# Annual Environmental Report

# 2020


Athboy

D0124-01

## CONTENTS

# 1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2020 AER

This Annual Environmental Report has been prepared for D0124-01, Athboy, in Meath in accordance with the requirements of the wastewater discharge licence for the agglomeration. Specified reports where relevant are included as an appendix to the AER.

## 1.1 ANNUAL STATEMENT OF MEASURES

A summary of any improvements undertaken is provided where applicable.

There were no major capital or operational changes undertaken in 2020.

## 1.2 TREATMENT SUMMARY

The agglomeration is served by a wastewater treatment plant(s)

- ATHBOY WWTP - 2020 with a Plant Capacity PE of 5800, the treatment type is 3P - Tertiary P removal

## 1.3 ELV OVERVIEW

The overall compliance of the final effluent with the Emission Limit Values (ELVs) is shown below. More detailed information on the below ELV's can be found in Section 2.

| Discharge Point Reference | Treatment Plant | Discharge Type | Compliance Status | Parameters failing if relevant |
|---|---|---|---|---|
| **TPEFF2300D0124SW001** | ATHBOY WWTP - 2020 | Treated | Non-Compliant | Ammonia-Total (as N) mg/l |

## 1.4 LICENCE SPECIFIC REPORTING INCLUDED IN AER

| Assessment / Report | Included in AER |
|---|---|
| **There are no Licence Specific Reports included in the AER.** | |

# 2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

## 2.1 ATHBOY WWTP - 2020 - TREATED DISCHARGE

### 2.1.1 INFLUENT MONITORING SUMMARY - ATHBOY WWTP - 2020

A summary of influent monitoring for the treatment plant is presented below. This monitoring is primarily undertaken in order to determine the overall efficiency of the plant in removing pollutants from the raw wastewater.

| Parameters | Number of Samples | Annual Max | Annual Mean |
|---|---|---|---|
| **BOD, 5 days with Inhibition (Carbonaceous) mg/l** | 13 | 831 | 285.14 |
| **COD-Cr mg/l** | 13 | 3308 | 800.51 |
| **Total Nitrogen mg/l** | 13 | 147 | 48.9 |
| **Total Phosphorus mg/l** | 13 | 41 | 10.62 |
| **Suspended Solids mg/l** | 13 | 2280 | 609.06 |
| **Hydraulic Capacity** | N/A | 4359 | 1277 |

If other inputs in the form of sludge / leachate are added to the WWTP then these are included in Section 2.1.5 if applicable.

#### Significance of Results:

The annual mean hydraulic loading is less than the peak Treatment Plant Capacity. The annual maximum hydraulic loading is greater than the peak Treatment Plant Capacity. Further details on the plant capacity and efficiency can be found under the sectional ‘Operational Performance Summary’.

## 2.1.2 EFFLUENT MONITORING SUMMARY - TPEFF2300D0124SW001

| Parameter | WWDL ELV (Schedule A) | ELV with Condition 2 Interpretation included [Note 1] | Interim % reduction from influent concentration | Number of sample results | Number of exceedances | Number of with Condition 2 Interpretation included | Annual Mean | Overall Compliance (Pass/Fail) |
|---|---|---|---|---|---|---|---|---|
| **Chemical Oxygen Demand mg/l** | 125 | 250 | N/A | 12 | N/A | N/A | 12.66 | Pass |
| **Suspended Solids mg/l** | 35 | 87.5 | N/A | 12 | N/A | N/A | 4.40 | Pass |
| **BOD, 5 days with Inhibition (Carbonaceous) mg/l** | 20 | 40 | N/A | 12 | N/A | N/A | 3.57 | Pass |
| **pH pH units** | 6-9 | 6-9 | N/A | 6 | N/A | N/A | 6.55 | Pass |
| **Total Phosphorus mg/l** | 1 | 1.2 | N/A | 12 | N/A | N/A | 0.1 | Pass |
| **Ammonia-Total (as N) mg/l** | 1.1 | 2.2 | N/A | 12 | 2 | 1 | 0.41 | Fail |
| **ortho-Phosphate (as P) - unspecified mg/l** | 0.6 | 1.2 | N/A | 12 | N/A | N/A | 0.06 | Pass |
| **Nitrate (as N) mg/l** | N/A | N/A | N/A | 12 | N/A | N/A | 2.57 | |
| **Conductivity 25 C µS/cm** | N/A | N/A | N/A | 12 | N/A | N/A | 996.64 | |

