Summary Report of the investigation into Fish Mortalities in the Munster Blackwater August-September 2025

SCOPE

This document provides a summary of investigations into the fish kill on the Munster Blackwater by the primary agencies during August and September 2025: (Inland Fisheries Ireland (IFI), Environmental Protection Agency (EPA) and Cork County Council (CCC).

Inland Fisheries Ireland

Inland Fisheries Ireland has the statutory responsibility for the protection, development and management of Ireland's 74,000 km of rivers, streams and lakes as well as coastal waters to the 12-mile jurisdictional limit. IFI's environmental role is limited to the protection of waters from pollution and the prevention of injury or damage to spawning beds as set out in section 171 to 173 of the Fisheries (Consolidation) Act 1959 and as authorised persons under the Local Government (Water Pollution) Act 1977. IFI prosecutes offenders under these Acts when the source of a deleterious discharge is identified and linked directly to the party responsible,

Environmental Protection Agency

The EPA is an independent statutory body established under the Environmental Protection Agency Act, 1992. The EPA's purpose is to protect, improve and restore our environment through regulation, scientific evidence and knowledge, and as a voice for the environment through leadership, advocacy, collaboration and partnership to deliver better environmental outcomes.

The EPA's primary role in the investigation into the fish mortalities on the Blackwater was to assess whether EPA-regulated sites within the region of interest could have been responsible through their water discharge activities, and to take action against any operator found to be at fault.

Cork County Council

Cork County council Environment Directorate monitors, analyses and reports on air, water, wastewater and waste management services in County Cork, in accordance with EU and national legislation. It also provides information on environmental matters to the public and to other County Council directorates.

Its mission is to promote and protect a high-quality natural environment, protect human health, secure the integration of environmental considerations into economic and sectoral policies and to promote best practice in the use of environmentally sustainable energy.

INTRODUCTION

Inland Fisheries Ireland (IFI) Officers investigated reports of dead and ailing fish in the Munster Blackwater on Monday 11th August at locations upstream of Mallow, Co. Cork. It was established that the first sightings of dead fish in the river were on Saturday 9th August. Affected fish were observed from Banteer (approx. 22km upstream of Mallow) to Castletownroche (approx. 17km downstream of Mallow). Dead and ailing fish were also found on the Cyda River, (c.1.5km upstream of Mallow). On initial observation fish presented with marks/lesions, damage to the eyes and gill damage. Fish mortalities were observed by IFI until 22nd August (1no trout at Bridgetown Abbey, Awbeg) and marked/ailing fish until 5th September (Clyda Bridge).

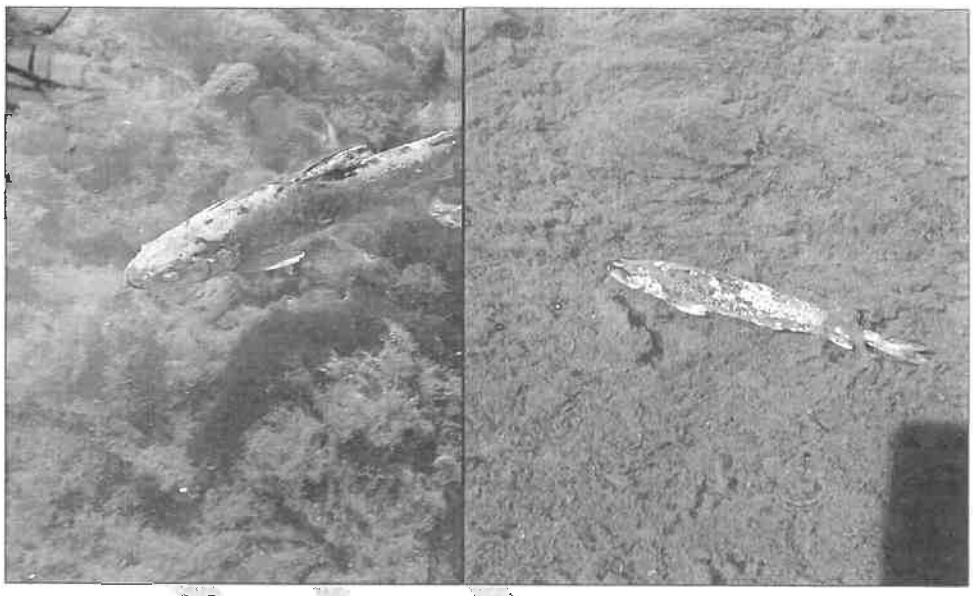

Plate 1 & 2: Heavily marked fish, 11th August, Mallow (photographs by IFI)

IFI officers contacted relevant authorities on the 11th August while on route to Mallow. All agencies worked closely together to share information and expertise as the investigation progressed.

Agencies participating in the investigation of the fish kill:

- Inland Fisheries Ireland (IFI) (LEAD), Environmental protection Agency (EPA), Cork County Council (CCC), Marine Institute (MI).

Additional agencies or Departments attending the Joint Interagency Working Group:

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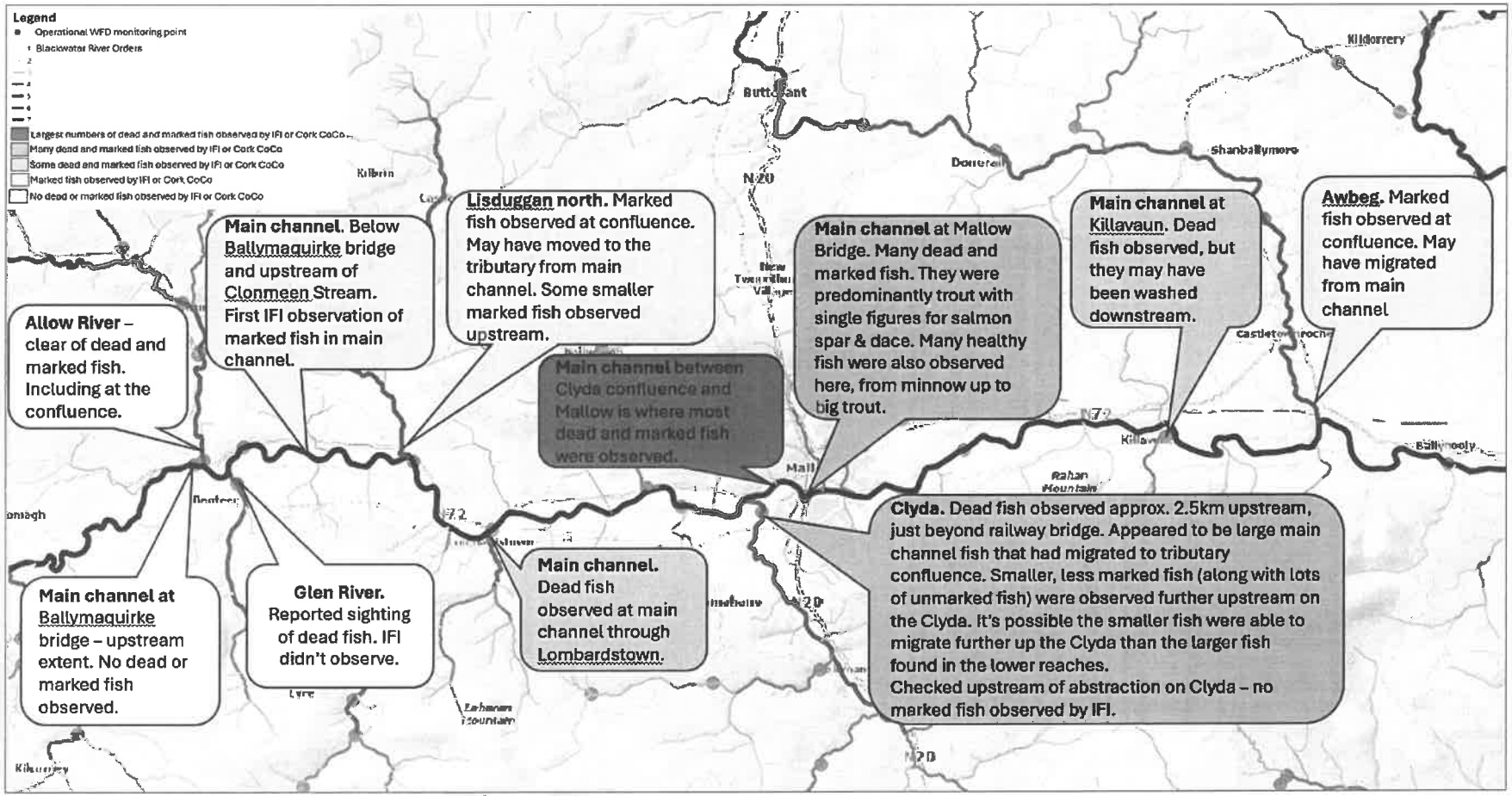


Figure 1: Area affected by fish kill. (Map courtesy of LAWPR

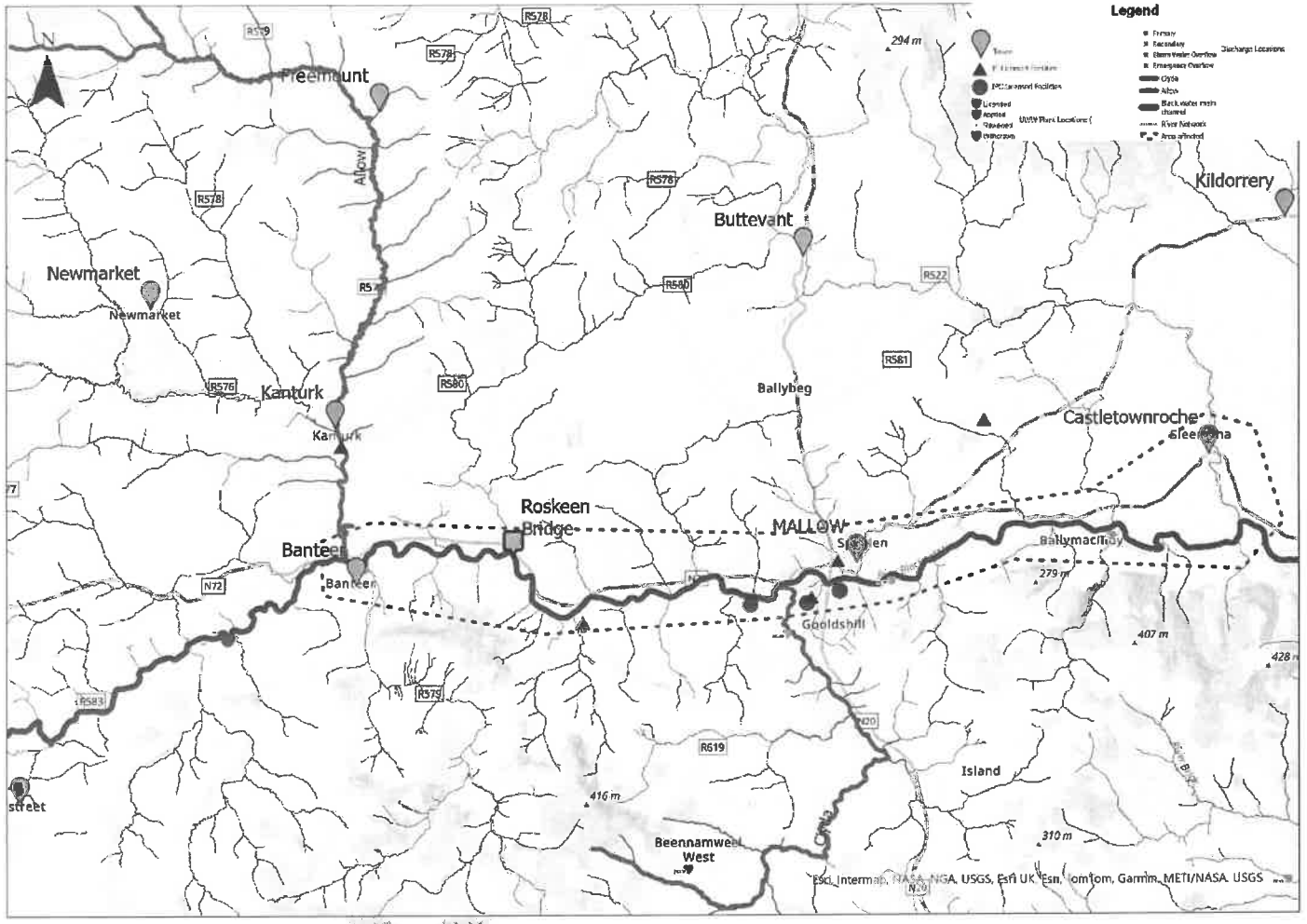


Figure 2: Munster Blackwater River channel where mortalities and marked/ailing fish were observed, between Banteer (upstream) and Castletownroche (downstream). Red dashed line indicates extent of affected area. (Map by IFI)

1. INLAND FISHERIES IRELAND INVESTIGATION

IFI's investigations 11th August to 17th September:

- IFI carried out inspections of the affected stretch of river to assess the extent, scale and source of the fish kill.
- IFI consulted with UÉ, EPA, CCC within the catchment throughout 11th and 12th August.
- IFI contracted MI Fish Health Unit (competent authority for fish health in Ireland) on 11th August to undertake diagnostic pathology sampling of fish. MI attended the site on 14th August at Mallow.
- IFI carried out 198 habitat inspections at 47 locations up to 8th September. (Figure 3).
- IFI carried out 52 repeat habitat inspections between 9th-14th September however conditions were unsuitable for useful observation due to continued rainfall.
- IFI carried out macroinvertebrate sampling at 10 sites.
- IFI provided fish samples to Eurofins Environmental Ltd on 26th and 29th August for residue sampling - broad suite of analysis for 900 chemicals (including pesticides) and heavy metals to be conducted
- IFI investigated a report of suspicious activity at Roskeen Bridge with An Garda Síochána on August 28th. Neither IFI nor AGS found evidence of criminal activity.
- IFI carried out electrofishing surveys at Roskeen bridge on 29th August at Roskeen bridge (Plate 3 and Figure 2).
- IFI is engaging with affected stakeholders

1.1 Bacterial, virology, parasite and pathology results

A total of 10 moribund fish were collected from the Munster Blackwater by IFI and the MI for examination on the 14th August. On examination eyes and gills of each fish were abnormal on affected fish. No significant bacterial fish pathogens or viruses were isolated from fish samples. No evidence of the fish parasite Gyrodactylus salaris were found in the fish examined. No evidence of systemic disease was observed in organs. Gill pathology was consistent with exposure to some form of environmental insult or water borne irritant.

See IFI Website:

https://www.fisheriesireland.ie/news/media-releases/results-and-note-re-residue-sampling-tests

1.2 Residual fish tissue results

Following the fish kill on the Munster Blackwater 29 brown trout were sampled on the 26th and 29th of August from the River Clyda confluence with the Munster Blackwater (is ~1.5km upstream of Mallow) and sent to Eurofins Environment Testing Ireland Ltd. for residual tissue analysis. The fish sampled via electrofishing, were adult brown trout. All individuals were observed to be actively swimming. Approximately 50% of individuals sampled presented with corneal oedema with opacity and swelling of affected tissue. Eurofins Environment Testing Ireland Ltd. arranged for testing in a specialist laboratory in Germany.

This laboratory testing involved measuring chemical residues in fish tissue to assess any potential environmental contamination. Tissue from each fish was screened for 900 chemicals including pesticides

and heavy metals. Analysis determined if residue levels of listed chemicals were within acceptable standards. Preliminary results did not indicate presence any of the listed chemicals (including pesticides) above the limit of quantification (LOQ) apart from three heavy metals, i.e. Mercury (Hg), Arsenic (As), and Aluminium (Al). One fish (Clyda 4A) had an Arsenic value above LoQ of 0.16mg/kg. Al ranged from <0.5 to 3.6mg/Kg of fish tissue and Hg ranged from 0.045 to 0.17mg/Kg.

It should be noted that mercury (Hg), aluminium (Al) are common in many Irish surface waters while arsenic (As) is naturally occurring in areas with underlying sandstone. Their concentration in surface waters is highly variable and are also increased by human activities.

Comment on Mercury concentrations and results of fish tissue analysis (EPA)

The national WFD monitoring programme provides a comprehensive and long-term picture of the concentrations of chemical substances in water. Substances, such as mercury, that persist in the environment many years after their use has ceased, are known as ubiquitous substances. Mercury is known to readily bioaccumulate and persist in fish. The Surface Water Regulations (S.I. No. 77/2019) sets out an environmental quality standard of 0.02 mg / kg for mercury in fish.

Samples taken from the national WFD monitoring programme between 2019-2024 indicate that 89% of rivers and lakes, where fish have been tested, had mercury concentrations exceeding the standard. 24% of the rivers and lakes, where fish have been tested, had concentrations greater than 0.2 mg / kg (with a maximum reported concentration 0.41 mg / kg).

Following the fish kill on the River Blackwater in August 2025, the reported mercury concentrations in each fish tested by Inland Fisheries Ireland was above the mercury standard (with a maximum reported concentration 0.17 mg / kg). The concentrations were comparable to those reported in WFD monitoring programme data and there is no evidence to indicate that mercury was the pollutant that led to the fish kill on the River Blackwater in August 2025.

Comment on Aluminium concentrations in surface waters in Catchment (EPA)

Water chemistry sample analysis from 12th & 13th August, provided by Cork County Council for the River Blackwater in Mallow, had a range of water quality parameter concentrations that were indicative of good water quality overall. The River Blackwater sample had an Aluminium concentration of 141 µg/l which was slightly elevated. Cork County Council indicated that the sample was unfiltered and therefore may overestimate the dissolved Aluminium concentration i.e., the sample may have contained particulate matter.

Historical water chemistry for the River Blackwater was examined and Aluminium concentrations for filtered samples at Killavullen Bridge (downstream of Mallow) in 2024 had an average concentration of 56 µg/l, with a maximum concentration of 171 µg/l. Since 2016, 13% of the filtered samples taken at Killavullen Bridge have had an Aluminium concentration greater than 100 µg/l. Upstream of Mallow, historical 2016-2018 filtered samples on the River Blackwater, taken at the Mallow Railway Bridge, Ballymaquirk Bridge and Colthurst Bridge also had Aluminium concentrations greater than 100 µg/l, with respective maximum concentrations of 130 µg/l, 320 µg/l and 610 µg/l.

Overall, the Aluminium concentration of 141 µg/l in the unfiltered sample taken by Cork County Council on 12 / 13 August is comparable to historic concentrations in the River Blackwater and is not indicative of an issue with Aluminium concentrations in the river.

Comment on Arsenic

A single sample - "Clyda 3A –26/08/2025) reported a level of arsenic at 0.16mg/kg, LOQ 0.1. Data from the EPA (2016-2024) indicates arsenic concentrations for all water samples are <LOQ, i.e., <0.1 ug/l.

Table 1: Eurofins Environment Testing Reports

Certificate Code	Status	Date Received	Sample References
AR-25-M3-029658-01	CERTIFICATE OF ANALYSIS	17 SEPTEMBER	CLYDA 1B – CLYDA 15 B
PR-25-M3-000552-01	PRELIMINARY CERTIFICATE	15 SEPTEMBER	CLYDA 1 B –CLYDA 15B
AR-M3-029021-01	CERTIFICATE OF ANALYSIS	12 SEPTEMBER	CLYDA 1 A – CLYDA 14 A
PR-25-M3-000550-01	PRELIMINARY CERTIFICATE	11 SEPTEMBER	CLYDA 4, 6, 8-14 [1]
PR-25-M3-000551-01	PRELIMINARY CERTIFICATE	11 SEPTEMBER	CLYDA 9 B - 15 B

NOTE 1: RE-LABELED AS 'A' SAMPLES 12 SEPTEMBER

Link to published results: www.fisheriesireland.ie/sites/default/files/2025-09/note-on-residue-sampling-results.pdf

1.3 Note on sampling

The Marine Institute, (MI), (Competent Authority for Fish Health in Ireland), was notified of the fish kill by IFI on 11th August. A researcher from the MI met with IFI 14th August at Mallow Bridge to take samples for diagnostic analysis. The preliminary report outlining the results of the diagnostic testing completed was received by IFI late 21st August and outlined at a meeting with the Minister and stakeholders at Mallow on 22nd.

The Inter-Agency Group established on the direction of the Minister met on Monday 25th August and reviewed the preliminary report. The Marine Institute noted that the samples taken ruled out disease; fish pathology suggested a range of chemicals, e.g., ammonia, could result in similar damage. Group discussion of actions to progress the investigation determined that organ analysis was the most likely route to identifying any chemicals / pesticides in the affected fish. IFI was advised that such analysis was not available from MI and would need to be outsourced to an independent laboratory. MI identified 'Eurofins Environment Testing' as a company with the capability to provide the service. IFI understood that the MI would co-ordinate with IFI to collect sample specimens, however was subsequently advised by MI that, while it could assist in assessing the impact of the event on the fish population from a pathology perspective, it did not have the technical capacity to co-ordinate sample collection for residue analysis. IFI thus engaged directly with Eurofins.

IFI inspected the main channel at the Ross River confluence at Killavullen on the same evening, 25th August, to ensure availability of marked fish for sampling. On returning to electro-fish the area early on 26th August to obtain samples, none were available. IFI was subsequently informed that the marked fish had been removed by a stakeholder on the evening of 25th. IFI moved upstream to the confluence of the main channel and the Clyda, as this location held the largest congregation of affected fish throughout the period and the location would be suitable for removing samples by electrofishing. Officers removed 14 (A samples) on 26th August and delivered them to Eurofins at Little Island, Cork, selecting a mix of marked and unmarked fish for comparison.

On 28th August Eurofins contacted IFI and advised that they could expand the range of substances for testing from 600 to 900 compounds if additional samples could be provided. IFI returned to the Clyda on the morning of 29th August and obtained 15 fish (B samples) for testing, again selecting a mix of marked and unmarked fish for comparison. The samples were delivered to Eurofins on 29th August.

1.4 Electrofishing at Roskeen Bridge, Munster Blackwater

Four stretches of river were electrofished upstream and downstream of Roskeen Bridge on Friday 29th August to assess the status of fish stocks in the locality. Six fish species were recorded during the surveys; Atlantic salmon (69), brown trout (20), dace (17), minnow (17), European eel (12), and stone loach (6). Atlantic salmon ranged in length from 6.9cm to 15.1cm and one adult salmon was also observed but not measured. Brown trout ranged in length from 15.9cm to 42.3cm, dace from 5.6cm to 19.8cm. Multiple age classes of both salmon (0+ and 1+) and brown trout (1+ to 4+, with 2+ most abundant) were present. Excess algae was observed on the river substrate indicating nutrient enrichment (eutrophication). Additionally, a small number of dead fish were observed in the margins among vegetation during the survey.

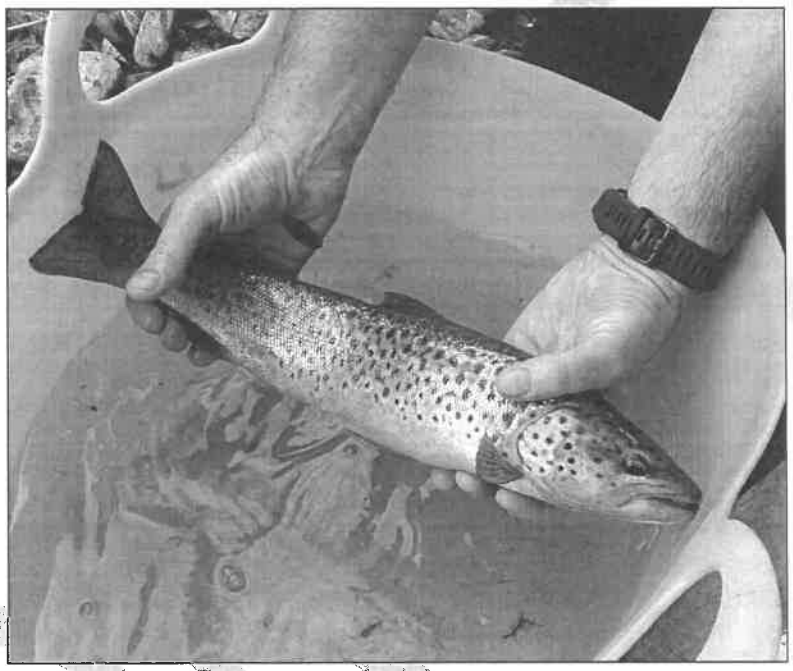


Plate 3: Brown trout captured during an electrofishing survey on the Munster Blackwater at Roskeen Bridge on Friday 29th August 2025 (IFI)

1.5 Estimate of fish mortalities

IFI estimated the minimum density of fish in the Munster Blackwater from Banteer to Castletownroche (39km of river channel) based on mean population density estimates calculated for earlier electrofishing surveys on the river from 2009 to 2022.

A conservative minimum density estimate for total number of fish present in the affected stretch is **83,602** fish. It was estimated that brown trout and juvenile salmon comprised an average of 76% of the population (**64,356**) of fish at surveyed sites. It should be noted that these figures do not include accurate estimates of YoY salmon and trout or adult salmon.

The proportion and the origin of the dead fish is unknown as live fish were observed throughout the affected stretch alongside dead and ailing fish. IFI observed dead brown trout and salmon parr, the vast majority of which were adult brown trout. 2no. heavily affected dace were observed at separate locations. Anecdotal reports of dead eels, stickleback were received but unverified. There was also a relatively healthy population of fish present at Roskeen bridge on 29th August (see above). IFI therefore assigned a

minimum (20%), and a maximum (50%) mortality estimate to the total estimated minimum population to calculate estimates of fish mortality (Table 1).

Table 2: Estimated fish mortalities on the Munster Blackwater, August 2025 (excluding YoY brown trout and salmon and adult salmon)

	20% mortality	50% mortality
Estimated total no. fish mortalities	16,720	41,801
Estimated salmon and brown trout mortalities	12,871	32,178

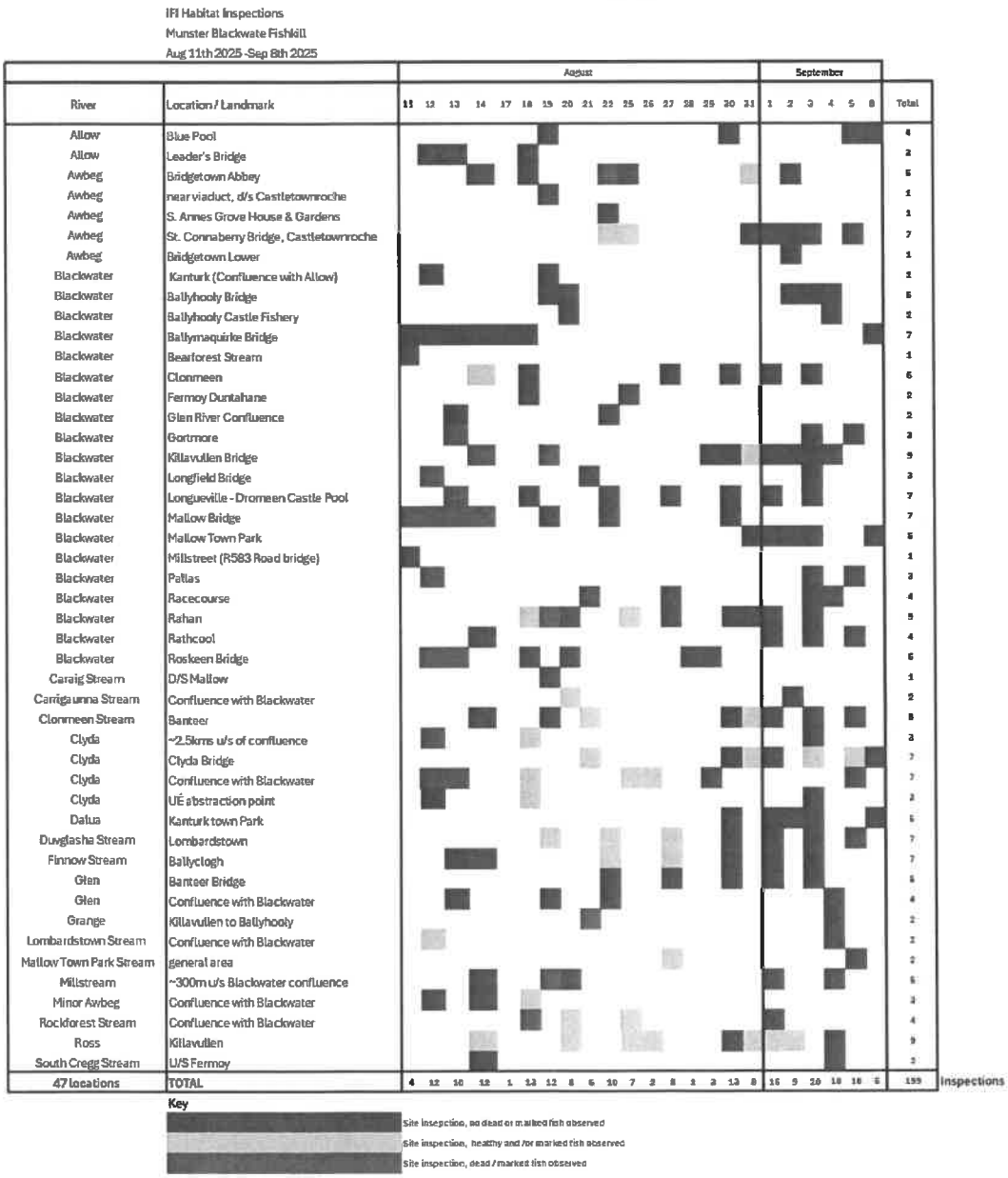


Figure 3: IFI habitat inspections related to the fish kill, Munster Blackwater Catchment, August-September 2025.

1.6 Next steps for Inland Fisheries Ireland

- Fish samples will be taken by IFI to establish a baseline for chemicals including pesticides and heavy metals across the catchment. It is envisaged that sampling will take place in the coming weeks, although successful completion of same will be weather dependent.
- IFI will undertake electrofishing surveys on the Allow River (weather permitting)
- IFI will undertake lamprey surveys across the catchment (weather permitting)
- IFI will deploy drone and kayak patrols to continue to examine and survey the scene.
- IFI will schedule an electrofishing survey of the Munster Blackwater in early July 2026 to monitor recovery of the affected channel (survey season opens on 1st July)

2. ENVIRONMENTAL PROTECTION AGENCY INVESTIGATION

Key Messages

- In August and September 2025, the EPA participated in a multi-agency investigation into fish mortalities arising in the River Blackwater in August 2025. The EPA's role was to investigate whether there was any link between the fish mortalities and EPA-regulated sites, and to provide water quality expertise and data to the wider investigation. The findings of this report are intended to support and inform the activities of a multi-agency investigation into the Blackwater fish mortalities.

- The EPA:

    - Completed 41 site inspections,

    - Collected 40 samples,

    - Carried out five macroinvertebrate quality surveys and

    - Assessed operational practices and monitoring data associated from 10 industrial sites, 17 wastewater treatment facilities and four drinking water plants.

- Samples taken during June, July and August 2025 indicate the water in the River Blackwater catchment is predominantly at Good Status, with no detectable changes in water quality. There was no evidence of a chronic water quality problem before or after the fish mortalities. This suggests the cause of the mortalities was a short-term pollution event.

- Four of the 31 EPA-regulated sites investigated had discharges that were not compliant with licence requirements in July and August, and one small wastewater facility with a certificate of authorisation was operating above operational capacity. **The detailed analysis of these sites in July and August 2025 does not support a causal link between these activities and the serious fish mortalities in the River Blackwater.**

- One of the four sites, North Cork Creameries (NCC) attracted significant public attention throughout the course of the investigation. Non-compliances were detected in the NCC wastewater discharge to the River Allow in the June to August period that were serious and entirely unacceptable. These issues were already the subject of significant ongoing enforcement activity by EPA. However, despite the seriousness and significance of licence breaches at NCC, the EPA's assessment, as set out in this report, does not support a causal link between the NCC's discharges into the River Allow and the fish mortalities in the Blackwater.

See EPA website (Include link to full EPA report)

3. CORK COUNTY COUNCIL

CCC staff attended the site on **August 11th**. The investigation continued into September. This included wider catchment assessments to ascertain scale of impacted area, macroinvertebrate sampling of several sites, in joint IFI/Cork County Council agreed programme. [redacted] Investigated reports of suspicious discharges on an interagency basis. CCC continued to undertake inspections of local authority regulated activities and other commercial activities.

3.1 Chemical Analysis of Water Samples

Samples taken on the 12/08/2025 were analysed for ammonia only, as it was understood the cause was a biological infection. No evidence of a plume/discharge was found, and no further samples were taken. Initial investigation was to establish the scale of the damage, from an as yet unidentified biological agent.

When it was disclosed on 25/08/2025 at first Inter Agency meeting, based on Marine Institute fish pathology results, the cause was now thought to be an "environmental irritant", samples from the Blackwater and Clyda were sent for suite of heavy metals including Aluminum.

Full set of results presented below.

	Al	Ca	Mg	K	Na	As	Se	Zn	Ba	Cd	Cr	Cu	Fe	Pb	Mn	Ni
	ug/l	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Average Blackwater (Mallow Bridge)	143.0	123.3	9.5	2.2	25.0	1.5	2.5	0.3	7.0	0.5	0.5	4.3	229.5	1.3	139.5	1.8
50m ds Clyda River (D/S water intake)	10.5	22.4	5.4	2.6	13.0	1.5	2.5	3.3	10.5	0.5	0.5	0.8	35.5	0.5	3.5	0.5

Dissolved metals is a river sample is a function of catchment geology, human & natural activities, weather, flow and sample turbidity. Metals will be present in both the dissolved phase, and particulate phase, so sample are usually filtered through a 0.45µm filter and acidified prior to analysis. The % of metal in either phase varies significantly from sample to sample, and from metal to metal. Results above are total metal in the sample, particulate and dissolved.

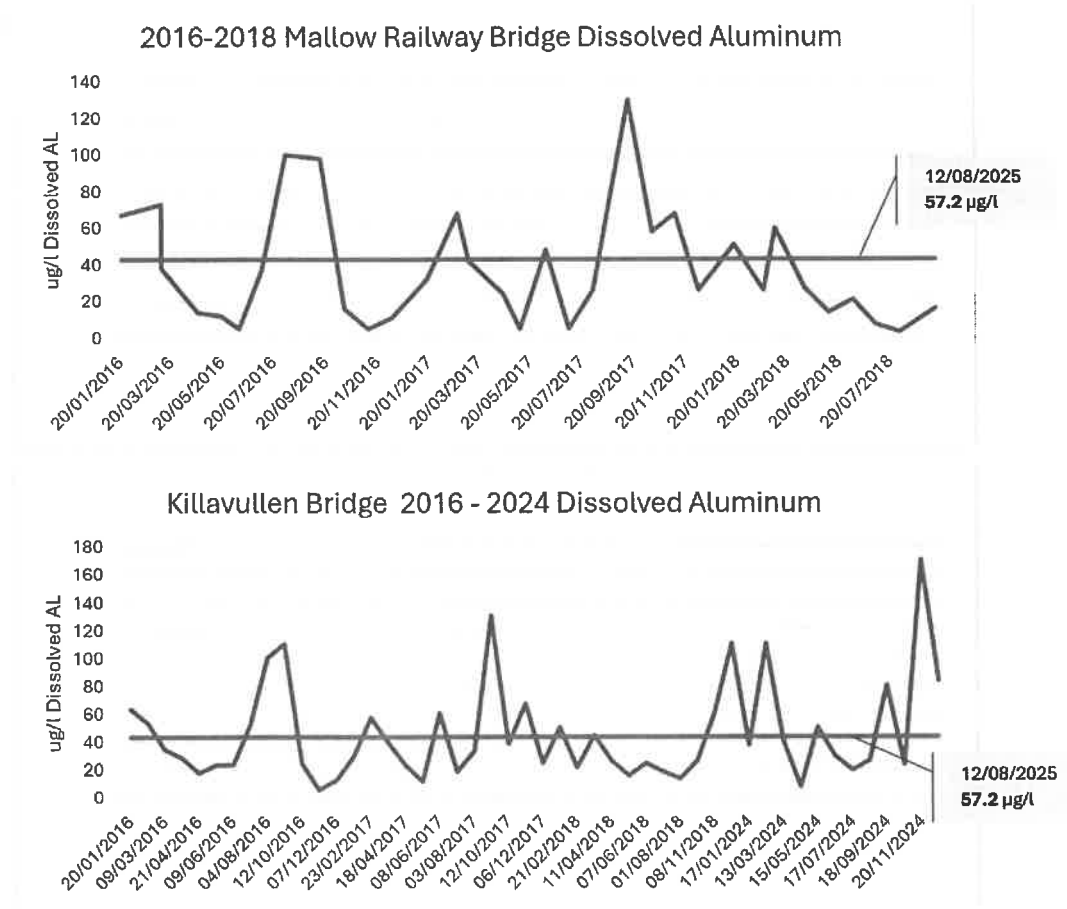
The average aluminum result from Blackwater sample taken on 12/08/2025, was 143 µg/l. The sample was unpreserved and unfiltered, so is of indicative value only. There is no accepted value for the % of aluminum in the particulate phase given the wide variation in sample matrix and source. To assess whether this was an elevated result and evidence of the casual event, a comparison to normal levels was undertaken.

Only filtered (dissolved) aluminum is currently being monitored at Mallow Railway Bridge and Killavullen Bridge under the WFD. However, Lismore (Co. Waterford) is an OSPAR site, with both particulate and dissolved aluminum being monitored in 2024. Using EPA data from Lismore (Blackwater) monitoring, approximately 72% of aluminum in the Blackwater is in the particulate phase:

WaterbodyCode	MonitoringStationCode	(2024) Average Un Filtered Aluminium µg/l	(2024) Average Filtered Aluminium µg/l	% Al Removal by filtration
IE_SW_18B022700	RS18B022600	195	54	72%

Assuming approximately 70% of the aluminum is particulate phase and removed on filtration (i.e. 30% was in dissolved phase), a dissolved aluminum concentration of 57.2 µg/l (143*0.3) can be estimated for the Blackwater 12/08/2025 sample.

Plotting this value against available EPA WFD monitoring data for Killavullen (2016 to 2024 data available), and Mallow Railway Bridge (only 2016 -2018 data available), shows this value is within the range of normal catchment aluminum, having regard to variation in sample matrix and catchment conditions.



The result was discussed at Inter Agency Meeting (11/09/2025) and consensus was it was within the normal range of Aluminum monitoring data and was unlikely to be indicative or of evidential value in establishing Aluminum as being the case of the kill.

4. DEPARTMENT OF AGRICULTURE, FOOD AND THE MARINE (DAFM)

The Department of Agriculture (DAFM) participated in the Inter-Agency Group and attended the IAG meetings in a supporting role having regard to its statutory responsibilities for farm animal/ health and welfare.

The DAFM has reviewed results produced by the group together with relevant associated information. In addition, the DAFM has not been notified, through its Regional Veterinary Office (RVO) and Regional

Veterinary Laboratory (RVL) networks of any increase or unusual patterns of farm animal illness or deaths in the area.

While one complaint relating to a dog was communicated to the RVO, this was not substantiated despite repeated efforts to contact the complainant. Notwithstanding this, there have been no reports nor concerns relating to animal health and welfare raised by the wider public to the DAFM.

Based on this and the significant amount of work commissioned and completed by the IAG as part of the inter-agency investigation there is no indication that that livestock health and the food chain from primary production was affected by this incident.

5. UISCE ÉIREANN

Following notification by the EPA to Uisce Éireann (UÉ) on August 12th of a fishkill in the River Blackwater UÉ undertook a review of its assets in the catchment. This included all relevant wastewater treatment plants and water treatment plants serving towns and village in the catchment.

This review included the examination of operational records and monitoring data to determine if discharges from these assets could have contributed to the reported fishkill. From this review no issues were identified with regard discharges or the normal operation of these assets.

In addition to the above, and as requested by the EPA, UÉ co-operated with the EPA in 19 audits of wastewater assets between August 12th and September 4th and audits of 4 drinking water assets between August 27th and September 4th. This also included the provision of relevant monitoring and operational records for review by the EPA.

UÉ as being responsible for the provision of safe drinking water also reviewed operational monitoring of the treatment process at the Mallow Water Treatment Plant and the monitoring of the water in supply undertaken in accordance with the requirements of S.I 99/2023. This monitoring did not indicate any issues or risks to drinking water quality.

6. NPWS

OVERALL CONCLUSION - TBA

There is no evidence available to link the significant fish kill on the Munster Blackwater in August 2025 to any identified discharge or licensed facility. As no change in water quality has been detected in the affected stretch between 2024 and 2025 it is likely that the fish kill was caused by an unknown toxic waterborne substance/irritant that may have entered the river between 5th and 9th August at a point upstream of the Glen River (the uppermost limit of reported mortalities) and dissipated quickly rendering it undetectable in water samples and fish tissue samples.

FUTURE DELIVERABLE - TBA

Interagency taskforce to be initiated for future fish kills investigations.

Glossary

LOQ: Limit of quantification – lowest concentration of a substance that can be measures with a stated degree of precision and accuracy (smallest amount of a substance that can be reliably quantified with statistical confidence)

LOD: Limit of detection – lowest concentration or amount of a substance that can be reliably detected by an analytical procedure – it indicates that the substance is present but does not mean it can be accurately quantified.

Electrofishing: uses the physiological effect of an electric field in water to stimulate a fish's nervous system so that it swims towards a handheld net – the fish is attracted to the net rather than stunned so as to precent harm. The charge emitted into the water causes them to turn and swim towards the net, which enables their quick removal for storage until processing.

Macroinvertebrate: very small animals without a backbone, visible to the naked eye. Found beneath water (benthic macroinvertebrates), are a useful indicator of water quality. Examples: mayflies, stoneflies, caddisflies.

2

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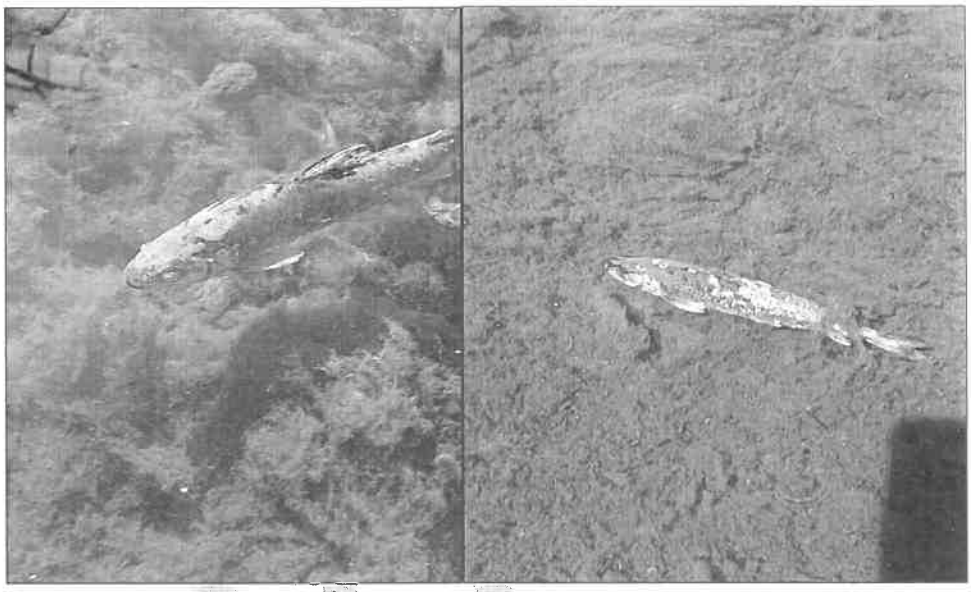

Plate 1 & 2: Heavily marked fish, 11th August, Mallow (photographs by IFI)

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Additional agencies or Departments attending the Joint Interagency Working Group:

- Local Authoriries Water Programme (LAWPRO), Department of Climate, Energy and the Environment (DCEE), Department of Agriculture (DAFM), Uisce Éireann (UÉ), HSE, NPWS

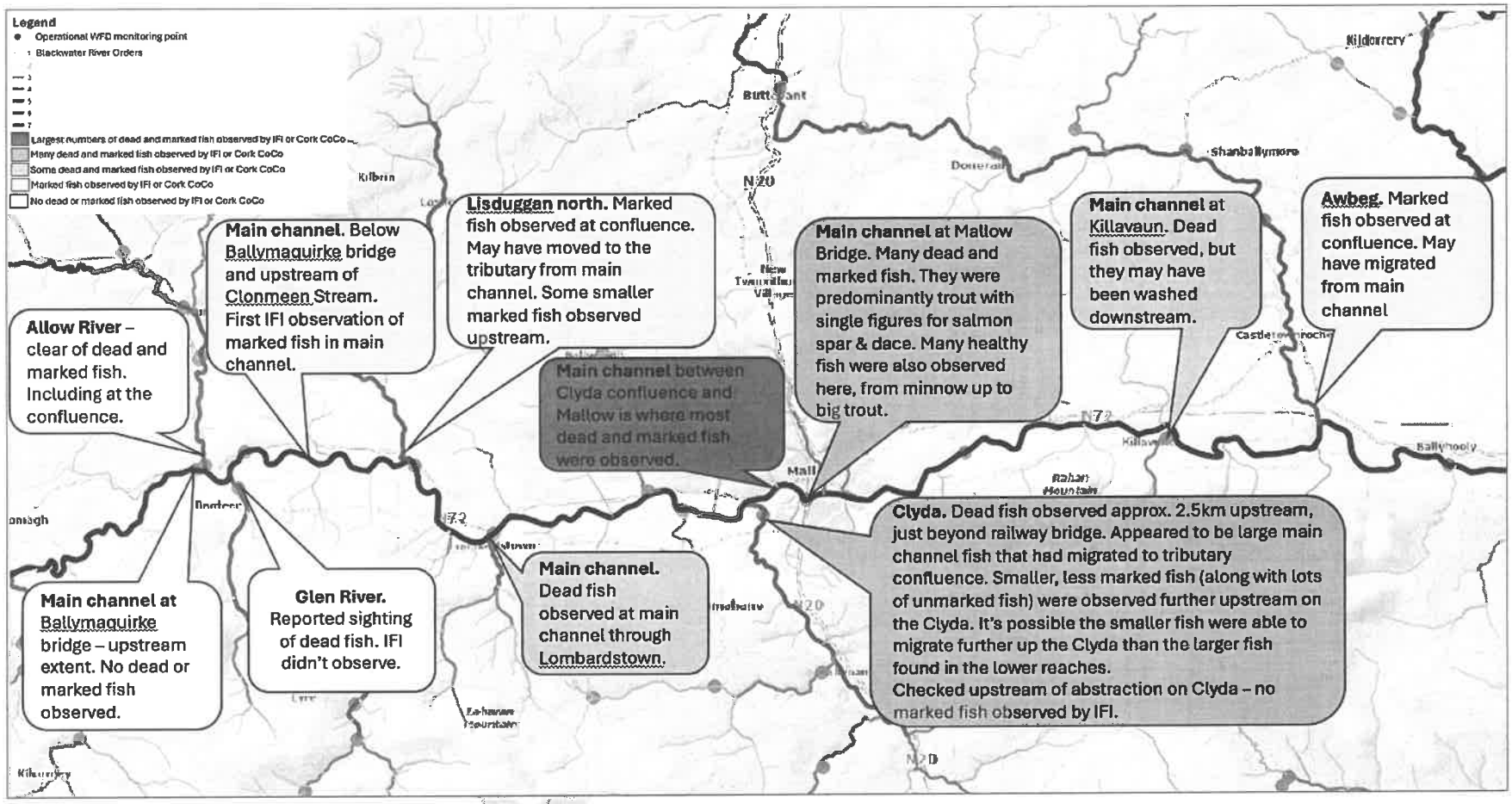


Figure 1: Area affected by fish kill. (Map courtesy of LAWPR

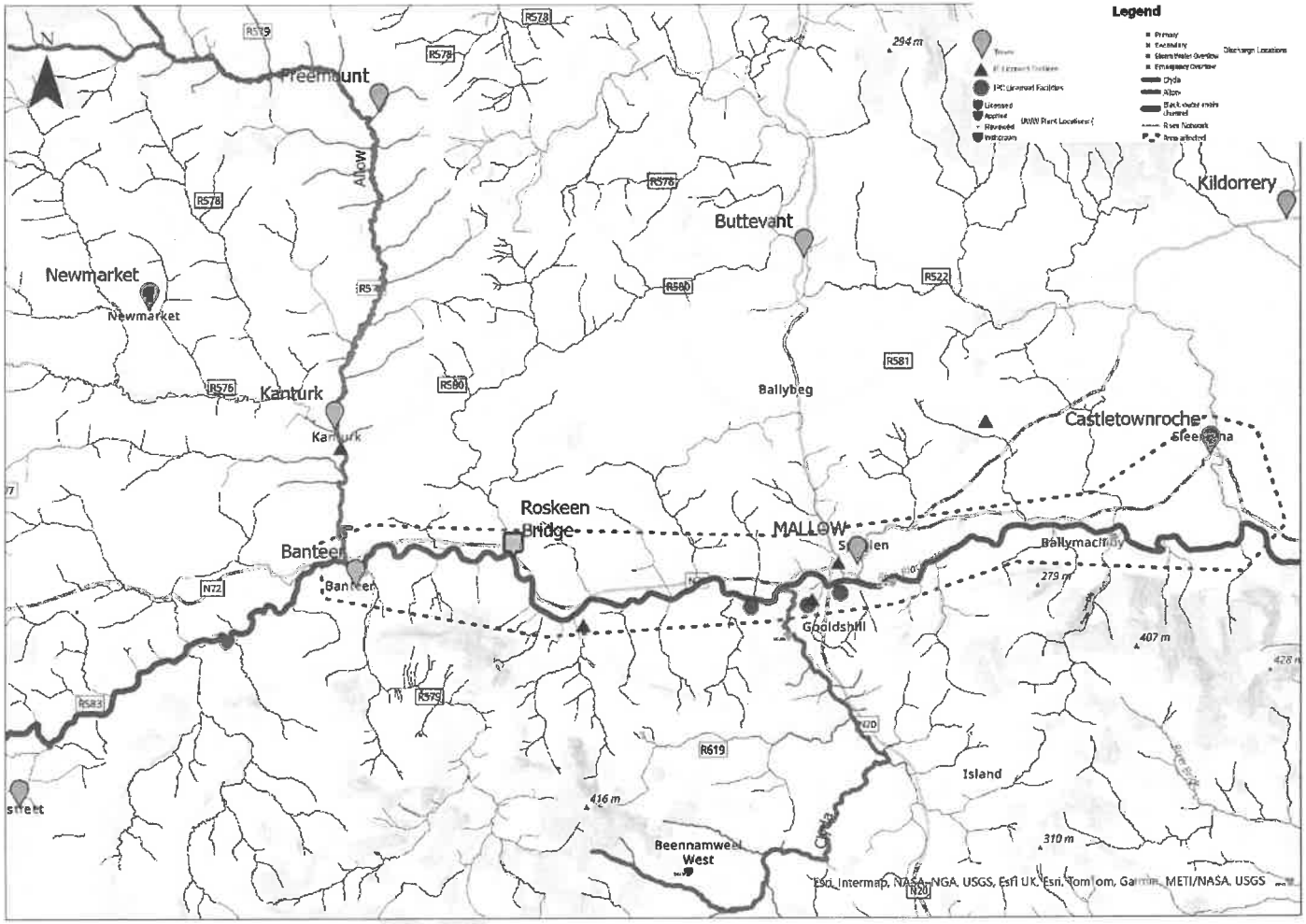


Figure 2: Munster Blackwater River channel where mortalities and marked/ailing fish were observed, between Banteer (upstream) and Castletownroche (downstream). Red dashed line indicates extent of affected area. (Map by IFI)

1. INLAND FISHERIES IRELAND INVESTIGATION

IFI's investigations 11th August to 17th September:

- IFI carried out inspections of the affected stretch of river to assess the extent, scale and source of the fish kill.
- IFI consulted with UÉ, EPA, CCC within the catchment throughout 11th and 12th August.
- IFI contracted MI Fish Health Unit (competent authority for fish health in Ireland) on 11th August to undertake diagnostic pathology sampling of fish. MI attended the site on 14th August at Mallow.
- IFI carried out 198 habitat inspections at 47 locations up to 8th September. (Figure 3).
- IFI carried out 52 repeat habitat inspections between 9th-14th September however conditions were unsuitable for useful observation due to continued rainfall.
- IFI carried out macroinvertebrate sampling at 10 sites.
- IFI provided fish samples to Eurofins Environmental Ltd on 26th and 29th August for residue sampling - broad suite of analysis for 900 chemicals (including pesticides) and heavy metals to be conducted
- IFI investigated a report of suspicious activity at Roskeen Bridge with An Garda Síochána on August 28th. Neither IFI nor AGS found evidence of criminal activity.
- IFI carried out electrofishing surveys at Roskeen bridge on 29th August at Roskeen bridge (Plate 3 and Figure 2).
- IFI is engaging with affected stakeholders

1.1 Bacterial, virology, parasite and pathology results

A total of 10 moribund fish were collected from the Munster Blackwater and sampled by the MI on the 14th August. On examination eyes and gills of each fish were abnormal on affected fish. No significant bacterial fish pathogens or viruses were isolated from fish samples. No evidence of the fish parasite Gyrodactylus salaris were found in the fish examined. No evidence of systemic disease was observed in organs. Gill pathology was consistent with exposure to some form of environmental insult or water borne irritant.

See IFI Website:

https://www.fisheriesireland.ie/news/media-releases/results-and-note-re-residue-sampling-tests

1.2 Residual fish tissue results

Following the fish kill on the Munster Blackwater 29 brown trout were sampled on the 26th and 29th of August from the River Clyda confluence with the Munster Blackwater (is ~1.5km upstream of Mallow) and sent to Eurofins Environment Testing Ireland Ltd. for residual tissue analysis. The fish sampled via electrofishing, were adult brown trout. All individuals were observed to be actively swimming. Approximately 50% of individuals sampled presented with corneal oedema with opacity and swelling of affected tissue. Eurofins Environment Testing Ireland Ltd. arranged for testing in a specialist laboratory in Germany.

This laboratory testing involved measuring chemical residues in fish tissue to assess any potential environmental contamination. Tissue from each fish was screened for 900 chemicals including pesticides

and heavy metals. Analysis determined if residue levels of listed chemicals were within acceptable standards. Preliminary results did not indicate presence of any of the listed chemicals (including pesticides) above the limit of quantification (LOQ) apart from three heavy metals, i.e. Mercury (Hg), Arsenic (As), and Aluminium (Al). One fish (Clyda 4A) had an Arsenic value above LoQ of 0.16mg/kg. Al ranged from <0.5 to 3.6mg/Kg of fish tissue and Hg ranged from 0.045 to 0.17mg/Kg.

It should be noted that mercury (Hg), aluminium (Al) are common in many Irish surface waters while arsenic (As) is naturally occurring in areas with underlying sandstone. Their concentration in surface waters is highly variable and are also increased by human activities.

Comment on Mercury concentrations and results of fish tissue analysis (EPA)

The national WFD monitoring programme provides a comprehensive and long-term picture of the concentrations of chemical substances in water. Substances, such as mercury, that persist in the environment many years after their use has ceased, are known as ubiquitous substances. Mercury is known to readily bioaccumulate and persist in fish. The Surface Water Regulations (S.I. No. 77/2019) sets out an environmental quality standard of 0.02 mg / kg for mercury in fish.

Samples taken from the national WFD monitoring programme between 2019-2024 indicate that 89% of rivers and lakes, where fish have been tested, had mercury concentrations exceeding the standard. 24% of the rivers and lakes, where fish have been tested, had concentrations greater than 0.2 mg / kg (with a maximum reported concentration 0.41 mg / kg).

Following the fish kill on the River Blackwater in August 2025, the reported mercury concentrations in each fish tested by Inland Fisheries Ireland was above the mercury standard (with a maximum reported concentration 0.17 mg / kg). The concentrations were comparable to those reported in WFD monitoring programme data and there is no evidence to indicate that mercury was the pollutant that led to the fish kill on the River Blackwater in August 2025.

Comment on Aluminium concentrations in surface waters in Catchment (EPA)

Water chemistry sample analysis from 12th & 13th August, provided by Cork County Council for the River Blackwater in Mallow, had a range of water quality parameter concentrations that were indicative of good water quality overall. The River Blackwater sample had an Aluminium concentration of 141 µg/l which was slightly elevated. Cork County Council indicated that the sample was unfiltered and therefore may overestimate the dissolved Aluminium concentration i.e., the sample may have contained particulate matter.

Historical water chemistry for the River Blackwater was examined and Aluminium concentrations for filtered samples at Killavullen Bridge (downstream of Mallow) in 2024 had an average concentration of 56 µg/l, with a maximum concentration of 171 µg/l. Since 2016, 13% of the filtered samples taken at Killavullen Bridge have had an Aluminium concentration greater than 100 µg/l. Upstream of Mallow, historical 2016-2018 filtered samples on the River Blackwater, taken at the Mallow Railway Bridge, Ballymaquirk Bridge and Colthurst Bridge also had Aluminium concentrations greater than 100 µg/l, with respective maximum concentrations of 130 µg/l, 320 µg/l and 610 µg/l.

Overall, the Aluminium concentration of 141 µg/l in the unfiltered sample taken by Cork County Council on 12 / 13 August is comparable to historic concentrations in the River Blackwater and is not indicative of an issue with Aluminium concentrations in the river.

Comment on Arsenic

A single sample - "Clyda 3A –26/08/2025) reported a level of arsenic at 0.16mg/kg, LOQ 0.1. Data from the EPA (2016-2024) indicates arsenic concentrations for all water samples are <LOQ, i.e., <0.1 ug/l.

