Annual Environmental Report

2018

Ballaghkeen

D0398-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2018 AER

This Annual Environmental Report has been prepared for D0398-01, Ballaghkeen, in Wexford 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 TREATMENT SUMMARY

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

- Ballaghkeen WWTP with a Plant Capacity PE of 500
- THORNBROOK ESTATE WWTP with a Plant Capacity PE of 250

The treatment process includes the following:

1.1.1 BALLAGHKEEN WWTP

Treatment type	Yes / No	Details
Preliminary Treatment	No	
Primary Treatment	Yes	Primary settlement tanks
Secondary Treatment	Yes	RBC
Nutrient Removal	Yes	P removal dosing
Tertiary Treatment	Yes	Polishing Reedbed

1.1.2 THORNBROOK ESTATE WWTP

Treatment type	Yes / No	Details
Preliminary Treatment	No	
Primary Treatment	Yes	Primary settlement tanks
Secondary Treatment	Yes	activated sludge
Nutrient Removal	Yes	P removal dosing
Tertiary Treatment	Yes	Polishing Reedbed

1.2 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
TPEFF3300D0398SW001	Ballaghkeen WWTP	Treated	Non-Compliant	Not currently designed to consistently achieve imposed ELV limits for Ammonia
TPEFF3300D0398SW002	THORNBROOK ESTATE WWTP	Treated	Non-Compliant	Not currently designed to consistently achieve imposed ELV limits for Ammonia

1.3 LICENCE SPECIFIC REPORTING INCLUDED IN AER

Assessment / Report	Included in AER
No licence specific reports are included	

2 TREATMENT PLANT PERFORMAND AND IMPACT SUMMARY

2.1 BALLAGHKEEN WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - BALLAGHKEEN WWTP

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
Total Phosphorus (as P) mg/l	6	18.6	11.35
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	9	853	434.88
Suspended Solids mg/l	6	1073	475.66
Total Nitrogen mg/l	6	93.6	75.6
COD-Cr mg/l	9	1750	926
Hydraulic Capacity[1]	N/A	406.35	101.59

Note 1: No flow data is available. Flows are based on organic loading of 301 p.e. DWF 67.725m3 annual mean estimated as 1.5 times DWF 101.59 and max as 6 dwf 406.35

Significance of Results:

The annual mean hydraulic loading is less than the peak Treatment Plant Capacity. The annual maximum hydraulic loading is less 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 - TPEFF3300D0398SW001

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)
COD-Cr mg/l	125	250	N/A	9	0	0	15.7	Pass
Suspended Solids mg/l	35	87.5	N/A	9	0	0	5.41	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	10	20	N/A	9	0	0	1.22	Pass
Ammonia-Total (as N) mg/l	5	6	N/A	9	6	5	5.80	Fail
ortho-Phosphate (as P) - unspecified mg/l	0.8	0.96	N/A	9	2	1	0.6	Fail
pH pH units	6-9	6-9	N/A	9	0	0	7.5	Pass

Notes:
1– This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied
2 - For parameters where a mean ELV applies

Cause of Exceedance(s):

WWTP not designed to meet ELV's

Significance of Results:

The WWTP is not compliant with the ELV's set in the Wastewater Discharge Licence.

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE

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	Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Status
Upstream	307188, 137572	TPEFF3300D0398SW001	No	No	No	No	Moderate
Downstream	307042, 137538	TPEFF3300D0398SW001	No	Yes	No	No	Moderate

The table below provides a summary of monitoring results for designated ambient monitoring points. The upstream and downstream annual mean values are shown (mg/l), and the difference between both monitoring stations is given as a percentage of the Environmental Quality Standard (EQS) where relevant.

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	RS12S030020	1.13	RS12S030030	5	2.6	149
Ammonia-Total (as N) mg/l	RS12S030020	0.08	RS12S030030	0.05	0.14	-26.8
ortho-Phosphate (as P) - unspecified mg/l	RS12S030020	0.04	RS12S030030	0.04	0.08	-10
Total Phosphorus (as P) mg/l	RS12S030020	0.05	RS12S030030			
Total Oxidised Nitrogen (as N) mg/l	RS12S030020	5.29	RS12S030030			

pH pH units	RS12S030020	7.21	RS12S030030	7.26		
Dissolved Oxygen mg/l	RS12S030020	10.09	RS12S030030	9.6		
Dissolved Oxygen % Saturation	RS12S030020	88.7	RS12S030030	94.25		

Significance of Results:

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

The discharge from the works maybe giving rise to a breach of EQS in the receiving water regardless of status.

The parameters which exceeded the EQS and may be causing an effect are: BOD.

Any other know impacts: Local agricultural and onsite WWTP's

2.1.4 OPERATIONAL PERFORMANCE SUMMARY

2.1.4.1 Treatment Efficiency Report

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)	Comment
SS	22524.25	170.8	99.24	
COD	29800.24	637.32	97.86	
TN	3047.59	734.93	75.88	

cBOD	13772.88	75.32	99.45	
TP	426.01	18.61	95.63	

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

2.1.4.2 Treatment Capacity Report Summary

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.

Ballaghkeen WWTP	
Peak Hydraulic Capacity (m3/day) - As Constructed	675
DWF to the Treatment Plant (m3/day)	112.5
Current Hydraulic Loading - annual max (m3/day)	406.35
Average Hydraulic loading to the Treatment Plant (m3/day)	101.59
Organic Capacity (PE) - As Constructed	500
Organic Capacity (PE) - Collected Load (peak week)	301
Organic Capacity (PE) - Remaining	199
Will the capacity be exceeded in the next three years? (Yes/No)	No

2.1.5 SLUDGE / OTHER INPUTS

'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.							

