Please note there are **17** submissions attached to this Application. Due to the large number, hard copies are not attached but can be accessed on EDMS or on www.epa.ie.

This memo has been cleared for submission to the Board by the Programme Manager F. Clinton
Signed: _____ Date: 05/07/10

Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

OFFICE OF CLIMATE, LICENSING & RESOURCE USE.

INSPECTORS REPORT ON A WASTE WATER DISCHARGE LICENCE APPLICATION

To:	DIRECTORS	
From:	Ann Marie Donlon	**Environmental Licensing Programme**
Date:	14th June 2010	
RE:	Application for a Waste Water Discharge Licence from Cork County Council Southern Division, for the agglomeration named Midleton, Reg. No. D0056-01	

Application Details	
Schedule of discharge licensed:	Discharges from agglomerations with a population equivalent of more than 10,000
Licence application received:	14 December 2007
Notices under Regulation 18(3)(b) issued:	18/08/09, 28/08/09
Information under Regulation 18(3)(b) received:	17/09/09, 30/09/09
Site notice check:	17/01/08
Site visit:	28/07/09
Submission(s) Received:	17

1. Agglomeration

This application relates to the Midleton agglomeration. Waste water is collected in a partially combined drainage network. The agglomeration comprises of eight pumping stations (PS). Within the combined sewer network there are four network pumping stations (Dungorney Road, Rock, Ballick 3 and Ballinacurra No. 2), three terminal pumping stations (Ballick 1, Ballick 2 and Dwyers road) and one final effluent pumping station (Ballinacurra No. 1).

Midleton waste water treatment plant (WWTP) provides secondary treatment by extended aeration and advanced treatment by UV disinfection of the final effluent. Denitrification is achieved by the inclusion of an anoxic zone in the aeration plant. Phosphorus removal by chemical or enhanced biological means is not undertaken. The plant is designed for a Population Equivalent (PE) of 10,000 and BOD loading of 600kg/day. Monitoring data indicates that the WWTP is treating satisfactorily an average BOD loading of around 700kg/day, which is equivalent to 12,000PE. The maximum hydraulic capacity of the plant is 90l/s, which is 3 Dry Weather Flow (3DWF). The plant is hydraulically protected by the

controlled pumping of the terminal pumping stations (70l/s, 13l/s and 8l/s). The influent flow ranges from 2DWF to 3DWF even during dry periods. The reason for this is assumed to be significant infiltration/ unauthorised surface water connections. Treated effluent is discharged to Ballinacurra No. 1 pumping station which lifts it into the tidal holding tank at Rathcoursey. The tidal holding tank (2,120m^3) has a penstock that discharges the effluent to the North Channel Great Island, Cork Harbour via an outfall pipe at appropriate times during the lunar cycle of the tide. The WWTP is currently operated by a private operator under a 10 year Operation and Maintenance Contract (commenced 2006). The WWTP has been operating since July 2000. Excess flows (>3DWF) to the terminal PSs are initially stored for return to the WWTP and where flows exceed the storage capacity, they are screened and discharged via storm water overflows to the Owenacurra estuary.

The wastewater is a mix of domestic, commercial and industrial (Irish Distillers Limited - IPPC licence Reg. No. P0442-01) and varies daily, weekly and seasonally. Irish Distillers Limited treated effluent bypasses the WWTP and is directed to the tidal holding tank at Rathcoursey. Effluent from Irish Distillers is a combination of treated process waste water, cooling water and boiler blowdown. Although the BOD load from the treated process waste water is 520PE (31.25kg/day), the IPPC licence allows up to 2,083PE (125kg/dayBOD) to be discharged to sewer. The licence allows the cooling water and boiler blowdown to have a BOD concentration of 25mg/l. Therefore, it is considered the load from Irish Distillers is significantly less than that licensed to be discharged and this was confirmed by data supplied in their annual environmental report, 2008. Irish Distillers provides secondary treatment, denitrification and, more recently, UV disinfection.

The primary discharge is the combined flow of Midleton WWTP effluent and Irish Distillers Limited effluent.

Four of the pumping stations have storm tanks and associated storm water overflows. There are six emergency overflows associated with pumping stations and as their operation is associated with mechanical or electrical failure, these are not considered further here.

The stated PE of the agglomeration is 18,742 and includes an allowance for pending development. The PE breakdown is given as follows: population – 10,048, planning permission granted - 6,594 and Irish Distillers Limited – 2,100.

Cork County Council (Cork County Council) have recently completed a ground water infiltration remediation project. The full effects of these works are currently being assessed. Further investigation works have been completed and substantial leaks have been identified. A number have been repaired and others are awaiting funding. The infiltration issue is considered in more detail below.

Cork County Council proposes to increase the capacity of the plant to 15,000PE by 2011 and this has been allocated funding under the Water Services Investment Programme (WSIP) 2010 - 2012 by the Department of Environment, Heritage & Local Government. The scheme is listed under 'contracts to start 2010 - 2012'. This capacity is 1,642 PE short of the required capacity when pending development is considered. As with the existing plant, it is likely that the plant will be capable of treating above its design capacity at this proposed loading. This matter is discussed further below.

The Midleton EIS dated 1996 accompanied the application and the associated Ministerial approval required Cork County Council to install UV disinfection. The EIS considered the proposed increase in capacity to 15,000PE.

2. Discharges to waters

The primary discharge (SW01 MIDL) is to North Channel Great Island (SW_060_0300) at Rathcoursey point via a diffuser (see figure 1 and 2). The primary discharge is over 5km from the WWTP.

The primary discharge at Rathcoursey (combined effluent of Midleton WWTP and the effluent from Irish Distillers Limited) is of a high quality with BOD <6mg/l, SS <30mg/l, total nitrogen <15mg/l and total phosphorus <1mg/l. Thus achieving the emission standards specified in the Urban Waste Water Treatment Regulations, 2001 (S.I. No. 254 of 2001) (UWW regulations). These results may, in part, relate to the diluting effect of ground water infiltration and cooling water from Irish Distillers Limited.

The Midleton WWTP plant is in compliance with the Urban Waste Water Treatment (UWWT) regulations for the years 2006 and 2007. Having regard to the requirements of Regulation 6(2) and the diluting effect of Irish Distillers cooling water and to ensure that the Midleton WWTP continues to comply with the requirements of the UWWT regulations, the Recommended Licence (RL) requires the effluent from Midleton WWTP to meet the emission standards specified in the UWW regulations for BOD, SS, COD and total nitrogen. The scope of the Urban Waste Water Treatment Directive 91/271/EEC includes brewing activities such as that carried on by Irish Distillers Limited (Article 13 and Annex III). The Irish Distillers Limited WWTP also complies with standards specified in the UWWT regulations. Consequently the primary discharge (combined flows of Midleton WWTP and Irish Distillers limited) is subject to the UWWT Regulations.

Infiltration is a significant problem in the agglomeration and this is clearly evident from the influent BOD data (127mg/l BOD on average in 2007). Typical domestic sewage has a BOD of 250mg/l under dry weather flow conditions. The primary discharge volume is reported to be 10,640m^3/day (inclusive of Irish Distillers effluent). The estimated DWF for 15,000 PE is 3,456m^3/day (40l/s) and Irish Distillers is licensed to discharge 5,000m^3/day, the sum of the effluents is 8,456m^3/day. For the purposes of assessment the dry weather flow is taken as 8,456m^3/day or 0.1m^3/s.

Monitoring undertaken for the purposes of the application process did not indicate that elevated levels of any of the dangerous substances, as defined in the Dangerous Substances Directive (2006/11/EC), were being discharged. The IPPC licence for Irish Distillers Limited specifies limits for metals.

The Foreshore Licence specifies faecal coliform limits (geomean[1] <250fc/100ml and 95%ile<1,000fc/100ml) for the effluent from Midleton WWTP and the IPPC licence for Irish Distillers Limited specifies the same limits. Although both effluents meet the specified limits, the primary discharge at Rathcoursey does not comply. Cork County Council gave no further explanation in the application. Monitoring data indicates that the geomean of faecal coliform results for 2008 was less than 1,000 at Rathcoursey which indicates limited misconnection/ illegal surface water connection to the treated effluent pipeline.

The applicant has advised that there are no flow monitoring or composite sampling facilities at the primary discharge monitoring point. Given that the primary discharge comprises of two separate effluent streams, the RL requires within six months flow proportional composite sampling in the vicinity of the primary discharge point. In the interim, monitoring may be undertaken by grab sample.