Table 1: Eurofins Environment Testing Reports

Certificate Code	Status	Date Received	Sample References
AR-25-M3-029658-01	CERTIFICATE OF ANALYSIS	17 SEPTEMBER	CLYDA 1B – CLYDA 15 B
PR-25-M3-000552-01	PRELIMINARY CERTIFICATE	15 SEPTEMBER	CLYDA 1 B –CLYDA 15B
AR-M3-029021-01	CERTIFICATE OF ANALYSIS	12 SEPTEMBER	CLYDA 1 A – CLYDA 14 A
PR-25-M3-000550-01	PRELIMINARY CERTIFICATE	11 SEPTEMBER	CLYDA 4, 6, 8-14 [1]
PR-25-M3-000551-01	PRELIMINARY CERTIFICATE	11 SEPTEMBER	CLYDA 9 B - 15 B

NOTE 1: RE-LABELED AS 'A' SAMPLES 12 SEPTEMBER

Link to published results: www.fisheriesireland.ie/sites/default/files/2025-09/note-on-residue-sampling-results.pdf

1.3 Note on sampling

The Marine Institute, (MI), (Competent Authority for Fish Health in Ireland), was notified of the fish kill by IFI on 11th August. A researcher from the MI met with IFI 14th August at Mallow Bridge to take samples for diagnostic analysis. The preliminary report outlining the results of the diagnostic testing completed was received by IFI late 21st August and outlined at a meeting with the Minister and stakeholders at Mallow on 22nd.

The Inter-Agency Group established on the direction of the Minister met on Monday 25th August and reviewed the preliminary report. The Marine Institute noted that the samples taken ruled out disease; fish pathology suggested a range of chemicals, e.g., ammonia, could result in similar damage. Group discussion of actions to progress the investigation determined that organ analysis was the most likely route to identifying any chemicals / pesticides in the affected fish. IFI was advised that such analysis was not available from MI and would need to be outsourced to an independent laboratory. MI identified 'Eurofins Environment Testing' as a company with the capability to provide the service. IFI understood that the MI would co-ordinate with IFI to collect sample specimens, however was subsequently advised by MI that, while it could assist in assessing the impact of the event on the fish population from a pathology perspective, it did not have the technical capacity to co-ordinate sample collection for residue analysis. IFI thus engaged directly with Eurofins.

IFI inspected the main channel at the Ross River confluence at Killavullen on the same evening, 25th August, to ensure availability of marked fish for sampling. On returning to electro-fish the area early on 26th August to obtain samples, none were available. IFI was subsequently informed that the marked fish had been removed by a stakeholder on the evening of 25th. IFI moved upstream to the confluence of the main channel and the Clyda, as this location held the largest congregation of affected fish throughout the period and the location would be suitable for removing samples by electrofishing. Officers removed 14 (A samples) on 26th August and delivered them to Eurofins at Little Island, Cork, selecting a mix of marked and unmarked fish for comparison.

On 28th August Eurofins contacted IFI and advised that they could expand the range of substances for testing from 600 to 900 compounds if additional samples could be provided. IFI returned to the Clyda on the morning of 29th August and obtained 15 fish (B samples) for testing, again selecting a mix of marked and unmarked fish for comparison. The samples were delivered to Eurofins on 29th August.

1.4 Electrofishing at Roskeen Bridge, Munster Blackwater

Four stretches of river were electrofished upstream and downstream of Roskeen Bridge on Friday 29th August to assess the status of fish stocks in the locality. Six fish species were recorded during the surveys; Atlantic salmon (69), brown trout (20), dace (17), minnow (17), European eel (12), and stone loach (6). Atlantic salmon ranged in length from 6.9cm to 15.1cm and one adult salmon was also observed but not measured. Brown trout ranged in length from 15.9cm to 42.3cm, dace from 5.6cm to 19.8cm. Multiple age classes of both salmon (0+ and 1+) and brown trout (1+ to 4+, with 2+ most abundant) were present. Excess algae was observed on the river substrate indicating nutrient enrichment (eutrophication). Additionally, a small number of dead fish were observed in the margins among vegetation during the survey.

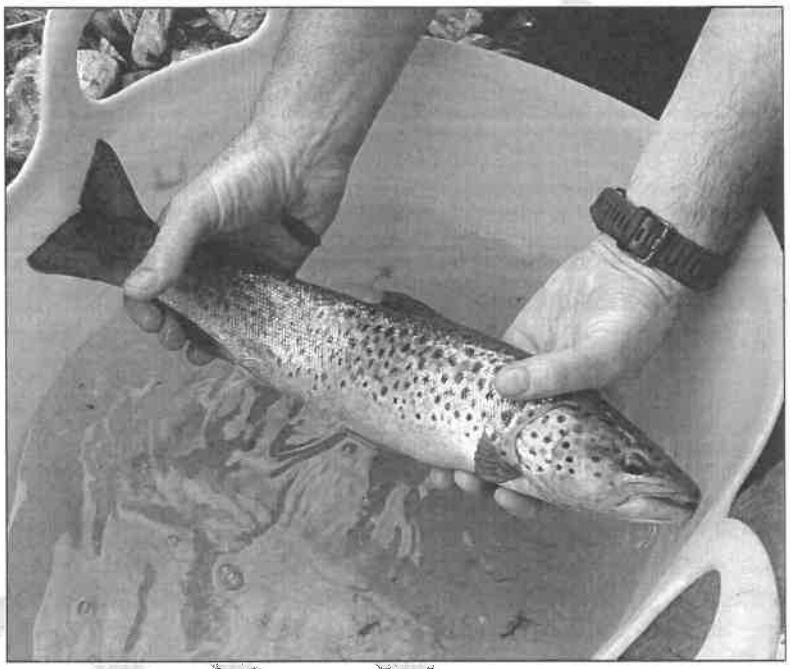


Plate 3: Brown trout captured during an electrofishing survey on the Munster Blackwater at Roskeen Bridge on Friday 29th August 2025 (IFI)

1.5 Estimate of fish mortalities

IFI estimated the minimum density of fish in the Munster Blackwater from Banteer to Castletownroche (39km of river channel) based on mean population density estimates calculated for earlier electrofishing surveys on the river from 2009 to 2022.

A conservative minimum density estimate for total number of fish present in the affected stretch is **83,602** fish. It was estimated that brown trout and juvenile salmon comprised an average of 76% of the population (**64,356**) of fish at surveyed sites. It should be noted that these figures do not include accurate estimates of YoY salmon and trout or adult salmon.

The proportion and the origin of the dead fish is unknown as live fish were observed throughout the affected stretch alongside dead and ailing fish. IFI observed dead brown trout and salmon parr, the vast majority of which were adult brown trout. 2no. heavily affected dace were observed at separate locations. Anecdotal reports of dead eels, stickleback were received but unverified. There was also a relatively healthy population of fish present at Roskeen bridge on 29th August (see above). IFI therefore assigned a

minimum (20%), and a maximum (50%) mortality estimate to the total estimated minimum population to calculate estimates of fish mortality (Table 1).

Table 2: Estimated fish mortalities on the Munster Blackwater, August 2025 (excluding YoY brown trout and salmon and adult salmon)

	20% mortality	**50% mortality**
Estimated total no. fish mortalities	16,720	41,801
Estimated salmon and brown trout mortalities	12,871	32,178

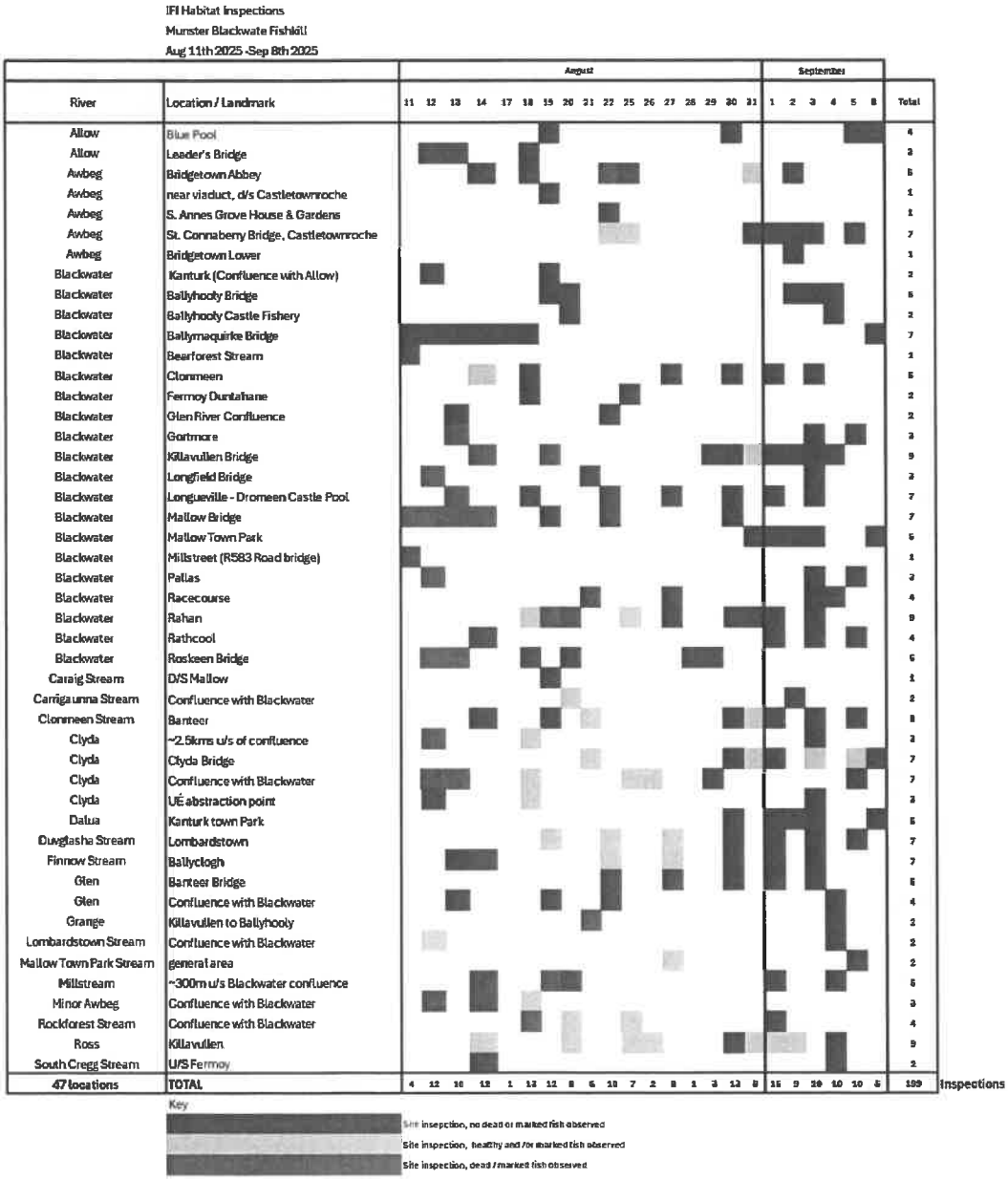


Figure 3: IFI habitat inspections related to the fish kill, Munster Blackwater Catchment, August-September 2025.

1.6 Next steps for Inland Fisheries Ireland

- Fish samples will be taken by IFI to establish a baseline for chemicals including pesticides and heavy metals across the catchment. It is envisaged that sampling will take place in the coming weeks, although successful completion of same will be weather dependent.
- IFI will undertake electrofishing surveys on the Allow River (weather permitting)
- IFI will undertake lamprey surveys across the catchment (weather permitting)
- IFI will deploy drone and kayak patrols to continue to examine and survey the scene.
- IFI will schedule an electrofishing survey of the Munster Blackwater in early July 2026 to monitor recovery of the affected channel (survey season opens on 1st July)

2. ENVIRONMENTAL PROTECTION AGENCY INVESTIGATION

Key Messages

- In August and September 2025, the EPA participated in a multi-agency investigation, into fish mortalities arising in the River Blackwater in August 2025. The EPA's role was to investigate whether there was any link between the fish mortalities and EPA-regulated sites, and to provide water quality expertise and data to the wider investigation. The findings of this report are intended to support and inform the activities of a multi-agency investigation into the Blackwater fish mortalities.

- The EPA:
    - Completed 41 site inspections,
    - Collected 40 samples,
    - Carried out five macroinvertebrate quality surveys and
    - Assessed operational practices and monitoring data associated from 10 industrial sites, 17 wastewater treatment facilities and four drinking water plants.

- Samples taken during June, July and August 2025 indicate the water in the River Blackwater catchment is predominantly at Good Status, with no detectable changes in water quality. There was no evidence of a chronic water quality problem before or after the fish mortalities. This suggests the cause of the mortalities was a short-term pollution event.

- Four of the 31 EPA-regulated sites investigated had discharges that were not compliant with licence requirements in July and August, and one small wastewater facility with a certificate of authorisation was operating above operational capacity. **The detailed analysis of these sites in July and August 2025 does not support a causal link between these activities and the serious fish mortalities in the River Blackwate**r.
- One of the four sites, North Cork Creameries (NCC) attracted significant public attention throughout the course of the investigation. Non-compliances were detected in the NCC wastewater discharge to the River Allow in the June to August period that were serious and entirely unacceptable. These issues were already the subject of significant ongoing enforcement activity by EPA. However, despite the seriousness and significance of licence breaches at NCC, the EPA's assessment, as set out in this report, does not support a causal link between the NCC's discharges into the River Allow and the fish mortalities in the Blackwater.

Introduction

The extensive fish mortalities that occurred on the Blackwater River in Cork during August 2025 are a serious harm to the local fish stocks and have had an unjust and negative impact on the local communities. The devastation of damaged carcasses of thousands of dead fish floating in the protected waters of the Blackwater or tangled in the weeds of any of our country's rivers or lakes are events that are not to be tolerated.

When such detrimental incidents occur as on the Blackwater and where causation can be established and the wrongdoer identified, then they should be held to account. It is incumbent on all the state agencies with responsibilities in relation to these incidents to do all in their power to identify the cause and the wrongdoer and to bring them to account. This can only be achieved by following and assessing the available evidence, data and science.

The EPA's primary role in the investigation into the fish mortalities on the Blackwater is to assess whether EPA-regulated sites within the region of interest could have been responsible through their water discharge activities, and to take action against any operator found to be at fault.

Investigation Overview

The EPA first became aware of the serious fishkill on the morning of the 12th August 2025, and immediately mobilised resources in the Blackwater catchment to investigate whether any EPA-regulated site could have been a source of polluting material.

EPA has participated in a Multi-Agency group, established at the direction of the Minister and coordinated by Inland Fisheries Ireland (IFI), for the purposes of sharing data and expertise and supporting the investigation into the cause of the fish mortalities.

The EPA's investigation encompassed:

- The deployment of three teams of inspectors to EPA-regulated sites in the Mallow and Kanturk area within an hour of the EPA becoming aware of the fish mortalities. The inspections on August 12th/13th found no evidence of spills or discharges linked to the incident.
- An immediate expansion of the investigation on August 22nd to include a broader timeframe and geographic scope within the Blackwater catchment. This was in response to preliminary fish postmortem results from the Marine Institute, which indicated a pollution source was the likely cause of the fish damage in the week prior to the 12th August.
- The completion of 41 inspections of thirty-one facilities in the catchment, the collection of 40 samples and an assessment of operational practices and monitoring data associated with 10 industrial sites, 17 wastewater treatment facilities and 4 drinking water plants.
- The completion of five invertebrate quality surveys carried out by the EPA in the Kanturk to Mallow area on 12th August and 1st and 2nd September 2025.

Twenty seven of the thirty one EPA-regulated sites investigated had either no discharges or had compliant discharges during the weeks prior to the 12th August. However, four of the thirty-one facilities investigated had discharges that were not compliant with licence requirements in July and August and one small wastewater facility with a certificate of authorisation was operating above operational capacity. These

sites were North Cork Creameries (Licence Register No. P1051-01); Millstreet wastewater treatment plant (D0332-02); Bweeng & Environs wastewater treatment plant (D0438-01); Dromahane wastewater treatment plant (D0302-01) and Lombardstown Certificate of Authorisation (A0327-01). The EPA was already aware of the issues at four of these sites, with the breach at Millstreet detected during the investigation. All these issues remain the subject of on-going enforcement action which is separate and distinct from the investigation into the causality of the fish mortalities on the Blackwater.

Detailed Assessment

To determine if there was a causal link between the fish mortalities and EPA-regulated sites, the EPA assessed the relevant monitoring and operational data for the sites and the impact of the non-compliant discharges on receiving water quality in the period 28th July to 12th August.

The EPA, with the assistance of Local Authorities and Inland Fisheries Ireland, collects water quality data from the Blackwater River on an ongoing basis as part of the National Water Monitoring Programmes under the Water Framework Directive. The data include water chemistry, fish and macroinvertebrate samples. The data collected in 2024 in the area of the investigation of the River Blackwater catchment generally indicates the water quality in the catchment is at Good Status. The water chemistry and macroinvertebrate ecological samples taken during June, July and August 2025 indicate no change in water quality in the River Blackwater catchment.

In response to the current incident, the EPA also carried out specific macroinvertebrate ecological water quality sampling in the affected area following the fish mortalities and the results were again indicative of good or better ecological water quality. Overall, there is no evidence from the ecological water quality data that there was a chronic water quality problem in the Blackwater catchment, in advance of, or following the fish mortalities. This suggests that the cause of the fish mortalities was a short-term pollution event, which may have been localised in extent, and wasn't due to an underlying chronic water quality problem.

The detailed analysis and assessment of discharges from all thirty-one EPA-regulated sites, including industrial sites and Uisce Éireann controlled urban wastewater discharges and drinking water plants during July and August 2025, does not support a causal link between these activities and the serious fish mortalities found in the River Blackwater.

North Cork Creameries [Licence No. P1051-01]

One of the thirty-one EPA-regulated sites investigated by EPA in relation to the fish mortalities incident was North Cork Creameries (NCC) situated on the River Allow near Kanturk. While NCC was an important focus of that investigation it is specifically mentioned in this summary as it attracted significant public attention and speculation throughout the course of the current investigation. NCC is a site with a history of failure to consistently achieve compliance with its licence discharge conditions and was already the subject of significant enforcement activity by EPA prior to the incident, culminating in a prosecution which concluded in April 2025 resulting in convictions and the imposition of fines. EPA continues to monitor the licensed site closely.

Non-compliances were detected in the wastewater treatment plant discharge from NCC in the June to August period and were serious and entirely unacceptable. The licence breaches arose primarily due a lack of organised management or control of wastewater treatment plant activities, a lack of appropriate

expertise to resolve significant operational issues, a failure to appropriately generate, manage, maintain and use critical data sets to inform corrective actions and a disregard for licence requirements and licence limits.

These compliance issues have not yet been fully resolved by the licensee, and the EPA is rigorously pursuing the enforcement of the licence breaches arising as a matter of priority and urgency, in line with its Compliance and Enforcement Policy. Offences related to breaches of EPA licences may be prosecuted summarily by the EPA or on indictment by the Director of Public Prosecutions (DPP). The EPA is giving full consideration to all such enforcement options available to it in respect of the non-compliances detected. These pre-existing issues are very serious matters that need to be resolved to restore consistent compliance and for the NCC to entertain the prospect of retaining its licence to operate into the future.

Despite the seriousness of these issues and the significance of licence breaches at NCC, the EPA's assessment as set out in this report, does not support a causal link between the NCC's discharges into the River Allow and the fish mortalities in the Blackwater (see Figure 1, page 12, for location of NCC relative to Blackwater). In summary, this reasoned conclusion is based on the following:

- **Yard Drainage:** The yard drainage on the site is configured to discharge only to the wastewater treatment plant. Therefore, all effluent and spills arising on site are discharged through the wastewater treatment plant.

- **Load to wastewater treatment plant:** An assessment of the plant's operational data demonstrates that while the site's wastewater treatment plant was performing very poorly during the first few weeks of August, it was consistently so. There was no evidence that a sudden catastrophic load to the river was discharged through the wastewater treatment plant in that period, or that any form of chemical discharge occurred. An assessment of the plant's operational data indicates that the occurrence of such an event in that period would be very unlikely.

- **Toxicity of discharge to fish:** Considering the types of material used on site, and the type of damage caused to the fish in the Blackwater (as described by the Marine Institute report), the key parameters of concern in relation to the NCC discharge is un-ionised ammonia and pH. The level of un-ionised ammonia that could have occurred in the river as a result of the NCC discharge in the weeks prior to the fish mortalities were below the threshold of 0.02mg/l NH_3 (i.e. below the level at which toxic effects could occur in fish and other aquatic species if subjected to chronic/longer term exposure). pH levels were stable and in compliance in the period investigated.

- **Proximity of site to dead fish:** No dead or marked fish in River Allow: The IFI also advised the public authorities investigating the fish mortalities that marked and dead fish were not observed in the River Allow, which is the river to which the NCC discharges, before, during or after the fish mortalities in the Blackwater were reported. In addition, there is a stretch of 4 km river water between the NCC discharge point on the Allow and where the Allow enters the Blackwater.

The EPA regulates, through authorisation and enforcement, almost 900 industrial and waste facilities, over 1000 wastewater authorisations and approximately 750 drinking water treatment plants, with 1,773

inspections carried out across these sectors in 2024. All inspection and monitoring reports are available on the EPA website via an online portal called LEAP online. It does so without fear or favour in the interests of the public and in the protection of the environment. It does so by detailed assessment and by drawing reasoned conclusions based on the available evidence, data and science as it has done in this report. To do otherwise would be to draw conclusions based on speculation which would be both environmentally irresponsible and regulatorily negligent.

Conclusion

In conclusion, the detailed analysis and assessment of all thirty-one EPA authorised sites, including industrial sites and Uisce Éireann controlled urban wastewater discharges and drinking water plants during June, July and August 2025, does not support a causal link between these activities and the serious fish mortalities found in the River Blackwater.

Throughout the investigation, the EPA worked closely with IFI, Cork County Council and others, both bilaterally and through an inter-agency group convened by the IFI for the purposes of the wider investigation. The EPA provided expertise and data in relation to discharges from regulated sites, water quality and invertebrate sampling in the Blackwater catchment.

The EPA also received videos and pertinent information from concerned members of the public in relation to discharges from EPA-regulated sites during the investigation period. The EPA acknowledges with gratitude the work and commitment of those concerned groups in contributing to the EPA's investigation. The issues raised by those members of the public have been considered in the EPA's assessment.

The findings of this report are intended to support and inform the activities of a multi-agency investigation into Blackwater fish mortalities.

See EPA website (Include link to full EPA report)

3. CORK COUNTY COUNCIL

CCC staff attended the site on **August 11th**. The investigation continued into September. This included wider catchment assessments to ascertain scale of impacted area, macroinvertebrate sampling of several sites, in joint IFI/Cork County Council agreed programme. [redacted] Investigated reports of suspicious discharges on an interagency basis. CCC continued to undertake inspections of local authority regulated activities and other commercial activities.

3.1 Chemical Analysis of Water Samples

Samples taken on the 12/08/2025 were analysed for ammonia only, as it was understood the cause was a biological infection. No evidence of a plume/discharge was found, and no further samples were taken. Initial investigation was to establish the scale of the damage, from an as yet unidentified biological agent.

When it was disclosed on 25/08/2025 at first Inter Agency meeting, based on Marine Institute fish pathology results, the cause was now thought to be an "environmental irritant", samples from the Blackwater and Clyda were sent for suite of heavy metals including Aluminum.

Full set of results presented below.

	Al	Ca	Mg	K	Na	As	Se	Zn	Ba	Cd	Cr	Cu	Fe	Pb	Mn	Ni
	ug/l	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Average Blackwater (Mallow Bridge)	143.0	123.3	9.5	2.2	25.0	1.5	2.5	0.3	7.0	0.5	0.5	4.3	229.5	1.3	139.5	1.8
50m ds Clyda River (D/S water intake)	10.5	22.4	5.4	2.6	13.0	1.5	2.5	3.3	10.5	0.5	0.5	0.8	35.5	0.5	3.5	0.5

Dissolved metals is a river sample is a function of catchment geology, human & natural activities, weather, flow and sample turbidity. Metals will be present in both the dissolved phase, and particulate phase, so sample are usually filtered through a 0.45µm filter and acidified prior to analysis. The % of metal in either phase varies significantly from sample to sample, and from metal to metal. Results above are total metal in the sample, particulate and dissolved.

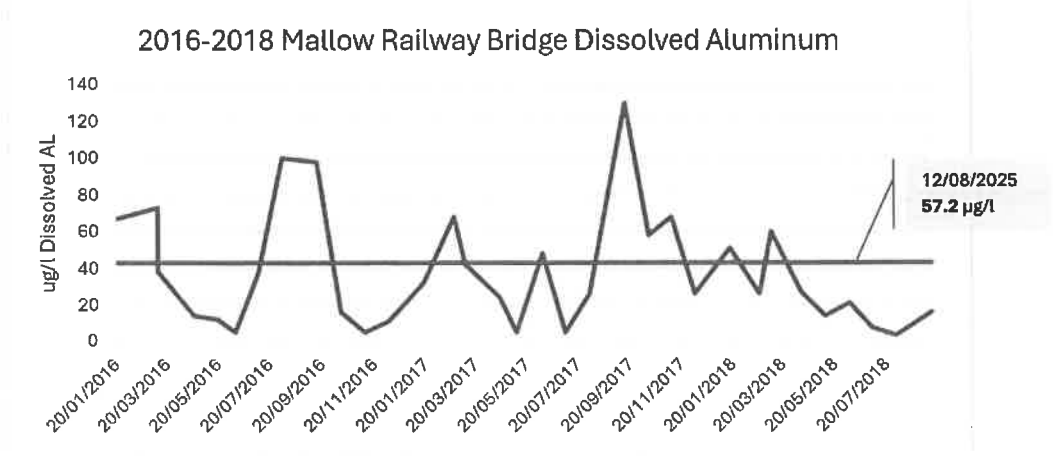
The average aluminum result from Blackwater sample taken on 12/08/2025, was 143 µg/l. The sample was unpreserved and unfiltered, so is of indicative value only. There is no accepted value for the % of aluminum in the particulate phase given the wide variation in sample matrix and source. To assess whether this was an elevated result and evidence of the casual event, a comparison to normal levels was undertaken.

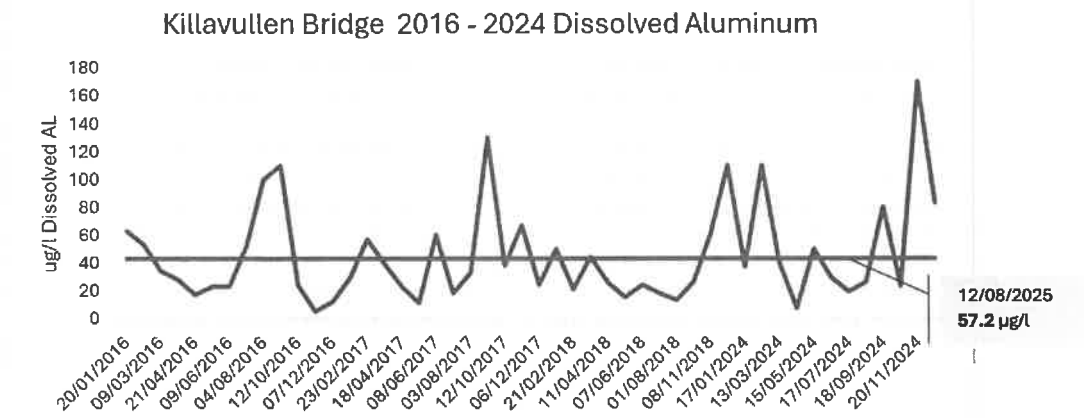
Only filtered (dissolved) aluminum is currently being monitored at Mallow Railway Bridge and Killavullen Bridge under the WFD. However, Lismore (Co. Waterford) is an OSPAR site, with both particulate and dissolved aluminum being monitored in 2024. Using EPA data from Lismore (Blackwater) monitoring, approximately 72% of aluminum in the Blackwater is in the particulate phase:

WaterbodyCode	MonitoringStationCode	(2024) Average Un Filtered Aluminium µg/l	(2024) Average Filtered Aluminium µg/l	% Al Removal by filtration
IE_SW_18B022700	RS18B022600	195	54	72%

Assuming approximately 70% of the aluminum is particulate phase and removed on filtration (i.e. 30% was in dissolved phase), a dissolved aluminum concentration of 57.2 µg/l (143*0.3) can be estimated for the Blackwater 12/08/2025 sample.

Plotting this value against available EPA WFD monitoring data for Killavullen (2016 to 2024 data available), and Mallow Railway Bridge (only 2016 -2018 data available), shows this value is within the range of normal catchment aluminum, having regard to variation in sample matrix and catchment conditions.





The result was discussed at Inter Agency Meeting (11/09/2025) and consensus was it was within the normal range of Aluminum monitoring data and was unlikely to be indicative or of evidential value in establishing Aluminum as being the case of the kill.

4. DEPARTMENT OF AGRICULTURE, FOOD AND THE MARINE (DAFM)

The Department of Agriculture (DAFM) participated in the Inter-Agency Group and attended the IAG meetings in a supporting role having regard to its statutory responsibilities for farm animal/ health and welfare.

The DAFM has reviewed results produced by the group together with relevant associated information. In addition, the DAFM has not been notified, through its Regional Veterinary Office (RVO) and Regional Veterinary Laboratory (RVL) networks of any increase or unusual patterns of farm animal illness or deaths in the area.

While one complaint relating to a dog was communicated to the RVO, this was not substantiated despite repeated efforts to contact the complainant. Notwithstanding this, there have been no reports nor concerns relating to animal health and welfare raised by the wider public to the DAFM.

Based on this and the significant amount of work commissioned and completed by the IAG as part of the inter-agency investigation there is no indication that that livestock health and the food chain from primary production was affected by this incident.

5. UISCE ÉIREANN

Following notification by the EPA to Uisce Éireann (UÉ) on August 12th of a fishkill in the River Blackwater UÉ undertook a review of its assets in the catchment. This included all relevant wastewater treatment plants and water treatment plants serving towns and village in the catchment.

This review included the examination of operational records and monitoring data to determine if discharges from these assets could have contributed to the reported fishkill. From this review no issues were identified with regard discharges or the normal operation of these assets.

In addition to the above, and as requested by the EPA, UÉ co-operated with the EPA in 19 audits of wastewater assets between August 12th and September 4th and audits of 4 drinking water assets between August 27th and September 4th. This also included the provision of relevant monitoring and operational records for review by the EPA.

UÉ as being responsible for the provision of safe drinking water also reviewed operational monitoring of the treatment process at the Mallow Water Treatment Plant and the monitoring of the water in supply undertaken in accordance with the requirements of S.I 99/2023. This monitoring did not indicate any issues or risks to drinking water quality.

6. NPWS

OVERALL CONCLUSION - TBA

There is no evidence available to link the significant fish kill on the Munster Blackwater in August 2025 to any identified discharge or licensed facility. As no change in water quality has been detected in the affected stretch between 2024 and 2025 it is likely that the fish kill was caused by an unknown toxic waterborne substance/irritant that may have entered the river between 5th and 9th August at a point upstream of the Glen River (the uppermost limit of reported mortalities) and dissipated quickly rendering it undetectable in water samples and fish tissue samples.

FUTURE DELIVERABLE - TBA

Interagency taskforce to be initiated for future fish kills investigations.

Glossary

LOQ: Limit of quantification – lowest concentration of a substance that can be measures with a stated degree of precision and accuracy (smallest amount of a substance that can be reliably quantified with statistical confidence)

LOD: Limit of detection – lowest concentration or amount of a substance that can be reliably detected by an analytical procedure – it indicates that the substance is present but does not mean it can be accurately quantified.

Electrofishing: uses the physiological effect of an electric field in water to stimulate a fish's nervous system so that it swims towards a handheld net – the fish is attracted to the net rather than stunned so as to precent harm. The charge emitted into the water causes them to turn and swim towards the net, which enables their quick removal for storage until processing.

Macroinvertebrate: very small animals without a backbone, visible to the naked eye. Found beneath water (benthic macroinvertebrates), are a useful indicator of water quality. Examples: mayflies, stoneflies, caddisflies.

3

Summary Report of the investigation into Fish Mortalities in the Munster Blackwater August-September 2025

Inter-Agency Report

September 2025

Iascach Intíre Éireann
Inland Fisheries Ireland

Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

Comhairle Contae Chorcaí
Cork County Council

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

NPWS An tSeirbhís Páirceanna Náisiúnta agus Fiadhúlra National Parks and Wildlife Service

HSE

Uisce Éireann
Irish Water

EXECUTIVE SUMMARY

Overall conclusions of the Inter-Agency Investigations

This report comprises the report of an Inter-Agency investigation into fish mortalities in the Munster Blackwater August 2025. It sets out the background to events which led to Minister of State Timmy Dooley (Minister of State at the Department of Agriculture, Food and the Marine with special responsibility for Fisheries and the Department of the Environment, Climate and Communications with special responsibility for the Marine) establishing an Inter-Agency Group to conduct a joint investigation, led by Inland Fisheries Ireland, with the Environmental Protection Agency and Cork County Council, supported by the Marine Institute, Uisce Éireann, the Department of Agriculture, Food and the Marine, the Health Service Executive, the National Parks and Wildlife Service and LAWPRO, and provides a synopsis of the main findings from each of the Agency investigations.

The extensive fish mortalities that occurred on the Blackwater River in Cork during August 2025 are a serious harm to the local fish stocks and have had an unjust and negative impact on the local communities. The devastation of damaged carcasses of thousands of dead fish floating in the protected waters of the Blackwater or tangled in the weeds of any of our country's rivers or lakes are events that are not to be tolerated.

When such detrimental incidents occur as on the Blackwater and where causation can be established and the wrongdoer identified, then they should be held to account. It is incumbent on all the state agencies with responsibilities in relation to these incidents to do all in their power to identify the cause and the wrongdoer and to bring them to account. This can only be achieved by following and assessing the available evidence, data and science.

Having considered the findings of each of the Agency contributions to this investigation, the following are the overall conclusions of the Inter-Agency Group:

- IFI completed over 200 habitat inspections, macroinvertebrate sampling and electrofishing in the affected area and pursued all leads to progress the investigation. The Agency provided samples to the Marine Institute Fish Health Unit for disease testing.

- IFI commissioned residue analysis of fish samples for chemicals (including pesticides) and heavy metals once disease was ruled out and sediment sampling deemed unsuitable.

- No evidence was found to link the fish mortalities to a point source of pollution or a specific environmental insult or waterborne irritant.

- Marine Institute Fish Health Diagnostics showed abnormal eyes and gills; no evidence of systemic disease was observed, pathology indicated exposure to an environmental insult or irritant.

- Cork County Council staff inspected twenty light industrial and commercial sites within the catchment, compromising of all businesses licensed under Section 4 of the Local Government (Water Pollution) Acts 1977 to 2007, and other commercial operators. No causal link to the incident was identified during inspections.

- Cork County Council undertook fourteen investigations of agricultural activities within the catchment. These investigations established no causal link to this incident.

- Cork County Council undertook nine macro-invertebrate assessments in the catchment. No evidence of the source of a potential environmental insult or irritant was found.

- Twenty complaints were received from members of the public in respect of this incident. All complaints were investigated, and no causal link was found.

- The EPA carried out an extensive investigation of 31 EPA regulated sites in the Blackwater catchment, including industrial facilities, wastewater treatment plants and drinking water plants. The detailed analysis of these sites in July and August 2025 does not support a causal link between these activities and the serious fish mortalities in the River Blackwater.

- The EPA assessment of water quality data for June, July and August 2025 indicates the water in the River Blackwater catchment is predominantly at Good Status, with no detectable changes in water quality noted. There was no evidence of a chronic water quality problem before or after the fish mortalities. This suggests the cause of the mortalities was a short-term pollution event.

- Uisce Éireann reviewed the operational and monitoring data associated with its wastewater and drinking water assets in the catchment and no issues were identified. This included confirmation that there were no risks or issues identified with drinking water quality in accordance with the requirements of S.I 99/2023.

- DAFM reported that there was no indication that livestock health and the food chain from primary production was affected by this incident.

- NPWS found no evidence of any mortalities on the protected species e.g. otter, freshwater pearl mussels or birds which are Qualifying Interests for the site or on other wildlife.

SCOPE

This document provides a summary of investigations into the fish kill on the Munster Blackwater by the primary agencies during August and September 2025: (Inland Fisheries Ireland (IFI), Environmental Protection Agency (EPA) and Cork County Council (CCC). Contributions from the wider Inter Agency Group are also included (Marine Institute, DAFM, DCEE, Uisce Eireann, National parks and wildlife Service

Inland Fisheries Ireland

Inland Fisheries Ireland has the statutory responsibility for the protection, development and management of Ireland's 74,000 km of rivers, streams and lakes as well as coastal waters to the 12-mile jurisdictional limit. IFI's environmental role is limited to the protection of waters from pollution and the prevention of injury or damage to spawning beds as set out in section 171 to 173 of the Fisheries (Consolidation) Act 1959 and as authorised persons under the Local Government (Water Pollution) Act 1977. IFI prosecutes offenders under these Acts when the source of a deleterious discharge is identified and linked directly to the party responsible.

IFI's role in the investigation was twofold – primarily to conduct habitat inspections and surveys to determine the cause and extent of the incident and to co-ordinate the inter-agency group established to conduct the investigation.

Environmental Protection Agency

The EPA is an independent statutory body established under the Environmental Protection Agency Act, 1992. The EPA's purpose is to protect, improve and restore our environment through regulation, scientific evidence and knowledge, and as a voice for the environment through leadership, advocacy, collaboration and partnership to deliver better environmental outcomes.

The EPA's primary role in the investigation into the fish mortalities on the Blackwater was to assess whether EPA-regulated sites within the region of interest could have been responsible through their water discharge activities, and to take action against any operator found to be at fault.

Cork County Council

Cork County council Environment Directorate monitors, analyses and reports on air, water, wastewater and waste management services in County Cork, in accordance with EU and national legislation. It also provides information on environmental matters to the public and to other County Council directorates.

Its mission is to promote and protect a high-quality natural environment, protect human health, secure the integration of environmental considerations into economic and sectoral policies and to promote best practice in the use of environmentally sustainable energy.

Marine Institute

The Marine Institute is the Competent Authority in Ireland for the implementation of Aquatic Animal Health Law (i.e.: EU Regulation 2016/429), which lays down rules for the prevention and control of animal diseases which are transmissible to animals or humans. As Ireland's Competent Authority for Aquatic Animal Health the Institute's Fish Health Unit is designated as Ireland's National Reference Laboratory for finfish, mollusc and crustacean diseases. That designation is made in accordance with the Animal Health Law (Article 17 of EU Regulation 2016/429) on the basis that the Fish Health Unit has the technical expertise necessary to carry out analysis of samples in relation to diseases of fish and shellfish.

As the National Reference Laboratory for diseases of fish, molluscs and crustaceans the Fish Health Unit's primary responsibilities are to develop, validate, and implement appropriate methods to test for

relevant listed diseases under the EU Animal Health Law (Annex II to Regulation (EU) 2016/429) and in the Annexes to Commission Implementing Decision (EU) 2021/260), as well as potential emerging diseases. These diagnostic services are provided as necessary, in support of the management of non-listed diseases by operators, veterinarians and other state agencies.

INTRODUCTION

Inland Fisheries Ireland (IFI) Officers investigated reports of dead and ailing fish in the Munster Blackwater on Monday 11th August at locations upstream of Mallow, Co. Cork. Later that week it was established that the first sightings of dead fish in the river were on Saturday 9th August. Affected fish were observed from Banteer (approx. 22km upstream of Mallow) to Castletownroche (approx. 17km downstream of Mallow) (Figure 1) with heavy concentrations at the confluence of the Clyda River with the main Blackwater channel. Dead and ailing fish were also found on the Cyda River, (c.1.5km upstream of Mallow). On initial observation fish presented with marks/lesions, damage to the eyes and gill damage. Fish mortalities were observed by IFI until 22nd August (1no. trout at Bridgetown Abbey, Awbeg) and marked/ailing fish until 5th September (Clyda Bridge) (Figure 1).

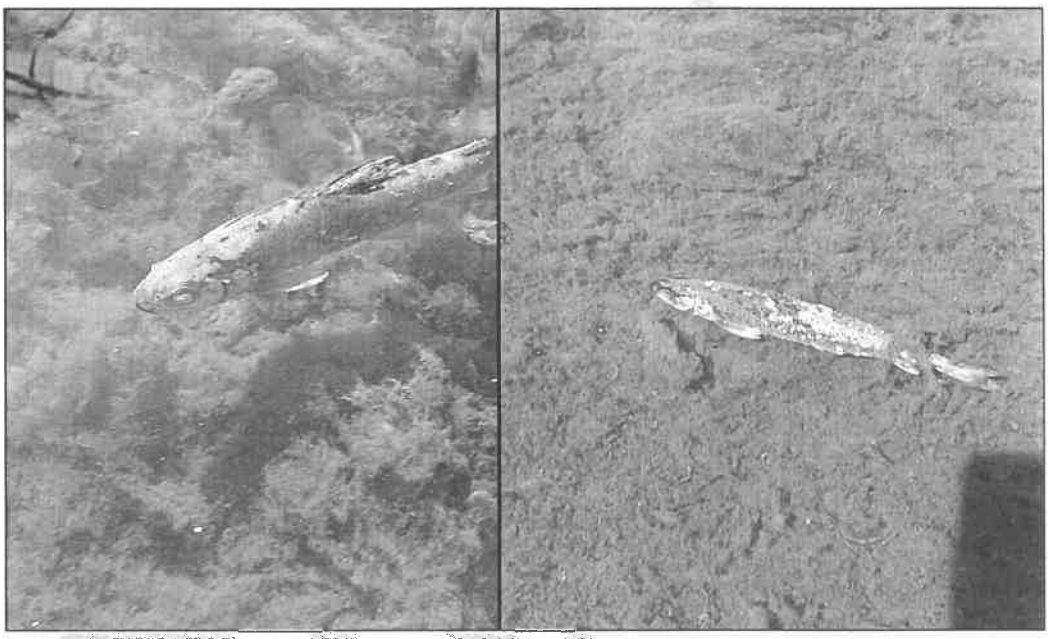


Plate 1 & 2: Heavily marked fish, 11th August, Mallow (photographs by IFI)

IFI contacted relevant authorities on the 11th August. All agencies worked closely together to share information and expertise as the investigation progressed.

Agencies participating in the investigation of the fish kill:

- Inland Fisheries Ireland (IFI) (LEAD), Environmental protection Agency (EPA), Cork County Council (CCC), Marine Institute (MI).

Additional agencies or Departments attending the Joint Interagency Working Group:

- Local Authorities Water Programme (LAWPRO), Department of Climate, Energy and the Environment (DCEE), Department of Agriculture, Food and the Marine (DAFM), Uisce Éireann (UÉ), HSE, NPWS

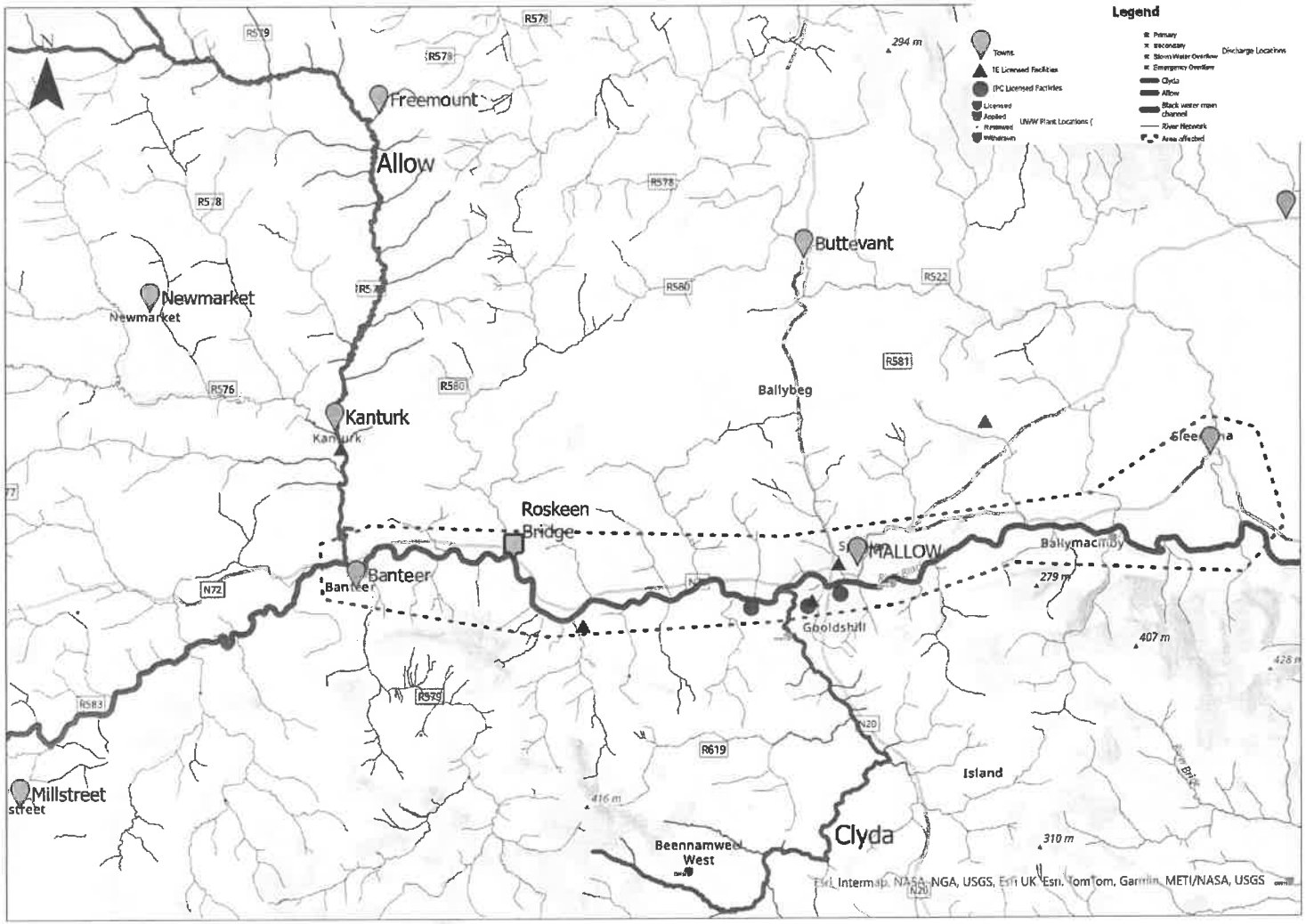


Figure 1: Munster Blackwater River channel where mortalities and marked/ailing fish were reported and/or observed, between Banteer (upstream) and Castletownroche (downstream). Red dashed line provides an indicative extent of affected area. (Map by IFI)

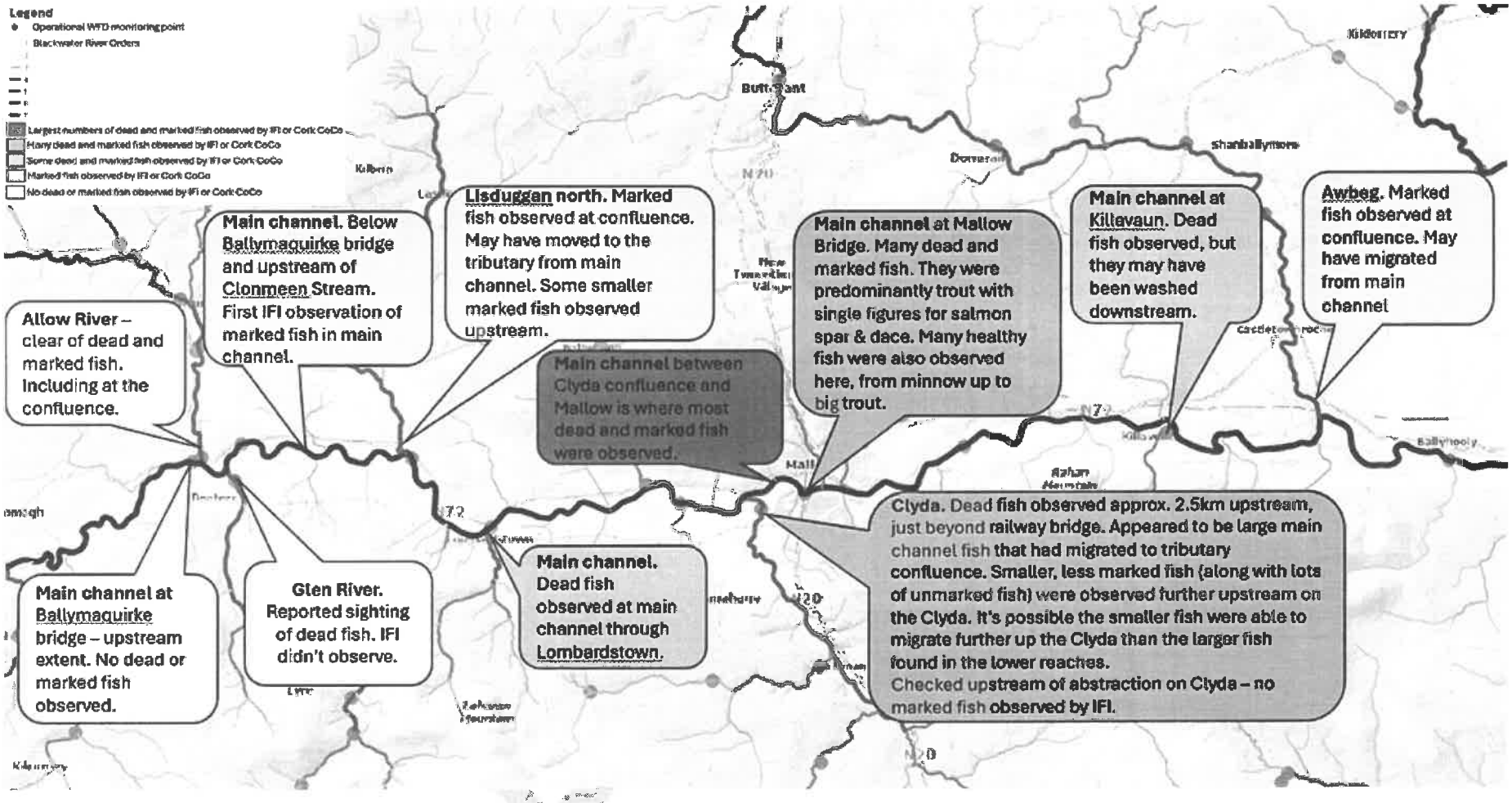


Figure 2: Areas of dead and affected fish observations (IFI)

1. INLAND FISHERIES IRELAND INVESTIGATION

IFI's investigations 11th August to 17th September:

- IFI carried out inspections of the affected stretch of river to assess the extent, scale and source of the fish kill.
- IFI consulted with UÉ, EPA, CCC within the catchment throughout 11th and 12th August.
- IFI contracted MI Fish Health Unit (competent authority for fish health in Ireland) on 11th August to undertake diagnostic pathology sampling of fish. MI attended the site on 14th August at Mallow.
- IFI carried out 198 habitat inspections at 47 locations up to 8th September. (Figure 3).
- IFI carried out 52 repeat habitat inspections between 9th-14th September however conditions were unsuitable for useful observation due to continued rainfall.
- IFI carried out macroinvertebrate sampling at 10 sites.
- IFI provided fish samples to Eurofins Environmental Ltd on 26th and 29th August for residue sampling - broad suite of analysis for 900 chemicals (including pesticides) and heavy metals to be conducted
- IFI investigated a report of possible suspicious activity at Roskeen Bridge (9th Aug) reported 27th Aug, with An Garda Síochána (AGS) on August 28th. Neither IFI nor AGS found evidence of criminal activity.
- IFI carried out electrofishing surveys at Roskeen bridge on 29th August (Plate 3 and Figure 1).
- IFI engaged with affected stakeholders

1.1 Bacterial, virology, parasite and pathology results

A total of 10 moribund fish were collected from the Munster Blackwater and sampled by the MI on the 14th August. On examination eyes and gills of each fish were abnormal on affected fish. No significant bacterial fish pathogens or viruses were isolated from fish samples. No evidence of the fish parasite *Gyrodactylus salaris* were found in the fish examined. No evidence of systemic disease was observed in organs. Gill pathology was consistent with exposure to some form of environmental insult or water borne irritant.

See IFI Website:

https://www.fisheriesireland.ie/news/media-releases/results-and-note-re-residue-sampling-tests

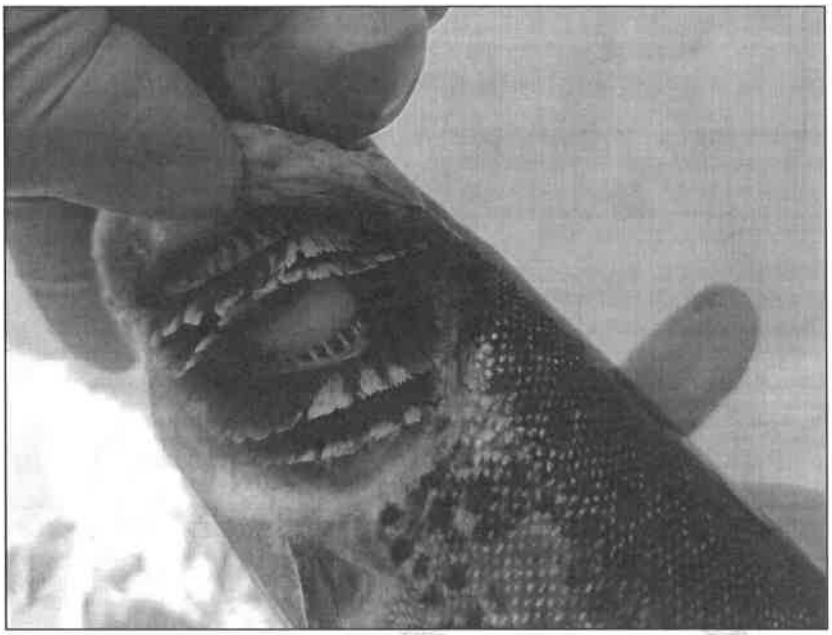


Plate 3: Gill pathology (photo by Marine Institute)

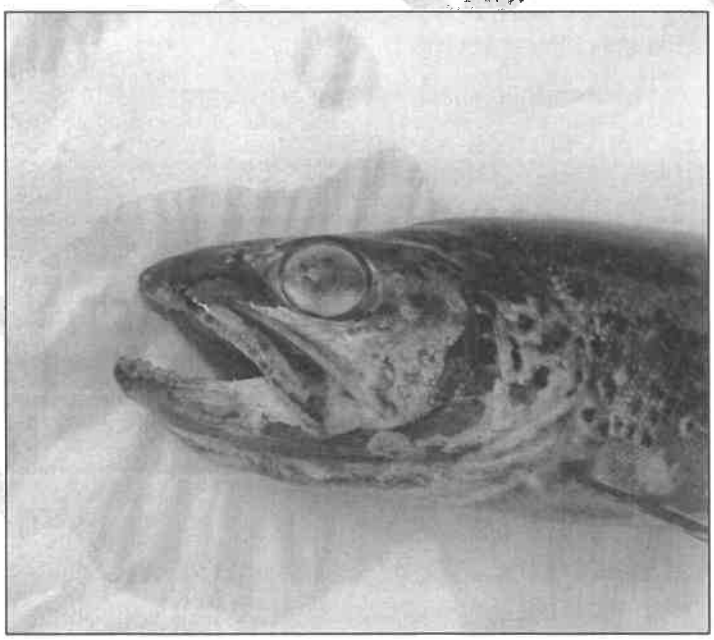


Plate 4: Pathology on eyes (photo by Marine Institute)

1.2 Residual fish tissue results

Following the fish kill on the Munster Blackwater 29 brown trout were sampled on the 26th and 29th of August from the River Clyda confluence with the Munster Blackwater (is ~1.5km upstream of Mallow) and sent to Eurofins Environment Testing Ireland Ltd. for residual tissue analysis. The fish sampled via electrofishing, were adult brown trout. All individuals were observed to be actively swimming. Approximately 50% of individuals sampled presented with corneal oedema

with opacity and swelling of affected tissue. Eurofins Environment Testing Ireland Ltd. arranged for testing in a specialist laboratory in Germany.

This laboratory testing involved measuring chemical residues in fish tissue to assess any potential environmental contamination. Tissue from each fish was screened for 900 chemicals including pesticides and heavy metals. Analysis determined if residue levels of listed chemicals were within acceptable standards. Preliminary results did not indicate presence of any of the listed chemicals (including pesticides) above the limit of quantification (LOQ) apart from three heavy metals, i.e. Mercury (Hg), Arsenic (As), and Aluminium (Al). One fish (Clyda 4A) had an Arsenic value above LoQ of 0.16mg/kg. Al ranged from <0.5 to 3.6mg/Kg of fish tissue and Hg ranged from 0.045 to 0.17mg/Kg.

It should be noted that mercury (Hg), aluminium (Al) are common in many Irish surface waters while arsenic (As) is naturally occurring in areas with underlying sandstone. Their concentration in surface waters is highly variable and are also increased by human activities.

Comment on Mercury concentrations and results of fish tissue analysis (provided by EPA)

The national WFD monitoring programme provides a comprehensive and long-term picture of the concentrations of chemical substances in water. Substances, such as mercury, that persist in the environment many years after their use has ceased, are known as ubiquitous substances. Mercury is known to readily bioaccumulate and persist in fish. The Surface Water Regulations (S.I. No. 77/2019) sets out an environmental quality standard of 0.02 mg / kg for mercury in fish.

Samples taken from the national WFD monitoring programme between 2019-2024 indicate that 89% of rivers and lakes, where fish have been tested, had mercury concentrations exceeding the standard. 24% of the rivers and lakes, where fish have been tested, had concentrations greater than 0.2 mg / kg (with a maximum reported concentration 0.41 mg / kg).

Following the fish kill on the River Blackwater in August 2025, the reported mercury concentrations in each fish tested by Inland Fisheries Ireland was above the mercury standard (with a maximum reported concentration 0.17 mg / kg). The concentrations were comparable to those reported in WFD monitoring programme data and there is no evidence to indicate that mercury was the pollutant that led to the fish kill on the River Blackwater in August 2025.

