

# Annual Environmental Report 2014

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



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## Section 1. Executive Summary and Introduction to the 2014 AER

### 1.1 Summary report on 2014

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:

- Priority substances assessment
- Drinking water risk assessment

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

- secondary treatment

The final effluent from the Primary Discharge Point was non-compliant with the Emission Limit Value for Ortho-phosphate in 2014.

The following parameters exceeded the emission limit values in 2014:-

- Ortho-phosphate
- COD
- Ammonia
- Total Suspended Solids

2268,000 kgs sludge (total weight sludge) were removed from the wastewater treatment plant in 2014 as liquid sludge. Sludge was transferred to Monaghan WWTP for dewatering.

There were no major capital or operational changes undertaken in 2014.

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

	BOD (mg/l)	COD (mg/l)	SS (mg/l)	TP (mg/l)	Ortho P (mg/l)	TN (mg/l)	Ammonia (mg/l)	Hydraulic Loading (m <sup>3</sup> /d)	Organic Loading (PE/day)
<b>Number of Samples</b>	5	5	5		5		5		
<b>Annual Max.</b>	361	764	176		11.66		84.93	711	1792
<b>Annual Mean</b>	187	357	75		4		31	225	700

#### Significance of results

The annual mean hydraulic loading is greater 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 Summary	pH	cBOD (mg/l)	COD (mg/l)	SS (mg/l)	Ortho P (mg/l)	Ammonia (mg/l)	Comment
WWDL ELV (Schedule A)	6 - 9	10	50	10	3	1	
<b>ELV with Condition 2 Interpretation included</b>	No allowable failures – No deviation allowed	1 allowable failure provided under 100% of ELV (20mg/l)	1 allowable failure provided under 100% of ELV (100mg/l)	1 allowable failure provided under 150% of ELV (25mg/l)	8 out of 10 consec. samples shall not exceed ELV. No individual result shall exceed ELV > 100% ( OrthoP 6mg/l)	8 out of 10 consec. samples shall not exceed ELV. No individual result shall exceed ELV > 20% (Ammoni1.2mg/l)	
<b>Number of sample results</b>	7	7	7	7	7	7	
<b>Number of sample results above WWDL ELV</b>	0	0	1	1	5	1	
<b>Number of sample results above ELV with Condition 2 Interpretation included</b>	0	0	0	0	4	0	
<b>Annual Mean (for parameters where a mean ELV applies)</b>	N/A	N/A	N/A	N/A	N/A	N/A	
<b>Overall Compliance (Pass/Fail)</b>	PASS	PASS	PASS	PASS	FAIL	PASS	

### Significance of results

The WWTP was non-compliant with the ELV for Orthophosphate set in the wastewater discharge licence. There were 4 samples non-compliant with the ELV in relation to Ortho-phosphate. The non-compliance is due to elevated levels of Ortho-P leaving the WWTP where no effective ferric dosing is in place, whereas ferric dosing would reduce the figure if correctly dosed. The impact on receiving waters is assessed further in Section 2.3.

### 2.3 Ambient monitoring summary

**Table 2.3 - Ambient Monitoring Report Summary**

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish Grid Reference	EPA Feature Coding Tool code	Current EQS Status	Does assessment of the ambient monitoring results indicate that the discharge is impacting on water quality?
Upstream monitoring point	257862E, 329854N	RS36M010200	Good	n/a
Downstream monitoring point	257552E, 329614N	RS36M010310	Good	No

The results for the upstream and downstream monitoring are included as in Appendix 7.2.

#### Significance of results

The WWTP was non-compliant with the ELV for Ortho-phosphate set in the wastewater discharge licence as detailed in Section 2.2.

The discharge from the wastewater treatment plant doesn't have an observable impact on the water quality status.

### 2.4 Data collection and reporting requirements under the Urban Waste Water Treatment Directive

The electronic submission of data was completed on a monthly basis to EPA through MDS (EDEN) in XML format.

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

A PRTR is not required as the agglomerations is less than 2000 p.e.