There are four storm water overflows from the pumping stations. All storm water overflows (SWO's) discharge to the Owenacurra estuary (upstream of the primary discharge). There is

[1] The geometric mean is a type of mean or average, which indicates the central tendency or typical value of a set of numbers. It is derived by multiplying the numbers in a set of values (n) and then getting the the nth root of the result.

no storm water overflow at or close to the primary discharge. Each PS has a storage facility and incorporate screening of overflows. It is reported in the application that two overflows comply with the requirements of the DoEHLG 'Procedures and Criteria in Relation to Storm Water Overflows, 1995'. Due to infiltration, Bailick 1 and 2 PSs spill on a frequent basis, and therefore do not comply with the requirements of the DoEHLG guidance.

In 1997 as part of the foreshore licence application, it was reported in an addendum to the EIS that the spill frequency and volume to be discharge from 2 overflows (only 2 were proposed at the time) was not to exceed 5-6 occasions per annum and that no more than 1.5% of the total storm water collected in the catchment would be discharged. Cork County Council did not provide the method by which these performance criteria was derived and although the criteria appear conservative, it is not clear they are in accordance with the DoEHLG guidance. In any event the two non-compliant SWO's cannot meet these criteria and the remedial measures required are considered in the following section.

Site visit

This Inspector undertook a site visit to the waste water works. The sludge has poor settlement characteristics but is not filamentous. The UV disinfection system is alarmed for low transmission values. The pumping stations were also visited and it was noted that two days of dry weather are needed to empty the storm cells.

3. Receiving waters and impact

The following table summarises the main considerations in relation to the North Channel Great Island, the receiving water of the primary discharge.

Table 1.0 Receiving waters

Characteristic	Classification	Comment
Receiving water name and type	North Channel Great Island	Transitional water body (SW_060_0300)
Resource use	Shellfish production	Cork Great Island North Channel designated shellfish water is within the receiving water body. Rostellan North, Rostellan South, Rostellan West shellfish areas are located in Cork harbour located to the south of receiving water.
Amenity value	Fishing	
Applicable Regulations	Shellfish waters[1]	Cork Great Island North Channel, Rostellan North, Rostellan South & Rostellan West are designated[2].
	EU Regulation 854/2004	Class B 2008 (purification required before sale) for Oysters[3]. Based on bacteriological quality.
	EU Regulation 853/2004	Cork harbour mussel production area is currently closed due to biotoxins.[4]
	EO Regulations[5]	See WFD below for details.
	UWWT Regulations[6]	North Channel is a designated sensitive water
Trophic classification[7]	Intermediate 1999-2005 Potentially Eutrophic 2006-2008	Dis -improvement from '99-05.
WFD[8] North Channel Great Island	Status: Moderate	Because of DIN, DO and ecological status.
	Risk: 1a (at risk)	WWTPs have been identified as a pressure.
	Objective: Restore	Restore by 2021 to achieve Protected Area objective.
WFD other adjacent water bodies[8]	1a (at risk) and moderate status	Cork Harbour (Coastal) Lough Mahon (Transitional) Outer Cork harbour (Coastal)
WFD Protected areas[8]	SPA (4030)	Water dependant habitat & species
	SAC (1058)	Water dependant habitat & species
	Owenacurra estuary / North Channel	Nutrient sensitive area
	Rostellan North, Rostellan South, Rostellan West and Cork Great Island North Channel	Shellfish waters

Note 1: Quality of Shellfish Water, 2006 (S.I. 268 of 2006)
Note 2: European Communities (Quality of Shellfish Waters)(Amendment) Regulations 2009 and European Communities (Quality of Shellfish Waters)(Amendment) (No.2) Regulations 2009
Note 3: Source: Sea Fisheries Protection Authority website
Note 4: Source: Food Safety Authority of Ireland website
Note 5: European Communities Environmental Objectives (Surface waters) Regulations 2009 (SI No. 272 of 2009)
Note 6: Urban Waste Water Treatment (Amendment) Regulations, 2004 (S.I. No. 440 of 2004)
Note 7: EPA (2009) Water Quality in Ireland 2006 – 2008: Key indicators of the Aquatic Environment
Note 8: River Basin Management Plan for the South Western River Basin District, April 2010 and interactive maps.

There are at least 29 dilutions available at the point of discharge (computed from salinity measurements and freshwater inflow from the Owennacurra / Dungourney river @ 95%ile flow) which provides good assimilative capacity conditions for the primary discharge.

Nutrients and the Water Framework Directive

Nitrogen

The North Channel is designated a nutrient sensitive area under the UWW regulations. The current trophic status of the receiving water is potentially eutrophic ('06-'08) as the winter dissolved inorganic nitrogen (DIN) and dissolved oxygen (DO) criteria were breached[2]. The Owenacurra estuary flows into the North Channel Great Island and is classified 'potentially eutrophic'[3] having failed the summer and winter DIN and DO criteria[2]. The Trophic Status Assessment Scheme for estuarine and coastal waters underpins the UWWT Regulations identification of sensitive areas.

The parameters DIN, DO and ecological status have contributed to the 'moderate' status of the water body under WFD River Basin Management Plan, April 2010. But only oxygen and nitrogen have been reported as pressures under the Trophic Status Assessment Scheme. The European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI No. 272 of 2009) (EO Regulations) specifies DIN standards for coastal waters but not for transitional waters such as the North Channel Great Island. Total ammonia standards are also not specified for transitional waters.

Therefore, in relation to nitrogen, the only applicable regulations are the UWWT regulations which specify limits for discharges to designated nutrient sensitive waters. The RL specifies a total nitrogen limit of 15mg/l at the primary discharge in line with the UWWT Regulations for designated nutrient sensitive waters. This limit requires denitrification of the effluents and consequently residual ammonia levels (< 5mg/l) will be discharged. The bulk of the total nitrogen will be nitrate. As phosphorus was not identified as a pressure parameter in the Trophic Status Assessment Scheme, total phosphorus is not limited.

Ortho-phosphate & BOD

The EO Regulations specifies a median standard for ortho-phosphate (ortho-P) in transitional waters (0.04mg/l @ 35psu[4] or 0.043mg/l @ 32psu). The RL specifies a limit of 2mg/l ortho-P which contributes a concentration of 0.005mg/l ortho-P at the point of discharge under median flow conditions. This is approximately 12% of the standard at the point of discharge. As stated previously, monitoring data indicates that this limit can be met.

The RL limits BOD in the primary discharge to 25mg/l and this will not raise the resultant BOD in the receiving water by more than 1mg/l BOD and is approximately 21% of the 95%ile standard at the point of discharge. The RL specifies limits for COD and Suspended Solids in line with the requirements of the UWWT regulations.

Storm water overflows & Nutrient Sensitive Areas

The River Basin Management Plan, April 2010 identified that the Owenacurra estuary as 'at risk' from combined sewer overflows. It has not been quantified to what extent the storm water overflows from Bailick 1 and 2 PS are contributing to the trophic status of the Owenacurra estuary (a nutrient sensitive area). The DoEHLG 'Procedures and Criteria in Relation to Storm Water Overflows, 1995' addresses sensitive areas and specifies that volume overflow as a percentage of rainfall run-off volume to the foul sewer should be a maximum of 20%. Further consideration is given to SWO's below.

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[2] Details provided by Shane O'Boyle, OEA

[3] EPA (2009) Water Quality in Ireland 2006 – 2008: Key indicators of the Aquatic Environment

[4] psu: Practical salinity units

Bacteriological Quality and Shellfish Waters

Status and Standards

As described in Table 1 above, part of the North Channel has been recently designated as a shellfish water (2009). The oyster fishery is Class B indicating a degree of bacteriological contamination of the receiving water. A prohibition order on the harvesting of oysters in this area has been in place since 2002 due to viral contamination. The primary discharge is approximately one kilometre from the designated shellfish waters in the North Channel (see figure 2).

The European Communities (Quality of Shellfish Water) Regulations, 2006 (S.I. 268 of 2006) (Shellfish Waters Regulations) only specifies a flesh standard of ≤300 faecal coliforms/100ml (guide value). There is no water quality standard for micro-organisms and this scientific area is particularly complex with bioaccumulation and species dependant factors to be considered.

In the USA, Canada and Australia shellfish growing waters are classified as 'approved' when the median or geometric mean faecal coliform Most Probable Number (MPN) of the water does not exceed 14/100 ml. This value is taken as a water quality guide value for the purposes of the following assessment.

