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 Signed: *Frank Clinton* Date: 27/05/10



OFFICE OF CLIMATE,
 LICENSING & RESOURCE USE.

INSPECTORS REPORT ON A WASTE WATER DISCHARGE LICENCE APPLICATION

To:	DIRECTORS		
From:	John McEntagart	Environmental Programme	Licensing
Date:	27/05/2010		
RE:	Application for a Waste Water Discharge Licence from Westmeath County Council, for the agglomeration named Moate, Reg. No. D0097-01		

Application Details	
Schedule of discharge licensed:	Discharges from agglomerations with a population equivalent of between 2,001 and 10,000.
Licence application received:	22/09/2008
Notices under Regulation 18(3)(b) issued:	18/06/2009
Information under Regulation 18(3)(b) received:	14/08/2009
Site notice check:	17/10/2008
Site visit:	12/05/2009
Submission(s) Received:	None

1. Agglomeration

This application relates to the Moate and environs agglomeration. The existing plant (design capacity of 4,000 p.e.) was constructed in 1997 and is due to be upgraded in two phases to have a design capacity of 7,500 p.e. (phase I) and later 10,200 p.e. (phase II). The current load to the WWTP was estimated at 5,705 p.e. (4,758 p.e. domestic, 195 p.e. industrial and 752 p.e. commercial) with a projected load of 7,174 p.e. in mid-2014.

The phase I upgrade was included in the Water Services Investment Programme (WSIP) 2007 – 2009 as a scheme to advance through planning, but was not included in the 2010 – 2012 WSIP. However the WSIP is subject to an annual review. The phase I upgrade increases the treatment capacity to 7,500 p.e. (upgrade of inlet works and biological treatment), increases storm water holding capacity, upgrades the sewer network and also relocates the primary discharge. Westmeath County Council plan to proceed with the works to increase the

treatment capacity under their own resources and to recoup the funds later, but the other works will only take place after receiving DoEHLG approval. As approval for these works has not yet been received, the applicant did not provide a timeframe for their completion. The applicant indicated the relocation of the primary discharge should take place by the time the population equivalent reaches 6,450 (expected around the end of 2012), but given the absence of the Moate agglomeration in the current WSIP the RL considers a deadline of 2015 (7,250 p.e.). The construction works associated with the phase I upgrade are expected to take one year to complete.

The results of a flow and BOD survey carried out in 2008 indicates that the WWTP is operating outside of the design capacity of the plant. The average loading to the WWTP during the surveyed period was 3,613 p.e. with a peak load of 5,705 p.e.

The Waste Water Treatment Plant

The existing WWTP (designed for 4,000 p.e.) includes an inlet chamber, a coarse bar screen, a fine bar screen, a parallel screened emergency bypass, a grit removal system (aerated grit trap and clarifier), a storm water tank, two aeration tanks – each with an anoxic zone (although only one in service), a secondary clarifier, an upward flow clarifier providing tertiary filtration, ferric dosing at sludge return, picket fence thickener, sludge dewatering system and a sludge belt press.

The phase I upgrade to the WWTP entails refurbishment of the existing plant (to treat 7,500 p.e.) and the provision of a pumping station and pipeline to discharge treated effluent into the River Brosna, 9 km away.

There is one storm water overflow at the WWTP, from the storm water storage tank (SW2). Overflows from the storm tank pass through the effluent monitoring station, i.e. the primary discharge (SW1). The inlet works direct screened sewage flows above 3 x DWF (dry weather flow) to the storm tank which in turn overflows to the Moate stream if the capacity of the storm water tank (320 m³) is exceeded. The applicant argues that the DoEHLG criteria (*'Procedures and Criteria in Relation to Storm Water Overflows'*, 1995) relate to storm water overflows on collection networks and not storm tanks. However, the applicant still considers that the storm water overflow is in compliance with these criteria. It bases this assertion by considering the Urban Waste Water Treatment Regulations (Northern Ireland), 1995 guidance note that indicates the storm tank should be 321 m³ where the current tank is 320 m³ (designed for a 4,000 p.e. agglomeration). At any rate, the applicant has plans to increase the capacity of the storm tank for 10,200 p.e. (1,148 m³, 2 hours at 6 x DWF) as part of the phase I upgrade. *Schedule A.4 Storm Water Overflows* requires this storm water overflow (SW2) to comply with the DoEHLG criteria and under Condition 4.12 of the RL the licensee will have to confirm this is the case.

