

Annual Environmental Report 2015

Agglomeration Name:	Monaghan
Licence Register No.	D0061-01



Contents

Section 1. Executive Summary and Introduction to the 2015 AER	3
1.1 Summary Report on 2015	3
Section 2. Monitoring Reports Summary	4
2.1 Summary report on monthly influent monitoring	4
2.2 Discharges from the agglomeration	5
2.3. Ambient Monitoring Summary	6
2.4 Data collection and reporting requirements under the UWWTD	7
2.5 Pollutant Release and Transfer Register (PRTR) - report for previous year	7
A PRTR report is not required.	7
Section 3. Operational Reports Summary	8
3.1 Treatment Efficiency Report	8
3.2 Treatment Capacity Report	8
3.3 Extent of Agglomeration Summary Report	8
3.4 Complaints Summary	9
3.5 Reported Incidents Summary	11
3.6 Sludge / Other inputs to the WWTP	12
Section 4. Infrastructure Assessments and Programme of Improvements	13
4.1 Storm water overflow identification and inspection report	13
4.2 Report on progress made and proposals being developed to meet the improvement programme requirements.	15
Section 5. Licence Specific Reports	17
5.1 Priority Substances Assessment	18
Section 6. Certification and Sign Off	19
Section 7. Appendix	20

Section 1. Executive Summary and Introduction to the 2015 AER

1.1 Summary Report on 2015

This Annual Environmental Report has been prepared for D0061-01, Monaghan, in County Monaghan, in accordance with the requirements of the wastewater discharge licence for the agglomeration. Specified reports are included as an appendix to the AER as follows:

- Storm water overflow assessment

The agglomeration is served by a wastewater treatment plant with a Plant Capacity PE of 37,400. The treatment process includes the following:-

- Preliminary Treatment (Screening and Grit removal)
- Primary Treatment (Settlement)
- Secondary Treatment (Aeration)
- Chemical dosing for Phosphorus removal

The final effluent from the Primary Discharge Point was compliant with the Emission Limit Values in 2015.

554,481kgs sludge (as kg dry solids) was removed from the wastewater treatment plant in 2015 as dewatered sludge cake. Sludge was transferred from Monaghan WWTP to Biocore Sludge Treatment Centre (lime stabilisation), Co. Meath (SSF-COR-MH-13-0001-02).

There were no major capital or operational changes undertaken in 2015
An Annual Statement of Measures is included in Appendix 7.1.

Section 2. Monitoring Reports Summary

2.1 Summary report on monthly influent monitoring

Table 2.1 Influent Monitoring Summary

2.1.1 Monthly Influent Monitoring	BOD (mg / l)	COD (mg / l)	SS (mg / l)	TP (mg / l)	TN (mg / l)	Hydraulic Loading (m3/d)	Organic Loading (PE/Day)
Number of Samples	25	25	25	25	25		
Annual Max.	391	977	488	9.9	161.1	12,625	29,032
Annual Mean	171.4	460.5	183.4	3.5	45.2	4,381	11,564

Significance of results

The annual mean hydraulic loading is less than the peak Treatment Plant Capacity as detailed further in Section 3.2.

The annual maximum hydraulic loading is less than the peak Treatment Plant Capacity as detailed further in Section 3.2.

The annual mean organic loading is less than the Treatment Plant Capacity as detailed further in Section 3.2.

The annual maximum organic loading is less than the Treatment Plant Capacity as detailed further in Section 3.2.

2.2 Discharges from the agglomeration

Table 2.2 - Effluent Monitoring

2.2.1 Effluent Monitoring Summary	BOD (mg/l)	COD (mg/l)	TSS (mg/l)	Total P (mg/l)	Ortho P (mg/l)	Ammonia NH3 (mg/l)	pH	Comments
WWDL ELV (Schedule A) where applicable	25	125	25	2	0.1 ELV will apply from the 31/12/19. There is no interim ELV.	0.2 ELV will apply from the 31/12/19. There is no interim ELV	6 to 9	ELV of 3.5 mg/L will apply from the 31/12/2019 for BOD.
ELV with Condition 2 Interpretation included	50	250	62.5	2.4	0.2	0.4		
Number of sample results	25	25	25	25	23	25	25	
Number of sample results above WWDL ELV	0	0	0	1	0	0	0	
Number of sample results above ELV with Condition 2 Interpretation	0	0	0	0	0	0	0	
Annual Mean (for parameters where a mean ELV applies)	N/A	N/A	N/A	0.51	N/A	N/A	7.22	
Overall Compliance (Pass/Fail)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	

Significance of results

The WWTP was compliant with the ELV's set in the wastewater discharge licence. The impact on receiving waters is assessed further in Section 2.3.

2.3. Ambient Monitoring Summary

Table 2.3. Ambient Monitoring Report Summary Table

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish Grid Reference	EPA Feature Coding Tool code	Receiving Waters Designation (Y/N)				WFD Status	Does assessment of the ambient monitoring results indicate that the discharge is impacting on water quality?
			Bathing Water	Drinking Water	FWPM	Shellfish		
Upstream monitoring point	267812E 333762N	RS03S01027 0	N	N	N	N	Poor	
Downstream monitoring point	267939E 334 666N	RE03S01040 0	N	N	N	N	Poor	Yes, due to orthophosphate and total phosphorus

The results for the upstream and downstream monitoring are included in Appendix 2 Ambient Monitoring Results.

