

# Annual Environmental Report

2021



Tullow

D0091-01

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# 1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0091-01, Tullow, in Carlow 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.

Upgrade works to the treatment plant in Tullow commence in August 2021, EPS took over operation of the treatment plant and construction works commenced onsite with a scheduled completion timeframe of summer 2022

## 1.2 TREATMENT SUMMARY

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

- TULLOW WWTP with a Plant Capacity PE of 4000, 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
TPEFF0100D0091SW001	TULLOW WWTP	Treated	Non-Compliant	Ammonia-Total (as N) mg/l

## 1.4 LICENCE SPECIFIC REPORTING

Assessment / Report

**There are no Licence Specific Reports included in this AER.**

## 2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

### 2.1 TULLOW WWTP - TREATED DISCHARGE

#### 2.1.1 INFLUENT MONITORING SUMMARY - TULLOW 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
pH units	12	7.96	7.49
Total Phosphorus (as P) mg/l	12	12	4.81
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	263	159
Ammonia-Total (as N) mg/l	12	70	36
ortho-Phosphate (as P) - unspecified mg/l	12	7.49	3.10
COD-Cr mg/l	12	1310	499
Suspended Solids mg/l	12	764	223
Total Nitrogen mg/l	12	84	42
Hydraulic Capacity	N/A	2205	1256

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 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 - TPEFF0100D0091SW001

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 exceedances with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
<b>COD-Cr mg/l</b>	125	250	N/A	12	N/A	N/A	40	Pass
<b>Suspended Solids mg/l</b>	25	62.5	N/A	12	2	N/A	15	Pass
<b>BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l</b>	20	40	N/A	12	N/A	N/A	4.23	Pass
<b>pH units</b>	9.00	9.00	N/A	12	N/A	N/A	7.07	Pass
<b>Ammonia-Total (as N) mg/l</b>	2.00	2.40	N/A	12	3	3	1.49	Fail
<b>ortho-Phosphate (as P) - unspecified mg/l</b>	1.00	1.20	N/A	12	N/A	N/A	0.269	Pass
<b>Conductivity @20°C µS/cm</b>	N/A	N/A	N/A	12	N/A	N/A	648	

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 exceedances with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
<b>Total Phosphorus (as P) mg/l</b>	N/A	N/A	N/A	12	N/A	N/A	0.785	
<b>Temperature °C</b>	N/A	N/A	N/A	12	N/A	N/A	6.08	
<b>Total Nitrogen mg/l</b>	N/A	N/A	N/A	12	N/A	N/A	24	

Notes:

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

2 – For pH the WWDA specifies a range of pH6 - 9

### Cause of Exceedance(s):

**The treatment plant is currently overloaded**

### Significance of Results:

The effluent monitoring shows three ELV failures for Ammonia and two for TSS, the results are marginally above the set ELV's. The plant is overloaded and upgrade works are at construction phase.

## 2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF0100D0091SW001

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 Ecological Status
<b>Upstream</b>	284643, 172055	RS12S021350	No	No	Yes	No	Moderate
<b>Downstream</b>	284615, 172010	RS12S021360	No	No	Yes	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
<b>BOD - 5 days (Total) mg/l</b>	RS12S021350	1.20	RS12S021360	1.33	1.50	8.3
<b>Ammonia-Total (as N) mg/l</b>	RS12S021350	0.034	RS12S021360	0.031	0.065	-3.8
<b>ortho-Phosphate (as P) - unspecified mg/l</b>	RS12S021350	0.021	RS12S021360	0.028	0.035	18.5
<b>Dissolved Oxygen mg/l</b>	RS12S021350	11	RS12S021360	10	N/A	
<b>COD-Cr mg/l</b>	RS12S021350	16	RS12S021360	18	N/A	
<b>Total Nitrogen mg/l</b>	RS12S021350	3.03	RS12S021360	3.65	N/A	
<b>pH units</b>	RS12S021350	8.08	RS12S021360	8.07	N/A	
<b>Temperature °C</b>	RS12S021350	11	RS12S021360	12	N/A	

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Dissolved Oxygen % Saturation	RS12S021350	96	RS12S021360	95	N/A	
Total Phosphorus (as P) mg/l	RS12S021350	0.059	RS12S021360	0.067	N/A	
Suspended Solids mg/l	RS12S021350	9.63	RS12S021360	11	N/A	

### Significance of Results:

The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence for the following: Ammonia-Total (as N) mg/l.

