the surface of the river bed, as they are exposed for most of the time. There can be only one reason that the WWDL applications keep on saying that the outfall pipe levels are “*below the Ballinacorra River low water mark*” and that is to mislead you into thinking that gravity flow cannot occur.

6. The very fact that the storm cells have largely been left full since September 2007, instead of being pumped down in readiness for the next storm as outlined in the Tender Documents, “*The Service Provider is obliged to manage the storm water facilities in the most efficient manner possible to ensure the maximum possible storage capacity is available at all times*” (Vol.2 paras. 3.9.3 and 3.10.3). In Vol.1 para. 3.3.9, “*The Service Provider is required to manage the stormwater handling facilities in a manner that maximises the amount of available storage. Specifically, the Service Provider is obliged to empty the storm tanks in an expeditious manner (return flows to the foul pumps are to start within 2 hours of inlet flows being lower than the specified pump forward capacity of the foul pumps) to ensure that the tanks have as much capacity as possible for the next wet weather event..... The penalties, to be deducted from the monies due to the Service Provider, will be subject to a minimum value of €1,500.00 for each day on which overflow incidents occur.*”

When it runs counter to the very philosophy of having the storm tanks in the system and they are made completely valueless, there just has to be some compelling motive to keep them full, and this can only be to keep the cell levels high enough to allow overflows to gravitate out of the overflow opes.

7. It is common knowledge amongst the shopkeepers in the lower part of Midleton, which is the first to be flooded through the sewers, that if sewage is rising in the toilets, you ring up the Council caretaker and ask him to “turn on the pumps”, which solves the problem. This also shows that turning off the storm pumps to make use of the facility to shed hydraulic load to the river, so that it does not appear in the records, is a conscious strategy of the County Council.
8. Finally, one has the evidence of one’s own eyes. Overflows are either pumped, in which case there is a violent expulsion of water from the 4 open pipes to the river, or there is a much calmer flow. Both types of flow can be observed very easily in wet weather from 20m away on the other side of the river.

**Bailick 2.**

I enclose parts of Drawing 122 Rev.6 (6.1, 6.2), from which you will see that the overflow ope in the storm pump chamber is set at 1.00m and the bottom of the storm cells is at - 3.50m, so that the invert of the overflow ope is reached when the depth of effluent in the cells is 4.50m and the 500 x 500mm ope is flowing full when the effluent depth is 5.00m.

I only have records for a few days in November 2008 and then March and April 2009. Records were unavailable for various reasons, "overwritten", "forgotten to be asked for" etc. for the wet months of December, January and February 2009 and FOI requests were refused for May onwards.

However, take the instantaneous data for April 24<sup>th</sup> (7). The ope is flowing full for 10 hours and half-full for 6 hours. This flow is in addition to the storm pumps, which, in fact only record 43m<sup>3</sup> that day. There is no other way for it to have gone except by gravity.

**Bullet point 10.** It would have been difficult for you to have made this question any clearer, especially as it is prefaced by, "Having regard to submissions made in relation to your waste water discharge licence application...". All that the County Council say is correct, but they evade the two questions asked:

1. "Are storm overflows from Bailick No. 2 and Ballinacurra No. 2 pumping stations pumped (and I would add "gravitated") to the Ballinacurra No.1 treated effluent pumping station and forwarded to the tidal tank at Rathcoursey?"
2. Confirm whether the primary discharge point is also a storm water overflow?

We certainly do not want to know about the overflow arrangements of the Rathcoursey Tank. Whatever effluent has got that far is going to be discharged at some point in time.

I do not know what you may propose to do about evasion of this magnitude, but, at the least, I trust you will be pressing these questions again. I intend to wait and see how the County Council answer your questions before I present any data on this.

**Bullet point 12.** You requested monitoring of the Owenacurra River, but it has been taken as an excuse to give up really vital monitoring of the sewerage system at:

1. The industrial tank – to ensure that this untreated line does not start carrying sewage.
2. The storm tanks at Bailick 1 – to keep an eye on the polluting effect of these very large escapes of untreated sewage (often greater in f.c. content than the influent received at the WWTP)
3. The sump at the final Ballinacurra No. 1 pumphouse, which is always easily available for sampling; should give a good idea of the combined treated and industrial flows to the all-important Rathcoursey outfall and is the one good record we have been given over the years since the commencement of the WWTP.

If you think about it, sampling of a river flowing past storm overflows, is unlikely to catch much unless sampling coincides precisely with the timing of the overflows and it is very difficult to make much of these results, even though we know the volume and composition of the overflows and I would have thought, if resources are stretched, it would be so much better to give up the river sampling and go back to sampling the 3 key points above that have been dropped.