Significance of results

- The WWTP was compliant with the ELVs set in the wastewater discharge licence as detailed in Section 2.2.
- A deterioration in water quality has been identified in terms of Orthophosphate and total phosphorus. The WWTP was compliant with the ELVs for Orthophosphate and total phosphorus and therefore it is not considered that the WWTP is impacting on these concentrations downstream. The other potential causes of deterioration in water quality in the area are unknown.
- The discharge from the wastewater plant doesn't have an observable negative impact on the WFD status.

2.4 Data collection and reporting requirements under the UWWTD

The reporting requirement under the Urban Wastewater Directive was completed by electronic submission of data on 15/01/2016.

2.5 Pollutant Release and Transfer Register (PRTR) - report for previous year

A PRTR report is not required.

Section 3. Operational Reports Summary

3.1 Treatment Efficiency Report

	cBOD (kg/yr)	COD (kg/yr)	SS (kg/yr)	Total P (kg/yr)	Total N (kg/yr)
Influent mass loading (kg/year)	253,254	654,287	279,150	4,643	65,192
Effluent mass emission (kg/year)	6,168	56,708	8,297	672	38,742
% Efficiency (% reduction of influent load)	98%	91%	97%	86%	41%

3.2 Treatment Capacity Report

Table 3.2 - Treatment Capacity Report Summary (excludes now redundant “old treatment works”)

Hydraulic Capacity – Design / As Constructed (dry weather flow) (m3/year)	2,899,560
Hydraulic Capacity – Design / As Constructed (peak flow) (m3/year)	13,507,920
Hydraulic Capacity – Current loading (m3/year)	1,599,153
Hydraulic Capacity – Remaining (m3/year)	11,908,767
Organic Capacity - Design / As Constructed (PE)	37,400
Organic Capacity - Current loading (PE)	11,564
Organic Capacity – Remaining (PE)	25,836
Will the capacity be exceeded in the next three years? (Yes / No)	No

3.3 Extent of Agglomeration Summary Report

In this section Irish Water is required to report on the amount of urban waste water generated within the agglomeration. It does not include any waste water collected and created in a private system and discharged to water under a Section 4 Licence issued under the Water Pollution Acts 1977 (as amended).

Table 3.3 - Extent of Agglomeration Summary Report

	% of total load generated in the agglomeration
Load generated in the agglomeration that is collected in the sewer network	100%
Load collected in the agglomerations that enters treatment plant	99.1%
Load collected in the sewer network but discharges without treatment	0.9%

Load generated in the agglomeration that is collected in the sewer network is the total load generated and collected in the municipal network within the boundary of the agglomeration.

Load collected in the agglomerations that enters treatment plant is that portion of the previous figure which enters the waste water treatment plant.

Load collected but discharged without treatment is that portion of the first figure which is discharged without treatment.

The data in Table 3.3 is estimated based on influent monitoring as detailed in Section 2.1 above.

3.4 Complaints Summary

A summary of complaints of an environmental nature is included below.

Table 3.4 - Complaints Summary Table

Number	Date & Time	Nature of Complaint	Cause of Complaint	Actions taken to resolve issue	Closed (Y/N)
36325847 46	16/03/2015 11:56:00	Blocked Sewer causing surcharge	Below Ground Waste Investigation Sewage Flooding		Yes
36325847 46	16/03/2015 11:56:00	Blocked Sewer causing surcharge	Below Ground Waste Investigation Sewage Flooding	Jetted normal blockage	Yes
42707267 72	23/04/2015 08:18:00	Blocked Sewer causing surcharge	Below Ground Waste Investigation Sewage Flooding	Repairs of collapsed sewer	Yes
42707267 72	23/04/2015 08:18:00	Blocked Sewer causing surcharge	Below Ground Waste Investigation Sewage Flooding		Yes
42707267 72	23/04/2015 08:18:00	Blocked Sewer causing surcharge	Below Ground Waste Investigation Sewage Flooding		Yes
42707267 72	23/04/2015 08:18:00	Blocked Sewer causing surcharge	Below Ground Waste Investigation Sewage Flooding		Yes
42707267 72	23/04/2015 08:18:00	Blocked Sewer causing surcharge	Below Ground Waste Investigation Sewage Flooding		Yes

42707267 72	23/04/2015 08:18:00	Blocked Sewer causing surcharge	Below Ground Waste Investigation Sewage Flooding		Yes
44413488 50	27/05/2015 09:41:00	Blocked Sewer causing surcharge	Below Ground Waste Investigation Sewage Flooding		Yes
44413488 50	27/05/2015 09:41:00	Blocked Sewer causing surcharge	Below Ground Waste Investigation Sewage Flooding		Yes
44413488 50	27/05/2015 09:41:00	Blocked Sewer causing surcharge	Below Ground Waste Investigation Sewage Flooding	Jetted blocked sewer	Yes
86913665 85	18/08/2015 13:29:00	Blocked Sewer causing surcharge	Below Ground Waste Investigation Sewage Flooding		Yes
86913665 85	18/08/2015 13:29:00	Blocked Sewer causing surcharge	Below Ground Waste Investigation Sewage Flooding	Jetted blocked sewer	Yes

3.5 Reported Incidents Summary

There were no reported incidents for Monaghan WWTP in 2015.

Table 3.5.1 - Summary of Incidents

3.5.1 Incident Type (e.g. Non-compliance, Emission, spillage, pollution incident)	Incident Description	Cause	No. of Incidents	Corrective Action	Authorities Contacted. Note 1	Reported to EPA (Yes/No)	Closed (Yes/No)
None	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note 1: For shellfish waters notify the Marine Institute (MI) Sea Fisheries Protection Authority (SFPA) Food Safety Authority (FSAI) and An Bord Iascaigh Mhara (BIM). This should also include any other authorities that should be contacted arising from the findings of any Licence Specific Reports also e.g. Drinking Water Abstraction Impact Risk Assessment, Fresh Water Pearl Mussel Impact Assessments etc.

