

# Annual Environmental Report 2016

<b>Agglomeration Name:</b>	<b>Smithborough</b>
<b>Licence Register No.</b>	<b>D0464-01</b>



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## Section 1. Executive Summary and Introduction to the 2016 AER

### 1.1 Summary Report on 2016

This Annual Environmental Report has been prepared for **D0464-01, Smithborough**, in County **Monaghan**, in accordance with the requirements of the wastewater discharge licence for the agglomeration. Specified assessments are included as an appendix to the AER as follows:

- Sewer Integrity Risk Assessment in **Appendix 7.3**
- Drinking water risk assessment in **Appendix 7.4**

The agglomeration is served by a wastewater treatment plant with a Plant Capacity PE of 750. The treatment process includes the following:-

- Preliminary Treatment (Screen)
- Secondary Treatment (Aeration)
- Nutrient Removal (Chemical Dosing for P Removal)

The final effluent from the Primary Discharge Point was non-compliant with the Emission Limit Values in 2016.

The following parameters exceeded the emission limit values in 2016:-

- Ammonia NH<sub>3</sub> (mg/l)

703,000kgs of liquid sludge was removed from the wastewater treatment plant in 2016. Sludge was transferred to Monaghan WWTP.

There were no major capital or operational changes undertaken in 2016.

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

<b>2.1.1 Monthly Influent Monitoring</b>	<b>BOD (mg / l)</b>	<b>COD (mg / l)</b>	<b>SS (mg / l)</b>	<b>TP (mg / l)</b>	<b>TN (mg / l)</b>	<b>Hydraulic Loading (m3/d)</b>	<b>Organic Loading (PE/Day)</b>
<b>Number of Samples</b>	6	6	6	0	0		
<b>Annual Max.</b>	700	8720	660	0	0	679.2	824
<b>Annual Mean</b>	416.37	2558.77	395.35			85.55	512.94

Other inputs, where relevant, are detailed in Section 3.6.

#### 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 greater than the peak Treatment Plant Capacity as detailed further in Section 3.2. The design of the wastewater treatment plant does not allow for peak values and therefore the peak loads have been impacted on compliance with Emission Limit Values.

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 greater than the Treatment Plant Capacity as detailed further in Section 3.2.

## 2.2 Discharges from the agglomeration

Table 2.2 - Effluent Monitoring

<b>2.2.1 Effluent Monitoring Summary</b>	<b>BOD (mg/l)</b>	<b>COD (mg/l)</b>	<b>TSS (mg/l)</b>	<b>Ortho P (mg/l)</b>	<b>Ammonia NH3 (mg/l)</b>	<b>pH</b>
<b>WWDL ELV (Schedule A) where applicable</b>	10.00	50.00	10.00	3mg/l From 31/12/19 a new ELV of 0.8mg/l P will apply	1.00	6 to 9
<b>ELV with Condition 2 Interpretation included</b>	20.00	100.00	25.00	3.60	2.00	No Allowable Exceedances
<b>Interim % Reduction (Schedule A)</b>						
<b>Number of sample results</b>	6	6	6	6	6	
<b>Number of sample results above WWDL ELV</b>	0	0	0	0	3	
<b>Number of sample results above ELV with Condition 2 Interpretation</b>	0	0	0	0	1	
<b>Annual Mean (for parameters where a mean ELV applies)</b>						
<b>Overall Compliance (Pass/Fail)</b>	Pass	Pass	Pass	Pass	Fail	

### Significance of results

The WWTP was non-compliant with the ELV's set in the wastewater discharge licence. One sample was non-compliant with the ELVs in relation to Ammonia NH3 (mg/l). There were 3 breaches of ELV 1 for ammonia in 2016. 13/06/16 1.3mg/l N, 19/10/16 1.6mg/l N and 08/12/16 4.9mg/l N. The likely cause of exceedances was plant /equipment maintenance at the WWTP. The impact on receiving waters is assessed further in Section 2.3.

### 2.3.1. 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	Bathing Water	Drinking Water	FWPM	Shellfish	Current WFD Status
Upstream Monitoring Point	E257862 N329854	RS36M010200					Moderate
Downstream Monitoring Point	E257552 N329614	RS36M010310	No	No	No	No	Moderate

The results for the upstream and downstream monitoring and/or additional monitoring data sets from Irish Water are included in Appendix 7.2.

#### Significance of results

- The WWTP was non-compliant with the ELV's set in the wastewater discharge licence as detailed in Section 2.2.
- The discharge from the wastewater treatment plant does not have an observable negative impact on the water quality.
- The discharge from the WWTP doesn't have an observable negative impact on the Water Framework Directive status.
- Other potential causes of deterioration in water quality relevant to this area are unknown

### 2.4 Data collection and reporting requirements under the UWWTD

The electronic submission of data was completed on 11/01/2017

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

A PRTR is not required as the PE is < 100000

## Section 3. Operational Reports Summary

### 3.1 Treatment Efficiency Report

	<b>cBOD (kg/yr)</b>	<b>COD (kg/yr)</b>	<b>SS (kg/yr)</b>
Influent mass loading (kg/year)	11,233	69,035	10,666
Effluent mass emission (kg/year)	100	655	140
% Efficiency (% reduction of influent load)	99%	99%	99%

### 3.2 Treatment Capacity Report

Table 3.2 - Treatment Capacity Report Summary

<b>Hydraulic Capacity – Design / As Constructed (dry weather flow) (m3/day)</b>	170
<b>Hydraulic Capacity – Design / As Constructed (peak flow) (m3/day)</b>	510
<b>Hydraulic Capacity – Current loading (m3/day)</b>	85
<b>Hydraulic Capacity – Remaining (m3/day)</b>	424
<b>Organic Capacity - Design / As Constructed (PE)</b>	750
<b>Organic Capacity - Current loading (PE)</b>	513
<b>Organic Capacity – Remaining (PE)</b>	237
<b>Will the capacity be exceeded in the next three years? (Yes / No)</b>	No
<b>Is an upgrade or expansion of the WWTP proposed? (i.e. if on Minor Programme or CIP) (Yes/No)</b>	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**

	<b>% of P.E. load generated in the agglomeration</b>	<b>Estimated / Measured</b>
<b>Load generated in the agglomeration that is collected in the sewer network</b>	100%	Estimated
<b>Load collected in the agglomerations that enters treatment plant</b>	Unknown	Estimated
<b>Load collected in the sewer network but discharges without treatment (includes SWO, EO, and any discharges that are not treated)</b>	Unknown	Estimated

**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.

### 3.4 Complaints Summary

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

**Table 3.4 - Complaints Summary Table**

<b>Number of Complaints</b>	<b>Nature of Complaint</b>	<b>Number Open Complaints</b>	<b>Number Closed Complaints</b>
None			



### 3.5 Reported Incidents Summary

A summary of reported incidents is included below.

**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	Recurring Incident (Yes/No)	Corrective Action	Authorities Contacted. Note 1	Reported to EPA (Yes/No)	Closed (Yes/No)
Non Compliance	INCI011108 19/10/16 Second Breach of ELV for Ammonia. 08/12/16 outright breach of ELV for Ammonia	Plant/ Equipment Maintenance at the WWTP	2	Yes	Ensure calibration/monitoring of fixed probes to ensure adequate aeration.	IFI	Yes	No

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**

<b>Number of Incidents in 2016</b>	2
<b>Number of Incidents reported to the EPA via EDEN in 2016</b>	2
<b>Explanation of any discrepancies between the two numbers above</b>	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	P.E.	% of load to WWTP	Included in Influent Monitoring? (Y/N)	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	0	0	N/A			
Industrial / Commercial Sludge	0	0	N/A			
Landfill Leachate (delivered by tanker)	0	0	N/A			
Landfill Leachate (delivered by sewer network)	0	0	N/A			
Other (specify)	0	0	N/A			

## Section 4. Infrastructure Assessments and Programme of Improvements

### 4.1 Storm water overflow identification and inspection report

There are no Storm Water Overflow identified in the licence.

