

# Annual Environmental Report 2015

|                             |                  |
|-----------------------------|------------------|
| <b>Agglomeration Name:</b>  | <b>Inniskeen</b> |
| <b>Licence Register No.</b> | <b>D0348-01</b>  |



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## Section 1. Executive Summary and Introduction to the 2015 AER

### 1.1 Summary Report on 2015

This Annual Environmental Report has been prepared for **D0348-01, Inniskeen**, in County **Monaghan**, in accordance with the requirements of the wastewater discharge licence for the agglomeration.

Specified reports are included as an appendix to the AER as follows:

- Storm water overflow assessment

The agglomeration is served by a wastewater treatment plant with a Design PE of 1750. The treatment process includes the following:

- Preliminary Treatment (Screens (manual))
- Primary Treatment
- Secondary Treatment (Aeration)
- Chemical dosing for phosphorus removal
- Tertiary Treatment (Sand Filter)

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

The following parameters exceeded the emission limit values in 2015:

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

2,420kgs sludge (as dry solids) were removed from the wastewater treatment plant in 2015 as dewatered sludge cake. Sludge was transferred from Monaghan WWTP to Biocore Sludge Treatment Centre (lime stabilisation), Co. Meath (SSF-COR-MH-13-0001-02).

There were no major capital or operational changes undertaken in

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>                 | 11                  | 11                  | 11                 | 11                 | 11                 | 0                               | 0                               |
| <b>Annual Max.</b>                       | 265                 | 495                 | 178                | 7.7                | 76.5               | 1636.8                          | 406                             |
| <b>Annual Mean</b>                       | 40.95               | 92.17               | 22.25              | 3.97               | 32.48              | 237                             | 198*                            |

\*Influent concentrations are lower than expected due to infiltration in the line into the WWTP. Approval has been granted under SCM to replace and re-line the pipeline to the inlet works as detailed in Appendix 7.1.

#### 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 higher than the peak Treatment Plant Capacity as detailed further in Section 3.2.

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

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

## 2.2 Discharges from the agglomeration

Table 2.2 - Effluent Monitoring

| <b>2.2.1 Effluent Monitoring Summary</b>                                  | <b>BOD mg/</b> | <b>COD (mg/l)</b> | <b>TSS (mg/l)</b> | <b>Total P (mg/l)</b> | <b>Ortho P (mg/l)</b> | <b>Total N (mg/l)</b> | <b>Ammonia NH3 (mg/l)</b> | <b>pH</b>                 | <b>Nitrate</b> | <b>Nitrite</b> | <b>Faecal Coliforms</b> | <b>E Coli</b> | <b>Intestinal enterococci</b> |
|---|----------------|-------------------|-------------------|-----------------------|-----------------------|-----------------------|---------------------------|---------------------------|----------------|----------------|-------------------------|---------------|-------------------------------|
| <b>WWDL ELV (Schedule A) where applicable</b>                             | 10             | 125               | 10                | 2                     | 1.5                   | N/A                   | 2                         | 6 to 9                    | N/A            | N/A            | N/A                     | N/A           | N/A                           |
| <b>ELV with Condition 2 Interpretation included</b>                       | 20             | 250               | 25                | 2.4                   | 1.8                   | N/A                   | 2.4                       | No allowable exceedances. | N/A            | N/A            | N/A                     | N/A           | N/A                           |
| <b>Number of sample results</b>   | 12             | 12                | 11                | 8                     | 12                    | 12                    | 12                        | 12                        | 11             | 12             | 2                       | 2             | 2                             |
| <b>Number of sample results above WWDL ELV</b>                            | 0              | 0                 | 5                 | 0                     | 0                     | N/A                   | 1                         | 2                         | N/A            | N/A            | N/A                     | N/A           | N/A                           |
| <b>Number of sample results above ELV with Condition 2 Interpretation</b> | 0              | 0                 | 4                 | 0                     | 0                     | N/A                   | 1                         |                           | N/A            | N/A            | N/A                     | N/A           | N/A                           |

|  |      |      |      |      |      |      |      |      |     |     |     |     |     |
|--|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|
| <b>Annual Mean (for parameters where a mean ELV applies)</b> | N/A  | N/A  | N/A  | N/A  | N/A  | N/A  | N/A  | N/A  | N/A | N/A | N/A | N/A | N/A |
| <b>Overall Compliance (Pass/Fail)</b>                        | Pass | Pass | Fail | Pass | Pass | Pass | Fail | Fail | N/A | N/A | N/A | N/A | N/A |

Significance of results

The WWTP was non-compliant with the ELV's set in the wastewater discharge licence. There were 4 samples non-compliant with the ELV (with condition 2 interpretation) in relation to Suspended Solids, 1 sample non-compliant with the ELV (with condition 2 interpretation) in relation to Ammonia and 2 samples non-compliant with the ELV in relation to pH. The non-compliance is due to plant /equipment breakdown. The sand filter required replacement. The impact on receiving waters is assessed further in Section 2.3.