Table 3.5.2 - Summary of Overall Incidents

Number of Incidents in 2015	0
Number of Incidents reported to the EPA via EDEN in 2015	0
Explanation of any discrepancies between the two numbers above	n/a

3.6 Sludge / Other inputs to the WWTP

Other inputs to the waste water treatment plant are summarised in Table 3.6 below.

Table 3.6 - Other Inputs

Input Type	m3/year	PE/year	% of load to WWTP	Included in Influent Monitoring (Y/N)? ³	Is there a leachate/sludge acceptance procedure for the WWTP? (Y/N)	Is there a dedicated leachate/sludge acceptance facility for the WWTP? (Y/N)
Domestic /Septic Tank Sludge	160	866	0.050	N	Yes	No
Industrial / Commercial Sludge	0	0		N/A	Yes	Yes
Landfill Leachate (delivered by tanker)	48190	80316	1.804	Y	Yes	Yes
Landfill Leachate (delivered by sewer network)	0	0	0	N/A	Yes	No
WWTP sludge	14403	Unknown	Unknown	N	Yes	No
WTP sludge	12237	Unknown	Unknown	N	Yes	No

Notes:

1. Other Inputs include; septic tank sludge, industrial /commercial sludge, landfill leachate and any other sludge that is collected and added to the treatment plant.
2. Sludge that is added to a dedicated sludge reception facility at a waste water treatment plant not included in Table 3.6. Only include sludge which is added to the waste water treatment process stream. Enter zero where there are no inputs.

Section 4. Infrastructure Assessments and Programme of Improvements

4.1 Storm water overflow identification and inspection report

The Storm Water Overflow Identification & Inspection report is included in Appendix 7.4. A summary of the significance and operation is included below.

Table 4.1.1 - SWO Identification and Inspection Summary Report

WWDL Name / Code for Storm Water Overflow	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow (High/Med/Low)	Compliance with DoEHLG criteria	No. of times activated in 2015 (No. of events)	Total volume discharged in 2015 (m3)	Total volume discharged in 2015 (P.E.)	Estimated / Measured data
SW002	267845E 333776N	Yes	High	Yes	0	0	0	E (assuming a 3h duration of each overflow)
SW003	267405E 333531N	Yes	High	No	44	11467.08	32757.62	E (assuming a 3h duration of each overflow)
SW005	267123E 333596N	Yes	Medium	Unknown	7	556.38	1589.39	E (assuming a 3h duration of each overflow)
SW006	266996E 333605N	Yes	Medium	Unknown	0	0.00	0.00	E (assuming a 3h duration of each overflow)
SW007	267045E 333500N	Yes	Medium	Unknown	7	802.63	2292.85	E (assuming a 3h duration of each overflow)
SW008	267324E 333645N	Yes	Low	Unknown	0	0.00	0.00	E (assuming a 3h duration of each overflow)
SW009	267123E 333500N	Yes	High	Unknown	10	1519.50	4340.69	E (assuming a 3h duration of each overflow)

Table 4.1.2 - SWO Identification and Inspection Summary Report

How much sewage was discharged via SWOs in the agglomeration in the year (m3/yr)?	14,345
How much sewage was discharged via SWOs in the agglomeration in the year (p.e.)?	4340.7
What % of the total volume of sewage generated in the agglomeration was discharged via SWOs in the agglomeration in 2015?	0.9%
Is each SWO identified as non-compliant with DoEHLG Guidance included in the Programme of Improvements?	No
The SWO assessment includes the requirements of relevant WWDL Schedules (Yes/No)	Yes
Have the EPA been advised of any additional SWOs / changes to Schedules A/C under Condition 1 ?	N/A

4.2 Report on progress made and proposals being developed to meet the improvement programme requirements.

The Improvement Programme is included in Appendix 7.3.

There are no **Specified Improvement Programmes** as detailed in Schedules C of the WWDL. Appendix 7.4 details improvements identified through assessments required under the licence

Table 4.2.1 - Specified Improvement Programme Summary

Specified Improvement Programmes	Licence Schedule	Licence Completion Date	Date Expired	Status of Works	% Construction Work Completed	Licensee Timeframe for Completing the Work	Comments
None							

A summary of the status of any improvements identified by under Condition 5.2 is included below.

Table 4.2.2 - Improvement Programme Summary

Improvement Identifier / Name	Improvement Description	Improvement Source	Progress (% complete)	Expected Completion Date	Comments
None		WWTP assessment (Condition 5.2).			
None		Sewer Integrity Tool (Condition 5.2).			
None		Secondary discharges assessment (Condition 5.2).			
	Additional surveys to assess compliance required by the 2015 SWO assessment.	SWO assessment (Condition 4 & 5.2).	0%	Unknown	
None		Pearl Mussel			

		Impact Assessment (Condition 4)			
	Maintenance Shortfall	Improved Operational Control	0%	Unknown	Grit removal unit to be needs to be repaired. This has been agreed but not started.
		Drainage Area Plan	0%	Unknown	In Q2 2016, Irish Water will appoint a consultant to carry out a Drainage Area Plan (DAP) on the Monaghan agglomeration. The DAP will take approximately 12 months (Q2 2017), at which we will have outline solutions for CSO compliance. Detailed design for the proposed solutions will then be required. No works will start before 2018.
10009830	D0061 Monaghan WWTP Dewatering Upgrade	Improved Operational Control	0%	01/06/2016	Sludge Programme
10007268	Flow Monitoring and Sampling MN	Improved Operational Control	0%	01/06/2016	Critical Asset Programme
10001305	Monaghan Town Sewerage Scheme (H) Contract 2 (Network)	Improved Operational Control			MN Monaghan Town SS