Flows in excess of the capacity of the inlet works (designed for 6 x DWF at 4,000 p.e., but now circa 5 x DWF due to increase in the size of the agglomeration) cause a local overflow at the inlet works which flows to the Moate stream via the surface water drainage system, bypassing the storm tank but passing through the effluent monitoring station (SW1). Flows greater than the 5 x DWF can also cause the sewage at the inlet pumping station to back-up and overflow to the storm pumping station, which in turn overflows to the Moate stream, without entering the storm tank, when the pumping capacity of the storm pumping station is exceeded. The applicant advises that this occurs on average three to four times per year. The duration and magnitude of the overflows is largely dependent on the duration of the storm. The inlet works will also be reconstructed and reconfigured so that it can screen 6 x DWF as part of the phase I upgrade. The applicant also identified another problem with the inlet works, blocking of the screens results in inaccurate low flow readings that cause a lag in the diversion of storm flows to the storm tank. Accordingly it plans to upgrade the screenings removal system. The RL requires the licensee to upgrade the storm water management system and the WWTP by 01/01/2015.

The existing storm tank is, however, due to be upgraded as part of the phase I works. The new tank will be designed for 2 hours at 6 x DWF at the 20 year design load (10,200 p.e.), i.e. 1,148 m³. Dedicated pumps for the expanded system will also be provided, as the existing storm tank is currently emptied through the RAS (return activated sludge) pumps.

There is a WWTP operator at the facility Monday to Friday during working hours and for 3 hours on both Saturday and Sunday.

The Sewer Network

The agglomeration is served by a 450 mm and 225mm gravity sewer network that flows into a sump where it is pumped into the inlet works via a 100 mm rising main. Wastewater is collected in combined and separate foul sewer lines.

There are four pumping stations located along the route of the sewer network and at the treatment works, two of which are privately operated.

- (i) Moyvoughly Road Foul Pumping Station. There is no emergency storage at this pumping station. The emergency overflow to the Moate stream activates only if there is power outage or pump failure – estimated to have occurred once or twice in the last five to six years.
- (ii) Moate WWTP Inlet Pumping Station – no emergency storage. An emergency overflow to the Moate stream discharges through a combined outfall with treated effluent and storm water overflow. Emergency overflow activates in the event of power outage, when flows greater than 6 x design DWF enter the inlet pumping station, and overflow to the storm pumping station, and when flows in excess of the capacity of the inlet works cause the inlet pumping station to back up and overflow to the storm pumping station. The storm pumping station overflows to the Moate stream if its capacity is exceeded, as discussed above. The storm pumping station pumps waste water from the storm tank to the WWTP for full treatment when inlet flows drop below 3 x DWF.
- (iii) Privately operated pumping stations. There is one at Gleann Duchais housing Estate. It has 90m³ of emergency storage, and no emergency overflow. No details were provided for the second pumping station, but this will be addressed through Condition 5.2 regarding the programme of infrastructural improvements.

The two municipal pumping stations have high level alarms but do not currently have call out facility arrangements. The phase I upgrade will provide a call out facility for these pumping stations.

The sewage collection network was due to be upgraded in two phases, but with the opening of the M6 motorway (diverting traffic away from the town) the applicant advises this can be done in one phase. However, Westmeath County Council are unable to provide a timeframe for the works until approval for the project from the DoEHLG is received, so the RL provides a timeframe of 01/01/2015 in order to achieve compliance with the Water Framework Directive. The works will include the rehabilitation, replacement, and improvement of existing sewers and the construction of new lines and will relieve currently overloaded sewers.

There will also be a pumping station at the WWTP to pump effluent to the River Brosna, but no details will be available until after the DoEHLG give approval for this project.

Site Inspection

A site inspection was conducted on 12/05/09. The WWTP, the outfall for the primary discharge and the Moate stream in the vicinity of the outfall (the ambient monitoring

locations were not accessible), the storm water overflow tank and the pumping stations were inspected.

Using information from the Agency's GIS system a manhole that overflows (ref. SW3) was identified during the inspection (see Figure 1). It is one of four manholes on the network, the applicant later advised that it is subject to surcharging or flooding under excessive flows due to hydraulic limitations of the sewer. A hydraulic model indicated the sewer has sufficient capacity at flows up to 6 x DWF and so exceeds the minimum requirements for a storm water overflow. Nonetheless it is to be removed during the upgrade of the sewer network and this is provided for in *Schedule A.3 Discharges to be discontinued*. Condition 5.2 of the RL, that details the requirements of the programme of infrastructural improvements, requires issues relating to the capacity of the sewer network to be addressed.



Figure 1. Photograph of manhole that overflows (ref. SW3) due to hydraulic limitations of sewer.

Otherwise the WWTP seemed to be operating satisfactorily at the time of the inspection. There was a lot of vegetation in the Moate stream in the vicinity of the outfall – a location where the Moate stream is small and slow-flowing – indicating some eutrophication.