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

The Improvement Programme report included in Appendix 7.1 addresses the **Specified Improvement Programmes** as detailed in Schedules A3 and C of the WWDL.

**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
Chemical dosing for P removal	C	31/12/2019	No	Completed	100%	29/05/2015	

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
Schedule C	Implement a phosphorus removal system	WWTP assessment (Condition 5.2)	100%	N/A	Complete
10007268	Flow Monitoring and Sampling MN	Improved Operational Control		01/06/2016	
		Sewer Integrity Tool	100%		Included with 2016 AER

**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:	Risk Assessment Rating (High, Medium, Low)	Risk Assessment Score	Reference to relevant section of AER (e.g. Appendix 2 Section 4.	Specified improvements	Comment
Hydraulic Risk Assessment Score	Medium	100	2016		
Environmental Risk Assessment Score	Low	55	2016		
Structural Risk Assessment Score	High	140	2016		
Operation & Maintenance Risk Assessment Score	Low	48	2016		
Overall Risk Score for the agglomeration	Low	343	2016		

## 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	Required	No	No	AER 2014
Drinking Water Abstraction Point Risk Assessment	Required	Yes	Yes	Appendix 7.4 AER 2016
Shellfish Impact Assessment	Not Required	No	No	
Pearl Mussel Report	Not Required	No	No	
Toxicity/Leachate Management	Not Required	No	No	
Toxicity of Final Effluent Report	Not Required	No	No	
Small Stream Risk Score Assessment	Not Required	No	No	
Habitats Impact Assessment	Not Required	No	No	

Licence Specific Reports Summary of Findings

Licence Specific Report	Recommendations in Report	Summary of Recommendations in Report
Priority Substances Assessment	Yes	No further screening required
Drinking Water Abstraction Point Risk Assessment	Yes	The preliminary DW risk assessment in 2014 recommended that a ZOC was delineated for the Smithborough wells. This was completed in 2016. This report concluded that location of the discharge from the Smithborough WWTP is outside of the Zone of Contribution of the Smithborough Borewells
Shellfish Impact Assessment	No	
Pearl Mussel Report	No	
Toxicity/Leachate Management	No	
Toxicity of Final Effluent Report	No	
Small Stream Risk Score Assessment		
Habitats Impact Assessment	No	

## 5.1 Priority Substances Assessment

The Priority Substances Assessment was submitted previously in AER 2014 and is summarised below:

<b>Priority Substance Assessment Summary Report</b>	<b>Licensee self- assessment checks to determine whether all relevant information is included in the Assessment.</b>
<b>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</b>	Desktop Study and Screening Analysis
<b>Does the assessment include a review of Trade inputs to the works?</b>	Yes
<b>Does the assessment include a review of other inputs to the works?</b>	No
<b>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)</b>	Yes
<b>Does the assessment identify that priority substances may be impacting the receiving water?</b>	No
<b>Does the Improvement Programme for the agglomeration include the elimination / reduction of all priority substances identified as having an impact on receiving water quality?</b>	No
<b>Recommendations</b>	No further screening required
<b>Status of any improvement measures required</b>	

## 5.2 Drinking Water Abstraction Point Risk Assessment

The Drinking Water Risk Assessment is included in Appendix 7.4. A summary of the significance and operation is included below:

**Table 5.2 - Drinking Water Abstraction Point Risk Assessment Summary**

<b>Is a Drinking Water Abstraction Risk Assessment required in the 2016 AER (or outstanding from a previous AER)</b>	Yes
<b>Does the Drinking Water Abstraction Risk Assessment identify whether any of the discharges in Schedule A of the licence pose a risk to a drinking water abstraction?</b>	No
<b>Does the assessment identify if any other discharge(s) from the works pose a risk to a drinking water abstraction (includes emergency overflows)?</b>	No
<b>What is the overall risk ranking applied by the licensee?</b>	Low
<b>Does the risk assessment consider the impacts of normal operation?</b>	Yes
<b>Does the risk assessment consider the impacts of abnormal operation (e.g. incidents /overflows)?</b>	Yes
<b>Does the risk assessment include control measures for each risk identified?</b>	N/A
<b>Does the risk assessment consider operational control measures?</b>	N/A
<b>Does the risk assessment include infrastructural control measures?</b>	N/A
<b>Recommendations</b>	The preliminary DW risk assessment in 2014 recommended that a ZOC was delineated for the Smithborough wells. This was completed in 2016. This report concluded that location of the discharge from the Smithborough WWTP is outside of the Zone of Contribution of the Smithborough Borewells
<b>Does the Improvement Programme for the agglomeration include control measures / corrective actions to eliminate / reduce priority substances identified as having an impact on receiving water quality?</b>	No
<b>Status of any improvement measures required.</b>	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?	Yes
Ensure the following reports are included	Sewer Integrity Risk Assessment 2016 Drinking water risk assessment 2016

### Declaration by Irish Water

The AER contains the following:

- Introduction and background to 2016 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: 24/02/2017

**Elizabeth Arnett**  
Head of Corporate Affairs and Environmental Regulation



## Section 7. Appendices

### Appendix 7.1 Statement of Measures

1	Issue	Ortho P exceedances
	Mitigation Measure	Install a phosphorus removal system to lower ortho p levels
	Status	Complete 2015, No breaches of ELV for ortho P 2016.
2	Issue	Improved operational Control
	Mitigation Measure	Flow monitoring at WWTP
	Status	Influent sampler and 3 flow meters installed at WWTP in 2016 as part of MN flow and sampling programme
3	Issue	Failed asset
	Mitigation Measure	Replacement DO meter in aeration basin
	Status	Complete. Further works on fixed probe in aeration tank 1 were carried out in 2016.

### Specified Improvement Programme

As per condition 5.1 of the licence, a programme of infrastructural improvements to maximise the efficiency and effectiveness of the waste water works shall be prepared and submitted:

In the licence, under schedule C, the specified improvement is to upgrade the plant to provide chemical dosing for phosphorus removal to comply with ELV's specified in Schedule A. Ferric dosing was installed at the plant in December 2015. There were no breaches of ELV for ortho phosphate in 2016.

Under condition 5.2 (a) of the licence, the programme of infrastructural improvements shall include an assessment of the waste water treatment plant having regard to the effectiveness of the treatment provided by reference to the following:

(i) The existing level of treatment, capacity of treatment plant and associated equipment:

A Ferric dosing system was installed for phosphorus removal in 2015.

(ii) The emission limit values specified in Schedule A: Discharges, of this licence:

There were 3 breaches of ELV 1 for Ammonia in 2016. Issues with the fixed DO probe in aeration tank 1 was the primary cause of this exceedance. Works were carried out on this probe in 2016.

(iii) The designations of the receiving water body:

Under the (WMU) action plan, Smithborough is not suggested to be having an impact on the receiving water as there is adequate dilution in the river at that location. The WMU suggests implementing a Performance Management system, which this report and other performance measures taken are deemed to satisfy.

The receiving River is not a designated Salmonid Water (under the European Communities (Quality of Salmonid Waters) Regulations, 1988. The river is not designated as an SPA, SAC or NHA

(iv) Water quality objective for the receiving water body:

Smithborough WWTP discharges to the Magherarney River waterbody NW\_36\_1082, this waterbody has been classified as poor and has a Restore 2021 objective in the North West International River Basin District. Ambient monitoring results are included as an appendix to this AER.

(v) The standards and volumetric limitations applied to any industrial waste water that is licensed to discharge to the waste water works:

There are no industries licensed to discharge to the waste water works.

Under condition 5.2 (b) of the licence, the programme of infrastructural improvements shall include an assessment of the integrity of the waste water works having regard to:

(i) Capacity of the waste water works:

There is adequate capacity at the WWTP works, the treatment capacity report is included in table 3.2.

ii) Leaks from the waste water works:

There are no known leaks at the WWTP site.