Table 4.2.3 - Sewer Integrity Risk Assessment Tool Summary

The Improvement Programme should include an assessment of the integrity of the existing wastewater works for the following:	<i>Risk Assessment Rating (High, Medium, Low)</i>	<i>Risk Assessment Score</i>	<i>Comment</i>
Hydraulic Risk Assessment Score	<i>Unknown</i>	<i>Unknown</i>	
Environmental Risk Assessment Score	<i>Unknown</i>	<i>Unknown</i>	
Structural Risk Assessment Score	<i>Unknown</i>	<i>Unknown</i>	
Operation & Maintenance Risk Assessment Score	<i>Unknown</i>	<i>Unknown</i>	
Overall Risk Score for the agglomeration	<i>Unknown</i>	<i>Unknown</i>	

The sewer network integrity risk assessment has not been completed and will be submitted this year at a later date following the submission of this AER.

Section 5. Licence Specific Reports

Licence Specific Reports Summary Table

Licence Specific Report	Never required by condition 5 in Licence	Required in this AER or outstanding from previous AER	Included in this AER / Remains outstanding	Reference to previous AER containing report or relevant section of this AER
Priority Substances Assessment	No	Further screening recommended in 2014 AER	No	Partial assessment included in 2014 AER
Drinking Water Abstraction Point Risk Assessment	Yes	No	No	N/A
Habitats Impact Assessment	Yes	No	No	N/A
Shellfish Impact Assessment	Yes	No	No	N/A
Pearl Mussel Report	Yes	No	No	N/A
Toxicity/Leachate Management	Yes	No	No	N/A
Toxicity of Final Effluent Report	Yes	No	No	N/A

Licence Specific Reports Summary of Findings

Licence Specific Report	Recommendations in Report	Summary of Recommendations in Report	Status of Recommendations
Priority Substances Assessment	Yes	Partial assessment carried out. No exceedances noted. Full assessment to be carried out as part of 2 nd AER.	Not carried out in 2015. Will be completed in 2016.

5.1 Priority Substances Assessment

The Priority Substances Assessment report is included in the 2014 AER. A summary of the findings of this report is included below. It has to be noted that this report was not complete, and that a complete report will be provided in the 2016 AER.

Table 5.1 - Priority Substance Assessment Summary

	<i>Licensee self- assessment checks to determine whether all relevant information is included in the Assessment.</i>
Does the assessment use the Desk Top Study Method or Screening Analysis to determine if the discharge contains the parameters in Appendix 1 of the EPA guidance	Desk Top Study <i>and</i> Screening Analysis
Does the assessment include a review of Trade inputs to the works?	Yes
Does the assessment include a review of other inputs to the works?	Yes
Does the report include an assessment of the significance of the results where a listed material is present in the discharge? (e.g. impact on the relevant EQS standard for the receiving water)	Yes
Does the assessment identify that priority substances may be impacting the receiving water?	No
Does the Improvement Programme for the agglomeration include the elimination / reduction of all priority substances identified as having an impact on receiving water quality?	N/A

Section 6. Certification and Sign Off

Table 6.1 - Summary of AER Contents

Does the AER include an executive summary?	Yes
Does the AER include an assessment of the performance of the Waste Water Works (i.e. have the results of assessments been interpreted against WWDL requirements and or Environmental Quality Standards)?	Yes
Is there a need to advise the EPA for consideration of a technical amendment / review of the licence?	No
List reason e.g. additional SWO identified	N/A
Is there a need to request/advise the EPA of any modifications to the existing WWDL? Refer to Condition 1.7 (changes to works/discharges) & Condition 4 (changes to monitoring location, frequency etc.)	No
List reason e.g. failure to complete specified works within dates specified in the licence, changes to monitoring requirements	N/A
Have these processes commenced? (i.e. Request for Technical Amendment / Licence Review / Change Request)	N/A
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER?	No
List outstanding reports	Sewer Network Integrity Assessment, Further priority substances screening

Declaration by Irish Water

The AER contains the following:

- Introduction and background to 2015 AER.
- Monitoring Reports Summary.
- Operational Reports Summary.
- Infrastructural Assessment and Programme of Improvements.
- Licence specific reports
- Certification and Sign Off
- Appendices

I certify that the information given in this Annual Environmental Report is truthful, accurate and complete:

Signed:  Date: 08/03/2016

Gerry Galvin
Chief Technical Advisor

Section 7. Appendix

In the appendix include all the detailed or site specific reports that are relevant to the AER. Reports omitted from previous AERs should also be appended here.

