Annual Environmental Report

2024

Kilmuckridge

D0161-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2024 AER

This Annual Environmental Report has been prepared for D0161-01, Kilmuckridge, 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 ANNUAL STATEMENT OF MEASURES

A summary of any improvements undertaken is provided where applicable.

There were no major capital or operational changes undertaken.

1.2 TREATMENT SUMMARY

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

- Kilmuckridge WWTP with a Plant Capacity PE of 2000, 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
TPEFF3300D0161SW001	Kilmuckridge WWTP	Treated	Non-Compliant	Ammonia-Total (as N) mg/l ortho-Phosphate (as P) - unspecified mg/l

1.4 LICENCE SPECIFIC REPORTING

Assessment / Report
Small Stream Risk Score Assessment

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

2.1 KILMUCKRIDGE WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - KILMUCKRIDGE 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 Nitrogen mg/l	12	96	58
Total Phosphorus (as P) mg/l	12	11	6.97
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	367	207
COD-Cr mg/l	12	971	556
Suspended Solids mg/l	12	286	134
Hydraulic Capacity	N/A	1001	431

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’. 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 - TPEFF3300D0161SW001

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)
COD-Cr mg/l	125	250	N/A	12	N/A	N/A	25	Pass
Suspended Solids mg/l	35	87.5	N/A	12	N/A	N/A	7.54	Pass
Temperature °C	25	25	N/A	12	N/A	N/A	8.37	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	N/A	12	N/A	N/A	3.02	Pass
pH pH units	9	9	N/A	12	N/A	N/A	7.62	Pass
Ammonia-Total (as N) mg/l	2	2.4	N/A	12	4	4	3.67	Fail
ortho-Phosphate (as P) - unspecified mg/l	0.7	0.84	N/A	12	2	1	0.363	Fail
Conductivity @20°C µS/cm	N/A	N/A	N/A	12	N/A	N/A	729	
Nitrite (as N) mg/l	N/A	N/A	N/A	12	N/A	N/A	0.190	
Nitrate (as N) mg/l	N/A	N/A	N/A	12	N/A	N/A	12	

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)
Visual Inspection Descriptive	N/A	N/A	N/A	12	N/A	N/A	N/A	
Total Nitrogen mg/l	N/A	N/A	N/A	12	N/A	N/A	18	
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	12	N/A	N/A	0.659	

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 pH 6 - 9

Cause of Exceedance(s):

Refer to the incident section of this report.

Significance of Results:

The WWTP is not in compliance with the ELV, as set by the WWDL. The impact on receiving waters is assessed in section 2.

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF3300D0161SW001

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
Upstream	316559, 141532	RS11L010220	No	No	No	No	Moderate
Downstream	317187, 141086	RS11L010310	No	No	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 (Total) mg/l	RS11L010220	3.00	RS11L010310	3.67	1.50	44.4
Ammonia-Total (as N) mg/l	RS11L010220	0.325	RS11L010310	0.300	0.065	-38.4
ortho-Phosphate (as P) - unspecified mg/l	RS11L010220	0.080	RS11L010310	0.193	0.035	323.8
Temperature °C	RS11L010220	11	RS11L010310	11	N/A	
pH pH units	RS11L010220	7.77	RS11L010310	7.73	N/A	
Total Nitrogen mg/l	RS11L010220	3.77	RS11L010310	4.63	N/A	
Dissolved Oxygen mg/l	RS11L010220	8.53	RS11L010310	8.57	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, ortho-Phosphate (as P) - unspecified mg/l.

The ambient monitoring results do not meet the required EQS at the upstream and the downstream monitoring locations. 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 BOD, dissolved Oxygen, ortho-Phosphate, temperature, total nitrogen, 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 - KILMUCKRIDGE WWTP

2.1.4.1 Treatment Efficiency Report - Kilmuckridge 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)
cBOD	23307	341	99
SS	15064	851	94
TP	786	74	91
COD	62719	2773	96
TN	6513	2085	68

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

2.1.4.2 Treatment Capacity Report Summary - Kilmuckridge 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.

Kilmuckridge WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	2700
DWF to the Treatment Plant (m^3/day)	450
Current Hydraulic Loading - annual max (m^3/day)	1001
Average Hydraulic loading to the Treatment Plant (m^3/day)	431
Organic Capacity (PE) - As Constructed	2000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	1519
Organic Capacity (PE) - Remaining	481
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 - KILMUCKRIDGE 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)
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 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 2024.			