## 2.3. Ambient Monitoring Summary

Table 2.3. Ambient Monitoring Report Summary Table

| Ambient Monitoring Point from WWDL (or as agreed with EPA) | Irish Grid Reference | EPA Feature Coding Tool code | Receiving Waters Designation (Y/N) |                |      |           | WFD Status | Does assessment of the ambient monitoring results indicate that the discharge is impacting on water quality? |
|--|----------------------|------------------------------|------------------------------------|----------------|------|-----------|------------|--|
|  |                      |                              | Bathing Water                      | Drinking Water | FWPM | Shellfish |            |  |
| Upstream monitoring point                                  | 293923E<br>306701N   | RS06F010667                  | N                                  | N              | N    | N         | Poor       |  |
| Downstream monitoring point                                | 293999E<br>306647N   | RS06F010670                  | N                                  | N              | N    | N         | Poor       | No   |

The results for the upstream and downstream monitoring are included in Appendix 7.2 Ambient Monitoring Results.

### Significance of results

The WWTP was non-compliant with the ELVs for Ammonia, pH and Suspended Solids set in the wastewater discharge licence as detailed in Section 2.2

The discharge from the wastewater plant does have an observable negative impact on the water quality status.

The discharge from the wastewater plant doesn't have an observable negative impact on the Water Framework Directive status

## 2.4 Data collection and reporting requirements under the UWWTD

The electronic submission of data was completed on 15/01/2016

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

A PRTR is not required as the agglomeration is less than 2000 PE.

## 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> | <b>Total P (kg/yr)</b> | <b>Total N (kg/yr)</b> |
|---|---------------------|--------------------|-------------------|------------------------|------------------------|
| Influent mass loading (kg/year)             | 4,333               | 9,750              | 2,354             | 420                    | 3,436                  |
| Effluent mass emission (kg/year)            | 295                 | 1,709              | 1,117             | 15                     | 890                    |
| % Efficiency (% reduction of influent load) | 93%                 | 82%                | 53%               | 97%                    | 74%                    |

### 3.2 Treatment Capacity Report

Table 3.2 - Treatment Capacity Report Summary

|  |         |
|--|---------|
| <b>Hydraulic Capacity – Design / As Constructed (dry weather flow) (m3/year)</b> | 148,920 |
| <b>Hydraulic Capacity – Design / As Constructed (peak flow) (m3/year)</b>        | 458,075 |
| <b>Hydraulic Capacity – Current loading (m3/year)</b>                            | 86,534  |
| <b>Hydraulic Capacity – Remaining (m3/year)</b>                                  | 371,541 |
| <b>Organic Capacity - Design / As Constructed (PE)</b>                           | 1,800   |
| <b>Organic Capacity - Current loading (PE)</b>                                   | 198*    |
| <b>Organic Capacity – Remaining (PE)</b>   | 1,602   |
| <b>Will the capacity be exceeded in the next three years? (Yes / No)</b>         | No      |

\*Influent concentrations are lower than expected due to infiltration in the line into the WWTP. Approval has been granted under SCM to replace and re-line the pipeline to the inlet works as detailed in Appendix 7.1.

### 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 total 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 agglomerations that enters treatment plant</b>           | 99.88%  |
| <b>Load collected in the sewer network but discharges without treatment</b>       | 0.12%   |

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

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

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

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

### **3.4 Complaints Summary**

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

**Table 3.4 - Complaints Summary Table**

| <b>Number</b> | <b>Date &amp; Time</b> | <b>Nature of Complaint</b> | <b>Cause of Complaint</b> | <b>Actions taken to resolve issue</b> | <b>Closed (Y/N)</b> |
|---------------|------------------------|----------------------------|---------------------------|---------------------------------------|---------------------|
| None          |                        |                            |                           |                                       |                     |

### 3.5 Reported Incidents Summary

A summary of reported incidents is included below.