Appendix 7.1 - Annual Statement of Measures

Appendix 7.2 - Ambient monitoring summary

Appendix 7.3 – Specified Improvement Programme

a) Specified Improvement Programme

b) Programme of Improvements

Appendix 7.4 - Storm water overflow identification and inspection report

Appendix 7.1 Annual Statement of Measures

Risk /Description of issue	Risk Score	Mitigation Measure to be taken	Outcome	Action	Date for Completion
SWO	High	Install flow meters with alarms	2 installed in 2014.	Install on remaining SWO	2015/2016
To maintain processing levels of all incoming sludge's	Low	Sludge Dewatering Unit	To maintain processing levels of all incoming sludges	Upgrade sludge press facilities	Tenders received
Diffusers in Aeration tank No 1 are ruptured and require replacement.	Medium	Replacement air blowers Monaghan	Improved operational control	Replace air blowers	Procurement Complete/Waiting to commence
The existing system has not been used for 5+ years due to operational practices and ferric has now crystallized blocking lines, pumps and tanks.	Medium	Replacement of Ferric dosing equipment	Improved Environmental Compliance	Replacement of Ferric Dosing Equipment	The improvement programme will be reviewed by Irish Water to assess the works required to comply with the licence condition on a prioritised basis
Failed Asset Screener	Medium	Replacement of gearbox and motor on 1No screener	Improved asset performance	Replacement of gearbox and motor on 1No screener	The improvement programme will be reviewed by Irish Water to assess the works required to comply with the licence condition on a prioritised basis

Appendix 7.2 Ambient Monitoring Summary

Upstream Monitoring Results										
Sampling Location	Sample Date	Sample Type	Dissolved Oxygen mg/l	Temp oC	Ammonia N mg/l	BOD, 5 days with Inhibition (Carbonaceous) mg/l	Ortho Phosphate mg/l	pH units	Total Nitrogen N mg/l	Total Phosphorus P mg/l
Monaghan WWTP Upstream	17/02/2015	Grab	8.2	7.8	0.097	2	0.02	8.1	1.7	0.04
Monaghan WWTP Upstream	08/04/2015	Grab	11	8.4	0.025	4	< 0.009	7.9	1.3	0.05
Monaghan WWTP Upstream	09/06/2015	Grab			0.2	3	0.013	8.5	1.1	0.09
Monaghan WWTP Upstream	15/07/2015	Grab	2.02	15.2	0.72	2	0.145	7.5	1.6	0.19
Monaghan WWTP Upstream	15/09/2015	Grab	5.75	13.5	0.27	3	0.046	7.7	< 1	0.07
Average			6.74	11.23	0.26	2.8	0.047	7.94	1.34	0.088

Downstream Monitoring Results										
Sample Location	Sample Date	Sample Method	Dissolved Oxygen mg/l	Temp oC	Ammonia N mg/l	BOD, 5 days with Inhibition (Carbonaceous) mg/l	Ortho-Phosphate P mg/l	pH units	Total Nitrogen N mg/l	Total Phosphorus P mg/l
Monaghan WWTP Downstream	17/02/2015	Grab	8.6	8.2	0.023		0.015	7.9	6	0.07
Monaghan WWTP Downstream	08/04/2015	Grab	11.4	9.2	0.095	4	< 0.009	7.8	5	0.07
Monaghan WWTP Downstream	09/06/2015	Grab			0.18	3	0.365	8.4	10.6	0.49
Monaghan WWTP Downstream	15/07/2015	Grab	5.24	16.1	0.3	3	0.593	7.5	18.4	0.68
Monaghan WWTP Downstream	15/09/2015	Grab	6.7	14.5	0.14	2	0.086	7.6	12.3	0.12
Average			7.95	12	0.1476	3	0.213	7.84	10.46	0.286

Appendix 7.3 Specified Improvement Programmes

a) Specified improvement Programme

Schedule C1 Specified Improvement Programme of the licence states that there are” no specified improvement programmes required in this licence”.

Under condition 5.2.1 of the licence, the programme of infrastructural improvements shall include an assessment of the wastewater treatment plant having regard to the effectiveness of the treatment provided by reference to the following:

(i) The capacity of the treatment plant and associated equipment:

The existing level of treatment is secondary with Nutrient Removal (Chemical dosing for P removal). The WWTP was compliant with the ELV's set in the wastewater discharge licence for 2015. The capacity of the treatment plant is currently adequate as outlined in section 2.1 of this report.

(ii) The emission limit values specified in Schedule A: Discharges and Discharge Monitoring

The WWTP was compliant with the ELV's set in the wastewater discharge licence for 2015. New ELV's for Ammonia 0.2mg/l, ortho P 0.1mg/l and BOD 3.5mg/l will apply from the 31/12/19. In 2015 these new ELV's would have been exceeded on 5 occasions for Ammonia, 9 occasions for ortho P and 7 occasions for BOD.

(ii) Designations of the receiving water body

Monaghan WWTP discharges to the Shambles River upstream of the WFD operational monitoring site 03B010500. There is a designated 'sensitive area' from the confluence of the Shambles & Blackwater to Newmills Bridge near Glaslough. The Shambles has impacted on water quality in the main Blackwater in the past but there are signs of improvements in recent years. Results for the Shambles for 2015 indicate contamination (ammonia in particular) upstream of the WWTP discharge. Below the discharge, phosphate levels are regularly elevated. Given the upstream values, the risks from Emergency Overflows, SWO and sewer integrity issues need to be kept under review. Limited assimilative capacity is available in the Shambles during low flows.

(iii) Water Quality objective for the receiving water body:

The receiving water is located within waterbody NB_03_479, this water body has been classified as poor and it has a Restore to Good Status by 2021 objective in the Neagh Bann International River Basin Management Plan.

(iv) The standards and volumetric limitations applied to any industrial wastewater that is licensed to discharge to the waste water works.

There are currently no companies licensed under Section 16 to discharge to Monaghan WWTP. There are 2 new licences due to commence in 2016.

Under Condition 5.2.2 of the licence, the programme of infrastructural improvements shall include an assessment of the integrity of the wastewater works having regard to :

(i) Capacity of the waste water works

The capacity of the wastewater treatment plant is currently adequate as outlined in Section 2.1 of this report.