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 Uisce Éireann 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	Recurring (Y/N)	Closed (Y/N)
Breach of ELV	WWTP biological sludge issue	No	Yes
Uncontrolled release	WWTP operating above capacity	No	Yes
Breach of ELV	Plant or equipment breakdown at WWTP	No	Yes

Incident Type	Cause	Recurring (Y/N)	Closed (Y/N)
Breach of ELV	Plant or equipment breakdown at WWTP	No	No
Breach of ELV	Inadequate Operational Procedures/Training	No	Yes

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2024	5
Number of Incidents reported to the EPA via EDEN in 2024	5
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 2024 (No. of events)	Total volume discharged in 2024 (m3)	Monitoring Status
TBC	316761, 141244	Yes	Low Significance	Meeting Criteria	Unknown	Unknown	Not Monitored

The contents presented in this table include the most up to date information available at the time of writing. 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 wastewater discharge by metered SWOs during the year (m3)?	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 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
D0161-SIP:01	Upgrade of WWTP to achieve limit for Orthophosphate by 31/12/13	C	31/12/2014	Yes	Works Completed		

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
No additional improvements planned at this time.				

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	Included in this AER
D0161-01-Priority Substances Assessment	Yes	No
D0161-01-Small Stream Risk Score Assessment	Yes	Yes

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?	N/A
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	N/A
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	No

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

Signed: Date: 16/05/2025

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

Eleanor Roche

Head of Environmental Regulation.

7 APPENDIX

Appendix
Appendix 7.1 - Small Stream Risk Score Assessment

SSRS Compliance Monitoring: *Kilmuckridge* Waste Water Treatment Plant 2024

Report to Uisce Éireann

Limnos Consultancy, January 2025

Contents

Kilmuckridge WWTP

Introduction

Small Streams Risk Score (SSRS) assessments on the Litter More River upstream and downstream of the Kilmuckridge waste water treatment plant (WWTP) are outlined in this report. The assessments were made 4 October 2024. Limnos Consultancy was contracted by Irish Water to undertake the surveys.

Methodology

Small Streams Risk Score (SSRS)

Samples were taken using an ISO compliant kick-sampling method compatible with the Environmental Protection Agency (EPA) Standard Operating Procedure for sampling aquatic macroinvertebrates. Samples were taken upstream and downstream of the discharge from the WWTP. SSRS results were assigned based on the macroinvertebrate fauna.

The author was the main initiator of the SSRS system developed by the Western River Basin District and the EPA under his supervision in 2005–2006 (McGarrigle 2014). He has undertaken SSRS training of local authority and other professional staff at the Local Government Water Services Training Centres around the country for over 100 personnel.

The SSRS was calculated based on selected sub-groups of the macroinvertebrates recorded. The score is calculated based on the number of taxa and their relative abundance in four main invertebrate groups as follows:

Group 1: Ephemeroptera (excluding *Baetis rhodani*)
Group 2: Plecoptera
Group 3: Trichoptera
Group 4: GOlD (Gastropoda, Oligochaeta, Diptera)
Group 5: *Asellus*

The first three groups above, mayflies, stoneflies, and caddis flies, are regarded as pollution-sensitive whereas gastropods, oligochaetes, dipterans and *Asellus* are relatively pollution-tolerant. The maximum score that can be achieved is 11.2 and threshold scores deciding the degree of risk of not being at good ecological status are as follows:

> 7.25 Probably not at risk
- > 6.5 to 7.25 Indeterminate
< 6.5 Stream may be at risk.

Samples were taken with a standard 1 mm mesh pond net. A 3-minute kick sample was combined with a 1-minute stonewash. Samples were placed on a white tray and, once cleaned of debris such as leaves and twigs and excessive sand or gravel by decanting and hand picking, the sample was examined carefully to identify the macroinvertebrates. At least 25 minutes were spent identifying and assigning each taxon found to a relative abundance category. Table 1 gives the definition of the relative abundance terms Few, Common, Numerous, Dominant and Excessive. The numeric code is used in the results tables below.

Table 1. Relative abundance table.

Abundance	Number of Individual Specimens	Relative abundance numeric code
Few:	1 to 5 individuals	1
Common:	6 to 20	2
Numerous:	21–50	3
Dominant:	51 to 100	4
Excessive:	>100	5

Physico-Chemical Measurements

Physico-chemical measurements were also made for dissolved oxygen, temperature and conductivity using a HACH HQ40d meter with appropriate compatible probes. Probes were calibrated before use.

Location of Sites Sampled

Figure 1 maps the sampling sites and Table 2 gives the details of the locations sampled.