**Table 3.5.1 - Summary of Incidents**

| <b>3.5.1 Incident Type (e.g. Non-compliance, Emission, spillage, pollution incident)</b> | <b>Incident Description</b>  | <b>Cause</b>              | <b>No. of Incidents</b> | <b>Corrective Action</b>                      | <b>Authorities Contacted. Note 1</b> | <b>Reported to EPA (Yes/No)</b> | <b>Closed (Yes/No)</b> |
|--|------------------------------|---------------------------|-------------------------|---|--------------------------------------|---------------------------------|------------------------|
| Emission   | Breach of ELV (SS & ammonia) | Plant/equipment breakdown | 1                       | Refurbishment of sand filter investigated     | No                                   | Yes                             | Yes                    |
| Emission   | Breach of ELV (SS)           | Plant/equipment breakdown | 1                       | Contractor Engaged                            | Yes - IFI                            | Yes                             | Yes                    |
| Emission   | Breach of ELV (SS & pH)      | Plant/equipment breakdown | 1                       | Contractor procurement issues pursued         | Yes - IFI                            | Yes                             | Yes                    |
| Emission   | Breach of ELV (SS)           | Plant/equipment breakdown | 1                       | Contractor and procurement issues in progress | Yes - IFI                            | 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 2015</b>                                    | 4   |
| <b>Number of Incidents reported to the EPA via EDEN in 2015</b>       | 4   |
| <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 | PE/year | % of load to WWTP | Included in Influent Monitoring (Y/N)? <sup>3</sup> | 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   |   |  |

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 include d in Table 3.6. Only include sludge which is added to the waste water treatment process stream. Enter zero where there are no inputs.

## Section 4. Infrastructure Assessments and Programme of Improvements

### 4.1 Storm water overflow identification and inspection report

The Storm Water Overflow Identification & Inspection report is included in Appendix 7.3. A summary of the significance and operation is included below.

**Table 4.1.1 - SWO Identification and Inspection Summary Report**

| WWDL Name / Code for Storm Water Overflow | Irish Grid Ref.    | Included in Schedule A4 of the WWDL | Significance of the overflow (High/Med/Low) | Compliance with DoEHLG criteria | No. of times activated in 2015 (No. of events) | Total volume discharged in 2015 (m3) | Total volume discharged in 2015 (P.E.) | Estimated / Measured data |
|---|--------------------|-------------------------------------|---|---------------------------------|--|--------------------------------------|--|---------------------------|
| SW-2                                      | 293928E<br>306704N | Yes                                 | Low   | Compliant                       | 8  | 55                                   | 46                                     | E                         |

**Table 4.1.2 - SWO Identification and Inspection Summary Report**

|   |  |
|---|--|
| How much sewage was discharged via SWOs in the agglomeration in the year (m3/yr)?   | 55   |
| How much sewage was discharged via SWOs in the agglomeration in the year (p.e.)?  | 46   |
| What % of the total volume of sewage generated in the agglomeration was discharged via SWOs in the agglomeration in 2013? | 0.12%  |
| Is each SWO identified as non-compliant with DoEHLG Guidance included in the Programme of Improvements?                   | The Programme of Improvements is outstanding but will be submitted following the submission of the 2015 AER. |
| The SWO assessment includes the requirements of relevant WWDL Schedules (Yes/No)  | Yes  |
| Have the EPA been advised of any additional SWOs / changes to Schedules A/C under Condition 1?                            | N/A  |

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

The Improvement Programme report included in Appendix 7.4 addresses the **Specified Improvement Programmes** as detailed in Schedules A3 and C of the WWDL. It also details other improvements identified through assessments required under the licence.

**Table 4.2.1 - Specified Improvement Programme Summary**

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

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

**Table 4.2.2 - Improvement Programme Summary**

| Improvement Identifier / Name                   | Improvement Description | Improvement Source                               | Progress (% complete) | Expected Completion Date | Comments  |
|---|-------------------------|--|-----------------------|--------------------------|---|
|   | None                    | WWTP assessment (Condition 5.2).                 | N/A                   | N/A                      | This report has not been completed but will be submitted following the submission of the 2015 AER |
|   | None                    | Sewer Integrity Tool (Condition 5.2).            |                       |                          | SNIT has not been completed but will be submitted following the submission of the 2015 AER        |
|   | None                    | Secondary discharges assessment (Condition 5.2). | N/A                   | N/A                      | This report has not been completed but will be submitted following the submission of the 2015 AER |
|   | N/A                     | SWO assessment (Condition 4 & 5.2).              | N/A                   | N/A                      | No work is required.  |
|   | N/A                     | Pearl Mussel Impact Assessment (Condition 4)     | N/A                   | N/A                      |   |
| Ensure minimum dial out alarms are provided for | Process Control         | Improved Operational Control                     | 0%                    | Unknown                  |   |

|  |                        |                                     |             |                  |  |
|--|------------------------|-------------------------------------|-------------|------------------|--|
| <p>inlet forward feed pumps fail to run/<br/>aeration blower fail to run.</p>  |                        |                                     |             |                  |  |
| <p>It is recommended that Mixed Liquor Suspended Solids analysis should be carried out to improve process control.</p> | <p>Process Control</p> | <p>Improved Operational Control</p> | <p>100%</p> | <p>Completed</p> |  |