Comment on Aluminium concentrations in surface waters in Catchment (provided by EPA)

Water chemistry sample analysis from 12th & 13th August, provided by Cork County Council for the River Blackwater in Mallow, had a range of water quality parameter concentrations that were indicative of good water quality overall. The River Blackwater sample had an Aluminium concentration of 141 µg/l which was slightly elevated. Cork County Council indicated that the sample was unfiltered and therefore may overestimate the dissolved Aluminium concentration i.e., the sample may have contained particulate matter.

Historical water chemistry for the River Blackwater was examined and Aluminium concentrations for filtered samples at Killavullen Bridge (downstream of Mallow) in 2024 had an average concentration of 56 µg/l, with a maximum concentration of 171 µg/l. Since 2016, 13% of the filtered samples taken at Killavullen Bridge have had an Aluminium concentration greater than 100 µg/l. Upstream of Mallow, historical 2016-2018 filtered samples on the River Blackwater, taken at the Mallow Railway Bridge, Ballymaquirk Bridge and Colthurst Bridge also had Aluminium concentrations greater than 100 µg/l, with respective maximum concentrations of 130 µg/l, 320 µg/l and 610 µg/l.

Overall, the Aluminium concentration of 141 µg/l in the unfiltered sample taken by Cork County Council on 12 / 13 August is comparable to historic concentrations in the River Blackwater and is not indicative of an issue with Aluminium concentrations in the river.

Comment on Arsenic concentrations

A single sample - "Clyda 3A –26/08/2025) reported a level of arsenic at 0.16mg/kg, LOQ 0.1. Data from the EPA (2016-2024) indicates arsenic concentrations for all water samples are <LOQ, i.e., <0.1 ug/l.

Table 1: Eurofins Environment Testing Reports

Certificate Code	Status	Date Received	Sample References
AR-25-M3-029658-01	CERTIFICATE OF ANALYSIS	17 SEPTEMBER	CLYDA 1B – CLYDA 15 B
PR-25-M3-000552-01	PRELIMINARY CERTIFICATE	15 SEPTEMBER	CLYDA 1 B –CLYDA 15B
AR-M3-029021-01	CERTIFICATE OF ANALYSIS	12 SEPTEMBER	CLYDA 1 A – CLYDA 14 A
PR-25-M3-000550-01	PRELIMINARY CERTIFICATE	11 SEPTEMBER	CLYDA 4, 6, 8-14 [1]
PR-25-M3-000551-01	PRELIMINARY CERTIFICATE	11 SEPTEMBER	CLYDA 9 B - 15 B

NOTE 1: RE-LABELED AS 'A' SAMPLES 12 SEPTEMBER

Link to published results: www.fisheriesireland.ie/sites/default/files/2025-09/note-on-residue-sampling-results.pdf

1.3 Note on sampling

The Marine Institute, (MI), (Competent Authority for Fish Health in Ireland), was notified of the fish kill by IFI on 11th August. A researcher from the MI met with IFI 14th August at Mallow Bridge to take samples for diagnostic analysis. The preliminary report outlining the results of the diagnostic testing completed was received by IFI late 21st August and outlined at a meeting with the Minister and stakeholders at Mallow on 22nd.

The Inter-Agency Group established on the direction of the Minister met on Monday 25th August and reviewed the preliminary report. The Marine Institute noted that the samples taken ruled out disease; fish pathology suggested a range of chemicals could result in similar damage. Group discussion of actions to progress the investigation determined that organ analysis was the most likely route to identifying any chemicals / pesticides in the affected fish. IFI was advised that such analysis was not available from MI and would need to be outsourced to an independent laboratory. MI identified 'Eurofins Environment Testing' as a company with the capability to provide the service. IFI understood that the MI would co-ordinate with IFI to collect sample specimens, however, was subsequently advised by MI that, while it could assist in assessing the impact of the event on the fish population from a pathology perspective, it did not have the technical capacity to co-ordinate sample collection for residue analysis. IFI thus engaged directly with Eurofins.

IFI inspected the main channel at the Ross River confluence at Killavullen on the same evening, 25th August, to ensure availability of marked fish for sampling. On returning to electro-fish the area early on 26th August to obtain samples, none were available. IFI was subsequently informed that the marked fish had been removed by a stakeholder on the evening of 25th. IFI moved upstream to the confluence of the main channel and the Clyda, as this location held the largest congregation of affected fish throughout the period and the location would be suitable for

removing samples by electrofishing. Officers removed 14 (A samples) on 26th August and delivered them to Eurofins at Little Island, Cork.

On 28th August Eurofins contacted IFI and advised that they could expand the range of substances for testing from 600 to 900 compounds if additional samples could be provided. IFI returned to the Clyda on the morning of 29th August and obtained 15 fish (B samples) for testing. The samples were delivered to Eurofins on 29th August.

1.4 Electrofishing at Roskeen Bridge, Munster Blackwater

Four stretches of river were electro fished upstream and downstream of Roskeen Bridge on Friday 29th August to assess the status of fish stocks in the locality. Six fish species were recorded during the surveys: Atlantic salmon (69), brown trout (20), dace (17), minnow (17), European eel (12), and stone loach (6). Atlantic salmon ranged in length from 6.9cm to 15.1cm and one adult salmon was also observed but not measured. Brown trout ranged in length from 15.9cm to 42.3cm and dace from 5.6cm to 19.8cm. Multiple age classes of both salmon (0+ and 1+) and brown trout (1+ to 4+, with 2+ most abundant) were present. Excess algae was observed on the river substrate indicating nutrient enrichment (eutrophication). Additionally, a small number of dead fish were observed in the margins among vegetation during the survey.

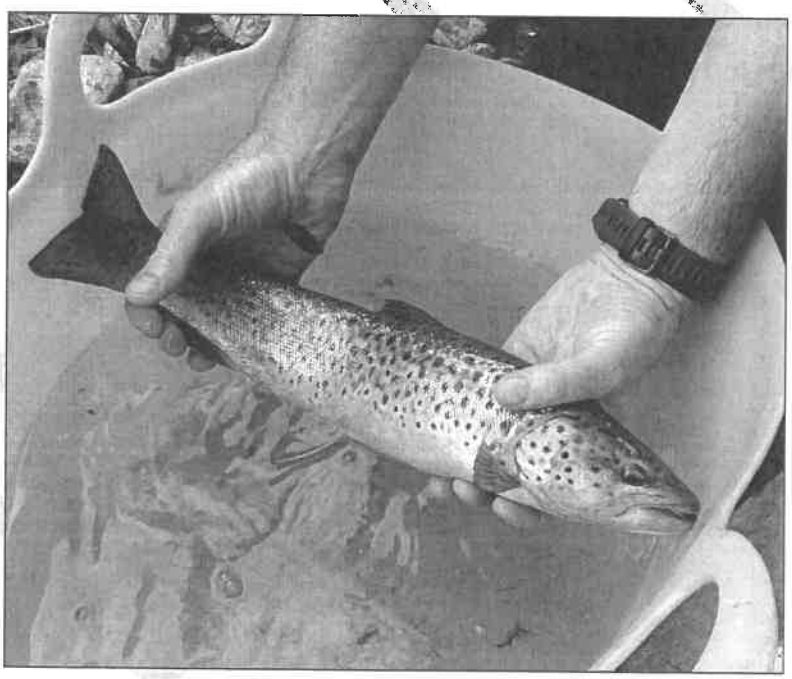


Plate 3: Brown trout captured during an electrofishing survey on the Munster Blackwater at Roskeen Bridge on Friday 29th August 2025 (IFI)

1.5 Estimate of fish mortalities

IFI estimated the minimum density of fish in the Munster Blackwater from Banteer to Castletownroche (39km of river channel) based on mean population density estimates calculated for earlier electrofishing surveys on the river from 2009 to 2022.

A conservative minimum density estimate for total number of fish present in the affected stretch is **83,602** fish. It was estimated that brown trout and juvenile salmon comprised an average of

76% of the population (**64,356**) of fish at surveyed sites. It should be noted that these figures do not include accurate estimates of YoY salmon and trout or adult salmon.

The proportion and the origin of the dead fish is unknown as live fish were observed throughout the affected stretch alongside dead and ailing fish. IFI observed dead brown trout and salmon parr, the vast majority of which were adult brown trout. Two heavily affected dace were also observed at separate locations. Anecdotal reports of dead eels, stickleback were received but unverified. There was also a relatively healthy population of fish present at Roskeen Bridge on 29th August (see above). IFI therefore assigned a minimum (20%), and a maximum (50%) mortality estimate to the total estimated minimum population to provide estimates of fish mortality (Table 2).

Table 2: Estimated fish mortalities on the Munster Blackwater, August 2025 (excluding YoY brown trout and salmon and adult salmon)

	20% mortality	**50% mortality**
Estimated total no. fish mortalities	16,720	41,801
Estimated salmon and brown trout mortalities	12,871	32,178

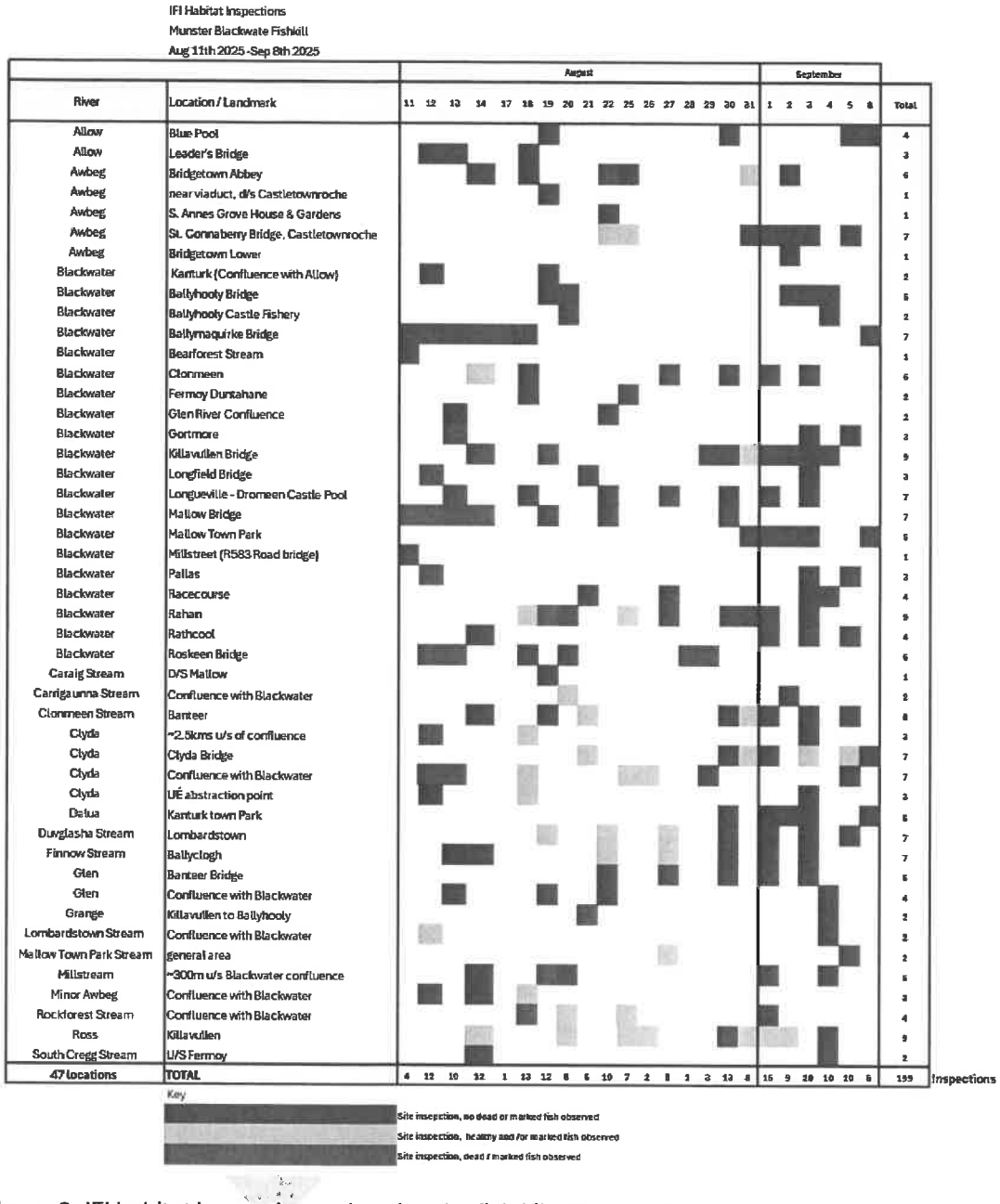


Figure 3: IFI habitat inspections related to the fish kill, Munster Blackwater Catchment, August-September 2025.

1.6 Inland Fisheries Ireland ongoing activities

- Fish samples will be taken by IFI to establish a baseline for chemicals including pesticides and heavy metals across the catchment. It is envisaged that sampling will take place in the coming weeks, although successful completion of same will be weather dependent.
- IFI will undertake electrofishing surveys on the Allow River (weather permitting)
- IFI will undertake lamprey surveys across the catchment (weather permitting)

- IFI will deploy drone and kayak patrols to continue to examine and survey the scene.
- IFI will schedule an electrofishing survey of the Munster Blackwater early in the survey season (July 2026) to monitor recovery of the affected channel (survey season for electrofishing opens on 1st July).

2. ENVIRONMENTAL PROTECTION AGENCY INVESTIGATION

Introduction

The EPA's primary role in the investigation into the fish mortalities on the Blackwater is to assess whether EPA-regulated sites within the region of interest could have been responsible through their water discharge activities, and to take action against any operator found to be at fault.

Investigation Overview

The EPA first became aware of the serious fishkill on the morning of the 12th August 2025, and immediately mobilised resources in the Blackwater catchment to investigate whether any EPA-regulated site could have been a source of polluting material.

EPA has participated in a Multi-Agency group, established at the direction of the Minister and coordinated by Inland Fisheries Ireland (IFI), for the purposes of sharing data and expertise and supporting the investigation into the cause of the fish mortalities.

The EPA's investigation encompassed:

- The deployment of three teams of inspectors to EPA-regulated sites in the Mallow and Kanturk area within an hour of the EPA becoming aware of the fish mortalities. The inspections on August 12th/13th found no evidence of spills or discharges linked to the incident.
- An immediate expansion of the investigation on August 22nd to include a broader timeframe and geographic scope within the Blackwater catchment. This was in response to preliminary fish postmortem results from the Marine Institute, which indicated a pollution source was the likely cause of the fish damage in the week prior to the 12th August.
- The completion of 41 inspections of thirty-one facilities in the catchment, the collection of 40 samples and an assessment of operational practices and monitoring data associated with 10 industrial sites, 17 wastewater treatment facilities and 4 drinking water plants.
- The completion of five invertebrate quality surveys carried out by the EPA in the Kanturk to Mallow area on 12th August and 1st and 2nd September 2025.

Twenty seven of the thirty one EPA-regulated sites investigated had either no discharges or had compliant discharges during the weeks prior to the 12th August. However, four of the thirty-one facilities investigated had discharges that were not compliant with licence requirements in July and August and one small wastewater facility with a certificate of authorisation was operating above operational capacity. These sites were North Cork Creameries (Licence Register No. P1051-01); Millstreet wastewater treatment plant (D0332-02); Bweeng & Environs wastewater treatment plant (D0438-01); Dromahane wastewater treatment plant (D0302-01) and Lombardstown Certificate of Authorisation (A0327-01). The EPA was already aware of the issues at four of these sites, with the breach at Millstreet detected during the investigation. All these issues remain the subject of on-going enforcement action which is separate and distinct from the investigation into the causality of the fish mortalities on the Blackwater.

Detailed Assessment

To determine if there was a causal link between the fish mortalities and EPA-regulated sites, the EPA assessed the relevant monitoring and operational data for the sites and the impact of the non-compliant discharges on receiving water quality in the period 28th July to 12th August.

The EPA, with the assistance of Local Authorities and Inland Fisheries Ireland, collects water quality data from the Blackwater River on an ongoing basis as part of the National Water Monitoring Programmes under the Water Framework Directive. The data include water chemistry, fish and macroinvertebrate samples. The data collected in 2024 in the area of the investigation of the River Blackwater catchment generally indicates the water quality in the catchment is at Good Status. The water chemistry and macroinvertebrate ecological samples taken during June, July and August 2025 indicate no change in water quality in the River Blackwater catchment.

In response to the current incident, the EPA also carried out specific macroinvertebrate ecological water quality sampling in the affected area following the fish mortalities and the results were again indicative of good or better ecological water quality. Overall, there is no evidence from the ecological water quality data that there was a chronic water quality problem in the Blackwater catchment, in advance of, or following the fish mortalities. This suggests that the cause of the fish mortalities was a short-term pollution event, which may have been localised in extent, and wasn't due to an underlying chronic water quality problem.

The detailed analysis and assessment of discharges from all thirty-one EPA-regulated sites, including industrial sites and Uisce Éireann controlled urban wastewater discharges and drinking water plants during July and August 2025, does not support a causal link between these activities and the serious fish mortalities found in the River Blackwater.

North Cork Creameries [Licence No. P1051-01]

One of the thirty-one EPA-regulated sites investigated by EPA in relation to the fish mortalities incident was North Cork Creameries (NCC) situated on the River Allow near Kanturk. While NCC was an important focus of that investigation it is specifically mentioned in this summary as it attracted significant public attention and speculation throughout the course of the current investigation. NCC is a site with a history of failure to consistently achieve compliance with its licence discharge conditions and was already the subject of significant enforcement activity by EPA prior to the incident, culminating in a prosecution which concluded in April 2025 resulting in convictions and the imposition of fines. EPA continues to monitor the licensed site closely.

Non-compliances were detected in the wastewater treatment plant discharge from NCC in the June to August period and were serious and entirely unacceptable. The licence breaches arose primarily due a lack of organised management or control of wastewater treatment plant activities, a lack of appropriate expertise to resolve significant operational issues, a failure to appropriately generate, manage, maintain and use critical data sets to inform corrective actions and a disregard for licence requirements and licence limits.

These compliance issues have not yet been fully resolved by the licensee, and the EPA is rigorously pursuing the enforcement of the licence breaches arising as a matter of priority and

urgency, in line with its Compliance and Enforcement Policy. Offences related to breaches of EPA licences may be prosecuted summarily by the EPA or on indictment by the Director of Public Prosecutions (DPP). The EPA is giving full consideration to all such enforcement options available to it in respect of the non-compliances detected. These pre-existing issues are very serious matters that need to be resolved to restore consistent compliance and for the NCC to entertain the prospect of retaining its licence to operate into the future.

Despite the seriousness of these issues and the significance of licence breaches at NCC, the EPA's assessment as set out in this report, does not support a causal link between the NCC's discharges into the River Allow and the fish mortalities in the Blackwater (see Figure 1, page 12, for location of NCC relative to Blackwater). In summary, this reasoned conclusion is based on the following:

- **Yard Drainage:** The yard drainage on the site is configured to discharge only to the wastewater treatment plant. Therefore, all effluent and spills arising on site are discharged through the wastewater treatment plant.

- **Load to wastewater treatment plant:** An assessment of the plant's operational data demonstrates that while the site's wastewater treatment plant was performing very poorly during the first few weeks of August, it was consistently so. There was no evidence that a sudden catastrophic load to the river was discharged through the wastewater treatment plant in that period, or that any form of chemical discharge occurred. An assessment of the plant's operational data indicates that the occurrence of such an event in that period would be very unlikely.

- **Toxicity of discharge to fish:** Considering the types of material used on site, and the type of damage caused to the fish in the Blackwater (as described by the Marine Institute report), the key parameters of concern in relation to the NCC discharge is un-ionised ammonia and pH. The level of un-ionised ammonia that could have occurred in the river as a result of the NCC discharge in the weeks prior to the fish mortalities were below the threshold of 0.02mg/l NH_3 (i.e. below the level at which toxic effects could occur in fish and other aquatic species if subjected to chronic/longer term exposure). pH levels were stable and in compliance in the period investigated.

- **Proximity of site to dead fish:** No dead or marked fish in River Allow: The IFI also advised the public authorities investigating the fish mortalities that marked and dead fish were not observed in the River Allow, which is the river to which the NCC discharges, before, during or after the fish mortalities in the Blackwater were reported. In addition, there is a stretch of 4 km river water between the NCC discharge point on the Allow and where the Allow enters the Blackwater.

The EPA regulates, through authorisation and enforcement, almost 900 industrial and waste facilities, over 1000 wastewater authorisations and approximately 750 drinking water treatment plants, with 1,773 inspections carried out across these sectors in 2024. All inspection and monitoring reports are available on the EPA website via an online portal called LEAP online. It does so without fear or favour in the interests of the public and in the protection of the environment. It does so by detailed assessment and by drawing reasoned conclusions based on

the available evidence, data and science as it has done in this report. To do otherwise would be to draw conclusions based on speculation which would be both environmentally irresponsible and regulatorily negligent.

Conclusion

In conclusion, the detailed analysis and assessment of all thirty-one EPA authorised sites, including industrial sites and Uisce Éireann controlled urban wastewater discharges and drinking water plants during June, July and August 2025, does not support a causal link between these activities and the serious fish mortalities found in the River Blackwater.

Throughout the investigation, the EPA worked closely with IFI, Cork County Council and others, both bilaterally and through an inter-agency group convened by the IFI for the purposes of the wider investigation. The EPA provided expertise and data in relation to discharges from regulated sites, water quality and invertebrate sampling in the Blackwater catchment.

The EPA also received videos and pertinent information from concerned members of the public in relation to discharges from EPA-regulated sites during the investigation period. The EPA acknowledges with gratitude the work and commitment of those concerned groups in contributing to the EPA's investigation. The issues raised by those members of the public have been considered in the EPA's assessment.

The findings of this report are intended to support and inform the activities of a multi-agency investigation into Blackwater fish mortalities.

See EPA website (Include link to full EPA report)

2. CORK COUNTY COUNCIL

Cork County Council was first notified by Inland Fisheries Ireland (IFI) at 12:15 hrs on Monday the 11/08/2025 of a reported fish kill at Mallow Bridge.

A Cork County Council officer attended the scene at 14:30 hrs with IFI.

Cork County Council carried out an inspection of the river in the vicinity of the reported fish kill and upstream of Mallow Bridge. No discharge, plume or other matter was evident.

Several dead and injured fish (brown trout) were observed by the Cork County Council officer and IFI inspectors, among seemingly unaffected fish.

IFI shared their initial assessment suggesting a possible fungal outbreak, exacerbated by low water levels and high temperatures. As early investigations yielded no sign of pollution, IFI continued their investigation of a potential disease outbreak.

IFI engaged The Marine Institute, Fish Health Unit, to assist in their investigation by way of pathological testing.

Investigations by IFI and Cork County Council officers continued, in order to ascertain the extent of the area impacted, and what rivers could potentially be affected.

Cork County Council received a number of complaints from the public on the 12/08/2025.

Cork County Council carried out sampling at the River Clyda and River Blackwater (Mallow) on the 12/08/2025. Results from these samples showed that ammonia, dissolved oxygen were within normal range. These results were shared with IFI.

From 12/08/2025 through to 22/08/2025, the investigation was primarily supporting IFI in their investigation to establish the scale and extent of affected catchment, following up and investigating reported mortalities and reports from the public about activities that may be responsible for this incident.

Fig 1. below shows the extent of the affected waterbodies. The main Blackwater channel from Clonmeen, Banteer to the confluence of the Awbeg with the Blackwater at Castletownroche, and approximately 2.5km of the Cylda river. The Allow, Glen and Lombardstown rivers appeared to be unaffected.

Figure 1 Affected Waterbodies

On the 22/08/2025 based on the Marine Institute Fish Health Unit, IFI confirmed they were satisfied the cause was not a fungal infection as previously suggested, and the likely cause was an "environment insult or irritant" that caused or contributed to the fish mortalities, and the exposure may have occurred in the days previous to the 11/08/2025.

Minister T. Dooley (Minister State Department Agriculture Food and the Marine) on the 22/08/2025 established an Inter-Agency Group to be led by IFI, which consisted of agencies including EPA, Cork County Council, Marine Institute, Uisce Éireann – eventually expanding to include HSE, DAFM, NPWS, LAWPRO.

On 25/08/2025, the interagency group convened for an online meeting. IFI was confirmed as the lead agency and chaired the meeting. The EPA and Cork County Council attended the first Inter-Agency Group meeting.

IFI have to date been the lead agency on this case and have co-ordinated and chaired a series of inter-agency meetings. The initial meeting took place on the 25/08/2025. Cork County Council attended further meetings on the 01/09/2025, 03/09/2025, 08/09/2025, 11/09/2025, 12/09/2025,16/09/2025 and 23/09/2025.

The Inter-Agency Group meetings agreed specific actions, including further analysis of tissue samples by a contracted laboratory on behalf of IFI, as well as further catchment macroinvertebrate assessments at agreed locations; these assessments to be undertaken by Cork County Council, EPA and IFI. These assessments found no evidence of an impacted macroinvertebrate population.

Between 13/08/2025 and 27/08/2025, Cork County Council staff inspected twenty light industrial and commercial sites within the catchment, compromising of businesses licensed under Section 4 of the Local Government (Water Pollution) Acts 1977 to 2007, and other commercial operators. No issues were identified that might give rise to an incident of this nature. Any minor non-compliant activities detected as part of these investigations are being pursued as appropriate under the enforcement provisions of the Local Government (Water Pollution) Act.

Cork County Council undertook fourteen investigations of agricultural activities within the catchment. These investigations established no causal link with this incident.

Cork County Council sent samples taken on 12/08/2025 for additional testing (heavy metals) on the 25/08/2025. The result was discussed at Inter Agency Meeting (11/09/2025) and consensus was it was these results were within the normal range of monitoring data and was unlikely to be indicative or of evidential value in establishing any analysed heavy metals as being the cause of the kill.

Between 12/08/2025 and 05/09/2025 a total of twenty complaints have been received from members of the public in respect of this incident. All complaints were triaged and assigned for inspection where deemed appropriate. Arising from the investigation of these complaints, no causal link to the fish kill was found.

Results from fish tissue testing undertaken by specialist laboratory on behalf of IFI, found no specific factors that could be conclusively said to have caused the incident.

Cork County Council briefed their elected members of the Northern Committee (In-Committee) on the 08/09/2025 and 22/09/2025.

Cork County Council has supported IFI (lead agency) and has worked closely with other state agencies throughout this investigation.

Cork County Council will continue to provide support to the investigation on an Inter-Agency basis.

4. DEPARTMENT OF CLIMATE, ENERGY AND THE ENVIRONMENT (DCEE)

The DCEE played a key role in the investigation through stakeholder and agency engagement and the establishment of the inter-agency group on 22nd August to co-ordinate the investigation:

- Minister Dooley visited the site in person on two occasions: August 18 and August 22
- He engaged with stakeholders throughout the process
- The Minister chaired the town hall meeting with stakeholders in Mallow GAA club on August 22nd and established the interagency working group at that meeting
- He communicated with local and national media – the communications team at DCEE at the direction of the Minister engaged with the interagency working group from the outset
- The Minister gave clear direction that as test results became available, they were released to the public ensuring maximum transparency
- He chaired three meetings of the interagency working group
- He was in ongoing contact with the IFI throughout the process and with the agencies involved.

5. DEPARTMENT OF AGRICULTURE, FOOD AND THE MARINE (DAFM)

The Department of Agriculture, Food and the Marine (DAFM) participated in the Inter-Agency Group and attended the IAG meetings in a supporting role having regard to its statutory responsibilities for farm animal/ health and welfare.

The DAFM has reviewed results produced by the group together with relevant associated information. In addition, the DAFM has not been notified, through its Regional Veterinary Office (RVO) and Regional Veterinary Laboratory (RVL) networks of any increase or unusual patterns of farm animal illness or deaths in the area.

While one complaint relating to a dog was communicated to the RVO, this was not substantiated despite repeated efforts to contact the complainant. Notwithstanding this, there have been no reports nor concerns relating to animal health and welfare raised by the wider public to the DAFM.

Based on this and the significant amount of work commissioned and completed by the IAG as part of the inter-agency investigation there is no indication that livestock health and the food chain from primary production was affected by this incident.

6. UISCE ÉIREANN

Following notification by the EPA to Uisce Éireann (UÉ) on August 12th of a fishkill in the River Blackwater UÉ undertook a review of its assets in the catchment. This included all relevant wastewater treatment plants and water treatment plants serving towns and village in the catchment.

This review included the examination of operational records and monitoring data to determine if discharges from these assets could have contributed to the reported fishkill. From this review no issues were identified with regard discharges or the normal operation of these assets.

In addition to the above, and as requested by the EPA, UÉ co-operated with the EPA in 17 audits of wastewater assets between August 12th and September 4th and audits of 4 drinking water assets between August 27th and September 4th. This also included the provision of relevant monitoring and operational records for review by the EPA.

UÉ as being responsible for the provision of safe drinking water also reviewed operational monitoring of the treatment process at the Mallow Water Treatment Plant and the monitoring of the water in supply undertaken in accordance with the requirements of S.I 99/2023. This monitoring did not indicate any issues or risks to drinking water quality.

7. NPWS

The National Parks and Wildlife Service (NPWS) has obligations under the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011 and amendments) in relation to the Qualifying Interests (QIs) for protected sites.

In response to the incident in the River Blackwater Special Area of Conservation (SAC) [Site Code 002170] the NPWS worked closely with other State agencies to identify the cause of and ascertain the full impact on the Qualifying Interests for the site.

NPWS staff carried out surveys and monitoring on the protected species which are Qualifying Interests for the site, for example Otters and the Freshwater Pearl Mussel. To date, NPWS staff and other agencies found no evidence of any mortalities amongst these species and other wildlife.

The National Parks and Wildlife Service will continue to undertake monitoring programmes for habitats and species in accordance with the requirements of the EU Birds and Habitats Directive under a six-year cycle, with surveys to assess the condition of protected species such as the Freshwater Pearl Mussel scheduled for 2026.

The responsibility for finfish species (as set out in the Fourth Schedule of the Regulations and in Annex II and V of the Habitats Directive) is held by the Ministers of Government whose Departments are responsible for marine fisheries and freshwater fisheries, or public authorities under the aegis of those Departments. NPWS will continue to work closely with the Inter-Agency Group.

OVERALL CONCLUSION - TBA

Despite the significant investigation by members of the Joint Agency Group the pollutant or the source, that caused the fish mortalities has not been identified. There is no evidence available to link the significant fish kill on the Munster Blackwater in August 2025 to any identified discharge or licensed facility. No change in water quality has been detected in the affected stretch between 2024 and 2025. There were no significant bacterial fish pathogens, nor diseases, identified in the brown trout sampled 14th August[1]. The Marine Institute Fish Health Report noted that gill pathology suggested possible exposure to a form of environmental insult or waterborne irritant.

Analysis of brown trout for presence of chemicals, pesticides and heavy metals did not identify any such possible irritant.[2]

It may be concluded that a waterborne irritant entered the river Blackwater up to 72 hours before the first mortalities were observed on 9th August 2025, at an unidentified point most likely upstream of the uppermost limit of IFI observed mortalities (main channel between Gortmore and upstream of Roskeen Bridge 13th August) and dissipated quickly rendering it undetectable in water samples and fish tissue samples.

There was no indication that that livestock health and the food chain from primary production was affected by this incident.

FUTURE DELIVERABLE - TBA

- Interagency protocol to be initiated for future fish kills investigations.
- The learnings from this incident to be captured to inform future interagency approaches to investigating significant incidents impacting water bodies across the country

[1] Marine Institute FHU Report No. F/099/25

[2] Eurofins Certificate of Analysis AR-25-M3-029658-01 & AR-25-M3-029021-01

Glossary

LOQ: Limit of quantification – lowest concentration of a substance that can be measures with a stated degree of precision and accuracy (smallest amount of a substance that can be reliably quantified with statistical confidence)

LOD: Limit of detection – lowest concentration or amount of a substance that can be reliably detected by an analytical procedure – it indicates that the substance is present but does not mean it can be accurately quantified.

Electrofishing: uses the physiological effect of an electric field in water to stimulate a fish's nervous system so that it swims towards a handheld net – the fish is attracted to the net rather than stunned so as to precent harm. The charge emitted into the water causes them to turn and swim towards the net, which enables their quick removal for storage until processing.

Macroinvertebrate: very small animals without a backbone, visible to the naked eye. Found beneath water (benthic macroinvertebrates), are a useful indicator of water quality. Examples: mayflies, stoneflies, caddisflies.

APPENDICES

APPENDIX 1 – IFI report

APPENDIX 2

BLACKWATER FISH MORTALITIES AUGUST 2025

EPA investigation of discharges to water from EPA-regulated sites in the Blackwater Catchment

July / August 2025

For submission to Inland Fisheries Ireland

23 September 2025

Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

Key Messages

- In August and September 2025, the EPA participated in a multi-agency investigation, into fish mortalities arising in the River Blackwater in August 2025. The EPA's role was to investigate whether there was any link between the fish mortalities and EPA-regulated sites, and to provide water quality expertise and data to the wider investigation. The findings of this report are intended to support and inform the activities of a multi-agency investigation into the Blackwater fish mortalities.

- The EPA:
    - Completed 41 site inspections,
    - Collected 40 samples,
    - Carried out five macroinvertebrate quality surveys and
    - Assessed operational practices and monitoring data associated from 10 industrial sites, 17 wastewater treatment facilities and four drinking water plants.

- Samples taken during June, July and August 2025 indicate the water in the River Blackwater catchment is predominantly at Good Status, with no detectable changes in water quality. There was no evidence of a chronic water quality problem before or after the fish mortalities. This suggests the cause of the mortalities was a short-term pollution event.

- Four of the 31 EPA-regulated sites investigated had discharges that were not compliant with licence requirements in July and August, and one small wastewater facility with a certificate of authorisation was operating above operational capacity. **The detailed analysis of these sites in July and August 2025 does not support a causal link between these activities and the serious fish mortalities in the River Blackwate**r.
- One of the four sites, North Cork Creameries (NCC) attracted significant public attention throughout the course of the investigation. Non-compliances were detected in the NCC wastewater discharge to the River Allow in the June to August period that were serious and entirely unacceptable. These issues were already the subject of significant ongoing enforcement activity by EPA. However, despite the seriousness and significance of licence breaches at NCC, the EPA's assessment, as set out in this report, does not support a causal link between the NCC's discharges into the River Allow and the fish mortalities in the Blackwater.

Introduction

The extensive fish mortalities that occurred on the Blackwater River in Cork during August 2025 are a serious harm to the local fish stocks and have had an unjust and negative impact on the local communities. The devastation of damaged carcasses of thousands of dead fish floating in the protected waters of the Blackwater or tangled in the weeds of any of our country's rivers or lakes are events that are not to be tolerated.

When such detrimental incidents occur as on the Blackwater and where causation can be established and the wrongdoer identified, then they should be held to account. It is incumbent on all the state agencies with responsibilities in relation to these incidents to do all in their power to identify the cause and the wrongdoer and to bring them to account. This can only be achieved by following and assessing the available evidence, data and science.

The EPA's primary role in the investigation into the fish mortalities on the Blackwater is to assess whether EPA-regulated sites within the region of interest could have been responsible through their water discharge activities, and to take action against any operator found to be at fault.

Investigation Overview

The EPA first became aware of the serious fishkill on the morning of the 12th August 2025, and immediately mobilised resources in the Blackwater catchment to investigate whether any EPA-regulated site could have been a source of polluting material.

EPA has participated in a Multi-Agency group, established at the direction of the Minister and coordinated by Inland Fisheries Ireland (IFI), for the purposes of sharing data and expertise and supporting the investigation into the cause of the fish mortalities.

The EPA's investigation encompassed:

- The deployment of three teams of inspectors to EPA-regulated sites in the Mallow and Kanturk area within an hour of the EPA becoming aware of the fish mortalities. The inspections on August 12th/13th found no evidence of spills or discharges linked to the incident.
- An immediate expansion of the investigation on August 22nd to include a broader timeframe and geographic scope within the Blackwater catchment. This was in response to preliminary fish postmortem results from the Marine Institute, which indicated a pollution source was the likely cause of the fish damage in the week prior to the 12th August.
- The completion of 41 inspections of thirty-one facilities in the catchment, the collection of 40 samples and an assessment of operational practices and monitoring data associated with 10 industrial sites, 17 wastewater treatment facilities and 4 drinking water plants.
- The completion of five invertebrate quality surveys carried out by the EPA in the Kanturk to Mallow area on 12th August and 1st and 2nd September 2025.

Twenty seven of the thirty one EPA-regulated sites investigated had either no discharges or had compliant discharges during the weeks prior to the 12th August. However, four of the thirty-one facilities investigated had discharges that were not compliant with licence requirements in July and August and one small wastewater facility with a certificate of authorisation was operating above operational capacity. These sites were North Cork Creameries (Licence Register No. P1051-01); Millstreet wastewater treatment plant (D0332-02); Bweeng & Environs wastewater treatment plant (D0438-01); Dromahane wastewater treatment plant (D0302-01) and Lombardstown Certificate of Authorisation (A0327-01). The EPA was already aware of the issues at four of these sites, with the breach at Millstreet detected during the investigation. All these issues remain the subject of on-going enforcement action which is separate and distinct from the investigation into the causality of the fish mortalities on the Blackwater.

Detailed Assessment

To determine if there was a causal link between the fish mortalities and EPA-regulated sites, the EPA assessed the relevant monitoring and operational data for the sites and the impact of the non-compliant discharges on receiving water quality in the period 28th July to 12th August.

The EPA, with the assistance of Local Authorities and Inland Fisheries Ireland, collects water quality data from the Blackwater River on an ongoing basis as part of the National Water Monitoring Programmes under the Water Framework Directive. The data include water chemistry, fish and macroinvertebrate samples. The data collected in 2024 in the area of the investigation of the River Blackwater catchment generally indicates the water quality in the catchment is at Good Status. The water chemistry and macroinvertebrate ecological samples taken during June, July and August 2025 indicate no change in water quality in the River Blackwater catchment.

In response to the current incident, the EPA also carried out specific macroinvertebrate ecological water quality sampling in the affected area following the fish mortalities and the results were again indicative of good or better ecological water quality. Overall, there is no evidence from the ecological water quality data that there was a chronic water quality problem in the Blackwater catchment, in advance of, or following the fish mortalities. This suggests that the cause of the fish mortalities was a short-term pollution event, which may have been localised in extent, and wasn't due to an underlying chronic water quality problem.

The detailed analysis and assessment of discharges from all thirty-one EPA-regulated sites, including industrial sites and Uisce Éireann controlled urban wastewater discharges and drinking water plants during July and August 2025, does not support a causal link between these activities and the serious fish mortalities found in the River Blackwater.

North Cork Creameries [Licence No. P1051-01]

One of the thirty-one EPA-regulated sites investigated by EPA in relation to the fish mortalities incident was North Cork Creameries (NCC) situated on the River Allow near Kanturk. While NCC was an important focus of that investigation it is specifically mentioned in this summary as it attracted significant public attention and speculation throughout the course of the current investigation. NCC is a site with a history of failure to consistently achieve compliance with its

licence discharge conditions and was already the subject of significant enforcement activity by EPA prior to the incident, culminating in a prosecution which concluded in April 2025 resulting in convictions and the imposition of fines. EPA continues to monitor the licensed site closely.

Non-compliances were detected in the wastewater treatment plant discharge from NCC in the June to August period and were serious and entirely unacceptable. The licence breaches arose primarily due a lack of organised management or control of wastewater treatment plant activities, a lack of appropriate expertise to resolve significant operational issues, a failure to appropriately generate, manage, maintain and use critical data sets to inform corrective actions and a disregard for licence requirements and licence limits.

These compliance issues have not yet been fully resolved by the licensee, and the EPA is rigorously pursuing the enforcement of the licence breaches arising as a matter of priority and urgency, in line with its Compliance and Enforcement Policy. Offences related to breaches of EPA licences may be prosecuted summarily by the EPA or on indictment by the Director of Public Prosecutions (DPP). The EPA is giving full consideration to all such enforcement options available to it in respect of the non-compliances detected. These pre-existing issues are very serious matters that need to be resolved to restore consistent compliance and for the NCC to entertain the prospect of retaining its licence to operate into the future.

Despite the seriousness of these issues and the significance of licence breaches at NCC, the EPA's assessment as set out in this report, does not support a causal link between the NCC's discharges into the River Allow and the fish mortalities in the Blackwater (see Figure 1, page 12, for location of NCC relative to Blackwater). In summary, this reasoned conclusion is based on the following:

- **Yard Drainage:** The yard drainage on the site is configured to discharge only to the wastewater treatment plant. Therefore, all effluent and spills arising on site are discharged through the wastewater treatment plant.
- **Load to wastewater treatment plant:** An assessment of the plant's operational data demonstrates that while the site's wastewater treatment plant was performing very poorly during the first few weeks of August, it was consistently so. There was no evidence that a sudden catastrophic load to the river was discharged through the wastewater treatment plant in that period, or that any form of chemical discharge occurred. An assessment of the plant's operational data indicates that the occurrence of such an event in that period would be very unlikely.
- **Toxicity of discharge to fish:** Considering the types of material used on site, and the type of damage caused to the fish in the Blackwater (as described by the Marine Institute report), the key parameters of concern in relation to the NCC discharge is un-ionised ammonia and pH. The level of un-ionised ammonia that could have occurred in the river as a result of the NCC discharge in the weeks prior to the fish mortalities were below the threshold of 0.02mg/l NH_3 (i.e. below the level at which toxic effects could occur in fish and other aquatic species if subjected to chronic/longer term exposure). pH levels were stable and in compliance in the period investigated.

- **Proximity of site to dead fish:** No dead or marked fish in River Allow: The IFI also advised the public authorities investigating the fish mortalities that marked and dead fish were not observed in the River Allow, which is the river to which the NCC discharges, before, during or after the fish mortalities in the Blackwater were reported. In addition, there is a stretch of 4 km river water between the NCC discharge point on the Allow and where the Allow enters the Blackwater.

The EPA regulates, through authorisation and enforcement, almost 900 industrial and waste facilities, over 1000 wastewater authorisations and approximately 750 drinking water treatment plants, with 1,773 inspections carried out across these sectors in 2024. All inspection and monitoring reports are available on the EPA website via an online portal called LEAP online. It does so without fear or favour in the interests of the public and in the protection of the environment. It does so by detailed assessment and by drawing reasoned conclusions based on the available evidence, data and science as it has done in this report. To do otherwise would be to draw conclusions based on speculation which would be both environmentally irresponsible and regulatorily negligent.

Conclusion

In conclusion, the detailed analysis and assessment of all thirty-one EPA authorised sites, including industrial sites and Uisce Éireann controlled urban wastewater discharges and drinking water plants during June, July and August 2025, does not support a causal link between these activities and the serious fish mortalities found in the River Blackwater.

Throughout the investigation, the EPA worked closely with IFI, Cork County Council and others, both bilaterally and through an inter-agency group convened by the IFI for the purposes of the wider investigation. The EPA provided expertise and data in relation to discharges from regulated sites, water quality and invertebrate sampling in the Blackwater catchment.

The EPA also received videos and pertinent information from concerned members of the public in relation to discharges from EPA-regulated sites during the investigation period. The EPA acknowledges with gratitude the work and commitment of those concerned groups in contributing to the EPA's investigation. The issues raised by those members of the public have been considered in the EPA's assessment.

The findings of this report are intended to support and inform the activities of a multi-agency investigation into Blackwater fish mortalities.

Context

The Environmental Protection Agency (EPA) is an independent statutory body established under the Environmental Protection Agency Act, 1992. The EPA's purpose is to protect, improve and restore our environment through regulation, scientific knowledge and working with others. This purpose reflects the EPA's three core roles – as an environmental regulator, as a key source of trusted scientific evidence and knowledge, and as a voice for the environment through our leadership and advocacy and our commitment to collaborating and partnering with others to deliver better environmental outcomes. The EPA has a wide range of responsibilities including:

Licensing and Enforcement

- Licensing of large industrial and waste sites and wastewater discharges. Licences issued by the EPA contain conditions that control the operations and limit emissions to protect human health and the environment, including the protection of aquatic habitats and their plant and animal life. Details of all licences issued by the EPA are available on the EPA's website.
- Enforcing the conditions of EPA licences and holding operators who breach their licences to account, using a range of legal powers up to and including prosecution, injunction and, ultimately, suspension or revocation of the licence. The EPA enforces these licences through an annual programme of inspections, monitoring and assessments.
- Enforcing Regulations that apply directly to certain sectors, e.g. drinking water quality is regulated by the European Union (Drinking water) Regulations 2023, S.I. no 99 of 2023.

When a licence application is received, the EPA assesses the potential impact of emissions from the site. The EPA's assessment approach incorporates best scientific principles and techniques, high quality environmental data and national and European legislative requirements. A licence, if granted, contains strict conditions and limits on how an activity must operate so as to protect the environment from pollution that might otherwise arise. Those sites that comply with licence requirements do not cause a negative impact on the environment beyond the site boundary.

The responsibility to comply with an EPA licence or specified Regulation lies solely with the licensee/regulated entity. In accordance with practice across all Member States, licensees must operate in accordance with the best practice and limits set out in the licence/relevant Regulation, report any incidents[3] or non-compliances arising to the EPA without delay and take swift corrective action to return to compliance. The EPA assesses the performance of licensees/regulated entities through an annual programme of inspections, monitoring and assessments.

[3] Incidents are events that are outside the normal range of operations. Regulated sites are required to minimise the risk of incidents occurring through preventative actions, training and incident detection and response practices.

While 97% of incidents rising at regulated sites since 2021 are minor in nature, they can on rare occasions result in releases to the environment where water pollution, and in some cases, fish mortalities occur. The EPA has a strong record in successfully investigating pollution events and holding those that don't comply to account through the legal system: Prosecutions and Penalties | Environmental Protection Agency. The EPA's Compliance and Enforcement Policy sets out the EPA's approach to enforcing environmental legislation to promote compliance and the principles and criteria underpinning enforcement decisions. It takes an approach that is outcomes focused and risk-based; is proportionate to the offence or non-compliance; and applies the polluter pays principle, so that the public can have confidence in the EPA's work to protect the environment.

Water quality monitoring and assessment

Under the Water Framework Directive (WFD), monitoring of Ireland's waterbodies is carried out by several public authorities. The water quality parameters and monitoring frequencies are specified in the WFD. The monitoring roles and responsibilities include:

- Local authorities: water chemistry monitoring
- EPA: ecological sampling including aquatic insects (macroinvertebrates), aquatic plants (macrophytes) and algae
- IFI: fish monitoring
- Waterways Ireland: water monitoring in canals

Information on the Water Framework Directive (WFD) monitoring programme is available on the EPA website and is viewable on EPA maps, with monitoring data published on the EPA data geoportal.

Every three years, the EPA assesses the condition of the water body status for our waters and publishes this information. The most recent assessment was the Water Quality in Ireland 2016-21 report. The next three year assessment and report will be published in Q4 2025.

The EPA also works with local authorities, government departments and other public agencies and bodies such as the Local Authority Waters Programme, to understand the pressures impacting on our waterways, inform policy and target the right measure in the right place. Further information is available at: Catchment science and management | Environmental Protection Agency

The EPA's role in relation to the Blackwater fish mortalities

As part of its enforcement activities, the EPA investigates EPA-regulated sites that may be implicated in water pollution incidents. There are a range of industrial sites, wastewater treatment plants and drinking water plants regulated by the EPA across the Blackwater Catchment. When the EPA became aware of fish mortalities in the River Blackwater and Clyda River around the Mallow area on the morning of August 12th, its initial focus was to determine if any of the EPA Regulated sites in the Mallow and Kanturk area could have contributed to the incident. On August 22nd, the EPA expanded its investigation to a greater number of EPA regulated

sites and over a wider date range on foot of the Marine Institutes report that a waterborne irritant was likely to have caused or contributed to the fish mortalities in the days previous to August 12th.

The investigation encompassed site inspections, sampling of discharges and of river water upstream and downstream of discharges, data analysis and verification activities, supported by extensive expertise from across environmental disciplines in the EPA.

Ongoing engagement was maintained between the EPA, IFI, Cork County Council and others, both bilaterally and through the interagency group convened by the IFI for the purposes of the wider investigation, to share knowledge and expertise throughout the investigation. The EPA provided expertise and data in relation to discharges from regulated sites, water quality and invertebrate sampling in the Blackwater catchment.

This report outlines the scope and findings of the EPA's investigation into discharges from EPA regulated sites in the Blackwater catchment for the period 28th July 2025 to 12th August 2025. The assessment and conclusions as set out are intended to inform the wider multi-agency investigation, being led by the IFI, into the cause of fish mortalities in the Blackwater in August 2025.

Where non-compliant activities were detected at EPA-regulated sites, the EPA is rigorously pursuing these issues through appropriate enforcement actions and in accordance with the EPA's Compliance and Enforcement Policy.

Focus of the investigation

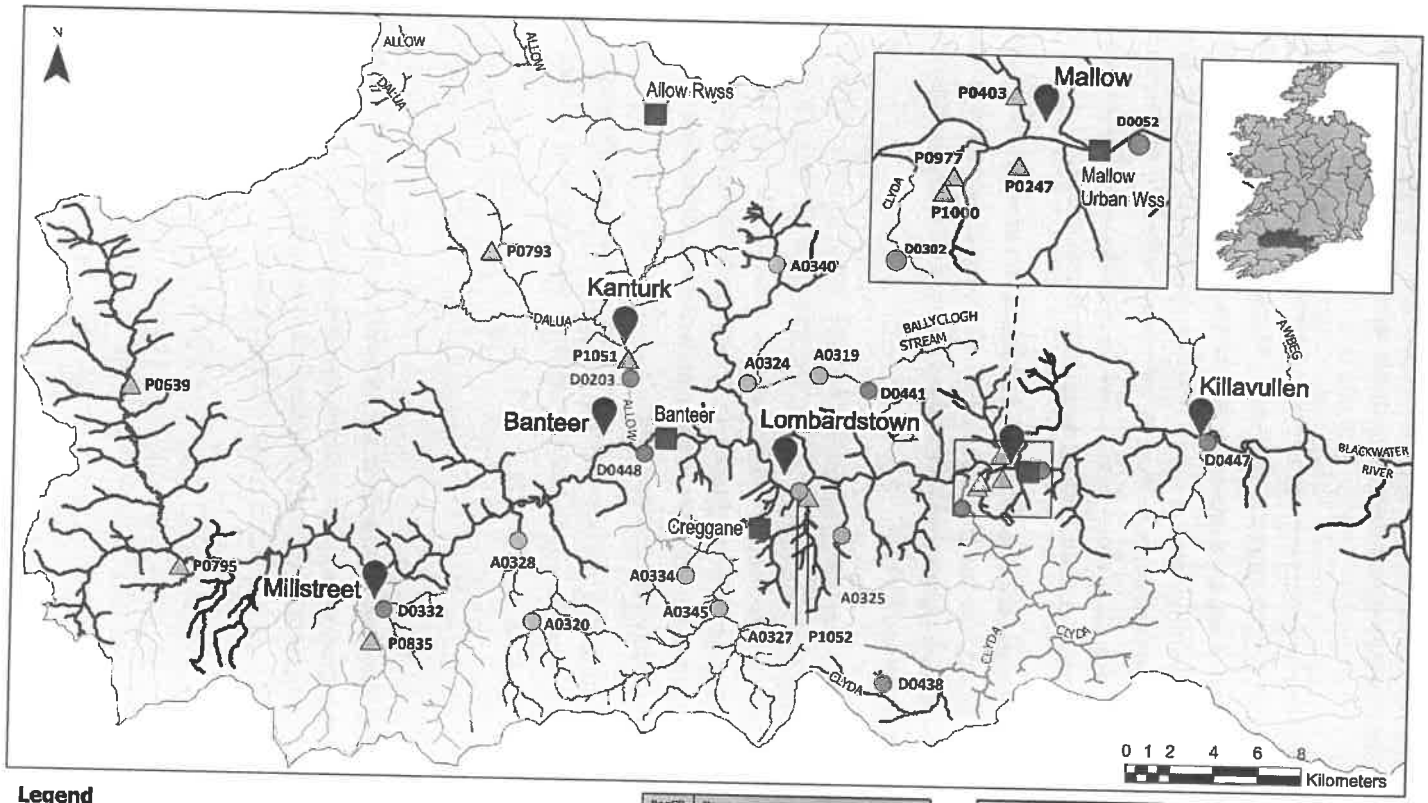
The EPA became aware of the fish mortalities in the River Blackwater and Clyda River around the Mallow area on the morning of August 12th. Three inspector teams were deployed to inspect EPA regulated facilities around Mallow and Kanturk, that could have contributed to the serious incident.

On August 22nd, preliminary findings of the postmortem carried out by the Marine Institute on fish, signalled that a waterborne irritant was likely to have caused or contributed to the fish mortalities, and that exposure may have occurred in the days before August 12th. The EPA immediately expanded the investigation to include discharges from EPA-regulated sites that may have occurred over a wider date range and wider area in the Blackwater Catchment. The EPA focused their investigation in the upper Blackwater catchment on the following EPA regulated facilities (see Figure 1):

- 10 licensed industrial sites
- 17 wastewater discharges (eight of which hold wastewater discharge licences and nine which are smaller plants <500 population equivalent that hold certificates of authorisation)
- Two drinking water plants that use chemicals for coagulation and flocculation. A further two drinking water plants that abstract from tributaries of the Blackwater were inspected.

The list of these facilities is provided in appendix 1. A map of the location of the facilities is provided in Figure 1.

Figure 1: Location of EPA Regulated Facilities Inspected



Legend

- Towns
- Blackwater River
- All other rivers
- Blackwater Catchment
- Certs of Authorisations
- Waste Water Discharge Authorisations
- Industrial Facilities
- Drinking Water Treatment Plants

RegCD	Name
P0835	ALPS Electric (Ireland) Limited
P0403	Dairygold Co-Operative Society Limited (Mallow)
P0793	Newmarket Co-Operative Creameries Limited
P0795	Mondelez Ireland Production Limited (Rathmore)
P0639	Gaindini
P0247	Micam Limited
P1000	Magh nAla Limited
P0977	Magh nAla Limited (Quartertown)
P1051	North Cork Co-Op Creameries Limited
P1052	Dairygold Agri Business Limited

RegCD	Name
A0345	Nad
D0332	Millstreet & Environs
D0438	Boweny and Environs
D0441	Ballyclough
A0319	Ceelstown & Environs
A0320	Kilcorney
D0203	Kanturk
D0302	Dromahane and Environs
A0324	Castlemagner

RegCD	Name
A0325	Glantane
A0327	Lombardstown & Environs
A0328	Rathcoole
A0334	Lyre
A0340	Kilbrin
D0447	Killavullen and Environs
D0448	Banteer and Environs
D0052	Mallow

Inspections, monitoring and assessment

The EPA enforces regulated facilities through site inspections, monitoring of licensed discharges and assessment of monitoring data. As part of the investigation, the EPA conducted 41 inspections at regulated facilities. As of September 11th, there were 19 inspections to 10 industrial facilities, 18 inspections to 17 wastewater treatment facilities and 4 to drinking water treatment plants. The list of the facilities inspected is provided in appendix 1. These inspections primarily focused on the operations of the facility and any discharges to water during the period of the fish mortalities. These inspection reports will be made available to the public via EPA's LEAP (Licence and Enforcement Access) online portal in due course.

As part of the initial investigation, samples were taken of discharges from two industrial sites on August 12th: Magh nAla Limited P1000-01 and NCC P1051-01. The EPA also sampled wastewater discharges from the Lombardstown urban wastewater discharge and downstream (d/s) of the Dromahane urban wastewater discharge on the Clyda River on August 12th and the discharge from Dromahane wastewater treatment plant on August 13th. The findings from these samples are summarised in Appendix 2. Full laboratory reports will be available on LEAP online in due course. Non-compliant results are discussed in more detail later in this report.

Additional EPA samples of discharges and receiving waters were taken at sites since August 13th (see Appendix 3). These samples are for the purpose of verifying compliance or pursuing compliance issues further. Enforcement action will be taken on any non-compliances detected, in line with normal enforcement procedures.

In addition to the EPA samples, the EPA regulated facilities were required to provide all monitoring data relevant to the time of the fish mortalities. The EPA assessed this monitoring data to determine compliance with licence requirements and to assess the significance of the discharges. Details of monitoring data from regulated facilities is provided in Appendix 4 and the assessment of the significance of the discharges in relation to the fish mortalities is provided in the *EPA Assessment of Water Quality* section below.

Regard was also had to the results of a fish postmortem analysis from the Marine Institute and fish tissue analysis arranged by the IFI, which did not highlight any chemical or substance of concern in the fish tissue.

Industrial

Ten EPA-licensed industrial sites were examined as part of the investigation as outlined in Appendix 1. Nine of the industrial sites either had no process effluent discharges during the period 28th July 2025 to 12th August 2025 or had compliant discharges to water. No evidence of spills or unauthorised emissions were found in relation to these sites.

One of the sites, NCC (Licence Register P1051-01) in Kanturk, had persistent non-compliances across the period investigated 28th July 2025 to 12th August 2025. The monitoring data for the period, and an assessment of that data is tabulated in the *EPA Assessment of Water Quality* section below.

North Cork Creameries

The NCC licence, P1051-01, and the associated Technical Amendment A of that licence, permits the licensee to discharge treated effluent to the River Allow via emission point SW1, provided that the discharge meets the emission limits set out in Schedule B.2 of the licence and other related conditions. The licensee is required to comply with the licence at all times, to monitor the discharge for the parameters and at the frequencies set out in the licence and to notify the EPA of any breaches of licence requirements.

Enforcement Record up to June 2025

The National Priority Sites (NPS) system allows the EPA to identify which industrial and waste-licensed sites should be prioritised for enforcement based on their environmental performance. It is used to target the EPA's enforcement effort at the poorest performing sites to drive improvements in environmental compliance. The list is published quarterly on a retrospective basis. National priority sites list | Environmental Protection Agency.