2. Discharges to waters

There are currently two discharges – the primary discharge point (SW1) and the storm water overflow from the storm water tank (SW2). The primary and storm water overflow discharge points combine and discharge through a 450 mm concrete pipe. There will also be a new primary discharge point (SW1a) to the River Brosna through a long-outfall, because of a lack of assimilative capacity in the Moate stream. Figure 2 presents the locations of the new and old discharge points. As the applicant does not yet have full details of the proposed primary discharge to the River Brosna, Condition 4.17 of the RL requires the licensee to agree the design and location of this outfall with the Agency at least twelve months prior to it becoming activated.

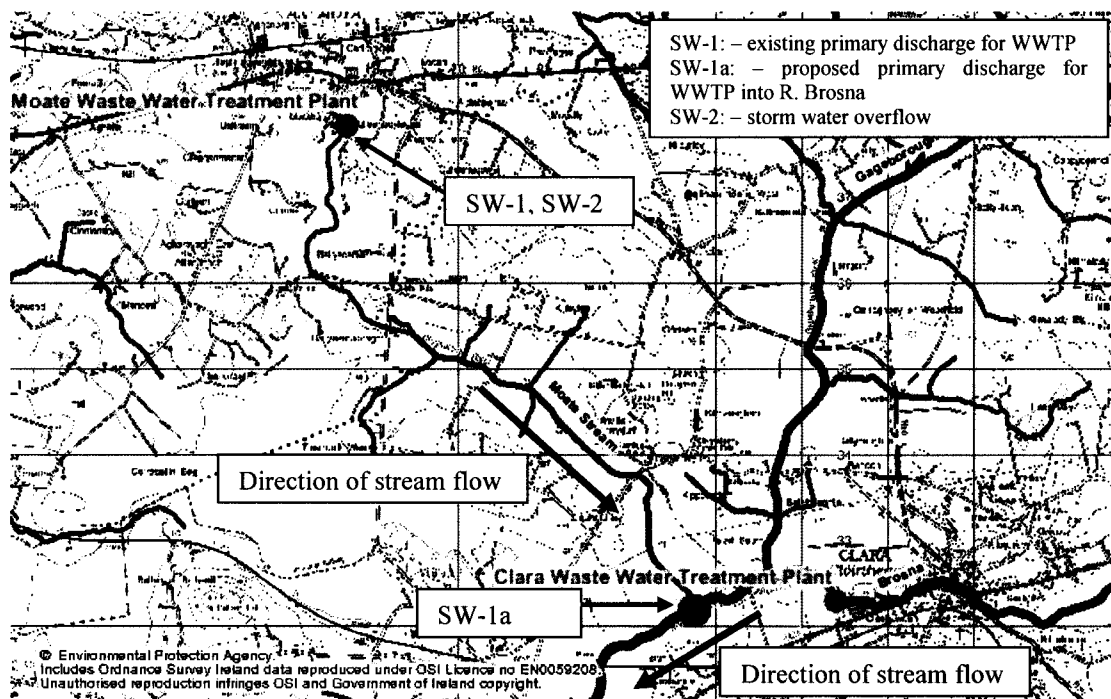


Figure 2. Discharge points for the Moate agglomeration.

The Agency's report on *Urban Waste Water Discharges in Ireland for Population Equivalents Greater than 500 Persons - A Report for the Years 2006 and 2007* identifies that the existing primary discharge was in non-compliance with the UWWT Regulations in 2006 and 2007, because an inadequate number of samples were taken and because of poor effluent quality for COD and BOD in 2006.

While the effluent monitoring data submitted by the applicant for the period January, 2007 to April, 2008 indicated levels of BOD, COD and suspended solids within those of the UWWT Regulations, the data indicated that levels of BOD, suspended solids, ammonia and orthophosphates were occasionally above the emission limit values proposed in the RL (with some ammonia levels well above the proposed emission limit value) but the upgrade to WWTP should rectify this matter (see below for discussion on setting emission limit values).

3. Receiving waters and impact

The following table summarises the main considerations in relation to the *Moate stream* downstream of the primary discharge.

Table 1a. Receiving waters

Characteristic	Classification	Comment
Receiving water name and type	Moate Stream	Joins the River Brosna circa 9 km downstream of the WWTP. The River Brosna is a tributary of the River Shannon.
Resource use		No drinking water abstractions from the Moate Stream downstream of any discharge in the agglomeration. There is no surface water abstraction from the River Brosna as far as the confluence with the River Shannon, a distance of 31 km.
Amenity value	N/a	None identified
Applicable Regulations	Surface Water Regulations Note 1	Non-compliant - breach of standards upstream of primary discharge for ammonia and downstream of primary discharge for BOD, orthophosphate and ammonia.