| Parameter | WWDL ELV (Schedule A) | ELV with Condition 2 Interpretation included [Note 1] | Interim % reduction from influent concentration | Number of sample results | Number of exceedances | Number of with Condition 2 Interpretation included | Annual Mean | Overall Compliance (Pass/Fail) |
|---|---|---|---|---|---|---|---|---|
| **Nitrite (as N) mg/l** | N/A | N/A | N/A | 12 | N/A | N/A | 1.39 | |
| **Total Nitrogen mg/l** | N/A | N/A | N/A | 12 | N/A | N/A | 6.35 | |
| **Total Oxidised Nitrogen (as N) mg/l** | N/A | N/A | N/A | 12 | N/A | N/A | 3.95 | |

Notes:
1 – This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied

## Cause of Exceedance(s):

**WWTP biological sludge issue.**

## Significance of Results:

The WWTP is non compliant with the ELV's set in the Wastewater Discharge Licence. The impact on receiving waters is assessed further in Section 2.

## 2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF2300D0124SW001

A summary of monitoring from ambient monitoring points associated with the wastewater discharge is provided in the sections below. For discharges to rivers upstream (U/S) and downstream (D/S) location data is provided. For other ambient points in lakes, coastal or transitional waters, monitoring data from the most appropriate monitoring station is selected.

The table below provides details of ambient monitoring locations and details of any designations as sensitive areas.

| Ambient Monitoring Point from WWDL (or as agreed with EPA) | Irish Grid Reference | River Station Code | Bathing Water | Drinking Water | FWPM | Shellfish | WFD Status |
|---|---|---|---|---|---|---|---|
| **Upstream** | 271765, 264214 | RS07A010200 | No | No | No | No | Moderate |
| **Downstream** | 272476, 263261 | RS07A010270 | No | Yes | No | No | Moderate |

The results for ambient results and / or additional monitoring data sets are included in the **Appendix 7.1 - Ambient monitoring summary.**

### Significance of Results:

The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence.

The ambient monitoring results do not meet the required EQS. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

Based on ambient monitoring results a deterioration in Ammonia, Ortho-P and BOD concentrations downstream of the effluent discharge is noted.

A deterioration in water quality has been identified, however it is not known if it or is not caused by the WWTP.

Other causes of deterioration in water quality in the area are unknown.

The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status.

## 2.1.4 OPERATIONAL PERFORMANCE SUMMARY - ATHBOY WWTP - 2020

### *2.1.4.1 Treatment Efficiency Report - ATHBOY WWTP - 2020*

Treatment efficiency is based on the removal of key pollutants from the influent wastewater by the treatment plant. In essence the calculation is based on the balance of load coming into the plant versus the load leaving the plant. The efficiency is presented as a percentage removal rate.

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

| Parameter | Influent mass loading (kg/year) | Effluent mass emission (kg/year) | Efficiency (% reduction of influent load) |
|---|---|---|---|
| **cBOD** | 127798 | 1453 | 99 |
| **COD** | 358783 | 5157 | 99 |
| **SS** | 272976 | 1794 | 99 |
| **TN** | 21917 | 2585 | 88 |
| **TP** | 4761 | 42 | 99 |

Note: The above data is based on sample results for the number of dates reported

### 2.1.4.2 Treatment Capacity Report Summary - ATHBOY WWTP - 2020

Treatment capacity is an assessment of the hydraulic (flow) and organic (the amount of pollutants) load a treatment plant is designed to treat versus the current loading of that plant.

| ATHBOY WWTP - 2020 | |
|---|---|
| **Peak Hydraulic Capacity ($m^3$/day) - As Constructed** | 3915 |
| **DWF to the Treatment Plant ($m^3$/day)** | 1305 |
| **Current Hydraulic Loading - annual max ($m^3$/day)** | 4359 |
| **Average Hydraulic loading to the Treatment Plant ($m^3$/day)** | 1277 |
| **Organic Capacity (PE) - As Constructed** | 5800 |
| **Organic Capacity (PE) - Collected Load (peak week)[Note1]** | 3648 |
| **Organic Capacity (PE) - Remaining** | 2152 |
| **Will the capacity be exceeded in the next three years? (Yes/No)** | No |

Nominal design capacities can be based on conservative design principles. In some cases assessment of existing plants has shown organic capacities significantly higher than the nominal design capacity. Accordingly plants that appear to be overloaded when comparing a collected peak load with the nominal design capacity can be fully compliant due to the safety factors in the original design.