NCC was on the EPA's National Priority Sites (NPS) list in Q3 2021, Q2, Q3 and Q4 of 2022, all of 2023 and all of 2024. A range of compliance issues contributed to the licensee's compliance scores over time, including breaches in Emission Limit Values in the wastewater discharge and emissions to air, stormwater management and material containment. NCC was not on the NPS in Q1 or Q2 of 2025 as the compliance issues were progressed to an extent that the site's scores reduced to below the NPS threshold. These improvements included resolution of wastewater treatment issues so that compliant discharges were achieved; changes to storm water management, where containment of material storage and transfer areas was significantly improved; and the achievement of compliant emissions to air. The NPS list for Q3 2025 will be published in October 2025 and based on the issues found at NCC in recent months, it will feature on the Q3 NPS list.

Since NCC was granted it's licence, the EPA has carried out 46 inspections, with samples taken on 23 of those visits. EPA brought a case against NCC to the District Court where, on 22nd February 2024, NCC pleaded guilty to eight charges of breaching conditions in 2022 related to ammonia and total nitrogen emission limit value exceedances in wastewater discharges, the unauthorised release of contaminated stormwater, non-compliant material containment, and exceedances of air-related emission limit values. Total fines of €11,000 were awarded during sentencing on the 29th of April 2025.

Wastewater treatment plant incident June 2025

Ten complaints were received in 2025 to date related to discharges to water from NCC, beginning on 21st June 2025 when reports were received of a sludgy discharge into the River Allow from the site. IFI were also notified at the time. The incident was caused when, during cleaning of the whey silo, a plug of whey material was discharged to the wastewater treatment plant. The volume and concentration of the whey shocked the biological system in the treatment plant, reducing the effectiveness of the plant and giving rise to non-compliant discharges. While the discharge was shut off on the morning of the 22nd June, EPA inspectors, who visited the site on the 23rd June, noted sewage fungus on plants and rocks in the River Allow around the discharge point, and a strong foul odour in the area at the time.

Since then, the EPA has inspected the site 20 times and held five compliance meetings with the licensee. The EPA opened Compliance Investigation CI002209 on 24/06/2025 to track and enforce the corrective actions required to resolve the problems identified. NCC took measures to bring discharges back into compliance, including an increase in aeration capabilities and the diversion of effluent to landspreading[4].

The licensee monitors the wastewater treatment plant and its discharges, in a number of different ways:

- An online SCADA[5] system provides continuous data on flow, pH and temperature at the discharge, and dissolved oxygen in the aeration tank point on a 24-hour basis.

- Each morning, flow meter readings are taken directly by the licensee for flow (at the inlet to the balance tank and at the discharge point), pH and temperature in the discharge and dissolved oxygen at the aeration tank. A daily record is maintained. The sludge settlement rate is also recorded.

- A composite sampler takes a proportionate sample from the discharge flow throughout the day. This sample therefore provides a representation of the quality of the effluent across a 24 hour period.

- Grab samples of the discharge provides data on the quality of the effluent at a given point in time.

The wastewater treatment plant operational data assessed on site confirms that the plant has operated poorly across July and August, with below optimal conditions being achieved through the various stages of treatment e.g. low dissolved oxygen in the aeration basin; poor sludge settlement rates in the clarifier.

The monitoring data (as summarised in Appendix 4), demonstrates that while compliance was restored by 2nd July 2025, breaches of the licence occurred for several parameters on various dates throughout the rest of July and into August. The most frequent exceedances were for BOD and total ammonia:

- Exceedances of the BOD Emission Limit Value (ELV) of 6mg/l occurred on twenty dates with levels ranging between 7.5mg/l and 33.2 mg/l.
- The total ammonia ELV of 0.5mg/l was breached on 22 dates, with levels ranging between 0.56mg/l and 26mg/l.

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[4] The NCC licence permits the licensee to send organic fertiliser off-site for landspreading, subject to conditions. The recovery of organic material by landspreading is regulated under the European Union (Good Agricultural Practice for Protection of Waters) Regulations 2022 (as amended) by the Department of Agriculture, Food and the Marine (DAFM) and Local Authorities.

[5] SCADA (Supervisor Control and Data Acquisition) is an online graphical interface that shows conditions across the wastewater treatment plant on a continuous basis on any given day. It provides real-time data collection and control and is used for managing and monitoring the waste water treatment processes.

It is noted that no evidence of a chemical spill or chemical discharge at NCC was identified during the investigation. The main chemicals of concern at the site are cleaning products and the potential for petroleum products to leak from vehicles. There was no visible evidence or reports of petroleum/oil spills on or from the site. pH levels in the discharge were within licence limits across all of July and up to 12th August (indicating that nothing caustic or acidic was discharged). In addition, COD levels were largely compliant with the ELV of 75mg/l across July and early August, except for:

- 1st August, where COD concentrations reached 101mg/l
- 12th August, where COD levels reached 120 mg/l

These COD levels, while not in compliance with the licence limits, are within the expected range for treated effluent from dairies[6]. Considering the other parameters that were elevated on those same dates, e.g. suspended solids and nutrients, the elevated COD more likely represents excess organic material due to the poor treatment process, rather than strong chemicals being in the discharge.

A spill of sludge from the site to the riverbank, upstream of SW1, was reported by complainants on the 1st August to the EPA, having been first noted by the complainants on the 30th July. EPA inspectors investigated the report and found evidence of the sludge on the grass on the riverbank. After thorough investigation of the area affected, the inspectors noted that while this area floods when river levels are high, the river levels had been low over that period and the bank was above the water level at the time of the inspection. Inspectors noted the sludge texture, its patterns in the grass and the topography of the river bank in that area (slightly bowl shaped). They found no evidence of a pathway whereby the sludge might have reached the water. The release of sludge onto the riverbank, and the lack of report from the licensee that a release occurred, breached licence requirements. The licensee was instructed to investigate the cause and remediate the area. The cause was identified as being due to spills occurring during the process of transferring sludge to tankers. The affected area has been cleaned up and the sludge transfer practices have been changed to prevent further spills from occurring.

The monitoring data from the licensee also demonstrates that a composite sample for the 5th August (9am of 5th to 9am on 6th August) was not tested by the licensee in accordance with licence requirements. This is a further breach of the licence. To ascertain conditions in the waste water treatment plant on that date and whether a significant or unusual discharge is likely to have occurred on that date, the EPA examined the SCADA[7] data for the 5th August, wastewater treatment plant operational records, the discharge monitoring data for the 4th and 6th August and

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[6] COMMISSION IMPLEMENTING DECISION (EU) 2019/2031 of 12 November 2019 establishing best available techniques (BAT) conclusions for the food, drink and milk industries, under Directive 2010/75/EU of the European Parliament and of the Council, specifies typical ranges for COD in food and drink effluent discharges are 25-100mg/l, with the upper end of the range being 125 mg/l for dairy plants eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019D2031

[7] SCADA (Supervisor Control and Data Acquisition) is an online graphical interface that shows conditions across the wastewater treatment plant on a continuous basis on any given day. It provides real-time data collection and control and is us used for managing and monitoring the waste water treatment processes.

ambient monitoring data in the river upstream and downstream of the treatment plant from the 6th August.

The wastewater treatment plant, while not operating optimally, showed no unusual activity on the 5th compared to the days before and shortly after. pH levels remained steady and within range, demonstrating no unusual caustic or acidic discharges in that period. Flow through the discharge point during that period was sporadic (stopped and started on various occasions, as it had for much of the days previously) but was at relatively normal levels compared to the days and weeks around that period and was in compliance with licence flow limits.

Wastewater treatment plants rely on a biological process to treat effluent. By its nature and based on extensive experience of dairy wastewater treatment plants, sudden peaks in parameters like ammonia in a wastewater which could occur due to shock loads to the plant, take several days to reduce to previous levels, even in modern plants where significant intervention is made. Ammonium on the 4th August was measured at 16.8mg/l. This is equivalent to approximately 13mg/l total ammonia. On the 6th August, total ammonia in the discharge was 5.2mg/l. If a peak significantly above 13mg/l occurred on the 5th August, it is highly unlikely that the concentration could have dropped to 5.2mg/l in the space of one day, especially in a plant like that at NCC, where the infrastructure is old. Based on experience of other dairy plants where wastewater treatment plants have failed, ammonia levels in the discharge in worst case scenario circumstances, rarely exceed 25mg/l. Therefore it is considered that any peak in ammonia in the discharge that could have arisen on the 5th was highly unlikely to have exceeded the maximum ammonia peak detected in the plant to date (i.e. 26mg/l, 12th August 2025). The impact of this maximum total ammonia peak is discussed further later in this report.

The drainage on the site is currently configured so that all effluent, spills and storm water arising on site can only discharge from the site via the wastewater treatment plant. COD levels in the discharge on the 4th and 6th were both at 44mg/l. As noted for ammonia, given the biological processes in the plant, any sudden peak in COD on the 5th August would take several days to return to levels of 44mg/l.

Videos submitted by complainants for that period, showing the flow from the discharge points over a range of dates, including the 5th, 6th, and 9th August, were also examined as part of this assessment. These complainants did not flag dead or distressed fish in the River Allow in the period before, during or after that period. IFI have also confirmed not receiving reports or seeing evidence of dead or distressed fish in the Allow.

In addition, EPA grab samples were taken from the River Allow on the 6 August between 12:45 and 13:10, at a time when NCC wasn't discharging. These samples indicate total ammonia concentrations were < 0.02 mg/l N upstream and downstream of the plant, and that there was overall good water quality in the River Allow. By way of comparison, this concentration in the river is below the 95%ile[8] Environmental Quality Standard for total ammonia of 0.14 mg/l N in good

[8] To maintain good water quality in relation to Total Ammonia, the Good Status EQS requires the annual average concentration to be less than 0.065 mg/l N and the concentration should be lower than 0.14 mg/l N 95% of the time. The 95%ile EQS is particularly relevant when considering acute impacts on rivers, complimenting the annual average EQS, which identifies chronic long term water quality issues.

status waters. The concrete outfall pipe structure traverses the River Allow at a diagonal, creating a bay area on the downstream side of the pipe. Discharged effluent can backwash into this bay as a result of flow dynamics caused by the outfall structure. Samples taken in the bay on the 6th August had 0.077mg/l total ammonia, which is below the 95%ile good status Environmental Quality Standard for total ammonia of 0.14 mg/l N.

When the EPA attended site on the 12th August at 13:13, the licensee had already ceased the discharge at SW1 at 10am due to elevated ammonia levels in the discharge. The EPA took samples at 13:38 and 13:48, one of which, a grab sample from the v-notch weir, where effluent was trickling out, had an ammonia level of 26mg/l. It is unlikely that this is representative of the discharge across the whole day but has been assumed so for the purposes of the assessment set out later in this report. A split of the sites composite sample on that day (covering a sample period of 9am 11th August to 9am 12th August) was also taken, and was found to have ammonia levels of 15mg/l. While the licensee resumed discharging from the plant periodically since that date, a consistently compliant discharge under normal operating conditions has not yet been demonstrated due to continued problems in the wastewater treatment plant process. Discharges from SW1 are being monitored by the EPA.

Significant non-compliances have been detected in relation to the discharges from the NCC wastewater treatment plant. The licensee's progress in resolving the issues arising has been wholly unsatisfactory due to disorganised management and oversight of the operation of the treatment plant, a lack of expertise to appropriately bring the plant back on line and a lack of regard for compliance with licence requirements. The EPA is actively taking enforcement actions in relation to the non-compliant discharges that have occurred and ongoing environmental management issues, in line with its Compliance and Enforcement Policy. Offences related to breaches of EPA licences may be prosecuted summarily by the EPA or on indictment by the DPP. The EPA is giving full consideration to all such enforcement options available to it in respect of the non-compliances detected.

While some improvements have been made with regard to the oversight of the plant since the 1st September, consistent control and operation of the plant has not yet been demonstrated. The Compliance Investigation CI002209 into effluent quality at NCC will remain open until compliance is fully restored.

Wastewater

Seventeen of Uisce Éireann's Wastewater Treatment Plants (WWTPs) around the Blackwater River and tributaries were the focus of the EPA's investigations. These are identified in Figure 1 above. Eight of the seventeen treatment plants are licensed as their treatment capacities are from areas with population equivalents of greater than 500. The remaining nine were much smaller plants and had certificates of authorisations, as their treatment capacities are from areas with population equivalents of less than 500. Discharges from certificates of authorisation are relatively low volume discharges compared to larger treatment plants due to the volume of wastewater treated.

Uisce Éireann informed the EPA that here were no spillages during the period associated with the fish mortalities. EPA inspections at the time of the fish mortalities and after then, found no evidence of spillages at wastewater treatment facilities. Details of the plants inspected are in appendix 1.

From the effluent monitoring data completed by Uisce Éireann in July and August for the 8 licensed facilities, 5 complied with licence limits and three (Bweeng WWTP, Dromahane WWTP and Millstreet WWTP) had discharges that were not in compliance with their emission limit values (ELVs). The EPA has ongoing enforcement activities in relation to these facilities.

- **Bweeng WWTP**
  The wastewater discharge from Bweeng WWTP is to a tributary which flows into the Clyda River, a tributary of the Blackwater River. The discharge from the WWTP is approximately 14.5 km upstream from the confluence with the Blackwater River. Uisce Éireann provided the EPA with their latest analysis of wastewater effluent from Bweeng WWTP, taken on July 8th, 2025. Suspended solids and total ammonia were non-compliant with the WWDL(Wastewater discharge licence) ELVs. The EPA inspected Bweeng wastewater treatment plant on September 4th and samples were taken of the discharge and upstream and downstream of the discharge. The plant was found to be non-compliant with Ammonia on this date. The downstream ambient results indicate that the receiving water quality met good surface water quality standards for rivers. The results of this analysis are provided in appendix 4. Bweeng needs infrastructural improvements to ensure the WWTP can meet the ELVs in their licence. The EPA opened a Compliance Investigation in November 2018 in relation to recurring non compliances at the plant and the need for infrastructural upgrades. Uisce Éireann has been requested to confirm timelines for the plant improvement works.

- **Dromahane WWTP**,
  The wastewater discharge from Dromahane WWTP is to the Clyda River a tributary of the Blackwater River which is located approximately 2.25km upstream of its confluence with the River Blackwater. The latest treated wastewater samples from Dromahane WWTP taken by Uisce Éireann for analysis were taken on the 8th July 2025, 13th August 2025, 14th August 2025 and the 18th August 2025. All samples taken show exceedances of ELVs, excluding Ammonia. In addition to sampling the final discharge, Uisce Éireann sampled the Clyda River upstream and downstream of the wastewater discharge from the WWTP on August 14th, 2025. The downstream results indicate that the receiving water quality met the environmental surface water quality standards for rivers. The EPA has inspected the site three times between 2024 and 2025. The EPA sampled the discharge on August 13th and September 3rd, 2025, and discharges show exceedances of ELVs, excluding Ammonia. The EPA sampled downstream of the discharge on August 12th and upstream and downstream on September 3rd. The downstream results indicate that the receiving water quality met the environmental surface water quality standards for rivers. The results of this analysis are provided in appendix 4. The EPA opened a Compliance

Investigation in relation to this issue on 22/09/2025. Operational improvements need to be implemented at the plant by Uisce Éireann to ensure the WWTP can meet the ELVs.

- **Millstreet WWTP**
  The wastewater discharge from Millstreet WWTP is to the Finnow River, a tributary of the Blackwater River which is located approximately 2km u/s of is confluence with the River Blackwater. The latest treated wastewater samples from Millstreet WWTP taken by Uisce Éireann for analysis were taken on July 22nd 2025 and August 19th, 2025. The sample taken in July was compliant. The sample from August for Total Ammonia exceeded the WWDL ELVs. In addition to sampling the final discharge, Uisce Éireann sampled the Finnow River upstream and downstream (1.5km) of the wastewater discharge from the WWTP on the August 19th, 2025. The downstream results indicate that the receiving water quality met the environmental surface water quality standards for rivers. The results of this analysis are provided in appendix 4. Millstreet WWTP has a generally good compliance record but the August breach of an ELV is currently being investigated. The EPA inspected the plant on September 9th. Uisce Éireann sampled the primary discharge on September 9th. The EPA took ambient samples upstream and downstream of the discharge location on that date. The downstream results indicate that the receiving water quality met the environmental surface water quality standards for rivers.

Certs of Authorisations

Eight of the nine Certificate of Authorisations discharge to tributaries of the Blackwater River at distances of 2km+ upstream of the Blackwater River main channel. No dead fish were reported in these tributaries' u/s of their confluence with the Blackwater River. No incidents were reported by Uisce Éireann at these eight Certificate of Authorisation WWTPs plants in 2025. The EPA inspected these eight certificates of authorisation and no issues of concern in relation to the fish mortalities were identified. One of the nine certificates of authorisation (Lombardstown) discharges to the main Blackwater river and is operating above its design capacity.

- **Lombardstown**

  Lombardstown WWTP consists of a septic tank system providing primary treatment and it is operating above its treatment capacity. It discharges directly to the Blackwater channel. The EPA inspected Lombardstown in April and August 2025. The plant has been identified by the EPA on its Priority Action List. The EPA Priority Action List is a list of priority urban areas where improvements in treatment are needed most and will bring the greatest benefits. Uisce Éireann has reported that it proposes to upgrade the WWTP. The latest treated wastewater samples from Lombardstown WWTP were taken by the EPA and are provided in appendix 4.

A full assessment of the discharges from wastewater treatment facilities in relation to the fish mortalities is provided in in the *EPA Assessment of Water Quality* section below.

Drinking water

The EPA considered all the drinking water treatment plants in the Blackwater catchment and their potential to have contributed to fish mortalities. There were 38 drinking water abstractions in the Blackwater catchment. Only two of these drinking water treatment plants, Freemount (Allow Regional) and Mallow, abstract from the river and use chemicals for coagulation, flocculation and clarification (CFC), and discharge supernatant to the receiving waters as part of their treatment processes. These two plants were the focus of the EPA investigation in relation to drinking water. The remainder of the sites don't use CFC processes, don't have the associated chemicals and don't discharge supernatant to rivers. There were no environmental incidents reported at these 38 plants in 2025.

- **Freemount (Allow Regional)**
  There was a chemical spill at the Freemount plant in June 2024 which resulted in ~~a~~ fish mortalities. The spillage occurred due to a break in the pipework resulting in approximately 3,000 litres of polyaluminium chloride (PAC) entering the storm water drain and discharging to the River Allow. Post this incident, the EPA requested Uisce Éireann to complete assessments of the risk of chemical spillages to receiving water bodies from all their drinking water plants. Detailed risk assessments were completed at all sites by the end of 2024 and risk mitigations, such as bunded storage of chemicals, are being implemented at these sites, prioritising plants considered to be of higher risks.

  Uisce Éireann confirmed that there were no incidents at the plant in 2025. The raw water monitoring data was within normal ranges and treated drinking water complied with the drinking water standards. The EPA inspected the plant on August 27th and no issues were identified that could have contributed to the fish mortalities. Upgrade works have been completed at the plant in relation to removing the risk of any chemical spill to the environment, post the incident in 2024. There is an inhibit on the supernatant discharge at Freemount water treatment plant, if it reaches 10 NTU (Nephelometric Turbidity units i.e. its level of cloudiness), which means that only clear supernatant is allowed to discharge. The supernatant discharge was clear on the day of the inspection.

- **Mallow**
  Uisce Éireann confirmed that there were no incidents at the plant in 2025. The raw water monitoring data was within normal ranges and treated drinking water complied with the drinking water standards. The EPA inspected the plant on August 27th and no issues were identified that could have contributed to the fish mortalities. The supernatant is discharged manually into the River Blackwater, but only after staff check that it's below the turbidity limit of 10 NTU. Daily records from 1st August show all readings were within this limit. No discharge was happening during the EPA visit.

The EPA completed two further inspections on September 4th to two smaller drinking water plants (Banteer and Cregane/Glantane) and no issues of concern were identified.

Catchment Context

On the morning of 12th August 2025, the EPA became aware that marked and dead fish were observed on the main channel of the River Blackwater between Blackwater (Munster)_090 and Blackwater (Munster)_160. Marked and dead fish were also observed along the reach of Clyda_030. Inland Fisheries Ireland (IFI) have advised the public authorities investigating the fish mortalities that observations of marked and dead fish in the other tributaries to the River Blackwater are thought to be the result of fish trying to escape from the main channel of the River Blackwater. This may also be the case with the Clyda River, although the IFI have indicated marked fish were observed further up the Clyda River (@~2.5km from the confluence with the River Blackwater).

No marked or dead fish were reported to have been observed in the main River Blackwater upstream of Blackwater (Munster)_090, or in the Glen River or River Allow tributaries to Blackwater (Munster)_090. However, it is possible that the cause of the fish mortalities was further upstream than the location where the marked and dead fish were observed and occurred prior to when notifications were made about the fish mortalities.

Therefore, this water quality assessment has focused on collation of available water quality data for the months of June-August 2025 for the River Blackwater, from Blackwater (Munster)__070 through to Blackwater (Munster)_160 which includes the reaches from Millstreet to Killavullen, the Glen River, the River Allow and the Clyda River.

Water quality and flow conditions

Background Water Quality

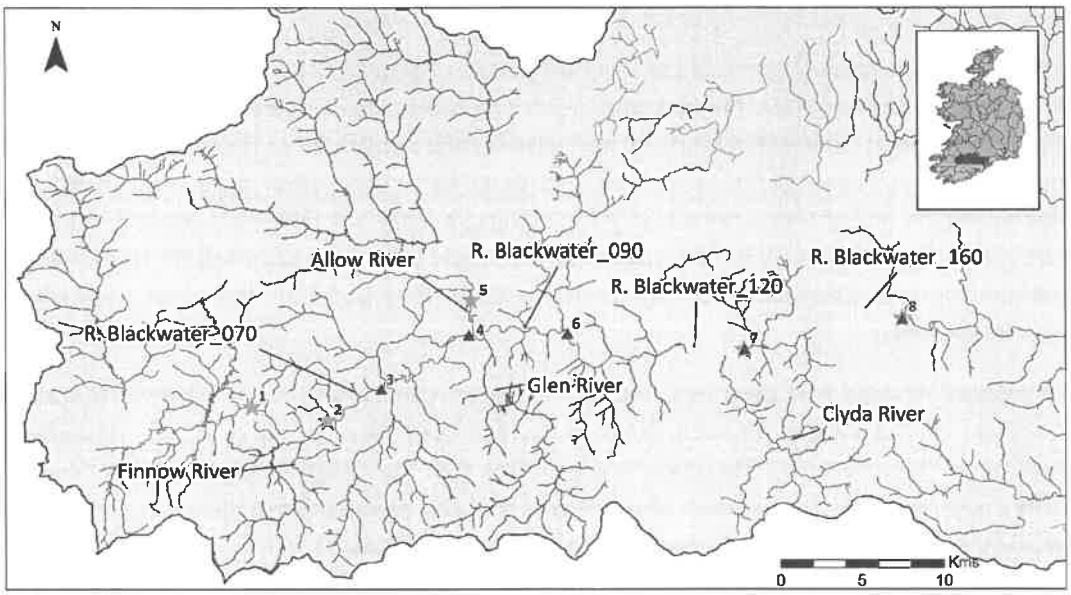
Existing EPA water quality data from the Water Framework Directive (WFD) National Water Quality Monitoring Programme for 2024 in the area of focus on the River Blackwater has been reviewed. The WFD water quality classification scheme is used to assign each waterbody into one of five water quality classes ranging from High Ecological Status, through Good, Moderate and Poor, to Bad Ecological Status[9]. The data for the Blackwater, as shown in Figure 2, indicates that:

- Blackwater (Munster)_070 to Blackwater (Munster)_100 has Good Ecological Status
- Blackwater (Munster)_110 has High Ecological Status
- Blackwater (Munster)_120 has Moderate Ecological Status.
- Blackwater (Munster)_130 to Blackwater (Munster)_160 has Good Ecological Status
- Blackwater (Munster)_160 has Moderate Ecological Status
- Glen (Banteer)_030 has High Ecological Status

[9] https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/assessing-river-water-quality---epa-fact-sheet.php

- Allow_070 has Good Ecological Status
- Clyda_030 has Good Ecological Status

Figure 2: Water Quality and WFD Monitoring Locations in the Blackwater Catchment



Legend

Water Quality Status (2016-2021)

- High
- Good
- Moderate
- Poor
- Bad

Monitoring Stations

Hydrometric Gauges

Map ID	Monitoring Location
1	Duarrigle
2	Keale Br
3	Colthurst Br
4	Ballymaquirk Br
5	Riverview
6	Roskeen Br
7	Mallow Railway Br
8	Killavullen Br

2025 EPA Ecological Monitoring

As part of the national WFD monitoring programme, ecological macroinvertebrate[10] monitoring was carried out in July and August 2025 in the Blackwater catchment. In September, the IFI requested additional ecological macroinvertebrate monitoring at certain locations on the River Allow and River Blackwater. In summary, ecological macroinvertebrate monitoring and assessment was carried out in 2025 as follows:

- Allow_070 (sampled September)
- Blackwater (Munster)__090 (sampled September)
- Blackwater (Munster)__120 (sampled August)
- Blackwater (Munster)__140 (sampled July)
- Blackwater (Munster)__150 (sampled July)

[10] Aquatic invertebrates assist in demonstrating the quality of the river water. The aquatic invertebrates in a sample are divided into 5 'Indicator Groups' based on their sensitivity to pollution. The greater the abundance of sensitive species in the sample, the better the water quality.

While these data have not been fully processed to date, an initial review of this data confirms no change in water quality in these river stretches from that observed in 2024.

2025 WFD Water Chemistry Monitoring

Annually, between 4 and 8 river chemistry samples are taken from monitored waterbodies by local authorities and subsequently analysed by the EPA to meet the requirements of the WFD. Between June and August 2025, chemistry samples were taken at the following locations in the area of focus.

- Colthurst Br (Blackwater (Munster)_070) - July
- Ballymaquirk Br (Blackwater (Munster)_080) - July
- Roskeen Br (Blackwater (Munster)_090) - July
- Rly Br, Mallow (Blackwater (Munster)_120) - July
- Killavullen Br (Blackwater (Munster)_160) – June and August

The available chemistry analysis data are for parameters that are indicators of the general physical condition of a river (e.g. temperature, pH, oxygen state and nutrient enrichment). Slightly elevated BOD is noted for all waterbodies in the River Blackwater upstream of Mallow in July, although all other parameters were within the typical range for the parameter and were indicative of Good water quality. There was no discernible change in water quality for Blackwater (Munster)_160 between the June and August sample.

Table 1: WFD River Chemistry Data for June, July and August in the River Blackwater Catchment

Location	Colthurst Br	Ballymaquirk Br	Roskeen Br	Rly Br, Mallow	Killavullen Br	Killavullen Br
Station Code	RS18B020900	RS18B021000	RS18B021200	RS18B021500	RS18B021900	RS18B021900
Waterbody name	Blackwater (Munster)_070	Blackwater (Munster)_080	Blackwater (Munster)_090	Blackwater (Munster)_120	Blackwater (Munster)_160	Blackwater (Munster)_160
Date	16-Jul-25	16-Jul-25	16-Jul-25	16-Jul-25	25-Jun-25	20-Aug-25
Alkalinity (mg/l)	17	19	33	47	107	108
Ammonia (mg/l)	0.033	0.033	0.036	<0.02	<0.02	0.02
BOD (mg/l)	3.7	3.6	3.6	3.3	1.6	<1
Chloride (mg/l)	14.5	14.4	17.1	19.4	26.7	27.5
Conductivity @25'C (uS/cm)	93	97	131	170	323	332
Dissolved Oxygen (mg/l)	9	9.5	9.2	8.8	10.1	9.4
Dissolved Oxygen (%Sat)	93	93	92	88	108	95
Hardness (mg/l)	22	25	37	51	121	123
o-Phosphate (mg/l)	0.024	0.02	0.019	0.013	0.016	0.012
pH (pH unit)	6.6	6.5	6.9	7.2	7.8	7.6
Suspended Solids (mg/l)	not analysed	not analysed	not analysed	not analysed	<4	<4
Temperature (°C)	16.5	14.5	14.9	15.6	18.4	15.6
Total Oxidised Nitrogen (mg/l)	0.49	0.57	0.81	1.1	2.4	2

Location	Colthurst Br	Ballymaquirk Br	Roskeen Br	Rly Br, Mallow	Killavullen Br	Killavullen Br
True Colour (mg/l)	213	216	182	106	21	16

Cork County Council has indicated that the analysis from the additional water samples they took on 12 / 13 August on the River Blackwater in Mallow and on the Clyda River had water quality parameter concentrations that were comparable to samples taken previously and were indicative of good water quality.

Rainfall, river flow and water level

Met Éireann data for Moore Park (approx. 40 km downstream of the area of focus) indicates that rainfall in July and August was below the long-term average. During the first two weeks in August there were only two days with more than 0.5mm of rainfall at Moore Park.

The low rainfall resulted in lower water levels and flows in the River Blackwater catchment, with the Local Authority-EPA Duarrigle hydrometric gauge (Blackwater (Munster)_060) and the OPWs Keale Bridge (Blackwater (Munster)_070), Mallow Railway Bridge (Blackwater (Munster)_120) and Killavullen Bridge (Blackwater (Munster)_160) hydrometric gauges experiencing low flow 95%ile conditions during the second week of August. Several water level gauges on the River Blackwater also had corresponding low water levels.

The Local Authority-EPA Riverview hydrometric gauge on the River Allow (Allow_070) recorded 90%ile flow conditions during the second week of August.

OPW hydrometric gauge water temperature data at Keale Bridge had daily mean water temperatures above 18 degrees during the second week of August, with daily mean water temperatures exceeding 19 degrees at Lombardstown Bridge (Blackwater (Munster)_100), Mallow Railway Bridge and Killavullen Bridge on some days during the second week of August. OPW hydrometric gauge water temperature data for the Glen River indicated daily mean temperatures of ~15 degrees, whereas the River Allow and Clyda River both had daily mean temperatures of ~18 degrees during the second week of August.

Table 2: River Flow Data for July and August in the River Blackwater Catchment

Date	Daily mean flow (m^3/s)				
	Measured flow on R. Blackwater u/s R. Finnow confluence @ Duarrigle hydrometric gauge	Measured flow on R. Blackwater d/s R. Finnow confluence @ Keale Br hydrometric gauge	Measured flow on R. Blackwater in Mallow @ Mallow Railway Br hydrometric gauge	Measured flow on R. Blackwater d/s Mallow @ Killavullen hydrometric gauge[11]	Measured flow on R. Allow d/s Kanturk @ Riverview hydrometric gauge
	Blackwater	Blackwater	Blackwater	Blackwater	Allow
	Catchment Area - 250 km^2	Catchment Area - 322 km^2	Catchment Area - 1178 km^2	Catchment Area - 1258 km^2	Catchment Area - 307 km^2
95%ile flow	0.921	1.279	4.888	4.797	0.697
21-Jul	7.94	10.02	52.45	50.76	33.32
22-Jul	4.26	4.72	19.25	23.39	9.43
23-Jul	3.5	3.90	14.6	16.53	7.39
24-Jul	2.52	2.90	11.08	12.98	5.16
25-Jul	1.96	2.31	8.95	9.70	3.89
26-Jul	1.66	2.01	7.89	8.01	3.26
27-Jul	1.42	1.78	7.13	6.96	2.79
28-Jul	1.34	1.67	6.65	6.31	2.48
29-Jul	1.59	1.82	6.42	6.00	2.3
30-Jul	1.69	2.02	6.51	6.02	2.12
31-Jul	1.72	1.90	6.16	5.72	1.96
01-Aug	1.63	1.93	6.11	5.65	1.80
02-Aug	1.23	1.53	5.58	5.23	1.63
03-Aug	1.12	1.40	5.21	4.77	1.53
04-Aug	2.17	2.17	5.18	4.65	1.66
05-Aug	1.88	2.21	6.49	5.95	1.64
06-Aug	1.20	1.48	5.25	5.07	1.35
07-Aug	1.09	1.36	4.84	4.44	1.29
08-Aug	0.97	1.24	4.58	4.13	1.19
09-Aug	0.88	1.14	4.28	3.86	1.10
10-Aug	0.86	1.12	4.15	3.71	1.05
11-Aug	0.82	1.08	4.07	3.63	0.99
12-Aug	0.76	1.00	3.86	3.44	0.92
13-Aug	0.70	0.95	3.69	3.31	0.86

[11] Daily mean estimated based on mid-point between the measured daily min and daily max flow.

Water Quality and Flow Summary

The water chemistry and macroinvertebrate ecological samples taken during June, July and August 2025 indicate that the water quality of main channel of the River Blackwater was generally Good during these months.

The lower flows and water levels and elevated water temperatures experienced during the first two weeks of August provided environmental conditions that can be undesirable for supporting good ecological health of aquatic species.

However, the lower flows were not at such a low level or duration to reduce the capacity of the rivers to assimilate licensed industrial/wastewater discharges.

Overall, the water quality data does not indicate that there was an enduring substantial water quality problem prior to the fish mortalities occurring. The water quality data gathered after the fish mortalities indicate no overall change in water quality.

Review of the implications of the Industrial and Wastewater discharges regulated by the EPA on water quality

As summarised in the previous sections and detailed in the appendices, within the focused area of the Blackwater (Munster)_070 through to Blackwater (Munster)_160, the Glen River, the River Allow and the Clyda River, there are 17 EPA authorised urban wastewater discharges (consisting of 8 Wastewater Discharge Licences (WWDL) and 9 Certificate of Authorisations (COA)) and 10 EPA licensed industrial facilities (IEL-IPC). The discharges from each plant have been reviewed in the context of the flow conditions at the time of the fish mortalities to assess the likely implications of those discharges on water quality at the time.

Table 3: Summary of EPA Regulated Facilities in the River Blackwater Catchment

Region	EPA Licensed Activity	Non-compliance or Incident	Review
River Blackwater upstream of Banteer	D0332 (WWDL) D0448 (WWDL) A0320 (COA) A0328 (COA) P0639 (IPC) P0835 (IPC) P0795 (IEL)	D0332 (Millstreet) – Total Ammonia	Millstreet was compliant in July but Uisce Éireann notified the EPA of an ELV exceedance on August 19th. An assimilative capacity assessment indicates that the Total Ammonia concentration at the bottom of Finnow_040 would not have exceeded the EQS and the low flow hydrometric data (Duarrigle) for the River Blackwater indicates further dilution would have taken place after the confluence with the River Blackwater.
River Allow	D0203 (WWDL) P0793 (IEL) P1051 (IEL)	P1051 (North Cork Creameries) – Total Ammonia, Total Phosphorus, Orthophosphate, Total Nitrogen, BOD, Suspended Solids	NCC had multiple ELV exceedances on multiple days. Of these, the Total Ammonia breaches in the wastewater were of sufficient magnitude that warranted further investigation to determine if good status EQS for Total Ammonia in the River Allow had been exceeded.

Region	EPA Licensed Activity	Non-compliance or Incident	Review
Glen River	A0334 (COA) A0345 (COA)	None	
River Blackwater from Banteer to Mallow	D0441 (WWDL) A0327 (COA) A0340 (COA) A0324 (COA) A0325 (COA) A0319 (COA) P1000 (IPC) P0977 (IEL) P1052 (IEL)	A0327 (Lombardstown) – Plant overloaded	The Lombardstown wastewater plant is a septic tank system with discharge and has been operating above capacity. It is on the EPA priority action list for remedial action. The plant is small, with a discharge of ~20 m^3/day, which is <0.01% of the 95%ile flow (i.e. low flow) in the River Blackwater and therefore had limited potential to impact on the water quality of the River Blackwater.
Clyda River	D0302 (WWDL) D0438 (WWDL)	D0302 (Dromahane) – Orthophosphate, Suspended Solids, BOD, COD D0438 (Bweeng) – Total Ammonia, Suspended Solids	Dromahane had multiple ELV exceedances in July, with further exceedances in August and September. The discharge is located in Clyda_30, close to the confluence with the River Blackwater. An assimilative load assessment indicates that, despite these exceedances, the good status EQS for Orthophosphate would not have been exceeded in Clyda_30, and this was validated in river samples taken downstream. Bweeng had ELV exceedances in July and an assimilative capacity assessment indicates that the river concentration would have achieved the good status EQS for Total Ammonia by the time it reached Clyda_20.
River Blackwater downstream of Mallow Rail Br	D0052 (WWDL) D0447 (WWDL) P0247 (IPC) P0403 (IEL)	None	

The nine COA plants have relatively small discharge volumes, with the discharges typically contributing < 2 % of the river flow during 95%ile flows. Consequently, the wastewater load from these COA plants has limited potential to significantly impact on the water quality of the River Blackwater.

Although ELVs were exceeded at three WWDL plants, assimilative capacity assessments and downstream sampling confirm that it is unlikely the discharges had a significant impact on the Ecological status in the River Blackwater.

Additionally, Uisce Éireann did not report any incidents, spillages or issues at their water treatment plants in the focused area of investigation and the EPA inspections did not find evidence of spillages at the plants.

Overall, the evidence does not support a causal link between these COA and WWDL wastewater discharges, or the operations at Uisce Éireann drinking water plants, and the fish mortalities in the River Blackwater.

As summarised in the previous sections and detailed in the appendices, there were no wastewater discharges / ELV breaches reported for 9 of the 10 EPA licensed industrial facilities

(IEL-IPC) in the area of focus at the end of July and in early August. Therefore, the 9 facilities had limited potential to significantly impact on the water quality of the River Blackwater and there is no evidence to support a causal link between these facilities and the fish mortalities in the River Blackwater.

The one remaining industrial facility, NCC, reported multiple breaches of its ELVs during July and in early August. The Total Ammonia ELV breaches at NCC on the River Allow were of sufficient magnitude that had the potential to cause the Total Ammonia concentration in the River Allow to exceed the 95%ile environmental quality standard (EQS) for good water quality. A further assessment was carried out to assess the significance of this breach for water quality, which is discussed further below.

Review of Total Ammonia concentrations in the River Allow following North Cork Creameries non-compliance with its licence conditions

Wastewater discharge values from NCC indicates the discharge was non-compliant with its ELVs for several parameters and on several days in July and August. The most significant exceedances related to Total Ammonia, with effluent concentrations exceeding the Total Ammonia ELV on all but one day when the plant was discharging wastewater to the River Allow.

Table 4: Wastewater Discharge Data for North Cork Creameries in July and August

Date	COD (mg/L)	BOD (mg/L)	Suspended Solids (mg/L)	Ammonia N (mg/L)	Total P (mg/L)	Ortho phosphate (mg/L)	Total Nitrogen (mg/L)	pH	Flow[12] (m^3/day)
ELV	**75**	**6.0**	**20**	**0.5**	**1.00**	**1.00**	**15.0**	**6.0-9.0**	**1000**
2025-07-27	38	2.2	5	9.8	0.13	0.12	12.8	8.1	702
2025-07-28	35	3.5	11	9.06	0.11	0.1	11	8.0	781
2025-07-29	23	7.5	12	6.4	1.22	0.5	9.5	7.7	761
2025-07-30	27	6.8	15	6.61	0.14	0.04	10.3	7.7	592
2025-07-31[13]	77	33.2	28	0.19*	0.35	0.05	5.0	8.4	362
2025-08-01	56	6.1	26	18.0*	0.43	0.21	27.3	8.3	603
2025-08-02	37	9.1	22	13.15*	0.35	0.20	21.8	8.3	688
2025-08-03	40	5.1	12	10.64*	0.29	0.11	16.0	8.4	716
2025-08-04	44	11.6	21	13.01*	0.35	0.11	22.2	8.4	659
2025-08-05	Composite sample not tested by NCC[14]							7.3[15]	678
2025-08-06	44	24.4	5	5.2	0.11	0.02	8.0	7.6	347

[12] Flow data taken from NCC hand written log book

[13] Sample reported as coming from SW1, but NCC have indicated its a composite sample

* Samples were reported as Ammonium NH_4 and have been converted to Ammonia N for this analysis by multiplying by 0.7767

[14] The licensee did not test a composite sample for the 5th August (covering 9am of 5th to 9am on 6th August) in accordance with licence requirements. Other monitoring and operational data was available for this date, e.g. wastewater plant logs and SCADA data, but total ammonia was not part of those data sets. This is discussed further in the *EPA Actions* section of this report.

[15] pH value taken from NCC hand written log book. NCC SCADA data confirms pH remained close to this figure across the day

Date	COD (mg/L)	BOD (mg/L)	Suspended Solids (mg/L)	Ammonia N (mg/L)	Total P (mg/L)	Ortho phosphate (mg/L)	Total Nitrogen (mg/L)	pH	Flow[12] (m^3/day)
2025-08-07	40	11.9	3	10.12	1.84	1.79	14.5	7.9	665
2025-08-08	43	5.1	4	11.41	1.37	1.05	16.2	7.9	651
2025-08-09	37	6.0	4	10.19	1.24	0.95	14.5	7.9	662
2025-08-10	44	8.6	3	11.8	1.44	1.04	17.0	8.0	826
2025-08-11	40	6.5	< 4	10.25	1.73	1.60	14.4	8.0	702

Taking account of the corresponding NCC discharge volume on each day, which ranged from 347-826 m^3/d during this period, and the daily mean river flow (derived from the measured river flow at the Riverview hydrometric gauge downstream on the River Allow), an assessment has been completed to estimate the Total Ammonia concentration in the River Allow at the point of discharge from NCC.

This assessment concludes that the consequence of the NCC discharge is a maximum projected Total Ammonia concentration of 0.1253 mg/l N in the River Allow on 10 August. All projected concentrations in the River Allow were below the 95%ile limit of 0.14 mg/l N for Total Ammonia i.e., the concentration that should not be exceeded 95% of the time to maintain good water quality.

Further dilution and nitrification are expected to have led to lower Total Ammonia concentrations in the River Allow before it reached the confluence with the River Blackwater, approximately 4km downstream.

Table 5: Projected Ammonia concentrations in the River Allow Downstream of North Cork Creameries from 31 July to 11 August

Date	Total Ammonia Conc. In wastewater (mg/l N)	Wastewater Discharge Volume (m^3/day)	Wastewater Discharge Volume Conversion (m^3/s)	Estimated River Flow at wastewater discharge point (m^3/s)[16]	Dilution factor	Equivalent Conc. of Ammonia (mg/l N) in River after dilution	Un-ionised Ammonia mg/l NH_3 In river estimation (calculated based on temp of 19 degrees and pH of 8.4)
31-Jul	0.2	362	0.00419	*1.69*	403.36	0.0005	0.0001
01-Aug	18.0	603	0.00698	*1.55*	222.09	0.0810	0.0084
02-Aug	13.2	688	0.00796	*1.4*	175.81	0.0748	0.0077
03-Aug	10.6	716	0.00829	*1.32*	159.28	0.0668	0.0069
04-Aug	13.0	659	0.00763	*1.43*	187.48	0.0694	0.0072
05-Aug	Sample not tested by NCC[17]	678	0.00785	*1.41*	179.68	No reported Ammonia Concentration	
06-Aug	5.2	347	0.00402	*1.16*	288.83	0.0180	0.0019

[16] Flow estimates are based on the proportional catchment area approach, whereby the River Allow catchment at coordinates 138506, 102458 is 86% of the catchment area at the Riverview hydrometric monitoring gauge.

[17] The licensee did not test a composite sample for the 5th August (covering 9am of 5th to 9am on 6th August) in accordance with licence requirements. Other monitoring and operational data was available for this date, e.g. wastewater plant logs and SCADA data, but total ammonia was not part of those data sets. This is discussed further in the *EPA Actions* section of this report.

Date	Total Ammonia Conc. In wastewater (mg/l N)	Wastewater Discharge Volume (m^3/day)	Wastewater Discharge Volume Conversion (m^3/s)	Estimated River Flow at wastewater discharge point (m^3/s)[16]	Dilution factor	Equivalent Conc. of Ammonia (mg/l N) in River after dilution	Un-ionised Ammonia mg/l NH_3 in river estimation (calculated based on temp of 19 degrees and pH of 8.4)
07-Aug	10.1	665	0.00770	*1.11*	144.22	0.0702	0.0072
08-Aug	11.4	651	0.00753	*1.02*	135.37	0.0843	0.0087
09-Aug	10.2	662	0.00766	*0.95*	123.99	0.0822	0.0085
10-Aug	11.8	826	0.00956	*0.9*	94.14	0.1253	0.0129
11-Aug	10.3	702	0.00813	*0.85*	104.62	0.0980	0.0101

Total Ammonia is present in fresh water as ionised Ammonia and un-ionised Ammonia. Un-ionised Ammonia is more harmful to freshwater aquatic life, including fish, and especially salmonids (including salmon and trout species). The concentrations of ionised Ammonia and un-ionised Ammonia in freshwaters are influenced by pH and water temperature, with higher temperatures and pH levels increasing the portion of Total Ammonia present as un-ionised Ammonia.

While the current Surface Water Regulations do not include an EQS for un-ionised Ammonia, a previous salmonid water quality standard of 0.02 mg/l NH_3 exists (S.I. No. 293/1988). The un-ionised Ammonia standard in these Regulations include the caveat that it is allowable for the standard to be exceeded in the form of minor peaks, but it should be complied with 95% of the time throughout the year[18]. Fish and other aquatic species can suffer adverse effects from toxic impacts if they are subject to chronic / longer term exposure to concentrations of un-ionised Ammonia above 0.02 mg/l NH_3.

Given the elevated river temperature (and assuming a worse case temperature of 19 degrees[19]) and a pH of 8.4 (the highest pH of the wastewater being discharged), the fraction of Total Ammonia present as un-ionised Ammonia is 8.5%, with the result converted from N to NH_3 to allow comparison with the previous salmonid water quality standard of 0.02 mg/l NH_3.

Based on the discharge data reported by NCC, the estimated maximum un-ionised Ammonia concentration was 0.0129 mg/l NH_3, occurring on 10 August. The concentration is lower than the 0.02 mg/l NH_3 threshold where long term exposure can have a toxic impact on fish and other aquatic species.

EPA samples were taken from the wastewater discharge at NCC on the 06 August and 12 August.

The EPA grab samples taken from the River Allow on the 6 August, indicate Total Ammonia concentrations were < 0.02 mg/l N upstream and downstream of the plant, which are indicative of good water quality in the River Allow.

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[18] The footnote in the Regulations states the "*standard may be exceeded in the form of minor peaks in daytime and, subject to this, be conformed with by 95% of samples over a period of 12 months where sampling is carried out at least once per month; where sampling is less frequent the standard shall be conformed with by all samples*".

[19] Upstream OPW hydrometric gauges on the River Allow indicate river temperatures recorded a maximum daily mean temperature of 17.8 degrees.

Analysis of the wastewater samples taken by the EPA on August 12th indicate a worst-case[20] Total Ammonia concentration of 26 mg/l N in the wastewater discharge. The projected concentration in the River Allow, based on these EPA sample results, are a Total Ammonia concentration of 0.1764 mg/l N, and an un-ionised Ammonia concentration of 0.0182 mg/l NH_3.

The worst-case projected river concentrations arising in the River Allow, based on EPA sample results for the wastewater discharge on the 12 August, are slightly higher than the 0.14 mg/l N Total Ammonia 95%ile. The data indicate a projected breach of the standard on a single day and therefore this does not indicate that the Total Ammonia 95%ile threshold was being exceeded more than 95% of the time. The worst-case projected river concentrations arising from the EPA samples indicate the 0.02 mg/l NH_3 un-ionised Ammonia threshold was not exceeded.

Table 6: Projected Ammonia concentrations in the River Allow Downstream of North Cork Creameries on 12 August

Date	Total Ammonia Conc. In wastewater (mg/l N)	Wastewater Discharge Volume (m^3/day)	Wastewater Discharge Volume Conversion (m^3/s)	Estimated River Flow at wastewater discharge point (m^3/s)	Dilution factor	Equivalent Conc. of Ammonia (mg/l N) in River after dilution	Un-ionised Ammonia mg/l NH_3 in river estimation (calculated based on temp of 19 degrees and pH of 8.4)
12-Aug (Composite Sample)	15	463	0.005358796	0.79	147.42	0.1017	0.0105
12-Aug (Grab Sample)	26	463	0.005358796	0.79	147.42	0.1764	0.0182

Based on the available data, the lines of evidence indicate that it is unlikely that the Total Ammonia and un-ionised Ammonia levels associated with the NCC discharge were at a level or duration that caused the significant fish mortalities on the River Blackwater. The IFI also advised the public authorities investigating the fish mortalities that marked and dead fish were not observed in the River Allow. Therefore, there is no causal link to show that the NCC discharge was the cause of the fish mortalities in the River Blackwater.

[20] The grab sample on the 12th August was taken from a trickle of wastewater at the discharge point after the discharge was ceased. It had a higher concentration of total ammonia than the composite wastewater sample taken at the same time, with the composite sample representing the discharge over the previous 24 hour period.

CONCLUSION

Since it became aware of the fish mortalities on August 12th, the EPA has investigated potential pollution sources from EPA regulated facilities across the Blackwater catchment. Over the course of the investigation, the EPA conducted 41 inspections, took 40 samples and assessed operational practices and monitoring data associated with industrial, wastewater and drinking water facilities within the Blackwater catchment. The EPA's assessment had regard to water quality data for the Blackwater catchment (chemical and ecological) and the results of fish pathology and tissue analysis arising from the incident.

Four sites inspected had non-compliances and one certificate of authorisation was operating above capacity, all of which are subject to on-going enforcement by the EPA.

Wastewater and Drinking water

Although ELVs were exceeded at three plants that hold a waste water discharge licence from the EPA, assimilative capacity assessments and downstream sampling confirm that it is unlikely the discharges had a significant impact on the water quality of the River Blackwater. There was no evidence of spillages or incidents at the plants investigated. Overall, there is no evidence to show a causal link between these EPA-regulated wastewater discharges, or the operations at Uisce Éireann drinking water plants, and the fish mortalities in the River Blackwater.

Industry

There were no wastewater discharges / ELV breaches reported for 9 of the 10 EPA licensed industrial facilities in the area of focus at the end of July and in early August. There was no evidence of spillages or incidents at the plants investigated. Therefore, the 9 facilities had limited potential to significantly impact on the water quality of the River Blackwater and there is no evidence to show a causal link between these facilities and the fish mortalities in the River Blackwater.

North Cork Creameries

The one remaining industrial facility, NCC, reported multiple breaches of its licence limits during July and in early August. The non-compliances detected at NCC, were significant and entirely unacceptable. The licence breaches arose following an incident at the end of June whereby a sudden load of whey was discharged to the plant which destabilised the biological processes in the plant so it could no longer adequately treat the effluent.

The EPA has reviewed, in detail, monitoring and operational data related to the wastewater treatment plant in the June/July/August period. The licensee has, to date, failed to resolve the issues in the wastewater treatment plant and it currently cannot adequately or consistently treat effluent under normal operation. This is due to the licensee's lack of organised management or control of wastewater treatment plant activities, their lack of appropriate expertise to resolve significant operational issues, their failure to appropriately generate, manage, maintain and use critical data sets to inform corrective actions and their disregard for licence requirements and licence limits.

The EPA has assessed the impact of the discharges from NCC on the River Allow. The primary parameter of concern in the NCC discharge is total ammonia, which is present in fresh water as

ionised ammonia and un-ionised ammonia. Un-ionised ammonia is more harmful to freshwater aquatic life, including fish, and especially salmonids (including salmon and trout species).

The assessment demonstrates that total ammonia levels in the river as a result of the NCC discharge in early August had the potential to cause the total ammonia concentration in the River Allow to exceed the environmental quality standard (EQS) for good water quality. The EPA calculated the level of un-ionised ammonia that could have occurred in the river as a result of the NCC discharge in the weeks prior to the fish mortalities occurring. The concentration of un-ionised ammonia in the river across early August was below the threshold of 0.02mg/l NH_3 at which fish and other aquatic species can suffer adverse effects from toxic impacts, when subject to chronic/longer term exposure.

Therefore, based on the available data, the lines of evidence indicate that it is unlikely that the total ammonia levels in the River Allow downstream of the NCC discharge were at a level that would have resulted in the environmental quality standards for good status not being met and the levels were lower than the un-ionised ammonia standard that would impact on fish. A detailed review of the wastewater treatment plant's operation in the weeks prior to the fish mortalities being detected indicate that while the plant was performing very poorly, and discharges were significantly non-compliant across many parameters, there was no evidence that a sudden catastrophic load to the river was discharged in that period, or that any form of chemical discharge occurred. The data indicates that the likelihood of such an event occurring in that period is low. The IFI also advised the public authorities investigating the fish mortalities that marked and dead fish were not observed in the River Allow before, during or after the fish mortalities in the Blackwater were reported. Therefore, notwithstanding the seriousness of the licence breaches at NCC, the EPA's assessments do not support a causal link between the NCC discharges into the River Allow and the fish mortalities in the Blackwater.

NCC has significant and ongoing compliance challenges to resolve. The EPA is rigorously pursuing the enforcement of the licence breaches arising as a matter of priority and urgency, in line with its Compliance and Enforcement Policy. Offences related to breaches of EPA licences may be prosecuted summarily by the EPA or on indictment by the DPP. The EPA is giving full consideration to all such enforcement options available to it in respect of the non-compliances detected.

Next steps

The EPA submits this report to the multi-agency group investigating into the Blackwater fish mortalities and will continue to support the work of the group as the investigation concludes.

Appendix 1: Details of EPA inspections

Industrial facilities

Reg No	Licensee	Location	Site activities	Discharges between 28 July 2025 and 12 August 2025	Site visits since 12th August
P0247-02	Micam Limited	Sean Moylan Park, Mallow, Cork.	Manufacturer of industrial laminates and plastic machined components	**No process emissions to sewer or water.** Summer shutdown period between 28 July and 11th August. No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	12th August
P0403-03	Dairygold Co-Operative Society Limited (Mallow)	Annabella, Westend, Mallow, Cork.	Milk processing plant	Process effluent treated at site WWTP and discharged into River Blackwater **No ELV breaches** No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	4th September
P0639-03	Gairdini *(also known as Munster Joinery)*	Lacka Cross, Lackanastooka, Ballydesmond, Mallow, Cork	Manufacturer of windows and doors	Sanitary effluent is treated at site WWTP and discharged into River Blackwater **No ELV breaches**	28th August

				No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	
P0793-03	Newmarket Co-Operative Creameries Limited	Scarteen Lower, Newmarket, Cork	Milk processing plant	Process effluent treated at site WWTP and discharged into River Dalua (joins the River Allow, which feeds into the Munster Blackwater) **No ELV breaches** No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	28th August
P0795-02	Mondelez Ireland Production Limited	Shinnagh, Rathmore, Kerry	Milk processing plant	Process effluent and sanitary effluent are treated at site WWTP and discharged to River Blackwater. **No ELV breaches.** Site was on summer shutdown from 1st to 11th of August 2025. No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	28th August
P0835-01	ALPS Electric (Ireland) Limited	Clara Road, Millstreet, Cork.	Manufacturer of electronic parts	All sanitary effluent is emitted to sewer. There are no process effluent discharges to water.	4th September

				No process effluent discharge during defined period. Summer shutdown period between 21st July to 11th August 2025. No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	
P0977-01	Magh nAla Limited	IDA Industrial Estate, Quartertown, Mallow, Cork, Cork	Manufacturer of zinc pigment and organometallic compound (resin)	**No process emission to sewer or water.** No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	12th August
P1000-01	Magh nAla Limited	Quartertown Industrial Estate, Mallow, Cork.	Manufacturer of solvent based coatings and zinc pigment	**No process emission to sewer or water** No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	12th August
P1051-01	North Cork Creameries	Strand Street, Kanturk, Cork.	Milk processing plant	Site effluent water is treated at site WWTP and discharged into River Allow (which feeds into the Munster Blackwater). **ELV breaches within the defined period**	12th 18th , 22nd August 1st, 4th , 5th , 8th , 10th , 11th September

P1052-01	Dairygold Agri Business Limited	Lombardstown, Mallow, Cork	Feed manufacturing mill and grain drying	**No treated process effluent discharge to Blackwater.** Effluent is tankered off site. No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	28th August 2nd September

Wastewater treatment

Reg No	Licensee	Location	Site activities	Discharges between 28 July 2025 and 12 August 2025	Site visits since 12th August
A0327-01	Uisce Éireann	Lombardstown and Environs.	Wastewater treatment	No evidence of spillages or unauthorised discharges. No incidents reported in this time period. Plant is overloaded.	12th August
D0302-01	Uisce Éireann	Dromahane and Environs	Wastewater treatment	No evidence of spillages. ELV breaches in July, August and September. Operational issues at the plant.	13th August 3rd September
D0447-01	Uisce Éireann	Killavullen and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No ELV breaches in July and August.	3rd September

				No incidents reported in this time period.	
D0448-01	Uisce Éireann	Banteer and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No ELV breaches in July and August. No incidents reported in this time period.	4th September
D0438-01	Uisce Éireann	Bweeng and Environs	Wastewater treatment	No evidence of spillages. ELV breaches in July and September. Infrastructural upgrade needed at the plant	4th September
A0324-01	Uisce Éireann	Castlemagnier and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	4th September
A0319-01	Uisce Éireann	Cecilstown and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	4th September
A0325-01	Uisce Éireann	Glantane and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	4th September
A0340-01	Uisce Éireann	Kilbrin and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges.	4th September

				No incidents reported in this time period.	
D0441-01	Uisce Éireann	Ballyclough	Wastewater treatment	No evidence of spillages or unauthorised discharges. No ELV breaches in July and August. There was an ELV breach of Ammonia in September which is currently being investigated. No incidents reported in this time period.	5th September
D0052-01	Uisce Éireann	Mallow	Wastewater treatment	No evidence of spillages or unauthorised discharges. No ELV breaches in July and August. No incidents reported in this time period.	5th September
A0320-01	Uisce Éireann	Kilcorney and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	8th September
A0328-01	Uisce Éireann	Rathcoole and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	8th September
A0345-01	Uisce Éireann	Nad and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	8th September

A0334-01	Uisce Éireann	Lyre and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No incidents reported in this time period	8th September
D0203-01	Uisce Éireann	Kanturk	Wastewater treatment	No evidence of spillages or unauthorised discharges from the plant. No ELV breaches in July and August. No incidents reported in this time period.	9h September
D0332-02	Uisce Éireann	Millstreet and Environs	Wastewater treatment	No evidence of spillages. No ELV breaches in July. ELV breaches in August.	9th September

Drinking Water treatment

Reg No	Licensee	Location	Site activities	Discharges between 28 July 2025 and 12 August 2025	Site visits since 12th August
0500PUB1101	Uisce Éireann	Allow Regional	Drinking Water Treatment	The water treatment plant was operating normally. No evidence of chemical spillages on the site.	27/08/2025
0500PUB1313	Uisce Éireann	Mallow	Drinking Water Treatment	The water treatment plant was operating normally. No evidence of chemical spillages on the site.	27/08/2025

0500PUB1401	Uisce Éireann	Banteer	Drinking Water Treatment	No discharges to surface water. No evidence of chemical spillages on the site.	04/09/2025
0500PUB1307	Uisce Éireann	Cregane/Glantane	Drinking Water Treatment	No discharges to surface water. No evidence of chemical spillages on the site.	04/09/2025

Appendix 2: EPA sampling activities for August 12th /13th

EPA took the following samples on the 12th/13th August as part of its initial response to the Blackwater fish mortality investigation.