	UWWT Regulations ^{Note 2}	The WWTP is compliant in terms of providing secondary treatment and in terms of effluent quality (2007 – 2008 data submitted by applicant). ^{Note 4} The Moate stream is not a designated area under UWWT Regulations.
Designations		None
EPA monitoring stations	25M050150 ^{Note 3} 25M050300	Circa 100m downstream of discharge ^{Note 3} Circa 3.5km downstream of discharge
Biological quality rating (Q value)	Downstream (100 m): Q3 Downstream (3.5 km): Q3	Rated in 2008 Rated in 2005
Target Q	Downstream (100 m): Q3 Downstream (3.5 km): Q3	Target achieved (Rated Q1 in 1996) Target achieved (Rated Q2 in 1996)
WFD status	Poor	
WFD Risk Category	1a (at risk of not achieving good status)	
WFD protected areas	None	

Note 1: European Communities Environmental Objectives (Surface Waters) Regulations 2009, S.I. 272 of 2009.

Note 2: Urban WW Treatment Regulations 2001, S.I. No. 254 of 2001, Urban Waste Water Treatment (Amendment) Regulations 2004, S.I. 440 of 2004 and Urban Waste Water Treatment (Amendment) Regulations 2010, S.I. No. 48 of 2010.

Note 3: There is no EPA upstream monitoring point for the primary discharge.

Note 4: It is noted that the Agency's report on *Urban Waste Water Discharges in Ireland for Population Equivalents Greater than 500 Persons - A Report for the Years 2006 and 2007* identified that the primary discharge was not in compliance in terms of effluent quality, but the applicant's data is more recent.

The Moate stream is not designated as a sensitive area under the UWWT Regulations (S.I. 254 of 2001) as amended and the agglomeration is currently under 10,000 p.e., so the WWTP is not required to comply with total phosphorus and total nitrogen limits specified in the Regulations.

The Moate stream is moderately polluted (biological quality rating of Q3) downstream of the primary discharge. There is no Agency biological monitoring station upstream of the primary discharge.

Table 1b summarises the waste assimilative capacity calculations for Biochemical Oxygen Demand (BOD), phosphorus and ammonia for the primary discharge to the Moate stream (current primary discharge point) at 7,250 p.e. (the maximum projected load for the current primary discharge point).

Table 1b. Assimilative capacity calculations at 7,250 p.e. (1633 m³/day).

Parameter	Background (mg/l) ^{Note 2}	Proposed ELVs for Discharge from SW1 (mg/l)	Contribution from primary discharge (mg/l) ^{Note 3}	Predicted downstream quality (mg/l) ^{Note 3}	Water Quality Standards (mg/l)
BOD	0.86 mg/l 1.74 mg/l	10	1.45 4.01	2.31 5.75	1.5 (mean) ^{Note 1} 2.6 (95%ile)
PO ₄ -P	0.03 mg/l 0.04 mg/l	1	0.15 0.47	0.18 0.51	0.035 (mean) ^{Note 1} 0.075 (95%ile)
Ammonia	0.2 mg/l 0.26 mg/l	1	0.13 0.36	0.33 0.62	0.065 (mean) ^{Note 1} 0.14 (95%ile)

Note 1: Mean and 95%ile values, as per European Communities Environmental Objectives (Surface Waters) Regulations 2009;

Note 2: Based on upstream monitoring data (5 to 7 samples) between January 2007 and April 2008.

Note 3: Based on proposed emission limit values.

Biochemical Oxygen Demand (BOD), Orthophosphate and Ammonia

Table 1b indicates there is insufficient assimilative capacity to comply with the water quality standards specified in the European Communities Environmental Objectives (Surface Waters) Regulations 2009, at the proposed emission limit values. In

particular an emission limit value of 5.1 mg/l (BOD), 0.13 mg/l (phosphorus) and 0.28 mg/l (ammonia) would be required to ensure *no deterioration in the status of water quality*, where this concept considers the effect of the discharge on a notionally clean river.¹ In addition the assimilative capacity calculations in table 1b considered the discharge expected from a population equivalent of 6,450, which is expected within just three years.

As a consequence of the insufficient assimilative capacity in the Moate stream, the applicant proposes to divert the discharge 9 km away to the River Brosna through a long-outfall (see below). In the meantime the interim emission limit values proposed in the RL will be adequate to ensure compliance with the European Communities (Quality of Salmonid Waters) Regulations, 1988 for ammonia (1mg/l) and BOD (5 mg/l). Condition 5.1 also requires the licensee to optimize the operation of the WWTP to reduce emissions of phosphorus and ammonia to the maximum extent. The applicant has indicated that the WWTP should be able to achieve 10 mg/l (BOD), 1 mg/l (orthophosphate) and 1 mg/l (ammonia).

