

Annual Environmental Report

2021



Mallow

D0052-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

- 1.1 ANNUAL STATEMENT OF MEASURES
- 1.2 TREATMENT SUMMARY
- 1.3 ELV OVERVIEW
- 1.4 LICENSE SPECIFIC REPORT INCLUDED IN AER

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

- 2.1 MALLOW WWTP - TREATED DISCHARGE
 - 2.1.1 INFLUENT SUMMARY - MALLOW WWTP
 - 2.1.2 EFFLUENT MONITORING SUMMARY - MALLOW WWTP -
 - 2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE -
 - 2.1.4 OPERATIONAL REPORTS SUMMARY FOR MALLOW WWTP
 - 2.1.5 SLUDGE/OTHER INPUTS TO MALLOW WWTP

3 COMPLAINTS AND INCIDENTS

- 3.1 COMPLAINTS SUMMARY
- 3.2 REPORTED INCIDENTS SUMMARY
 - 3.2.1 SUMMARY OF INCIDENTS
 - 3.2.2 SUMMARY OF OVERALL INCIDENTS

4 INFRASTRUCTURAL ASSESSMENT AND PROGRAMME OF IMPROVEMENTS

- 4.1 STORM WATER OVERFLOW IDENTIFICATION AND INSPECTION REPORT
 - 4.1.1 SWO IDENTIFICATION AND INSPECTION SUMMARY REPORT
- 4.2 REPORT ON PROGRESS MADE AND PROPOSALS BEING DEVELOPED TO MEET THE IMPROVEMENT PROGRAMME REQUIREMENTS
 - 4.2.1 SPECIFIED IMPROVEMENT PROGRAMME SUMMARY
 - 4.2.2 IMPROVEMENT PROGRAMME SUMMARY
 - 4.2.3 SEWER INTEGRITY RISK ASSESSMENT

5 LICENCE SPECIFIC REPORTS

- 5.1 PEARL MUSSEL REPORT
- 5.2 PRIORITY SUBSTANCES ASSESSMENT

6 CERTIFICATION AND SIGN OFF

- 6.1 SUMMARY OF AER CONTENTS

7 APPENDIX

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0052-01, Mallow, in Cork 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 Mallow Sewerage Scheme is included on Irish Water's current Capital Investment Plan. The Networks Contract has been awarded to Ward & Burke and includes for the removal of 8CSO's and reduced discharges to the River Blackwater. The works entail laying of 5.5km of new pipework to cater for the increased network demand currently and into the future (10 years/20% Headroom Allowance). Works commenced on site in April 2021 and are ongoing with an estimated completion date of December 2022. DAP Stage 3 for the Mallow Agglomeration was completed in 2017. The WWTP and Pump Station is being advanced separately through the ECI process and is being undertaken by Glan Agua. The WWTP & Pump Station upgrade will cater for the increased flow from the network and will include a new Stormwater Holding Tank (not in place previously), new Pump Station, rising main and upgrades to the WWTP (increasing to a design PE of 22,000). The contract was awarded in May 2021 and works are ongoing with an estimated completion date of December 2023.

1.2 TREATMENT SUMMARY

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

- Mallow WWTP with a Plant Capacity PE of 10500, 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
TPEFF0500D0052SW001	Mallow 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 MALLOW WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - MALLOW 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	12	4.95	3.16
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	222	146
Total Nitrogen mg/l	12	55	29
COD-Cr mg/l	12	576	402
Hydraulic Capacity	N/A	11631	5449

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 - TPEFF0500D0052SW001

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	24	Pass
Suspended Solids mg/l	25	62.5	N/A	12	1	N/A	12	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	N/A	12	N/A	N/A	3.59	Pass
pH units	9.00	9.00	N/A	12	N/A	N/A	7.68	Pass
Ammonia-Total (as N) mg/l	3.00	3.60	N/A	12	3	2	1.79	Fail
Total Phosphorus (as P) mg/l	2.00	2.40	N/A	12	N/A	N/A	0.204	Pass
ortho-Phosphate (as P) - unspecified mg/l	1.50	1.80	N/A	12	N/A	N/A	0.099	Pass
Total Nitrogen mg/l	N/A	N/A	N/A	12	N/A	N/A	8.45	
Tributyltin µg/l	N/A	N/A	N/A	1	N/A	N/A	N/A	

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):

The existing WWTP is not designed for Ammonia Removal. A Major upgrade of Mallow WWTP commenced in May 2021 and is ongoing.