(ii) Leaks from the waste water works

There are no known leaks from the waste water works

(iii) Misconnections between foul sewers and surface water drainage network

Monaghan County Councils Environment Section on behalf of Irish Water monitors surface waters and investigate any misconnections highlighted. In Q2 2016, Irish Water will appoint a consultant to carry out a Drainage Area Plan (DAP) on the Monaghan agglomeration. The DAP will take approximately 12 months (Q2 2017), at which we will have outline solutions for CSO compliance. Detailed design for the proposed solutions will then be required. No works will start before 2018.

(iv) Infiltration by surface water/ ground water

The sewer network integrity risk assessment has not been completed and will be submitted this year at a later date following the submission of this AER.

Under condition 5.2.3 of the licence the programme of improvements shall include an assessment of all storm water overflows associated with the wastewater works to determine effectiveness of their operation and in particular identify improvements necessary to comply with requirements of this licence:

This item is addressed in Appendix 7.4 - Storm water overflow identification and inspection report

(b) Programme of Improvements

Other identified improvement works for the WWTP are summarised in the following table.

Improvement Identifier / Name	Improvement Description	Improvement Source	Progress (% complete)	Expected Completion Date	Comments
Grit removal unit to be needs to be repaired	Maintenance Shortfall	Improved Operational Control	80%	February 2016	
Sludge Programme	D0061 Monaghan WWTP Dewatering Upgrade	Improved Operational Control	0%	01/06/2016	
Critical Asset Programme	Flow Monitoring and Sampling MN	Improved Operational Control	0%	01/06/2016	
MN Monaghan Town SS	Monaghan Town Sewerage Scheme (H) Contract 2 (Network)	Improved Operational Control	0%		

**Appendix 7.4 Storm water overflow identification and inspection
report**

Storm Water Overflow Assessment

Agglomeration Name:	Monaghan Town
Licence Register No.	D0061-01



Table of Contents

1	Introduction	27
2	Storm Water Overflow Assessment	29
2.1	Description of SWOs	29
2.2	Assessment of Operating Criteria of SWOs	30
2.3	Assessment of Design Criteria of SWOs	31
2.3.1	Compliance with Formula A.....	31
2.3.2	Significance of Spill.....	33
2.4	Assessment of Requirement for Storage	35
3	Remedial Measures to Ensure Compliance	36
3.1	Specified Improvement and Improvement Programme Works	36
3.2	Additional Measures	36

1 Introduction

This report has been prepared for D0061-01, Monaghan Town, in County Monaghan in accordance with the requirements of Condition 4.12 of the wastewater discharge licence for the agglomeration. This report identifies storm water overflows within the agglomeration and assesses the compliance of the storm water overflows with the criteria set out in the DoEHLG document on *'Procedures and Criteria in Relation to Storm Water Overflows'*, 1995.

There are 7Nr. SWOs within the agglomeration. These are listed in Table 1. As there is no directory of cyprinid fisheries in Ireland, it will be considered in a conservative approach that the Shambles River is a cyprinid fishery.

Table 1: Storm Water Overflows in the Agglomeration

Licence Code	Discharge Location		Receiving Water Name and WFD Code	WFD Status of Receiving Water	Other designation of receiving water
	Easting	Northing			
SW002	267845	333776	Shambles River NB_03_479	Poor (2011)	Supposed cyprinid fishery (Salmonid - River Blackwater 1.5km d/s)
SW003	267405	333531	Shambles River NB_03_479	Poor (2011)	Supposed cyprinid fishery (Salmonid - River Blackwater 1.5km d/s)
SW005	267123	333596	Shambles River NB_03_479	Poor (2011)	Supposed cyprinid fishery (Salmonid - River Blackwater 1.5km d/s)
SW006	266996	333605	Shambles River NB_03_479	Poor (2011)	Supposed cyprinid fishery (Salmonid - River Blackwater 1.5km d/s)
SW007	267045	333500	Shambles River NB_03_479	Poor (2011)	Supposed cyprinid fishery (Salmonid - River Blackwater 1.5km d/s)
SW008	267324	333645	Shambles River NB_03_479	Poor (2011)	Supposed cyprinid fishery (Salmonid - River Blackwater 1.5km d/s)
SW009	267123	333500	Shambles River NB_03_479	Poor (2011)	Supposed cyprinid fishery (Salmonid - River Blackwater 1.5km d/s)

A storm water overflow assessment is required to comply with the requirements of the wastewater discharge licence condition as detailed below.

Condition 4.12 - Storm Water Overflows

4.12.1 *The licensee shall, prior to the date for submission of the second AER (required under Condition 6.1 2), carry out an investigation for the identification and assessment of storm water overflows. A report on the storm water overflows shall be submitted to the Agency as part of the second AER. The assessment shall include a determination of compliance with the criteria for storm water overflows, as set out in the DoEHLG Procedures and Criteria in Relation to Storm Water Overflows', 1995, and any other guidance as may be specified by the Agency.*

4.12.2 *The licensee shall carry out an assessment of storm water overflows at least once every three years thereafter and report to the Agency on each occasion as part of the AER. The assessment shall include a determination of compliance with the criteria for storm water overflows, as set out in the DoEHLG 'Procedures and Criteria in Relation to Storm Water Overflows', 1995, and any other guidance as may be specified by the Agency. The licensee shall maintain a written record of all assessments and remedial measures arising from the assessment.*

2 Storm Water Overflow Assessment

2.1 Description of SWOs



Figure 1. Primary discharge and storm water overflows locations

There are 7 overflows in the Monaghan agglomeration:

- SW002 is the storm water overflow located at the wastewater treatment plant. Influent flows in excess of 4 DWF overflows after screening at the inlet works to the storm water holding tank. In the event that the storm water holding tank is filled and the storm continues, the storm water holding tank operates as a pre-clarification tank (primary treatment), and discharges to the Shambles River This is not known to cause any pollution.
- SW003 is the storm water overflow located at the Old Cross Square pumping station. Unscreened effluent discharges to the Shambles River. This is not known to cause any pollution.