**Bullet point 13.** €2.7 million has been spent on infiltration remediation without very great effect to date – the larger sources of infiltration must surely have been tackled first in the programme and we cannot go on and on waiting for a plant to be designed that will cater for a shortfall in capacity of 300-400%. Let us be clear, adding a further 50% capacity with the third aeration stream, without putting in primary sedimentation, or overcoming the problem of shock loads from the outlying storm tanks, which are constantly full, will certainly not improve the safety of the water for growing shellfish.

**Bullet point 14.** I was glad that emergency overflows (EO's) were mentioned by you here, even if only in relation to the new Dwyer's Road pumping station. All the pumping stations have EO's. It is well known that in overloaded collection systems such as at Middleton, where the instantaneous flows show the pumps to be running at their set speeds all the time (rather than the on/off pattern of wet wells being pumped down), that it is easy for EO's to become CSO's. We know very little of Bailick 3, except what we are told in Section C on p.18, "*Bailick No. 3 pumping station is an emergency overflow which is utilised in the event of pump failure*", and I note that the County Council classified the Bailick 3 pipe to the river as a storm overflow in their original application. EO's are a well-known source of pollution in shellfish areas in the UK and I believe that the EPA should take special note of EO's and require a recording system to be put in place in Middleton to keep track of the number and duration of any such emergency events.

**Bullet point 16 re the UV system.**

We would like to point out a very serious omission in the data which is released to us monthly and which is quite clearly spelt out as being required in the "*Specification for Middleton Main Drainage Mechanical and Electrical Contract No. 2 - UV Disinfection*", which is given by the County Council on pp.1-8 in the documents supporting their letter. This is the flow measurement through the UV. You will find it under the monitoring requirements on p.7 item v. – incidentally flow measurement ranks at item no.1 in the Environment Agency monitoring requirements for UV systems. On p.8 it specifies that "*ultrasonic level detectors shall be provided as required to measure flow....*"

It seems extremely odd that the instantaneous flow measurements are not given with the other instantaneous parameters listed, as not only is the flow record of great intrinsic importance, but without it, one is unable to check the applied and received dose from the CSV data and the dose rate is, of course, the vital part of the UV disinfection process. It is the flow and transmissivity data which together set the power requirement and, if necessary, bring in the second bank of lights. None of this can be checked if the flow data is withheld. The flow record should be reinstated in the Wedeco package. Without the promise of the inclusion of the UV treatment of the final effluent, there would have been no agreement in the High Court, and it is of huge concern to us that the ability to verify the efficacy of the system is withheld from us (both) in this way.



As you will know, the measurement of flow is so fundamental, that the Environment Agency in the UK has required effluent flow monitoring in UV systems for some years to be covered by its Self-Monitoring Certification Scheme, MCERTS, which establishes quality criteria, independently audited, for flow sensing systems, to ensure that verification of the UV dose level will be accurate. When public health is at risk, it is essential that a complete record is kept, which is capable of showing that the tertiary disinfection has been performing correctly and records which did not include the flow would NOT be acceptable in the UK and the WWTP would lose its consent. See the Environment Agency's requirement for the monitoring of UV disinfection systems, which I have sent you in the past.

### **Revised information attached to the County Council letter**

May I add, very briefly, a few comments, which I believe you should know, which arise in the Non-Technical Summary (Section A).

**Section A p.9 re environmental impacts on the Owenacurra Estuary.** It is stated that. *"It has been confirmed that this estuary is eutrophic due to the high levels of Nitrogen in the Owenacurra River. Agricultural practices have been identified as one of the main contributors of pollutants to both the Owenacurra and its Dungourney tributary by the Phosphorus Regulations Implementation Report produced by Cork County Council's Environmental Department in 2004."*

In response to an FOI request to see the evidence for this, I was advised by the County Council in a letter of 10<sup>th</sup> March 2008 (8) that. *"The statement (in the WWDL Application) regarding loss of nitrates and phosphorus from farm land has been taken from the EPA's report on Water Quality in Ireland 2001-2003. However, the reference in the report is more general than specific to the Owenacurra Estuary and the section in the application will be revised to reflect this."* Clearly it has not been revised in either of the subsequent revisions requested by you and we believe that the continuing degradation of water quality in the Owenacurra Estuary is due to the discharge of large quantities of nitrate from a plant that does not denitrify – as explained in my letter of 4<sup>th</sup> September 2009 (submission 10 on your website).

It is important that you should, at the least, request nitrate sampling of the effluent, but sampling of the rivers above and below Bailick 1 would determine the agricultural influence. It is noteworthy that it is only the water impacted by the primary discharge and the storm overflows, ie. precisely between Bailick 1 and the lower end of East Ferry, which has deteriorated since this WWTP began discharging.