Lab reports for these sampling visits will be available on LEAP online in due course. Details of non-compliances detected are summarised in the main body of this report.

Reg No	Licensee	Type of sample	Note
12/08/2025	North Cork Creameries	Location: Final discharge point SW1 Sample type: Grab and composite	Both samples relate to discharges on the 12th August and were non-compliant with the Emission Limit Values of the licence
12/08/2025	Magh-nAla	Location: Storm water discharge Sample type: Grab.	Sample from small storm water discharge on the 12th August. Laboratory results indicated no issues of concern
12/08/2025	Lombardstown WWTP	Location: Final discharge point. Sample type: Grab.	Sample taken from the wastewater discharge from the primary treatment system to the Blackwater River on the 12th August 2025. This certified site does not have ELVs; Requirement of certificate of Authorisation is not to cause environmental pollution . Downstream water quality within surface water quality standards.
12/08/2025	Ambient monitoring of the Clyda River	Location: d/s of the wastewater discharge point. Sample type: Grab.	Sample taken from the Clyda River d/s of the wastewater discharge from Dromahane WWTP on August 12th, 2025. Laboratory results indicate the sample meets the EQS.
13/08/2025	Dromahane WWTP	Location: Final monitoring point. Sample type: Grab and composite (dated 12/08/2025) Note 1.	Sample taken of the wastewater discharge at the final monitoring point prior to discharge to the Clyda River on August 13th, 2025. Laboratory results indicate the discharge exceeds Emission Limit Values of the licence.

Appendix 3: Additional EPA sites sampled post August 13th

These samples are for the purpose of verifying compliance or pursuing compliance issues further. Enforcement action will be taken on any non-compliances detected, in line with normal enforcement procedures.

Reg No	Licensee	Note
01/09/2025	North Cork Creameries	Location: No discharge occurring but a sample was taken of the treated effluent in the final discharge basin at SW1. Sample type: Grab
01/09/2025	Ambient monitoring of the Allow River	Location: u/s and d/s of North Cork Creameries ambient discharge pipe Sample type: Grab
02/09/2025	Dairygold Agri Business Limited	Location: Storm water (No discharges occuring but sample taken to confirm integrity of shut-off valve.) Sample Type: Grab
04/09/2025	Dairygold Co-Operative Society Limited (Mallow)	Location: Final discharge point Sample type: Composite and grab from 4/9/25, also split composite samples from 31/8 and 1/9
04/09/2025	Ambient Monitoring of Blackwater River	Location: u/s and d/s of Dairygold (Mallow) effluent discharge pipe Sample type: Grab
04/09/2025	ALPS Electric (Ireland) Limited	Location: Storm water discharge. Sample type: Grab
04/09/2025	North Cork Creameries	Location: Final discharge point Sample type: Grab
04/09/2025	Ambient monitoring of the Allow River	Location: u/s and d/s of North Cork Creameries ambient discharge pipe Sample type: Grab
03/09/2025	Dromahane WWTP	Location: Final discharge point. Sample type: Grab and composite.
03/09/2025	Ambient monitoring of the Clyda River.	Location: u/s and d/s of the Dromahane final discharge point. Sample type: Grab.
04/09/2025	Cecilstown WWTP	Location: Final discharge point. Sample type: Grab.
04/09/2025	Ambient monitoring of the East Lohort River.	Location: u/s and d/s of the Cecilstown final discharge point. Sample type: Grab.
04/09/2025	Glantane WWTP	Location: Final discharge point. Sample type: Grab.
04/09/2025	Ambient monitoring of the Skarragh Hill River.	Location: u/s and d/s of the Glantane final discharge point. Sample type: Grab.
04/09/2025	Bweeng WWTP	Location: Final discharge point. Sample type: Grab.

04/09/2025	Ambient monitoring of a tributary to the Clyda River.	Location: u/s and d/s of the Bweeng final discharge point. Sample type: Grab.
04/09/2025	Castlemaginer WWTP	Location: Final discharge point. Sample type: Grab.
04/09/2025	Ambient monitoring of Lisduggan North River.	Location: u/s of the Castlemaginer final discharge point. No safe access d/s. Sample type: Grab.
04/09/2025	Kilbrin WWTP	Location: Final discharge point. Sample type: Grab.
04/09/2025	Ambient monitoring of the Awbeg River.	Location: u/s and d/s of the Kilbrin final discharge point. Sample type: Grab. Note: 2 u/s samples taken (two joining rivers).
05/09/2025	Ballyclough WWTP	Location: Final discharge point. Sample type: Grab
08/09/2025	North Cork Creameries	Location: Final discharge point. Sample type: Composite
08/09/2025	Ambient monitoring of the Allow River	Location: u/s and d/s of North Cork Creameries ambient discharge pipe Sample type: Grab
09/09/2025	Ambient monitoring of the Finnow River.	Location: u/s and d/s of the Millstreet final discharge point. Sample type: Grab.
09/09/2025	Kanturk WWTP	Location: Final discharge point. Sample type: Grab

Appendix 4: Licensee Monitoring data

Industrial

On examination of monitoring data provided by licensees, 9 of the 10 EPA-licensed industrial sites investigated either had compliant discharges to water or no discharges during the period 28th July to 12th August 2025.

Discharges from the NCC effluent treatment plant at SW1 exceeded the emission limit values set out in licence P1051-01 on various occasions between 25th June 2025 and 12th August 2025 (see Table A). These exceedances were detected by the licensees own onsite laboratory (NCC internal monitoring), an external accredited laboratory contracted by the licensee (NCC external) and EPA sample results (EPA ORM). Ambient samples were taken on the 6th August as presented in Table B below.

Table A: Monitoring results for emission point SW1 from North Cork Creameries and from EPA samples over the period 25th June 2025 to 12th August 2025

ELV Breach

Data Source**	Date	Grab/ Composite	Emission Limit Values (ELV)*										
			COD (mg/L)	BOD (mg/L)	SS (mg/L)	Ammonia (mg/L)	o-Phosphate (mg/L))	Temp (°C)	pH	Total Phosphorous (mg/L)	Total Nitrogen (mg/L)	Conductivity (S/m)	Flow (m^3/d)
			75	6	20	0.5	0.5	25	>6 <9	2	15	N/A	1000
NCC internal	25/06/2025	Grab	279	-	-	4.72	0.63	-	7.22	3.7	6.4	-	567
NCC internal	28/06/2025	Grab	238	-	-	>3.5	1.03	-	7.92	4.03	5.6	-	520
NCC internal	29/06/2025	Grab	96	-	-	0.08	0.23	-	7.92	1.59	8.6	-	140
NCC internal	30/06/2025	Grab	90	-	-	0.29	0.14	-	7.98	1.11	6.9	-	599
NCC internal	01/07/2025	Grab	90	-	-	1.6	0.19	-	7.65	1.97	8.5	-	427
NCC internal	02/07/2025	Grab	73	-	-	0.34	0.12	-	7.32	1.85	1.3	-	599
NCC internal	03/07/2025	Grab	74	-	-	0.32	0.28	-	7.33	1.7	1.4	-	577
NCC external	04/07/2025	Grab	20	2.2	6	0.21	0.02	-	7.2	0.07	14.4	-	530
EPA ORM	04/07/2025	Grab	97	20	66	0.15	0.026	-	7.8	0.11	1.7	1106	-
NCC external	05/07/2025	Grab	32	5.6	8	0.5	0.02	-	7.3	0.07	15.6	-	511
NCC internal	06/07/2025	Grab	24	-	-	0.3	0.04	-	7.42	0.6	1.3	-	411
NCC external	07/07/2025	Grab	<10	2.9	<2	0.3	0.04	-	7.4	<0.04	5.4		514

Data Source**	Date	Grab/ Composite	Emission Limit Values (ELV)*										
			COD (mg/L)	BOD (mg/L)	SS (mg/L)	Ammonia (mg/L)	o-Phosphate (mg/L))	Temp (°C)	pH	Total Phosphorous (mg/L)	Total Nitrogen (mg/L)	Conductivity (S/m)	Flow (m^3/d)
			75	6	20	0.5	0.5	25	>6 <9	2	15	N/A	1000
NCC external	08/07/2025	Grab	<10	8.9	<4	0.07	0.03	-	7.5	0.05	5.4	-	473
NCC external	09/07/2025	Grab	39	23.3	9	0.62	0.05	-	7.4	0.14	3.5	-	519
EPA ORM	10/07/2025	Grab	125	25	11	0.55	0.067	-	7.7	0.19	4.6	1743	28.27 (m3/hr)
NCC external	10/07/2025	Grab	83	20	18	0.91	0.03	-	7.5	0.21	5.2	-	550
NCC external	11/07/2025	Grab	36	17.7	16	0.27	0.04	-	7.6	-	2.4	-	559
NCC external	12/07/2025	Grab	13	3.7	6	0.18	0.03	-	7.5	-	1.8	-	629
NCC external	13/07/2025	Grab	28	8.1	13	0.22	0.03	-	7.5	-	2.7	-	618
NCC external	14/07/2025	Grab	16	7.9	9	0.13	0.04	-	7.5	-	1.9	-	595
NCC external	15/07/2025	Grab	19	10.3	6	0.13	0.03	-	7.6	-	2	-	600
NCC external	16/07/2025	Grab	18	11.6	7	0.1	0.01	-	7.4	0.12	2.2	-	552
EPA ORM	16/07/2025	Grab	49	4.8	8	0.036	<0.01	-	7.8	0.1	1.6	1561	-
NCC external	16/07/2025	Comp	13	5.9	6	0.31	0.02	-	7.5	0.21	2.3	-	723
NCC external	17/07/2025	Comp	17	7.1	31	0.21	0.03	-	7.5	0.08	7.7	-	665
NCC external	18/07/2025	Comp	34	6.3	22	0.43	0.01	-	7.6	0.08	11.7	-	-
NCC external	19/07/2025	Comp	37	5.3	10	0.34	0.02	-	7.7	0.07	11.2	-	623
NCC external	20/07/2025	Comp	16	5.7	12	0.41	0.03	-	7.7	0.11	12.1	-	530
NCC external	21/07/2025	Comp	32	4.9	4	0.97	0.26	-	7.7	0.05	7.6	-	534
NCC external	22/07/2025	Comp	93	16	19	0.82	-	-	7.5	0.15	-	-	443
NCC external	23/07/2025	Comp	89	17.6	20	0.56	0.05	-	7.5	0.16	3.8	-	504
NCC external	24/07/2025	Comp	52	10	10	7.29	0.2	-	7.9	0.17	10	-	515
NCC external	25/07/2025	Comp	60	4.4	14	9.74	0.05	-	8.1	0.22	13.1	-	458
NCC external	26/07/2025	Comp	36	1.7	<4	9.47	0.05	-	8.2	0.11	11.6	-	596
NCC external	27/07/2025	Comp	38	2.2	5	9.8	0.12	-	8.1	0.13	12.8	-	702

Data Source**	Date	Grab/ Composite	Emission Limit Values (ELV)*										
			COD (mg/L)	BOD (mg/L)	SS (mg/L)	Ammonia (mg/L)	o-Phosphate (mg/L))	Temp (°C)	pH	Total Phosphorous (mg/L)	Total Nitrogen (mg/L)	Conductivity (S/m)	Flow (m^3/d)
			75	6	20	0.5	0.5	25	>6 <9	2	15	N/A	1000
NCC external	28/07/2025	Comp	35	3.5	11	9.1	0.1	-	8	0.11	11	-	781
NCC external	29/07/2025	Comp	23	7.5	12	6.4	0.5	-	7.7	1.22	9.5	-	761
NCC external	30/07/2025	Comp	27	6.8	15	6.6	0.14	-	7.7	0.14	10.3	-	592
NCC external	31/07/2025	Grab	77	33.2	28	0.3	0.05	-	8.4	0.35	5	-	362
EPA ORM	01/08/2025	Grab (V-notch)	101	16	82	0.27	0.039	-	7.9	0.28	4.3	1984	
EPA ORM	01/08/2025	Grab (outfall)	72	15	72	0.27	0.051	-	7.9	0.26	4.1	1899	-
NCC external#	01/08/2025	Grab (Outfall)	72	23.7	18	0.19^	0.04	-	8.4	0.3	4.9	-	
NCC external	01/08/2025	Comp	56	6.1	26	18^	0.21	-	8.3	0.43	27.3	-	603
NCC external	02/08/2025	Comp	37	9.1	22	13.15^	0.2	-	8.3	9.35	21.8	-	688
NCC external	03/08/2025	Comp	40	5.1	12	10.64^	0.11	-	8.4	0.29	16	-	716
NCC external	04/08/2025	Comp	44	11.6	21	13.01^	0.11	-	8.4	0.35	22.2	-	659
NCC external	05/08/2025	**No sample taken**											678
NCC external	06/08/2025	Comp	44	24.4	5	5.2	0.02	-	7.6	0.11	8	-	347
NCC external	07/08/2025	Comp	40	11.9	3	10.1	1.79	-	7.9	1.84	14.5	-	665
NCC external	08/08/2025	Comp	43	5.1	4	11.4	1.05	-	7.9	1.37	16.2	-	651
NCC external	09/08/2025	Comp	37	6	4	10.2	0.95	-	7.9	1.24	14.5	-	622
NCC external	10/08/2025	Comp	44	8.6	3	11.8	1.04	-	8	1.44	17	-	826
NCC external	11/08/2025	Comp	40	6.5	<4	10.25	1.6	-	8	1.73	14.4	-	702
EPA ORM	12/08/2025	Grab	120	13	18	26	3.6	26	8.1	4.3	34	2230	-
EPA ORM	12/08/2025	Comp	56	5.9	26	15	1.2	26	8.5	1.4	19	1586	-
NCC External#	12/08/2025	Grab	95	19.2	22	24.6	3.36		8	4.18	32.8		-

Data Source**	Date	Grab/ Composite	Emission Limit Values (ELV)*										
			COD (mg/L)	BOD (mg/L)	SS (mg/L)	Ammonia (mg/L)	o-Phosphate (mg/L))	Temp (°C)	pH	Total Phosphorous (mg/L)	Total Nitrogen (mg/L)	Conductivity (S/m)	Flow (m^3/d)
			75	6	20	0.5	0.5	25	>6 <9	2	15	N/A	1000
NCC external#	12/08/2025	Comp	51	9.7	13	14.16	1.17	-	8.1	1.67	20.9	-	465

* **Composite Samples:** In accordance with Condition 4.3.2 of the licence, no pH value shall deviate from the specified range. For parameters other than pH and flow, eight out of ten consecutive composite results, based on flow proportional composite sampling, shall not exceed the emission limit value. No individual results similarly calculated shall exceed 1.2 times the emission limit value. **Grab samples:** In accordance with Condition 4.3.3, for parameters other than pH and temperature, no grab sample value shall exceed 1.2 times the emission limit value.

**NCC internal testing carried out in on-site laboratory at licensees installation. NCC external testing conducted by accredited laboratory. EPA ORM testing conducted in accredited EPA laboratory. Where both NCC internal and NCC external results are available for a sample on a given date, only NCC external results are reported in table as they are accredited results.

^ Samples for the period 31/7/2025 to 4/8/2025 were incorrectly analysed for ammonium rather than total ammonia. Results displayed in the table are the calculated equivalent total ammonia levels based on the ammonium results reported (i.e. 0.3mg/l on 31/7; 23.2mg/l on 01/08; 16.9mg/l on 02/08; 13.7mg/l on 03/08; 16.8mg/l on 04/08).

Duplicate of EPA sample take on same day

Table B: Ambient Monitoring in the vicinity of North Cork Creameries SW1 discharge location on 6th August 2025 (no discharge at SW1 occurring at time of sampling)

Data Source	Date	Grab/ Composite	Parameters										
			COD (mg/L)	BOD (mg/L)	SS (mg/L)	Ammonia (mg/L)	o-Phosphate (mg/L))	Temp. (°C)	pH	Total Phosphorous (mg/L)	Total Nitrogen (mg/L)	Conductivity (S/m)	Flow (m^3/d)
EPA ORM	06/08/2025	Uptream	21	1.1	<4	<0.02	0.014	-	8.4	0.034	1.2	220	-
EPA ORM	06/08/2025	Downstream	<20	1.2	<4	<0.02	0.013	-	8.4	0.039	1.2	218	-
EPA ORM	06/08/2025	Bay at outfall	51	6.3	70	0.077	0.012	-	8.1	0.091	2	431	-

Wastewater

Wastewater licences

Uisce Éireann monitoring data for discharges from Kanturk, Banteer, Ballyclough, Mallow and Killavulllen wastewater were compliant with their licence in July and August. Uisce Éireann wastewater monitoring data from Millstreet, Bweeng and Dromahane exceeded the ELVs required by their respective wastewater discharge licence.

Wastewater discharge from **Millstreet WWTP** to the Finnow River:

The wastewater discharge from Millstreet WWTP is to the Finnow River, a tributary of the Blackwater River which is located approximately 2km u/s of is confluence with the River Blackwater. The latest treated wastewater samples from Millstreet WWTP taken by Uisce Éireann for analysis were taken on the 22nd July 2025 and the 19th August 2025 respectively are shown in Table C below. The sample taken in July does not exceed the emission limit values. The sample from August exceeded the total ammonia emission limit values.

Table C: Monitoring of treated effluent from Millstreet WWTP.

Parameter Tested	pH (pH unit)	BOD (mg/L)	COD (mg/L)	Suspended Solids (mg/L)	Total Ammonia (mg/L)	Ortho-P (mg/L)
ELV	6-9	25	125	25	0.8	0.5
Uisce Éireann 22/07/2025	7.3	4.3	7.07	2.83	0.03	0.18
Uisce Eireann 19/08/2025	7.1	2.8	22	<4	4.44	0.6

Samples that exceed the upward deviation tolerance provided by Condition 2.1.2 of the WWDL are highlighted in salmon colour.

In addition to sampling the final discharge, Uisce Éireann sampled the Finnow River u/s and d/s (1.5km d/s) of the wastewater discharge from the WWTP on the 19th August 2025. As shown in Table D below, the d/s results for the parameters BOD, Ammonia and Orthophosphate indicate that the receiving water quality met the environmental surface water quality standards for rivers. The EPA took ambient samples upstream and downstream of the discharge September 9th. The downstream results indicate that the receiving water quality met the environmental surface water quality standards for rivers.

Table D: Uisce Éireann's u/s and d/s of the discharge from Millstreet WWTP.

Parameter Tested	pH (pH unit)	BOD (mg/L)	Total Ammonia (mg/L)	Ortho-P (mg/L)
EQS[21] – River Good Status	Soft Water: 4.5 – 9.0 Hard Water: 6.0 – 9.0	≤1.5 (mean) and ≤2.6 (95%tile)	≤0.065 (mean) and ≤0.140 (95%tile)	MRP ≤0.035 (mean) and ≤0.075 (95%tile)
Uisce Éireann upstream 19/08/2025	7.3	3.5	0.06	0.18
Uisce Éireann downstream 19/08/2025	7.7	1.1	<0.02	0.01
EPA upstream 9/09/2025		1.1	0.02	0.021
EPA downstream 9/09/2025		1.0	0.023	0.025

Wastewater discharge from Bweeng and Environs WWTP to the Clyda River:

The wastewater discharge from Bweeng WWTP is to a tributary which flows into the Clyda River, a tributary of the Blackwater River. The discharge from the WWTP is approximately 14.5 km upstream from the confluence with the Blackwater River. Uisce Éireann provided the EPA with their last analysis of wastewater effluent from Bweeng WWTP. These results of this analysis is described in Table E below. Treated wastewater effluent was sampled on the 8th July 2025. The parameters BOD, suspended solids and Total ammonia exceeded the WWDL Emission Limit Values. The BOD result exceeded the ELV by 28% which does not exceed the upward deviation tolerance provided by Condition 2.1.2 of the licence. The EPA inspected Bweeng wastewater treatment plant on Septem ber 4th and samples were taken of the discharge and upstream and downstream of the discharge. The plant was found to be non-compliant with Ammonia on this date. Ambient data for the plant is provided in Table F below. The downstream results indicate that the receiving water quality met the environmental surface water quality standards for rivers.

Table E: Monitoring of treated effluent from Bweeng WWTP.

Parameter Tested	pH (pH unit)	BOD (mg/L)	COD (mg/L)	Suspended Solids (mg/L)	Total Ammonia (mg/L)	Ortho-P (mg/L)
ELV	6-9	10	100	35	1	0.5
Uisce Éireann 08/07/2025	7	12.8	17	90	3.7	0.24
EPA 04/09/2025	7	4	30		8.4	0.11

Samples that exceed the upward deviation tolerance provided by Condition 2 of the WWDL are highlighted in salmon colour.

[21] Environmental Quality Standard (EQS) - European Communities Environmental Objectives (Surface Water) Regulations 2009, as amended (Irish Statute Book).

Further occurrences of ELV breaches for Ammonia, BOD, COD, Orthophosphate and Suspended Solids have been reported earlier in 2025.

Table F: Ambient monitoring u/s and d/s for Bweeng WWTP.

Parameter Tested	pH (pH unit)	BOD (mg/L)	Total Ammonia (mg/L)	Ortho-P (mg/L)
Uisce Éireann upstream 12/03/2025	7.2	1.3	<0.02	0.02
Uisce Éireann downstream 12/03/2025	7.5	1.1	<0.02	0.03
Uisce Éireann upstream 14/05/2025	7.2	<1.0	<0.02	0.01
Uisce Éireann downstream 14/05/2025	7.4	<1.0	0.03	0.02
Uisce Éireann upstream 08/07/2025	7.4	<1.0	<0.02	0.02
Uisce Éireann downstream 08/07/2025	7.5	<1.0	0.08	0.04
EPA upstream 04/09/2025	7.3	<1.0	<0.02	<0.01
EPA downstream 04/09/2025	7.3	<1.0	<0.02	0.037
Mean downstream*	n.a.	0.65	0.033	0.032

*Results below Limit of Detection taken at half the Limit of Detection.

Wastewater discharge from Dromahane WWTP to the Clyda River:

The wastewater discharge from Dromahane WWTP is to the Clyda River a tributary of the Blackwater River which is located approximately 2.25km u/s of its confluence with the River Blackwater. The latest treated wastewater samples from Dromahane WWTP taken by Uisce Éireann for analysis were taken on the 8th July 2025, 13th August 2025, 14th August 2025 and the 18th August 2025; results are shown in Table G below. All samples taken show exceedances of emission limit values. The EPA sampled the discharge on August 13th and September 3rd and discharges show exceedances of emission limit values, excluding Ammonia.

Table G: Monitoring of the treated effluent from Dromahane WWTP.

Parameter Tested	pH (pH unit)	BOD (mg/L)	COD (mg/L)	Suspended Solids (mg/L)	Total Ammonia (mg/L)	Ortho-P (mg/L)	Total Phosphorus (mg/L)	Total Nitrogen (mg/L)
ELV	6-9	15	125	25	3	1	N/A	N/A
Uisce Éireann 8/07/2025	7.1	516	1050	1036	0.74	1.27	20.4	64.2
Uisce Éireann 13/08/2025	7.2	53.1	255	244	0.15	2.03	5.35	42.1
EPA 13/08/2025 Grab	7.4	21	127	109	0.79	2.2		

Parameter Tested	pH (pH unit)	BOD (mg/L)	COD (mg/L)	Suspended Solids (mg/L)	Total Ammonia (mg/L)	Ortho-P (mg/L)	Total Phosphorus (mg/L)	Total Nitrogen (mg/L)
EPA 13/08/2025 composite	7.3	110	533	450	0.56	2.2		
Uisce Éireann 14/08/2025	7.1	16.9	70	76	0.05	2.03	2.36	36.8
Uisce Éireann 18/08/2025	7.0	88.2	175	132	0.25	2.54	3.93	39.4
EPA 03/09/2025 grab	6.6	44	360		0.1	1		
EPA 03/09/2025 composite	6.4	63	481		0.085	0.99		

Samples that exceed the upward deviation tolerance provided by Condition 2.1.2 of the WWDL are highlighted in salmon colour.

In addition to sampling the final discharge, Uisce Éireann sampled the Clyda River u/s and d/s of the wastewater discharge from the WWTP on the 14th August 2025. Uisce Éireann have provided the EPA with the analysis of these samples. The EPA took ambient samples of the Clyda River on 12/08 and the 03/09. As shown in Table H below, the d/s results for the parameters BOD, Ammonia and Orthophosphate indicate that the receiving water quality met the environmental surface water quality standards for rivers.

Table H: Ambient Monitoring u/s and d/s of the discharge from Dromahane WWTP to the Clyda River.

Parameter Tested	pH (pH unit)	BOD (mg/L)	Total Ammonia (mg/L)	Ortho-P (mg/L)
EQS[22] – River Good Status	Soft Water: 4.5 – 9.0 Hard Water: 6.0 – 9.0	≤1.5 (mean) and ≤2.6 (95%tile)	≤0.065 (mean) and ≤0.140 (95%tile)	MRP ≤0.035 (mean) and ≤0.075 (95%tile)
EPA downstream 12/08/2025	7.9	1.1	<0.02	
Uisce Éireann upstream 14/08/2025	7.8	<1	<0.02	0.03
Uisce Éireann downstream 14/08/2025	7.8	2.1	0.03	<0.01
EPA upstream 03/09/2025	7.5	<1	<0.02	0.019
EPA downstream 03/09/2025	7.3	<1	<0.02	0.025

Wastewater certificates of authorisation

Eight of the nine Certificate of Authorisations discharge to tributaries of the Blackwater River at distances of 2km+ upstream of the Blackwater River main channel. No dead fish were reported in these tributaries' u/s of their confluence with the Blackwater River. No incidents were reported by Uisce Éireann at these eight

[22] Environmental Quality Standard (EQS) - European Communities Environmental Objectives (Surface Water) Regulations 2009, as amended (Irish Statute Book).

Certificate of Authorisation WWTPs plants in 2025. No issues of concern in relation to the fish mortalities were identified at the eight Certificate of Authorisations on inspection by the EPA.

Wastewater discharge from Lombardstown WWTP to the Blackwater River:

Lombardstown WWTP, which consists of a septic tank system providing primary treatment, discharges directly to the Blackwater River main channel. This WWTP is operating above capacity and is listed on the EPA's Wastewater Priority Areas List. Uisce Éireann has reported that it proposes to upgrade the WWTP and that the plant is currently progressing through the workshop stage. The latest treated wastewater samples from Lombardstown WWTP were taken by the EPA. The results of analysis are shown in Table I below.

Table I: EPA sample analysis of the Lombardstown final effluent.

Parameter Tested	BOD (mg/L)	COD (mg/L)	Suspended Solids (mg/L)	Total Ammonia (mg/L)	Ortho-P (mg/L)	Total Nitrogen (mg/L)
Result 12/08/2025	270	662	117	54	6.9	63

The plant is small, with a discharge of ~20 m3/day, which is <0.01% of the 95%ile flow (i.e. low flow) in the River Blackwater. There was no visible plume from the discharge in the Blackwater River. The most recent ambient monitoring by Uisce Éireann in April and May 2025 and by Cork County Council d/s of the WWTP on the 12th August 2025, were within environmental surface water quality standards23.

Drinking water

Drinking water plants were in compliance with Drinking water quality standards

[23] European Communities Environmental Objectives (Surface Water) Regulations 2009, as amended (Irish Statute Book).

Title: Cork County Council Report into August 2025 Blackwater Fish Kill

Date: 24/09/2025

Comhairle Contae Chorcaí
Cork County Council

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Contents

1.0 Role of Cork County Council

Cork County Council delivers a number of statutory and regulatory inspection and monitoring programmes in the area of water quality protection. These are outlined in the annual Recommended Minimum Criteria for Environmental Inspections (RMCEI) Plan.

National Enforcement Priorities (NEPs) are identified by the EPA and underpin the development and implementation of the council's RMCEI plan. The 2025 2027 NEPs programme identify twenty NEPs, including four in water:

- Pressures from Agriculture (Farmyards)- soiled water/slurry collection and storage;
- Pressures from Agriculture (Farmland) -slurry and fertiliser spreading;
- Section 4 (Local Government (Water Pollution) Act 1977 to 2007 discharge licences /misconnections;
- Local water quality issues including septic tanks and private water supplies;

The RMCEI plan is subject to annual review and assessment by the EPA, with performance benchmarked against performance indicators and environmental outcomes, across the local authority sector in the annual Local Authority Performance Framework report.

Cork County Council performance in environmental protection is also subject to audit by the EPA.

The statutory and regulatory functions of Cork County Council are across several sectoral activities, including:

- Ensuring sustainable development in accordance with Planning and Development Legislation, national policy and the County Development Plan as well as implementing water quality objectives under the Habitats and Water Framework Directive.
- Monitoring of compliance with Good Agricultural Practice (Nitrate) regulations by reference to targets specified by EPA in the National Agricultural Inspection Plan (NAIP). The NAIP is the national risk-based inspection plan based on risk to ground and surface waters from agricultural activities. Cork County Council is required to undertake 586 NAIP first time inspections in 2025. Where non-compliances are detected, appropriate enforcement action including cross-reporting to DAFM is taken.
- Inspection of residential septic tanks in accordance with targets specified by the Environmental Protection Agency (EPA) in the National Inspection Plan (NIP). The NIP is a national risk-based inspection plan based on risk to ground and surface waters from domestic wastewater treatment systems. An annual target of 136 domestic wastewater systems inspections is established for Cork County Council.
- Licensing and ongoing regulation of trade effluent and sewage effluent discharges (as defined) under Section 4 of the Local Government (Water Pollution) Acts 1977 to 2007, which are not Scheduled Activities under the 1992 EPA Act. Taking appropriate enforcement action when noncompliances are detected up to and including prosecution. An annual inspection programme compromising of 227 inspections of S4 licences are scheduled in 2025 across the county.

- Responding to and investigating reported water pollution incidents and complaints. Taking enforcement action as appropriate where Cork County Council is the competent authority, and liaising with other responsible agencies such as EPA, UÉ, IFI etc. as appropriate.
- Cork County Council supports the EPA Water Framework Directive sampling programme by undertaking collection of samples on behalf of the EPA and sending samples to the EPA for analysis.
- Delivering actions assigned to us under the Water Action Plan 2024 (National River Basin Management Plan) as funded by the Department Housing, Local Government and Heritage. Cork County Council is supported in the discharge of its regulatory functions by Local Authority Waters Programme Office (LAWPRO) – a national local authority shared service, established to coordinate the efforts of the 31 local authorities and other public bodies in the implementation of the River Basin Management Plan, whose objective is to protect and restore good quality water in rivers, lakes, estuaries, ground and coastal water.

2.0 Investigation

Cork County Council was first notified by Inland Fisheries Ireland (IFI) at 12:15 hrs on Monday the 11/08/2025 of a reported fish kill at Mallow Bridge.

A Cork County Council officer attended the scene at 14:30 hrs with IFI.

Cork County Council carried out an inspection of the river in the vicinity of the reported fish kill and upstream of Mallow Bridge. No discharge, plume or other matter was evident.

Several dead and injured fish (brown trout) were observed by the Cork County Council officer and IFI inspectors, among seemingly unaffected fish.

IFI shared their initial assessment suggesting a possible fungal outbreak, exacerbated by low water levels and high temperatures. As early investigations yielded no sign of pollution, IFI continued their investigation of a potential disease outbreak.

IFI engaged The Marine Institute, Fish Health Unit, to assist in their investigation by way of pathological testing.

Investigations by IFI and Cork County Council officers continued, in order to ascertain the extent of the area impacted, and what rivers could potentially be affected.

Cork County Council received a number of complaints from the public on the 12/08/2025.

Cork County Council carried out sampling at the River Clyda and River Blackwater (Mallow) on the 12/08/2025. Results from these samples showed that ammonia, dissolved oxygen were within normal range. These results were shared with IFI.

From 12/08/2025 through to 22/08/2025, the investigation was primarily supporting IFI in their investigation to establish the scale and extent of affected catchment, following up and investigating reported mortalities and reports from the public about activities that may be responsible for this incident.

Fig 1. below shows the extent of the affected waterbodies. The main Blackwater channel from Clonmeen, Banteer to the confluence of the Awbeg with the Blackwater at Castletownroche, and approximately 2.5km of the Cylda river. The Allow, Glen and Lombardstown rivers appeared to be unaffected.

Figure 2 Affected Waterbodies

On the 22/08/2025 based on the Marine Institute Fish Health Unit, IFI confirmed they were satisfied the cause was not a fungal infection as previously suggested, and the likely cause was an *"environment insult or irritant"* that caused or contributed to the fish mortalities, and the exposure may have occurred in the days previous to the 11/08/2025.

Minister T. Dooley (Minister State Department Agriculture Food and the Marine) on the 22/08/2025 established an Inter-Agency Group to be led by IFI, which consisted of agencies including EPA, Cork County Council, Marine Institute, Uisce Éireann – eventually expanding to include HSE, DAFM, NPWS, LAWPRO.

On 25/08/2025, the interagency group convened for an online meeting. IFI was confirmed as the lead agency and chaired the meeting. The EPA and Cork County Council attended the first Inter-Agency Group meeting.

IFI have to date been the lead agency on this case and have co-ordinated and chaired a series of inter-agency meetings. The initial meeting took place on the 25/08/2025. Cork County Council attended further meetings on the 01/09/2025, 03/09/2025, 08/09/2025, 11/09/2025, 12/09/2025,16/09/2025 and 23/09/2025.

The Inter-Agency Group meetings agreed specific actions, including further analysis of tissue samples by a contracted laboratory on behalf of IFI, as well as further catchment macroinvertebrate assessments at agreed locations, these assessments to be undertaken by Cork County Council, EPA and IFI. These assessments found no evidence of an impacted macroinvertebrate population.

Between 13/08/2025 and 27/08/2025, Cork County Council staff inspected twenty light industrial and commercial sites within the catchment, compromising of businesses licensed under Section 4 of the Local Government (Water Pollution) Acts 1977 to 2007, and other commercial operators. No issues were identified that might give rise to an incident of this nature. Any minor non-compliant activities detected as part of these investigations are being pursued as appropriate under the enforcement provisions of the Local Government (Water Pollution) Act.

Cork County Council undertook fourteen investigations of agricultural activities within the catchment. These investigations established no causal link with this incident.

Cork County Council sent samples taken on 12/08/2025 for additional testing (heavy metals) on the 25/08/2025. The result was discussed at Inter Agency Meeting (11/09/2025) and consensus was it was these results were within the normal range of monitoring data and was unlikely to be indicative or of evidential value in establishing any analysed heavy metals as being the cause of the kill.

Between 12/08/2025 and 05/09/2025 a total of twenty complaints have been received from members of the public in respect of this incident. All complaints were triaged and assigned for inspection where deemed appropriate. Arising from the investigation of these complaints, no causal link to the fish kill was found.

Results from fish tissue testing undertaken by specialist laboratory on behalf of IFI, found no specific factors that could be conclusively said to have caused the incident.

Cork County Council briefed their elected members of the Northern Committee (In-Committee) on the 08/09/2025 and 22/09/2025.

Cork County Council has supported IFI (lead agency) and has worked closely with other state agencies throughout this investigation.

Cork County Council will continue to provide support to the investigation on an Inter-Agency basis.

3.0 Conclusion

- Cork County Council staff inspected twenty light industrial and commercial sites within the catchment, compromising of all businesses licensed under Section 4 of the Local Government (Water Pollution) Acts 1977 to 2007, and other commercial operators. No causal link to the incident was identified during inspections.

- Cork County Council undertook fourteen investigations of agricultural activities within the catchment. These investigations established no causal link to this incident.

- Cork County Council undertook nine macro-invertebrate assessments in the catchment. No evidence of the source of a potential environmental insult or irritant was found.

- Twenty complaints were received from members of the public in respect of this incident. All complaints were investigated, and no causal link was found.

4

Summary Report of the investigation into Fish Mortalities in the Munster Blackwater August-September 2025

Inter-Agency Report

September 2025

Iascach Intíre Éireann
Inland Fisheries Ireland

epa
Environmental Protection Agency

Comhairle Contae Chorcaí
Cork County Council

Uisce Éireann
Irish Water

Foras na Mara
Marine Institute

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

NPWS
An tSeirbhís Páirceanna Náisiúnta agus Fiadhúlra
National Parks and Wildlife Service

Local Authority Waters Programme
vibrant communities | catchment assessment | healthy waters

HSE

CONTENTS

EXECUTIVE SUMMARY

This report comprises the report of an Inter-Agency Group (IAG) investigation into fish mortalities in the Munster Blackwater August 2025. It sets out the background to events which led to Minister of State Timmy Dooley (Minister of State at the Department of Agriculture, Food and the Marine with special responsibility for Fisheries and the Department of the Environment, Climate and Communications with special responsibility for the Marine) establishing the IAG to conduct a joint investigation, led by Inland Fisheries Ireland, with the Environmental Protection Agency and Cork County Council, supported by the Marine Institute, Uisce Éireann, the Department of Agriculture, Food and the Marine, the Health Service Executive, the National Parks and Wildlife Service (NPWS) and LAWPRO, and provides a synopsis of the main findings from each of the Agency investigations.

The extensive fish mortalities that occurred on the River Blackwater in Cork during August 2025 represent a serious impact to local fish stocks and have had a deeply negative impact on surrounding communities. When incidents of this severity occur, such as on the Blackwater, and where causation can be clearly established, it is essential that those responsible are held to account based on evidence, robust data and scientific analysis. It is the duty of all State agencies with statutory responsibilities in this area to act decisively: to exhaust all avenues in identifying the cause, the contributing factors, and, where applicable, the party or parties responsible.

Only by maintaining this rigorous and transparent approach can we protect our natural heritage and uphold public trust.

The IAG met 11 times throughout the investigation. The initial IAG meeting took place on the 25 August with subsequent meetings on 1 September, 3 September, 8 September, 11 September (x 2), 12 September, 15 September, 16 September, 23 September and 24 September. All meetings were held online.

1. OVERALL CONCLUSIONS

Having considered the findings of each of the Agency contributions to this investigation, the following are the overall conclusions of the IAG:

Fish Health

1. No evidence was found to link the fish mortalities in the River Blackwater to a point source of pollution or a specific environmental insult or waterborne irritant.
2. No evidence of systemic disease in affected trout was observed; pathology indicated exposure to an environmental insult or irritant.
3. No evidence of chemical (incl. pesticide) or heavy metals residue was detected in analysed fish samples.

Water Quality

4. There were no risks or issues identified with drinking water quality in accordance with the requirements of S.I 99/2023.
5. An assessment of water quality data for June, July and August 2025 indicated the water in the River Blackwater catchment is predominantly at Good Status, with no detectable changes in water quality noted.
6. There was no evidence of a chronic water quality problem before or after the fish mortalities. This suggests the cause of the mortalities was a short-term pollution event.
7. Investigation of 31 EPA regulated sites in the River Blackwater catchment, including industrial facilities, wastewater treatment plants and drinking water plants found no causal link between these activities and the fish mortalities in the River Blackwater.
8. No causal link was found following investigation of twenty complaints received from members of the public in respect of the incident.
9. Inspections of twenty light industrial and commercial sites within the catchment, compromising of all businesses licensed under Section 4 of the Local Government (Water Pollution) Acts 1977 to 2007, and other commercial operators, found no causal link to the incident.
10. Fourteen investigations of agricultural activities within the catchment established no causal link to this incident.

Animal Health

11. There was no indication that livestock health and the food chain from primary production was affected by this incident.
12. There was no evidence of any mortalities of protected species e.g. otter, freshwater pearl mussels or birds which are Qualifying Interests for the site.
13. Macro-invertebrate assessments in the catchment found no evidence of the source of a potential environmental insult or irritant.

2. SCOPE

A summary report of investigations into fish mortalities on the Munster Blackwater by the primary agencies during August and September 2025.

Inland Fisheries Ireland

Inland Fisheries Ireland has the statutory responsibility for the protection, development and management of Ireland's 74,000 km of rivers, streams and lakes as well as coastal waters to the 12-mile jurisdictional limit. IFI's environmental role is limited to the protection of waters from pollution and the prevention of injury or damage to spawning beds as set out in section 171 to 173 of the Fisheries (Consolidation) Act 1959 and as authorised persons under the Local Government (Water Pollution) Act 1977. IFI prosecutes offenders under these Acts when the source of a deleterious discharge is identified and linked directly to the party responsible.

IFI's role in the investigation was primarily to investigate and source a deleterious discharge, conduct habitat inspections and surveys to determine the cause and extent of the incident and to co-ordinate the IAG established to conduct the investigation.

Environmental Protection Agency

The EPA is an independent statutory body established under the Environmental Protection Agency Act, 1992. The EPA's purpose is to protect, improve and restore our environment through regulation, scientific evidence and knowledge, and as a voice for the environment through leadership, advocacy, collaboration and partnership to deliver better environmental outcomes.

The EPA's primary role in the investigation into the fish mortalities on the Blackwater was to assess whether EPA-regulated sites within the region of interest could have been responsible through their water discharge activities, and to act against any operator found to be at fault.

Cork County Council

Cork County Council is a local authority responsible for delivering a number of statutory functions in relation to water quality. Cork County Council's role in the investigation into the fish mortalities on the Blackwater was to investigate whether local authority regulated sites and regulated activities within the catchment, could potentially have been responsible for this incident. Our investigations focused on agriculture and light industrial and commercial activities, as well as investigating specific complaints received from the public in relation to this incident. Cork County Council has supported IFI (lead agency) and has worked closely with the Inter-Agency Group throughout this investigation.

Marine Institute

The Marine Institute is the Competent Authority in Ireland for the implementation of Aquatic Animal Health Law (i.e.: EU Regulation 2016/429), which lays down rules for the prevention and control of animal diseases which are transmissible to animals or humans. As Ireland's Competent Authority for Aquatic Animal Health the Institute's Fish Health Unit is designated as Ireland's National Reference Laboratory for finfish, mollusc and crustacean diseases. That designation is made in accordance with the Animal Health Law (Article 17 of EU Regulation 2016/429) on the basis that the Fish Health Unit has the technical expertise necessary to carry out analysis of samples in relation to diseases of fish and shellfish.

As the National Reference Laboratory for diseases of fish, molluscs and crustaceans the Fish Health Unit's primary responsibilities are to develop, validate, and implement appropriate methods to test for relevant listed diseases under the EU Animal Health Law (Annex II to Regulation (EU) 2016/429) and in the

Annexes to Commission Implementing Decision (EU) 2021/260), as well as potential emerging diseases. These diagnostic services are provided as necessary, in support of the management of non-listed diseases by operators, veterinarians and other state agencies.

As part of the investigation into the mortality event in the Blackwater, the Marine Institute was tasked with conducting diagnostic analyses of the affected fish. The objective was to determine whether infectious disease played a contributory role in the observed mortalities

3. INTRODUCTION

Inland Fisheries Ireland (IFI) Officers investigated reports of dead and ailing fish in the Munster Blackwater on Monday 11 August at locations upstream of Mallow, Co. Cork. Later that week it was established that the first sightings of dead fish in the river were on Saturday 9 August. Affected fish, swimming alongside visually healthy fish, were observed from Banteer (approx. 22km upstream of Mallow) to Castletownroche (approx. 17km downstream of Mallow) (Figure 1) with heavy concentrations at the confluence of the Clyda River with the main Blackwater channel. Healthy, dead and ailing fish were also found on the Cyda River, (c.1.5km upstream of Mallow). On initial observation, affected fish presented with marks/lesions, damage to the eyes and gill damage (Plates 1 to 4). Fish mortalities were observed by IFI until 22 August (1no. trout at Bridgetown Abbey, Awbeg) and marked/ailing fish until 5 September (Clyda Bridge) (Figure 3.1 and 3.2).

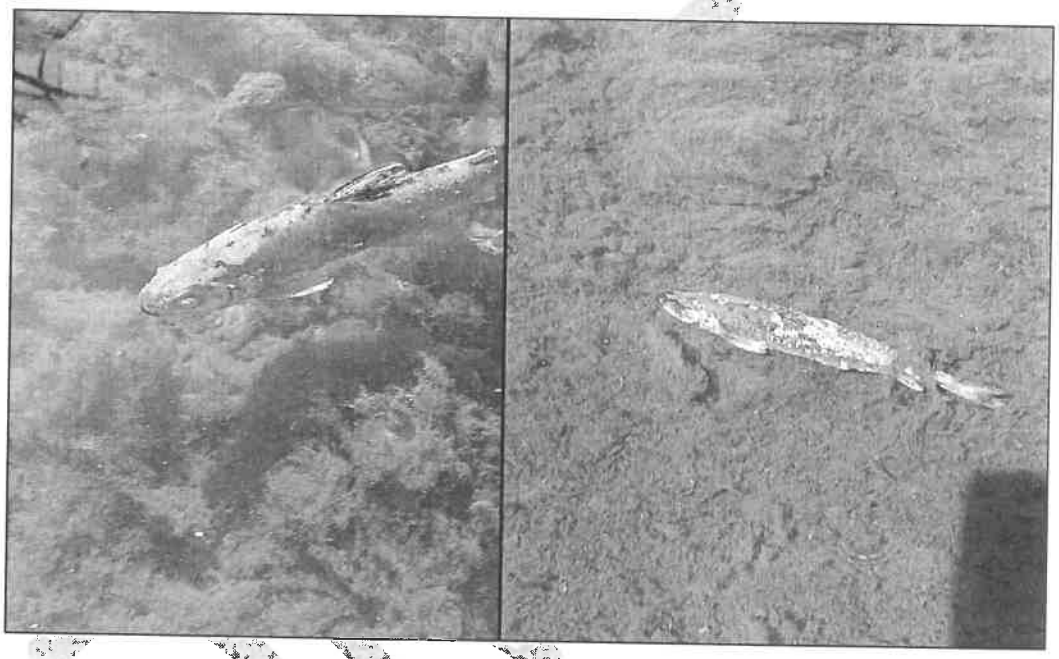


Plate 1 & 2: Heavily marked fish, 11 August, Mallow (photographs by IFI)

IFI began contacting relevant authorities on 11 August. All agencies worked closely together to share information and expertise as the investigation progressed.

Agencies participating in the investigation of the fish kill:

- Inland Fisheries Ireland (IFI) (LEAD), Environmental protection Agency (EPA), Cork County Council (CCC), Marine Institute (MI).

Additional agencies or Departments attending the Joint Interagency Working Group:

- Local Authorities Water Programme (LAWPRO), Department of Climate, Energy and the Environment (DCEE), Department of Agriculture, Food and the Marine (DAFM), Uisce Éireann (UÉ), HSE, NPWS

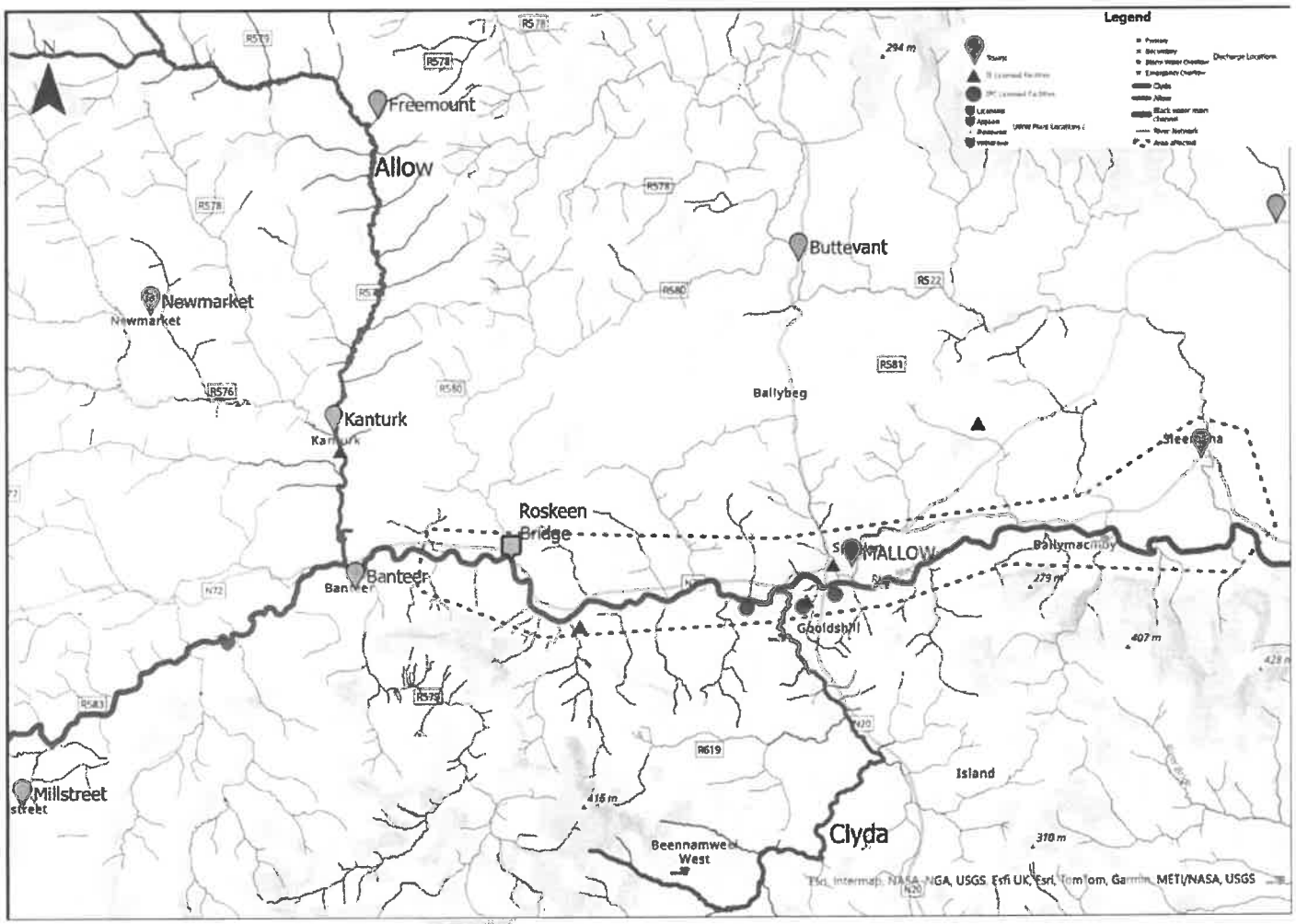


Figure 3.1: Munster Blackwater River channel where mortalities and marked/ailing fish were reported and/or observed, between Banteer (upstream) and Castletownroche (downstream). Red dashed line provides an indicative extent of affected area. (Map by IFI)

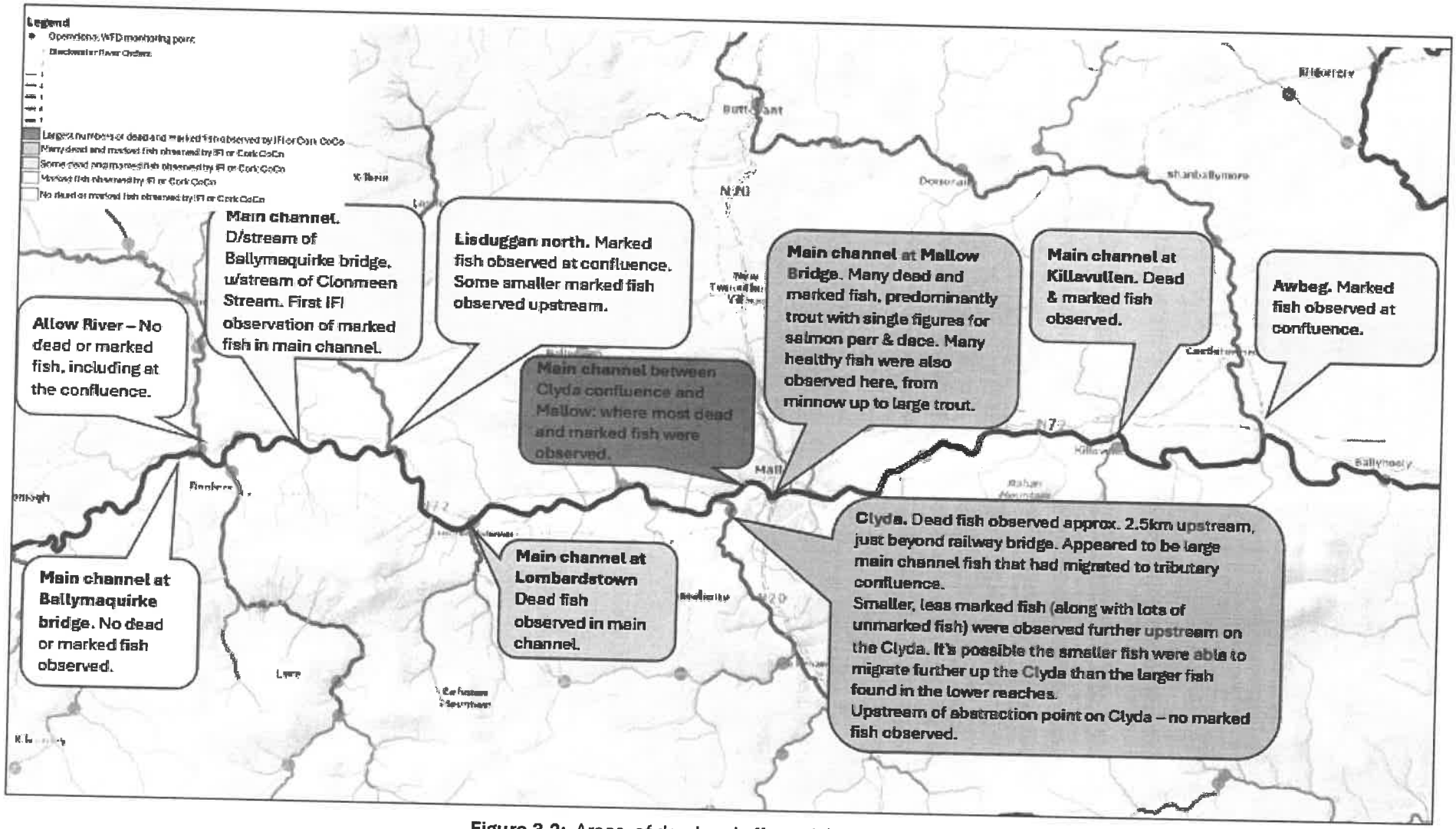


Figure 3.2: Areas of dead and affected fish observations (IFI)

4. INLAND FISHERIES IRELAND INVESTIGATION

IFI's primary role in the investigation was to investigate and source any deleterious discharge, conduct habitat inspections and surveys to determine the cause and extent of the incident and to co-ordinate the IAG established to conduct the investigation. The following summarises IFI's investigations 11 August to 17 September:

- IFI carried out inspections of the affected stretch of river to assess the extent, scale and source of the fish kill.
- IFI consulted with UÉ, EPA, CCC within the catchment throughout 11 and 12 August.
- IFI contracted MI Fish Health Unit (competent authority for fish health in Ireland) on 11 August to undertake diagnostic pathology sampling of fish. MI attended the site on 14 August at Mallow.
- IFI carried out 198 habitat inspections at 47 locations up to 8 September. (Figure 3).
- IFI carried out 52 repeat habitat inspections between 9-14 September .
- IFI carried out macroinvertebrate sampling at 10 sites.
- IFI provided fish samples to Eurofins Environmental Ltd on 26 and 29 August for residue sampling - broad suite of analysis for 900 chemicals (including pesticides) and heavy metals to be conducted
- IFI investigated a report of possible suspicious activity at Roskeen Bridge (9 Aug) reported 27 Aug, with An Garda Síochána (AGS) on 28 August. Neither IFI nor AGS found evidence of criminal activity.
- IFI carried out electrofishing surveys at Roskeen bridge on 29 August (Plate 3 and Figure 1).
- IFI engaged with affected stakeholders, public representatives and the media.

4.1 Fish Health Diagnostic Results

A total of 10 moribund fish were collected from the Munster Blackwater and sampled by the MI on 14 August. On examination eyes and gills of each fish were abnormal on affected fish. No significant bacterial fish pathogens or viruses were isolated from fish samples. No evidence of the fish parasite *Gyrodactylus salaris* were found in the fish examined. No evidence of systemic disease was observed in other organs sampled in these fish. Eye and gill pathology was consistent with exposure to some form of environmental insult or water borne irritant, was widespread and largely chronic.