**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>   |
|--|---|------------------------------|--|
| <b>Hydraulic Risk Assessment Score</b>   | Unknown   | Unknown                      | SNIT has not been completed but will be submitted following the submission of the 2015 AER |
| <b>Environmental Risk Assessment Score</b>   | Unknown   | Unknown                      | SNIT has not been completed but will be submitted following the submission of the 2015 AER |
| <b>Structural Risk Assessment Score</b>  | Unknown   | Unknown                      | SNIT has not been completed but will be submitted following the submission of the 2015 AER |
| <b>Operation &amp; Maintenance Risk Assessment Score</b>   | Unknown   | Unknown                      | SNIT has not been completed but will be submitted following the submission of the 2015 AER |
| <b>Overall Risk Score for the agglomeration</b>  | Unknown   | Unknown                      | SNIT has not been completed but will be submitted following the submission of the 2015 AER |

## Section 5. Licence Specific Reports

Licence Specific Reports Summary Table

| <b>Licence Specific Report</b>                          | <b>Required in this AER or outstanding from previous AER</b> | <b>Included in this AER</b> | <b>Reference to previous AER containing report or relevant section of this AER</b> |
|---|--|-----------------------------|--|
| <b>Priority Substances Assessment</b>                   | No   | No                          | Included in 2011 AER   |
| <b>Drinking Water Abstraction Point Risk Assessment</b> | No   | No                          | Included in 2014 AER   |
| <b>Habitats Impact Assessment</b>                       | No   | No                          | N/A  |
| <b>Shellfish Impact Assessment</b>                      | No   | No                          | N/A  |
| <b>Pearl Mussel Report</b>                              | No   | No                          | N/A  |
| <b>Toxicity/Leachate Management</b>                     | No   | No                          | N/A  |
| <b>Toxicity of Final Effluent Report</b>                | No   | No                          | N/A  |

Licence Specific Reports Summary of Findings

| <b>Licence Specific Report</b>                          | <b>Recommendations in Report</b> | <b>Summary of Recommendations in Report</b>   | <b>Status of Recommendations</b> |
|---|----------------------------------|---|----------------------------------|
| <b>Priority Substances Assessment</b>                   | Yes                              | None  | N/A                              |
| <b>Drinking Water Abstraction Point Risk Assessment</b> | Yes                              | Report concluded that the overall risk is low | N/A                              |



## 5.1 Priority Substances Assessment

The Priority Substances Assessment report is included in the 2011 AER. 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 <i>and</i> 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   |

## 5.2 Drinking Water Abstraction Point Risk Assessment.

The Drinking Water Abstraction Point Risk Assessment report is included in the 2014 AER. 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 AER (or outstanding from a previous AER)</b>  | No   |
| <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>  | Yes  |
| <b>Does the risk assessment consider operational control measures e.g? waste water incident notification to drinking water abstraction operator</b>  | Yes  |
| <b>Does the risk assessment include infrastructural control measures</b>   | Yes  |
| <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> | Yes  |

## Section 6. Certification and Sign Off

Table 6.1 - Summary of AER Contents

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

### Declaration by Irish Water

The AER contains the following:

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

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

Signed:



**Gerry Galvin**  
Chief Technical Advisor

Date: 08/03/2016

## Section 7. Appendix

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

Appendix 7.1 - Annual Statement of Measures

Appendix 7.2 - Ambient monitoring summary

Appendix 7.3 - Storm water overflow identification and inspection report

Appendix 7.4 – Specified Improvement Programme

- a) Specified Improvement Programme
- b) Programme of Improvements

## Appendix 7.1 - Annual Statement of Measures

| Annual Statement of Measures Risk /Description of issue | Risk Score | Mitigation Measure to be taken   | Outcome  | Action                                   | Date for Completion                       |
|---|------------|--|--|--|---|
| No record of SWO activating or measurement or flows.    | Medium     | Install SWO measurement/recorder device to measure flows/record no. times it activates | Information on SWO available to assess impact on receiving water | Install SWO measurement /recorder device | Unknown                                   |
| Failure to meet ELV for suspended Solids                | Medium     | Sand filter to be replaced   | Improved wastewater treatment                                    | Sand filter to be replaced               | Jan 2016                                  |
| Infiltration into the sewer line                        | High       | Pipe to be replaced and relined  | Reduced flows in periods of heavy rainfall                       | Pipe to be replaced and relined          | Approval has been granted by IW under SCM |