## Section 3 Operational Reports Summary

### 3.1 Treatment Efficiency Report

A summary presentation of the efficiency of the treatment process including information for all the parameters specified in the licence is included below:-

**Table 3.1 - Treatment Efficiency Report Summary**

	<b>cBOD (kg/yr)</b>	<b>COD (kg/yr)</b>	<b>SS (kg/yr)</b>	<b>Ammonia (kg/yr)</b>	<b>Ortho -P (kg/yr)</b>	<b>Comment</b>
<b>Influent mass loading (kg/year)</b>	15300	29273	6163	2536	2930	
<b>Effluent mass emission (kg/year)</b>	365	3418	600	50	211	
<b>% Efficiency (% reduction of influent load)</b>	98	88	90	98	28	

### 3.2 Treatment Capacity Report

**Table 3.2 - Treatment Capacity Report Summary**

<b>Hydraulic Capacity – Design / As Constructed (dry weather flow) (m3/year)</b>	28105
<b>Hydraulic Capacity – Design / As Constructed (peak flow) (m3/year)</b>	62050
<b>Hydraulic Capacity – Current loading (m3/year)</b>	82000
<b>Hydraulic Capacity – Remaining (m3/year)</b>	0
<b>Organic Capacity - Design / As Constructed (PE)</b>	750
<b>Organic Capacity - Current loading (PE)</b>	699
<b>Organic Capacity – Remaining (PE)</b>	51
<b>Will the capacity be exceeded in the next three years?</b>	Yes

### 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 treated 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>Load generated in the agglomeration that is collected in the sewer network</b>	100%
<b>Load collected in the agglomeration that enters treatment plant</b>	100%
<b>Load collected in the sewer network but discharged without treatment</b>	0%

**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 above is based on influent monitoring as detailed in Section 2.1 above.

### **3.4 Complaints Summary**

There were no complaints of an environmental nature related to the discharge to waters from the Smithborough WWTP in 2014.

### **3.5 Reported Incidents Summary**

A summary of reported incidents is included below.

**Table 3.5.1 - Summary of Incidents**

<b>Incident Type (e.g. Non-compliance, Emission, spillage, Emergency Overflow Activation)</b>	<b>Incident Description</b>	<b>Cause</b>	<b>No. of incidents</b>	<b>Corrective Action</b>	<b>Authorities Contacted <small>Note 1</small></b>	<b>Reported to EPA (Yes/No)</b>	<b>Closed (Y/N)</b>
Exceedance	ELV exceedance	Ferric Dosing system	6	Installation of Ferric dosing system is underway, to be completed by end of May 2015. Continue to monitor Ortho P levels	EPA	Yes	Yes



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 2014</b>	6
<b>Number of Incidents reported to the EPA via EDEN in 2014</b>	6
<b>Explanation of any discrepancies between the two numbers above</b>	N/A

Irish Water are in continuous communication with Local Authorities reiterating the requirement to report incidents to the EPA as per Waste Water Discharge Licence Requirements. Discussions in relation to this matter are also progressing at senior management level between Irish Water and the Local Authorities. In addition to this Incident Management training will also be provided to Local Authorities in 2015 to address concerns associated with incident classification, reporting requirements and incident notification.

### 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**

<b>Input type</b>	<b>m3/year</b>	<b>PE/year</b>	<b>% of load to WWTP</b>	<b>Is there a leachate/sludge acceptance procedure for the WWTP? (Y/N)</b>	<b>Is there a dedicated leachate/sludge acceptance facility for the WWTP? (Y/N)</b>
Domestic /Septic Tank Sludge	0	0	0	N	N
Industrial / Commercial Sludge	0	0	0	N	N
Landfill Leachate (delivered by tanker)	0	0	0	N	N
Landfill Leachate (delivered by sewer network)	0	0	0	N	N
Other (specify)	0	0	0	N	N

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. Infrastructural Assessments and Programme of Improvements

### 4.1 Storm water overflow identification and inspection report

There is no storm water overflows at Smithborough WWTP.