2.1.6 SLUDGE REMOVAL

The amount of sludge removed from the wastewater treatment plant is shown below along with the transported destination of the sludge from the treatment plant.

Treatment Plant	Sludge type	Quantity	Unit	% Dry Solids	Destination
Ballaghkeen WWTP	Liquid Sludge	143.43	Volume (m3)	2.51	Sludge Facility Wexford WWTP
Ballaghkeen WWTP	Liquid Sludge	173.39	Volume (m3)	1.62	Sludge Facility Courtown WWTP

2.2 THORNBROOK ESTATE WWTP - TREATED DISCHARGE

2.2.1 INFLUENT MONITORING SUMMARY - THORNBROOK ESTATE WWTP

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
Suspended Solids mg/l	5	2310	697.2
Total Phosphorus (as P) mg/l	5	22.5	11.4

Parameters	Number of Samples	Annual Max	Annual Mean
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	7	725	355.5
COD-Cr mg/l	8	1990	667.5
Total Nitrogen mg/l	5	136	88.6
Hydraulic Capacity[1]	N/A	70.2	35.1

Note 1: Flow data is not readily available - max annual is assumed as 3 DWF (70.2 m3) and average flow as 1.5 DWF (35.1 m3) based on CSO figure for Wexford of 2.6 p.e. per dwelling and 40 units (solely serves esate) current loading is 104 p.e , which gives DWF design as 23.4 m3/d.

Significance of Results:

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

2.2.2 EFFLUENT MONITORING SUMMARY - TPEFF3300D0398SW002

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)
COD-Cr mg/l	125	250	N/A	10	0	0	22.6	Pass
Suspended Solids mg/l	35	87.5	N/A	10	0	0	3.15	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	10	20	N/A	10	0	0	2.05	Pass

Ammonia-Total (as N) mg/l	5	6	N/A	10	6	6	7.4	Fail
ortho-Phosphate (as P) - unspecified mg/l	0.8	0.96	N/A	10	0	0	0.32	Pass
pH pH units	6-9	6-9	N/A	9	0	0	7.1	Pass

Notes:
1– This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied
2 - For parameters where a mean ELV applies

Cause of Exceedance(s):

WWTP not designed to meet the ELVs

Significance of Results:

The WWTP is not compliant with the ELV's set in the Wastewater Discharge Licence.

2.2.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE

As per Ballaghkeen WWTP.

2.2.4 OPERATIONAL PERFORMANCE SUMMARY

2.2.4.1 Treatment Efficiency Report

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)	Comment
TN	701.98	169.28	75.88	
cBOD	3172.41	17.35	99.45	
COD	6864.12	146.8	97.86	
TP	98.13	4.29	95.63	
SS	5188.18	39.34	99.24	

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

2.2.4.2 Treatment Capacity Report Summary

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.

THORNBROOK ESTATE WWTP	
Peak Hydraulic Capacity (m3/day) - As Constructed	204
DWF to the Treatment Plant (m3/day)	34
Current Hydraulic Loading - annual max (m3/day)	70.2
Average Hydraulic loading to the Treatment Plant (m3/day)	35.1
Organic Capacity (PE) - As Constructed	250
Organic Capacity (PE) - Collected Load (peak week)	158
Organic Capacity (PE) - Remaining	92
Will the capacity be exceeded in the next three years? (Yes/No)	No

2.2.5 SLUDGE / OTHER INPUTS

'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.							

2.2.6 SLUDGE REMOVAL

The amount of sludge removed from the wastewater treatment plant is shown below along with the transported destination of the sludge from the treatment plant.

Treatment Plant	Sludge type	Quantity	Unit	% Dry Solids	Destination
THORNBROOK ESTATE WWTP	Liquid Sludge	32.9	Volume (m3)	2.2	Sludge Facility Courtown WWTP
THORNBROOK ESTATE WWTP	Liquid Sludge	136.32	Volume (m3)	1.29	Sludge Facility Wexford WWTP

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
1	Blocked Sewer	0	1

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)
Non-compliance	WWTP upgrade required to meet ELV	5	Yes	No
Non-compliance	WWTP upgrade required to meet ELV	7	Yes	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2018	2
Number of Incidents reported to the EPA via EDEN in 2018	2
Explanation of any discrepancies between the two numbers above	

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 2018 (No. of events)	Total volume discharged in 2018 (m3)	Monitoring Status
NO SWO in the agglomeration							

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m3)?	0
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?	N/A
Have the EPA been advised of any additional SWOs / changes to Schedule C3 and A4 under Condition 1.7?	N/A

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
D0398-SIP:01	Complete groundwater assessment of reed beds at Thornbrook Estate WWTP and re-line as necessary.	C	22/12/2015	Yes	Not Started	The improvement programme will be reviewed by Irish Water to assess the works required to comply with the licence condition on a prioritised basis	
D0398-SIP:02	Relocate secondary discharge point to bypass natural wetlands at Thornbrook Estate WWTP and discharge directly from constructed reed beds to River Sow	C	22/12/2015	Yes	Works Completed		

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
D0398-SIP:03	Upgrade WWTPs to comply with ELVs specified in Schedule A	C	22/12/2015	Yes	Not Started	The improvement programme will be reviewed by Irish Water to assess the works required to comply with the licence condition on a prioritised basis	

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	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.

5.a Licence Specific Reports Summary Table

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	2015	No	
Priority Substances Assessment	Yes	2015	No	

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	
Is there a need to request/advise the EPA of any modifications to the existing WWDL?	No
List reason e.g. changes to monitoring requirements	
Have these processes commenced?	
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER	No

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

Signed: Date: 22/05/2019

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 ,

Eleanor Roche

Acting Head of Environmental Regulation.

7 APPENDIX

There are no Appendices included