In an addendum to the EIS that accompanied an application for a foreshore licence in 1997-98, it was predicted that UV treatment of the effluent would reduce the peak *E.Coli* concentrations over the oyster beds to 0.35fc/100ml for one hour and an average of 0.18fc/100ml. These values compare well to the 'approved' standard but do not take into account other sources.

The foreshore licence specifies a faecal coliform geometric mean limit of ≤250fc/100ml and a 95%ile of <1000fc/100ml in the effluent from the waste water treatment plant. The UV treatment achieves a geometric mean of 14.5fc/100ml in the WWTP effluent based on one-year monitoring data. The IPPC licence to Irish Distillers Limited specifies the same limits and it was reported to the Office of Environmental Enforcement in July 2009 that their geometric mean over a 50 rolling sample programme was 14.2fc/100ml. They have also recently installed a UV treatment plant on their discharges.

As previously discussed, monitoring data from the primary discharge indicates that the foreshore licence limits cannot be complied with at this point (Rathcoursey). This may be as a result of misconnections or illegal connections to the outfall line between the WWTP and the tidal tank at Rathcoursey which is over 5km in length, or it may be attributable to the industrial effluent pipeline. The available dilution at the point of discharge (based on salinity and freshwater inflow from the Owennacurra / Dungourney river) indicates that the 'approved standard' will be observed where these limits are applied to the primary discharge.

Norovirus

With regard to viruses, the Cork County Council and UCC ***"Modelling the Norovirus contamination of an oyster farm in Cork Harbour", 2007*** report was submitted with the application. There is no quality standard for *Norovirus* in water and the virus has a slow die off rate (30 days was considered in the model). The occurrence of *Norovirus* in sewage is as a result of an outbreak of 'winter vomiting bug', which can then cause gastroenteritis following consumption of raw oysters. Oysters are harvested during the winter months.

The report describes the relative contribution of each discharge in the harbour to the contamination of the oyster farm. The discharges considered included discharges associated with the agglomerations, of Cork City, Cobh, Ringaskiddy, Passage West, Monkstown, Cloyne, Whitegate, Carrigaline, Crosshaven, Carrigtohill, Midleton, storm water overflows from Bailick 1 and 2 and houses around the North Channel. The model results indicate that Midleton WWTP effluent is not a significant contributor (2% relative contribution during winter). The model results indicate that the storm water overflows from Ballick 1 and 2 are very significant (42% relative contribution) during the winter (when active) and waste water

from private domestic houses around the North Channel are the largest contributor during the summer.

Shellfish Waters Regulations and the Pollution Reduction Programme

The Agency is obliged under the European Communities (Quality of Shellfish Water) Regulations, 2006 (S.I. 268 of 2006) (Shellfish Waters Regulations) to ensure compliance with the quality standards specified in Schedule 2 (mandatory values). There is no quality standard for faecal coliforms or *Norovirus* in this Schedule. Under the Shellfish Waters Regulations the Minister for Environment, Heritage and Local Government is responsible for a programme of action that aims to take all reasonably practicable steps to reduce pollution and comply with the quality standards specified in Schedule 4 (guide values), which sets the shellfish flesh standard of ≤300 faecal coliforms /100ml as a guide value, through the publication of a programme of action. The pollution reduction programme (PRP) for the Great Island North Channel was published in January 2010. The Agency is obliged to take action to secure compliance with the regulations and the Shellfish PRP.

In relation to the overall status of the designated shellfish waters, the following was reported in the PRP;

- that monitoring data for the purposes of the Shellfish Waters Directive and Regulations does not indicate any water quality issues within/in the vicinity of this shellfish area;
- that WFD monitoring indicate water quality issues with dissolved oxygen (DO) and dissolved inorganic nitrogen (DIN) and
- food hygiene monitoring indicates faecal contamination in this area.

The prohibition order due to viral contamination is noted. Given that nitrogen is not specified in the Shellfish Waters Regulations and that DO criteria was exceeded for supersaturation (>130%) (as advised by Shane O'Boyle, OEA), bacteriological and viral contamination are the parameters of issue in this area. In addition to the foregoing, the EPA (2009) Water Quality in Ireland 2006 – 2008: Key indicators of the Aquatic Environment, did not highlight any exceedances of the standards specified in the Shellfish Waters Regulations for trace metals and PCBs in either the water column or shellfish flesh taken from the North Channel.

Midleton urban waste water system has been identified as a key pressure in the PRP. The PRP action programme sets out the following specific measures in relation to the Midleton agglomeration:

- A waste water discharge licence will require detailed actions including infrastructural works, if required, within specified timeframes if the discharge does not comply with the Shellfish Waters Regulations, 2006, including the effects of viruses.
- Remediation work in the collection system is on-going and expansion of the plant is being procured.

The following tables sets out the rationale, and actions as appropriate, taken in the RL for the primary discharge, having regard to the relevant quality standards, both mandatory and guide values, specified in the Shellfish Water Regulations. The measures specified in the RL to meet the requirements of the PRP are also discussed below.

Table 1.1 (A) & (B): Standards for Shellfish waters

(A)

Parameter	**Mandatory Value**	**Action**
pH	7-9	pH is set in RL between 6.5-9
Colour	A discharge affecting shellfish waters must not cause the colour of the waters after filtration to deviate by more than 10 milligrams per litre from the colour of waters not so affected.	Urban waste water is typically without colour. No limit set.
Suspended solids	A discharge affecting shellfish waters must not cause the suspended solids content of the waters to exceed by more than 30 per cent the suspended solids content of waters not so affected.	RL specifies an ELV for SS of 35mg/l which will not cause the SS of the waters to exceed by > 30%.
Salinity	(b) discharges affecting shellfish waters must not cause the salinity of the waters to exceed by more than 10 per cent the salinity of waters not so affected.	Discharges are fresh water and therefore will not increase salinity. No limit set.
Dissolved oxygen	≥70%	DO understaturation in the shellfish water was not noted. The RL specifies an ELV for BOD of 25mg/l.
Petroleum hydrocarbons	No visual film or harmful effects	RL requires visual inspection of effluent for hydrocarbon film.
Polychlorinated biphenyls	0.3ug/l	Discussed under dangerous substances below.
Metals	Mandatory values specified for sea water	Discussed under dangerous substances below.
Taste	Must not impair taste	Discussed under dangerous substances below.

(B)

Parameter	**Guide Value**	**Measure**
Temperature	A discharge affecting shellfish must not cause the temperature of the waters to exceed by more than 2 degrees Celsius the temperatures of waters not so affected.	RL limits temperature. Discussed in more detail below.
Faecal coliforms	≤300FC/100ml in the shellfish flesh and intervalvular liquid	RL limits faecal coliforms in primary discharge. Discussed in more detail below.

As previously discussed, Irish Distillers Limited discharge includes cooling water which combines with process effluent and the Midleton WWTP effluent and is piped approximately 6km to the primary discharge. Although the temperature effects are likely to be minimal at the primary discharge, the IPPC licence has no temperature limits on the final discharge to sewer (but previously included a limit for maximum temperature of 25°C). Therefore the RL must now address the thermal load associated with the cooling water. The RL requires that the primary discharge will not result in a temperature increase at the edge of the mixing zone of greater than 1.5°C in the receiving system to ensure compliance with the EO Regulations and that the mixing zone shall not exceed 25% of the estuarine cross sectional area at any point.

Notwithstanding the absence of a water quality standard for faecal coliforms and *Norovirus*, it is appropriate to set emission limit values given that UV disinfection systems are in use. It is also considered necessary to set emission limits to facilitate enforcement regarding the use of

the UV treatment plant but it must be clear that these limits do not infer a water quality standard for faecal coliforms in the receiving water.

Setting faecal coliform (indicator bacteria) limits is consistent with EPA licensing regimes (IPPC/waste), previous licensing arrangements (foreshore licensing) and international practice (e.g. SEPA Regulatory Method (WAT-RM-13)). Regulation 45 of the WWD (Authorisation) Regulations requires that conditions attached to a foreshore licence for the purpose of preventing environmental pollution will cease to have effect where the Agency grants a licence. These limits will ensure that foreshore licence requirements will continue under the waste water discharge licence (WWDL). The RL specifies the limits as set out in the foreshore licence at the point of discharge from the treatment plant and at the primary discharge. The ELV for the primary discharge will be effective within twelve months of the date of grant of licence following investigation and remediation of misconnections and illegal connections. The RL does not specify limits for *Norovirus* as it is not a parameter specified in the Shellfish Waters Regulations. *Norovirus* has an episodic occurrence in the WWTP and is a human pathogen.