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

There are no known misconnections on the Smithborough network.

(iv) Infiltration by surface water/ground water:

During storm conditions/periods of extensive rainfall, inflows into the WWTP increase greatly suggesting surface water/ground water infiltration.

**b) Programme of Improvements**

Under condition 5.2 (c) of the licence, the programme of infrastructural improvements shall include an assessment of all storm water overflows associated with the waste water works to determine the effectiveness of their operation and in particular identify improvements necessary to comply with the requirements of this licence:

There are no storm water overflows from the Smithborough WWTP. There is a secondary discharge point. Treated effluent is discharges here when river flows are high. It is located close to the primary discharge point and both discharges are to the same waterbody.

Condition 5.3 (a) and (b) of the licence, the programme of infrastructural improvements shall include a plan for implantation for each individual improvement identified:

Schedule C 1 lists one specified improvement for the WWTP. Upgrade WWTP to provide chemical dosing for phosphorus removal to comply with ELV's specified in Schedule A. This was completed in 2015.

## Appendix 7.2 Ambient Monitoring Results

Upstream Smithborough WWTP							
Sample Date	Sample Method	Dissolved Oxygen mg/l	Temp °C	BOD mg/l	Ortho Phosphorus mg/l	Ammonia mg/l	pH units
10-Feb-2016	Grab	11.1	8.1	5.6	0.048	0.01	7.8
8-Mar-2016	Grab	10.71	9.7	2.8	0.032	0.097	8
13-June-2016	Grab	8.06	16.7	6.5	0.028	0.16	7.9
17-Aug-2016	Grab	7.53	18.9	1.2	0.051	0.035	8
19-Oct-2016	Grab	9.72	10.9	3.8	0.064	0.096	8
07-Dec-2016	Grab	9.84	11.2	2.7	0.029	1.2	7.9
<b>Average</b>		<b>9.49</b>	<b>12.58</b>	<b>3.77</b>	<b>0.04</b>	<b>0.27</b>	<b>7.93</b>

Downstream Smithborough WWTP							
Sample Date	Sample Method	Dissolved Oxygen mg/l	Temp °C	BOD mg/l	Ortho Phosphorus mg/l	Ammonia mg/l	pH units
10-Feb-2016	Grab	11	9.6	4	0.048	0.012	7.8
8-Mar-2016	Grab	10.64	8.7	4.7	0.029	0.009	8.1
13-June-2016	Grab	8.07	16.8	3.5	0.071	0.17	7.9
17-Aug-2016	Grab	7.51	18.9	3.5	0.052	0.055	8.1
19-Oct-2016	Grab	9.54	11	3.4	0.069	0.14	8
07-Dec-2016	Grab	9.85	10.7	1.4	0.032	1.3	7.9
<b>Average</b>		<b>9.43</b>	<b>12.61</b>	<b>3.42</b>	<b>0.05</b>	<b>0.28</b>	<b>7.97</b>

## **Appendix 7.3 Sewer Integrity Risk Assessment 2016**

Section 1.1 Agglomeration Details						
Name		Smithborough				
Licence Number		D0464-01				
Insert Name of Catchment if the Risk Assessment is for part of an agglomeration (only divide agglomeration where p.e. >5,000p.e. and where such division is warranted)		Smithborough				
Date Licence Issued		20/06/2013				
Current Date		23/02/2017				
			Year	Year	Year	Year
Waste Water Works - Wastewater Treatment Plant Details		Unit	2015	2016	2017	2018
1.1	Is there an existing WWTP in operation?		Yes	Yes	Yes	Yes
Section 1.2 BOD Loading & Population Equivalent						
1.2	Average Daily Influent Flow or Average Total Flow in system (If no measured data exists, insert estimated figure)	l/day, measured	200000	85545		
1.3	Average Daily Influent BOD or Average BOD Load from area served (If no measured data exists, insert estimated figure)	mg/l, measured	127.01	416.36		
1.4	Total BOD Load	kg/day	25.402	35.6175162	0	0
1.5	Average Population Equivalent (@0.06kg/person/day)	p.e.	423	594	0	0
1.6	Estimated (existing) Non-Domestic Load	p.e.				
1.7	Estimated Domestic Load	p.e.	423	594	0	0
1.8	Occupancy Rate for the Agglomeration	pop/house	2.7	2.7		
1.9	Estimated Number of Connected Properties	houses	157	220	0	0
1.10	Number of properties within the agglomeration when compared with CSO Data or An Post Geodirectory	houses	134	134		
Section 1.3 Hydraulic Details						
1.11	Average Dry Weather Flow arriving at WWTP OR Total Average DWF in system (If no measured data exists insert estimated figure)	l/s, measured	1.97	0.89		
1.12	Estimated 3DWF	l/sec	5.91	2.67	0.00	0.00
1.13	Annual Average Peak Flow to WWTP or discharging from whole system if there is no existing WWTP	l/s, measured	9.027777778	9.54		
1.14	This Annual Average Peak as Multiples of Dry Weather Flow (Peaking Factor)	Nr	4.58	10.72	0.00	0.00
1.15	Highest Peak Flow Recorded (Insert UNKNOWN if no records exist)	l/s	Unknown	9.54		
1.16	Does this Peak Flow (multiple of DWF) cause hydraulic capacity problems within the network ?	---	No	Yes	Yes	Yes
1.17	Total Rainfall for Previous Year	mm	1269	891		
1.18	Comparison - Mean Annual Rainfall for the agglomeration	mm	1007	1006.9		
1.18.1	Define the Weather Station Used		Ballyhaise	Ballyhaise		
1.19	If Storm Water Storage is available at the Wastewater Treatment plant, what is the volume of the storm tank ?	m <sup>3</sup>	None	None		
1.20	Is the capacity of the storm tank sufficient to capture and retain all overflows to the tank ?	---				
1.21	Total monthly average volume of Storm Water Stored or Returned for Treatment within the Waste Water Treatment Plant	m <sup>3</sup> per month				
1.22	If the answer to 1.20 above is No, What is the estimated frequency of Overflows from the Storm Tank ? (N/A if no overflow)					
Waste Water Works - Sewer Network Details		Unit	2015	2016	2017	2018
Section 1.4 Waste Water Works - Gravity Sewer Details						
1.23	What database is used to maintain records of the sewer network		Hard Copy Drawings only	Hard Copy Drawings only	SUS 2002	SUS 2003
1.23.1	If other or combination of the above please describe	Describe				
1.24	Total length of sewers (use drop down menus to define whether these figures are estimated or measured)	km Estimated	4.40	4.40	0.00	0.00
1.24.1	Total length of sewers > 450mm Diameter	km Estimated	1.20	1.20		
1.24.2	Total length of sewers > 300mm but ≤ 450mm in Diameter	km Estimated	0.00	0.00		
1.24.3	Total length of sewers > 225mm but ≤ 300mm in Diameter	km Measured	0.00	0.00		
1.24.4	Total length of sewers ≤ 225mm in Diameter	km Estimated	3.20	3.20		
1.24.5	Other	km Estimated				
1.25	Pipeline Material					
1.25.1	What portion of the sewer network consists of Concrete Pipes	% Estimated	94%	94%		
1.25.2	What portion of the sewer network consists of Plastic Pipes	% Estimated	1%	1%		
1.25.3	What portion of the sewer network consists of Clay materials	% Estimated	0%	0%		
1.25.4	What portion of the sewer network consists of Brick Type Sewers	% Estimated	0%	0%		
1.25.5	What portion of the sewer network consists of Other Materials	% Estimated	5%	5%		
1.26	Total number of Storm Water Overflows	Nr				