The ambient monitoring results meet the required EQS. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

The discharge from the wastewater treatment plant does not have an observable impact on the water quality.

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 - TULLOW WWTP

### 2.1.4.1 Treatment Efficiency Report - TULLOW WWTP

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)
TP	2214	379	83

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
SS	102759	7481	93
cBOD	73207	2041	97
TN	19492	11396	42
COD	229489	19194	92

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

#### 2.1.4.2 Treatment Capacity Report Summary - TULLOW WWTP

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.

TULLOW WWTP	
Peak Hydraulic Capacity (m <sup>3</sup> /day) - As Constructed	3000
DWF to the Treatment Plant (m <sup>3</sup> /day)	1000
Current Hydraulic Loading - annual max (m <sup>3</sup> /day)	2205
Average Hydraulic loading to the Treatment Plant (m <sup>3</sup> /day)	1256
Organic Capacity (PE) - As Constructed	4000
Organic Capacity (PE) - Collected Load (peak week) <sup>Note1</sup>	6192
Organic Capacity (PE) - Remaining	0
Will the capacity be exceeded in the next three years? (Yes/No)	Yes

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 - TULLOW WWTP

'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)
Other	78	Volume (m3)	1	1	No	Yes	Yes

## 3 COMPLAINTS AND INCIDENTS

### 3.1 COMPLAINTS SUMMARY

A summary of complaints of an environmental nature related to the discharge(s) to water from the WWTP and network is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
There were no relevant environmental complaints in 2021.			

### 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)
Abatement Equipment offline	Plant or equipment breakdown at WWTP	1	No	Yes
Breach of ELV	WWTP upgrade required to meet ELV	1	Yes	No
Spillage	Shock load to the WWTP	1	No	Yes

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

### 3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2021	8
Number of Incidents reported to the EPA via EDEN in 2021	8
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 (chamber) where applicable	Irish Grid Ref. (outfall)	Included in Schedule of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2021 (No. of events)	Total volume discharged in 2021 (m3)	Monitoring Status
TBC	285429, 172826	No	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW002	285399, 172817	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored
SW003	285247, 172950	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored
SW004	285413, 172485	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored
SW005	284545, 173610	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW006	285149, 173089	Yes	Unknown	Not yet Assessed	Unknown	Unknown	Not Monitored

WWDL Name / Code for Storm Water Overflow (chamber) where applicable	Irish Grid Ref. (outfall)	Included in Schedule of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2021 (No. of events)	Total volume discharged in 2021 (m3)	Monitoring Status
SW007	287521, 173241	Yes	Medium	Meeting	Unknown	Unknown	Not Monitored
SW008	284618, 172050	Yes	Low	Meeting	Unknown	Unknown	Not Monitored

Any TBC SWO(s) were identified as part of the on-going National SWO programme and will be updated in subsequent AER(s) once the information is confirmed.

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m3)?	Unknown
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	Yes
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 a 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>D0091-SIP:01</b>	Install chemical dosing for Phosphorous	C	31/12/2014	Yes	Works Completed		
<b>D0091-SIP:02</b>	Sufficient storage for incoming sludge	C	31/12/2014	Yes	Work ongoing on-site	2023	
<b>D0091-SIP:03</b>	Sufficient stormwater storage at inlet	C	31/12/2014	Yes	Work ongoing on-site	2023	
<b>D0091-SIP:04</b>	Upgrade of pipe network	C	31/12/2014	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

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>D0091-SIP:05</b>	Upgrade of stormwater overflows	C	31/12/2014	Yes	Work ongoing on-site	2023	

A summary of the status of any other improvements identified by under Condition 5 assessments - is included below.

#### 4.2.2 IMPROVEMENT PROGRAMME SUMMARY

Improvement Identifier	Improvement Description / or any Operational Improvements	Improvement Source	Expected Completion Date	Comments
<b>No additional improvements planned at this time.</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 Tables 4.2.1 and 4.2.2.

## 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 a 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
<b>Pearl Mussel Report</b>	Yes	2015	No
<b>Priority Substances Assessment</b>	Yes	2014	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
Has a Technical amendment/licence review application been submitted to the Agency by IW?	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	Yes
List reason e.g. changes to monitoring requirements	Ambient monitoring location change
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:

Signed:    Date: 28/04/2022

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**

There are no Appendices included