Suspended Solids

Assimilative capacity calculations by the applicant indicated the primary discharge should not discharge suspended solids into the Moate stream above 11 mg/l to avoid raising levels in the stream by more than 5 mg/l. The applicant has specified a design level of 10 mg/l for the short term upgrade. Emissions monitoring between January 2007 and July 2008 indicated levels of suspended solids greater than 10 mg/l on 3 out of 24 occasions, so this standard should be achievable and is included as an interim emission limit value in the RL.

The following table summarises the main considerations in relation to the *River Brosna* downstream of the proposed primary discharge.

Table 2a. Receiving waters

Characteristic	Classification	Comment
Receiving water name and type	River Brosna	The River Brosna is a tributary of the River Shannon.
Resource use		There is no surface water abstraction, for drinking water, from the River Brosna as far as the confluence with the River Shannon, a distance of 31 km.
Amenity value	N/a	Important for town of Clara and environs, specifically for walkers, boaters and anglers. Good stocks of wild brown trout and small runs of salmon in the summer months. No specific amenity identified for River in vicinity, or downstream, of proposed primary discharge.
Applicable Regulations	Surface Water Regulations Note 1	Monitoring upstream of proposed primary discharge location compliant with standards for BOD, phosphorus and ammonia. Monitoring results indicate water quality is already in exceedance of the standards for BOD downstream of the proposed primary discharge location for. This monitoring location is after the Moate Stream joins the R. Brosna with the existing pollutant load from the Moate WWTP.

¹ Notionally clean river: BOD (0.26 mg/l); orthophosphates (0.005 mg/l); ammonia (0.008 mg/l).

	UWWT Regulations ^{Note 2}	The WWTP is compliant in terms of providing secondary treatment and in terms of effluent quality (2007 – 2008 data submitted by applicant). ^{Note 3}
Designations	Nutrient Sensitive Waters ^{Note 2}	As agglomeration is below 10,000 p.e. the WWTP is not required to comply with the total phosphorus and total nitrogen limits.
EPA monitoring stations	25B090600 25B090700	c. 900 m upstream c. 2.3 km downstream
Biological quality rating (Q value)	Upstream: Q3-4 Downstream: Q4	Rated in 2008 Rated in 2005
Target Q	Upstream: Q4 Downstream: Q3-4	Target not achieved (Rated Q3-4 in 1999) Target achieved (Rated Q3 in 1996)
WFD status	Good	
WFD Risk Category	1a (at risk of not achieving good status)	
WFD protected areas	None	

Note 1: European Communities Environmental Objectives (Surface Waters) Regulations 2009, S.I. 272 of 2009.

Note 2: Urban WW Treatment Regulations 2001, S.I. No. 254 of 2001, Urban Waste Water Treatment (Amendment) Regulations 2004, S.I. 440 of 2004 and Urban Waste Water Treatment (Amendment) Regulations 2010, S.I. No. 48 of 2010.

Note 3: It is noted that the Agency's report on *Urban Waste Water Discharges in Ireland for Population Equivalents Greater than 500 Persons - A Report for the Years 2006 and 2007* identified that the primary discharge was not in compliance in terms of effluent quality, but the applicant's data is more recent.

The section of the River Brosna into which it is proposed to divert the primary discharge is designated as a sensitive area under the UWWT (Amendment) Regulations (S.I. 48 of 2010), but the agglomeration is currently under 10,000 p.e., so the WWTP is not required to comply with total phosphorus and total nitrogen limits.

The River Brosna is already slightly polluted (biological quality rating of Q3-4) just upstream of the proposed location for the primary discharge.

Table 2b summarises the waste assimilative capacity calculations for BOD, phosphorus and ammonia for the primary discharge to the River Brosna at 7,500 p.e. (estimated population equivalent in a little over six years time).

Table 2b. Assimilative capacity calculations at 7,500 p.e. (1,685 m³/day).

Parameter	Background (mg/l) ^{Note 2}	Proposed ELVs for Discharge from SW1 (mg/l)	Contribution from primary discharge (mg/l) ^{Note 3}	Predicted downstream quality (mg/l) ^{Note 3}	Water Quality Standards (mg/l)
BOD	1.69 mg/l	20	0.1	1.79	1.5 (mean) ^{Note 1}
	2.14 mg/l		0.38	2.52	2.6 (95%ile)
PO ₄ -P	0.02 mg/l	1	0.005	0.025	0.035 (mean) ^{Note 1}
	0.05 mg/l		0.02	0.07	0.075 (95%ile)
Ammonia	0.05 mg/l	1	0.005	0.055	0.065 (mean) ^{Note 1}
	0.1 mg/l		0.019	0.119	0.14 (95%ile)

Note 1: Mean and 95%ile values, as per European Communities Environmental Objectives (Surface Waters) Regulations 2009.