1.27	What Screening or other mechanical devices are employed at the storm water overflows					
1.28	Water Quality at the receiving waters					
1.28.1	Where the receiving water is a river - indicate the EPA Biological Rating of the Receiving Water for each SWO below (Particularly if there is more than one receiving water within the agglomeration)					
1.28.2	Where the receiving water is a coastal water indicate the Status of the Receiving Water for each SWO below (Particularly if there is more than one receiving water within the agglomeration)					
1.28.3	With reference to the SWO's detailed above define if the receiving waters are sensitive in accordance with the Urban Wastewater Treatment Regulations as amended.					
1.28.4	With reference to the SWO's detailed above define are the receiving waters Protected Areas (designated or awaiting designation)					
1.28.5	With reference to the SWO's detailed above define do the receiving waters have any other designations.					
	<b>Section 1.5 Waste Water Works - Pumping Stations</b>					
1.29	Number of Pumping Stations (operated by the Local Authority)	Nr	1	1		
1.30	Total Length of Rising Mains (operated by the Local Authority)	km				
1.31	Rising Main Material					
1.31.1	What portion of the rising mains consists of ductile iron pipes	% Measured	Unknown	Unknown		
1.31.2	What portion of the rising mains consists of plastic pipes	% Measured	Unknown	Unknown		
1.31.3	What portion of the rising mains consists of other materials	% Estimated	Unknown	Unknown		
1.32	Discharge Capacity of the Pump Set (s) at normal duty point					
	At Pump Station 1 at E258542, N330327		Unknown	Unknown		
1.33	What percentage of the pumping stations have recorded flow data (i.e. if all pumping stations have flow meters on the rising mains then this would read 100%)	%	0.00%	0.00%		
1.34	Available Storage Capacity at Pump Stations (include pump sump and any storm water/emergency overflow tanks)					
	At Pump Station 1 at E258542, N330327	m <sup>3</sup>	15	15		
1.35	Total Number of " <b>Licensed Secondary Discharge Points and Stormwater Overflows</b> " at pumping stations	Nr	0	0		
1.36	Total Number of " <b>Emergency Overflow Points</b> " at pumping stations	Nr	1	1		
1.37	What Screening or other mechanical devices are employed at the secondary discharge points or emergency overflows ?					
	At Pump Station 1 at E258542, N330327	Describe	Unknown	Unknown		
1.38	Water Quality at the receiving waters at each pumping station location					
1.38.1	Where the receiving water is a river - indicate the EPA Biological Rating of the Receiving Water for each secondary discharge point or emergency overflow at each pumping station (Particularly if there is more than one receiving water within the agglomeration)					

	At Pump Station 1 at E258542, N330327	Describe	N/A	N/A		
1.38.2	Where the receiving water is a coastal water indicate the Status of the Receiving Water for each secondary discharge point or emergency overflow at each pumping station (Particularly if there is more than one receiving water within the agglomeration)					
	At Pump Station 1 at E258542, N330327	Describe	N/A	N/A		
1.38.3	With reference to the pumping stations, for each secondary discharge point or emergency overflow detailed above, define if the receiving waters are sensitive in accordance with the Urban Wastewater Treatment Regulations as amended.					
	At Pump Station 1 at E258542, N330327		Not Listed	Not Listed		
1.38.4	With reference to the pumping stations, for each secondary discharge point or emergency overflow detailed above, are the receiving waters Protected Areas (designated or awaiting designation) .					
	At Pump Station 1 at E258542, N330327	Designation	Np	Np		
1.38.5	With reference to the pumping stations, for each secondary discharge point or emergency overflow detailed above, do the receiving waters have any other designations.					
	At Pump Station 1 at E258542, N330327	Designation	No	No		
1.39	Estimated Number of Private Pumping Stations within the agglomeration (not operated by the Local Authority)	Nr	0	0		
	<b>Section 1.6 Reporting</b>					
	<b>Section 1.6.1 Reported Number of Sewer Related Complaints</b> (‘Complaint’ as defined in the Discharge Licence)					
1.40	Number of Reported Complaints	Nr	0			
1.41	Number of Reported Complaints which have been rectified	Nr	0			
	<b>Section 1.6.2 Reported/Recorded/Estimated Number of Secondary Discharges</b>					
1.42	Number of Reported Secondary Discharges	Nr	0			
1.43	Number of Recorded Secondary Discharges	Nr	0			
1.44	Estimated Total Number of Secondary Discharges	Nr	0	0	0	0
	<b>Section 1.6.3 Reported/Recorded/Estimated Number of Emergency Overflow Discharges from Pumping Stations</b>					
1.45	Number of Reported Emergency Overflow Discharges	Nr	0			
1.46	Number of Recorded Emergency Overflow Discharges	Nr	0			
1.47	Estimated Total Number of Emergency Overflow Discharges	Nr	0	0	0	0
	<b>Section 1.7 Operational Staff</b>					
1.48	In the four boxes below, describe the extent of operation staff employed by the Local Authority to maintain and operate the sewer network and pumping stations <i>(The individual personnel shall not be named, only grade and level of training needs to be provided)</i>					
1.48.1	Caretaker 8 is responsible for the maintenance and operation of the Smithboro network and WWTP. The caretaker is also responsible for the Rockcorry, Latton, Bawn and Threemilehouse conglomerations.					
1.48.2	Caretaker operates under the supervision of a Line Manager Technician					
1.48.3	The Line Manager Technician is supervised by the Senior Executive Engineer					
1.48.4						
	<b>Waste Water Works - Investment Details</b>	<b>Unit</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
	<b>Section 1.8 Capital Investment works carried out since most recent report (including works not included on WSIP Programme or not WSIP funded)</b>					
1.49	Sewers Upgraded or Replaced	m	0	0		

1.50	Sewers Rehabilitated	m	0	0		
1.51	Manholes Rehabilitated	Nr	0	0		
1.52	Local Repairs	Nr	0	0		
1.53	Total Length of sewers Upgraded, Replaced or Rehabilitated	m	0	0	0	0
1.54	Pumping Stations Operated by Local Authority Upgraded or Repaired	Nr	0	0		
1.55	WWTW operated by Local Authority Upgraded or Replaced	Nr	0	0		
1.56	In the following two cells describe the actual Capital Investment undertaken in the reporting period.					
1.56.1	The following improvement works were undertaken during 2015. <input type="checkbox"/> Chemical dosing for phosphorus was installed at the WWTP in 2015. An Annual Statement of Measures is included in 2015 AER Report.					
1.56.2						
	<b>Section 1.9 Licence Specified Improvements Works</b>					
1.57	2015 AER, Appendix 7.3					
	<b>Section 1.10 Other Updates Since Last Report</b>					
1.58						
1.59						



