

# Annual Environmental Report

2020



Kells

D0127-01

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# 1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2020 AER

This Annual Environmental Report has been prepared for D0127-01, Kells, 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.

The two Surface Aerators in Aeration Tank 1 and Aeration Tank 2 were removed in August 2020. They were replaced by a Fine Bubble Diffused Air Aeration system in both tanks.

## 1.2 TREATMENT SUMMARY

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

- KELLS (MEATH) WWTP - 2020 with a Plant Capacity PE of 8000, the treatment type is 2 - Secondary treatment.

## 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
<b>TPEFF2300D0127SW001</b>	KELLS (MEATH) WWTP - 2020	Treated	Compliant	N/A

## 1.4 LICENCE SPECIFIC REPORTING INCLUDED IN AER

Assessment / Report	Included in AER
<b>There are no Licence Specific Reports included in the AER.</b>	

## 2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

### 2.1 KELLS (MEATH) WWTP - 2020 - TREATED DISCHARGE

#### 2.1.1 INFLUENT MONITORING SUMMARY - KELLS (MEATH) 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
<b>BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l</b>	12	321.00	145.26
<b>COD-Cr mg/l</b>	12	547.00	365.14
<b>Suspended Solids mg/l</b>	12	278.00	180.84
<b>Total Nitrogen mg/l</b>	12	52.20	31.52
<b>Total Phosphorus (as P) mg/l</b>	12	10.30	5.01
<b>Hydraulic Capacity</b>	N/A	5852	2232

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'. The design of the wastewater treatment plant allows for peak values and therefore the peak loads have not impacted on compliance with Emission Limit Values.

## 2.1.2 EFFLUENT MONITORING SUMMARY - TPEFF2300D0127SW001

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included <sup>Note 1</sup>	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	26.45	Pass
Suspended Solids mg/l	35	87.5	N/A	12	N/A	N/A	6.17	Pass
BOD, 5 days with Inhibition (Carbonaceous) mg/l	25	50	N/A	12	N/A	N/A	5.93	Pass
pH pH units	6-9	6-9	N/A	12	N/A	N/A	7.52	Pass
Ammonia-Total (as N) mg/l	2	2.4	N/A	12	N/A	N/A	0.61	Pass
ortho-Phosphate (as P) - unspecified mg/l	1	1.2	N/A	12	N/A	N/A	0.2	Pass
Conductivity @25°C µS/cm	N/A	N/A	N/A	10	N/A	N/A	549.29	
Total Nitrogen mg/l	N/A	N/A	N/A	3	N/A	N/A	16.75	
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	12	N/A	N/A	0.32	

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):

Not applicable

### Significance of Results:

The WWTP is compliant with the ELV's set in the Wastewater Discharge Licence.

## 2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF2300D0127SW001

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	273697, 277272	RS07B011200	No	Yes	No	No	Moderate
Downstream	276189, 275984	RS07B011300	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 compliant with the ELV's set in the wastewater discharge licence.

The ambient monitoring results does 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 and Ortho-P 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. The status is Moderate u/s and d/s of the WWTP.

## 2.1.4 OPERATIONAL PERFORMANCE SUMMARY - KELLS (MEATH) WWTP - 2020

### 2.1.4.1 Treatment Efficiency Report - KELLS (MEATH) 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	126054	4254	97
COD	316870	18967	94
SS	156936	4428	97
TN	27356	10202	63
TP	4344	228	95

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



### 2.1.4.2 Treatment Capacity Report Summary - KELLS (MEATH) 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.

KELLS (MEATH) WWTP - 2020	
<b>Peak Hydraulic Capacity (m<sup>3</sup>/day) - As Constructed</b>	5400
<b>DWF to the Treatment Plant (m<sup>3</sup>/day)</b>	1800
<b>Current Hydraulic Loading - annual max (m<sup>3</sup>/day)</b>	5852
<b>Average Hydraulic loading to the Treatment Plant (m<sup>3</sup>/day)</b>	2232
<b>Organic Capacity (PE) - As Constructed</b>	8000
<b>Organic Capacity (PE) - Collected Load (peak week)<sup>Note1</sup></b>	7958
<b>Organic Capacity (PE) - Remaining</b>	42
<b>Will the capacity be exceeded in the next three years? (Yes/No)</b>	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 - KELLS (MEATH) 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)
<b>There is no Sludge and Other Input data for the Treatment Plant included in the AER.</b>							

## 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)
<b>Abatement Equipment offline</b>	Plant or equipment breakdown at WWTP	1	No	Yes
<b>Breach of ELV *</b>	Plant or equipment maintenance at WWTP	1	No	Yes
<b>Other</b>	Screen maintenance issue	1	No	Yes

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Spillage	Blocked Sewer	1	No	Yes
Spillage	Adverse Weather	1	No	Yes
Spillage	Blocked Sewer	1	No	Yes
Spillage	Blocked Sewer	1	No	Yes
Uncontrolled release	Blocked Sewer	1	No	Yes
Uncontrolled release	Blocked Sewer	1	No	Yes

\* This ELV breach relates to a process grab sample taken from the clarifier on 04.06.2020.