## 2.1.5 SLUDGE / OTHER INPUTS - ATHBOY WWTP - 2020

'Other inputs' to the waste water treatment plant are summarised in table below

| Input type | Quantity | Unit | P.E. | % of load to WWTP | Included in Influent Monitoring (Y/N)? | Is there a leachate/sludge acceptance procedure for the WWTP? | Is there a dedicated leachate/sludge acceptance facility for the WWTP? (Y/N) |
|---|---|---|---|---|---|---|---|
| **There is no Sludge and Other Input data for the Treatment Plant included in the AER.** | | | | | | | |

# 3 COMPLAINTS AND INCIDENTS

## 3.1 COMPLAINTS SUMMARY

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

| Number of Complaints | Nature of Complaint | Number Open Complaints | Number Closed Complaints |
|---|---|---|---|
| **2** | Blocked Sewer | 0 | 2 |

## 3.2 REPORTED INCIDENTS SUMMARY

Environmental incidents that arise in an agglomeration are reported on an on-going basis in accordance with our waste water discharge licences. Where an incident occurs and it is reportable under the licence, it is reported to the Environmental Protection Agency through their Environmental Data Exchange Network, or in some instances by telephone. Some incidents which arise in the agglomeration are recorded by Irish Water but may not be reportable under our licence for example where the incident does not have an impact on environmental performance.

A summary of reported incidents is included below.

### 3.2.1 SUMMARY OF INCIDENTS

| Incident Type | Cause | No. of incident occurrences | Recurring (Y/N) | Closed (Y/N) |
|---|---|---|---|---|
| **Breach of ELV** | WWTP biological sludge issue | 1 | Yes | Yes |
| **Uncontrolled release** | EO caused by ragging or blocking | 1 | Yes | Yes |

## 3.2.2 SUMMARY OF OVERALL INCIDENTS

| Question | Answer |
|---|---|
| **Number of Incidents in 2020** | 2 |
| **Number of Incidents reported to the EPA via EDEN in 2020** | 2 |
| **Explanation of any discrepancies between the two numbers above** | N/A |

# 4 INFRASTRUCTURAL ASSESSMENTS AND PROGRAMME OF IMPROVEMENTS

## 4.1 STORM WATER OVERFLOW IDENTIFICATION AND INSPECTION REPORT

A summary of the operation of the storm water overflows and their significance where known is included below:

### 4.1.1 SWO IDENTIFICATION

| WWDL Name / Code for Storm Water Overflow | Irish Grid Ref. | Included in Schedule A4 of the WWDL | Significance of the overflow(High / Medium / Low) | Assessed against DoEHLG Criteria | No. of times activated in 2020 (No. of events) | Total volume discharged in 2020 ($m^3$) | Monitoring Status |
|---|---|---|---|---|---|---|---|
| **ATHBOY PUMPING STATION** | 271831, 264132 | Yes | Low | Meeting | Unknown | Unknown | Not Monitored |
| **SW-2** | 272035, 263610 | Yes | Low | Meeting | 0 | 0 | Monitored |

| SWO Summary | |
|---|---|
| **How much sewage was discharged via SWOs in the agglomeration in the year ($m^3$)?** | Unknown |
| **Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?** | N/A |
| **The SWO Assessment included the requirements of relevant of WWDL schedules?** | Yes |
| **Have the EPA been advised of any additional SWOs / changes to Schedule C3 and A4 under Condition 1.7?** | No |

## 4.2 REPORT ON PROGRESS MADE AND PROPOSALS BEING DEVELOPED TO MEET THE IMPROVEMENT PROGRAMME REQUIREMENTS

### 4.2.1 SPECIFIED IMPROVEMENT PROGRAMME SUMMARY

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides list of the various reports required for this agglomeration and a brief summary of their recommendations.