Figure 1. Location of upstream and downstream monitoring sites for Kilmuckridge WWTP. The river flows South.

Table 2. Location of sites sampled upstream and downstream of Kilmuckridge WWTP.

Location	Kilmuckridge WWTP Upstream	Kilmuckridge WWTP Downstream
EPA Code	RS11L010220	RS11L010310
Station	Bridge in Kilmuckridge	100m d/s WWTP discharge
River	Litter More	Litter More
Easting	316560	316778
Northing	141532	141242

Results

Site Photographs

Figure 2 shows photographs taken when sampling at the sites upstream and downstream of the Kilmuckridge WWTP.

	
U/S Kilmuckridge WWTP looking downstream	U/S Kilmuckridge WWTP looking upstream
	
D/S Kilmuckridge WWTP looking downstream	D/S Kilmuckridge WWTP looking upstream

Figure 2. Upstream (U/S) and downstream (D/S) of Kilmuckridge WWTP.

Macroinvertebrates - SSRS

Table 3 gives the recorded macroinvertebrate taxa for the standard kick samples taken at these sites. The taxa are ordered from top to bottom by their SSRS group, noting that not all taxa belong to an SSRS group. In this case no taxa belonging to pollution-sensitive groups – Group 1, 2 (Ephemeroptera, Plecoptera) – were found.

Table 3. Relative abundances of macroinvertebrates recorded upstream and downstream of Kilmuckridge WWTP discharge point.

			Upstream Kilmuckridge WWTP	**Downstream Kilmuckridge WWTP**
			Litter More	**Litter More**
			11L010220	**11L010310**
			Br in Kilmuckridge	**Just d/s Kilmuckridge WWTP discharge**
			04/10/2024	**04/10/2024**
SSRS Group		**Taxon**		
3	Trich	Limnephilidae	-	Few
4	GOlD	Ancylidae	Few	-
4	GOlD	Chironomidae	-	Common
4	GOlD	*Chironomus*	Numerous	-
4	GOlD	*Lymnaea peregra*	Few	Few
4	GOlD	Simuliidae	-	Excessive
4	GOlD	Tubificidae	Numerous	Few
5	Asellus	*Asellus aquaticus*	Dominant	Common
	n/a	*Baetis rhodani*	-	Few
	n/a	*Erpobdella octoculata*	-	Few
	n/a	*Gammarus*	-	Numerous
	n/a	*Glossiphonia complanata*	Few	-
	n/a	Planaria	-	Few
		Number Taxa	**6**	**10**
		SSRS	**0**	**1.6**
		Q-Value	**Q1-2**	**Q2-3**

At the upstream site six taxa were recorded – down from seven in 2023. Once again it was dominated by *Asellus* with *Chironomus* and Tubificidae numerous. This is a decline in quality at the upstream site compared with December 2023. The SSRS was zero due to the lack of Groups 1, 2 and 3 at the upper site and the domination of *Asellus* and GOlD taxa. A Q-Value of Q1-2 was assigned putting the site at Bad Ecological Status. This result and the 2023 result indicate some very serious pollution upstream of Kilmuckridge.

The downstream site below the WWTP had 10 taxa – up from seven in 2023. The cased caddis, Limnephilidae in low numbers, was the only sensitive type present. The filter-feeding blackfly larvae Simuliidae was present in excessive numbers with tolerant species *Asellus aquaticus* also common. The SSRS value of 1.6 puts the site at risk and a Q-Value Q2-3 was assigned.

Physico-Chemical Results

Table 4 gives the physico-chemical measurements made on the day of sampling. The daytime oxygen saturations of 79.2 and 83.6% give some cause for concern. The conductivity is high but probably related to the catchment geology resulting in hard water.

Table 4. Physico-chemical results for Kilmuckridge River, 4 October 2024.

Station	Dissolved Oxygen (DO) % Saturation	DO mg/l	Temp. °C	Conductivity µS/cm	pH
Upstream Kilmuckridge WWTP	79.2	8.19	13.70	617	7.70
Downstream Kilmuckridge WWTP	83.6	8.54	14.50	637	7.64

Summary

The Litter More River was in even poorer condition at the upstream site than it was in December 2023. The pollution source may be agricultural or industrial – investigative assessment is needed to source the cause. The downstream site was in poor condition but slightly better than the upstream site.

Reference

McGarrigle, M. 2014. "Assessment of Small Water Bodies in Ireland." *Biology and Environment* 114B(3). doi: 10.3318/BIOE.2014.15.