## Appendix 7.2 - Ambient Monitoring Results

| Upstream Monitoring Results |             |             |                |   |                    |                         |                              |                      |             |                     |
|-----------------------------|-------------|-------------|----------------|---|--------------------|-------------------------|------------------------------|----------------------|-------------|---------------------|
| Sampling Location           | Sample Date | Sample Type | Ammonia N mg/l | BOD, 5 days with Inhibition (Carbonaceous) mg/l | E Coli MPN/100 mls | Enterococci cfu/100 mls | Faecal Coliforms no./100 mls | Ortho Phosphate mg/l | pH units    | Total Nitrogen mg/l |
| Inniskeen WWTP Upstream     | 12/01/2015  | Grab        | 0.039          | 3   |                    |                         |                              | 0.049                | 7.9         | 1.1                 |
| Inniskeen WWTP Upstream     | 02/02/2015  | Grab        | <0.007         | < 1   |                    |                         |                              | 0.072                | 7.8         | 1.4                 |
| Inniskeen WWTP Upstream     | 09/03/2015  | Grab        | 0.042          | < 1   |                    |                         |                              | 0.013                | 8           | < 1                 |
| Inniskeen WWTP Upstream     | 14/04/2015  | Grab        | 0.04           | < 1   |                    |                         |                              | 0.124                | 8           | 1.1                 |
| Inniskeen WWTP Upstream     | 14/04/2015  | Grab        |                |   | 49                 | 8                       | 150                          |                      |             |                     |
| Inniskeen WWTP Upstream     | 11/05/2015  | Grab        | 0.08           | 2.8   |                    |                         |                              | <0.009               | 8.1         | < 1                 |
| Inniskeen WWTP Upstream     | 03/06/2015  | Grab        | 0.016          | 1   |                    |                         |                              | 0.028                | 8           | < 1                 |
| Inniskeen WWTP Upstream     | 14/07/2015  | Grab        | 0.077          | 3   |                    |                         |                              | 0.03                 | 8           | < 1                 |
| Inniskeen WWTP Upstream     | 05/08/2015  | Grab        | 0.098          | 1   |                    |                         |                              | 0.039                | 8.1         | < 1                 |
| Inniskeen WWTP Upstream     | 02/09/2015  | Grab        | 0.026          | 2   |                    |                         |                              | 0.029                | 8.1         | < 1                 |
| Inniskeen WWTP Upstream     | 09/10/2015  | Grab        | 0.021          | 1   |                    |                         |                              | 0.03                 | 8           | < 1                 |
| Inniskeen WWTP Upstream     | 04/11/2015  | Grab        |                |   | 86                 | 33                      | 93                           |                      |             |                     |
| Inniskeen WWTP Upstream     | 04/11/2015  | Grab        | 0.012          | < 1   |                    |                         |                              | 0.032                | 8.1         | < 1                 |
| Inniskeen WWTP Upstream     | 08/12/2015  | Grab        | 0.013          | 6.5   |                    |                         |                              | 0.04                 | 7.8         | < 1                 |
| <b>Average</b>              |             |             | <b>0.039</b>   | <b>1.94</b>                                     | <b>67.5</b>        | <b>20.5</b>             | <b>121.5</b>                 | <b>0.041</b>         | <b>7.99</b> | <b>1.05</b>         |