### 3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2020	9
Number of Incidents reported to the EPA via EDEN in 2020	9
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 <sup>3</sup> )	Monitoring Status
SW2	275200, 276291	Yes	Low	Meeting	Unknown	Unknown	Not Monitored
SW3	274667, 276079	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m <sup>3</sup> )?	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?	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
<b>D0127-SIP:01</b>	Upgrade to Phosphorus removal system	A	31/12/2014	Yes	Works Completed		
<b>D0127-SIP:02</b>	Upgrading of Storm Water Overflow SW3 to comply with the criteria outlined in the DoEHLG "Procedures and Criteria in relation to Storm Water Overflows, 1995"	A	31/12/2014	Yes	At Planning Stage	31/12/2022	

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
<b>There are no Improvements Programme for this Agglomeration.</b>				

### 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
<b>Drinking Water Abstraction Point Risk Assessment</b>	Yes	2014	No	N/A
<b>Priority Substances Assessment</b>	Yes	2014	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 2014.

### 5.2 PRIORITY SUBSTANCES ASSESSMENT

The Priority Substances Assessment Report has been included in the AER 2014.



## 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: 07/05/2021

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**

## Kells 2020 Ambient Monitoring Summary

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish National Grid Reference (Easting, Northing)	EPA Feature Coding Tool code	Receiving Waters Designation (Yes/No)			
			Bathing Water	Drinking Water	FWPM	Shellfish
Upstream Monitoring Point	273697, 277272	RS07B011200	No	Yes	No	No
Downstream Monitoring Point	276189, 275984	RS07B011300	No	Yes	No	No

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Current WFD Status	cBOD (Mean mg/l)	o-Phosphate (as P) (Mean mg/l)	Ammonia (as N) (mean mg/l)
Upstream Monitoring Point	Moderate	1.048	0.041	0.034
Downstream Monitoring Point	Moderate	0.991	0.044	0.072
<i>Difference</i>		<i>-0.058</i>	<i>0.003</i>	<i>0.039</i>
EQS		1.500	0.035	0.065
% of EQS		-3.837%	8.571%	59.538%

## Kells 2020 Ambient Monitoring Data

Location	Sample Date	pH pH units	BOD mg/ l	Total Nitrogen as N mg/l	Total Ammonia as N mg/l	Ortho-Phosphate as P mg/l	DO mg/l	DO % sat
u/s Kells WWTP	20-Feb-2020	7.78	< 1	2.61	0.074	0.072	13.1	106
u/s Kells WWTP	26-Mar-2020	8.14	< 1	2.99	0.029	0.028	10.7	93
u/s Kells WWTP	22/05/2020	8.27	2.02	2.87	0.034	0.042	7.9	78
u/s Kells WWTP	19/06/2020	8.38	<2	3.63	0.037	0.033	11.63	117.7
u/s Kells WWTP	03/07/2020	8.06	<2	0.05	0.044	0.05	9.7	101.3
u/s Kells WWTP	28/08/2020	8.03	1.39	1.57	0.046	0.036	8.03	97.7
u/s Kells WWTP	22-Sep-2020	7.81	< 1	2.58	0.022	0.037	10.17	98.8
u/s Kells WWTP	15/10/2020	7.93	<1	2.39	0.018	0.032	11.52	105.6
u/s Kells WWTP	03/11/2020	7.86	<1	2.02	0.019	0.04	11.41	97.8
u/s Kells WWTP	01/12/2020	7.86	<1	2.69	0.014	0.035	10.9	91
	<b>Mean</b>		<b>1.048</b>		<b>0.034</b>	<b>0.041</b>		
	<b>95%ile</b>		<b>1.747</b>		<b>0.061</b>	<b>0.062</b>		
d/s Kells WWTP	20-Feb-2020	7.87	< 1	2.63	0.072	0.069	12.9	103
d/s Kells WWTP	26-Mar-2020	8.04	< 1	2.75	0.032	0.039	10.2	90
d/s Kells WWTP	22/05/2020	8.23	<2	2.73	0.114	0.039	5	57
d/s Kells WWTP	19/06/2020	8.2	<2	3.41	0.291	0.041	7.16	74.1
d/s Kells WWTP	03/07/2020	8.22	<2	0.044	0.082	0.044	9.59	98.5
d/s Kells WWTP	28/08/2020	7.93	1.62	1.62	0.044	0.044	9.34	95.5
d/s Kells WWTP	22-Sep-2020	7.77	< 1	2.64	0.029	0.052	9.8	96.6
d/s Kells WWTP	15/10/2020	7.8	<1	2.21	0.019	0.042	10.94	95
d/s Kells WWTP	03/11/2020	7.86	<1	3.11	0.022	0.031	11.39	97.9
d/s Kells WWTP	01/12/2020	7.82	<1	2.94	0.019	0.034	10.2	87
	<b>Mean</b>		<b>0.991</b>		<b>0.072</b>	<b>0.044</b>		
	<b>95%ile</b>		<b>1.417</b>		<b>0.211</b>	<b>0.061</b>		

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.