| Specified Improvement Programmes (under Schedule A and C of WWDL) | Description | Licence Schedule | Licence Completion Date | Date Expired? (N/NA/Y) | Status of Works | Timeframe for Completing the Work | Comments |
|---|---|---|---|---|---|---|---|
| **D0124-SIP:01** | Athboy pumping station (main) | C | 30/06/2010 | Yes | Works Completed | | |
| **D0124-SIP:02** | Rathcairn pumping station RA1 | C | 30/06/2010 | Yes | Works Completed | | |
| **D0124-SIP:03** | Rathcairn pumping station RA2 (main) | C | 30/06/2010 | Yes | Works Completed | | |
| **D0124-SIP:04** | Rathcairn pumping station RA3 | C | 30/06/2010 | Yes | Works Completed | | |
| **D0124-SIP:05** | Rathcairn pumping station RA4 | C | 30/06/2010 | Yes | Works Completed | | |
| **D0124-SIP:06** | WWTP and ancillary works | C | 30/06/2010 | Yes | Works Completed | | |

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

## 4.2.2 IMPROVEMENT PROGRAMME SUMMARY

| Improvement Identifier | Improvement Description / or any Operational Improvements | Improvement Source | Expected Completion Date | Comments |
|---|---|---|---|---|
| **There are no Improvements Programme for this Agglomeration.** | | | | |

## 4.2.3 SEWER INTEGRITY RISK ASSESSMENT

The utilisation of multiple capital maintenance programmes and the outputs of the workshops with the Local Authority Operations Staff held under the programme can be used to satisfy the requirements of Condition 5 regarding network integrity. Improvement works identified by way of these programmes and workshops will be included in the Improvements Summary Table.

# 5 LICENCE SPECIFIC REPORTS

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides list of the various reports required for this agglomeration and a brief summary of their recommendations.

| Licence Specific Report | Required by licence | Year included in AER | Included in this AER | Reference to relevant section of AER |
|---|---|---|---|---|
| **Drinking Water Abstraction Point Risk Assessment** | Yes | 2011 | No | N/A |
| **Priority Substances Assessment** | Yes | 2015 | No | N/A |

## 5.1 DRINKING WATER ABSTRACTION POINT RISK ASSESSMENT

The Drinking Water Abstraction Point Risk Assessment Report has been included in the AER 2011.

## 5.2 PRIORITY SUBSTANCES ASSESSMENT

The Priority Substances Assessment Report has been included in the AER 2015.

# 6 CERTIFICATION AND SIGN OFF

## 6.1 SUMMARY OF AER CONTENTS

| Parameter | Answer |
|---|---|
| **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 modification to the existing WWDL with respect to condition 4 changes to monitoring location, frequency etc** | No |
| **List reason e.g. changes to monitoring requirements** | N/A |
| **Have these processes commenced?** | N/A |
| **Are all outstanding reports and assessments from previous AERs included as an appendix to this AER** | N/A |

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

Date: 28/02/2021

This AER has been produced by Irish Water's Environmental Information System (EIMS) and has been electronically signed off in that system for and on behalf of,

Katherine Walshe

Acting Head of Environmental Regulation.

# 7 APPENDIX

| Appendix |
| --- |
| **Appendix 7.1 - Ambient monitoring summary** |

# Athboy 2020 Ambient Monitoring Summary

| | | | Receiving Waters Designation (Yes/No) | | | |
|---|---|---|---|---|---|---|
| **Ambient Monitoring Point from WWDL (or as agreed with EPA)** | **Irish National Grid Reference (Easting, Northing)** | **EPA Feature Coding Tool code** | **Bathing Water** | **Drinking Water** | **FWPM** | **Shellfish** |
| Upstream Monitoring Point | 271765, 264214 | RS07A010200 | | | | |
| Downstream Monitoring Point | 272476, 263261 | RS07A010270 | No | Yes | No | No |

| | | Mean (mg/l) | | |
|---|---|---|---|---|
| **Ambient Monitoring Point from WWDL (or as agreed with EPA)** | **Current WFD Status** | **cBOD** | **o-Phosphate (as P)** | **Ammonia (as N)** |
| Upstream Monitoring Point | Moderate | 1.268 | 0.031 | 0.050 |
| Downstream Monitoring Point | Moderate | 1.503 | 0.036 | 0.078 |
| *Difference* | | *0.235* | *0.005* | *0.028* |
| EQS | | 1.500 | 0.035 | 0.065 |
| % of EQS | | 15.667% | 13.714% | 43.538% |

*Note: Where the concentration in the result is less than the limit of detection (LOD), a value of LOD/sqrt(2) was used in calculating the mean and 95%ile concentrations.*