## Section 2.1 Hydraulic Risk Assessment

Query	Description	Prompt	Risk Score	Short Commentary by the Local Authority	Comment or Action to be Taken
2.1	<a href="#">Has a Hydraulic Performance Assessment been undertaken for the Sewer Network (e.g., Computer Model or other Engineering Design or Design Review) ?</a>	No	40	Identified, therefore a	If the answer is <b>No</b> assess the need and cost benefit of developing a computer model or engineering design assessment of the Sewer Network and complete Query 2.12. If the answer is <b>Yes</b> proceed to Queries 2.1.1 to 2.1.4 inclusive
2.1.1	If Answer to Query 2.1 is Yes, what % of the Network is covered by the hydraulic assessment ?	N/A	0		The % coverage of the Network by the Hydraulic Assessment can be estimated by the area assessed against the area served by the Network. ENTER "N/A" IF COMPUTER MODEL or DESIGN DOES NOT EXIST. DO NOT LEAVE BLANK OR ENTER "0".
2.1.2	How many years has it been since the completion of the hydraulic assessment ?	N/A	0		Select N/A response if no design assessment or design exists.
2.1.3	Are the outcomes of the Hydraulic Assessment being implemented ?	No	0		Select N/A response if no design assessment or design exists.
2.1.4	How many years has it been since the outcomes of the hydraulic assessment have been implemented ?	N/A	0		Select N/A response if no hydraulic performance assessment or design exists. For ongoing works select "less than 5".
2.2	<a href="#">Has a Dynamic Computer Model been used to Assess the Hydraulic Performance of the Sewer Network ?</a>	No	10		Computer Model means a Hydroworks/Infoworks Model, Micro-Drainage Model or equivalent.
2.3	<a href="#">Has a Manhole Survey been undertaken in accordance with WRc Documentation "Model Contract Document for Manhole Location Surveys and the Production of Record Maps" ?</a>	No	10		If the answer is <b>No</b> assess the need and cost benefit of undertaking a Manhole Survey and complete Query 2.12. If the answer is <b>Yes</b> proceed to Query 2.2.1
2.3.1	If yes, how many years has it been since the survey was undertaken or updated?	N/A	0		Select N/A if no Manhole Survey has been undertaken. Enter N/A value for Confidence Grade if Prompt Box is "N/A"
2.4	<a href="#">Has a Flow Survey been undertaken in accordance with WRc Documentation "A Guide to Short Term Flow Surveys of Sewer Systems" and "Contract Documents for Short Term Sewer Flows" ?</a>	No	20		If the answer is <b>No</b> assess the need and cost benefit of undertaking a Flow Monitoring Survey and complete Query 2.12. If answer is <b>Yes</b> Proceed to Query 2.5
2.5	<a href="#">What was this Flow Survey Information Used for ?</a>				
2.5.1	To Determine the extent of Problematic Sewer Catchments	N/A	0		Select N/A if no Flow Survey has been undertaken.
2.5.2	To Verify a Computer or Mathematical Model of the Network	N/A	0		Select N/A if no Flow Survey has been undertaken.
2.6	<a href="#">Have Performance Criteria been developed to determine the short, medium or long term capacity of the sewer network ?</a>	No	10		If the answer is <b>No</b> assess the Future Needs of the Sewer Network and complete Query 2.12. If the answer is <b>Yes</b> proceed to Query 2.8
2.7	<a href="#">How many flood events resulting from surcharge in the network have occurred in the past 3 years?</a>	None	0		Flood events in this context means water/sewage backing up from the Network causing flooding of properties or causing disruption of traffic
2.8	<a href="#">Are there deficiencies in performance criteria within the sewer network ?</a>	No	0		If the answer is <b>No</b> , Proceed to Query 2.10 and complete Query 2.12. If the answer is <b>Yes</b> proceed to Query 2.9
2.9	<a href="#">Have the causes of these deficiencies in the Performance Criteria been identified and rectified ?</a>	N/A	0		If the answer is <b>No</b> , consider further examination of the hydraulic model (if available) and complete Query 2.12. If the answer is <b>Yes</b> proceed to Query 2.10
2.10	<a href="#">Can the Hydraulic Assessment (defined in Query 2.1 above) be used to determine the benefit of reducing the contributory Impermeable Areas or extent of surface water contributions</a>	N/A	0		If the answer is <b>No</b> , consider further development of the Hydraulic Assessment (or model if available) and complete Query 2.12. If the answer is <b>Yes</b> proceed to Query 2.11
2.11	<a href="#">Has an Impermeable Area Survey been carried out for the agglomeration or parts of the agglomeration ?</a>	No	10		If the answer is <b>No</b> , consider the need and cost benefit of undertaking an Impermeable Survey for parts of the agglomeration which are under hydraulic pressure and complete Query 2.12.
<b>Total Risk Assessment Score (RAS)</b>			<b>100</b>		
2.12	<a href="#">Prepare Assessment of Needs &amp; Sewer Upgrade Implementation Plan</a>	In the AER Attach Assessment of Needs and Rehabilitation Implementation Plan as separate documents			
2.13	In the AER provide Summary of Proposed Works or Direction to be taken to improve hydraulic efficiency				

Section 3.1 Environmental Risk Assessment					
Query	Description	Prompt	Risk Score	Short Commentary by the Local Authority	Comment or Action to be Taken
3.1	<u>What Environmental or Discharge Quality Data is available with regard to the sewer network ?</u>	largely anecdotal	20		Select N/A if no discharges, secondary discharges or overflows from network; if discharges do exist complete Query 3.12
3.1.1	<u>Do trade effluents discharge to the sewer network?</u>	No	0		If the answer is <b>No</b> , proceed to Query 3.1.2. If the answer is <b>Yes</b> , Proceed to Query 3.2
3.1.2	<u>Are there Storm Water Overflows within the network ?</u>	No	0		If the answer is <b>No</b> , proceed to Query 3.1.3. If the answer is <b>Yes</b> , Proceed to Query 3.3
3.1.3	<u>Are there Secondary Discharges within the network (excluding Emergency Overflows at Pump Stations)?</u>	No	0		If the answer is <b>No</b> , proceed to Query 3.1.4.
3.1.4	<u>Is there any evidence that exfiltration is occurring from the network ?</u>	Unknown	20		If the answer is <b>No</b> , does all wastewater enter a wastewater treatment plant (insert summary details in the AER)? If <b>Yes</b> , Proceed to Query 3.6
3.2	<u>If Answer to Query 3.1.1 is "Yes", what % of trade effluents have a licence to Discharge to the Public Sewer ?</u>	N/A	0		Select N/A if answer to Query 3.1.1 is <b>No</b> . If not all trade effluents are licenced, Local Authority should consider issuing and controlling such discharges under the appropriate Legislation.
3.2.1	<u>Are all licenced trade Discharges compliant with their relevant licence and associated conditions.</u>	N/A	0		Answer N/A if none of the trade effluents are licenced. Answer <b>No</b> if this information is unknown. If the answer is <b>Unknown</b> or <b>No</b> , consider issuing a direction to the relevant Licencee. If the answer is <b>Yes</b> , no further action is needed.
3.2.2	<u>If Answer to Query 3.2.1 is "No", state what % of Trade Discharges are NOT compliant with their relevant licence and associated conditions (where that non-compliance led to enforcement action)</u>	N/A	0		Select <b>N/A</b> if answer to Query 3.2.1 is <b>Yes</b> . If <b>N/A</b> is selected as answer to Query 3.2.2
3.3	<u>In accordance with the DoEHLG paper "Procedures &amp; Criteria in relation to Storm Water Overflows", what % of storm water overflows in the system have been classified for their significance?</u>	N/A	0		If the answer is <b>No</b> , consider a review of each discharge within the sewer network complete and Query 3.11. If the answer is <b>Yes</b> , proceed to Query 3.6
3.4	<u>Have samples from any Secondary Discharges within the system been analysed ?</u>	N/A	0		Select N/A if no secondary discharges in system. If the answer to Query 3.4 is <b>No</b> , consider examining the quality of each secondary discharge within the sewer network complete Query 3.11. If the answer is <b>Yes</b> , proceed to Query 3.11
3.5	<u>What percentage of discharges from the system are known to cause environmental pollution of the receiving waters ?</u>	None	0		If the answer is greater than 50% then detail, in the AER, the Improvement Programme necessary to reduce this percentage.
3.6	<u>In relation to possible exfiltration has a risk analysis of ground water contamination or pollution been undertaken ?</u>	N/A	0		Select <b>N/A</b> if answer to Query 3.1.4 is <b>No</b> . If the answer is <b>No</b> , consider undertaking ground water risk analysis and complete Query 3.12 If the answer is <b>Yes</b> , proceed to Query 3.6
3.6.1	<u>If Answer to Query 3.6 is "Yes", have any groundwater aquifers been identified in the area of the Network and/or Discharge Points?</u>	N/A	0		Select <b>N/A</b> if no risk analysis of groundwater contamination has been undertaken.
3.6.2	<u>If Answer to Query 3.6.1 is "Yes", state the classification of groundwater aquifer identified in the area?</u>	N/A	0		Select <b>N/A</b> if no risk analysis of groundwater contamination has been undertaken.
3.6.3	<u>In relation to Query 3.6.1, is the aquifer used as a source for Public, Private or Group Water Supply Schemes?</u>	N/A	0		Select <b>N/A</b> if no risk analysis of groundwater contamination has been undertaken.
3.7	<u>Has an Impact Assessment of each Storm Water Overflow been undertaken in accordance with the DoEHLG paper "Procedures &amp; Criteria in relation to Storm Water Overflows" including setting performance criteria?</u>	N/A	0		If the answer is <b>No</b> , consider assessing the risk category of the receiving waters. If the answer is <b>Yes</b> , proceed to Query 3.8 and provide summary details of the assessment in the AER.
3.8	<u>What percentage of storm water overflows comply with the performance criteria referred to in Query 3.7?</u>	N/A	0		Select <b>N/A</b> if answer to Query 3.7 is <b>No</b> or if there are no SWOs in system. <b>(Risk Score is locked at 0 if no SWOs in system is stated in Agglomeration Details)</b>
3.9	<u>Have the causes of these Capacity Deficiencies (storm water overflows &amp; Secondary Discharges) been identified ?</u>	No	15		Select <b>N/A</b> if answer to Query 3.7 is <b>No</b> or if there are no SWOs in system. If the answer to Query 3.9 is <b>No</b> , consider further examination of the environmental model, see legislative model
<b>Total Risk Assessment Score (RAS)</b>			<b>55</b>		
3.10	<u>Prepare Assessment of Needs &amp; Sewer Upgrade Implementation Plan</u>	In the AER Attach Assessment of Needs and Rehabilitation Implementation Plan as separate documents			
3.11	Provide Summary Details (in the AER) of records upstream and downstream of licenced discharges with regard to Environmental Performance of the network. These details can be included as part of the AER submitted for the agglomeration.				