See IFI Website:

https://www.fisheriesireland.ie/news/media-releases/results-and-note-re-residue-sampling-tests

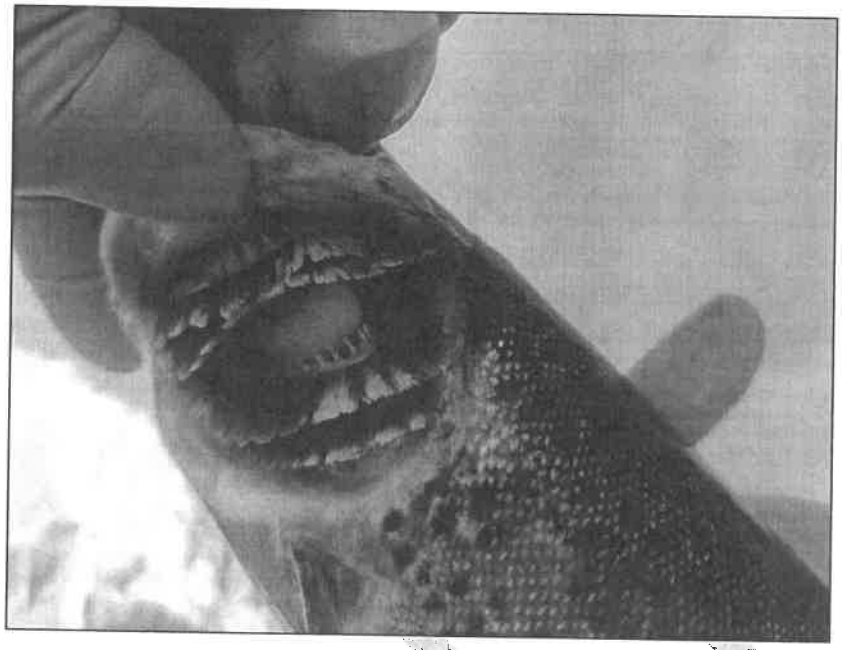


Plate 3: Multifocal severe gill lesions, necrosis and erosion of gill filaments (photo by Marine Institute)

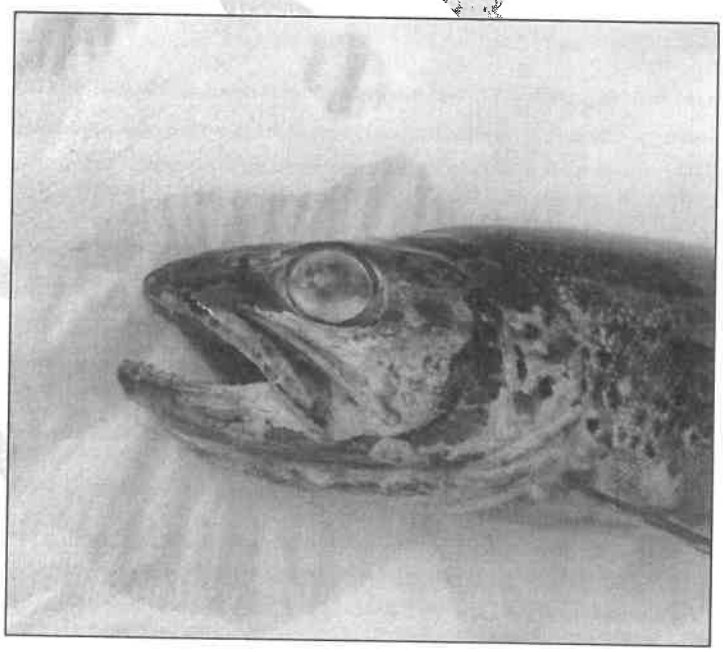


Plate 4: Severe corneal oedema, with extensive opacity and swelling (photo by Marine Institute)

4.2 Fish Chemical Pollutant Screening

Following the fish kill on the Munster Blackwater 29 brown trout were sampled on the 26th and 29th of August from the River Clyda confluence with the Munster Blackwater (is ~1.5km upstream of Mallow) and sent to Eurofins Environment Testing Ireland Ltd. for residual tissue analysis. The fish sampled via electrofishing, were adult brown trout. All individuals were observed to be actively swimming. Approximately 50% of individuals sampled presented with corneal oedema

with opacity and swelling of affected tissue. Eurofins Environment Testing Ireland Ltd. arranged for testing in a specialist laboratory in Germany.

This laboratory testing involved measuring chemical residues in fish tissue to assess any potential environmental contamination. Tissue from each fish was screened for 900 chemicals including pesticides and heavy metals. Analysis determined if residue levels of listed chemicals were within acceptable standards. Preliminary results did not indicate presence of any of the listed chemicals (including pesticides) above the limit of quantification (LOQ) apart from three heavy metals, i.e. Mercury (Hg), Arsenic (As), and Aluminium (Al). One fish (Clyda 4A) had an Arsenic value above LoQ of 0.16mg/kg. Al ranged from <0.5 to 3.6mg/Kg of fish tissue and Hg ranged from 0.045 to 0.17mg/Kg.

It should be noted that mercury (Hg), aluminium (Al) are common in many Irish surface waters while arsenic (As) is naturally occurring in areas with underlying sandstone as in the River Blackwater. Their concentration in surface waters is highly variable and are also increased by human activities.

Comment on Mercury concentrations and results of fish tissue analysis (provided by EPA)

The national WFD monitoring programme provides a comprehensive and long-term picture of the concentrations of chemical substances in water. Substances, such as mercury, that persist in the environment many years after their use has ceased, are known as ubiquitous substances. Mercury is known to readily bioaccumulate and persist in fish. The Surface Water Regulations (S.I. No. 77/2019) sets out an environmental quality standard of 0.02 mg / kg for mercury in fish.

Samples taken from the national WFD monitoring programme between 2019-2024 indicate that 89% of rivers and lakes, where fish have been tested, had mercury concentrations exceeding the standard. 24% of the rivers and lakes, where fish have been tested, had concentrations greater than 0.2 mg / kg (with a maximum reported concentration 0.41 mg / kg).

Following the fish kill on the River Blackwater in August 2025, the reported mercury concentrations in each fish tested by Inland Fisheries Ireland was above the mercury standard (with a maximum reported concentration 0.17 mg / kg). The concentrations were comparable to those previously reported in WFD monitoring programme data and there is no evidence to indicate that mercury was the pollutant that led to the fish kill on the River Blackwater in August 2025.

Comment on Aluminium concentrations in surface waters in Catchment (provided by EPA)

Water chemistry sample analysis from 12 & 13 August, provided by Cork County Council for the River Blackwater in Mallow, had a range of water quality parameter concentrations that were indicative of good water quality overall. The River Blackwater sample had an Aluminium concentration of 141 µg/l which was slightly elevated. Cork County Council indicated that the sample was unfiltered and therefore may overestimate the dissolved Aluminium concentration i.e., the sample may have contained particulate matter.

Historical water chemistry for the River Blackwater was examined and Aluminium concentrations for filtered samples at Killavullen Bridge (downstream of Mallow) in 2024 had an average concentration of 56 µg/l, with a maximum concentration of 171 µg/l. Since 2016, 13% of the filtered samples taken at Killavullen Bridge have had an Aluminium concentration greater than 100 µg/l. Upstream of Mallow, historical 2016-2018 filtered samples on the River Blackwater, taken at the Mallow Railway Bridge, Ballymaquirk Bridge and Colthurst Bridge also had

Aluminium concentrations greater than 100 µg/l, with respective maximum concentrations of 130 µg/l, 320 µg/l and 610 µg/l.

Overall, the Aluminium concentration of 141 µg/l in the unfiltered sample taken by Cork County Council on 12 / 13 August is comparable to historic concentrations in the River Blackwater and is not indicative of an issue with Aluminium concentrations in the river.

Comment on Arsenic concentrations

A single sample - "Clyda 3A –26/08/2025) reported a level of arsenic at 0.16mg/kg, LOQ 0.1. Data from the EPA (2016-2024) indicates arsenic concentrations for all water samples are <LOQ, i.e., <0.1 ug/l.

Table 4.1: Eurofins Environment Testing Reports

Certificate Code	Status	Date Received	Sample References
AR-25-M3-029658-01	CERTIFICATE OF ANALYSIS	17 SEPTEMBER	CLYDA 1B – CLYDA 15 B
PR-25-M3-000552-01	PRELIMINARY CERTIFICATE	15 SEPTEMBER	CLYDA 1 B –CLYDA 15B
AR-M3-029021-01	CERTIFICATE OF ANALYSIS	12 SEPTEMBER	CLYDA 1 A – CLYDA 14 A
PR-25-M3-000550-01	PRELIMINARY CERTIFICATE	11 SEPTEMBER	CLYDA 4, 6, 8-14 [1]
PR-25-M3-000551-01	PRELIMINARY CERTIFICATE	11 SEPTEMBER	CLYDA 9 B - 15 B

NOTE 1: RE-LABELED AS 'A' SAMPLES 12 SEPTEMBER

Link to published results: www.fisheriesireland.ie/sites/default/files/2025-09/note-on-residue-sampling-results.pdf

4.3 Note on sampling

The Marine Institute, (MI), (Competent Authority for Fish Health in Ireland), was notified of the fish kill by IFI on 11 August. The Marine Institute met with IFI 14 August at Mallow Bridge to take samples for diagnostic analysis. The preliminary report outlining the results of the diagnostic testing completed was received by IFI late 21 August and outlined at a meeting with the Minister and stakeholders at Mallow on 22 August. A full report with completed virology and parasitology was received by IFI on 29 August.

The IAG established on the direction of the Minister met on Monday 25 August and reviewed the preliminary report.

The Marine Institute diagnostic analysis found no evidence of systemic disease in any of the samples. Pathology observed suggested exposure to some form of environmental insult or water borne irritant. Discussion within the group in relation to a potential causative agent, concluded that it wasn't possible to form a single exhaustive list of every possible compound as there are thousands of chemicals, industrial compounds, pesticides and algal toxins that can be toxic under certain conditions that could potentially cause the pathology observed in the Blackwater fish.

In the absence of any agency having the capabilities to analyse the fish for residues, the MI identified "Eurofins Environment Testing" as a possible company with the capability to provide the service. IFI, on behalf of the IAG, thus engaged directly with Eurofins.

IFI inspected the main channel at the Ross River confluence at Killavullen on the same evening, 25 August, to ensure availability of marked fish for sampling. On returning to electro-fish the area early on 26 August to obtain samples, none were available, having been removed by a stakeholder overnight. IFI moved upstream to the confluence of the main channel and the Clyda, as this location held the largest congregation of affected fish throughout the period and the location would be suitable for removing samples by electrofishing. Officers removed 14 (A samples) on 26th August and delivered them to Eurofins at Little Island, Cork.

On 28 August Eurofins contacted IFI and advised that they could expand the range of substances for testing from 600 to 900 compounds if additional samples could be provided. IFI returned to the Clyda on the morning of 29 August and obtained 15 fish (B samples) for testing. The samples were delivered to Eurofins on 29 August.

4.4 Electrofishing at Roskeen Bridge, Munster Blackwater

Four stretches of river were electro fished upstream and downstream of Roskeen Bridge on Friday 29 August to assess the status of fish stocks in the locality. Six fish species were recorded during the surveys: Atlantic salmon (69), brown trout (20), dace (17), minnow (17), European eel (12), and stone loach (6). Atlantic salmon ranged in length from 6.9cm to 15.1cm and one adult salmon was also observed but not measured. Brown trout ranged in length from 15.9cm to 42.3cm and dace from 5.6cm to 19.8cm. Multiple age classes of both salmon (0+ and 1+) and brown trout (1+ to 4+, with 2+ most abundant) were present. Excess algae was observed on the river substrate indicating nutrient enrichment (eutrophication). Additionally, a small number of dead fish were observed in the margins among vegetation during the survey.

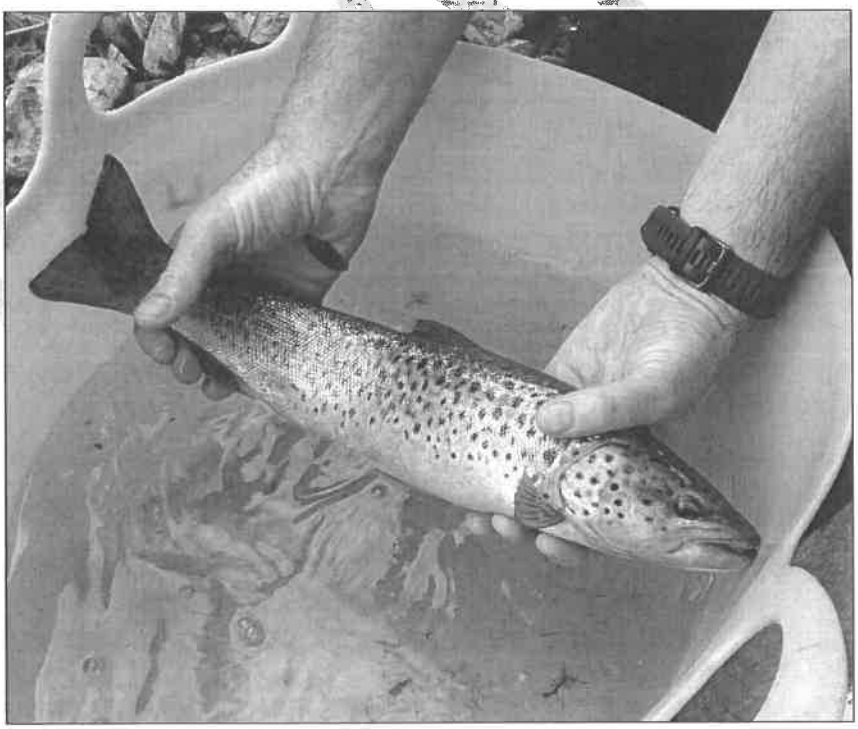


Plate 5: Brown trout captured during an electrofishing survey on the Munster Blackwater at Roskeen Bridge on Friday 29 August 2025 (IFI)

4.5 Estimate of fish mortalities

IFI estimated the minimum density of fish in the Munster Blackwater from Banteer to Castletownroche (39km of river channel) based on mean population density estimates calculated for earlier electrofishing surveys on the river from 2009 to 2022.

A conservative minimum density estimate for total number of fish present in the affected stretch is **83,602** fish. It was estimated that brown trout and juvenile salmon comprised an average of 76% of the population (**64,356**) of fish at surveyed sites. It should be noted that these figures do not include accurate estimates of Young of the Year (YoY) salmon and trout or adult salmon.

The proportion and the origin of the dead fish is unknown as live fish were observed throughout the affected stretch alongside dead and ailing fish. IFI observed dead brown trout and salmon parr, the vast majority of which were adult brown trout. Two heavily affected dace were also observed at separate locations. Anecdotal reports of dead eels, stickleback were received but unverified. There was also a relatively healthy population of fish present at Roskeen Bridge on 29th August (see above). IFI therefore assigned a minimum (20%), and a maximum (50%) mortality estimate to the total estimated minimum population to provide estimates of fish mortality (Table 4.2).

Table 4.2: Estimated fish mortalities on the Munster Blackwater, August 2025 (excluding YoY brown trout and salmon and adult salmon)

	20% mortality	**50% mortality**
Estimated total no. fish mortalities	16,720	41,801
Estimated salmon and brown trout mortalities	12,871	32,178

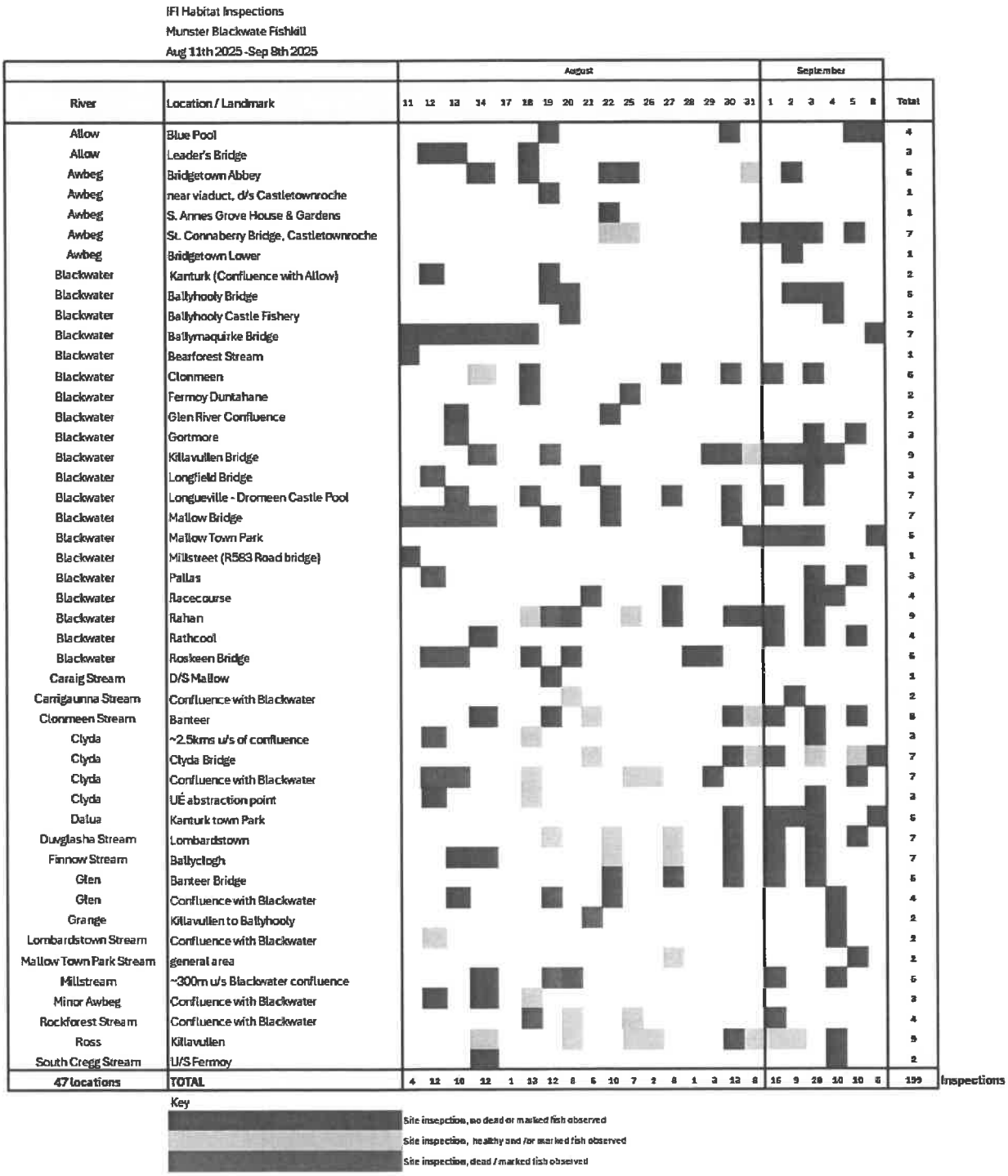


Figure 4.1: IFI habitat inspections related to the fish kill, Munster Blackwater Catchment, August-September 2025.

4.6 Inland Fisheries Ireland ongoing activities

- Fish samples will be taken by IFI to establish a baseline for chemicals including pesticides and heavy metals across the catchment. It is envisaged that sampling will take place in the coming weeks, although successful completion of same will be weather dependent.
- IFI will undertake electrofishing surveys on the Allow River (weather permitting)
- IFI will undertake lamprey surveys across the catchment (weather permitting)
- IFI will deploy drone and kayak patrols to continue to examine and survey the scene.
- IFI will schedule an electrofishing survey of the Munster Blackwater early in the 2026 survey season to monitor recovery of the affected channel (survey season for electrofishing opens on 1 July).

5. ENVIRONMENTAL PROTECTION AGENCY INVESTIGATION

Introduction

The EPA's primary role in the investigation into the fish mortalities on the Blackwater is to assess whether EPA-regulated sites within the region of interest could have been responsible through their water discharge activities, and to take action against any operator found to be at fault.

Investigation Overview

The EPA first became aware of the serious fishkill on the morning of the 12 August 2025, and immediately mobilised resources in the Blackwater catchment to investigate whether any EPA-regulated site could have been a source of polluting material.

EPA has participated in a Multi-Agency group, established at the direction of the Minister and coordinated by Inland Fisheries Ireland (IFI), for the purposes of sharing data and expertise and supporting the investigation into the cause of the fish mortalities.

The EPA's investigation encompassed:

- The deployment of three teams of inspectors to EPA-regulated sites in the Mallow and Kanturk area within an hour of the EPA becoming aware of the fish mortalities. The inspections on 12/13 August found no evidence of spills or discharges linked to the incident.
- An immediate expansion of the investigation on 22 August to include a broader timeframe and geographic scope within the Blackwater catchment. This was in response to preliminary fish postmortem results from the Marine Institute, which indicated a pollution source was the likely cause of the fish damage in the week prior to the 12 August.
- The completion of 41 inspections of thirty-one facilities in the catchment, the collection of 40 samples and an assessment of operational practices and monitoring data associated with 10 industrial sites, 17 wastewater treatment facilities and 4 drinking water plants.
- The completion of five invertebrate quality surveys carried out by the EPA in the Kanturk to Mallow area on 12 August and 1 and 2 September 2025.

Twenty seven of the thirty one EPA-regulated sites investigated had either no discharges or had compliant discharges during the weeks prior to the 12 August. However, four of the thirty-one facilities investigated had discharges that were not compliant with licence requirements in July and August and one small wastewater facility with a certificate of authorisation was operating above operational capacity. These sites were North Cork Creameries (Licence Register No. P1051-01); Millstreet wastewater treatment plant (D0332-02); Bweeng & Environs wastewater treatment plant (D0438-01); Dromahane wastewater treatment plant (D0302-01) and Lombardstown Certificate of Authorisation (A0327-01). The EPA was already aware of the issues

at four of these sites, with the breach at Millstreet detected during the investigation. All these issues remain the subject of on-going enforcement action which is separate and distinct from the investigation into the causality of the fish mortalities on the Blackwater.

Detailed Assessment

To determine if there was a causal link between the fish mortalities and EPA-regulated sites, the EPA assessed the relevant monitoring and operational data for the sites and the impact of the non-compliant discharges on receiving water quality in the period 28 July to 12 August.

The EPA, with the assistance of Local Authorities and Inland Fisheries Ireland, collects water quality data from the Blackwater River on an ongoing basis as part of the National Water Monitoring Programmes under the Water Framework Directive. The data include water chemistry, fish and macroinvertebrate samples. The data collected in 2024 in the area of the investigation of the River Blackwater catchment generally indicates the water quality in the catchment is at Good Status. The water chemistry and macroinvertebrate ecological samples taken during June, July and August 2025 indicate no change in water quality in the River Blackwater catchment.

In response to the current incident, the EPA also carried out specific macroinvertebrate ecological water quality sampling in the affected area following the fish mortalities and the results were again indicative of good or better ecological water quality. Overall, there is no evidence from the ecological water quality data that there was a chronic water quality problem in the Blackwater catchment, in advance of, or following the fish mortalities. This suggests that the cause of the fish mortalities was a short-term pollution event, which may have been localised in extent, and wasn't due to an underlying chronic water quality problem.

The detailed analysis and assessment of discharges from all thirty-one EPA-regulated sites, including industrial sites and Uisce Éireann controlled urban wastewater discharges and drinking water plants during July and August 2025, does not support a causal link between these activities and the serious fish mortalities found in the River Blackwater.

North Cork Creameries [Licence No. P1051-01]

One of the thirty-one EPA-regulated sites investigated by EPA in relation to the fish mortalities incident was North Cork Creameries (NCC) situated on the River Allow near Kanturk. While NCC was an important focus of that investigation it is specifically mentioned in this summary as it attracted significant public attention and speculation throughout the course of the current investigation. NCC is a site with a history of failure to consistently achieve compliance with its licence discharge conditions and was already the subject of significant enforcement activity by EPA prior to the incident, culminating in a prosecution which concluded in April 2025 resulting in convictions and the imposition of fines. EPA continues to monitor the licensed site closely.

Non-compliances were detected in the wastewater treatment plant discharge from NCC in the June to August period and were serious and entirely unacceptable. The licence breaches arose primarily due a lack of organised management or control of wastewater treatment plant activities, a lack of appropriate expertise to resolve significant operational issues, a failure to

appropriately generate, manage, maintain and use critical data sets to inform corrective actions and a disregard for licence requirements and licence limits.

These compliance issues have not yet been fully resolved by the licensee, and the EPA is rigorously pursuing the enforcement of the licence breaches arising as a matter of priority and urgency, in line with its Compliance and Enforcement Policy. Offences related to breaches of EPA licences may be prosecuted summarily by the EPA or on indictment by the Director of Public Prosecutions (DPP). The EPA is giving full consideration to all such enforcement options available to it in respect of the non-compliances detected. These pre-existing issues are very serious matters that need to be resolved to restore consistent compliance and for the NCC to entertain the prospect of retaining its licence to operate into the future.

Despite the seriousness of these issues and the significance of licence breaches at NCC, the EPA's assessment as set out in this report, does not support a causal link between the NCC's discharges into the River Allow and the fish mortalities in the Blackwater (see Figure 1, page 12, for location of NCC relative to Blackwater). In summary, this reasoned conclusion is based on the following:

- **Yard Drainage:** The yard drainage on the site is configured to discharge only to the wastewater treatment plant. Therefore, all effluent and spills arising on site are discharged through the wastewater treatment plant.
- **Load to wastewater treatment plant:** An assessment of the plant's operational data demonstrates that while the site's wastewater treatment plant was performing very poorly during the first few weeks of August, it was consistently so. There was no evidence that a sudden catastrophic load to the river was discharged through the wastewater treatment plant in that period, or that any form of chemical discharge occurred. An assessment of the plant's operational data indicates that the occurrence of such an event in that period would be very unlikely.
- **Toxicity of discharge to fish:** Considering the types of material used on site, and the type of damage caused to the fish in the Blackwater (as described by the Marine Institute report), the key parameters of concern in relation to the NCC discharge is un-ionised ammonia and pH. The level of un-ionised ammonia that could have occurred in the river as a result of the NCC discharge in the weeks prior to the fish mortalities were below the threshold of 0.02mg/l NH_3 (i.e. below the level at which toxic effects could occur in fish and other aquatic species if subjected to chronic/longer term exposure). pH levels were stable and in compliance in the period investigated.
- **Proximity of site to dead fish:** No dead or marked fish in River Allow: The IFI also advised the public authorities investigating the fish mortalities that marked and dead fish were not observed in the River Allow, which is the river to which the NCC discharges, before, during or after the fish mortalities in the Blackwater were reported. In addition, there is a stretch of 4 km river water between the NCC discharge point on the Allow and where the Allow enters the Blackwater.

The EPA regulates, through authorisation and enforcement, almost 900 industrial and waste facilities, over 1000 wastewater authorisations and approximately 750 drinking water treatment plants, with 1,773 inspections carried out across these sectors in 2024. All inspection and monitoring reports are available on the EPA website via an online portal called LEAP online. It does so without fear or favour in the interests of the public and in the protection of the environment. It does so by detailed assessment and by drawing reasoned conclusions based on the available evidence, data and science as it has done in this report. To do otherwise would be to draw conclusions based on speculation which would be both environmentally irresponsible and regulatorily negligent.

Conclusion

In conclusion, the detailed analysis and assessment of all thirty-one EPA authorised sites, including industrial sites and Uisce Éireann controlled urban wastewater discharges and drinking water plants during June, July and August 2025, does not support a causal link between these activities and the serious fish mortalities found in the River Blackwater.

Throughout the investigation, the EPA worked closely with IFI, Cork County Council and others, both bilaterally and through an IAG convened by the IFI for the purposes of the wider investigation. The EPA provided expertise and data in relation to discharges from regulated sites, water quality and invertebrate sampling in the Blackwater catchment.

The EPA also received videos and pertinent information from concerned members of the public in relation to discharges from EPA-regulated sites during the investigation period. The EPA acknowledges with gratitude the work and commitment of those concerned groups in contributing to the EPA's investigation. The issues raised by those members of the public have been considered in the EPA's assessment.

The findings of this report are intended to support and inform the activities of a multi-agency investigation into Blackwater fish mortalities.

Refer to Appendix 1 : EPA investigation of discharges to water from EPA-regulated sites in the Blackwater Catchment

6. CORK COUNTY COUNCIL INVESTIGATION

Cork County Council was first notified by Inland Fisheries Ireland (IFI) at 12:15 hrs on Monday 11 August of a reported fish kill at Mallow Bridge.

A Cork County Council officer attended the scene at 14:30 hrs with IFI.

Cork County Council carried out an inspection of the river in the vicinity of the reported fish kill and upstream of Mallow Bridge. No discharge, plume or other matter was evident.

Several dead and injured fish (brown trout) were observed by the Cork County Council officer and IFI inspectors, among seemingly unaffected fish.

IFI shared their initial assessment suggesting a possible fungal outbreak or disease, exacerbated by low water levels and high temperatures, as early investigation yielded no signs of pollution.

IFI engaged the Marine Institute, Fish Health Unit, to assist in their investigation by way of pathological testing.

Investigations by IFI and Cork County Council officers continued, in order to ascertain the extent of the area impacted, and what rivers could potentially be affected.

Cork County Council received a number of complaints from the public on 12 August.

Cork County Council carried out sampling at the River Clyda and River Blackwater (Mallow) on 12 August. Results from these samples showed that ammonia, dissolved oxygen were within normal range. These results were shared with IFI.

From 12 August through to 22 August, the investigation was primarily supporting IFI in their investigation to establish the scale and extent of affected catchment, following up and investigating reported mortalities and reports from the public about activities that may be responsible for this incident.

Fig 1. below shows the extent of the affected waterbodies. The main Blackwater channel from Clonmeen, Banteer to the confluence of the Awbeg with the Blackwater at Castletownroche, and approximately 2.5km of the Clyda river. The Allow, Glen and Lombardstown rivers appeared to be unaffected.

Figure 6.1: Affected Waterbodies

On 22 August based on the Marine Institute Fish Health Unit, IFI confirmed they were satisfied the cause was not a fungal infection as previously suggested, and the likely cause was an "environment insult or irritant" that caused or contributed to the fish mortalities, and the exposure may have occurred in the days previous to 11 August.

Minister T. Dooley (Minister State Department Agriculture Food and the Marine) on 22 August established an IAG to be led by IFI, which consisted of agencies including EPA, Cork County Council, Marine Institute, Uisce Éireann – eventually expanding to include HSE, DAFM, NPWS, LAWPRO.

On 25 August, the IAG convened for an online meeting. IFI was confirmed as the lead agency and chaired the meeting. The EPA and Cork County Council attended the first IAG meeting.

IFI have to date been the lead agency on this case and have co-ordinated and chaired a series of IAG meetings. The initial meeting took place on the 25th August. Cork County Council attended further meetings on the 01/09/2025, 03/09/2025, 08/09/2025, 11/09/2025, 12/09/2025,16/09/2025 and 23/09/2025.

The IAG meetings agreed specific actions, including further analysis of tissue samples by a contracted laboratory on behalf of IFI, as well as further catchment macroinvertebrate assessments at agreed locations, these assessments to be undertaken by Cork County Council, EPA and IFI. These assessments found no evidence of an impacted macroinvertebrate population.

Between 13 August and 27 August, Cork County Council staff inspected twenty light industrial and commercial sites within the catchment, compromising of businesses licensed under Section 4 of the Local Government (Water Pollution) Acts 1977 to 2007, and other commercial operators. No issues were identified that might give rise to an incident of this nature. Any minor non-compliant activities detected as part of these investigations are being pursued as appropriate under the enforcement provisions of the Local Government (Water Pollution) Act.

Cork County Council undertook fourteen investigations of agricultural activities within the catchment. These investigations established no causal link with this incident.

Cork County Council sent samples taken on 12 August for additional testing (heavy metals) on 25 August. The result was discussed at an IAG meeting (11 September) and consensus was it was these results were within the normal range of monitoring data and was unlikely to be indicative or of evidential value in establishing any analysed heavy metals as being the cause of the kill.

Between 12 August and 05 September a total of twenty complaints have been received from members of the public in respect of this incident. All complaints were triaged and assigned for inspection where deemed appropriate. Arising from the investigation of these complaints, no causal link to the fish kill was found.

Results from fish tissue testing undertaken by specialist laboratory on behalf of IFI, found no specific factors that could be conclusively said to have caused the incident.

Cork County Council briefed their elected members of the Northern Committee (In-Committee) on the 08 September and 22 September.

Cork County Council has supported IFI (lead agency) and has worked closely with other state agencies throughout this investigation.

Cork County Council will continue to provide support to the investigation on an IAG basis.

7. DEPARTMENT OF CLIMATE, ENERGY AND THE ENVIRONMENT (DCEE)

The Department of Climate, Energy and the Environment (DCEE) holds policy responsibility for inland fisheries and played an important support role in the investigation. It coordinated press lines, issued public updates and maintained engagement with stakeholders and agencies throughout the process.

Minister Dooley, as the Minister of State with responsibility for inland fisheries, took a proactive leadership role in the State's response. He directed the establishment of the Inter-Agency Group on 22 August to co-ordinate the investigation and promote cross-agency collaboration.

The Minister personally engaged with stakeholders, visiting the affected site twice and chaired a townhall meeting with the local community. Throughout the process, Minister Dooley oversaw the work of the Inter-Agency Group, chairing meetings on three occasions, and maintained close contact with IFI and the other agencies. He directed the communications strategy for the investigation, ensuring reports and results were issued as they became available and timely updates were provided to local and national media. This approach ensured coordination, transparency and kept the public informed of progress.

8. DEPARTMENT OF AGRICULTURE, FOOD AND THE MARINE (DAFM)

The Department of Agriculture, Food and the Marine (DAFM) participated in the IAG and attended the IAG meetings in a supporting role having regard to its statutory responsibilities for farm animal/ health and welfare.

The DAFM has reviewed results produced by the group together with relevant associated information. In addition, the DAFM has not been notified, through its Regional Veterinary Office (RVO) and Regional Veterinary Laboratory (RVL) networks of any increase or unusual patterns of farm animal illness or deaths in the area.

While one complaint relating to a dog was communicated to the RVO, this was not substantiated despite repeated efforts to contact the complainant. Notwithstanding this, there have been no reports nor concerns relating to animal health and welfare raised by the wider public to the DAFM.

Based on this and the significant amount of work commissioned and completed by the IAG as part of the inter-agency investigation there is no indication that livestock health and the food chain from primary production was affected by this incident.

9. UISCE ÉIREANN

Following notification by the EPA to Uisce Éireann (UÉ) on 12 August of a fish kill in the River Blackwater UÉ undertook a review of its assets in the catchment. This included all relevant

wastewater treatment plants and water treatment plants serving towns and village in the catchment.

This review included the examination of operational records and monitoring data to determine if discharges from these assets could have contributed to the reported fishkill. From this review no issues were identified with regard discharges or the normal operation of these assets.

In addition to the above, and as requested by the EPA, UÉ co-operated with the EPA in 17 audits of wastewater assets between 12 August and 4 September and audits of 4 drinking water assets between 27 August and 4 September. This also included the provision of relevant monitoring and operational records for review by the EPA.

UÉ as being responsible for the provision of safe drinking water also reviewed operational monitoring of the treatment process at the Mallow Water Treatment Plant and the monitoring of the water in supply undertaken in accordance with the requirements of S.I 99/2023. This monitoring did not indicate any issues or risks to drinking water quality.

10. NPWS

NPWS has obligations under the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011 and amendments) in relation to the Qualifying Interests (QIs) for protected sites.

In response to the incident in the River Blackwater Special Area of Conservation [Site Code 002170] the NPWS worked closely with other State agencies to identify the cause of and ascertain the full impact on the Qualifying Interests for the site.

NPWS carried out surveys and monitoring on the protected species for the site including otters and the freshwater pearl mussel. To date, NPWS and other agencies found no evidence of any mortalities amongst these species and other wildlife.

NPWS will continue to undertake monitoring programmes for habitats and species in accordance with the requirements of the EU Birds and Habitats Directive under a six-year cycle, with surveys to assess the condition of protected species such as the Freshwater Pearl Mussel scheduled.

11. LAWPRO

The Local Authority Waters Programme (LAWPRO) works on behalf of Ireland's 31 local authorities to protect and restore good water quality in our rivers, lakes, estuaries, ground and coastal water through catchment science and local community engagement.

Following the first inter-agency meeting on 25 August 2025, LAWPRO was requested to attend a meeting with Cork County Council and IFI. While LAWPRO does not have an enforcement role in such incidents, it provided advice and support in relation to the macroinvertebrate sampling and offered staff resources to assist with this sampling.

LAWPRO attended all subsequent inter-agency meetings and provided its catchment science and communications expertise to the group.

LAWPRO Communities team continues to engage with and support local community groups along the River Blackwater.

12. OVERALL CONCLUSION

Despite the significant investigation by members of the IAG, the pollutant or the source, that caused the fish mortalities has not been identified. There is no evidence available to link the significant fish kill on the Munster Blackwater in August 2025 to any identified discharge or licensed facility. No change in water quality has been detected in the affected stretch between 2024 and 2025.

The Marine Institute conducted diagnostic analyses on brown trout sampled from the River Blackwater on 14 August as part of the investigation into the mortality event. The report concluded that there was no evidence of systemic disease in the fish examined. However, both gross and histopathological findings indicated changes consistent with exposure to an environmental insult or waterborne irritant.

Analysis of brown trout for presence of chemicals, pesticides and heavy metals did not identify any such possible irritant.[1]

It may be concluded that a waterborne irritant likely entered the river Blackwater around 5-6 August, ~72 hours before the first mortalities were observed on 9 August 2025, at an unidentified point most likely upstream of the uppermost limit of IFI observed mortalities (main channel between Gortmore and upstream of Roskeen Bridge 13 August) and dissipated quickly rendering it undetectable in water samples and fish tissue samples.

There was no indication that livestock health and the food chain from primary production was affected by this incident.

13. FUTURE DELIVERABLE

The learnings from this incident will be captured to inform future interagency approaches to investigating significant incidents impacting water bodies across the country

[1] Eurofins Certificate of Analysis AR-25-M3-029658-01 & AR-25-M3-029021-01

14. GLOSSARY

LOQ: Limit of quantification – lowest concentration of a substance that can be measures with a stated degree of precision and accuracy (smallest amount of a substance that can be reliably quantified with statistical confidence)

LOD: Limit of detection – lowest concentration or amount of a substance that can be reliably detected by an analytical procedure – it indicates that the substance is present but does not mean it can be accurately quantified.

Electrofishing: uses the physiological effect of an electric field in water to stimulate a fish's nervous system so that it swims towards a handheld net – the fish is attracted to the net rather than stunned so as to precent harm. The charge emitted into the water causes them to turn and swim towards the net, which enables their quick removal for storage until processing.

Macroinvertebrate: very small animals without a backbone, visible to the naked eye. Found beneath water (benthic macroinvertebrates), are a useful indicator of water quality. Examples: mayflies, stoneflies, caddisflies.

15. APPENDICES

APPENDIX 1: IFI HABITAT INSPECTION REPORT

Munster Blackwater Fish Kill August 2025
Inland Fisheries Ireland
Investigation Report

1. Background

On Monday 11 August, Inland Fisheries Ireland was notified of a fish kill in the Munster Blackwater. IFI, in cooperation with Cork County Council (CCC), the EPA and Irish Water (IW) commenced an investigation to identify the possible cause and extent of the fish kill.
IFI reviewed monitoring data from the agencies responsible for water quality, provided fish for sampling for disease by the Marine Institute (MI) and subsequently for residual chemicals, pesticides and heavy metals by an independent laboratory; undertook macro-invertebrate sampling, a targeted electrofishing survey and over 200 habitat inspections.

2. The Habitat Investigation

Monday August 11th

IFI received the initial fish kill report at 12.08pm in Macroom office, Monday 11 August. An IFI Senior Fisheries Environmental Officer arrived at the location at approximately 1.15pm.
On arrival on site downstream of Mallow bridge IFI noted significant numbers (~50) of heavily marked and weak swimming adult Brown trout both below the apron of Mallow Bridge and in a backwater at the confluence with the Bearforest stream a short distance further downstream. IFI also noted (~10) healthy unmarked Brown trout swimming normally in the scour pool below the bridge apron.
Conversation with anglers on site reported further instances of similar fish further upstream of Mallow, indicating the potential scale of the affected area. IFI commenced investigations.

Tuesday August 12th

Fisheries Officers conducted habitat inspections down through the catchment, initially noting no issue at Ballymaquirke bridge on the main channel south of Kanturk with plentiful unmarked fish observed. Similarly unmarked fish were then noted in the Minor Awbeg close to its confluence with the main channel. IFI observed a large shoal of healthy unmarked Dace at Roskeen Bridge and two dead trout with two trout noted swimming mid-channel with pale marks around their heads. Further downstream at Pallas IFI spotted one dead trout (dead >1 day with a bird mark wound) and other, healthy trout rising in the main channel.

The confluence of the Clyda River and the main channel at a location upstream of Mallow showed numerous marked trout and mortalities (~50) with significant numbers of heavily marked trout and unmarked trout in the lower pools of the Clyda, numbering (~100) to a pool in some cases.

This marked a trend with observations of visibly affected fish congregating at tributary confluences or in slack water, noted at many locations along the main channel.

IFI inspected the Clyda River for approximately 2.5km upstream of its confluence noting large numbers of fish congregated in pools due to its low levels. The pools for approximately 500m upstream from the main channel appeared to contain a mix of marked and unmarked trout of a size likely to be residents from the main channel. Further upstream IFI noted similar mixes of marked and unmarked fish but mainly of small and juvenile trout more likely resident in the smaller river. While marked fish were still numerous their incidence receded to a point ~2km upstream where only unmarked fish were observed. Ongoing communication with EPA staff working less than 1km upstream of his position confirmed no signs of marked fish upstream of his inspection.

IFI inspected the Uisce Éireann (UÉ) abstraction point on the Clyda River which supplies water to Mallow town following communication with their own staff. IFI observed abundant and healthy trout at the same location noting UÉ had not detected in any issue with the influent to date which might have flagged a problem. IFI was in contact with Cork County Council and EPA colleagues in WWTP Compliance and Licensing teams who were inspecting various locations in the catchment to determine if there were any potential problems in the environs of known discharge points. Water sampling was taking place by both EPA and Cork County Council staff with confirmation that data would be available in due course. IFI was contacted by EPA field staff observing a small number of marked fish congregating at the Lombardstown stream confluence during their WWTP inspection. Communication with Cork County Council confirmed dissolved oxygen levels normal on the Blackwater at Mallow although temperature had reached 20°C

Wednesday August 13th

IFI conducted habitat inspections throughout Wednesday 13th commencing in the Kanturk-Banteer area, observing no signs of marked fish or mortalities on the Allow River upstream of Leaders bridge, at Ballymaquirke Bridge or on the Glen River at its confluence with the main channel NE of Banteer.

A further two main channel habitat inspections were again unproblematic until fish mortalities were noted between Gortmore and Roskeen bridge ~1km of Roskeen bridge, with ~10 dead trout noted over ~500m in deep water where dead fish may be obscured. Trout and dace were noted at all the locations mentioned with no markings, swimming normally and feeding in the main flow of the channel.

IFI inspected at Mallow Bridge. The number of mortalities and otherwise moribund fish swimming weakly in areas of slack water had increased since the previous day with anglers also collecting dead fish at the time, 50-100 marked fish swimming at the Mallow Bridge apron and in slack water downstream. Unmarked trout with normal swimming behaviour were also observed below the bridge apron in similar numbers to the previous day. One live dace with discolouration and significant eye damage was observed but could not be retrieved.

The Clyda River confluence was re-inspected and similar numbers of marked fish and mortalities were noted as previous observations.

Thursday August14th

Initial habitat inspections at Ballymaquirke bridge, Minor Awbeg near confluence confirmed no marked or dead fish and plentiful freely swimming trout. IFI met and consulted with MI staff during sampling at Mallow Bridge accompanied by other field staff. Exchanged information on fish behaviour observed and geography of the issue observed to date.
IFI investigated a report detailing significant slurry spreading in fields adjoining main channel near Rathcool Aerodrome, accompanied by local Inspector. Habitat inspection showed no discharge or visible impact on the river with unmarked fish in abundance. Spreading activity was relayed to Cork County Council who inspected farm site on Friday 15th. Inspection of main channel opposite Clonmeen at Murphys Garage downstream of Ballymaquirke, with no mortalities observed; one marked and discoloured trout noted swimming in main flow.

Friday 15th
Lismore district staff continued monitoring previously identified locations and follow up any new information gathered.

Saturday 16th and Sunday 17th

IFI responded to calls throughout the weekend.

Monday 18th

IFI continued habitat inspections at Ballymaquirke bridge and noted abundant unmarked fish, no mortalities. Inspections on the Minor Awbeg at Roskeen Bridge did not detect any mortalities two discoloured trout observed swimming in main flow upstream of bridge. Rising trout and dace shoals observed upstream of bridge. IFI received further updates from Cork County Council and EPA; all responses gave preliminary analysis results for ammonia as 'low,' and in the case of EPA, 'below detection limits.' A repeat walk-through habitat inspection of the River Clyda conducted to point ~2km upstream of its confluence with the main channel. Similar number of marked fish and unmarked fish observed as previously, but with notably less larger fish in lower pools closer to main channel and a few older mortalities present at confluence and no weak swimming fish present where previously observed.

Tuesday 19th

Inspections completed at Millstream Mallow and main channel upstream of Mallow Railway Bridge.
Trout previously reported by angler noted crowded in a scour pool in Millstream ~300m upstream of confluence with main channel ~100 marked fish and 10 very decomposed mortalities, likely from early previous week. Noted as a suitable location to reinspect to assess whether remaining live marked fish die at location or otherwise disperse or recover. Habitat inspection of ~500m adjoining main channel showed rising trout and large shoals of dace, no marked fish observed although lighting not ideal to confirm.
Inspection at Mallow Bridge noted no weak swimming or marked fish with some older decomposed mortalities <10. A few rising trout noted and large shoals of unmarked minnows present.

Inspection of Rahan Fishery, main channel, between Mallow and Killavullen conducted. Large numbers of dace and also some rising trout observed also large shoals of minnow present. One trout mortality noted floating in main flow, fish checked and observed to be dead at least a few days. Inspection at Killavullen Bridge and main channel 500m upstream showed large shoals of unmarked dace and also free rising trout, though less numerous as the dace, as would be normal. One large dead fish mid-channel likely to be adult salmon. One large adult salmon seen leaping downstream of bridge, a healthy looking individual. Three trout mortalities noted mid-channel at bridge.
Inspection at Awbeg river near the viaduct downstream of Castletownroche, conducted; numerous healthy trout observed feeding on surface, no marked fish or mortalities observed.
Habitat inspection at Ballyhooly bridge conducted, numerous Brown trout and dace noted feeding, no marked fish or mortalities.

Wed 20th Aug.

At the Mill Stream - Ballyhooly Bridge, no dead or marked fish were observed. One fish jumped while in the area and observed a small number of healthy trout swimming as well as a shoal of healthy-looking fry/minnows. Ballyhooly Castle Fishery, no fish observed from foot patrol of the bank except for moving ripples in centre of the river that looked like they could have been made by a larger moving fish (though it never broke the surface).
Inspection at Ross River Killavullen from the bridge to the halfway point, three shoals of about eight healthy trout in each observed. In the lowest of the pools, observed three distressed/marked trout. Two healthy trout and sixteen distressed/marked trout scattered throughout the different pools and riffle area. As approached the last pool before Blackwater observed deep pool with about 30 to 40 marked trout parr with 20 to 25 healthy trout parr. About 40 to 50 healthy trout mouth of the river. Observed two cormorants just downstream of the mouth of Ross River and one trout jumping.
At Rockforest Stream (just D/S Mallow) Confluence with the river Blackwater, while approaching the entry into Blackwater, two cormorants observed and upon arriving at the mouth of the river 2 distressed/marked parr and 1 healthy fry at confluence. One healthy heron observed.
From the bridge downstream at Carrigacunna Stream - Killavullen, a few healthy trout observed spread out in the pools along the way. At the mouth of the river entering Blackwater, six marked/distressed trout parr observed mixed amongst some healthy trout fry.
Flora and fauna observed to be ok in all areas. Cormorants, herons and other birds evident and no signs of distress or illness. Macroinvertebrate kick sampling at Roskeen Bridge and Rahan state fishery on the main channel showed Q4 with site at on the Clyda River on the Quartertown road showing Q4-5: all indicative of good ecological status and no recent or medium negative impact on pollution sensitive species.

Thurs 21st Aug

Officers inspected Longfield Bridge – Mallow and observed two fish jumping and a group of trout fry, some stickleback swimming in the shallows and a large group of fry type fish. No dead or marked seen. One heron on riverbank. At Mallow Racetrack – River Blackwater, ripples midstream, but the fish never broke the surface. One or two trout jumping and a large shoal of

dace. One dead brown trout that looked like he had been there for a few days or longer than that based on decomposition. No dead wildlife in the area.
Racecourse frontage on river walked (excluding yard area) with no signs of activity on bank, no signs of marked fish or mortalities at viewing points, fish activity light in strong sun sunlight. Factory stretch upstream of Longfields bridge walked, trout seen rising although not in large numbers during bright sunny period.
Macroinvertebrate kick sampling downstream of Longfields bridge showed Q4 although with more abundant Gammarids (shrimp), which have moderate pollution tolerance.
Large groups of about 75 to 90 fish of all varied sizes observed from on the Clyda River at Clyda bridge to the pools. Observed about 600 in this area. About 80% were healthy and 20% were marked/distressed. In the pool near the main channel of Blackwater there was a large group of about 200 trout separate to the aforementioned. These looked marked/distressed and in the main channel saw +3kg marked/distressed salmon and one marked large brown trout. Observed 20 to 30 trout all marked/distressed and larger group of healthy trout fry. Six dead trout noted with mould and moss growing on them showing they had been there for quite a while.
At Grange River – Between Killavullen & Ballyhooly South Bank, cows were observed in the river; water a polluted colour which faded fast after they exited it. Some fry in the stream and at the confluence of Blackwater. One dead trout and no marked fish.
Hundreds of fish in the 300m stretch of the Clyda walked. The larger trout more likely to be affected in comparison to the parr and smaller fish from observations earlier in week. This was reinforced on walk through the Clyda. At the d/s of the mouth of the Clyda in Blackwater channel, one brown trout floating belly up, but when approached he swam off.

Friday 22nd Aug

Inspections at Mallow Bridge/ Pump House showed no signs of marked fish or fresh mortalities, a few fish seen rising. At the Awbeg river, Bridgetown Abbey some healthy trout observed swimming around. No dead or marked/distressed at the mouth of the river travelling upstream. Officers walked upstream, there were lots of brown trout and one dead one. No apparent signs of any pollution or tracks to the bankside to suggest pollution. On the Awbeg River, St Connaberry bridge Castletownroche about 100m d/stream of bridge, observed 20 to 25 trout. Amongst these trout saw two marked/distressed, the rest were all healthy. No dead trout in the area. No dead birds or otters or any other wildlife. No apparent signs of any pollution or tracks to the bankside to suggest pollution. At Annes Grove House & Garden there were a lot of trout scattered about in the Awbeg flowing through the gardens. Five sticklebacks in the river as well. All fish in this section of the Awbeg river appeared healthy. There were no marked/distressed or dead fish in the area. No apparent signs of any pollution or tracks to the bankside to suggest pollution. On the Glen River at Banteer bridge About 15 healthy trout in the river section walked. No signs of any distressed/marked or dead fish in the area. Small groups of fry on either side of the mouth of the river where enters Blackwater. No apparent signs of any pollution or tracks to the bankside to suggest pollution.
Inspection of the Duvglasha stream at Lombardstown reported no dead fish in the river from the bridge in village down to Blackwater. 30 or so trout spread throughout the stream. Six or seven were distressed/marked, the others were healthy looking. At confluence, no fish evident. No apparent signs of any pollution or tracks to the bankside to suggest pollution.

In the Glen River and confluence main channel a report of marked fish investigated at location provided (on site late afternoon). No sign of marked fish or fish mortalities, some trout rising in main channel, abundant unmarked salmonids in Glen River.
At Longueville fishery – Dromeen Castle Pool, no dead or distressed/marked fish. Upstream of Castle pool, two (live) cormorants. No fish of any type noted in river at the time. Ripples on the water showing fish underneath the surface that never broke the surface but then before leaving we did see a large shoal of small fry. No apparent signs of any pollution or tracks to the bankside to suggest pollution. No dead wildlife. At each inspection site visited Officers observed 2/3 birds at a minimum, drinking the river water. No dead or sick wildlife of any type seen on the Awbeg.

Monday 25th Aug

Habitat inspections were completed at Fermoy Duntahane, above the weir where the river had a brown colouring that you would normally see after a lot of rain. No dead or marked/distressed fish observed. Smaller number of fry observed compared to norma, small number of healthy brown trout visible; Officers expected to observe more in the centre of the river , but due to the coloured water visuals were limited. Observed 2 herons downstream. No apparent signs of any pollution or tracks to the bankside to suggest pollution.
On the Awbeg river - Bridgetown Abbey, no dead or marked/distressed fish observed in the stream. Small numbers of trout parr swimming around hiding under vegetation. At the mouth of the river a few separate groups of varied sizes of trout fry were observed, upstream and downstream side of the mouth of the Awbeg. No apparent signs of any pollution or tracks to the bankside to suggest pollution. Also, on the Awbeg river at St Connaberry Bridge Castletownroche, no dead fish observed from the bridge to c.100m downstream. C.20 healthy parr and adult trout spread through the river with 3 trout marked/distressed. No apparent signs of any pollution or tracks to the bankside to suggest pollution.
At Ross River – Killavullen, no dead trout observed in the river. From the bridge to just before mouth of river about 30 trout and 4 fry spread throughout different pools with 6 of the trout appearing marked/distressed. Better flowing water close to the mouth of the river, however no trout observed. At the last 3 pools at the mouth of the river is where most of the fish were: in the third and the second pool before the mouth, there was a mix of healthy and marked/distressed fish. In total for the 2 pools there were c.80 fish, approx. 55 of them being healthy and 25 marked/distressed. In the 3rd pool, at the mouth, there were about 60 trout and only 4 of them appeared healthy. No apparent signs of any pollution or tracks to the bankside to suggest pollution.
At the Rahan – State Fishery, main channel:1 dead fry of unknown species observed in the stream. Observed c.100 brown trout in the stream, all appeared healthy however cannot be certain as they had lighter colouring on head but not to the extent seen in obviously affected trout. abundant trout fry observed. No apparent signs of any pollution or tracks to the bankside to suggest pollution.
At Rockforest stream – D/S Mallow Bridge no fish observed in the river at the mouth; 2 marked/distressed and 1 healthy trout parr observed but no fry in area nor dead trout. No apparent signs of any pollution or tracks to the bankside to suggest pollution.
At the Clyda River (Lower section and main channel at confluence) large concentrations of adult brown trout crowded in pools on lower Clyda but now with fewer marked fish obvious and no

heavily marked fish or fresh mortalities. Large numbers of dace and trout observed in the main channel in the locality, again with no marked fish observed.
Macroinvertebrate kick sampling showed Q4 upstream and downstream of Clyda confluence on main channel with slightly less overall abundance more likely due to river morphology at the location. Healthy and active small birds observed drinking and bathing in most of the streams

Tuesday 26th Aug

Officers conducted an inspection of the main channel at Killavullen, Ross River to obtain subject trout for residual chemical sampling. Some marked fish were observed but lively and darted away on approach. Officers observed numbers of marked fish in the lowest pool. 14 sample fish removed for sampling and delivered to Eurofins and analysis for pesticides and metals in fish to be conducted.
Habitat inspections, including macroinvertebrate kick sampling, had not yet revealed any clear indication as to the location of an event or incident which may have contributed to the fish mortality event.

Wednesday 27th August

Inspections at Longueville fishery (Blackwater main channel) noted that there were no fish in the area; no dead or marked/distressed trout observed. The river was clear with increased flow than recently due to heavy rains from the previous night. No apparent signs of any pollution or tracks to the bankside to suggest pollution. At the Glen River, Banteer Bridge lower no dead marked or distressed fish observed in the river. From the bridge to the mouth of the river, observed 13 healthy trout. At the mouth of the river downstream, a small group of trout fry observed. No apparent signs of any pollution or tracks to the bankside to suggest pollution.
At Clonmeen stream no fish observed in the stream due to stream depth, which was 3" at most; stream was clear. No apparent signs of any pollution or tracks to the bankside to suggest pollution. At the Duvglasha River Lombardstown the river was slightly coloured due to the overnight rain.
From the Co-Op down the Lombardstown bridge c. 20 trout parr and 15 fry observed. From the bridge to the mouth, the river was clear. 28 trout observed, two of them heavily marked/distressed, remainder were healthy. A small number of fry observed directly under the bridge. At the confluence of the Blackwater, no dead fish spotted. No apparent signs of any pollution or tracks to the bankside to suggest pollution.
An inspection of the main channel behind Mallow Racetrack was completed. The section of the river patrolled was clear, but water flow was faster than recently due to recent rain. No dead marked or healthy parr or fry noted. No apparent signs of any pollution or tracks to the bankside to suggest pollution.
At Mallow Town Park stream and surrounding area, the water was generally clear but slightly murky in spots. Two dead fish observed on the downstream section of the park. The dead fish had vegetation growing on them, suggesting that they had been here for a while. In the small stream going through the park, multiple juvenile sticklebacks were observed. In the surrounding area by the bridge and treatment plant, six healthy & two marked/distressed trout parr and multiple groups of fry spotted. As the river Blackwater is wide in this area, there are numerous places for

the trout to hide, so hard to get an accurate number. 1 heron observed. No apparent signs of any pollution or tracks to the bankside to suggest pollution.
At Rahan - Bord Fishery (main channel) no dead fish were observed in the area. Numerous small fry observed in the shallows; the river was running faster than normal due to heavy rain overnight. No apparent signs of any pollution or tracks to the bankside to suggest pollution.

Thursday 28th August

IFI investigated report received of alleged suspicious activity at Roskeen Bridge.
Habitat inspections focusing on the areas u/stream and d/stream of Roskeen Bridge were completed and nothing of relevance detected.