| Downstream Monitoring Results |             |               |                |   |                    |                         |                              |                        |             |                       |                       |
|-------------------------------|-------------|---------------|----------------|---|--------------------|-------------------------|------------------------------|------------------------|-------------|-----------------------|-----------------------|
| Sample Location               | Sample Date | Sample Method | Ammonia N mg/l | BOD, 5 days with Inhibition (Carbonaceous) mg/l | E Coli MPN/10 Omls | Enterococci cfu/100 mls | Faecal Coliforms no./100 mls | Ortho-Phosphate P mg/l | pH units    | Suspended Solids mg/l | Total Nitrogen N mg/l |
| Inniskeeen WWTP Downstream    | 12/01/2015  | Grab          | 0.064          | < 1   |                    |                         |                              | 0.033                  | 7.9         |                       | 1.1                   |
| Inniskeeen WWTP Downstream    | 02/02/2015  | Grab          | <0.007         | 2   |                    |                         |                              | 0.038                  | 7.9         |                       | 1.4                   |
| Inniskeeen WWTP Downstream    | 09/03/2015  | Grab          | 0.024          | 3   |                    |                         |                              | 0.032                  | 8           |                       | < 1                   |
| Inniskeeen WWTP Downstream    | 14/04/2015  | Grab          | 0.034          | < 1   |                    |                         |                              | <0.009                 | 8.1         |                       | 1.2                   |
| Inniskeeen WWTP Downstream    | 14/04/2015  | Grab          |                |   | 58                 | 16                      | 93                           |                        |             |                       |                       |
| Inniskeeen WWTP Downstream    | 11/05/2015  | Grab          | 0.096          | 2.8   |                    |                         |                              | <0.009                 | 8.1         |                       | < 1                   |
| Inniskeeen WWTP Downstream    | 03/06/2015  | Grab          | 0.014          | 1   |                    |                         |                              | 0.009                  | 8           |                       | < 1                   |
| Inniskeeen WWTP Downstream    | 14/07/2015  | Grab          | 0.031          | 1   |                    |                         |                              | 0.031                  | 8.1         |                       | < 1                   |
| Inniskeeen WWTP Downstream    | 05/08/2015  | Grab          | 0.062          | 1   |                    |                         |                              | 0.029                  | 8.1         |                       | < 1                   |
| Inniskeeen WWTP Downstream    | 02/09/2015  | Grab          | 0.034          | 2   |                    |                         |                              | 0.025                  | 8.1         |                       | < 1                   |
| Inniskeeen WWTP Downstream    | 08/10/2015  | Grab          | 0.021          | 1   |                    |                         |                              | 0.051                  | 8           |                       | < 1                   |
| Inniskeeen WWTP Downstream    | 04/11/2015  | Grab          |                |   | 210                | 64                      | 93                           |                        |             |                       |                       |
| Inniskeeen WWTP Downstream    | 04/11/2015  | Grab          | 0.017          | 3   |                    |                         |                              | 0.029                  | 8.1         |                       | < 1                   |
| Inniskeeen WWTP Downstream    | 08/12/2015  | Grab          | 0.019          | < 2   |                    |                         |                              | 0.041                  | 7.8         |                       | < 1                   |
| <b>Average</b>                |             |               | <b>0.035</b>   | <b>1.73</b>                                     | <b>134</b>         | <b>40</b>               | <b>93</b>                    | <b>0.028</b>           | <b>8.01</b> |                       | <b>1.06</b>           |

## Appendix 7.3 -SWO Identification and Inspection report



# Storm Water Overflow Assessment

|                             |                  |
|-----------------------------|------------------|
| <b>Agglomeration Name:</b>  | <b>Inniskeen</b> |
| <b>Licence Register No.</b> | <b>D0348-01</b>  |



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# 1 Introduction

This report has been prepared for D0348-01, Inniskeen WWTP in County Monaghan in accordance with the requirements of Condition 4.12.1 of the wastewater discharge licence for the agglomeration. This report identifies storm water overflows within the agglomeration and assesses the compliance of the storm water overflows with the criteria set out in the DoEHLG document on ‘*Procedures and Criteria in Relation to Storm Water Overflows*’, 1995.

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

**Table 1: Storm Water Overflows in the Agglomeration**

| Licence Code | Discharge Location |          | Receiving Water Name and WFD Code | WFD Status of Receiving Water | Other designation of receiving water    |
|--------------|--------------------|----------|-----------------------------------|-------------------------------|---|
|              | Easting            | Northing |                                   |                               |   |
| SW-2         | 293928E,           | 306704N  | River Fane (IE_XB_06_8)           | Poor                          | DW Abstraction, supposed cyprinid river |

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

***Condition 4.12- Storm Water Overflows***

***4.12.1*** The licensee shall, prior to the date for submission of the second AER (required under Condition 6.11), carry out an investigation for the identification and assessment of storm water overflows. A report on the storm water overflows shall be submitted to the Agency as part of the second AER. The assessment shall include a determination of compliance with the criteria for storm water overflows, as set out in the DoEHLG *Procedures and Criteria in Relation to Storm Water Overflows*, 1995, and any other guidance as may be specified by the Agency.

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

## **2 Storm Water Overflow Assessment**

### **2.1 Description of SWOs**

There is one storm water overflow at Inniskeen WWTW from a storm tank at the treatment plant site.