Shellfish waters and the Water Framework Directive (WFD)

This shellfish water is a protected area under the WFD and is therefore subject to measures that aim to achieve protected areas objective. The WFD measures that apply to the North Channel Great Island water body (IE_SW_060_0300) have been considered and the measures relevant to the Midleton agglomeration include:

- Licence urban waste water discharges taking account of WFD objectives.
- Measures for improved management.
- Optimise treatment plant performance by the implementation of a performance management system.

Having regard to the scope of WWD (Authorisation) Regulations, the RL specifies numerous requirements to meet these measures, namely; monitoring requirements, documented procedures, notification of incidents, investigation of illegal connections to the final effluent line, limits for faecal coliforms at the primary discharge and investigations of combined storm water overflows.

The RL requires upgrading of the plant capacity to 15,000PE which will ensure all waste water that could be generated within the agglomeration will be treated under dry weather conditions as well as improving the performance of SWOs. The RL requires the PE of the agglomeration and the treatment capacities of the plant to be reported annually and maintain such available capacity within the waste water works to ensure that there is no risk to the receiving water from discharges. The RL goes further specifying controls and limitations on storm water overflows and these are discussed in more detail below.

Storm water overflows and impact

The storm water overflows from Bailick 1 and 2 pumping stations have been highlighted in the UCC *Norovirus* study as being significant contributors to the viral contamination (up to 42%). No information was provided in the application on the bacteriological impact of storm water overflows at the shellfish waters. These overflows are approximately 5km from the North Channel shellfish waters. The overflows from the pumping stations spill regularly and this is largely attributed to significant infiltration into the collection system. Remedial measures taken to reduce infiltration has not brought these SWO's into compliance with the DoEHLG 'Procedures and Criteria in relation to Storm Water Overflows, 1995' or the criteria specified in the addendum to the EIS (6 spills/ annum and discharge volumes of $\leq$1.5% of total storm water collected).

The DoEHLG guidance provides for the use of hydraulic models in assessing and establishing acceptable spill regimes for overflows of 'high significance'. The SWO's from Bailick 1 and 2 are highly significant due to the size of agglomeration and the proximity of designated shellfish waters in line with the DoEHLG guidance (see figure 2). As stated previously, it is

not clear whether the spill frequency of 6 (per year) was established using hydraulic models. In light of SEPA Regulatory Method (WAT-RM-13 & WAT-RM-07), which specifies a spill frequency from SWO's of 10 spills per annum for shellfish waters, the criteria specified in the addendum to the EIS appears conservative.

The DoEHLG guidance describes the options for remedying any capacity constraints as follows; upgrading the existing system, use of storage and active control. The DoEHLG guidance does not address the potential use of UV disinfection or the problem of significant infiltration. Midleton is built on a regional aquifer with known caverns, therefore the elimination of infiltration will continue to be an important issue to the performance of SWO spill frequency.

The RL specifies a spill frequency and volume discharge limits in accordance with the addendum to the EIS. These limits will be subject to a requirement to undertake an assessment of the SWO's within three months of the date of the grant of the licence, to confirm that the limits are in compliance with the DoEHLG guidance or allow for alternative limits where advanced remedial measures such as UV disinfection is proposed that aims to provide an equivalent level of protection to the shellfish waters.

The assessment will consider protected areas (shellfish waters, nutrient sensitive areas, habitats and birds), relevant regulations, plans and programmes (PRP, River Basin Management Plan), the outcome of consultation with relevant bodies, international guidance, the provision of UV disinfection and the addendum to the EIS in the assessment. Storm water disinfection has been successfully implemented in the UK. New limits, in terms of spill frequency and volumes to be discharged, arising from the assessment shall be agreed by the Agency and shall become part of the licence.

The RL requires the two non-compliant overflows to meet the limits (for spill frequency and relative proportion spilled) by 31st December 2011. In relation to these overflows, the RL requires a programme of improvement to be submitted within six months and included within this programme is a requirement to consider the provision of in-sewer flow monitoring devices. The RL requires the programme of improvement to be completed by December 2011. These requirements will reduce the spill frequency to a level that will aim to protect the shellfish waters.

The RL requires the upgrade of the treatment plant to 15,000PE, elimination of misconnections to the outfall line and remedial measures on the SWO's. These are the main improvement measures that aim to meet the obligations of the PRP and Shellfish Waters Regulations.

Dangerous substances

The Marine Institute reported in 2006 that levels of trace metals in shellfish from Cork Harbour continue to be very low. The EPA (2009) *Water Quality in Ireland 2006 – 2008: Key indicators of the Aquatic Environment*, did not highlight any exceedances of the standards specified in the Shellfish Waters Regulations for trace metals and PCBs in either the water column or shellfish flesh taken from the North Channel. As previously stated the screening for pollutants did not detect elevated levels of dangerous substances. Data from Irish Distillers Limited AER 2008 indicates that mass emissions of heavy metals are a fraction of their licensed limits and the licence application did not identify any significant sources. The RL requires further screening and the improvement programme requires the reduction of priority pollutants and the cessation of priority hazardous substances. The RL requires monitoring of the metals and polychlorinated biphenyls in line with the Shellfish Waters Regulations.

Habitats and Birds

The Great Island Channel SAC and the Cork Harbour SPA occupy almost the same area within the North Channel Great Island (receiving water). The site synopsis to the SAC

identifies the main habitats of conservation interest being the sheltered tidal mudflats and the Atlantic salt meadows. The area is extremely important for wintering waterfowl and thus a designated SPA. The primary discharge is located just outside the SAC/SPA.

The main threat to the SAC is described in the site synopsis as coming from *road works, infilling, sewage outflows and possible marina developments.* The NPWS 2008 report '*The status of EU Protected Habitats and Species*', does not identify sewage discharges as a threat to the main habitats occurring within the SAC. An EIS dated 1996 accompanied the application and it is stated that the change from release of primary to secondary treated effluent at Rathcoursey would provide positive benefits for the marine environment. At the time it was estimated that approximately one tonne of particulate matter was being discharged per day (1000kg/day) under untreated conditions. Particulate matter loading from the primary discharge is currently averaging at approximately 100kg/day. The WWTP has been operational since 2000.

As the primary discharge is outside the SAC/SPA, the key indicator of site conservation value is water quality. Remedial measures to the SWO's and the planned extension to the WWTP will further reduce organic loading. The RL makes specific reference to the protected areas in the assessment of the SWO's. The RL further requires ambient monitoring of water quality having regard to the EO regulations.

4. 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.

5. Programme of Improvements

It is proposed to extend the treatment plant to cope with a loading of 15,000PE. This extension has been approved by the DoEHLG under the WSIP 2010 - 2012 and is due for completion by June 2011. The continuation of the infiltration programme is subject to further funds being released.

The RL specifies the extension to the plant to be completed by December 2011. The RL requires significant improvement in the performance of the storm water overflows having regard to the downstream protected areas. It is anticipated that this work should be in association with the extension to the plant and therefore the completion date is specified for December 2011. The infiltration programme will be an integral part of the improvement programme for the SWO's.

These improvements will improve the quality of discharges from the agglomeration.

6. 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:

- Water Framework Directive [2000/60/EC]

This is discussed in detail above.

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

The receiving water is designated nutrient sensitive and the requirements of the Directive have been transposed as discussed above.

- Shellfish Waters Directive [2006/113/EC]

The Midleton WWTP and Irish Distillers Limited provide UV treatment of effluent. The provision of additional treatment capacity will significantly reduce the bacteriological contribution from overflows to designated shellfish waters. The RL specifies further requirements for reducing the impact of storm water overflows. This matter is discussed in more detail above.

- Dangerous Substances Directive [2006/11/EC]

The RL specifies requirements to reduce chemical pollution.

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

The EIS addressed the impact of discharges on the North Channel SAC and Cork Harbour SPA. The provision of secondary treatment means that the primary discharge is not likely to have a significant effect.

7. Cross Office Liaison

Data and advice was received from Shane O'Boyle, Rebecca Quinn and Micheál MacCarthaigh of the Office of Environmental Assessment. Shane O'Boyle provided information on the parameters under the Trophic Status Assessment Scheme. Rebecca Quinn and Micheál MacCarthaigh provided freshwater flow data.

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.