### 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.

The Improvement Programme report included in Appendix 7.3 addresses the **Specified Improvement Programmes** as detailed in Schedules A3 and C of the WWDL. It should details other improvements identified through assessments required under the licence

**Table 4.2.1 - Specified Improvement Programme Summary**

Specified Improvement Programmes (under Schedule A and C of WWDL)	Licence Schedule (A or C)	Licence Completion Date	Date Expired? (N/NA/Y)	Status of Works ((i) Not Started; (ii) At planning stage; (iii) Work ongoing on-site; (iv) Commissioning Phase; (v) Completed; (vi) Delayed;)	% Construction Work Completed	Timeframe for Completing the Work	Comments
Chemical dosing for P removal	C	31/12/2019	N	(iii) Work ongoing on-site	20%	29/05/2015	Installation of ferric dosing system is underway. To be commissioned by end of May 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	Improvement Description	Improvement Source	Progress (% completed)	Expected Completion Date	Comments
Implement a phosphorus removal system	Lower ortho-P levels discharging from the WWTP	WWTP assessment (Condition 5.2).	20%	29/05/2015	Installation of ferric dosing system is

					currently underway. To be commissioned by end of May 2015.
		<i>Sewer Integrity Tool (Condition 5.2).</i>	0%	Unknown	
		<i>Secondary discharges assessment (Condition 5.2).</i>			
N/A	N/A	<i>SWO assessment (Condition 4 &amp; 5.2).</i>			
		<i>Drinking Water Abstraction Risk Assessment (Condition 4)</i>		Complete	See Appendix 7.6.
N/A	N/A	<i>Shellfish Impact Risk Assessment (Condition 5)</i>			
N/A	N/A	<i>Pearl Mussel Impact Assessment (Condition 4)</i>			
N/A	N/A	<i>Improved Operational Control</i>			
N/A	N/A	<i>Incident Reduction</i>			
		<i>Elimination/Reduction of Priority Substances</i>		Complete	See Appendix 7.5.

**Improvements identified above also include measures taken to** prevent environmental damage anticipated following events or accidents/incidents associated with discharges or overflows from the waste water works and as such are considered to fulfil any Statement of Measures requirements. Refer also to Appendix 7.1 which summarises the Annual Statement of Measures.

**Table 4.2.3 - Sewer Integrity Risk Assessment Tool Summary**

<b>The Improvement Programme should include an assessment of the integrity of the existing wastewater works for the following:</b>	<b>Risk Assessment Rating (High, Medium, Low)</b>	<b>Risk Assessment Score</b>	<b>Comment</b>
Hydraulic Risk Assessment Score	<i>medium</i>	<i>unknown</i>	<i>SIRAT not used in 2014</i>
Environmental Risk Assessment Score	<i>medium</i>	<i>unknown</i>	<i>SIRAT not used in 2014</i>
Structural Risk Assessment Score	<i>medium</i>	<i>unknown</i>	<i>SIRAT not used in 2014</i>
Operation & Maintenance Risk Assessment Score	<i>medium</i>	<i>unknown</i>	<i>SIRAT not used in 2014</i>
Overall Risk Score for the agglomeration	<i>medium</i>	<i>unknown</i>	<i>SIRAT not used in 2014</i>

## Section 5. Licence Specific Reports

Licence Specific Reports Summary Table

Licence Specific Report	Required in 2014 AER or outstanding from previous AER	Included in 2014 AER	Reference to relevant section of AER (e.g. Appendix 2 Section 4).
Priority Substances Assessment	Yes	Yes	Appendix 7.5
Drinking Water Abstraction Point Risk Assessment	No	Yes	Appendix 7.6
Habitats Impact Assessment	No	No	N/A
Shellfish Impact Assessment	No	No	N/A
Pearl Mussel Report	No	No	N/A
Toxicity/Leachate Management	No	No	N/A
Toxicity of Final Effluent Report	No	No	N/A