Note 2: Based on upstream monitoring data (19 samples) between January 2007 and July 2008.

Note 3: Based on proposed emission limit values.

(i) *Biochemical Oxygen Demand*

Table 2b indicates there is sufficient assimilative capacity to comply with the water quality standards (i.e. the 95%ile standard) specified in the European Communities Environmental Objectives (Surface Waters) Regulations 2009, at the proposed emission limit value, despite relatively elevated background levels. The applicant proposed a standard of 20 mg/l for BOD in the upgrade to the plant. While this emission limit value (ELV) is greater than that proposed for the Moate stream (10 mg/l), maintaining the ELV for the Moate stream requires a lot more resources and as the contribution of the primary discharge (at 20 mg/l) is about 15% of that permitted by the EQS (at 95%ile flow conditions), the RL proposes an ELV of 20 mg/l.

(ii) *Phosphorus*

Table 2b indicates there is sufficient assimilative capacity to comply with the water quality standards (i.e. the mean standard) specified in the European Communities Environmental Objectives (Surface Waters) Regulations 2009, at the proposed emission limit value. The applicant had proposed an emission limit value (ELV) of 2 mg/l but the contribution from the primary discharge would be more than half of that permitted by the EQS (95%ile flow conditions), so an ELV of 1 mg/l is proposed in the RL.

(iii) *Ammonia*

Table 2b indicates there is sufficient assimilative capacity to comply with the water quality standards specified in the European Communities Environmental Objectives (Surface Waters) Regulations 2009, at the proposed emission limit value. The applicant has indicated that the WWTP should be able to achieve 1 mg/l for ammonia.

(iv) *Suspended Solids*

The applicant proposes a design standard of 35 mg/l for suspended solids when it has diverted to the River Brosna, as there is sufficient assimilative capacity.

Table 2b highlights that background levels of BOD, phosphorus and ammonia are already elevated due to other pollutant sources, which are compromising the River Brosna's ability to achieve *good status* under the Water Framework Directive. However, it is not the role of the Wastewater Discharge Licence to address these other pollutant sources – it can only address pollution from the urban waste water discharges. Measures to address these other pollutant sources are incorporated into other mechanisms, in particular the River Basin Management Plan for the Shannon IRBD (2009 - 2015) and the Phosphorus Regulations National Implementation Report (2005) provide details of recommendations and planned measures to

reduce pollution in water courses. It is considered that the above plans, if fully implemented, in addition to the upgrade of the WWTP, and the relocation of the primary discharge, should address the pollutant loads in the Moate stream, and go a long way to ensuring compliance with the Water Framework Directive requirements for both the Moate Stream and the River Brosna.

4. Ambient Monitoring

Table 3 highlights that the water quality in the Moate stream downstream of the primary discharge is somewhat poorer than that upstream, indicating the primary discharge is adversely affecting water quality. In particular the primary discharge is causing BOD and orthophosphate levels downstream greater than that permitted by the European Communities Environmental Objectives (Surface Waters) Regulations 2009 and so would prevent the Moate stream from achieving good water quality status under the Water Framework Directive. Ammonia levels in the Moate stream are also raised significantly by the primary discharge, but the upstream levels are already greater than the standards specified in the European Communities Environmental Objectives (Surface Waters) Regulations 2009.

Table 3: Summary of upstream and downstream monitoring results the Moate stream, for the period February 2007 to April 2008.

Parameter	95%ile ^{Note 2}		Average ^{Note 2} (Range in brackets)		Water quality standard/guideline
	Upstream	Downstream	Upstream	Downstream	
BOD (mg/l)	1.74	3.33	0.86 (0.5 – 2)	1.59 (0.5 – 3.5)	2.6 mg/l (95%ile) 1.5 mg/l (mean)
Ortho-phosphate (mg/l)	0.042	0.115	0.03 (0.007– 0.043)	0.05 (0.13 – 0.17)	0.075 mg/l (95%ile) 0.035 mg/l (mean)
Ammonium (mg/l)	0.264	2.37	0.2 (0.05 – 0.27)	0.84 (0.11 – 2.7)	0.14 mg/l (95%ile) 0.065 mg/l (mean)

Note 1: Mean and 95%ile values, as per European Communities Environmental Objectives (Surface Waters) Regulations 2009;

Note 2: Based on upstream monitoring data (19 samples) between January 2007 and July 2008.