8. Submissions

Seventeen submissions were received in relation to this licence from four parties. The main issues raised in the submissions are summarised below. However, the original submission should be referred to at all times for greater detail and expansion of particular points.

1. Mr. Patrick J Murphy received 07/01/08

Mr. Murphy is a fisherman and has observed a large brown slick floating in the water at East Ferry in the morning during the summer of 2006 and suspects that this slick is caused by the pumping of sewage at night. He objects strongly to any licence being given.

Comment:

The RL provides for only treated waste water being discharged at Rathcoursey (near East Ferry). There are no storm water overflows within the vicinity of Rathcoursey. It is not possible to ascertain at this time what was the source of the brown slick observed in 2006.

2. Mr. Brian Byrne received 12/02/08

Mr. Byrne of East Cork Angling Centre objects to the application as large quantities of effluent being discharged from this point continue to contaminate fish life and the leisure craft in the estuary.

Comment:

The RL specifies ELV's for the primary discharge that will not result in an adverse impact on the quality of the receiving water and consequently fish life and leisure craft use should also not be adversely affected. The ELV's are in accordance with the Urban Waste Water Treatment Regulations, 2001.

3. Mr. Hugh-Jones , Atlantic Shellfish Ltd., received 01/04/08, 28/04/08, 03/06/08, 09/07/08, 05/11/08, 19/11/08, 25/11/08, 15/06/09, 09/09/09, 26/10/09, 27/10/09, 29/10/09, 09/11/09, 22/03/2010

Mr. Hugh-Jones believes that the primary discharge, storm water overflows and emergency overflows should not be licensed as the Midleton WWTP is not fit for purpose nor can the quality of effluent ever be made reliable enough in such close proximity to the oyster beds. He requests that *all* the sewage of Midleton is treated as currently raw sewage is discharged untreated through the storm water overflows. He states that the oyster fisheries have been destroyed and closed down since October 2002 because of persistent contamination with human sewage causing the recorded illness of over 1,000 customers of Cork oysters between December 1988 and October 2002. He believes that the Agency should not now grant any authorisation for the Midleton WWTP discharges having regard to the obligations of Regulation 6(3) i.e. no deterioration objective and compromise the achievement of environmental quality standards established for shellfish waters.

Mr. Hugh-Jones made substantial submissions on numerous dates in relation to this application. All submissions were read in detail but for the purposes of clarity the concerns raised are summarised into topic paragraphs as follows:

(a) The location of the primary discharge at Rathcoursey is too close to the oyster farm(s) and should be relocated because:

- The relocation of the outfall in 1988 was in contravention of the Shellfish Waters Directive (79/923/EEC) and disputed in the 1980's and 1990's by the Department of Marine/Fisheries.

- The number of incidents of sludge overflows was 34 in 2007 which are rich in viral particles.
- High faecal coliforms /viral particles loads measured at the primary discharge point. Bacteriological count is significantly higher at the point of discharge (Rathcoursey) than samples taken at the UV plant and are equivalent to hundreds to thousands of people.
- High flows mean that the gravity overflow at the tidal tank by-passes the lunar valve and discharges are into the flood tide.
- There were 65 days during the winter of '06-07 when the flows to the WWTP exceeded 90l/s. Hydraulically overloading an under capacity WWTP may cause non-compliance due to plant failure.
- Mr. Hugh-Jones suggests to discharge at the by-pass bridge and storm water overflows cut down to 5-6 p.a.

Comment:

The licence application was for a primary discharge at Rathcoursey and the assessment was on this basis. Both the effluent from the Midleton WWTP and Irish Distillers Limited now undergo UV treatment. The Midleton UV treatment plant now alarms when transmission goes below 60% which indicates solids increase. The RL requires the licensee to undertake such investigations and remedial measures to ensure that the faecal coliform emissions limits will be met at the primary discharge within twelve months. Cork County Council has stated that the gravity overflow at Rathcoursey tank rejoins the diffuser and is used in the event of breakdown of the lunar valve. The RL further requires that discharges are to the ebb tide and the breakdown of the lunar valve that results in discharges to the flood tide is a reportable incident.

(b) Discharging untreated and unrecorded waste water through storm water overflows.

Mr. Hugh-Jones states that there were 6 days when the flow was over 30,000m^3/day in the sewerage system and he estimates that 1,077,494m^3 (22.8%) of raw sewage is discharged untreated.

Mr. Hugh-Jones states that storm overflows are not just pumped flow but also gravity flow, which is not recorded. Mr. Hugh-Jones does not believe that Cork County Council are telling the truth when they say there are no gravity overflows from the storm tanks to the river and details eight reasons including comments made by Prof. O'Kane in his report and the overflow design specified in the 1993 Preliminary Report. He asserts that Bailick 2 PS has a similar arrangement of a gravity overflow and provides evidence of drawings and graphics of storm pump chamber levels.

He considers that infiltration is not the reason for the high hydraulic loads and there is no room for further storage capacity at Bailick 1.

Mr. Hugh-Jones points out that in the addendum to the EIS of 1996 that accompanied the application for the foreshore licence, it was estimated there would be no more than 5-6 overflows to the river per annum and would equate to no more than 2,973m^3/annum. He states that this plant cannot be licensed when the calculations of storm water overflow in volume and occasion were so wrong.

He observes that there has been very little benefit from the infiltration remediation programme which was completed in 2007 as the volumes overflowing are as bad as ever.

Mr Hugh-Jones states that the average storm water overflow from Bailick 1 for November – December period was 3,063m^3/day, a period paramount to oyster sales.

He asserts that the County Council's strategy is to shed hydraulic and organic load so as not to overload the plant.

Mr Hugh-Jones points out that Prof. O'Kane's hydrodynamic survey identified that Bailick 1 and 2 storm tanks are a significant source of pollution of the oyster beds. On occasion the volume of waste water pumped to the river was twice the volume pumped to the treatment plant.

He states that Cork County Council did not answer the question regarding the current estimate of mass load or PE lost via the storm water overflows.

Mr. Hugh-Jones points out that emergency overflows can become storm water overflows under certain conditions and there is no recording system.

Comment:

It is clear from the application that Midleton agglomeration experiences significant infiltration. The SWO's from Bailick 1 and 2 PSs spill frequently and are not in compliance with the DoEHLG 'Procedures and Criteria in relation to Storm Water Overflows, 1995' or the criteria specified in the addendum to the EIS. Remedial measures have been undertaken and further works are required. The RL specifies spill frequency and discharge volumes in accordance with the addendum to the EIS. The RL further requires the licensee to assess SWO's, confirm that these limits are in accordance with DoEHLG guidance and where necessary, establish new acceptable spill frequency/ discharge volume limits. The RL requires a programme of improvement for non-compliant SWOs. Upon agreement with the Agency the SWO's will be remediated by December 2011.

Cork County Council state that the storm water from Bailick 1 and 2 are only pumped to river and that there is a high level gravity overflow to the river which only activates in the event of all three pumps failing simultaneously. An emergency overflow occurs in the event of pump failure. These overflows are not provided for in the licence and such an overflow is a reportable incident.

Cork County Council state that they cannot provide data on the organic load lost from storm water overflows as no monitoring has been undertaken. Cork County Council gave details as to the hydraulic load discharged.

The RL specifies the discharges from this waste water works in Schedule A which is restricted to the primary discharge and four storm water overflows. It specifies emission limit values on the primary discharge and specifies requirements for SWO's. These requirements aim to protect the receiving environment including designated shellfish waters by way of control and limitation.

(c) The primary discharge is also a storm water overflow.

Mr Hugh-Jones states that storm overflows from Bailick 2 & 3 and Ballinacurra 2 are pumped to the Ballinacurra No. 1 treated effluent pumping station and forwarded to the tidal tank at Rathcoursey (primary discharge).

In support of his argument he points to the high faecal coliform counts for samples taken at Rathcoursey and he states that the foreshore licence was meant to cover the discharge to sea.

Mr Hugh-Jones states that on the 24th and 25th of September, 2008 the load to the plant was 62,000PE over 48 hours and it is thought that Cork County Council by-passed the WWTP in order to avoid plant closure from sudden loads. He argues that suspended solids figures support this rationale. He also gives another example of a large load (11,306kg COD) received at the works and by-passed the plant as evidenced by low total nitrogen levels on the 16/01/09 (4.2mg/l) in the effluent and high oxygen levels in the aeration tanks.