Licence Specific Reports Summary of Findings

Licence Specific Report	Recommendations in Report	Summary of Recommendations in Report
Priority Substances Assessment	Yes	It can be concluded from this desktop overview that there is no further screening necessary or required for organic compounds or metals. Furthermore, in 2009 when the initial discharge licence application for Smithborough was compiled, monitoring of the influent and effluent discharges and upstream and downstream locations in the receiving Blackwater River was undertaken and analysed for dangerous substances and submitted with the application. There were no elevated levels of these compounds in the discharge as reported. It is therefore concluded that no further screening is required for Smithborough WWTP with regard to Priority substances.
Drinking Water Abstraction Point Risk Assessment	Yes	From the risk ranking applied to the impacts of the WWTP discharge on the adjacent drinking water borehole abstraction point, in the four situations i.e. <b>(1) Level of treatment and capacity of WWTP (2) Discharge Compliance (3) River quality &amp; Ground water and monitoring data &amp; (4) Discharges impact during periods of normal and abnormal operation and control measures</b> ; it is concluded that the <b>overall risk is low</b> .
Habitats Impact Assessment	N/A	N/A
Shellfish Impact Assessment	N/A	N/A

<b>Pearl Mussel Report</b>	N/A	N/A
<b>Toxicity/Leachate Management</b>	N/A	N/A
<b>Toxicity of Final Effluent Report</b>	N/A	N/A

### 5.1 Priority Substances Assessment

The Priority Substances Assessment report is included in Appendix 7.5. A summary of the findings of this report is included below.

**Table 5.1 - Priority Substance Assessment Summary**

	<i>Licensee self- assessment checks to determine whether all relevant information is included in the Assessment.</i>
<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>	Desk Top Study
<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>	Yes
<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>	Yes

### 5.2 Drinking Water Abstraction Point Risk Assessment.

The Drinking Water Abstraction Point Risk Assessment report submitted as part of the 2013 AER is included in Appendix 7.6. A summary of the findings of this report is included below.

**Table 5.2 - 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 2014 AER (or outstanding from a previous AER)</b>	Yes

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	Yes
Does the assessment identify if any other discharge(s) from the works pose a risk to a drinking water abstraction (includes emergency overflows)	Yes
What is the overall risk ranking applied by the licensee	L
Does the risk assessment consider the impacts of normal operation	Yes
Does the risk assessment consider the impacts of abnormal operation (e.g. incidents /overflows)	Yes
Does the risk assessment include control measures for each risk identified	Yes
Does the risk assessment consider operational control measures e.g? waste water incident notification to drinking water abstraction operator	Yes
Does the risk assessment include infrastructural control measures	Yes
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?	Yes

A copy of the detailed assessment should be included as an appendix to the AER. Where relevant, findings from this assessment should be considered under the Programme of Improvements required under Condition 5.

### **5.3 Shellfish Impact Assessment Report.**

The Shellfish Impact Assessment Report is not required for Smithborough.

### **5.4 Toxicity / Leachate Management**

The Toxicity / Leachate Management Assessment Report is not required for Smithborough.

### **5.5 Toxicity of the Final Effluent Report**

The Toxicity of the Final Effluent Assessment report is not required for Smithborough.

### **5.6 Pearl Mussel Measures Report**

A sub-basin management plan in relation to Pearl Mussels is not required for Smithborough.

### **5.7 Habitats Impact Assessment Report**

The Habitats Impact Assessment Report is not required for Smithborough.

## 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 <i>(insert lines as required)</i>	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 <i>(insert lines as required)</i>	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?	N/A
List outstanding reports <i>(insert lines as required)</i>	Sewer Integrity Risk Assessment

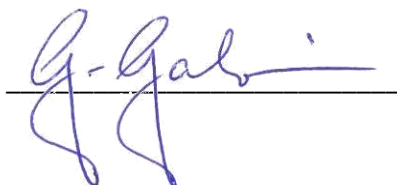
### Declaration by Irish Water

The AER contains the following;

- Introduction and background to 2014 AER
- Monitoring reports summary.
- Operational reports summary.
- Infrastructural Assessment and Programme of Improvements.
- Licence specific reports.
- Certification and Sign Off
- Appendices

I certify that to the best of my knowledge the information given in this Annual Environmental Report is truthful, accurate and complete:

Signed:



Date: 15/04/2015

**Gerry Galvin**  
Chief Technical Advisor

## Section 7. Appendix

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 7.5 - Priority substances assessment