Friday 29th August

IFI contacted Cork CoCo re. discharge at Fermoy; IFI attended site enroute to Clyda River for fish sample collection. Electrofishing boat survey conducted from c1PM to 6PM u/stream and d/stream of Roskeen Bridge in main channel to determine variations in variety or abundance re report of suspicious activity received 28th.

Saturday 30th August

It rained overnight Friday 29th and throughout most of Saturday; rivers rose quickly. Officers conducted habitat inspections at Killavullen at the main channel, at the Ross River, the Rahan State fishery and in the Mallow area at the town park and Clyda River. Some healthy adult trout and parr were observed in the area. Inspections were made at Longueville fishery on the main channel, at Kanturk town park (Allow River) and Kanturk Castle (Blue Pool area), at the Glen River (Banteer bridge), Clonmeen Stream and the Duvglasha at Lombardstown bridge. As the water was discoloured, officers were unable to observe instream activity.

Sunday 31st August

On Sunday the Awbeg River at Bridgetown Abbey was high & fast flowing but clear at the mouth. One dead fish was observed which appeared to be dead for a while. Three marked/distressed and one healthy trout parr were observed. Lots of trout fry in multiple different group sizes noted, all appeared healthy. No apparent signs of any pollution or tracks to the bankside to suggest pollution either. Officers noted lots of small foam on the surface of the main channel which was not there on previous visits.
Inspections were completed at Awbeg River (St Connaberry Bridge) where the river was higher and faster flowing than on previous visits, though the water was still clear. No dead trout were observed but lots of healthy trout parr, no marked/distressed trout spotted in the area. No apparent signs of any pollution or tracks to the bankside to suggest pollution. At Killavullen on the Blackwater main channel, conditions due to the rain made it extremely hard to see fish activity. One trout was spotted jumping and appeared to be marked/distressed. There were no dead fish spotted in the area; 1 heron observed. Officers spoke to anglers, and one mentioned pulling out

a 5-pound salmon that was dead and marked. The eyes were white & the fish had white stripes along it and crows had been eating bits of it. The same angler reported taking two dead trout from the river last week.

At the Ross River, Killavullen, 21 healthy trout parr were observed downstream of bridge. Before the mouth, three marked/distressed trout noted struggling to make their way upstream. At deep pool, Officers observed 12 trout parr with 9 of them healthy & three marked/distressed. Before the confluence, Officers observed about 18 trout parr with 2 of them being marked/distressed and the other 16 were healthy.

Where the river meets the Blackwater, Officers observed three individual groups of trout. One group of 12 trout contained 2 which appeared marked/distressed while the rest appeared healthy. A second group of c. 20 trout observed; 2 appeared marked/distressed and the others were healthy. In the third group of c.30-40 trout, 4 appeared to be marked/distressed and the rest were all healthy.

The river was faster and higher than previous visits, but it was still noticeably clear. No apparent signs of any pollution or tracks to the bankside to suggest pollution. Inspections at the Rahan State Fishery and Mallow Town Park area noted nothing of interest.

At the Clyda River (Clyda bridge lower) the flow was faster and higher than in previous days but still clear. No dead fish were observed. Large groups of between 70-90 fish noted every 8-10m, with only about 4-10 fish (5%-11%) from each group appearing marked/distressed. From the bridge to the mouth of the river, c. 600 to 700 healthy trout parr and young adults were observed, about 15 to 25 marked/distressed. One 15" trout observed without any markings but had 1 damaged eye and 2 large scratch marks on his back that was from a predator of some kind.

Monday 1st September

Habitat inspections continued: at Kanturk Town park (River Dalua) the river was extremely high and fast flowing with heavy discolouration, making it impossible to see any activity in the river. Foam observed on the surface in small little patches, likely due to the heavy rainfall over the last four days.

Inspections at other sites noted high, fast discoloured water throughout with one or two exceptions; the following sites were visited:

- Rathcool Blackwater main channel
- Glen River Banteer bridge lower
- Clonmeen Stream Aghawadda bridge
- Duvglasha River Lombardstown
- Longueville fishery Blackwater main channel
- Mallow Town area Blackwater main channel
- Rockforest stream
- Killavullen Blackwater main channel
- Awbeg river St Connaberry Bridge
- Millstream Ballyhooly

Tuesday 2nd September

Officers continued to inspect key locations, however conditions rendered instream observations difficult in most locations:

- Ballyhooly Blackwater main channel
- Awbeg River Bridgetown lower
- Awbeg River Bridgetown Abbey
- Awbeg river St Connaberry Bridge
- Killavullen Blackwater main channel
- Mallow town area blackwater main channel

At the Ross River Killavullen from the bridge to the main channel confluence, the river was unaffected by recent rainfall. Water was noticeably clear and had the same level as normal, however at the Blackwater confluence, upstream had been backfilled by Blackwater. A lot of the fish that had been downstream had now made it to the higher pools. The trout were larger adults up to 12" long, with some parr. Officers observed 100-120 trout and 90% appeared healthy. Below the confluence, fish were splashing around but Officers were unable to see them clearly. One dead trout noted in the river which looked as if it was dead 3/4 days- may have been pushed in from the main channel and died in Ross River.
At Carrigacunna Stream the stream was unaffected by recent rainfall up to the meeting of the Blackwater. Officers observed healthy trout parr in the stream. At the mouth the main channel had backfilled the stream and Officers were unable to observe anything.

Wednesday 3rd September

Inspections at Kanturk town park Dalua river, Rathcool on Blackwater main channel, Glen River (Banteer bridge lower), Longueville Fishery and Mallow racetrack were hampered by discoloured water. While flow and height were less than on previous visits as the effects of the rain reduced, it was still hard to observe instream, however Officers noted some healthy brown trout.
At the Clomeen stream (Aghawadda bridge) and Duvglasha River (Lombardstown bridge) the river was unaffected by the rainfall, clear and low levels, and no fish spotted in the area. Officers observed multiple small groups of parr and one small group fry.
The Clyda River (Clyda bridge lower) was inspected. It was higher than normal but clear, and only slightly affected by the recent rainfall. Officers observed a heron in the river, 2 cormorants and 1 duck where it meets the main channel. They came across large groups of trout parr of up to about 60 to 120 parr, every ten metres or so. In total, seeing somewhere between 700 to 800 with the majority being healthy; Officers observed around 10 to 25 marked/distressed trout.
In the Mallow town area and the Rahan State fishery and at Killavullen, (Awbeg River), St Connaberry Bridge, Ballyhooly, the main channel was affected by rainfall, and heavy discoloration that was slowly clearing as levels continued to drop. Visibility instream was poor. Between 20 to 30 trout parr spotted.

Thursday 4th September

Inspection of South Cregg stream, Fermoy reported it clear and unaffected by recent rain; a small number of healthy trout parr spotted. At the meeting point, the main channel was heavily discovered and high due to recent rainfall. Officers were unable to see activity in the river due to poor visibility instream. The Millstream at Ballyhooly was lightly coloured due to recent rainfall,

making it hard to see. Saw some shadows observed moving around at the meeting point with the main channel.
At Ballyhooly Castle, Blackwater main channel was high, with a fast flow and heavy discoloration due to recent rainfall making it difficult to see into the channel. The Grange River was clear with low water level. No fish observed. At the meeting point the main channel was heavily discoloured, and hard to see due to recent rainfall. The Blackwater main channel behind Mallow racetrack was high and heavily discoloured due to recent rainfall.

Friday 5th September

Inspections of the Blackwater at Colthurst Bridge, Rathcool reported heavy discoloration from rain earlier in week, but dropping off.
At Clonmeen Stream water was clear & low, with no fish life observed. At Duvglasha Stream, Lombardstown water was clear and back to normal levels for time of year, except at confluence with main channel. Officers observed 20 – 30 healthy and unmarked trout.
The Awbeg River at St. Connaberry Bridge was still discoloured; 20 healthy trout observed in the area. River was dropping back, one heron observed.

Monday 8th September

Inspection of at Kanturk town Park, Dalua river noted high and heavily discoloured due to recent rainfall. No fish were observed in the area. In the main channel at Ballymaquirke Bridge, water was high and heavily discoloured due to recent rainfall. No fish were observed in the area. At Mallow town area, Blackwater main channel water was high and heavily discoloured due to recent rainfall. No fish were observed in the area. One heron and numerous ducks in the area. One the Clyda River at Clyda bridge lower, water was high and heavily discoloured due to recent rainfall. No fish were observed in the area. Inspections post 8th September were hampered by generally high and discoloured water conditions.

Tuesday 9th September

1. At Ballyhooly Castle, Blackwater main channel water was high and heavily discoloured due to recent rainfall. No fish were observed in the area.
2. At the Grange Stream water was high and heavily discoloured due to recent rainfall. No fish were observed in the area.
3. Officers observed one cormorant downstream of the meeting point with the Blackwater main channel.
4. The Ross river Killavullen was high due to recent rainfall, but clear. 20 to 30 trout parr observed in stream. Two herons & two cormorants observed. At the meeting point with the main channel there was heavy discoloration because of recent rainfall.

5. The Rahan State fishery on Blackwater main channel, the water was high and heavily discoloured due to recent rainfall. No fish were observed in the area.
6. At Rock forest Stream, water was clear but high due to recent rainfall no fish observed. At the meeting point with the main channel, there was heavy discoloration due to the recent rainfall.
7. At the Clyda river (Clyda bridge lower) water was high and lightly discoloured due to rain; observation difficult; some fish shadows observed and one heron in the area.

Wednesday 10th September

1. At Ballyhooly, Blackwater main channel, water was high and heavily discoloured due to recent rainfall; no fish were observed in the area.
2. At the Awbeg river, Bridgetown Abbey waters were high and fast but clear. A small number of parr spotted swimming around. At the meeting point with the main channel, water was heavily discoloured due to the recent rainfall.
3. At the Awbeg river, Bridgetown lower, water was high and flowing faster due to recent rainfall. However, the water was clear, spotted small birds drinking and trout parr swimming around.
4. The Awbeg river at St Connaberry Bridge was high with light discoloration due to recent rainfall. Officers observed 15 to 25 healthy trout parr swimming around.
5. At Killavullen, Blackwater main channel, the water was high and heavily discoloured due to recent rainfall. Observations were difficult. Officers observed 1 salmon break the surface and noted one heron upstream of bridge.
6. In the Mallow town area, Blackwater main channel water was high and heavily discoloured due to recent rainfall. In the shallows, officers observed fry and 1 trout parr, one heron.
7. In the main channel at Longfield bridge water was high and heavily discolored due to recent rainfall. Instream observation was difficult and no fish were observed in the area.
8. In the main channel at Lombardstown bridge water was high and heavily discoloured due to recent rainfall. No fish were observed.
9. The Duvglasha river, Lombardstown, was unaffected by recent rainfall. Officers observed numbers of trout fry at the bridge.
10. The Clomeen stream at Aghawadda bridge was slightly raised but clear; no fish were observed. In the Glen river, Banteer lower, water was high and heavily discoloured due to recent rainfall; no fish were observed.

11. In the main channel at Ballymaquirke bridge, water was high and heavily discolored due to recent rainfall; no fish were observed.
12. At Rathcool, Blackwater main channel water was high and heavily discolored due to recent rainfall and as a result no fish were observed.

Saturday 13th September

Inspections continued at various locations, however water levels and discolouration made observations difficult:

1. Ballyhooly, Blackwater main channel -high and heavily discoloured due to recent rainfall.
2. Awbeg river, Bridgetown lower - high with light discoloration. Observed small number of trout parr swimming &1 cormorant.
3. Awbeg river, Bridgetown Abbey -high and heavily discoloured due to recent rainfall. Observed group of ducks.
4. Awbeg river, St Connaberry Bridge -mildly discoloured and high. Observed small birds drinking in river and about 10 trout parr.
5. Grange Stream - clear but high due to recent rainfall. No fish observed.
6. Killavullen, Blackwater main channel - high and heavily discoloured due to recent rainfall.
7. Ross River, Killavullen -high but clear. Observed about 10 trout parr swimming around and 2 herons in the area.
8. Rahan State fishery, Blackwater main channel- high and heavily discoloured due to recent rainfall.
9. Mallow town area- Blackwater main channel- high & heavily discoloured due to recent rain. 2 herons and a large group of ducks (40/50).
10. Clyda river, Clyda bridge lower- high and heavily discoloured due to recent rainfall.
11. Mallow Racetrack, Blackwater main channel - high and heavily discoloured due to recent rainfall.
12. Longfield bridge - high and heavily discoloured due to recent rainfall.
13. Longueville Fishery, Blackwater main channel - high and heavily discoloured due to recent rain.
14. Lombardstown bridge - high & heavily discoloured due to recent rainfall.
15. Duvglasha river Lombardstown - river was high but clear. Observed small number of trout parr and fry. At the meeting point with main channel, river was heavily discoloured due to backfill from flooded Blackwater.
16. Clomeen stream, Aghawadda bridge - clear and low with no signs of fish.

17. Glen river, Banteer bridge lower - high and heavily discoloured due to recent rainfall.
18. Dalua river, Kanturk town park - high and heavily discoloured due to recent rainfall.
19. Ballymaquirke bridge-high and heavily discoloured due to recent rainfall.
20. Rathcool, Blackwater main channel- high and heavily discoloured due to recent rainfall.

Sunday 14th September.

1. Kanturk town park Dalua river - high and heavily coloured due to the recent rainfall. 1 heron spotted in the area.
2. Rathcool, Blackwater main channel - high and heavily coloured due to the recent rainfall.
3. Ballymaquirke bridge - high and heavily coloured due to the recent rainfall.
4. Glen river, Banteer lower - high and heavily coloured due to the recent rainfall.
5. Clomeen stream, Aghawadda bridge - high but clear because of the recent rainfall. Multiple different small birds drinking out of stream.
6. Duvglasha river, Lombardstown - high but clear, observed no fish in the stream.
7. Lombardstown bridge - high and heavily coloured due to the recent rainfall.
8. Longueville fishery, Blackwater main channel - high and heavily coloured due to the recent rainfall.
9. Longfield bridge - high and heavily coloured due to the recent rainfall.
10. Clyda river, Clyda bridge lower - high and heavily coloured due to the recent rainfall.
11. Mallow town area, Blackwater main channel - high and heavily coloured due to the recent rainfall. 2 herons and 1 duck in area.
12. Rockforest Stream - high but clear due to recent rainfall. No fish observed.
13. Killavullen, Blackwater main channel - high and heavily coloured due to the recent rainfall.

APPENDIX 2: EPA INVESTIGATION REPORT

BLACKWATER FISH MORTALITIES AUGUST 2025

EPA investigation of discharges to water from EPA-regulated sites in the Blackwater Catchment

July / August 2025

For submission to Inland Fisheries Ireland

23 September 2025

Environmental Protection Agency
An Ghaiomhaireacht um Chaomhnú Comhshaoil

Executive Summary

Key Messages

- In August and September 2025, the EPA participated in a multi-agency investigation, into fish mortalities arising in the River Blackwater in August 2025. The EPA's role was to investigate whether there was any link between the fish mortalities and EPA-regulated sites, and to provide water quality expertise and data to the wider investigation. The findings of this report are intended to support and inform the activities of a multi-agency investigation into the Blackwater fish mortalities.

- The EPA:
    - Completed 41 site inspections,
    - Collected 40 samples,
    - Carried out five macroinvertebrate quality surveys and
    - Assessed operational practices and monitoring data associated from 10 industrial sites, 17 wastewater treatment facilities and four drinking water plants.

- Samples taken during June, July and August 2025 indicate the water in the River Blackwater catchment is predominantly at Good Status, with no detectable changes in water quality. There was no evidence of a chronic water quality problem before or after the fish mortalities. This suggests the cause of the mortalities was a short-term pollution event.

- Four of the 31 EPA-regulated sites investigated had discharges that were not compliant with licence requirements in July and August, and one small wastewater facility with a certificate of authorisation was operating above operational capacity. **The detailed analysis of these sites in July and August 2025 does not support a causal link between these activities and the serious fish mortalities in the River Blackwate**r.
- One of the four sites, North Cork Creameries (NCC) attracted significant public attention throughout the course of the investigation. Non-compliances were detected in the NCC wastewater discharge to the River Allow in the June to August period that were serious and entirely unacceptable. These issues were already the subject of significant ongoing enforcement activity by EPA. However, despite the seriousness and significance of licence breaches at NCC, the EPA's assessment, as set out in this report, does not support a causal link between the NCC's discharges into the River Allow and the fish mortalities in the Blackwater.

Introduction

The extensive fish mortalities that occurred on the Blackwater River in Cork during August 2025 are a serious harm to the local fish stocks and have had an unjust and negative impact on the local communities. The devastation of damaged carcasses of thousands of dead fish floating in the protected waters of the Blackwater or tangled in the weeds of any of our country's rivers or lakes are events that are not to be tolerated.

When such detrimental incidents occur as on the Blackwater and where causation can be established and the wrongdoer identified, then they should be held to account. It is incumbent on all the state agencies with responsibilities in relation to these incidents to do all in their power to identify the cause and the wrongdoer and to bring them to account. This can only be achieved by following and assessing the available evidence, data and science.

The EPA's primary role in the investigation into the fish mortalities on the Blackwater is to assess whether EPA-regulated sites within the region of interest could have been responsible through their water discharge activities, and to take action against any operator found to be at fault.

Investigation Overview

The EPA first became aware of the serious fishkill on the morning of 12 August 2025, and immediately mobilised resources in the Blackwater catchment to investigate whether any EPA-regulated site could have been a source of polluting material.

EPA has participated in a Multi-Agency group, established at the direction of the Minister and coordinated by Inland Fisheries Ireland (IFI), for the purposes of sharing data and expertise and supporting the investigation into the cause of the fish mortalities.

The EPA's investigation encompassed:

- The deployment of three teams of inspectors to EPA-regulated sites in the Mallow and Kanturk area within an hour of the EPA becoming aware of the fish mortalities. The inspections on August 12/13 found no evidence of spills or discharges linked to the incident.
- An immediate expansion of the investigation on 22 August to include a broader timeframe and geographic scope within the Blackwater catchment. This was in response to preliminary fish postmortem results from the Marine Institute, which indicated a pollution source was the likely cause of the fish damage in the week prior to 12 August.
- The completion of 41 inspections of thirty-one facilities in the catchment, the collection of 40 samples and an assessment of operational practices and monitoring data associated with 10 industrial sites, 17 wastewater treatment facilities and 4 drinking water plants.
- The completion of five invertebrate quality surveys carried out by the EPA in the Kanturk to Mallow area on 12 August and 1 and 2 September 2025.

Twenty seven of the thirty one EPA-regulated sites investigated had either no discharges or had compliant discharges during the weeks prior to the 12 August. However, four of the thirty-one

facilities investigated had discharges that were not compliant with licence requirements in July and August and one small wastewater facility with a certificate of authorisation was operating above operational capacity. These sites were North Cork Creameries (Licence Register No. P1051-01); Millstreet wastewater treatment plant (D0332-02); Bweeng & Environs wastewater treatment plant (D0438-01); Dromahane wastewater treatment plant (D0302-01) and Lombardstown Certificate of Authorisation (A0327-01). The EPA was already aware of the issues at four of these sites, with the breach at Millstreet detected during the investigation. All these issues remain the subject of on-going enforcement action which is separate and distinct from the investigation into the causality of the fish mortalities on the Blackwater.

Detailed Assessment

To determine if there was a causal link between the fish mortalities and EPA-regulated sites, the EPA assessed the relevant monitoring and operational data for the sites and the impact of the non-compliant discharges on receiving water quality in the period 28 July to 12 August.

The EPA, with the assistance of Local Authorities and Inland Fisheries Ireland, collects water quality data from the Blackwater River on an ongoing basis as part of the National Water Monitoring Programmes under the Water Framework Directive. The data include water chemistry, fish and macroinvertebrate samples. The data collected in 2024 in the area of the investigation of the River Blackwater catchment generally indicates the water quality in the catchment is at Good Status. The water chemistry and macroinvertebrate ecological samples taken during June, July and August 2025 indicate no change in water quality in the River Blackwater catchment.

In response to the current incident, the EPA also carried out specific macroinvertebrate ecological water quality sampling in the affected area following the fish mortalities and the results were again indicative of good or better ecological water quality. Overall, there is no evidence from the ecological water quality data that there was a chronic water quality problem in the Blackwater catchment, in advance of, or following the fish mortalities. This suggests that the cause of the fish mortalities was a short-term pollution event, which may have been localised in extent, and wasn't due to an underlying chronic water quality problem.

The detailed analysis and assessment of discharges from all thirty-one EPA-regulated sites, including industrial sites and Uisce Éireann controlled urban wastewater discharges and drinking water plants during July and August 2025, does not support a causal link between these activities and the serious fish mortalities found in the River Blackwater.

North Cork Creameries [Licence No. P1051-01]

One of the thirty-one EPA-regulated sites investigated by EPA in relation to the fish mortalities incident was North Cork Creameries (NCC) situated on the River Allow near Kanturk. While NCC was an important focus of that investigation it is specifically mentioned in this summary as it attracted significant public attention and speculation throughout the course of the current investigation. NCC is a site with a history of failure to consistently achieve compliance with its licence discharge conditions and was already the subject of significant enforcement activity by EPA prior to the incident, culminating in a prosecution which concluded in April 2025 resulting in convictions and the imposition of fines. EPA continues to monitor the licensed site closely.

Non-compliances were detected in the wastewater treatment plant discharge from NCC in the June to August period and were serious and entirely unacceptable. The licence breaches arose primarily due a lack of organised management or control of wastewater treatment plant activities, a lack of appropriate expertise to resolve significant operational issues, a failure to appropriately generate, manage, maintain and use critical data sets to inform corrective actions and a disregard for licence requirements and licence limits.

These compliance issues have not yet been fully resolved by the licensee, and the EPA is rigorously pursuing the enforcement of the licence breaches arising as a matter of priority and urgency, in line with its Compliance and Enforcement Policy. Offences related to breaches of EPA licences may be prosecuted summarily by the EPA or on indictment by the Director of Public Prosecutions (DPP). The EPA is giving full consideration to all such enforcement options available to it in respect of the non-compliances detected. These pre-existing issues are very serious matters that need to be resolved to restore consistent compliance and for the NCC to entertain the prospect of retaining its licence to operate into the future.

Despite the seriousness of these issues and the significance of licence breaches at NCC, the EPA's assessment as set out in this report, does not support a causal link between the NCC's discharges into the River Allow and the fish mortalities in the Blackwater (see Figure 1, page 12, for location of NCC relative to Blackwater). In summary, this reasoned conclusion is based on the following:

- **Yard Drainage:** The yard drainage on the site is configured to discharge only to the wastewater treatment plant. Therefore, all effluent and spills arising on site are discharged through the wastewater treatment plant.

- **Load to wastewater treatment plant:** An assessment of the plant's operational data demonstrates that while the site's wastewater treatment plant was performing very poorly during the first few weeks of August, it was consistently so. There was no evidence that a sudden catastrophic load to the river was discharged through the wastewater treatment plant in that period, or that any form of chemical discharge occurred. An assessment of the plant's operational data indicates that the occurrence of such an event in that period would be very unlikely.

- **Toxicity of discharge to fish:** Considering the types of material used on site, and the type of damage caused to the fish in the Blackwater (as described by the Marine Institute report), the key parameters of concern in relation to the NCC discharge is un-ionised ammonia and pH. The level of un-ionised ammonia that could have occurred in the river as a result of the NCC discharge in the weeks prior to the fish mortalities were below the threshold of 0.02mg/l NH_3 (i.e. below the level at which toxic effects could occur in fish and other aquatic species if subjected to chronic/longer term exposure). pH levels were stable and in compliance in the period investigated.

- **Proximity of site to dead fish:** No dead or marked fish in River Allow: The IFI also advised the public authorities investigating the fish mortalities that marked and dead fish were not observed in the River Allow, which is the river to which the NCC discharges, before, during or after the fish mortalities in the Blackwater were reported. In addition, there is a

stretch of 4 km river water between the NCC discharge point on the Allow and where the Allow enters the Blackwater.

The EPA regulates, through authorisation and enforcement, almost 900 industrial and waste facilities, over 1000 wastewater authorisations and approximately 750 drinking water treatment plants, with 1,773 inspections carried out across these sectors in 2024. All inspection and monitoring reports are available on the EPA website via an online portal called LEAP online. It does so without fear or favour in the interests of the public and in the protection of the environment. It does so by detailed assessment and by drawing reasoned conclusions based on the available evidence, data and science as it has done in this report. To do otherwise would be to draw conclusions based on speculation which would be both environmentally irresponsible and regulatorily negligent.

Conclusion

In conclusion, the detailed analysis and assessment of all thirty-one EPA authorised sites, including industrial sites and Uisce Éireann controlled urban wastewater discharges and drinking water plants during June, July and August 2025, does not support a causal link between these activities and the serious fish mortalities found in the River Blackwater.

Throughout the investigation, the EPA worked closely with IFI, Cork County Council and others, both bilaterally and through an IAG convened by the IFI for the purposes of the wider investigation. The EPA provided expertise and data in relation to discharges from regulated sites, water quality and invertebrate sampling in the Blackwater catchment.

The EPA also received videos and pertinent information from concerned members of the public in relation to discharges from EPA-regulated sites during the investigation period. The EPA acknowledges with gratitude the work and commitment of those concerned groups in contributing to the EPA's investigation. The issues raised by those members of the public have been considered in the EPA's assessment.

The findings of this report are intended to support and inform the activities of a multi-agency investigation into Blackwater fish mortalities.

Introduction

Context

The Environmental Protection Agency (EPA) is an independent statutory body established under the Environmental Protection Agency Act, 1992. The EPA's purpose is to protect, improve and restore our environment through regulation, scientific knowledge and working with others. This purpose reflects the EPA's three core roles – as an environmental regulator, as a key source of trusted scientific evidence and knowledge, and as a voice for the environment through our leadership and advocacy and our commitment to collaborating and partnering with others to deliver better environmental outcomes. The EPA has a wide range of responsibilities including:

Licensing and Enforcement

- Licensing of large industrial and waste sites and wastewater discharges. Licences issued by the EPA contain conditions that control the operations and limit emissions to protect human health and the environment, including the protection of aquatic habitats and their plant and animal life. Details of all licences issued by the EPA are available on the EPA's website.
- Enforcing the conditions of EPA licences and holding operators who breach their licences to account, using a range of legal powers up to and including prosecution, injunction and, ultimately, suspension or revocation of the licence. The EPA enforces these licences through an annual programme of inspections, monitoring and assessments.

- Enforcing Regulations that apply directly to certain sectors, e.g. drinking water quality is regulated by the European Union (Drinking water) Regulations 2023, S.I. no 99 of 2023.

When a licence application is received, the EPA assesses the potential impact of emissions from the site. The EPA's assessment approach incorporates best scientific principles and techniques, high quality environmental data and national and European legislative requirements. A licence, if granted, contains strict conditions and limits on how an activity must operate so as to protect the environment from pollution that might otherwise arise. Those sites that comply with licence requirements do not cause a negative impact on the environment beyond the site boundary.

The responsibility to comply with an EPA licence or specified Regulation lies solely with the licensee/regulated entity. In accordance with practice across all Member States, licensees must operate in accordance with the best practice and limits set out in the licence/relevant Regulation, report any incidents[2] or non-compliances arising to the EPA without delay and take swift corrective action to return to compliance. The EPA assesses the performance of licensees/regulated entities through an annual programme of inspections, monitoring and assessments.

[2] Incidents are events that are outside the normal range of operations. Regulated sites are required to minimise the risk of incidents occurring through preventative actions, training and incident detection and response practices.

While 97% of incidents rising at regulated sites since 2021 are minor in nature, they can on rare occasions result in releases to the environment where water pollution, and in some cases, fish mortalities occur. The EPA has a strong record in successfully investigating pollution events and holding those that don't comply to account through the legal system: Prosecutions and Penalties | Environmental Protection Agency. The EPA's Compliance and Enforcement Policy sets out the EPA's approach to enforcing environmental legislation to promote compliance and the principles and criteria underpinning enforcement decisions. It takes an approach that is outcomes focused and risk-based; is proportionate to the offence or non-compliance; and applies the polluter pays principle, so that the public can have confidence in the EPA's work to protect the environment.

Water quality monitoring and assessment

Under the Water Framework Directive (WFD), monitoring of Ireland's waterbodies is carried out by several public authorities. The water quality parameters and monitoring frequencies are specified in the WFD. The monitoring roles and responsibilities include:

- Local authorities: water chemistry monitoring
- EPA: ecological sampling including aquatic insects (macroinvertebrates), aquatic plants (macrophytes) and algae
- IFI: fish monitoring
- Waterways Ireland: water monitoring in canals

Information on the Water Framework Directive (WFD) monitoring programme is available on the EPA website and is viewable on EPA maps, with monitoring data published on the EPA data geoportal.

Every three years, the EPA assesses the condition of the water body status for our waters and publishes this information. The most recent assessment was the Water Quality in Ireland 2016-21 report. The next three year assessment and report will be published in Q4 2025.

The EPA also works with local authorities, government departments and other public agencies and bodies such as the Local Authority Waters Programme, to understand the pressures impacting on our waterways, inform policy and target the right measure in the right place. Further information is available at: Catchment science and management | Environmental Protection Agency

The EPA's role in relation to the Blackwater fish mortalities

As part of its enforcement activities, the EPA investigates EPA-regulated sites that may be implicated in water pollution incidents. There are a range of industrial sites, wastewater treatment plants and drinking water plants regulated by the EPA across the Blackwater Catchment. When the EPA became aware of fish mortalities in the River Blackwater and Clyda River around the Mallow area on the morning of 12 August, its initial focus was to determine if any of the EPA Regulated sites in the Mallow and Kanturk area could have contributed to the incident. On 22 August, the EPA expanded its investigation to a greater number of EPA regulated sites and

over a wider date range on foot of the Marine Institutes report that a waterborne irritant was likely to have caused or contributed to the fish mortalities in the days previous to 12 August.

The investigation encompassed site inspections, sampling of discharges and of river water upstream and downstream of discharges, data analysis and verification activities, supported by extensive expertise from across environmental disciplines in the EPA.

Ongoing engagement was maintained between the EPA, IFI, Cork County Council and others, both bilaterally and through the interagency group convened by the IFI for the purposes of the wider investigation, to share knowledge and expertise throughout the investigation. The EPA provided expertise and data in relation to discharges from regulated sites, water quality and invertebrate sampling in the Blackwater catchment.

This report outlines the scope and findings of the EPA's investigation into discharges from EPA regulated sites in the Blackwater catchment for the period 28 July 2025 to 12 August 2025. The assessment and conclusions as set out are intended to inform the wider multi-agency investigation, being led by the IFI, into the cause of fish mortalities in the Blackwater in August 2025.

Where non-compliant activities were detected at EPA-regulated sites, the EPA is rigorously pursuing these issues through appropriate enforcement actions and in accordance with the EPA's Compliance and Enforcement Policy.

EPA Actions

Focus of the investigation

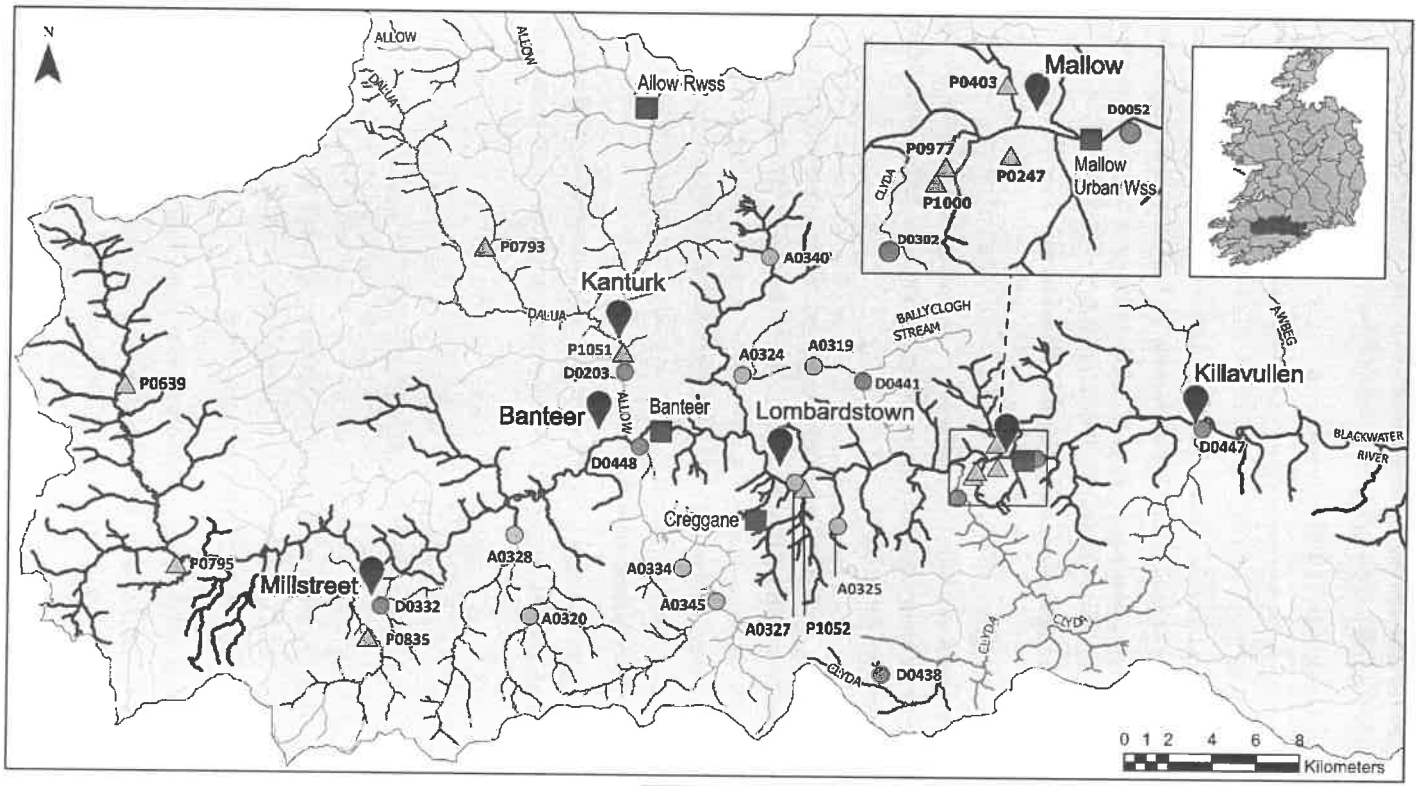
The EPA became aware of the fish mortalities in the River Blackwater and Clyda River around the Mallow area on the morning of 12 August. Three inspector teams were deployed to inspect EPA regulated facilities around Mallow and Kanturk, that could have contributed to the serious incident.

On 22 August, preliminary findings of the postmortem carried out by the Marine Institute on fish, signalled that a waterborne irritant was likely to have caused or contributed to the fish mortalities, and that exposure may have occurred in the days before 12 August. The EPA immediately expanded the investigation to include discharges from EPA-regulated sites that may have occurred over a wider date range and wider area in the Blackwater Catchment. The EPA focused their investigation in the upper Blackwater catchment on the following EPA regulated facilities (see Figure 1):

- 10 licensed industrial sites
- 17 wastewater discharges (eight of which hold wastewater discharge licences and nine which are smaller plants <500 population equivalent that hold certificates of authorisation)
- Two drinking water plants that use chemicals for coagulation and flocculation. A further two drinking water plants that abstract from tributaries of the Blackwater were inspected.

The list of these facilities is provided in appendix 1. A map of the location of the facilities is provided in Figure 1.

Figure 1: Location of EPA Regulated Facilities Inspected



Legend

- Towns
- Blackwater River
- All other rivers
- Blackwater Catchment
- Certs of Authorisations
- Waste Water Discharge Authorisations
- Industrial Facilities
- Drinking Water Treatment Plants

RegCD	Name
P0R35	ALPS Electric (Ireland) Limited
P0403	Dairygold Co-Operative Society Limited (Mallow)
P0793	Newmarket Co-Operative Creameries Limited
P0795	Mondelez Ireland Production Limited (Rathmore)
P0639	Gairdini
P0247	Micam Limited
P1000	Magh nAla Limited
P0977	Magh nAla Limited (Quarterlown)
P1051	North Cork Co-Op Creameries Limited
P1052	Dairygold Agri Business Limited

RegCD	Name
A0345	Ned
D0332	Millstreet & Environs
D0438	Rweeng and Environs
D0441	Ballyclough
A0319	Cecilstown & Environs
A0320	Kilcorney
D0203	Kanturk
D0302	Dromahane and Environs
A0324	Castlemagner

RegCD	Name
A0325	Glantane
A0327	Lombardstown & Environs
A0328	Rathcoole
A0334	Lyre
A0340	Kilbrin
D0447	Killavullen and Environs
D0448	Banteer and Environs
D0052	Mallow

Inspections, monitoring and assessment

The EPA enforces regulated facilities through site inspections, monitoring of licensed discharges and assessment of monitoring data. As part of the investigation, the EPA conducted 41 inspections at regulated facilities. As of 11 September, there were 19 inspections to 10 industrial facilities, 18 inspections to 17 wastewater treatment facilities and 4 to drinking water treatment plants. The list of the facilities inspected is provided in appendix 1. These inspections primarily focused on the operations of the facility and any discharges to water during the period of the fish mortalities. These inspection reports will be made available to the public via EPA's LEAP (Licence and Enforcement Access) online portal in due course.

As part of the initial investigation, samples were taken of discharges from two industrial sites on 12 August: Magh nAla Limited P1000-01 and NCC P1051-01. The EPA also sampled wastewater discharges from the Lombardstown urban wastewater discharge and downstream (d/s) of the Dromahane urban wastewater discharge on the Clyda River on 12 August and the discharge from Dromahane wastewater treatment plant on 13 August. The findings from these samples are summarised in Appendix 2. Full laboratory reports will be available on LEAP online in due course. Non-compliant results are discussed in more detail later in this report.

Additional EPA samples of discharges and receiving waters were taken at sites since 13 August (see Appendix 3). These samples are for the purpose of verifying compliance or pursuing compliance issues further. Enforcement action will be taken on any non-compliances detected, in line with normal enforcement procedures.

In addition to the EPA samples, the EPA regulated facilities were required to provide all monitoring data relevant to the time of the fish mortalities. The EPA assessed this monitoring data to determine compliance with licence requirements and to assess the significance of the discharges. Details of monitoring data from regulated facilities is provided in Appendix 4 and the assessment of the significance of the discharges in relation to the fish mortalities is provided in the *EPA Assessment of Water Quality* section below.

Regard was also had to the results of a fish postmortem analysis from the Marine Institute and fish tissue analysis arranged by the IFI, which did not highlight any chemical or substance of concern in the fish tissue.

Industrial

Ten EPA-licensed industrial sites were examined as part of the investigation as outlined in Appendix 1. Nine of the industrial sites either had no process effluent discharges during the period 28 July 2025 to 12 August 2025 or had compliant discharges to water. No evidence of spills or unauthorised emissions were found in relation to these sites.

One of the sites, NCC (Licence Register P1051-01) in Kanturk, had persistent non-compliances across the period investigated 28 July 2025 to 12 August 2025. The monitoring data for the period, and an assessment of that data is tabulated in the *EPA Assessment of Water Quality* section below.

North Cork Creameries

The NCC licence, P1051-01, and the associated Technical Amendment A of that licence, permits the licensee to discharge treated effluent to the River Allow via emission point SW1, provided that the discharge meets the emission limits set out in Schedule B.2 of the licence and other related conditions. The licensee is required to comply with the licence at all times, to monitor the discharge for the parameters and at the frequencies set out in the licence and to notify the EPA of any breaches of licence requirements.

Enforcement Record up to June 2025

The National Priority Sites (NPS) system allows the EPA to identify which industrial and waste-licensed sites should be prioritised for enforcement based on their environmental performance. It is used to target the EPA's enforcement effort at the poorest performing sites to drive improvements in environmental compliance. The list is published quarterly on a retrospective basis. National priority sites list | Environmental Protection Agency.

NCC was on the EPA's National Priority Sites (NPS) list in Q3 2021, Q2, Q3 and Q4 of 2022, all of 2023 and all of 2024. A range of compliance issues contributed to the licensee's compliance scores over time, including breaches in Emission Limit Values in the wastewater discharge and emissions to air, stormwater management and material containment. NCC was not on the NPS in Q1 or Q2 of 2025 as the compliance issues were progressed to an extent that the site's scores reduced to below the NPS threshold. These improvements included resolution of wastewater treatment issues so that compliant discharges were achieved; changes to storm water management, where containment of material storage and transfer areas was significantly improved; and the achievement of compliant emissions to air. The NPS list for Q3 2025 will be published in October 2025 and based on the issues found at NCC in recent months, it will feature on the Q3 NPS list.

Since NCC was granted it's licence, the EPA has carried out 46 inspections, with samples taken on 23 of those visits. EPA brought a case against NCC to the District Court where, on 22nd February 2024, NCC pleaded guilty to eight charges of breaching conditions in 2022 related to ammonia and total nitrogen emission limit value exceedances in wastewater discharges, the unauthorised release of contaminated stormwater, non-compliant material containment, and exceedances of air-related emission limit values. Total fines of €11,000 were awarded during sentencing on 29 April 2025.

Wastewater treatment plant incident June 2025

Ten complaints were received in 2025 to date related to discharges to water from NCC, beginning on 21 June 2025 when reports were received of a sludgy discharge into the River Allow from the site. IFI were also notified at the time. The incident was caused when, during cleaning of the whey silo, a plug of whey material was discharged to the wastewater treatment plant. The volume and concentration of the whey shocked the biological system in the treatment plant, reducing the effectiveness of the plant and giving rise to non-compliant discharges. While the discharge was shut off on the morning of 22 June, EPA inspectors, who visited the site on 23 June, noted sewage fungus on plants and rocks in the River Allow around the discharge point, and a strong foul odour in the area at the time.

Since then, the EPA has inspected the site 20 times and held five compliance meetings with the licensee. The EPA opened Compliance Investigation CI002209 on 24 June 2025 to track and enforce the corrective actions required to resolve the problems identified. NCC took measures to bring discharges back into compliance, including an increase in aeration capabilities and the diversion of effluent to landspreading[3].

The licensee monitors the wastewater treatment plant and its discharges, in a number of different ways:

- An online SCADA[4] system provides continuous data on flow, pH and temperature at the discharge, and dissolved oxygen in the aeration tank point on a 24-hour basis.

- Each morning, flow meter readings are taken directly by the licensee for flow (at the inlet to the balance tank and at the discharge point), pH and temperature in the discharge and dissolved oxygen at the aeration tank. A daily record is maintained. The sludge settlement rate is also recorded.

- A composite sampler takes a proportionate sample from the discharge flow throughout the day. This sample therefore provides a representation of the quality of the effluent across a 24 hour period.

- Grab samples of the discharge provides data on the quality of the effluent at a given point in time.

The wastewater treatment plant operational data assessed on site confirms that the plant has operated poorly across July and August, with below optimal conditions being achieved through the various stages of treatment e.g. low dissolved oxygen in the aeration basin; poor sludge settlement rates in the clarifier.

The monitoring data (as summarised in Appendix 4), demonstrates that while compliance was restored by 2 July 2025, breaches of the licence occurred for several parameters on various dates throughout the rest of July and into August. The most frequent exceedances were for BOD and total ammonia:

- Exceedances of the BOD Emission Limit Value (ELV) of 6mg/l occurred on twenty dates with levels ranging between 7.5mg/l and 33.2 mg/l.
- The total ammonia ELV of 0.5mg/l was breached on 22 dates, with levels ranging between 0.56mg/l and 26mg/l.

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[3] The NCC licence permits the licensee to send organic fertiliser off-site for land spreading, subject to conditions. The recovery of organic material by land spreading is regulated under the European Union (Good Agricultural Practice for Protection of Waters) Regulations 2022 (as amended) by the Department of Agriculture, Food and the Marine (DAFM) and Local Authorities.

[4] SCADA (Supervisor Control and Data Acquisition) is an online graphical interface that shows conditions across the wastewater treatment plant on a continuous basis on any given day. It provides real-time data collection and control and is used for managing and monitoring the waste water treatment processes.

It is noted that no evidence of a chemical spill or chemical discharge at NCC was identified during the investigation. The main chemicals of concern at the site are cleaning products and the potential for petroleum products to leak from vehicles. There was no visible evidence or reports of petroleum/oil spills on or from the site. pH levels in the discharge were within licence limits across all of July and up to 12 August (indicating that nothing caustic or acidic was discharged). In addition, COD levels were largely compliant with the ELV of 75mg/l across July and early August, except for:

- 1 August, where COD concentrations reached 101mg/l
- 12 August, where COD levels reached 120 mg/l

These COD levels, while not in compliance with the licence limits, are within the expected range for treated effluent from dairies[5]. Considering the other parameters that were elevated on those same dates, e.g. suspended solids and nutrients, the elevated COD more likely represents excess organic material due to the poor treatment process, rather than strong chemicals being in the discharge.

A spill of sludge from the site to the riverbank, upstream of SW1, was reported by complainants on the 1 August to the EPA, having been first noted by the complainants on the 30 July. EPA inspectors investigated the report and found evidence of the sludge on the grass on the riverbank. After thorough investigation of the area affected, the inspectors noted that while this area floods when river levels are high, the river levels had been low over that period and the bank was above the water level at the time of the inspection. Inspectors noted the sludge texture, its patterns in the grass and the topography of the river bank in that area (slightly bowl shaped). They found no evidence of a pathway whereby the sludge might have reached the water. The release of sludge onto the riverbank, and the lack of report from the licensee that a release occurred, breached licence requirements. The licensee was instructed to investigate the cause and remediate the area. The cause was identified as being due to spills occurring during the process of transferring sludge to tankers. The affected area has been cleaned up and the sludge transfer practices have been changed to prevent further spills from occurring.

The monitoring data from the licensee also demonstrates that a composite sample for 5 August (9am of 5th to 9am on 6th August) was not tested by the licensee in accordance with licence requirements. This is a further breach of the licence. To ascertain conditions in the waste water treatment plant on that date and whether a significant or unusual discharge is likely to have occurred on that date, the EPA examined the SCADA[6] data for the 5 August, wastewater treatment plant operational records, the discharge monitoring data for 4 and 6 August and

[5] COMMISSION IMPLEMENTING DECISION (EU) 2019/2031 of 12 November 2019 establishing best available techniques (BAT) conclusions for the food, drink and milk industries, under Directive 2010/75/EU of the European Parliament and of the Council, specifies typical ranges for COD in food and drink effluent discharges are 25-100mg/l, with the upper end of the range being 125 mg/l for dairy plants eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019D2031

[6] SCADA (Supervisor Control and Data Acquisition) is an online graphical interface that shows conditions across the wastewater treatment plant on a continuous basis on any given day. It provides real-time data collection and control and is us used for managing and monitoring the waste water treatment processes.

ambient monitoring data in the river upstream and downstream of the treatment plant from the 6 August.

The wastewater treatment plant, while not operating optimally, showed no unusual activity on the 5th compared to the days before and shortly after. pH levels remained steady and within range, demonstrating no unusual caustic or acidic discharges in that period. Flow through the discharge point during that period was sporadic (stopped and started on various occasions, as it had for much of the days previously) but was at relatively normal levels compared to the days and weeks around that period and was in compliance with licence flow limits.

Wastewater treatment plants rely on a biological process to treat effluent. By its nature and based on extensive experience of dairy wastewater treatment plants, sudden peaks in parameters like ammonia in a wastewater which could occur due to shock loads to the plant, take several days to reduce to previous levels, even in modern plants where significant intervention is made. Ammonium on 4 August was measured at 16.8mg/l. This is equivalent to approximately 13mg/l total ammonia. On 6 August, total ammonia in the discharge was 5.2mg/l. If a peak significantly above 13mg/l occurred on 5 August, it is highly unlikely that the concentration could have dropped to 5.2mg/l in the space of one day, especially in a plant like that at NCC, where the infrastructure is old. Based on experience of other dairy plants where wastewater treatment plants have failed, ammonia levels in the discharge in worst case scenario circumstances, rarely exceed 25mg/l. Therefore it is considered that any peak in ammonia in the discharge that could have arisen on the 5th was highly unlikely to have exceeded the maximum ammonia peak detected in the plant to date (i.e. 26mg/l, 12 August 2025). The impact of this maximum total ammonia peak is discussed further later in this report.

The drainage on the site is currently configured so that all effluent, spills and storm water arising on site can only discharge from the site via the wastewater treatment plant. COD levels in the discharge on the 4th and 6th were both at 44mg/l. As noted for ammonia, given the biological processes in the plant, any sudden peak in COD on 5 August would take several days to return to levels of 44mg/l.

Videos submitted by complainants for that period, showing the flow from the discharge points over a range of dates, including the 5th, 6th, and 9th August, were also examined as part of this assessment. These complainants did not flag dead or distressed fish in the River Allow in the period before, during or after that period. IFI have also confirmed not receiving reports or seeing evidence of dead or distressed fish in the Allow.

In addition, EPA grab samples were taken from the River Allow on the 6 August between 12:45 and 13:10, at a time when NCC wasn't discharging. These samples indicate total ammonia concentrations were < 0.02 mg/l N upstream and downstream of the plant, and that there was overall good water quality in the River Allow. By way of comparison, this concentration in the river is below the 95%ile[7] Environmental Quality Standard for total ammonia of 0.14 mg/l N in good

[7] To maintain good water quality in relation to Total Ammonia, the Good Status EQS requires the annual average concentration to be less than 0.065 mg/l N and the concentration should be lower than 0.14 mg/l N 95% of the time. The 95%ile EQS is particularly relevant when considering acute impacts on rivers, complimenting the annual average EQS, which identifies chronic long term water quality issues.

status waters. The concrete outfall pipe structure traverses the River Allow at a diagonal, creating a bay area on the downstream side of the pipe. Discharged effluent can backwash into this bay as a result of flow dynamics caused by the outfall structure. Samples taken in the bay on 6 August had 0.077mg/l total ammonia, which is below the 95%ile good status Environmental Quality Standard for total ammonia of 0.14 mg/l N.

When the EPA attended site on 12 August at 13:13, the licensee had already ceased the discharge at SW1 at 10am due to elevated ammonia levels in the discharge. The EPA took samples at 13:38 and 13:48, one of which, a grab sample from the v-notch weir, where effluent was trickling out, had an ammonia level of 26mg/l. It is unlikely that this is representative of the discharge across the whole day but has been assumed so for the purposes of the assessment set out later in this report. A split of the sites composite sample on that day (covering a sample period of 9am 11 August to 9am 12 August) was also taken, and was found to have ammonia levels of 15mg/l. While the licensee resumed discharging from the plant periodically since that date, a consistently compliant discharge under normal operating conditions has not yet been demonstrated due to continued problems in the wastewater treatment plant process. Discharges from SW1 are being monitored by the EPA.

Significant non-compliances have been detected in relation to the discharges from the NCC wastewater treatment plant. The licensee's progress in resolving the issues arising has been wholly unsatisfactory due to disorganised management and oversight of the operation of the treatment plant, a lack of expertise to appropriately bring the plant back on line and a lack of regard for compliance with licence requirements. The EPA is actively taking enforcement actions in relation to the non-compliant discharges that have occurred and ongoing environmental management issues, in line with its Compliance and Enforcement Policy. Offences related to breaches of EPA licences may be prosecuted summarily by the EPA or on indictment by the DPP. The EPA is giving full consideration to all such enforcement options available to it in respect of the non-compliances detected.

While some improvements have been made with regard to the oversight of the plant since the 1 September, consistent control and operation of the plant has not yet been demonstrated. The Compliance Investigation CI002209 into effluent quality at NCC will remain open until compliance is fully restored.

Wastewater

Seventeen of Uisce Éireann's Wastewater Treatment Plants (WWTPs) around the Blackwater River and tributaries were the focus of the EPA's investigations. These are identified in Figure 1 above. Eight of the seventeen treatment plants are licensed as their treatment capacities are from areas with population equivalents of greater than 500. The remaining nine were much smaller plants and had certificates of authorisations, as their treatment capacities are from areas with population equivalents of less than 500. Discharges from certificates of authorisation are relatively low volume discharges compared to larger treatment plants due to the volume of wastewater treated.

Uisce Éireann informed the EPA that here were no spillages during the period associated with the fish mortalities. EPA inspections at the time of the fish mortalities and after then, found no evidence of spillages at wastewater treatment facilities. Details of the plants inspected are in appendix 1.

From the effluent monitoring data completed by Uisce Éireann in July and August for the 8 licensed facilities, 5 complied with licence limits and three (Bweeng WWTP, Dromahane WWTP and Millstreet WWTP) had discharges that were not in compliance with their emission limit values (ELVs). The EPA has ongoing enforcement activities in relation to these facilities.

- **Bweeng WWTP**
  The wastewater discharge from Bweeng WWTP is to a tributary which flows into the Clyda River, a tributary of the Blackwater River. The discharge from the WWTP is approximately 14.5 km upstream from the confluence with the Blackwater River. Uisce Éireann provided the EPA with their latest analysis of wastewater effluent from Bweeng WWTP, taken on 8 July, 2025. Suspended solids and total ammonia were non-compliant with the WWDL(Wastewater discharge licence) ELVs. The EPA inspected Bweeng wastewater treatment plant on 4 September and samples were taken of the discharge and upstream and downstream of the discharge. The plant was found to be non-compliant with Ammonia on this date. The downstream ambient results indicate that the receiving water quality met good surface water quality standards for rivers. The results of this analysis are provided in appendix 4. Bweeng needs infrastructural improvements to ensure the WWTP can meet the ELVs in their licence. The EPA opened a Compliance Investigation in November 2018 in relation to recurring non compliances at the plant and the need for infrastructural upgrades. Uisce Éireann has been requested to confirm timelines for the plant improvement works.

- **Dromahane WWTP**,
  The wastewater discharge from Dromahane WWTP is to the Clyda River a tributary of the Blackwater River which is located approximately 2.25km upstream of its confluence with the River Blackwater. The latest treated wastewater samples from Dromahane WWTP taken by Uisce Éireann for analysis were taken on the 8 July 2025, 13 August 2025, 14 August 2025 and the 18 August 2025. All samples taken show exceedances of ELVs, excluding Ammonia. In addition to sampling the final discharge, Uisce Éireann sampled the Clyda River upstream and downstream of the wastewater discharge from the WWTP on 14 August, 2025. The downstream results indicate that the receiving water quality met the environmental surface water quality standards for rivers. The EPA has inspected the site three times between 2024 and 2025. The EPA sampled the discharge on 13 August and 3 September 2025, and discharges show exceedances of ELVs, excluding Ammonia. The EPA sampled downstream of the discharge on 12 August and upstream and downstream on 3 September. The downstream results indicate that the receiving water quality met the environmental surface water quality standards for rivers. The results of this analysis are provided in appendix 4. The EPA opened a Compliance Investigation in

relation to this issue on 22/09/2025. Operational improvements need to be implemented at the plant by Uisce Éireann to ensure the WWTP can meet the ELVs.

- **Millstreet WWTP**
  The wastewater discharge from Millstreet WWTP is to the Finnow River, a tributary of the Blackwater River which is located approximately 2km u/s of is confluence with the River Blackwater. The latest treated wastewater samples from Millstreet WWTP taken by Uisce Éireann for analysis were taken on 22 July 2025 and 19 August 2025. The sample taken in July was compliant. The sample from August for Total Ammonia exceeded the WWDL ELVs. In addition to sampling the final discharge, Uisce Éireann sampled the Finnow River upstream and downstream (1.5km) of the wastewater discharge from the WWTP on 19 August 2025. The downstream results indicate that the receiving water quality met the environmental surface water quality standards for rivers. The results of this analysis are provided in appendix 4. Millstreet WWTP has a generally good compliance record but the August breach of an ELV is currently being investigated. The EPA inspected the plant on 9 September. Uisce Éireann sampled the primary discharge on 9 September. The EPA took ambient samples upstream and downstream of the discharge location on that date. The downstream results indicate that the receiving water quality met the environmental surface water quality standards for rivers.

Certs of Authorisations

Eight of the nine Certificate of Authorisations discharge to tributaries of the Blackwater River at distances of 2km+ upstream of the Blackwater River main channel. No dead fish were reported in these tributaries' u/s of their confluence with the Blackwater River. No incidents were reported by Uisce Éireann at these eight Certificate of Authorisation WWTPs plants in 2025. The EPA inspected these eight certificates of authorisation and no issues of concern in relation to the fish mortalities were identified. One of the nine certificates of authorisation (Lombardstown) discharges to the main Blackwater river and is operating above its design capacity.

- **Lombardstown**

  Lombardstown WWTP consists of a septic tank system providing primary treatment and it is operating above its treatment capacity. It discharges directly to the Blackwater channel. The EPA inspected Lombardstown in April and August 2025. The plant has been identified by the EPA on its Priority Action List. The EPA Priority Action List is a list of priority urban areas where improvements in treatment are needed most and will bring the greatest benefits. Uisce Éireann has reported that it proposes to upgrade the WWTP. The latest treated wastewater samples from Lombardstown WWTP were taken by the EPA and are provided in appendix 4.

A full assessment of the discharges from wastewater treatment facilities in relation to the fish mortalities is provided in in the *EPA Assessment of Water Quality* section below.

Drinking water

The EPA considered all the drinking water treatment plants in the Blackwater catchment and their potential to have contributed to fish mortalities. There were 38 drinking water abstractions in the Blackwater catchment. Only two of these drinking water treatment plants, Freemount (Allow Regional) and Mallow, abstract from the river and use chemicals for coagulation, flocculation and clarification (CFC), and discharge supernatant to the receiving waters as part of their treatment processes. These two plants were the focus of the EPA investigation in relation to drinking water. The remainder of the sites don't use CFC processes, don't have the associated chemicals and don't discharge supernatant to rivers. There were no environmental incidents reported at these 38 plants in 2025.