He states that losses of untreated sewage to the Rathcoursey outfall are the most significant in terms of their proximity to the oyster fishery.

Mr Hugh-Jones reports that the flow from the Ballinacurra 1 PS are in excess of the combined flow from the WWTP and Irish Distillers Limited and approximately 3,500m^3/day on average is from other sources and discharged through the main outfall.

He states that Cork County Council have evaded answering the questions regarding whether storm water is discharging via the primary discharge.

He reminds us that there is unaccounted flow of 3,500m^3 discharging at the outfall which cannot be ignored.

Comment:

The licence application does not indicate that the primary discharge is also a SWO discharge and the application was assessed on that basis. Therefore by-passes of the WWTP or storm water to the treated effluent outfall line were not considered. The applicant states that the discharge from Rathcoursey would not meet the requirements of the foreshore licence though the discharge from WWTP has done so. No further explanation is given. The RL specifies faecal coliform limits at the primary discharge consistent with the foreshore licence and effective within twelve months following investigation of illegal connections to the treated effluent line. The RL further provides for flow proportional composite sampling on the final treated effluent line.

(d) Ambient Monitoring data

Mr. Hugh-Jones expresses concern about the ambient monitoring of total and faecal coliforms regarding location of a composite sampler relative to the overflow and the influence of the flooding tide. Mr. Hugh-Jones complains that the river sampling has replaced point sampling and would rather the decision be reversed if resources are an issue. Mr. Hugh-Jones sought a response to his letter to OEE regarding ambient monitoring for total and faecal coliforms as this programme was set up before licensing and is of importance to the oyster fisheries.

Comment:

The monitoring of total and faecal coliforms upstream and downstream of storm waters overflow points in transitional waters is not considered useful due to the influence of the tide. The RL specifies control limits on SWO's having regard to the protection of shellfish waters.

(e) The hydraulically overloaded waste water treatment plant poses a risk of mixed liquor wash out (8 hr at > 90l/s) and causes frequent crashes in transmission measured at the UV plant. In a six month period between October 2006 and March 2007 there were 68 occasions that flows to the WWTP exceeded 90l/s.

Comment:

The flow to the plant is controlled by the maximum capacity of the terminal pumping stations and is maintained at its hydraulic design of 3DWF of 90l/s.

(f) The waste water treatment plant is under capacity and is not functioning properly.

Mr Hugh-Jones states that the waste water treatment plant is under capacity and is overloaded organically to approximately 20,000-30,000PE.

He asserts that Cork County Council have been aware since 1999 that the plant is under capacity and is supported by the statement of Mr. Noel O'Keefe, Acting County Engineer on 6/03/06 that '*overflow incidents are more defensible than inadequate treatment or plant-downtime*'.

Mr Hugh-Jones points out that the consent for Midleton is 20:30 (BOD:COD) not 25:35 as this was set in the EIS and certified by the Minister for the Environment on 14/07/1997.

He states that the contract document with the operator of the WWTP incentivises the operator to overload the plant as payment is based on BOD handled and penalities for poor effluent do not apply to flows and loads in excess of agreed maximums.

Mr Hugh-Jones considers the proposal to upgrade the plant to 15,000PE is not for the purpose of dealing with existing capacity but to accommodate a further 1,191 housing units as per JB Barry and Partners report, June 2006.

He states that the load variations experienced by the plant are not conducive to effective biological functioning. Increased load is caused by cleaning out of storm tanks and the diversion of load to the river by using storm pumps and gravity overflows, dilutes the load to the plant.

He considers that primary settlement stage is required under the National Sludge Strategy of 1994 and could remove 60% organic load. He considers the lack of primary settlement as a major design fault as there is no buffering for 'shock loads' caused by raw settled sludge returning from the storm tanks.

Mr. Hugh-Jones believes that the excellent effluent results ($\leq$ 3mg/lBOD) shows that very little effluent is being put through the plant and that high DO values in the aeration tanks would indicate, on many occasions, they contain little more than fresh water.

Mr. Hugh-Jones asserts that the continuing degradation of water quality in the Owenacurra estuary is due to the discharges from a plant that does not denitrify.

He points out that Cork County Council comment that the operator will be penalised for non-compliance with effluent quality is not comprehensive, as minutes to the tendering procedure indicate that the operator is not responsible for effluent quality above certain flows and loads. Cork County Council state that these measures apply to the treatment plant and not the network. He asks 'who is going to ensure that Cork County Council is going to comply with the levels of control/standards required to protect the environment'.

Comment:

It is proposed to extend the plant to 15,000PE by June 2011 to cater for the organic load arising in the agglomeration. The plant currently treats 12,000PE. Monitoring data provided in the application indicates that the Midleton WWTP is functioning satisfactorily and is capable of handling load variations as well as denitrifying waste water. It should be noted that infiltration will dilute the influent and effluent. The RL specifies controls and standards on all discharges from the agglomeration. The Office of Environmental Enforcement will ensure that these requirements are met.

(g) Effluent results are not credible and all monitoring data should be disclosed.

Mr. Hugh-Jones does not trust the excellent results and statement of certification provided by the plant operator and seeks full access/ disclosure to all monitoring data. He considers the EPA *Report on the Urban Waste Water Discharges in Ireland for the years 2006 -2007* misleading in that it appears to give a clean bill of health to the Midleton WWTP. He considers the high quality effluent results are not credible in the context of costs of the treatment process, contractor obligations to only achieve 20/30 standard and the recorded overloading of the plant.

Comment:

As previously considered, monitoring data for the Midleton WWTP indicates that the plant is functioning effectively. Given the level of infiltration to the network significant dilution of the influent and effluent is occurring. Therefore excellent results for parametric concentrations in the effluent are understandable. The RL requires monitoring and reporting

of results on the primary discharge and these may be inspected by any member of the public. It is a matter for Cork County Council to decide whether monitoring data relating to the functioning of the WWTP is made available to the public.

(h) 100% effective treatment.

Mr. Hugh-Jones states that the human health implications of producing oysters is such that 100% effective treatment is required as *norovirus* takes at least 6 weeks to get out of shellfish. A few lapses of treatment will put public health at risk for months.

He considers that it is impossible to provide effluent of consistently high enough quality to prevent pollution of shellfish. He asserts that the Environment Agency (UK) requires a discharger to demonstrate that at least an equivalent degree of environmental protection will be achieved as would be afforded by relocation of the discharge to a remote area.

Mr. Hugh-Jones points out that SEPA decided that an effluent discharge could never be made in such a way that any managed risk level can be entirely effective at all times and Scottish Water now pipe the treated effluent 8 miles overland to the open sea. Just a single polluting event every 6-10 weeks will mean consumption of shellfish will be permanently hazardous to public health due to *norovirus*.

Comment:

In Ireland designated shellfish waters such as the North Channel come within the scope of the Shellfish Waters Regulations, the published Pollution Reduction Programme and the WFD. Having reviewed the relevant legislation, plan and programme, there is no requirement to cease or relocate the discharge(s). The RL specifies a number of measures that improves the quality of discharges from the agglomeration, namely the upgrading of the collection system and increasing the treatment capacity.

(i) Impact of discharge on trophic status, SPA and SAC

Mr. Hugh-Jones considers that eutrophic status of waters is a result of storm water overflows rather than farmland and demonstrates that the WWTP is only able to treat a fraction of the load that the Midleton agglomeration is providing. He queries whether denitrification is occurring in the plant. The phosphorus limitation is required as this area is designated sensitive.

He considers that the North Channel has been a long time an SPA and is also a candidate SAC and thus requires protection. The discharge and overflows will not be licensed in defiance of EU Directive and the duties of the Agency (Regulation 6(3)) and Regulation 4 of SI No. 684 of 2007.

Comment:

The RL requires SWO's to be improved in accordance with the DoEHLG 'Procedures and Criteria in relation to Storm Water Overflows, 1995' which takes account of the nutrient sensitive designation of the receiving water. The RL specifies emission limit values (ELV) for nitrogen having regard to the nutrient sensitive designation. As discussed above the RL does not specify total phosphorus ELV but does specify ortho-phosphate ELV in line with the combined approach. The RL specifies requirements in relation to discharges that will not cause deterioration in water quality or compromise the achievement of water quality objectives.

(j) Shellfish Waters Directive and Bacteriological / viral impact.