Appendix 7.6 - Drinking water risk assessment



## Appendix 7.1 - Annual Statement of Measures

Risk /Description of issue	Mitigation Measure to be taken	Date for Completion	Owner/ Contact Person
Ortho-P ELV exceedances.	Install a phosphorus removal system to lower ortho-P levels discharging form the WWTP	29/05/2015	C McCrossan

## Appendix 7.2 - Ambient monitoring summary

### Upstream Results:

UPSTREAM	Ammonia (N)	BOD, 5 days with inhibition (CBOD)	Orthophosphate (P)	PH	Temp	DO
Sample Date	mg/l	mg/l	mg/l	Unit		mg/l
19/02/2014	0.023	3	0.035	8	10.4	10.43
22/04/2014	0.031	1	0.02	8	12.8	9.66
10/06/2014	0.041	2	0.062	7.9	15.5	8.23
12/08/2014	0.083	1	0.057	7.9	14.6	8.86
14/10/2014	0.044	1	0.03	7.9	7.5	10.39
02/12/14	0.033	1	0.051	8.1	6.3	10.79
<b>AVERAGE</b>	0.0425	1.5	0.0425	7.966667	11.18333	9.7266667

### Downstream results:

DOWNSTREAM	Ammonia (N)	BOD, 5 days with inhibition (CBOD)	Orthophosphate (P)	PH	Temp	DO
DOWNSTREAM	mg/l	mg/l	mg/l			mg/l
19/02/2014	0.041	2	0.036	8	10.3	10.58
22/04/2014	0.032	1	0.024	8	12.1	9.57
10/06/2014	0.075	1	0.069	7.9	17.3	8.38
12/08/2014	0.085	1	0.059	8	14.8	8.83
14/10/2014	0.035	1	0.03	7.9	7.9	10.29
02/12/2014	0.048	1	0.055	8.1	7.9	10.56
<b>Finn (Monaghan)</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>
<b>AVERAGE</b>	0.052667	1.1666667	0.0455	7.7	11.71667	9.7016667
<b>MAXIMUM</b>	0.085	2	0.069	8.1	17.3	10.58

## Appendix 7.3 – Specified Improvement Programme

### a) 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. These works are planned to be carried out in Q1 2015.

Other than Orthophosphate removal the WWTP is considered to be operating efficiently as effluent results are compliant with specified ELVs in the discharge licence and the WWTP is achieving adequate removal efficiencies (over 90%, ref. Table 1.3) for BOD, COD parameters.

The treatment capacity is addressed in section 3, with the remaining capacity at the WWTP improving slightly compared to last year.

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:

As discussed above a ferric dosing system is to be installed in Q1 2015 for phosphorus removal to comply with exceedances.

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

The treatment plant is considered to be operating effectively but there were high levels of Orthophosphate in 2014 at the WWTP, causing ELV exceedances. It is envisaged that the installation of the ferric dosing system should improve these figures significantly.

(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:

This item is addressed in point no. 4.2 (iii) above.

(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:

Based on 2014 flow figures there is inadequate capacity at the treatment plant (ref section 3.2, 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 do 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:

The planned improvement works for the WWTP is to install a ferric dosing system to reduce the phosphorus to comply with ELVs specified in Schedule A.

An assessment of the SWO from a storm tank at the WWTP in relation to the ‘Procedures and criteria in relation to Storm Water Overflows’, 1995 document, was addressed in section 4.1 of this report, it is concluded that the SWO complies with the document as assessed under section 4.1.

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:

There is no specified improvement works under schedule C1 or C2 of the discharge licence. One individual improvement identified for the WWTP is the addition of a ferric dosing system to reduce Ortho P.