### Section 4.1 Structural Risk Assessment

Query	Description	Prompt	Risk Score	Short Commentary by the Local Authority	Comment or Action to be Taken
4.1	<u>Has a CCTV Survey been undertaken in accordance with WRc Documentation "Model Contract Document for Sewer Condition Inspections" and "Manual of Sewer Condition Classification" ?</u>	No	10		If the answer is <b>No</b> assess the need and benefit of undertaking CCTV Survey. If <b>Yes</b> Proceed to Query 4.2
4.1.1	How many years has it been since the completion of the CCTV Survey?	N/A	0		If no CCTV has been undertaken, select "N/A" response
4.2	<u>What was this CCTV Survey Information Used for?</u>	N/A	10		Select N/A if answer to Query 4.1 is NO.
4.3	<u>Has the CCTV Survey been used to Assess the Structural Condition of the Sewer Network or targeted sections of the Sewer Network?</u>	No	5		If no CCTV has been undertaken, select "No" response. If the answer is <b>No</b> assess the need and benefit of undertaking an assessment of the Structural Condition of the Sewer Network. If the answer is <b>Yes</b> proceed to Q
4.4	<u>Have Performance Criteria been developed to determine the short, medium or long term structural condition of the sewer network ?</u>	No	5		If the answer is <b>No</b> , enter "unknown" in response to Queries 4.4.1 to 4.4.5; consider assessing the Future Needs of the Sewer Network. If the answer is <b>Yes</b> proceed to Queries 4
4.4.1	What % of the Total Sewer Length contains Collapsed or Imminent Collapse of Sewers (Grade 5)	unknown	30		Insert Percentage of Overall Network Length; If a sewer length contains a Grade 5 collapse, include the total length of that sewer in calculating the %. If information is not available type "Unknown" into Prompt Box
4.4.2	What % of Total Sewer Length contains Sewers Likely to Collapse (Grade 4)	unknown	25		Insert Percentage of Overall Network Length; If a sewer length contains a Grade 4 condition, include the total length of that sewer in calculating the %. If information is not available type "Unknown" into Prompt Box
4.4.3	What % of Total Sewer Length contains sewers with Further Possible Deterioration (Grade 3)	unknown	10		Insert Percentage of Overall Network Length; If a sewer length contains a Grade 3 deterioration, include the total length of that sewer in calculating the %. If information is not available type "Unknown" into Prompt Box
4.4.4	What % of Total Sewer Length contains sewers with Minimal Collapse (Grade 2)	unknown	5		Insert Percentage of Overall Network Length; If a sewer length contains a Grade 2 feature, include the total length of that sewer in calculating the %. If information is not available type "Unknown" into Prompt Box
4.4.5	What % of Total Sewer Length contains sewers of Acceptable Structural Condition (Grade 1)	unknown	5		Insert Percentage of Overall Network Length. If information is not available type "Unknown" into Prompt Box
<b>If all % lengths are known, Check Total Length = 100%</b>			<b>75</b>		If answers to Queries 4.4.1, 4.4.2 or 4.4.3 are above a set level, the RAS for Query 4 is automatically set at the maximum of 140.
4.5	<u>What % of the deficiencies, as detailed in Items 4.4.1, 4.4.2 and 4.4.3, have been rectified ?</u>	N/A	35		Select N/A if answer to Query 4.4 is <b>No</b> . If the answer is <b>No</b> , Proceed to Query 4.6 If the answer is <b>Yes</b> , what monitoring is in place to ensure continued acceptance of structural condition? Proceed to Query 4.7
4.6	<u>Have the causes of the Structural Deficiencies (Grades 3, 4 and 5) been identified or is there a Preventative Maintenance Programme in place?</u>	N/A	0		If the answer is <b>No</b> , consider further examination of the sewer network, the structural loading conditions, gradients and possible H <sub>2</sub> S Formation. If Yes completed Query 4.7
<b>Total Risk Assessment Score (RAS)</b>			<b>140</b>		
4.7	<u>Prepare Assessment of Needs &amp; Sewer Rehabilitation Implementation Plan</u>	In the AER Attach Assessment of Needs and Rehabilitation Implementation Plan as separate documents			

### Section 5.1 O&M Risk Assessment

Query	Description	Prompt	Risk Score	Short Commentary by the Local Authority	Comment or Action to be Taken
5.1	<u>Are complaints of an environmental nature recorded and held in a central database?</u>	Yes	0		Consider setting up Central Database for Complaints
5.2	<u>Is there an emergency response procedure in place?</u>	No	20		Consider setting up target response times for dealing with Complaints
5.3	<u>What has been the highest frequency of flooding in the network due to hydraulic inadequacy, over the past 5 years?</u>	None	0		Refers to flooding from the Network only, not natural flooding from rivers/streams/high tides. Select the highest number of events in any 12 month period.
5.4	<u>What has been the highest frequency of flooding in the network due to operational causes over the past 5 years?</u>	None	0		Refers to flooding from the Network only, not natural flooding from rivers/streams/high tides. Select the highest number of events in any 12 month period.
5.5	<u>What has been the highest frequency of surcharging of critical sewers in the network, over the past 5 years?</u>	None	0		Select the highest number of events in any 12 month period.
5.6	<u>What has been the highest frequency of reportable incidents in the network, over the past 5 years?</u>	Twice/yr	4		Select the highest number of events in any 12 month period.
5.7	<u>What has been the highest frequency of reportable incidents due to discharges, for whatever reason, from Pumping Station Emergency Overflows in the network, over the past 5 years?</u>	Twice/yr	4		Select the highest number of events at any given Pumping Station in any 12 month period.
5.8	<u>What has been the highest frequency of blockages in sewers in the network over the past 5 years?</u>	unknown	20		Select the highest number of events per km of sewer network in any 12 month period.
5.9	<u>What has been the highest frequency of collapses in sewers in the network over the past 5 years?</u>	None	0		Select the highest number of events in any 12 month period.
5.10	<u>What has been the highest frequency of bursts in rising mains in the network over the past 5 years?</u>	None	0		Select the highest number of events in any 12 month period.
<b>Total Risk Assessment Score (RAS)</b>			<b>48</b>		
5.11	<u>Prepare Up Dated Operational and Maintenance Plan</u>				