Mr. Hugh-Jones states that the most significant environmental impact on shellfish waters is viral not bacterial. The oyster fisheries have been destroyed and closed down since October

2002 because of persistent contamination with human sewage. He advises that the water standard that used to apply was 14fc/100ml and that it is generally accepted that shellfish concentrate bacteria by about 2 orders and viruses by about 3 orders of magnitude. The Environment Agency (UK) require a reduction of potential pathogens to a factor of 178,000 fold for Shellfish waters. Mr. Hugh-Jones points out that the microbiological standards set in the foreshore licence should have been applied to the point of discharge at Rathcoursey. He states that high *Norovirus* levels detected at the oyster fishery coincides with periods of high volumes and mass load of untreated sewage from storm water overflows.

Mr Hugh-Jones asserts that following the ECJ ruling, the waters covered by the two oyster fishery orders should have been designated in 1981 and it is considered that all discharges into the waters will be accorded a level of 'high significance'. He advises that he has circulated his submission to other bodies including the legal unit in Brussels.

He also notes that *Norovirus* is now a factor taken into account in the Pollution Reduction Programme and that the requirements of the Shellfish Waters Regulations are fully integrated into the licensing programme. He understands that the EPA cannot grant a licence where the achievement of standards established for shellfish waters are compromised.

Comment:

Effluent from Midleton WWTP and Irish Distillers Limited are subject to secondary treatment and UV treatment. The RL specifies ELV's for faecal coliforms at the primary discharge and from the Midleton WWTP in line with the foreshore licence. There is no quality standard for viruses specified in the Shellfish Waters Regulations. The RL requires measures to improve the SWO's having regard to the Shellfish Waters Regulations.

The designation of shellfish waters is a matter for the Department of Environment, Heritage and Local Government.

The licence assessment has taken into account the requirements of the PRP and the Shellfish Waters Regulations including *Norovirus*. The RL specifies measures which aim to achieve the environmental quality standards for the shellfish areas as specified in the Shellfish Waters Regulations.

(k) PE calculation assessment, DWF and average flow

Mr. Hugh-Jones questions the PE for the agglomeration noting from information supplied by Cork County Council that the calculation of the Midleton PE of 17,100 was derived from the proposed WWTP capacity of 15,000PE and Irish Distillers contribution of 2000PE. He queries the revised PE of 16,642 as it is based on planning permissions and not calculated from more direct measurement. He also estimates the size of the agglomeration as 30,000PE to 39,000PE, the treatment capacity of the WWTP as 10,000- 13,000PE and a shortfall in treatment of more than 20,000PE. He seeks a more detailed PE calculation for Midleton.

He finds unbelievable a Cork County Council statement that industrial discharges aside from Irish Distillers are 'negligible' and refers to commercial premises such as banks and shops and institutional premises such as school and hospital. He refers to the JB Barry report of June 2006 which says the industrial PE is 5,284. Based on EPA guidance, he considers that the commercial load should be 16% of the domestic /residential loading. The addition of all components together with tourism, his calculated PE is closer to the mark and the treatment plant is inadequate.

He points out that the planned expansion to 15,000PE will still leave a shortfall of 12,000PE which is unacceptable in the context of designated shellfish waters.

Mr. Hugh-Jones points out that it is hardly surprising that the WWTP is in a mess when Cork County Council does not know the DWF nor can they give a breakdown by source of the flow. He states that in August/September 2007 there was 19 days without rain and the estimated DWF was 5,725m^3/day. From records he obtained the average flow was

11,994m^3/day not 8,760m^3 as reported in the application from the primary discharge. When storm water overflows are added he estimates that 16,041m^3/day of wastewater is emitted from the agglomeration on average.

Mr. Hugh-Jones estimates that the load lost via the storm water overflows can be established by subtracting the load being treated at the WWTP from the estimated PE of the agglomeration of 19,305 or 1,158kg (without industrial load). He calculates the PE lost from the SWOs for November 2009 to January 2010 as ranging from 6,000 to over 17,000PE. He states that the average daily loss of untreated sewage has been as much as three quarters of all the sewage that the town produces for November 2009 and January 2010.

Comment:

Cork County Council stated in the application that the PE of their agglomeration was 17,100 and that when pending development was taken into account the PE is 18,742.

It should be noted that domestic waste water is defined as waste water from residential settlements and services that originates predominately from human metabolism and from house hold activities. Waste water from commercial (banks, shops), institutional (schools, hospitals) and tourism are predominately domestic in nature. The only IPPC licence installation discharging to the waste water works is Irish Distillers Limited.

For the purposes of licence assessment the DWF was taken as the sum of the DWF from Midleton WWTP at 40l/s and the volumetric licensed limit for Irish Distillers Limited.

The RL requires the capacity of the WWTP to increase to 15,000PE and remedial action on the SWO's to ensure that appropriate protection is afforded the receiving environment. No other discharges from the agglomeration are provided for in the RL. The RL requires the PE of the agglomeration and treatment capacity to be reported annually and to maintain such available capacity within the waste water works to ensure that there is no risk to the receiving water from discharges.

(l) WWDL requirements

Mr. Hugh-Jones hopes that the WWD Licence would contain a requirement to publish on-site sampling results in particular daily loads, a random sampling programme and process parameters and be subject to spot checks by the Agency. He expects that the bacteriological monitoring of the primary discharge should continue under any licence.

He recommends chloride monitoring and queries the SVI monitoring of tank 1 and 5 instead of 4 and 8.

Mr. Hugh-Jones asserts that the measurement of flow is fundamental to ensure the accuracy of the UV dose level, an essential performance criterion. He points out UK consents require these records.

He asks for nitrate monitoring of the discharge and upstream and downstream of Bailick 1.

Mr. Hugh-Jones requests that all instantaneous data collected from the WWTP, pumping stations flow rates and storm tank levels would be kept for 2 years and points out that a high court judge commented on the need for good records to be taken and preserved.

Comment:

The RL requires bacteriological monitoring and nitrate monitoring of the primary discharge. The scope of WWDL does not allow the setting of requirements regarding the control of the treatment plant. The RL requires a Public Awareness and Communications Programme to ensure that members of the public are informed of, and can obtain, at all reasonable times, environmental information relating to the discharge. The availability of other monitoring data to the public is a matter for Cork County Council to decide.

(m) Mr Hugh-Jones called on the Agency to perform its functions under the EC (Environmental Liability) Regulations, 2008 S.I. No. 547 of 2008.

Comment:

The Office of Environmental Enforcement have advised that the Agency has determined that environmental damage as defined in the European Communities (Environmental Liability) Regulations, 2008 has not occurred and therefore will not be pursuing this matter further.

(n) Misleading information and unanswered questions

Mr. Hugh-Jones states that Cork County Council have evaded or deliberately mis-answered the questions set in the EPA notices and calls on the EPA to insist on clarity and truthfulness. Mr. Hugh-Jones believes that Cork County Council refusal to answer questions because they are guilty of large volumes of untreated sewage discharged to the estuary via unrecorded gravity flows. He hopes that the EPA will press for answers to notices issued.

Mr. Hugh-Jones believes that Cork County Council have contravened regulation 35 of the WWDL (authorisation) regulations, 2007 and have committed an offence regarding the furnishing of misleading information and the requirement to comply with notices issued.

Comment:

The application was deemed in compliance with regulation 18(3) of the Waste Water Discharge (Authorisation) Regulations, 2007 and the application was signed as being accurate and complete.

(o) Mr. Hugh-Jones also made comments about sludge treatment and production.

Comment:

Supernatant from sludge treatment at the WWTP is returned to the aeration tank in line with normal operating practices. Sludge treatment and production at the Midleton WWTP is outside the scope of waste water discharge licensing.

Concluding Comment:

It is considered that the RL requires improvements and remedial actions that aim to achieve the environmental quality objectives for the receiving waters and in particular aim to improve the quality of designated shellfish waters. It is the duty of the Agency to take such action as is necessary to restore the receiving waters in so far as their duties allow and as provided for in legislation. The grant of a licence subject to conditions aims to achieve this objective.

4. Marine Institute 08/10/09

The Marine Institute (MI) made a submission having regard to aquaculture operations in the receiving environment. Seven points have been identified and are summarised below.

(a) Human health risk from viruses

The MI point out that the principle risk associated with consumption of such shellfish is from contamination with human viruses.

With regard to human viruses, the MI believes that licence conditions must take account of the impact on shellfisheries which may have implication for public health when such shellfish are harvested for consumption. Any discharge should decrease the public health risk.

It believes that the discharge must not cause an increased risk to public health by causing further contamination of shellfish harvested for consumption.