### Improvement Summary Table

Improvement Identifier	Improvement Description	Improvement Source	Progress (% completed)	Expected Completion Date
Implement a phosphorus removal system	Lower ortho-P levels discharging from the WWTP	WWTP Assessment	20%	29/05/2015

## Appendix 7.5 - Priority substances assessment

Under section 4.16, Schedule B.1 of the licence, there is a requirement that, *Priority Substances that are identified by the licensee in the effluent after undertaking a 'risk based assessment in accordance with the Guidance on the screening for Priority Substances for Waste Water Discharge Licences'*, within 6-months of grant of licence, should be monitored at least annually, by the licensee. A desktop study is undertaken as follows:

The Smithborough WWTP catchment area serves a small rural village comprising primarily of domestic dwellings, along with a school, church and local shops. There are no industrial inputs to the waste water works or section 16 licenced companies discharging to the WWTP, or disposal of same at the waste water works. It can therefore be concluded from this desktop overview that there is no further screening necessary or required for organic compounds or metals. Furthermore, in 2009 when the initial discharge licence application for Smithborough was compiled, monitoring of the influent and effluent discharges and upstream and downstream locations in the receiving Blackwater River was undertaken and analysed for dangerous substances and submitted with the application. There were no elevated levels of these compounds in the discharge as reported. It is therefore concluded that no further screening is required for Smithborough WWTP with regard to Priority substances.

## Appendix 7.6 - Drinking water risk assessment

Under condition 4.16 of the licence ‘a risk assessment for the protection of the downstream drinking water abstraction point’ is required. This risk assessment is assessing the impact of the Smithborough waste water treatment plant and its discharges on the receiving water, as there is a GROUNDWATER drinking water abstraction point (MCC Smithborough water supply scheme) BOREHOLE, approximately 100m to east of the primary discharge supplying SMITHBOROUGH WATER SUPPLY ZONE (WSZ).

The water supply scheme abstracts water from the Ground through a borehole and treats the water at the local treatment plant located approximately 100m from the WWTP discharge. The treatment plant is quite small and provides a sufficient level of treatment to the pristine clean ground waters, producing an average of 160m<sup>3</sup>/day treated water for their consumers.

Smithborough WWTP discharge has the potential to impact on the groundwater abstraction in relation to pollutant loading into the adjacent river. The risk from the WWTP will be assessed under four separate headings with an overall risk ranking applied in conclusion:

- (1) Level of treatment and capacity of WWTP.
- (2) Discharge compliance.
- (3) River quality and monitoring data.
- (4) Discharges impact during periods of normal and abnormal operation and control measures.

### (1) Level of treatment and capacity of WWTP:

The WWTP provides secondary treatment with no nutrient removal. The plant is operated and maintained to a good standard with a caretaker 3-4 hours per day Monday to Friday and 2 hours Saturdays and Sundays. The plant runs automatically with monitors and meters linked to a SCADA system on site. The design P.E. of the plant is 750. An assessment of the remaining capacities at the plant is outlined in section 4.1 of this AER, (tabulated in table 3.2). Despite the capacity of the treatment works being excessive in relation to the loading into the plant, the BOD levels are well within the ELVs on the effluent results. The plant produces effluent compliant with licence requirements; (except for Ortho-P) thus the risk ranking for this element of the WWTP is applied as **low risk**.

### (2) Discharge Compliance:

Under Schedule B and condition 2 of the licence (ref. table 2.2 and section 2.2 of this AER report) the WWTP discharge has some exceedances during 2014 due to higher Ortho-P. The impact of these exceedances on the receiving River is assessed in section 2.3 of the report and concluded that some impact may have occurred with regard to Ortho P in the receiving water, however, it would have been minimal and of limited duration. Ferric chemical dosing will be implemented to address the Ortho-P exceedances.

Ortho-p is not a substance harmful to human health at these levels (0.05mg/l) and should present a very low risk to the zone of contribution (ZOC) being contaminated. A regular monitoring and sampling program is in place for analysis of the discharge at the WWTP thus minimising the risk of pollution to the River. As Noted earlier for Ammonia, BOD and Ortho-P the downstream results for 2014 are:

<b>DOWNSTREAM AVERAGE</b>	0.05	1.2	0.05
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And comparing with upstream:

<b>UPSTREAM AVERAGE</b>	0.04	1.5	0.04
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Therefore the influence on the river from the WWTP and the river on the ZOC is minimal. The risk ranking for this element of the discharge from the WWTP is therefore applied as '*low risk*' on the adjacent WSZ.