### Section 6.1 Summary of Risk Assessment Scores

Element	Risk Assessment Score	Risk Category	% Risk Score	Maximum Risk Score
Section 2.1 Hydraulic Risk Assessment	100	Medium Risk	67%	150
Section 3.1 Environmental Risk Assessment	55	Low Risk	11%	500
Section 4.1 Structural Risk Assessment	140	High Risk	93%	150
Section 5.1 O&M Risk Assessment	48	Low Risk	24%	200
<b>Total RAS for Network</b>	<b>343</b>	<b>Low Risk</b>	<b>34%</b>	<b>1000</b>

If the total RAS is greater than 750, or if any of the individual RASs are greater than 75% of the Maximum Available Score, the Risk category for the Network is graded "High Risk"

## Appendix 7.4 Drinking Water Risk Assessment 2016

# Drinking Water Risk Assessment

<b>Agglomeration Name:</b>	<b>Smithborough</b>
<b>Licence Register No.</b>	<b>D0464</b>



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### **Appendix 1 – Mapping**

### **Appendix 2 - Raw Water Analysis “Smithborough Wells”**



## **1 Introduction**

This report has been prepared for D0464, Smithborough, in County Monaghan in accordance with the requirements of Condition 4.16 of the wastewater discharge licence for the agglomeration. This report assesses the potential impacts on drinking water abstractions.

Tynan Environmental were engaged to produce a report titled “Establishment of Groundwater Zones of Contribution, Smithborough Public Water Supply, Co. Monaghan”. This report was issued in June 2016 and the conclusions of this report specific to the Smithborough Wastewater treatment plant are discussed in the relevant sections below.

The risk from the discharges from the agglomeration has been assessed under four separate headings with an overall risk ranking applied in conclusion.

- (1) Level of treatment and capacity of WWTP
- (2) Discharge compliance and level of dilution
- (3) Receiving waters / abstraction water quality
- (4) Impact of discharges during normal and abnormal operation

## 2 Tabular Details of Agglomeration and Drinking Water Abstractions

### 2.1 Wastewater Treatment Plant Details

The wastewater treatment plant details are summarised in Table 2.1 below.

**Table 2.1 – Wastewater Treatment Plant**

1	Type of treatment (primary, secondary, tertiary)	Secondary with chemical dosing for P removal
2	Hydraulic Capacity – Design / As Constructed (dry weather flow) (m <sup>3</sup> /year)	62050
3	Hydraulic Capacity – Design / As Constructed (peak flow) (m <sup>3</sup> /year)	186150
4	Hydraulic Capacity – Current loading (m <sup>3</sup> /year)	31224
5	Hydraulic Capacity – Remaining (m <sup>3</sup> /year)	154926
6	Organic Capacity - Design / As Constructed (PE)	750
7	Organic Capacity - Current loading (PE)	513 ***
8	Organic Capacity – Remaining (PE)	237
9	Will the hydraulic capacity be exceeded in the next three years? (Yes / No)	No
10	Will the organic capacity be exceeded in the next three years? (Yes / No)	No
11	Are ELV's compliant with licence ? (Yes / No)	No
12	If answer to No. 11 above is <b>No</b> , list parameters not in compliance	Ammonia, 3 breaches of ELV for Ammonia in 2016.

\*\*\* There was a new outflow mag meter installed in 2016.

The figures from the newly installed magmeter are significantly lower than previous inflow readings and raise questions over the accuracy of the inflow meter. Therefore estimated outflow and actual outflow figures have been used in these calculations. There were also a number of high BOD values in influent monitoring in 2016.

## 2.2 Discharges from the Agglomeration

A list discharges from the agglomeration is summarised in Table 2.2 below.

**Table 2.2 – List of Discharges from the Agglomeration**

Discharge	Type of Discharge	Receiving Waters	Level of Dilution (DWF vs 95 percentile river flow)	Easting	Northing	Frequency of Discharge (if known)	Compliant Discharge (Yes / No)
<b>Licensed Discharges</b>							
SW001	Primary	NW_36_1082 River Magherarney	The nearby abstraction point is a ground water supply source up gradient of the WWTP	257715	329730	Primary discharge	No
SW002	Secondary discharge point treated effluent discharged vis this location when river flows are high	NW_36_1082 River Magherarney	The nearby abstraction point is a ground water supply source up gradient of the WWTP	257718	329734	Secondary discharge – frequency relates to river flow levels	No

**Table 2.3 – List of Nearby Drinking Water Abstractions**

Abstraction Code	Agglomeration Served	Abstraction Volume (m <sup>3</sup> /day)	Groundwater Supply Source Up gradient	Type of Treatment	Easting	Northing
2400PUB1010	Smithborough PWS	129m <sup>3</sup> /d	Groundwater supply source approximately 90m up gradient of WWTP	Disinfection using sodium hypochlorite	257772	329675

### 3 Risk Assessment

#### 3.1 **Level of Treatment and Capacity of WWTP**

Smithborough WWTP consists of secondary treatment with chemical dosing for P removal. Capacities of the plant are detailed in Table 2.1.

#### 3.2 **Discharge Compliance and Level of Dilution**

Smithborough WWTP was non compliant with ELV's for Ammonia in 2016.

There are 2 boreholes serving the Smithborough PWS located approximately 90m south east and up gradient of the Smithborough wastewater treatment plant (Refer to Appendix 1 for mapping locations). Establishing levels of dilution in a ground water source is more complex than for surface water supply sources. Consultants Tynan Environmental were engaged to establish the groundwater "Zone of Contribution" for the Smithborough Public Water Supply. The main conclusions of this report relating to Smithborough WWTP are included in overall risk and recommendations below.

#### 3.3 **Receiving Waters / Abstracted Water Quality**

Abstracted water quality results were included in the study carried out by Tynan Environmental. An extract from the report is included in Appendix 2.

#### 3.4 **Impact of discharges during normal and abnormal operations.**

See overall risk and recommendations below.

### 4 Overall Risk and Recommendations

Tynan Environmental were engaged to produce a report titled "Establishment of Groundwater Zones of Contribution, Smithborough Public Water Supply, Co. Monaghan". This report was issued in June 2016 and the conclusions of this report specific to the Smithborough Wastewater treatment plant were as follows:

*"The boreholes are located approximately 90m south east and up gradient of the wastewater treatment plant serving the Smithborough agglomeration (licence register D0464-01 which discharges to a tributary of the Finn River. The down gradient boundaries of ZOC 1 (current abstraction) extends 19m north-west towards the Finn Tributary but does not include it. Regional groundwater flow direction is north westwards towards the tributary from the boreholes. ZOC's delineated in the course of this work suggest that the discharge of treated wastewater from the WWTP serving the Smithborough Agglomeration (Licence Register No D0464-01) poses no threat to the Smithborough PWS at the current abstraction rate of 129m<sup>3</sup>/d. Further works completed in the course of this work package suggests that*

increasing the abstraction rate from the Smithborough PWS to 125% would not cause an encroachment of the ZOC to the WWTP's discharge zone."