The MI believes that specific consideration should be given to the extent (if any) that the continuous or intermittent discharges associated with the WWTP contribute to the virus contamination found in the shellfish in the North Channel.

It notes Government commitments as laid down in the programme of Government 2007-2012 to ensure Irish waters are pristine and continued investment in waste water schemes. The institute also notes category B oyster classification of the North Channel shellfishery and the prohibition on the harvesting of oysters since 2002 due to viral contamination.

Comment:

It is noted that there is no virus standard specified in the Shellfish Waters Regulations (S.I. No. 268 of 2006). The RL requires secondary treatment and UV disinfection of the primary discharge through the ELV's specified in the licence. Viral load is significantly reduced as a result of these treatments. The RL requires measures to reduce the frequency of storm water overflows and their impact on the designated shellfish waters.

(b) The MI considers that licence conditions for the discharge must allow for compliance for the whole fishery rather than the designated sampling point.

Comment:

In the assessment of the licence application, regard was had for the designated shellfish waters area as specified in statute. Discharges in accordance with the conditions of the licence and following the implementation of a programme of improvement will not compromise the Shellfish Waters Regulations (S.I. 268 of 2006).

(c) Overflows and untreated effluent

The MI considers specific provisions should be made by the Local Authority to address infiltration/ illegal surface water connections and ensure excessive overflow discharges are significantly reduced.

It believes that the WWTP should be operated such that the discharge of untreated effluent due to storm events is kept to a minimum in light of the significant impact on the microbiological quality of shellfish.

Comment:

The RL does not provide for a storm water overflow discharge at the primary discharge (Rathcoursey) which is the nearest discharge to the designated shellfish waters. The RL specifies further requirements on the reduction of infiltration but more specifically, requires the SWO's to be operated in a manner that shall not cause significant impact on the microbiological quality of the shellfish. The SWO's are approximately 5km from the designated shellfish waters.

(d) Shellfish waters regulations

The MI believe that the standards for the WWTP discharges must be set on the basis of the standards set in the Quality of Shellfish Waters Regulations (S.I. 268 of 2006) and should meet the guideline value for faecal coliforms in the whole fishery.

It considers it appropriate that licence conditions must ensure no deterioration in water quality having regard to the standards set down in S.I. 268 of 2006 and endeavour to meet the guidelines values set in the regulations.

Comment:

The RL specifies faecal coliform limits on the primary discharge and the effluent from the Midleton WWTP having regard to the Shellfish Waters Regulations (S.I. No. 268 of 2006)

guideline value for faecal coliforms. No other standard in these regulations were identified as key pressures in the PRP or being relevant to the primary discharge.

The RL specifies a number of requirements to provide for an improvement in the receiving water quality, namely measures to reduce infiltration, limit impact of SWO's and increase plant capacity.

(e) Impact assessment

The MI believes that the impact of the discharges in conjunction with existing discharges and contamination sources and the overall aggregated impact should be determined. Failure to do so could lead to non-compliance with environmental standards.

Comment:

The accumulative impact of the numerous potential contamination sources was considered in the UCC report on viral contamination and the Great island North Channel PRP. These reports were considered during the licence assessment. However, the scope of licensing is limited to discharges from agglomerations.

(f) Recording and reporting

The MI believe that significant overflow events should be recorded and reported to the Sea Fisheries Protection Authority, MI and Food Safety Authority.

The MI believe that a system of detecting and recording emergency overflows must be in place and be reported to the authorities specified above.

Comment:

The RL does not provide for emergency overflows and in the event of power /pump failure that gives rise to an emergency overflow, it is a reportable incident under the terms of the licence. The RL provides for the notification of the Sea Fisheries Protection Authority, MI and Food Safety Authority in the event of an incident. The following shall constitute an incident for the purposes of this licence:

- any discharge that does not comply with the requirements of this licence;
- any incident with the potential for environmental contamination of surface water or groundwater, or posing an environmental threat to land, or requiring an emergency response by the relevant Water Services Authority.

(g) The MI believe that fortnightly monitoring of faecal coliform and E. coli in the influent and final effluent should be undertaken to demonstrate compliance with the design standard criteria.

Comment:

The RL specifies an ELV for faecal coliforms that demonstrate the performance of the UV treatment systems within the agglomeration.

9. Charges

The RL sets an annual charge for the agglomeration at €6,034 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

p.p.

Ann Marie Donlon

Office of Climate, Licensing and Resource Use

Figure 1: Midleton Agglomeration and Cork Harbour

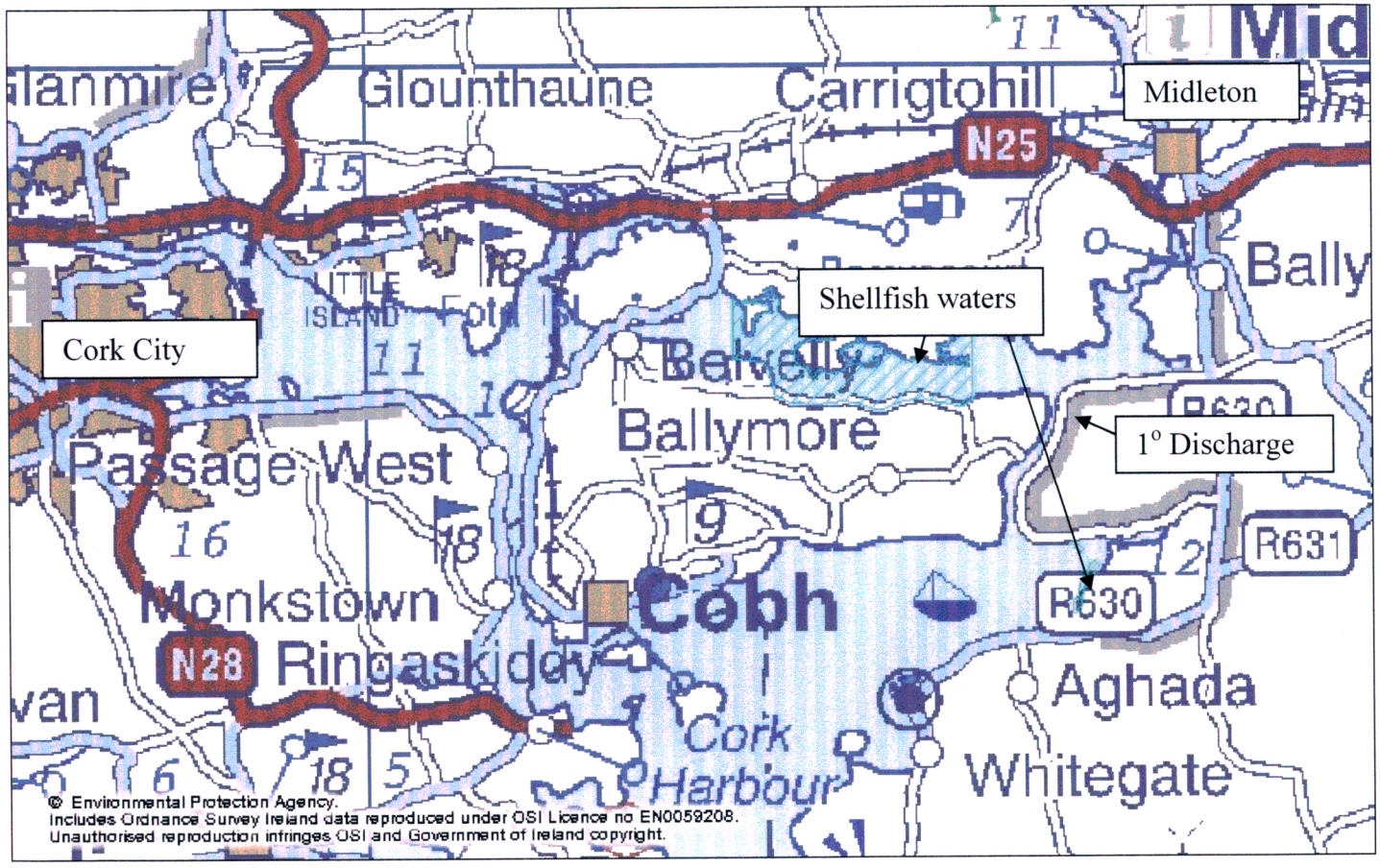

Figure 2: Primary discharge and storm water overflows from Bailick 1 (SW03 MIDL) and 2 (SWO4 MIDL) pumping stations relative to the designated shellfish waters