**(3) River quality & Ground water and monitoring data.**

The River is not designated Salmonid water (under the European Communities (Quality of Salmonid Waters) Regulations, 1988) nor is it identified as sensitive water in terms of the Urban Waste Water Treatment Regulations 2001. The river is not designated as an SPA, SAC or NHA. The River Fane is in the ERNE EAST river basin district with overall status classified as poor and at risk of not meeting good status by 2015, with overall objective to restore it to good status by 2021, however, the 'point risk source' and potential for impact from the WWTP discharge on the river is categorised as '2b – not at risk' therefore it is not identified as impacting on the poor river quality status, (ref: WFD Ireland maps/website & reports.).

The ambient monitoring results for 2014 indicate that the Environmental Quality Standard (EQS) (Surface Water Reg's 2009) for BOD 'good status' mean flows of 1.5mg/l is being met both upstream and downstream in the river. Ammonia as noted under ambient monitoring in main report above.

Ortho P (MRP) average figures both upstream and downstream exceed the 'mean' figure (0.035mg/l). The ground water is classed by the GSI as "Regionally important-fissured, good development potential". The aquifer vulnerability is classed as "High". This would indicate a permeable soil which would allow the passage of water from the surface quite readily, therefore susceptible to contamination from surface water sources. It is important to limit pollutants in Magherarney River for this reason as it too flows through this high vulnerability area adjacent the borehole. It is imperative, that ecoli or other potentially harmful bacteria does not harm the water supply from the river and its sources of pollution, whether that is farming, industry or WWTW.

WFD & EPA monitoring designates the receiving water River Magheramey, (Trib of Finn and Erne - IE\_NW\_36\_1082) as "Poor" (Q2-3, Q3), Upstream of WWTP discharge location near the abstraction point at. Further downstream it is "moderate" at Annagmakiff.

Ground water quality is "Possibly at risk of not achieving good status" again according to the EPA Envision data. The quality of the River water downstream and the distance downstream of the drinking water abstraction point from the discharge point would indicate that the river can assimilate the discharge adequately and will not have a pollution effect over long distances. The risk ranking for this element of the discharge from the WWTP is therefore applied as '*low risk*'.

**(4) Discharges impact during periods of normal and abnormal operation and control measures.**

The impact of the WWTP discharge to the drinking water abstraction point at Smithborough is considered minimal as discussed in points 1 to 3 above. Periods of abnormal operation at the plant would be considered to occur due to extreme storm conditions, equipment malfunction or breakdown or Power cut.

The impact to the treatment plant and discharge to the Magherarney River from these events occurring is minimised by having a plant operator on site every day at the plant, therefore identifying any abnormal events that occur and implementing control measures as necessary to alleviate them.

The controls and monitors at the treatment works are linked to a SCADA system on site, which is continually monitored by the plant operator, which would highlight any problem with the treatment plant equipment or treatment process. The risk of a chemical spill or overdose into the treatment system at the plant is minimised as the storage tanks for all chemicals are bunded.

Regular monitoring of the effluent also ensures that any deviations in the effluent parameters resulting from problems with the treatment process are addressed. In the event of a power cut, the electricity supply company will be called. From past experience a power cut occurs twice per year and usually lasts 2 to 3 hours.

If the WWTP is unable to operate and treat the influent from the agglomeration, the influent could be tankered by a licensed haulier to a WWTP elsewhere in Monaghan with available capacity to treat it, until the WWTP is up and running again.

If there is an event at the plant that leads to a pollution incident in the River, Monaghan County Council will immediately notify the downstream drinking water manager- Veolia-who are responsible for the nearby water abstraction water supply scheme, the EPA and the Inland Fisheries Board and implement any control measures and necessary works to address the incident.

From the occurrence of these periods of abnormal operation and the control measures in place to deal with them should they occur, the risk ranking for this element of the discharge from the WWTP is applied as '**low risk**'.

#### **Conclusion:**

From the risk ranking applied to the impacts of the WWTP discharge on the adjacent drinking water borehole abstraction point, in the four situations addressed previously in this section, it is concluded that the **overall risk is low**.