- SW005 is the storm water overflow located on Dawson Street. Unscreened effluent discharges to the Shambles River. This is not known to cause any pollution.
- SW006 is the storm water overflow located on Park Street. Unscreened effluent discharges to the Shambles River. This is not known to cause any pollution.
- SW007 is the storm water overflow located on the Market Road. Unscreened effluent discharges to the Shambles River. This is not known to cause any pollution.
- SW008 is the storm water overflow located on Coothill Street. Unscreened effluent discharges to the Shambles River. This is not known to cause any pollution.
- SW009 is the storm water overflow located at the crossroads of Dawson Street and the Market Road. Unscreened effluent discharges to the Shambles River. This is not known to cause any pollution.

2.2 Assessment of Operating Criteria of SWOs

The following criteria for each SWO on the network have been examined in accordance with the assessment criteria set out in *Procedures and Criteria in Relation to Storm Water Overflows* in order to determine possible capacity constraints.

1. Does the SWO cause significant visual or aesthetic impact and public complaints
2. Does the SWO cause deterioration in water quality in the receiving water (i.e. is there a deterioration in ecological quality status attributable to the SWO)
3. Does the SWO gives rise to failure in meeting the requirements of national regulations on foot of EU Directives (e.g. bathing water quality standards, shellfish water quality standards, Water Framework Directive status etc.),
4. Does the SWO operate in dry weather.

Table 2: Assessment of Operating Criteria

CSO Ref	Causes significant visual or aesthetic impact and public complaints.	Causes deterioration in water quality in the receiving water	Gives rise to failure in meeting the requirements of national Regulations on foot of EU Directives.	Operates in dry weather	Compliant / Non-Compliant
SW002	No	No	No	No (Compliant
SW003	No	No	No	No (operates very rarely, after very heavy and prolonged rainfalls only)	Compliant
SW005	No – 1 incident reported in EPA AER Report 2015: Section 3.5.1 Sewer Dawson St. blocked caused back up overflow to SW05 – Incident Closed	No	No	No (operates rarely, after heavy prolonged rainfalls only)	Compliant
SW006	No	No	No	No (operates very rarely, after very heavy rain only)	Compliant
SW007	No	No	No	No (operates rarely, after heavy prolonged rain only)	Compliant
SW008	No	No	No	No (operates rarely, after heavy prolonged rain only)	Compliant
SW009	No	No	No	No (very rarely, overflow from high level in manhole)	Compliant

2.3 Assessment of Design Criteria of SWOs

2.3.1 Compliance with Formula A

Formula A is used in the *Procedures and Criteria in Relation to Storm Water Overflows* as follows:-

$$\text{Formula A} = \text{DWF} + 1.36P + 2E \quad (\text{m}^3/\text{day})$$

P = design domestic population contributing to SWO (to be estimated)

E = design industrial effluent flow (estimated to be 20% of domestic PE unless otherwise by LA)

DWF = Dry weather flow m^3/day (dry weather flow of total PE, based on $0.175\text{m}^3/\text{PE}/\text{day}$)

Table 3 provides an estimation of the current population of Monaghan Town based on Census data.

Table 3: Estimation of current Monaghan town population (Census data)

Year	Population	Population growth (%/annum)
2002	5936	
2006	6710	3.26
2011	7452	2.21
Expected 2014	7946	Based on 2006 – 2011 growth rate
Expected 2015	8111	Based on 2006 – 2011 growth rate

Moreover, the 2014 AER reports an annual mean hydraulic loading of 4,346 m³/d, or 24,834 PE based on a 175 L/PE/d ratio. Based on the 2014 estimated population, it is considered that the domestic loading is approximately equal to 8,000 PE. Therefore, the 2014 non-domestic loading is approximately equal to 16,834 PE. Based on the population growth rate for the 2006-2011 period, and assuming that this growth rate also applies to non-domestic inputs, the estimated 2015 influent amounts to approximately 25,400 PE, including 8,200 PE from domestic inputs and 17,200 PE from non-domestic inputs.

Using Geodirectory, an estimation of the number of addresses discharging to each storm water overflow has been realised. It has been supposed that the non-domestic inputs were distributed equally over the agglomeration. Table 4 provides an assessment of the domestic and industrial loading for each storm water overflow. For each type of loading (domestic or non-domestic), the loading at each storm water overflow is calculated by using the ratio between the numbers of addresses of this type connected to the storm water overflow to the total number of addresses of this type over the agglomeration. Each figure is rounded to the nearest 50 PE.

Table 4: Overflows loading estimation from Geodirectory data

SWO identification	Number of residential addresses	Domestic loading (PE)	Number of commercial addresses	Non-domestic loading (PE)	Total loading (PE)
SW002	3,063	8,200	664	17,200	25,400
SW003	2,142	5,750	379	9,800	15,550
SW005	229	600	102	2,650	3,250
SW006	309	850	138	3,600	4,450
SW007	827	2,200	163	4,200	6,400
SW008	395	1,100	38	100	1,200

SW009	1,526	4,100	333	8,650	12,750
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Table 5 provide an assessment of the compliance of the existing overflows to the “Formula A” calculation.