# Athboy 2020 Ambient Monitoring Data

| | | | Dissolved Oxygen | Dissolved Oxygen % Saturation | pH | Biological Oxygen Demand | Ortho-Phosphate P | Total Nitrogen N | Ammonia N |
|---|---|---|---|---|---|---|---|---|---|
| | | | mg/l | % Sat. | pH units | mg/l | mg/l | mg/l | mg/l |
| 31-Jan-2020 | Upstream | Grab | 11.3 | 97.1 | 8.2 | 1.41 | 0.038 | 2.75 | 0.02 |
| 13-May-2020 | Upstream | Grab | 9.95 | 105 | 8.1 | 0.81 | 0.017 | 1.9 | 0.022 |
| 10-June-2020 | Upstream | Grab | 9.64 | 101.3 | 8.01 | 1.48 | 0.042 | 2.17 | 0.041 |
| 26-June-2020 | Upstream | Grab | 9.47 | 107.8 | 7.98 | 1.31 | 0.038 | 2.24 | 0.041 |
| 30-Sep-2020 | Upstream | Grab | 11.83 | 108.3 | 8.31 | 1.89 | 0.019 | 2.25 | 0.029 |
| 21-Oct-2020 | Upstream | Grab | 9.37 | 96.1 | 8.15 | 1.33 | 0.03 | 2.08 | 0.019 |
| 5-Nov-2020 | Upstream | Grab | 10.65 | 98.4 | 7.92 | < 1 | 0.017 | 1.83 | 0.023 |
| 11-Nov-2020 | Upstream | Grab | 9.63 | 96.1 | 8.1 | 1.37 | 0.025 | 2.32 | 0.024 |
| 19-Nov-2020 | Upstream | Grab | 10.44 | 97.7 | 8.2 | 0.92 | 0.024 | 2.26 | 0.019 |
| 10-Dec-2020 | Upstream | Grab | 9.98 | 103.3 | 7.9 | 1.45 | 0.063 | 3.12 | 0.263 |
| | | **Mean** | | | | **1.268** | **0.031** | | **0.050** |
| | | **95%ile** | | | | **1.706** | **0.054** | | **0.163** |

*Note: Where the concentration in the result is less than the limit of detection (LOD), a value of LOD/sqrt(2) was used in calculating the mean and 95%ile concentrations.*

| | | | Dissolved Oxygen | Dissolved Oxygen % Saturation | pH | Biological Oxygen Demand | Ortho-Phosphate P | Total Nitrogen N | Ammonia N |
|---|---|---|---|---|---|---|---|---|---|
| | | | mg/l | % Sat. | pH units | mg/l | mg/l | mg/l | mg/l |
| 31-Jan-2020 | Downstream | Grab | 10.75 | 94.2 | 8.1 | 1.03 | 0.048 | 2.92 | 0.039 |
| 13-May-2020 | Downstream | Grab | 10.33 | 110.2 | 8.2 | 0.87 | 0.017 | 2.13 | 0.027 |
| 10-June-2020 | Downstream | Grab | 9.67 | 101 | 8.01 | 2.08 | 0.039 | 2.9 | 0.121 |
| 26-June-2020 | Downstream | Grab | 9.4 | 106.2 | 7.99 | 1.86 | 0.063 | 2.6 | 0.106 |
| 30-Sep-2020 | Downstream | Grab | 11.34 | 104.5 | 8.29 | 2.23 | 0.026 | 2.29 | 0.029 |
| 21-Oct-2020 | Downstream | Grab | 9.51 | 95.2 | 8.02 | 1.6 | 0.03 | 2.38 | 0.028 |
| 5-Nov-2020 | Downstream | Grab | 10.52 | 99.6 | 7.9 | < 1 | 0.018 | 2.8 | 0.027 |
| 11-Nov-2020 | Downstream | Grab | 9.48 | 94 | 8.2 | 1.04 | 0.027 | 2.08 | 0.027 |
| 19-Nov-2020 | Downstream | Grab | 10.55 | 99.4 | 8.2 | 0.99 | 0.031 | 2.44 | 0.022 |
| 10-Dec-2020 | Downstream | Grab | 10.04 | 103.8 | 7.9 | 2.62 | 0.062 | 2.76 | 0.358 |
| | | **Mean** | | | | **1.503** | **0.036** | | **0.078** |
| | | **95%ile** | | | | **2.445** | **0.063** | | **0.251** |

*Note: Where the concentration in the result is less than the limit of detection (LOD), a value of LOD/sqrt(2) was used in calculating the mean and 95%ile concentrations.*