In storm conditions, excess flow from the inlet pump sump flows into a storm holding tank until storm conditions subside, it operates on dual flow pipe system so that excess flows, flow back into the inlet pump sump when storm conditions subside and progresses around the treatment plant. In extreme storm conditions whereby the storm tank fills to capacity and the treatment works is still operating at full capacity, the storm overflow from the storm tank will then discharge to the river via the storm overflow outlet pipe from the storm tank.

In 2008 as part of an upgrade of the treatment works plant at Inniskeen an existing oxidation ditch treatment tank was decommissioned, it was commissioned a storm water storage tank with no change to the tank itself except for the removal of the mechanical aerator. The storm water overflow discharged directly to the Fane River, before the upgrade works. The existing storm tank was therefore not designed or sized for any specific storm return period or duration. The storm tank volume equates to approximately 145m<sup>3</sup>, the WwTP was designed to treat a Dry Weather Flow (DWF) of 408 m<sup>3</sup>/d. At 3 DWF, the storm tank is able to provide storage for 2.8h. It operates on the principal that in storm conditions, flows in excess of the capacity of the inlet pump sump flow into the storm storage tank and can be contained until the storm has subsided and the stored storm water flows back into the inlet pump sump of the treatment works. In extreme storm conditions whereby the storm tank fills to capacity and the treatment works is still operating at full capacity, the storm overflow from the storm tank will then discharge to the river via the storm overflow outlet pipe from the storm tank.

This storm overflow would activate rarely, only after heavy prolonged periods of rainfall, possibly once per year.

## 2.2 Assessment of Operating Criteria of SWOs

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

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

**Table 2: Assessment of Operating Criteria**

| CSO Ref | Causes significant visual or aesthetic impact and public complaints. | Causes deterioration in water quality in the receiving water | Gives rise to failure in meeting the requirements of national Regulations on foot of EU Directives. | Operates in dry weather | Compliant / Non-Compliant |
|---------|--|--|---|-------------------------|---------------------------|
| SW-2    | No   | No   | Supposed no considering the 2015 ambient monitoring results   | No                      | Compliant (supposed)      |

## 2.3 Assessment of Design Criteria of SWOs

### 2.3.1 Compliance with Formula A

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

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

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

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

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

The annual mean hydraulic and organic loadings are reported in the Annual Environmental Reports since 2010. For the purpose of this report, the following assumptions have been made:

- The organic loading of the plant includes 80% of domestic inputs and 20% of non-domestic inputs.
- The dry weather flow due to domestic and non-domestic inputs is calculated considering a 175 L/PE/d.
- The difference between the reported hydraulic loading and the dry weather flow calculated from the organic loading is due to infiltration of surface water into the network.

The following table summarises the current loading of the treatment plant based on these assumptions.

**Table 3: Current loading of Inniskeen Wastewater treatment plant**

| Year of AER | Hydraulic loading (m <sup>3</sup> /d) | Organic loading (PE) | Estimated flow due to domestic inputs (m <sup>3</sup> /d) | Estimated flow due to non-domestic inputs | Estimated flow due to infiltration (m <sup>3</sup> /d) |
|-------------|---------------------------------------|----------------------|---|---|--|
| 2011        | 165.00                                | 368.00               | 51.52   | 12.88                                     | 100.60   |
| 2012        | 211.00                                | 322.00               | 45.08   | 11.27                                     | 154.65   |
| 2013        | 206.00                                | 322.00               | 45.08   | 11.27                                     | 149.65   |
| 2014        | 274.00                                | 607.00               | 84.98   | 21.245                                    | 167.78   |
| 2015        | 237.00                                | 198.00               | 27.72   | 6.93                                      | 202.35   |
| Average     | 218.60                                | 363.40               | 50.88   | 12.72                                     | 155.01   |

Based on these values, the following estimation has been made for formula A calculations purposes:

- Based on the average organic loading of the plant, the current loading is 363 PE. In a conservative approach, this has been approximated to the next 100 PE (400 PE).
- This includes 80% of domestic inputs (320 PE) and 20% of non-domestic inputs (80 PE).
- The dry weather flow resulting from these inputs is estimated using a 175 L/PE/d ratio and amounts to 56 m<sup>3</sup>/d from domestic inputs and 14 m<sup>3</sup>/d from non-domestic inputs.
- Based on the average estimated flow due to infiltration, the infiltration flow rate is 155 m<sup>3</sup>/d. In a conservative approach, this has been approximated to the next 100 m<sup>3</sup>/d (200 m<sup>3</sup>/d).

Table 4 provides a calculation of the “Formula A” flow.