Tynan S & Bartley Dr P (2016)

#### Drinking Water Abstraction Point Risk Assessment Summary

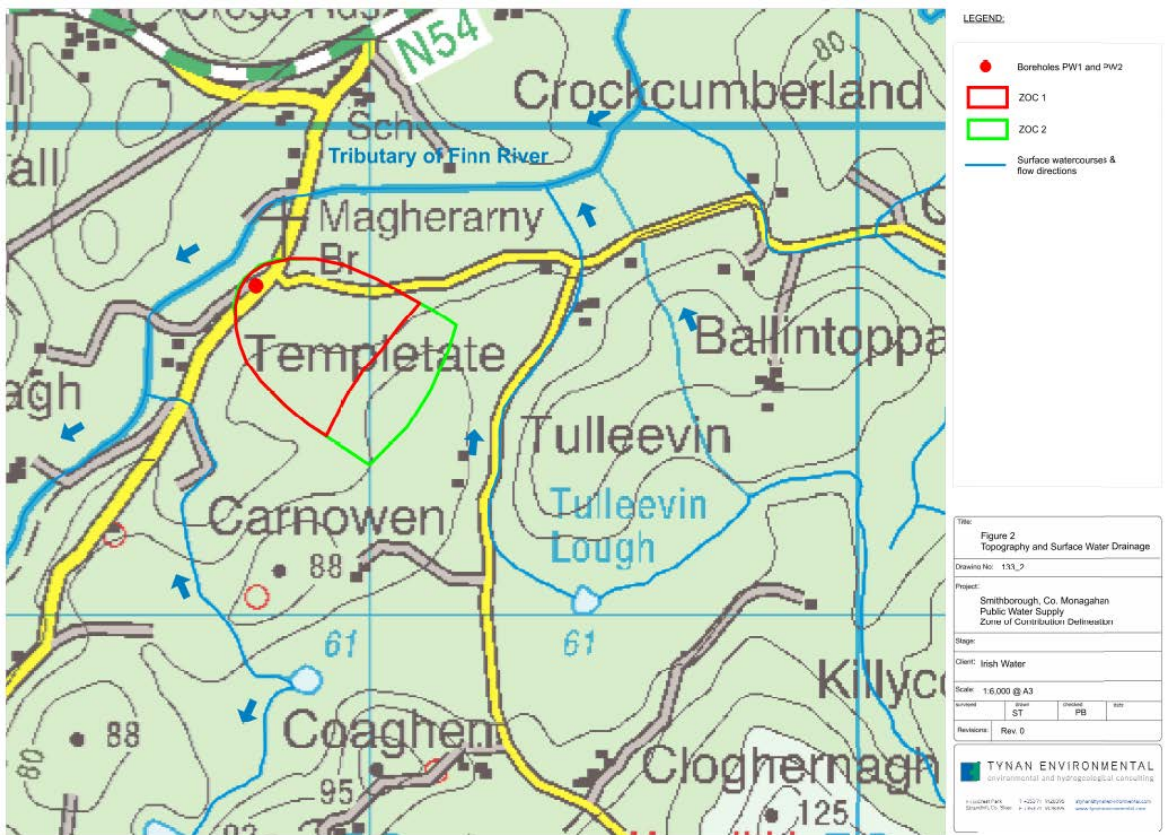
	<i>Licensee self- assessment checks to determine whether all relevant information is included in the Assessment.</i>
<b>Is a Drinking Water Abstraction Risk Assessment required in the 2016 AER (or outstanding from a previous AER)</b>	Outstanding from previous AER
<b>Does the Drinking Water Abstraction Risk Assessment identify whether any of the discharges in Schedule A of the licence pose a risk to a drinking water abstraction</b>	No
<b>Does the assessment identify if any other discharge(s) from the works pose a risk to a drinking water abstraction (includes emergency overflows)</b>	No
<b>What is the overall risk ranking applied by the licensee</b>	L
<b>Does the risk assessment consider the impacts of normal operation</b>	Yes
<b>Does the risk assessment consider the impacts of abnormal operation (e.g. incidents /overflows)</b>	Yes
<b>Does the risk assessment include control measures for each risk identified</b>	N/A
<b>Does the risk assessment consider operational control measures e.g? waste water incident notification to drinking water abstraction operator</b>	N/A
<b>Does the risk assessment include infrastructural control measures</b>	N/A
<b>Does the Improvement Programme for the agglomeration include control measures / corrective actions to eliminate / reduce priority substances identified as having an impact on receiving water quality?</b>	No

## References

Tynan S & Bartley Dr P (2016) Establishment of Groundwater Zones of Contribution , Smithborough Public Water Supply, Co. Monaghan.

**Appendix 1:**

Maps below are extracted from Tynan Tynan S & Bartley Dr P (2016)



**Appendix 2:**

Raw Water Analysis “Smithborough Wells” Result table below is an extract from Tynan S & Bartley Dr P (2016)

**Raw Water Analyses 1981-2016**

Exceedence of threshold or limit  

Parameter	PW1			PW2			EPA 18_005/NERDO 12 8/1				NERDO 12 8/m	Drinking Water limit (DWL) or Threshold value (TV)	
	10/11/2014 (EPA)	02/12/2014 (EPA)	21/03/2016 (Hydro-G)	10/11/2014 (EPA)	02/12/2014 (EPA)	21/03/2016 (Hydro-G)	10/10/1979 (NERDO, 1981)	09/11/1979 (NERDO, 1981)	01/04/1980 (NERDO, 1981)	02/04/1980 (NERDO, 1981)	??/11/1979 (NERDO, 1981)		
Total Hardness (mg/l CaCO <sub>3</sub> )	440		422	463		432	294	334	356	343	320	320	[-]
Alkalinity, total (mg/l CaCO <sub>3</sub> )			384			399		314	320	310	296	296	[-]
Non-carbonate Hardness (T.H.-Alkalinity)			38			33		20	36	33	24	24	[-]
Calcium Hardness (mg/l CaCO <sub>3</sub> )							172	270	278	268	220	220	[-]
Electrical Conductivity (µS/cm) (field measurement)			720			734	600	670	685	680	640	640	800 (TV), 2500 (DWL)
Electrical Conductivity (µS/cm @20°C) (laboratory measurement)		766	753		758	764							800 (TV), 2500 (DWL)
Hydrogen Ion Concentration Laboratory (pH) (* - Field measmt.)		7.1	6.8		7.2	6.8		7.6	7.4	7.5			≥6.5 and ≤9.5 (DWL)
Colour, apparent (mg/l Pt Co)			<4			<4							Acceptable to consumers and no abnormal change
Turbidity (NTU)			0.5			1.2							[-]
Total Coliforms (cfu/100ml)	10	0	2	0	0	0							0 (DWL)
Faecal Coliforms (E. coli (number/100ml)	0	0	0	0	0	0							0 (DWL)
Enterococci (cfu/100ml)			0			0							0 (DWL)
Clostridium Perfringens (cfu/100ml)			0	<4	0	0							0 (indicator)
Turbidity (NTU)		0.7	0.5		<0.5	1.2							Acceptable to consumers and no abnormal change
Total Oxidised Nitrogen (mg/l N)	1.8			1.6									[-]
Nitrate (mg/l NO <sub>3</sub> )			8.42			7.37		0.38	2.77	2.51	0.9	0.9	37.5 (TV)
Nitrite (µg/l NO <sub>2</sub> )			<0.0170		0.018	0.018							375 (TV)
Ammonium (mg/l N)			0.02			0.02							0.065 mg/l (TV-lower)
Ammonia (mg/l N)	<0.02			0.032	0.058								0.1 (Indicator value)
Orthophosphate (mg/l PO <sub>4</sub> P)			<0.01			<0.01							[0.035 MRP TV]
Chloride (mg/l Cl)			20			20	15	19	22	21	15	15	24 (TV- lower)
Iron (µg/l Fe) Total	170	47.2	90.7	110	10.4	338			1040	734			200 (DWL)
Manganese Total (µg/l)	6.7	9.3	8.5	9.4	<5	20			68	53			50 (DWL)
Lead ( µg/l)	1.8	<1		1.2	<1								18.75 (TV)
Copper (µg/l)	1.6			1.1									1500 (TV)
Aluminium (µg/l Fe) Total	<10	<10		<10	<10								150 (TV)
Arsenic Total 10 days (µg/l Fe)			0.11			<0.1							7.5 (TV)
Sulphate (mg/l)			31.8			32.9		36	34	34	30	30	187.5 (TV)
Magnesium			15.8			16.3							[-]
Potassium (mg/l)			3.4			3.48			1.53	1.55			[-]
Sodium (mg/l)			11.3			11.9			10.28	10.7			[-]
Potassium:Sodium			0.30			0.29			0.14	0.14			0.3-0.4 (Indicator value)