### **Sec. A p.12 re further measures to comply with the general principle of the basic obligations of the operator, i.e. that no significant pollution is caused.**

The County Council tell us that. *"As part of the operator's contract, failure to meet specified final effluent quality standards results in financial penalties due to non-compliance. The penalties vary on the severity of the pollution caused."* It would seem that only the single criterion of "final effluent quality" is to be considered, which is clearly not comprehensive enough.

I also understand from minutes in relation to the Tendering procedure, which I have sent you in the past, that the current Plant Operator cannot be held to account if more than 3,248m<sup>3</sup>/day (1.44DWF) is accepted by him into the plant. The Plant Operator's contract (Vol. 2 p.15) is actually, "*The Service Provider will be responsible for producing final effluent to the current consent detailed above up to these incoming flows and loads. Flows and loads in excess of these maximum limits will not be subject to the penalty mechanisms however it will be expected that the Service Provider will undertake his best endeavours to still comply with the required treated quality standards if these maximum inlet flows and loads are exceeded.*"

This is not the level of control that is required to protect the environment of a water body of the highest level of significance according to the DOE "Procedures and Criteria in Relation to Storm Water Overflows", i.e. a discharge of greater than 10,000 PE into a designated shellfish water.

However, it is the collection system that is equally at fault in Midleton – overloaded pumping stations, storm overflows, blocking pumps, telemetry failure, shock loads sent forward to the WWTP etc. Here the County Council themselves are the operator, as they state. "*These measures apply at the treatment plant operated by the operator (EPS) and not to the network or pump stations.*" Who then is going to ensure that the County Council comply with the standards they have set in their own Contract Documents, which were put there to secure the environmental requirements? Who, for instance, is going to make them pump down the storm tanks within 2 hours of the level dropping sufficiently, so that the maximum capacity is available in the storm tanks in readiness for the next rainfall event – instead of being left full most of the time?

**Sec. A p.13 re measures planned to monitor emissions to water.**

The County Council state at the bottom of the page, "*The monitoring and recording of the status of all parameters appropriate to proper control and operation of the plant is carried out and documented at all stages.*" All this sounds marvellous, but it is not much good if it is so difficult to find out what is actually being monitored and if the record is overwritten within 45 days – as it is. I would hope that the EPA would insist that records should be stored for at least 2 years and these will include all the instantaneous data collected from the WWTP and pumping stations covering flow rates and storm tank levels as well as the UV data. The Environment Agency requires records to be kept for 2 years in the UK and I believe that the County Council requires their Licence holders to keep records for 10 years.

The judge in the High Court, who has already spent 14 days on preliminaries, commented forcefully on the necessity for good records to be taken **and preserved** so that the case could be judged on the facts.

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DG8 6AA

Our ref: 92/03/02

24th June 2004

Dear Mr Gorman,

**Proposed new Stranraer wastewater treatment works affecting Loch Ryan**  
**The Food Safety (Fishery Products and Live Shellfish) (Hygiene) Regulations 1998**

I write in relation to the above proposal about which you have sought our comments. The Food Standards Agency Scotland is the Central Competent Authority under Directive 91/492 and The Food Safety (Fishery Products and Live Shellfish) (Hygiene) Regulations 1998. The Agency is responsible under these Regulations for classifying shellfish harvesting production areas according to the degree of e.coli found within the shellfish flesh.

The area of Loch Ryan is a classified shellfish harvesting area for Native Oysters and has been a classified area for many years.

FSAS cannot speculate as to the impact this waste water treatment works may have on the area. However, filter feeding bivalve molluscan shellfish can accumulate human pathogenic micro organisms and may present a risk to health when consumed raw or lightly cooked. Such pathogens may be naturally occurring marine micro organisms or microbiological contaminants introduced via sources of pollution. It is also known from research in this area that the standard commercial depuration cycle which is applied to shellfish reduces bacterial load very effectively but demonstrates poor removal of viruses. It is also most likely that the shellfish harvested from the classified area i.e Oysters will be consumed raw or lightly cooked.

My opinion therefore is that any additional risk generated by this treatment works be quantified and ideally eliminated. Any managed risk level must be determined to be entirely effective at all times. This could be important to protect the public health interest and the current status of Loch Ryan which is currently classified as an 'A' January to April and a 'B' May to December.

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Our Website address is: [www.food.gov.uk](http://www.food.gov.uk)

I enclose a history of e.coli results from the Loch Ryan area for your interest and would be happy to provide you with any other information which may assist you in dealing with this application.

Yours sincerely



Lorna Murray  
Senior Executive Officer  
Food Law Enforcement Branch

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