Table 1a identifies that the water quality in the Moate Stream has improved somewhat since 1996 (reference year for the Phosphorus Regulations), but it still remains significantly polluted. The biologist's report on the *Biological Survey of River Quality (Results of the 2008 Investigations)* gave the following assessment for the Moate Stream:

The Moate Stream (aka Cloghatanny River) was moderately polluted at both locations surveyed in 2008. The complete lack of sensitive macroinvertebrate taxa, dominance of pollution tolerant fauna, heavy siltation and low dissolved oxygen concentrations indicates significant ecological disruption at both locations (0150 and 0400). Unrestricted livestock access and recent bank works noted in lower reaches (0400) could have contributed to the heavy siltation noted. Sewage and Agriculture suspected sources of pollution.

The relocation of the primary discharge to the River Brosna, in approximately three years, should greatly improve water quality in the Moate stream. In the meantime, the upgrade to the WWTP, based on design effluent concentrations, should ensure downstream levels in line with those specified in the Salmonid Regulations (5 mg/l for BOD and 1 mg/l for ammonia).

There is limited dilution available in the Moate stream, especially under dry weather flow (DWF) conditions, where the dilution factor at DWF is 0.005 m³/s (river): 0.017 m³/s (WWTP discharge) or 0.29:1. Under normal discharge conditions with 95%ile flow in the river the dilution ratio is 1.2:1 (6,450 p.e.). For the River Brosna, the dilution factor (at 7,500 p.e.) will be about 46:1 under normal discharge and 95%ile flow conditions.

The RL requires regular monitoring at one location upstream and one location downstream of the primary discharge, which should be sufficient to monitor the impact of the discharge on the receiving waters. The upstream and downstream monitoring points for the Moate stream are respectively 600 m upstream and 2200 m downstream of the primary discharge point. The RL requires monitoring in the receiving waters at least ten times per year.

The RL also requires biological monitoring (an annual Small Stream Risk Score (SSRS) assessment) to determine the effect of improvements to the waste water treatment works, and the diversion of the primary discharge, on the biological quality of the Moate stream. This monitoring may continue after the diversion of the primary discharge (there will still be the storm water overflows) until the Agency agrees to its cessation. This biological monitoring is not specified for the River Brosna. This is because the Agency conducts biological monitoring in the River Brosna in the vicinity of the proposed primary discharge location (c. 900m upstream and c. 2.3km downstream of the proposed primary discharge location) and the relative impact of the primary discharge on the Brosna is not significant compared to its impact on the Moate stream.

The applicant identifies EPA monitoring stations upstream (circa 900m) and downstream (circa 2.3 km) of the proposed discharge to the River Brosna. Condition 4.18 of the RL requires the licensee to review and agree the appropriate ambient monitoring locations in the River Brosna, six months prior to the diversion of the primary discharge.

The primary discharge was monitored for a range of dangerous substances. All dangerous substances were below specified standards. The RL requires screening of the waste water discharges for the presence of organic compounds and metals within twelve months of the date of grant of licence, analysis shall be at an appropriate sensitivity to reflect the standard levels in Water Quality (Dangerous Substances) Regulations, 2001.

5. Combined Approach

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

6. Discharges from agglomerations where no treatment or insufficient treatment is in place

The WWTP does not currently provide sufficient treatment for ammonia, BOD and total phosphorus, as noted above. However, the relocation of the primary discharge to the River Brosna should ensure the Moate stream will have good water status by 22nd December 2015. Until the diversion takes place, the applicant will minimize the impact of the primary discharge and ensure no deterioration on the Moate Stream and in particular reduce emission levels so that the levels of ammonia and BOD in the Moate Stream are within those specified by the Salmonid Regulations. The upgrade to the waste water treatment works should ensure the primary discharge does not prevent the River Brosna from achieving compliance with the Water Framework Directive requirements.

7. Programme of Improvements

The applicant plans to upgrade the waste water works in two phases.

Phase I:

- Upgrade treatment capacity of the plant to cater for the 10 year design load (7,500 p.e.) – this will include upgrade of the inlet works, the biological treatment units, the phosphorus removal system and the monitoring and control system.
- Provide for the diversion of the primary discharge to the River Brosna, by way of a 9km long-outfall pipeline and pumping station. This will require planning permission and is still awaiting DoEHLG approval.
- Upgrade the storm water management system, including installation of new storm tank.
- Upgrade and rehabilitation of the sewer network.

Phase II:

- Upgrade the WWTP to treat 10,200 p.e. (2026 design load). This upgrade is not expected prior to 2016 and is not included in the RL.
- Rehabilitation, replacement and upgrade of the sewer network in the town centre. The applicant has advised that it is possible to complete the phase I and phase II upgrade to the sewer network at the same time and this is provided for in the RL.