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 TPEFF0500D0052SW001

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	157482, 98165	RS18B021600	No	No	Yes	No	Unassigned
Downstream	158083, 98036	RS18B021720	No	No	Yes	No	Unassigned

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	RS18B021600	1.25	RS18B021720	2.15	1.50	60

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Ammonia-Total (as N) mg/l	RS18B021600	0.045	RS18B021720	0.029	0.065	-24.9
ortho-Phosphate (as P) - unspecified mg/l	RS18B021600	0.025	RS18B021720	N/A	0.035	
Conductivity @20°C µS/cm	RS18B021600	187	RS18B021720	217	N/A	
Dissolved Oxygen % Saturation	RS18B021600	101	RS18B021720	N/A	N/A	
Nitrite (as N) mg/l	RS18B021600	0.006	RS18B021720	0.009	N/A	
Total Nitrogen mg/l	RS18B021600	2.35	RS18B021720	2.28	N/A	
Dissolved Oxygen % O2	RS18B021600	96	RS18B021720	98	N/A	
pH units	RS18B021600	7.73	RS18B021720	7.82	N/A	
Temperature °C	RS18B021600	11	RS18B021720	11	N/A	
Orthophosphate (as P) - filtered mg/l	RS18B021600	0.026	RS18B021720	0.030	N/A	
Dissolved Oxygen mg/l	RS18B021600	11	RS18B021720	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 do not meet the required EQS at the downstream monitoring location. 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, 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: Diffuse Urban Point Sources, SWO's and Industry Discharges

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 - MALLOW WWTP

2.1.4.1 Treatment Efficiency Report - Mallow 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)
SS	N/A	28829	N/A
COD	883265	58408	93
cBOD	321901	8718	97
TP	6940	495	93
TN	64153	20527	68

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

2.1.4.2 Treatment Capacity Report Summary - Mallow 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.

Mallow WWTP	
Peak Hydraulic Capacity (m ³ /day) - As Constructed	13125
DWF to the Treatment Plant (m ³ /day)	5250
Current Hydraulic Loading - annual max (m ³ /day)	11631
Average Hydraulic loading to the Treatment Plant (m ³ /day)	5449
Organic Capacity (PE) - As Constructed	10500
Organic Capacity (PE) - Collected Load (peak week) ^{Note¹}	14468
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 - MALLOW 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)
Domestic /Septic Tank Sludge	28	Volume (m3)	4925	0.09	Yes	Yes	No
Domestic /Septic Tank Sludge	44	Volume (m3)	469	0.01	Yes	Yes	No

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)
Domestic /Septic Tank Sludge	148.7	Volume (m3)	1586	0.03	Yes	Yes	No
Domestic /Septic Tank Sludge	411.8	Volume (m3)	4993	0.08	Yes	Yes	No
Industrial / Commercial Sludge	807	Volume (m3)	8608	0.16	No	No	No

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)
Breach of ELV	WWTP not designed for N removal	1	Yes	Yes
Fire	Plant or equipment breakdown at WWTP	1	No	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2021	2
Number of Incidents reported to the EPA via EDEN in 2021	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 (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	156147, 98071	No	Medium	Not Meeting	Unknown	Unknown	Monitored
TBC	154984, 97847	No	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW002	156235, 97966	Yes	Medium	Not Meeting	138	512093	Monitored
SW003	156245, 97642	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW004	156455, 99655	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW005	155067, 97871	Yes	Medium	Not Meeting	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
SW006	155491, 98920	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW007	156218, 97978	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW008	155530, 98572	Yes	Medium	Not Meeting	Unknown	Unknown	Not Monitored
SW009	156028, 98037	Yes	Medium	Not 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?	No
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
D0052-SIP:01	Installation of overflow holding tank	C	01/06/2016	Yes	Work ongoing on-site	2023	
D0052-SIP:02	Sewerage network upgrade	C	01/06/2016	Yes	Work ongoing on-site	2023	
D0052-SIP:03	SW002 to be discontinued	C	01/06/2016	Yes	Work ongoing on-site	2023	
D0052-SIP:04	SW003 to be discontinued	C	01/06/2016	Yes	Work ongoing on-site	2023	
D0052-SIP:05	SW004 to be discontinued	C	01/06/2016	Yes	Work ongoing on-site	2023	

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
D0052-SIP:06	SW005 to be discontinued	C	01/06/2016	Yes	Work ongoing on-site	2023	
D0052-SIP:07	SW006 to be discontinued	C	01/06/2016	Yes	Work ongoing on-site	2023	
D0052-SIP:08	SW007 to be discontinued	C	01/06/2016	Yes	Work ongoing on-site	2023	
D0052-SIP:09	SW008 to be discontinued	C	01/06/2016	Yes	Work ongoing on-site	2023	
D0052-SIP:10	SW009 to be discontinued	C	01/06/2016	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
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	Year included in AER	Included in this AER
Pearl Mussel Report	Yes	2014	No
Priority Substances Assessment	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	No
List reason e.g. changes to monitoring requirements	N/A
Have these processes commenced?	No
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: 25/05/2022

This AER has been produced by Irish Water's Environmental Information Management 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