Table 5: Formula A calculations

Designation	Formula A flow (L/s)	Spill setting (L/s)	Compliance to DOEHLG	Number of dilution
SW002	250.2	430.5 (4 DWF)	Yes	0.58
SW003	161.7	53 (estimated from the pump capacity)	No	0.95
SW005	26.8	Unknown	Unknown	4.56
SW006	37.0	Unknown	Unknown	3.33
SW007	64.6	Unknown	Unknown	2.31
SW008	20.1	Unknown	Unknown	12.3
SW009	150.3	Unknown	Unknown	0.88

2.3.2 Significance of Spill

Monitoring information in relation to duration of overflows is not available. However, information from local knowledge gives the following information concerning the frequency of overflows.

Table 6: Overflow frequency

CSO Ref	Information on frequency of overflows (estimations from caretaker knowledge)
SW002	Unknown
SW003	Very rare, only when influent flow at the plant is higher than 8,000 m ³ /d
SW005	About 7 times a year (heavy rainfall conditions)
SW006	Only if the downstream pipe is blocked
SW007	About 7 times a year (heavy rainfall conditions)
SW008	Only if the downstream pipe is blocked
SW009	About 10 times a year (heavy rainfall conditions)

The significance of overflows to inland freshwaters has been assessed as follows:

<p>Low Significance: >8:1 Dilutions in Receiving water (average SWO DWF / 95%ile river flow) No interaction with other discharges</p>
<p>Medium Significance - only if all these criteria apply. Dilution < 8 : 1 Limited or no interaction with other discharges > 2,000 population equivalent Cyprinid fishery</p>
<p>High Significance - only if all these criteria apply. Dilution < 2 : 1 Interaction with other discharges > 10,000 population equivalent Cyprinid or salmonid fishery</p>

Table 7: Assessment of Significance

CSO Ref	Dilution	PE Range	Designation of Receiving Water	Significance
SW002	0.58	>10,000	Supposed cyprinid fishery (Salmonid - River Blackwater 1.5km d/s)	High (interaction with other storm water overflows)
SW003	0.95	>10,000	Supposed cyprinid fishery (Salmonid - River Blackwater 1.5km d/s)	High (interaction with other storm water overflows)
SW005	4.56	2,000 – 10,000	Supposed cyprinid fishery (Salmonid - River Blackwater 1.5km d/s)	Medium
SW006	3.33	2,000 – 10,000	Supposed cyprinid fishery (Salmonid - River Blackwater 1.5km d/s)	Medium
SW007	2.31	2,000 – 10,000	Supposed cyprinid fishery (Salmonid - River Blackwater 1.5km d/s)	Medium
SW008	12.3	<2,000	Supposed cyprinid fishery (Salmonid - River Blackwater 1.5km d/s)	Low
SW009	0.88	>10,000	Supposed cyprinid fishery (Salmonid - River Blackwater 1.5km d/s)	High (interaction with other storm water overflows)

2.4 Assessment of Requirement for Storage

The necessity for a storm tank within the sewer network has been assessed based on available dilution as detailed in Table 3 from Procedures and Criteria in Relation to Storm Water Overflows, included as Table 8 below. The requirement for a storm tank at a wastewater treatment plant shall be based on an overflow setting of 3 DWF.

Table 8 – SDD Method Recommended Storage at Overflows¹

Dilution Factor ²	Overflow Setting	Storage Tank
> 8	Formula A	None
> 6	Formula A + 455 P or Formula A	None 40 l/PE
> 4	Formula A	40 l/PE
> 2	Formula A	80 l/PE
> 1	Formula A	120 l/PE

1. Table 3 extracted from Procedures and Criteria in Relation to Storm Water Overflows

2. Dilution factor = average DWF / 95%ile river flow

Table 9 – Stormwater Storage within Agglomeration

CSO Ref	Dilution Factor ¹	Required Overflow Setting (l/s)	Actual Overflow Setting (l/s)	Required Storage Tank Volume (m ³)	Actual Storage Tank Volume (m ³)	Compliant / Non-Compliant
SW002	0.58	250.2	430.5 (4 DWF)	1,980 (2 hours at 3 DWF)	2,270	Yes
SW003	0.95	161.7	53 (est.)	1,866	Unknown (pumping station storage volume)	No
SW005	4.56	26.8	Unknown	130	Unknown (manhole storage volume)	Unknown
SW006	3.33	37.0	Unknown	356	Unknown (manhole storage volume)	Unknown
SW007	2.31	64.6	Unknown	512	Unknown (manhole storage volume)	Unknown
SW008	12.3	20.1	Unknown	None	Unknown (manhole storage volume)	Unknown

SW009	0.88	150.3	Unknown	2,022	Unknown (manhole storage volume)	Unknown
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1. Dilution factor = average DWF / 95%ile river flow

3 Remedial Measures to Ensure Compliance

3.1 Specified Improvement and Improvement Programme Works

There are no specified improvement works or improvement programmes relating to storm water overflows.

3.2 Additional Measures

The additional measures required, identified in this report are as follows:

- Assess the current spill setting for SW005 to SW009 to assess the compliance of these overflows to formula A spill setting
- Assess the current storage volume in SW003 to SW009 to assess the compliance of these overflows to the storm water storage required by the SDD method
- Provide additional hydraulic and/or storage capacity for SW003 to SW009 if required following the completion of the two previous assessments