**Table 4: Revised calculation of the “Formula A” flow**

| Designation | Formula A flow (L/s) | Spill setting (L/s) | Compliance to DOEHLG | Revised number of dilution |
|-------------|----------------------|---------------------|----------------------|----------------------------|
| SW-2        | 8.49                 | 5.25                | Yes <sup>1</sup>     | 64                         |

---

<sup>1</sup> This is a storm water overflow located at the waste water treatment plant. Provided that sufficient storage capacity is maintained, it is considered that this storm water overflow will be compliant.

### 2.3.2 Significance of Spill

Monitoring information in relation to frequency and duration of overflows is not available. The significance of overflows to inland freshwaters has been assessed as follows:

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

**Table 3: Assessment of Significance**

| CSO Ref | Dilution | PE Range | Designation of Receiving Water | Significance |
|---------|----------|----------|--------------------------------|--------------|
| SW-2    | 64       | <2000    | Supposed cyprinid              | Low          |

### 2.4 Assessment of Requirement for Storage

The necessity for a storm tank within the sewer network has been assessed based on available dilution as detailed in Table 3 (from Procedures and Criteria in Relation to Storm Water Overflows) included as Table 4 below. The requirement for a storm tank at a wastewater treatment plant shall be based on an overflow setting of 3 DWF.

**Table 4 – SDD Method Recommended Storage at Overflows<sup>1</sup>**

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

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

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

**.Table 5 – Stormwater Storage within Agglomeration**

| <b>Dilution Factor<sup>1</sup></b> | <b>Required Overflow Setting (l/s)</b> | <b>Actual Overflow Setting (l/s)</b> | <b>Required Storage Tank Volume (m<sup>3</sup>)</b> | <b>Actual Storage Tank Volume (m<sup>3</sup>)</b>              | <b>Compliant / Non-Compliant</b> |
|------------------------------------|--|--------------------------------------|---|--|----------------------------------|
| 64                                 | 15.25                                  | 5.25                                 | 105   | 145 (2.8 hours at 3 Design DWF, almost 9 hours at current DWF) | Compliant                        |

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

### **3 Remedial Measures to Ensure Compliance**

#### **3.1 Specified Improvement and Improvement Programme Works**

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

#### **3.2 Additional Measures None**

It is considered that the existing storage tank provides sufficient storage capacity to avoid any significant overflow. As a result, no additional measure is recommended.



## Appendix 7.4 - Specified Improvement Programme

### a) Specified Improvement Programme

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

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, there are no improvement works specified.

Under condition 5.2 (i) 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:

There is adequate capacity at the treatment plant.

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

In 2015 the WWTP plant breached the ELV's for Ammonia, pH and Suspended Solids. The polishing filter is due to be replaced early 2016 this should result in improved performance of the WWTP.

The capacity of the WWTP is detailed in section 3.2 (Treatment Capacity Report), there is remaining capacity at the WWTP.

(iii) The designations of the receiving water body:

The WWTP discharges to The River Fane. The receiving water is not a designated Salmonid Water (under the European Communities (Quality of Salmonid Waters) Regulations, 1988) although the River Fane is a well-known valuable Salmonid River. It is not designated as a sensitive water under the Urban Waste Water Treatment Regulations 2001. The river is not designated as an SPA, SAC or NHA. The receiving water is a drinking water abstraction further downstream.

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

The WWTP discharges to the River Fane waterbody XB-06-8 this waterbody has been classified as poor with a restore 2021 objective in the Neagh Bann International River Basin District.

(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 treatment plant (section 3.2 Treatment Capacity Report).

(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:

Monaghan County Councils Environment Section monitor surface water quality and investigate misconnections. Any misconnections identified will be rectified.

(iv) Infiltration by surface water/ground water:

Infiltration into the main line entering the plant has been identified and works are due to be carried out on this line in 2016.

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 specified improvement works in the discharge licence. The polishing filter is due to be replaced at the plant in early 2016. Works to reduce infiltration into the main line are due to be carried out in 2016.

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:

**Improvement Summary Table**

| Improvement Identifier / Name  | Improvement Description | Improvement Source           | Progress (% complete) | Expected Completion Date | Comments |
|--|-------------------------|------------------------------|-----------------------|--------------------------|----------|
| Ensure minimum dial out alarms are provided for inlet forward feed pumps fail to run/ aeration blower fail to run. | Process Control         | Improved Operational Control |                       | Agreed but not started   |          |
| It is recommended that Mixed Liquor Suspended Solids analysis should be  | Process Control         | Improved Operational Control |                       | Completed                |          |

|   |  |  |  |  |  |
|---|--|--|--|--|--|
| carried out to improve process control. |  |  |  |  |  |
|---|--|--|--|--|--|