Westmeath County Council have advised that the timeframes for implementation are dependent on DoEHLG approval. However, they also advised that they expect to have completed the phase I upgrade by the time the population equivalent of the agglomeration reaches 6,450 (expected by the end of 2012). The 2007-2009 WSIP (Water Services Investment Program) included Phase I of the Moate scheme as being scheduled to advance through planning and estimates the cost of this project at €9.7 million. The next WSIP (2010 – 2012) has not yet been published.

8. Compliance with EU Directives

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

Drinking Water Abstraction Regulations

There is no surface water abstraction point from the Moate Stream or the River Brosna downstream of the primary discharge locations until the River Brosna reaches the River Shannon (31 km from the outfall to the River Brosna). No Risk analysis has been completed or considered necessary.

Sensitive Waters

The Moate stream is not designated as nutrient sensitive under the UWWT Directive, however the River Brosna has been designated as nutrient sensitive under the Urban Waste Water Treatment (Amendment) Regulations 2010, S.I. No. 48 of 2010. The emission limit values stipulated in the RL are in line with, or more stringent than, those required by the UWWT Directive, even though the agglomeration is below 10,000 p.e.

Water Framework Directive [2000/60/EC]

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

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

The Moate stream currently does not comply with the water quality standards specified in the European Communities Environmental Objectives (Surface Water) Regulations 2009, and the

primary discharge from the Moate WWTP is largely responsible for this. The RL, as drafted, provides interim emission limit values that may reduce the pollutant load, but will not ensure compliance with these Regulations. However, the RL also provides for the relocation of the primary discharge to the River Brosna by 01/01/2015, which should significantly aid the Moate stream in achieving compliance with these regulations without compromising the River Brosna from doing likewise.

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

The Moate and environs agglomeration complies with the requirements of the Urban Waste Water Treatment Directive in terms of the level of treatment provided (i.e. secondary), and in terms of the quality of the effluent (based on most recent data submitted by applicant). The RL, as drafted, has regard to the requirements of the Urban Waste Water Treatment Directive. In particular, *Condition 3 Discharges* provides conditions regulating discharges to waters and *Schedule A: Discharges* specifies limit values for those substances contained within the waste water discharge.

Bathing Water Directive [2006/7/EC]

There is no designated bathing water located in the vicinity of the primary discharge.

EC Freshwater Fish Directive [2006/44/EC]

Neither the Moate stream nor the River Brosna is designated as a Salmonid water.

Shellfish Waters Directive [2006/113/EC]

There are no shellfish waters in the vicinity of the agglomeration.

Dangerous Substances Directive [2006/11/EC]

The applicant has provided sampling results for 17 of the 19 dangerous substances in the primary discharge for the purposes of the licence application. The measured concentrations are not considered significant.

The RL requires screening of the waste water discharges for the presence of organic compounds and metals within twelve months of the date of grant of licence, analysis shall be at an appropriate sensitivity to reflect the standard levels in

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

There are no discharges from the Moate agglomeration directly into any site designated under the E.U. Habitats or Birds Directives. The nearest habitats are the River Shannon Callows cSAC (Site code: 000216) and the Middle Shannon Callows SPA (Site code: 004096) about 39.7 km downstream of the primary discharge at Moate and 31 km downstream of the proposed discharge to the River Brosna. It is very unlikely that the WWTP discharge would significantly affect this site .

Other Directives

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

Submissions

No submissions were received in relation to this application.

Cross-office liaison

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.

I also consulted with Dr. Catherine Bradley of the Office of Environmental Assessment (Aquatic Environment unit) in relation to the biological assessment of the Moate Stream.

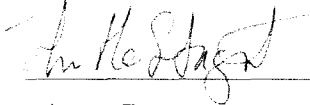
Charges

The RI sets an annual charge for the agglomeration at € 3,460 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



John McEntagart

Office of Climate, Licensing and Resource Use

Cross-office liaison

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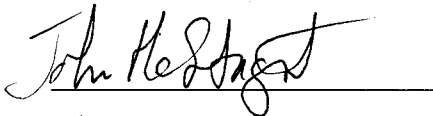
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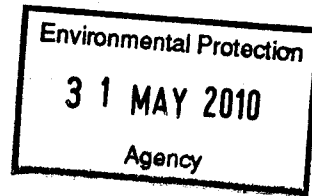
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Signed



John McEntagart

Office of Climate, Licensing and Resource Use



*Hi Dorothy
Please find word copy of last
page of IR (signed) for
Moate WWDZ (00097-01)*

*Regards
John*