- **Freemount (Allow Regional)**
  There was a chemical spill at the Freemount plant in June 2024 which resulted in ~~a~~ fish mortalities. The spillage occurred due to a break in the pipework resulting in approximately 3,000 litres of polyaluminium chloride (PAC) entering the storm water drain and discharging to the River Allow. Post this incident, the EPA requested Uisce Éireann to complete assessments of the risk of chemical spillages to receiving water bodies from all their drinking water plants. Detailed risk assessments were completed at all sites by the end of 2024 and risk mitigations, such as bunded storage of chemicals, are being implemented at these sites, prioritising plants considered to be of higher risks.

  Uisce Éireann confirmed that there were no incidents at the plant in 2025. The raw water monitoring data was within normal ranges and treated drinking water complied with the drinking water standards. The EPA inspected the plant on 27 August and no issues were identified that could have contributed to the fish mortalities. Upgrade works have been completed at the plant in relation to removing the risk of any chemical spill to the environment, post the incident in 2024. There is an inhibit on the supernatant discharge at Freemount water treatment plant, if it reaches 10 NTU (Nephelometric Turbidity units i.e. its level of cloudiness), which means that only clear supernatant is allowed to discharge. The supernatant discharge was clear on the day of the inspection.

- **Mallow**
  Uisce Éireann confirmed that there were no incidents at the plant in 2025. The raw water monitoring data was within normal ranges and treated drinking water complied with the drinking water standards. The EPA inspected the plant on 27 August and no issues were identified that could have contributed to the fish mortalities. The supernatant is discharged manually into the River Blackwater, but only after staff check that it's below the turbidity limit of 10 NTU. Daily records from 1 August show all readings were within this limit. No discharge was happening during the EPA visit.

The EPA completed two further inspections on 4 September to two smaller drinking water plants (Banteer and Cregane/Glantane) and no issues of concern were identified.

EPA Assessment of WATER QUALITY

Catchment Context

On the morning of 12 August 2025, the EPA became aware that marked and dead fish were observed on the main channel of the River Blackwater between Blackwater (Munster)_090 and Blackwater (Munster)_160. Marked and dead fish were also observed along the reach of Clyda_030. Inland Fisheries Ireland (IFI) have advised the public authorities investigating the fish mortalities that observations of marked and dead fish in the other tributaries to the River Blackwater are thought to be the result of fish trying to escape from the main channel of the River Blackwater. This may also be the case with the Clyda River, although the IFI have indicated marked fish were observed further up the Clyda River (@~2.5km from the confluence with the River Blackwater).

No marked or dead fish were reported to have been observed in the main River Blackwater upstream of Blackwater (Munster)_090, or in the Glen River or River Allow tributaries to Blackwater (Munster)_090. However, it is possible that the cause of the fish mortalities was further upstream than the location where the marked and dead fish were observed and occurred prior to when notifications were made about the fish mortalities.

Therefore, this water quality assessment has focused on collation of available water quality data for the months of June-August 2025 for the River Blackwater, from Blackwater (Munster)__070 through to Blackwater (Munster)_160 which includes the reaches from Millstreet to Killavullen, the Glen River, the River Allow and the Clyda River.

Water quality and flow conditions

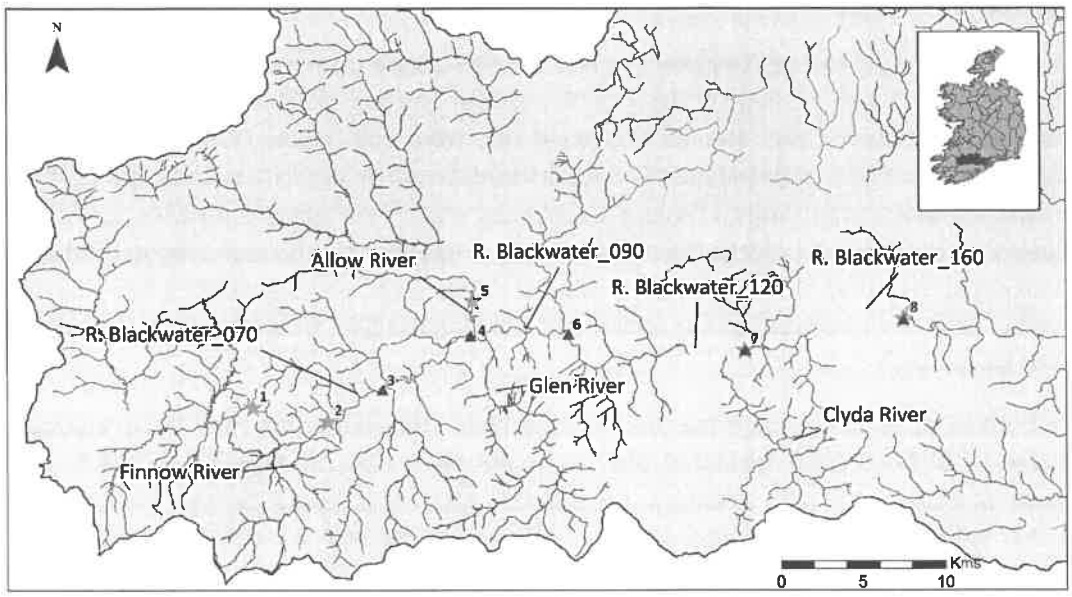
Background Water Quality

Existing EPA water quality data from the Water Framework Directive (WFD) National Water Quality Monitoring Programme for 2024 in the area of focus on the River Blackwater has been reviewed. The WFD water quality classification scheme is used to assign each waterbody into one of five water quality classes ranging from High Ecological Status, through Good, Moderate and Poor, to Bad Ecological Status[8]. The data for the Blackwater, as shown in Figure 2, indicates that:

- Blackwater (Munster)_070 to Blackwater (Munster)_100 has Good Ecological Status
- Blackwater (Munster)_110 has High Ecological Status
- Blackwater (Munster)_120 has Moderate Ecological Status.
- Blackwater (Munster)_130 to Blackwater (Munster)_160 has Good Ecological Status
- Blackwater (Munster)_160 has Moderate Ecological Status
- Glen (Banteer)_030 has High Ecological Status
- Allow_070 has Good Ecological Status
- Clyda_030 has Good Ecological Status

[8] https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/assessing-river-water-quality---epa-fact-sheet.php

Figure 2: Water Quality and WFD Monitoring Locations in the Blackwater Catchment



Legend

Water Quality Status (2016-2021)

- High
- Good
- Moderate
- Poor
- Bad

▲ Monitoring Stations

★ Hydrometric Gauges

Map ID	Monitoring Location
1	Duarrigle
2	Keale Br
3	Colthurst Br
4	Ballymaquirk Br
5	Riverview
6	Roskeen Br
7	Mallow Railway Br
8	Killavullen Br

2025 EPA Ecological Monitoring

As part of the national WFD monitoring programme, ecological macroinvertebrate[9] monitoring was carried out in July and August 2025 in the Blackwater catchment. In September, the IFI requested additional ecological macroinvertebrate monitoring at certain locations on the River Allow and River Blackwater. In summary, ecological macroinvertebrate monitoring and assessment was carried out in 2025 as follows:

- Allow_070 (sampled September)
- Blackwater (Munster)__090 (sampled September)
- Blackwater (Munster)__120 (sampled August)
- Blackwater (Munster)__140 (sampled July)
- Blackwater (Munster)__150 (sampled July)

While these data have not been fully processed to date, an initial review of this data confirms no change in water quality in these river stretches from that observed in 2024.

[9] Aquatic invertebrates assist in demonstrating the quality of the river water. The aquatic invertebrates in a sample are divided into 5 'Indicator Groups' based on their sensitivity to pollution. The greater the abundance of sensitive species in the sample, the better the water quality.

2025 WFD Water Chemistry Monitoring

Annually, between 4 and 8 river chemistry samples are taken from monitored waterbodies by local authorities and subsequently analysed by the EPA to meet the requirements of the WFD. Between June and August 2025, chemistry samples were taken at the following locations in the area of focus.

- Colthurst Br (Blackwater (Munster)_070) - July
- Ballymaquirk Br (Blackwater (Munster)_080) - July
- Roskeen Br (Blackwater (Munster)_090) - July
- Rly Br, Mallow (Blackwater (Munster)_120) - July
- Killavullen Br (Blackwater (Munster)_160) – June and August

The available chemistry analysis data are for parameters that are indicators of the general physical condition of a river (e.g. temperature, pH, oxygen state and nutrient enrichment). Slightly elevated BOD is noted for all waterbodies in the River Blackwater upstream of Mallow in July, although all other parameters were within the typical range for the parameter and were indicative of Good water quality. There was no discernible change in water quality for Blackwater (Munster)_160 between the June and August sample.

Table 1: WFD River Chemistry Data for June, July and August in the River Blackwater Catchment

Location	Colthurst Br	Ballymaquirk Br	Roskeen Br	Rly Br, Mallow	Killavullen Br	Killavullen Br
Station Code	RS18B020900	RS18B021000	RS18B021200	RS18B021500	RS18B021900	RS18B021900
Waterbody name	Blackwater (Munster)_070	Blackwater (Munster)_080	Blackwater (Munster)_090	Blackwater (Munster)_120	Blackwater (Munster)_160	Blackwater (Munster)_160
Date	16-Jul-25	16-Jul-25	16-Jul-25	16-Jul-25	25-Jun-25	20-Aug-25
Alkalinity (mg/l)	17	19	33	47	107	108
Ammonia (mg/l)	0.033	0.033	0.036	<0.02	<0.02	0.02
BOD (mg/l)	3.7	3.6	3.6	3.3	1.6	<1
Chloride (mg/l)	14.5	14.4	17.1	19.4	26.7	27.5
Conductivity @25'C (uS/cm)	93	97	131	170	323	332
Dissolved Oxygen (mg/l)	9	9.5	9.2	8.8	10.1	9.4
Dissolved Oxygen (%Sat)	93	93	92	88	108	95
Hardness (mg/l)	22	25	37	51	121	123
o-Phosphate (mg/l)	0.024	0.02	0.019	0.013	0.016	0.012
pH (pH unit)	6.6	6.5	6.9	7.2	7.8	7.6
Suspended Solids (mg/l)	not analysed	not analysed	not analysed	not analysed	<4	<4
Temperature (°C)	16.5	14.5	14.9	15.6	18.4	15.6
Total Oxidised Nitrogen (mg/l)	0.49	0.57	0.81	1.1	2.4	2
True Colour (mg/l)	213	216	182	106	21	16

Cork County Council has indicated that the analysis from the additional water samples they took on 12 / 13 August on the River Blackwater in Mallow and on the Clyda River had water quality parameter concentrations that were comparable to samples taken previously and were indicative of good water quality.

Rainfall, river flow and water level

Met Éireann data for Moore Park (approx. 40 km downstream of the area of focus) indicates that rainfall in July and August was below the long-term average. During the first two weeks in August there were only two days with more than 0.5mm of rainfall at Moore Park.

The low rainfall resulted in lower water levels and flows in the River Blackwater catchment, with the Local Authority-EPA Duarrigle hydrometric gauge (Blackwater (Munster)_060) and the OPWs Keale Bridge (Blackwater (Munster)_070), Mallow Railway Bridge (Blackwater (Munster)_120) and Killavullen Bridge (Blackwater (Munster)_160) hydrometric gauges experiencing low flow 95%ile conditions during the second week of August. Several water level gauges on the River Blackwater also had corresponding low water levels.

The Local Authority-EPA Riverview hydrometric gauge on the River Allow (Allow_070) recorded 90%ile flow conditions during the second week of August.

OPW hydrometric gauge water temperature data at Keale Bridge had daily mean water temperatures above 18 degrees during the second week of August, with daily mean water temperatures exceeding 19 degrees at Lombardstown Bridge (Blackwater (Munster)_100), Mallow Railway Bridge and Killavullen Bridge on some days during the second week of August. OPW hydrometric gauge water temperature data for the Glen River indicated daily mean temperatures of ~15 degrees, whereas the River Allow and Clyda River both had daily mean temperatures of ~18 degrees during the second week of August.

Table 2: River Flow Data for July and August in the River Blackwater Catchment

Date	Daily mean flow (m^3/s)				
	Measured flow on R. Blackwater u/s R. Finnow confluence @ Duarrigle hydrometric gauge	Measured flow on R. Blackwater d/s R. Finnow confluence @ Keale Br hydrometric gauge	Measured flow on R. Blackwater in Mallow @ Mallow Railway Br hydrometric gauge	Measured flow on R. Blackwater d/s Mallow @ Killavullen hydrometric gauge[10]	Measured flow on R. Allow d/s Kanturk @ Riverview hydrometric gauge
	Blackwater	Blackwater	Blackwater	Blackwater	Allow
	Catchment Area - 250 km^2	Catchment Area - 322 km^2	Catchment Area - 1178 km^2	Catchment Area - 1258 km^2	Catchment Area - 307 km^2
95%ile flow	0.921	1.279	4.888	4.797	0.697
21-Jul	7.94	10.02	52.45	50.76	33.32
22-Jul	4.26	4.72	19.25	23.39	9.43
23-Jul	3.5	3.90	14.6	16.53	7.39
24-Jul	2.52	2.90	11.08	12.98	5.16
25-Jul	1.96	2.31	8.95	9.70	3.89
26-Jul	1.66	2.01	7.89	8.01	3.26
27-Jul	1.42	1.78	7.13	6.96	2.79
28-Jul	1.34	1.67	6.65	6.31	2.48
29-Jul	1.59	1.82	6.42	6.00	2.3
30-Jul	1.69	2.02	6.51	6.02	2.12
31-Jul	1.72	1.90	6.16	5.72	1.96
01-Aug	1.63	1.93	6.11	5.65	1.80
02-Aug	1.23	1.53	5.58	5.23	1.63
03-Aug	1.12	1.40	5.21	4.77	1.53
04-Aug	2.17	2.17	5.18	4.65	1.66
05-Aug	1.88	2.21	6.49	5.95	1.64
06-Aug	1.20	1.48	5.25	5.07	1.35
07-Aug	1.09	1.36	4.84	4.44	1.29
08-Aug	0.97	1.24	4.58	4.13	1.19
09-Aug	0.88	1.14	4.28	3.86	1.10
10-Aug	0.86	1.12	4.15	3.71	1.05
11-Aug	0.82	1.08	4.07	3.63	0.99
12-Aug	0.76	1.00	3.86	3.44	0.92
13-Aug	0.70	0.95	3.69	3.31	0.86

[10] Daily mean estimated based on mid-point between the measured daily min and daily max flow.

Water Quality and Flow Summary

The water chemistry and macroinvertebrate ecological samples taken during June, July and August 2025 indicate that the water quality of main channel of the River Blackwater was generally Good during these months.

The lower flows and water levels and elevated water temperatures experienced during the first two weeks of August provided environmental conditions that can be undesirable for supporting good ecological health of aquatic species.

However, the lower flows were not at such a low level or duration to reduce the capacity of the rivers to assimilate licensed industrial/wastewater discharges.

Overall, the water quality data does not indicate that there was an enduring substantial water quality problem prior to the fish mortalities occurring. The water quality data gathered after the fish mortalities indicate no overall change in water quality.

Review of the implications of the Industrial and Wastewater discharges regulated by the EPA on water quality

As summarised in the previous sections and detailed in the appendices, within the focused area of the Blackwater (Munster)_070 through to Blackwater (Munster)_160, the Glen River, the River Allow and the Clyda River, there are 17 EPA authorised urban wastewater discharges (consisting of 8 Wastewater Discharge Licences (WWDL) and 9 Certificate of Authorisations (COA)) and 10 EPA licensed industrial facilities (IEL-IPC). The discharges from each plant have been reviewed in the context of the flow conditions at the time of the fish mortalities to assess the likely implications of those discharges on water quality at the time.

Table 3: Summary of EPA Regulated Facilities in the River Blackwater Catchment

Region	EPA Licensed Activity	Non-compliance or Incident	Review
River Blackwater upstream of Banteer	D0332 (WWDL) D0448 (WWDL) A0320 (COA) A0328 (COA) P0639 (IPC) P0835 (IPC) P0795 (IEL)	D0332 (Millstreet) – Total Ammonia	Millstreet was compliant in July but Uisce Éireann notified the EPA of an ELV exceedance on August 19th. An assimilative capacity assessment indicates that the Total Ammonia concentration at the bottom of Finnow_040 would not have exceeded the EQS and the low flow hydrometric data (Duarrigle) for the River Blackwater indicates further dilution would have taken place after the confluence with the River Blackwater.
River Allow	D0203 (WWDL) P0793 (IEL) P1051 (IEL)	P1051 (North Cork Creameries) – Total Ammonia, Total Phosphorus, Orthophosphate, Total Nitrogen, BOD, Suspended Solids	NCC had multiple ELV exceedances on multiple days. Of these, the Total Ammonia breaches in the wastewater were of sufficient magnitude that warranted further investigation to determine if good status EQS for Total Ammonia in the River Allow had been exceeded.
Glen River	A0334 (COA)	None	

Region	EPA Licensed Activity	Non-compliance or Incident	Review
	A0345 (COA)		
River Blackwater from Banteer to Mallow	D0441 (WWDL) A0327 (COA) A0340 (COA) A0324 (COA) A0325 (COA) A0319 (COA) P1000 (IPC) P0977 (IEL) P1052 (IEL)	A0327 (Lombardstown) – Plant overloaded	The Lombardstown wastewater plant is a septic tank system with discharge and has been operating above capacity. It is on the EPA priority action list for remedial action. The plant is small, with a discharge of ~20 m^3/day, which is <0.01% of the 95%ile flow (i.e. low flow) in the River Blackwater and therefore had limited potential to impact on the water quality of the River Blackwater.
Clyda River	D0302 (WWDL) D0438 (WWDL)	D0302 (Dromahane) – Orthophosphate, Suspended Solids, BOD, COD D0438 (Bweeng) – Total Ammonia, Suspended Solids	Dromahane had multiple ELV exceedances in July, with further exceedances in August and September. The discharge is located in Clyda_30, close to the confluence with the River Blackwater. An assimilative load assessment indicates that, despite these exceedances, the good status EQS for Orthophosphate would not have been exceeded in Clyda_30, and this was validated in river samples taken downstream. Bweeng had ELV exceedances in July and an assimilative capacity assessment indicates that the river concentration would have achieved the good status EQS for Total Ammonia by the time it reached Clyda_20.
River Blackwater downstream of Mallow Rail Br	D0052 (WWDL) D0447 (WWDL) P0247 (IPC) P0403 (IEL)	None	

The nine COA plants have relatively small discharge volumes, with the discharges typically contributing < 2 % of the river flow during 95%ile flows. Consequently, the wastewater load from these COA plants has limited potential to significantly impact on the water quality of the River Blackwater.

Although ELVs were exceeded at three WWDL plants, assimilative capacity assessments and downstream sampling confirm that it is unlikely the discharges had a significant impact on the Ecological status in the River Blackwater.

Additionally, Uisce Éireann did not report any incidents, spillages or issues at their water treatment plants in the focused area of investigation and the EPA inspections did not find evidence of spillages at the plants.

Overall, the evidence does not support a causal link between these COA and WWDL wastewater discharges, or the operations at Uisce Éireann drinking water plants, and the fish mortalities in the River Blackwater.

As summarised in the previous sections and detailed in the appendices, there were no wastewater discharges / ELV breaches reported for 9 of the 10 EPA licensed industrial facilities (IEL-IPC) in the area of focus at the end of July and in early August. Therefore, the 9 facilities had

limited potential to significantly impact on the water quality of the River Blackwater and there is no evidence to support a causal link between these facilities and the fish mortalities in the River Blackwater.

The one remaining industrial facility, NCC, reported multiple breaches of its ELVs during July and in early August. The Total Ammonia ELV breaches at NCC on the River Allow were of sufficient magnitude that had the potential to cause the Total Ammonia concentration in the River Allow to exceed the 95%ile environmental quality standard (EQS) for good water quality. A further assessment was carried out to assess the significance of this breach for water quality, which is discussed further below.

Review of Total Ammonia concentrations in the River Allow following North Cork Creameries non-compliance with its licence conditions

Wastewater discharge values from NCC indicates the discharge was non-compliant with its ELVs for several parameters and on several days in July and August. The most significant exceedances related to Total Ammonia, with effluent concentrations exceeding the Total Ammonia ELV on all but one day when the plant was discharging wastewater to the River Allow.

Table 4: Wastewater Discharge Data for North Cork Creameries in July and August

Date	COD (mg/L)	BOD (mg/L)	Suspended Solids (mg/L)	Ammonia N (mg/L)	Total P (mg/L)	Ortho phosphate (mg/L)	Total Nitrogen (mg/L)	pH	Flow[11] (m^3/day)
ELV	**75**	**6.0**	**20**	**0.5**	**1.00**	**1.00**	**15.0**	**6.0-9.0**	**1000**
2025-07-27	38	2.2	5	9.8	0.13	0.12	12.8	8.1	702
2025-07-28	35	3.5	11	9.06	0.11	0.1	11	8.0	781
2025-07-29	23	7.5	12	6.4	1.22	0.5	9.5	7.7	761
2025-07-30	27	6.8	15	6.61	0.14	0.04	10.3	7.7	592
2025-07-31[12]	77	33.2	28	0.19*	0.35	0.05	5.0	8.4	362
2025-08-01	56	6.1	26	18.0*	0.43	0.21	27.3	8.3	603
2025-08-02	37	9.1	22	13.15*	0.35	0.20	21.8	8.3	688
2025-08-03	40	5.1	12	10.64*	0.29	0.11	16.0	8.4	716
2025-08-04	44	11.6	21	13.01*	0.35	0.11	22.2	8.4	659
2025-08-05	Composite sample not tested by NCC[13]							7.3[14]	678
2025-08-06	44	24.4	5	5.2	0.11	0.02	8.0	7.6	347
2025-08-07	40	11.9	3	10.12	1.84	1.79	14.5	7.9	665

[11] Flow data taken from NCC hand written log book

[12] Sample reported as coming from SW1, but NCC have indicated its a composite sample

* Samples were reported as Ammonium NH_4 and have been converted to Ammonia N for this analysis by multiplying by 0.7767

[13] The licensee did not test a composite sample for the 5th August (covering 9am of 5th to 9am on 6th August) in accordance with licence requirements. Other monitoring and operational data was available for this date, e.g. wastewater plant logs and SCADA data, but total ammonia was not part of those data sets. This is discussed further in the *EPA Actions* section of this report.

[14] pH value taken from NCC hand written log book. NCC SCADA data confirms pH remained close to this figure across the day

Date	COD (mg/L)	BOD (mg/L)	Suspended Solids (mg/L)	Ammonia N (mg/L)	Total P (mg/L)	Ortho phosphate (mg/L)	Total Nitrogen (mg/L)	pH	Flow[11] (m^3/day)
2025-08-08	43	5.1	4	11.41	1.37	1.05	16.2	7.9	651
2025-08-09	37	6.0	4	10.19	1.24	0.95	14.5	7.9	662
2025-08-10	44	8.6	3	11.8	1.44	1.04	17.0	8.0	826
2025-08-11	40	6.5	< 4	10.25	1.73	1.60	14.4	8.0	702

Taking account of the corresponding NCC discharge volume on each day, which ranged from 347-826 m^3/d during this period, and the daily mean river flow (derived from the measured river flow at the Riverview hydrometric gauge downstream on the River Allow), an assessment has been completed to estimate the Total Ammonia concentration in the River Allow at the point of discharge from NCC.

This assessment concludes that the consequence of the NCC discharge is a maximum projected Total Ammonia concentration of 0.1253 mg/l N in the River Allow on 10 August. All projected concentrations in the River Allow were below the 95%ile limit of 0.14 mg/l N for Total Ammonia i.e., the concentration that should not be exceeded 95% of the time to maintain good water quality.

Further dilution and nitrification are expected to have led to lower Total Ammonia concentrations in the River Allow before it reached the confluence with the River Blackwater, approximately 4km downstream.

Table 5: Projected Ammonia concentrations in the River Allow Downstream of North Cork Creameries from 31 July to 11 August

Date	Total Ammonia Conc. in wastewater (mg/l N)	Wastewater Discharge Volume (m^3/day)	Wastewater Discharge Volume Conversion (m^3/s)	Estimated River Flow at wastewater discharge point (m^3/s)[15]	Dilution factor	Equivalent Conc. of Ammonia (mg/l N) in River after dilution	Un-Ionised Ammonia mg/l NH_3 in river estimation (calculated based on temp of 19 degrees and pH of 8.4)
31-Jul	0.2	362	0.00419	*1.69*	403.36	0.0005	0.0001
01-Aug	18.0	603	0.00698	*1.55*	222.09	0.0810	0.0084
02-Aug	13.2	688	0.00796	*1.4*	175.81	0.0748	0.0077
03-Aug	10.6	716	0.00829	*1.32*	159.28	0.0668	0.0069
04-Aug	13.0	659	0.00763	*1.43*	187.48	0.0694	0.0072
05-Aug	Sample not tested by NCC[16]	678	0.00785	*1.41*	179.68	No reported Ammonia Concentration	
06-Aug	5.2	347	0.00402	*1.16*	288.83	0.0180	0.0019
07-Aug	10.1	665	0.00770	*1.11*	144.22	0.0702	0.0072

[15] Flow estimates are based on the proportional catchment area approach, whereby the River Allow catchment at coordinates 138506, 102458 is 86% of the catchment area at the Riverview hydrometric monitoring gauge.

[16] The licensee did not test a composite sample for the 5th August (covering 9am of 5th to 9am on 6th August) in accordance with licence requirements. Other monitoring and operational data was available for this date, e.g. wastewater plant logs and SCADA data, but total ammonia was not part of those data sets. This is discussed further in the *EPA Actions* section of this report.

Date	Total Ammonia Conc. In wastewater (mg/l N)	Wastewater Discharge Volume (m^3/day)	Wastewater Discharge Volume Conversion (m^3/s)	Estimated River Flow at wastewater discharge point (m^3/s)[15]	Dilution factor	Equivalent Conc. of Ammonia (mg/l N) in River after dilution	Un-ionised Ammonia mg/l NH_3 in river estimation (calculated based on temp of 19 degrees and pH of 8.4)
08-Aug	11.4	651	0.00753	*1.02*	135.37	0.0843	0.0087
09-Aug	10.2	662	0.00766	*0.95*	123.99	0.0822	0.0085
10-Aug	11.8	826	0.00956	*0.9*	94.14	0.1253	0.0129
11-Aug	10.3	702	0.00813	*0.85*	104.62	0.0980	0.0101

Total Ammonia is present in fresh water as ionised Ammonia and un-ionised Ammonia. Un-ionised Ammonia is more harmful to freshwater aquatic life, including fish, and especially salmonids (including salmon and trout species). The concentrations of ionised Ammonia and un-ionised Ammonia in freshwaters are influenced by pH and water temperature, with higher temperatures and pH levels increasing the portion of Total Ammonia present as un-ionised Ammonia.

While the current Surface Water Regulations do not include an EQS for un-ionised Ammonia, a previous salmonid water quality standard of 0.02 mg/l NH_3 exists (S.I. No. 293/1988). The un-ionised Ammonia standard in these Regulations include the caveat that it is allowable for the standard to be exceeded in the form of minor peaks, but it should be complied with 95% of the time throughout the year[17]. Fish and other aquatic species can suffer adverse effects from toxic impacts if they are subject to chronic / longer term exposure to concentrations of un-ionised Ammonia above 0.02 mg/l NH_3.

Given the elevated river temperature (and assuming a worse case temperature of 19 degrees[18]) and a pH of 8.4 (the highest pH of the wastewater being discharged), the fraction of Total Ammonia present as un-ionised Ammonia is 8.5%, with the result converted from N to NH_3 to allow comparison with the previous salmonid water quality standard of 0.02 mg/l NH_3.

Based on the discharge data reported by NCC, the estimated maximum un-ionised Ammonia concentration was 0.0129 mg/l NH_3, occurring on 10 August. The concentration is lower than the 0.02 mg/l NH_3 threshold where long term exposure can have a toxic impact on fish and other aquatic species.

EPA samples were taken from the wastewater discharge at NCC on 6 August and 12 August.

The EPA grab samples taken from the River Allow on 6 August, indicate Total Ammonia concentrations were < 0.02 mg/l N upstream and downstream of the plant, which are indicative of good water quality in the River Allow.

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[17] The footnote in the Regulations states the "*standard may be exceeded in the form of minor peaks in daytime and, subject to this, be conformed with by 95% of samples over a period of 12 months where sampling is carried out at least once per month; where sampling is less frequent the standard shall be conformed with by all samples*".

[18] Upstream OPW hydrometric gauges on the River Allow indicate river temperatures recorded a maximum daily mean temperature of 17.8 degrees.

Analysis of the wastewater samples taken by the EPA on 12 August indicate a worst-case[19] Total Ammonia concentration of 26 mg/l N in the wastewater discharge. The projected concentration in the River Allow, based on these EPA sample results, are a Total Ammonia concentration of 0.1764 mg/l N, and an un-ionised Ammonia concentration of 0.0182 mg/l NH_3.

The worst-case projected river concentrations arising in the River Allow, based on EPA sample results for the wastewater discharge on the 12 August, are slightly higher than the 0.14 mg/l N Total Ammonia 95%ile. The data indicate a projected breach of the standard on a single day and therefore this does not indicate that the Total Ammonia 95%ile threshold was being exceeded more than 95% of the time. The worst-case projected river concentrations arising from the EPA samples indicate the 0.02 mg/l NH_3 un-ionised Ammonia threshold was not exceeded.

Table 6: Projected Ammonia concentrations in the River Allow Downstream of North Cork Creameries on 12 August

Date	Total Ammonia Conc. In wastewater (mg/l N)	Wastewater Discharge Volume (m^3/day)	Wastewater Discharge Volume Conversion (m^3/s)	Estimated River Flow at wastewater discharge point (m^3/s)	Dilution factor	Equivalent Conc. of Ammonia (mg/l N) in River after dilution	Un-ionised Ammonia mg/l NH_3 in river estimation (calculated based on temp of 19 degrees and pH of 8.4)
12-Aug (Composite Sample)	15	463	0.005358796	0.79	147.42	0.1017	0.0105
12-Aug (Grab Sample)	26	463	0.005358796	0.79	147.42	0.1764	0.0182

Based on the available data, the lines of evidence indicate that it is unlikely that the Total Ammonia and un-ionised Ammonia levels associated with the NCC discharge were at a level or duration that caused the significant fish mortalities on the River Blackwater. The IFI also advised the public authorities investigating the fish mortalities that marked and dead fish were not observed in the River Allow. Therefore, there is no causal link to show that the NCC discharge was the cause of the fish mortalities in the River Blackwater.

[19] The grab sample on the 12th August was taken from a trickle of wastewater at the discharge point after the discharge was ceased. It had a higher concentration of total ammonia than the composite wastewater sample taken at the same time, with the composite sample representing the discharge over the previous 24 hour period.

Conclusion

Since it became aware of the fish mortalities on 12 August, the EPA has investigated potential pollution sources from EPA regulated facilities across the Blackwater catchment. Over the course of the investigation, the EPA conducted 41 inspections, took 40 samples and assessed operational practices and monitoring data associated with industrial, wastewater and drinking water facilities within the Blackwater catchment. The EPA's assessment had regard to water quality data for the Blackwater catchment (chemical and ecological) and the results of fish pathology and tissue analysis arising from the incident.

Four sites inspected had non-compliances and one certificate of authorisation was operating above capacity, all of which are subject to on-going enforcement by the EPA.

Wastewater and Drinking water

Although ELVs were exceeded at three plants that hold a waste water discharge licence from the EPA, assimilative capacity assessments and downstream sampling confirm that it is unlikely the discharges had a significant impact on the water quality of the River Blackwater. There was no evidence of spillages or incidents at the plants investigated. Overall, there is no evidence to show a causal link between these EPA-regulated wastewater discharges, or the operations at Uisce Éireann drinking water plants, and the fish mortalities in the River Blackwater.

Industry

There were no wastewater discharges / ELV breaches reported for 9 of the 10 EPA licensed industrial facilities in the area of focus at the end of July and in early August. There was no evidence of spillages or incidents at the plants investigated. Therefore, the 9 facilities had limited potential to significantly impact on the water quality of the River Blackwater and there is no evidence to show a causal link between these facilities and the fish mortalities in the River Blackwater.

North Cork Creameries

The one remaining industrial facility, NCC, reported multiple breaches of its licence limits during July and in early August. The non-compliances detected at NCC, were significant and entirely unacceptable. The licence breaches arose following an incident at the end of June whereby a sudden load of whey was discharged to the plant which destabilised the biological processes in the plant so it could no longer adequately treat the effluent.

The EPA has reviewed, in detail, monitoring and operational data related to the wastewater treatment plant in the June/July/August period. The licensee has, to date, failed to resolve the issues in the wastewater treatment plant and it currently cannot adequately or consistently treat effluent under normal operation. This is due to the licensee's lack of organised management or control of wastewater treatment plant activities, their lack of appropriate expertise to resolve significant operational issues, their failure to appropriately generate, manage, maintain and use critical data sets to inform corrective actions and their disregard for licence requirements and licence limits.

The EPA has assessed the impact of the discharges from NCC on the River Allow. The primary parameter of concern in the NCC discharge is total ammonia, which is present in fresh water as ionised ammonia and un-ionised ammonia. Un-ionised ammonia is more harmful to freshwater aquatic life, including fish, and especially salmonids (including salmon and trout species).

The assessment demonstrates that total ammonia levels in the river as a result of the NCC discharge in early August had the potential to cause the total ammonia concentration in the River Allow to exceed the environmental quality standard (EQS) for good water quality. The EPA calculated the level of un-ionised ammonia that could have occurred in the river as a result of the NCC discharge in the weeks prior to the fish mortalities occurring. The concentration of un-ionised ammonia in the river across early August was below the threshold of 0.02mg/l NH_3 at which fish and other aquatic species can suffer adverse effects from toxic impacts, when subject to chronic/longer term exposure.

Therefore, based on the available data, the lines of evidence indicate that it is unlikely that the total ammonia levels in the River Allow downstream of the NCC discharge were at a level that would have resulted in the environmental quality standards for good status not being met and the levels were lower than the un-ionised ammonia standard that would impact on fish. A detailed review of the wastewater treatment plant's operation in the weeks prior to the fish mortalities being detected indicate that while the plant was performing very poorly, and discharges were significantly non-compliant across many parameters, there was no evidence that a sudden catastrophic load to the river was discharged in that period, or that any form of chemical discharge occurred. The data indicates that the likelihood of such an event occurring in that period is low. The IFI also advised the public authorities investigating the fish mortalities that marked and dead fish were not observed in the River Allow before, during or after the fish mortalities in the Blackwater were reported. Therefore, notwithstanding the seriousness of the licence breaches at NCC, the EPA's assessments do not support a causal link between the NCC discharges into the River Allow and the fish mortalities in the Blackwater.

NCC has significant and ongoing compliance challenges to resolve. The EPA is rigorously pursuing the enforcement of the licence breaches arising as a matter of priority and urgency, in line with its Compliance and Enforcement Policy. Offences related to breaches of EPA licences may be prosecuted summarily by the EPA or on indictment by the DPP. The EPA is giving full consideration to all such enforcement options available to it in respect of the non-compliances detected.

Next steps

The EPA submits this report to the multi-agency group investigating into the Blackwater fish mortalities and will continue to support the work of the group as the investigation concludes.

Appendix 1: Details of EPA inspections

Industrial facilities

Reg No	Licensee	Location	Site activities	Discharges between 28 July 2025 and 12 August 2025	Site visits since 12th August
P0247-02	Micam Limited	Sean Moylan Park, Mallow, Cork.	Manufacturer of industrial laminates and plastic machined components	**No process emissions to sewer or water.** Summer shutdown period between 28 July and 11th August. No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	12th August
P0403-03	Dairygold Co-Operative Society Limited (Mallow)	Annabella, Westend, Mallow, Cork.	Milk processing plant	Process effluent treated at site WWTP and discharged into River Blackwater **No ELV breaches** No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	4th September
P0639-03	Gairdini *(also known as Munster Joinery)*	Lacka Cross, Lackanastooka, Ballydesmond, Mallow, Cork	Manufacturer of windows and doors	Sanitary effluent is treated at site WWTP and discharged into River Blackwater **No ELV breaches** No evidence of spillages or unauthorised discharges.	28th August

				No incidents reported in this time period.	
P0793-03	Newmarket Co-Operative Creameries Limited	Scarteen Lower, Newmarket, Cork	Milk processing plant	Process effluent treated at site WWTP and discharged into River Dalua (joins the River Allow, which feeds into the Munster Blackwater) **No ELV breaches** No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	28th August
P0795-02	Mondelez Ireland Production Limited	Shinnagh, Rathmore, Kerry	Milk processing plant	Process effluent and sanitary effluent are treated at site WWTP and discharged to River Blackwater. **No ELV breaches.** Site was on summer shutdown from 1st to 11th of August 2025. No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	28th August
P0835-01	ALPS Electric (Ireland) Limited	Clara Road, Millstreet, Cork.	Manufacturer of electronic parts	All sanitary effluent is emitted to sewer. There are no process effluent discharges to water. **No process effluent discharge during defined period.** Summer shutdown period between 21st July to 11th August 2025.	4th September

				No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	
P0977-01	Magh nAla Limited	IDA Industrial Estate, Quartertown, Mallow, Cork, Cork	Manufacturer of zinc pigment and organometallic compound (resin)	**No process emission to sewer or water.** No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	12th August
P1000-01	Magh nAla Limited	Quartertown Industrial Estate, Mallow, Cork.	Manufacturer of solvent based coatings and zinc pigment	**No process emission to sewer or water** No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	12th August
P1051-01	North Cork Creameries	Strand Street, Kanturk, Cork.	Milk processing plant	Site effluent water is treated at site WWTP and discharged into River Allow (which feeds into the Munster Blackwater). **ELV breaches within the defined period**	12th 18th , 22nd August 1st, 4th , 5th , 8th , 10th , 11th September
P1052-01	Dairygold Agri Business Limited	Lombardstown, Mallow, Cork	Feed manufacturing mill and grain drying	**No treated process effluent discharge to Blackwater.** Effluent is tankered off site. No evidence of spillages or unauthorised discharges.	28th August 2nd September

				No incidents reported in this time period.	

Wastewater treatment

Reg No	Licensee	Location	Site activities	Discharges between 28 July 2025 and 12 August 2025	Site visits since 12th August
A0327-01	Uisce Éireann	Lombardstown and Environs.	Wastewater treatment	No evidence of spillages or unauthorised discharges. No incidents reported in this time period. Plant is overloaded.	12th August
D0302-01	Uisce Éireann	Dromahane and Environs	Wastewater treatment	No evidence of spillages. ELV breaches in July, August and September. Operational issues at the plant.	13th August 3rd September
D0447-01	Uisce Éireann	Killavullen and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No ELV breaches in July and August. No incidents reported in this time period.	3rd September
D0448-01	Uisce Éireann	Banteer and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No ELV breaches in July and August.	4th September

				No incidents reported in this time period.	
D0438-01	Uisce Éireann	Bweeng and Environs	Wastewater treatment	No evidence of spillages. ELV breaches in July and September. Infrastructural upgrade needed at the plant	4th September
A0324-01	Uisce Éireann	Castlemagnier and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	4th September
A0319-01	Uisce Éireann	Cecilstown and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	4th September
A0325-01	Uisce Éireann	Glantane and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	4th September
A0340-01	Uisce Éireann	Kilbrin and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	4th September
D0441-01	Uisce Éireann	Ballyclough	Wastewater treatment	No evidence of spillages or unauthorised discharges.	5th September

				No ELV breaches in July and August. There was an ELV breach of Ammonia in September which is currently being investigated. No incidents reported in this time period.	
D0052-01	Uisce Éireann	Mallow	Wastewater treatment	No evidence of spillages or unauthorised discharges. No ELV breaches in July and August. No incidents reported in this time period.	5th September
A0320-01	Uisce Éireann	Kilcorney and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	8th September
A0328-01	Uisce Éireann	Rathcoole and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	8th September
A0345-01	Uisce Éireann	Nad and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No incidents reported in this time period.	8th September
A0334-01	Uisce Éireann	Lyre and Environs	Wastewater treatment	No evidence of spillages or unauthorised discharges. No incidents reported in this time period	8th September

D0203-01	Uisce Éireann	Kanturk	Wastewater treatment	No evidence of spillages or unauthorised discharges from the plant. No ELV breaches in July and August. No incidents reported in this time period.	9h September
D0332-02	Uisce Éireann	Millstreet and Environs	Wastewater treatment	No evidence of spillages. No ELV breaches in July. ELV breaches in August.	9th September

Drinking Water treatment

Reg No	Licensee	Location	Site activities	Discharges between 28 July 2025 and 12 August 2025	Site visits since 12th August
0500PUB1101	Uisce Éireann	Allow Regional	Drinking Water Treatment	The water treatment plant was operating normally. No evidence of chemical spillages on the site.	27/08/2025
0500PUB1313	Uisce Éireann	Mallow	Drinking Water Treatment	The water treatment plant was operating normally. No evidence of chemical spillages on the site.	27/08/2025
0500PUB1401	Uisce Éireann	Banteer	Drinking Water Treatment	No discharges to surface water. No evidence of chemical spillages on the site.	04/09/2025

0500PUB1307	Uisce Éireann	Cregane/Glantane	Drinking Water Treatment	No discharges to surface water. No evidence of chemical spillages on the site.	04/09/2025

Appendix 2: EPA sampling activities for August 12th /13th

EPA took the following samples on the 12th/13th August as part of its initial response to the Blackwater fish mortality investigation.
Lab reports for these sampling visits will be available on LEAP online in due course. Details of non-compliances detected are summarised in the main body of this report.

Reg No	Licensee	Type of sample	Note
12/08/2025	North Cork Creameries	Location: Final discharge point SW1 Sample type: Grab and composite	Both samples relate to discharges on the 12th August and were non-compliant with the Emission Limit Values of the licence
12/08/2025	Magh-nAla	Location: Storm water discharge Sample type: Grab.	Sample from small storm water discharge on the 12th August. Laboratory results indicated no issues of concern
12/08/2025	Lombardstown WWTP	Location: Final discharge point. Sample type: Grab.	Sample taken from the wastewater discharge from the primary treatment system to the Blackwater River on the 12th August 2025. This certified site does not have ELVs; Requirement of certificate of Authorisation is not to cause environmental pollution . Downstream water quality within surface water quality standards.
12/08/2025	Ambient monitoring of the Clyda River	Location: d/s of the wastewater discharge point. Sample type: Grab.	Sample taken from the Clyda River d/s of the wastewater discharge from Dromahane WWTP on August 12th, 2025. Laboratory results indicate the sample meets the EQS.
13/08/2025	Dromahane WWTP	Location: Final monitoring point. Sample type: Grab and composite (dated 12/08/2025) Note 1.	Sample taken of the wastewater discharge at the final monitoring point prior to discharge to the Clyda River on August 13th, 2025. Laboratory results indicate the discharge exceeds Emission Limit Values of the licence.

Appendix 3: Additional EPA sites sampled post August 13th

These samples are for the purpose of verifying compliance or pursuing compliance issues further. Enforcement action will be taken on any non-compliances detected, in line with normal enforcement procedures.

Reg No	Licensee	Note
01/09/2025	North Cork Creameries	Location: No discharge occurring but a sample was taken of the treated effluent in the final discharge basin at SW1. Sample type: Grab
01/09/2025	Ambient monitoring of the Allow River	Location: u/s and d/s of North Cork Creameries ambient discharge pipe Sample type: Grab
02/09/2025	Dairygold Agri Business Limited	Location: Storm water (No discharges occuring but sample taken to confirm integrity of shut-off valve.) Sample Type: Grab
04/09/2025	Dairygold Co-Operative Society Limited (Mallow)	Location: Final discharge point Sample type: Composite and grab from 4/9/25, also split composite samples from 31/8 and 1/9
04/09/2025	Ambient Monitoring of Blackwater River	Location: u/s and d/s of Dairygold (Mallow) effluent discharge pipe Sample type: Grab
04/09/2025	ALPS Electric (Ireland) Limited	Location: Storm water discharge. Sample type: Grab
04/09/2025	North Cork Creameries	Location: Final discharge point Sample type: Grab
04/09/2025	Ambient monitoring of the Allow River	Location: u/s and d/s of North Cork Creameries ambient discharge pipe Sample type: Grab
03/09/2025	Dromahane WWTP	Location: Final discharge point. Sample type: Grab and composite.
03/09/2025	Ambient monitoring of the Clyda River.	Location: u/s and d/s of the Dromahane final discharge point. Sample type: Grab.
04/09/2025	Cecilstown WWTP	Location: Final discharge point. Sample type: Grab.
04/09/2025	Ambient monitoring of the East Lohort River.	Location: u/s and d/s of the Cecilstown final discharge point. Sample type: Grab.
04/09/2025	Glantane WWTP	Location: Final discharge point. Sample type: Grab.
04/09/2025	Ambient monitoring of the Skarragh Hill River.	Location: u/s and d/s of the Glantane final discharge point. Sample type: Grab.
04/09/2025	Bweeng WWTP	Location: Final discharge point. Sample type: Grab.

04/09/2025	Ambient monitoring of a tributary to the Clyda River.	Location: u/s and d/s of the Bweeng final discharge point. Sample type: Grab.
04/09/2025	Castlemaginer WWTP	Location: Final discharge point. Sample type: Grab.
04/09/2025	Ambient monitoring of Lisduggan North River.	Location: u/s of the Castlemaginer final discharge point. No safe access d/s. Sample type: Grab.
04/09/2025	Kilbrin WWTP	Location: Final discharge point. Sample type: Grab.
04/09/2025	Ambient monitoring of the Awbeg River.	Location: u/s and d/s of the Kilbrin final discharge point. Sample type: Grab. Note: 2 u/s samples taken (two joining rivers).
05/09/2025	Ballyclough WWTP	Location: Final discharge point. Sample type: Grab
08/09/2025	North Cork Creameries	Location: Final discharge point. Sample type: Composite
08/09/2025	Ambient monitoring of the Allow River	Location: u/s and d/s of North Cork Creameries ambient discharge pipe Sample type: Grab
09/09/2025	Ambient monitoring of the Finnow River.	Location: u/s and d/s of the Millstreet final discharge point. Sample type: Grab.
09/09/2025	Kanturk WWTP	Location: Final discharge point. Sample type: Grab

Appendix 4: Licensee Monitoring data

Industrial

On examination of monitoring data provided by licensees, 9 of the 10 EPA-licensed industrial sites investigated either had compliant discharges to water or no discharges during the period 28th July to 12th August 2025.

Discharges from the NCC effluent treatment plant at SW1 exceeded the emission limit values set out in licence P1051-01 on various occasions between 25th June 2025 and 12th August 2025 (see Table A). These exceedances were detected by the licensees own onsite laboratory (NCC internal monitoring), an external accredited laboratory contracted by the licensee (NCC external) and EPA sample results (EPA ORM). Ambient samples were taken on the 6th August as presented in Table B below.

Table A: Monitoring results for emission point SW1 from North Cork Creameries and from EPA samples over the period 25th June 2025 to 12th August 2025

ELV Breach

Data Source**	Date	Grab/ Composite	Emission Limit Values (ELV)*										
			COD (mg/L)	BOD (mg/L)	SS (mg/L)	Ammonia (mg/L)	o-Phosphate (mg/L))	Temp (°C)	pH	Total Phosphorous (mg/L)	Total Nitrogen (mg/L)	Conductivity (S/m)	Flow (m^3/d)
			75	6	20	0.5	0.5	25	>6 <9	2	15	N/A	1000
NCC internal	25/06/2025	Grab	279	-	-	4.72	0.63	-	7.22	3.7	6.4	-	567
NCC internal	28/06/2025	Grab	238	-	-	>3.5	1.03	-	7.92	4.03	5.6	-	520
NCC internal	29/06/2025	Grab	96	-	-	0.08	0.23	-	7.92	1.59	8.6	-	140
NCC internal	30/06/2025	Grab	90	-	-	0.29	0.14	-	7.98	1.11	6.9	-	599
NCC internal	01/07/2025	Grab	90	-	-	1.6	0.19	-	7.65	1.97	8.5	-	427
NCC internal	02/07/2025	Grab	73	-	-	0.34	0.12	-	7.32	1.85	1.3	-	599
NCC internal	03/07/2025	Grab	74	-	-	0.32	0.28	-	7.33	1.7	1.4	-	577
NCC external	04/07/2025	Grab	20	2.2	6	0.21	0.02	-	7.2	0.07	14.4	-	530
EPA ORM	04/07/2025	Grab	97	20	66	0.15	0.026	-	7.8	0.11	1.7	1106	-
NCC external	05/07/2025	Grab	32	5.6	8	0.5	0.02	-	7.3	0.07	15.6	-	511
NCC internal	06/07/2025	Grab	24	-	-	0.3	0.04	-	7.42	0.6	1.3	-	411
NCC external	07/07/2025	Grab	<10	2.9	<2	0.3	0.04	-	7.4	<0.04	5.4		514
NCC external	08/07/2025	Grab	<10	8.9	<4	0.07	0.03	-	7.5	0.05	5.4	-	473

Data Source**	Date	Grab/ Composite	Emission Limit Values (ELV)*										
			COD (mg/L)	BOD (mg/L)	SS (mg/L)	Ammonia (mg/L)	o-Phosphate (mg/L))	Temp (°C)	pH	Total Phosphorous (mg/L)	Total Nitrogen (mg/L)	Conductivity (S/m)	Flow (m^3/d)
			75	6	20	0.5	0.5	25	>6 <9	2	15	N/A	1000
NCC external	09/07/2025	Grab	39	23.3	9	0.62	0.05	-	7.4	0.14	3.5	-	519
EPA ORM	10/07/2025	Grab	125	25	11	0.55	0.067	-	7.7	0.19	4.6	1743	28.27 (m3/hr)
NCC external	10/07/2025	Grab	83	20	18	0.91	0.03	-	7.5	0.21	5.2	-	550
NCC external	11/07/2025	Grab	36	17.7	16	0.27	0.04	-	7.6	-	2.4	-	559
NCC external	12/07/2025	Grab	13	3.7	6	0.18	0.03	-	7.5	-	1.8	-	629
NCC external	13/07/2025	Grab	28	8.1	13	0.22	0.03	-	7.5	-	2.7	-	618
NCC external	14/07/2025	Grab	16	7.9	9	0.13	0.04	-	7.5	-	1.9	-	595
NCC external	15/07/2025	Grab	19	10.3	6	0.13	0.03	-	7.6	-	2	-	600
NCC external	16/07/2025	Grab	18	11.6	7	0.1	0.01	-	7.4	0.12	2.2	-	552
EPA ORM	16/07/2025	Grab	49	4.8	8	0.036	<0.01	-	7.8	0.1	1.6	1561	-
NCC external	16/07/2025	Comp	13	5.9	6	0.31	0.02	-	7.5	0.21	2.3	-	723
NCC external	17/07/2025	Comp	17	7.1	31	0.21	0.03	-	7.5	0.08	7.7	-	665
NCC external	18/07/2025	Comp	34	6.3	22	0.43	0.01	-	7.6	0.08	11.7	-	-
NCC external	19/07/2025	Comp	37	5.3	10	0.34	0.02	-	7.7	0.07	11.2	-	623
NCC external	20/07/2025	Comp	16	5.7	12	0.41	0.03	-	7.7	0.11	12.1	-	530
NCC external	21/07/2025	Comp	32	4.9	4	0.97	0.26	-	7.7	0.05	7.6	-	534
NCC external	22/07/2025	Comp	93	16	19	0.82	-	-	7.5	0.15	-	-	443
NCC external	23/07/2025	Comp	89	17.6	20	0.56	0.05	-	7.5	0.16	3.8	-	504
NCC external	24/07/2025	Comp	52	10	10	7.29	0.2	-	7.9	0.17	10	-	515
NCC external	25/07/2025	Comp	60	4.4	14	9.74	0.05	-	8.1	0.22	13.1	-	458
NCC external	26/07/2025	Comp	36	1.7	<4	9.47	0.05	-	8.2	0.11	11.6	-	596
NCC external	27/07/2025	Comp	38	2.2	5	9.8	0.12	-	8.1	0.13	12.8	-	702
NCC external	28/07/2025	Comp	35	3.5	11	9.1	0.1	-	8	0.11	11	-	781

Data Source**	Date	Grab/ Composite	Emission Limit Values (ELV)*										
			COD (mg/L)	BOD (mg/L)	SS (mg/L)	Ammonia (mg/L)	o-Phosphate (mg/L))	Temp (°C)	pH	Total Phosphorous (mg/L)	Total Nitrogen (mg/L)	Conductivity (S/m)	Flow (m^3/d)
			75	6	20	0.5	0.5	25	>6 <9	2	15	N/A	1000
NCC external	29/07/2025	Comp	23	7.5	12	6.4	0.5	-	7.7	1.22	9.5	-	761
NCC external	30/07/2025	Comp	27	6.8	15	6.6	0.14	-	7.7	0.14	10.3	-	592
NCC external	31/07/2025	Grab	77	33.2	28	0.3	0.05	-	8.4	0.35	5	-	362
EPA ORM	01/08/2025	Grab (V-notch)	101	16	82	0.27	0.039	-	7.9	0.28	4.3	1984	
EPA ORM	01/08/2025	Grab (outfall)	72	15	72	0.27	0.051	-	7.9	0.26	4.1	1899	-
NCC external#	01/08/2025	Grab (Outfall)	72	23.7	18	0.19^	0.04	-	8.4	0.3	4.9	-	
NCC external	01/08/2025	Comp	56	6.1	26	18^	0.21	-	8.3	0.43	27.3	-	603
NCC external	02/08/2025	Comp	37	9.1	22	13.15^	0.2	-	8.3	9.35	21.8	-	688
NCC external	03/08/2025	Comp	40	5.1	12	10.64^	0.11	-	8.4	0.29	16	-	716
NCC external	04/08/2025	Comp	44	11.6	21	13.01^	0.11	-	8.4	0.35	22.2	-	659
NCC external	05/08/2025	**No sample taken**											678
NCC external	06/08/2025	Comp	44	24.4	5	5.2	0.02	-	7.6	0.11	8	-	347
NCC external	07/08/2025	Comp	40	11.9	3	10.1	1.79	-	7.9	1.84	14.5	-	665
NCC external	08/08/2025	Comp	43	5.1	4	11.4	1.05	-	7.9	1.37	16.2	-	651
NCC external	09/08/2025	Comp	37	6	4	10.2	0.95	-	7.9	1.24	14.5	-	622
NCC external	10/08/2025	Comp	44	8.6	3	11.8	1.04	-	8	1.44	17	-	826
NCC external	11/08/2025	Comp	40	6.5	<4	10.25	1.6	-	8	1.73	14.4	-	702
EPA ORM	12/08/2025	Grab	120	13	18	26	3.6	26	8.1	4.3	34	2230	-
EPA ORM	12/08/2025	Comp	56	5.9	26	15	1.2	26	8.5	1.4	19	1586	-
NCC External#	12/08/2025	Grab	95	19.2	22	24.6	3.36		8	4.18	32.8		-
NCC external#	12/08/2025	Comp	51	9.7	13	14.16	1.17	-	8.1	1.67	20.9	-	465

* **Composite Samples:** In accordance with Condition 4.3.2 of the licence, no pH value shall deviate from the specified range. For parameters other than pH and flow, eight out of ten consecutive composite results, based on flow proportional composite sampling, shall not exceed the emission limit value. No individual results similarly calculated shall exceed 1.2 times the emission limit value. **Grab samples:** In accordance with Condition 4.3.3, for parameters other than pH and temperature, no grab sample value shall exceed 1.2 times the emission limit value.

**NCC internal testing carried out in on-site laboratory at licensees installation. NCC external testing conducted by accredited laboratory. EPA ORM testing conducted in accredited EPA laboratory. Where both NCC internal and NCC external results are available for a sample on a given date, only NCC external results are reported in table as they are accredited results.

^ Samples for the period 31/7/2025 to 4/8/2025 were incorrectly analysed for ammonium rather than total ammonia. Results displayed in the table are the calculated equivalent total ammonia levels based on the ammonium results reported (i.e. 0.3mg/l on 31/7; 23.2mg/l on 01/08; 16.9mg/l on 02/08; 13.7mg/l on 03/08; 16.8mg/l on 04/08).

Duplicate of EPA sample take on same day

Table B: Ambient Monitoring in the vicinity of North Cork Creameries SW1 discharge location on 6th August 2025 (no discharge at SW1 occurring at time of sampling)

Data Source	Date	Grab/ Composite	Parameters										
			COD (mg/L)	BOD (mg/L)	SS (mg/L)	Ammonia (mg/L)	o-Phosphate (mg/L))	Temp. (°C)	pH	Total Phosphorous (mg/L)	Total Nitrogen (mg/L)	Conductivity (S/m)	Flow (m^3/d)
EPA ORM	06/08/2025	Uptream	21	1.1	<4	<0.02	0.014	-	8.4	0.034	1.2	220	-
EPA ORM	06/08/2025	Downstream	<20	1.2	<4	<0.02	0.013	-	8.4	0.039	1.2	218	-
EPA ORM	06/08/2025	Bay at outfall	51	6.3	70	0.077	0.012	-	8.1	0.091	2	431	-

Wastewater

Wastewater licences

Uisce Éireann monitoring data for discharges from Kanturk, Banteer, Ballyclough, Mallow and Killavulllen wastewater were compliant with their licence in July and August. Uisce Éireann wastewater monitoring data from Millstreet, Bweeng and Dromahane exceeded the ELVs required by their respective wastewater discharge licence.

Wastewater discharge from **Millstreet WWTP** to the Finnow River:

The wastewater discharge from Millstreet WWTP is to the Finnow River, a tributary of the Blackwater River which is located approximately 2km u/s of is confluence with the River Blackwater. The latest treated wastewater samples from Millstreet WWTP taken by Uisce Éireann for analysis were taken on the 22nd July 2025 and the 19th August 2025 respectively are shown in Table C below. The sample taken in July does not exceed the emission limit values. The sample from August exceeded the total ammonia emission limit values.

Table C: Monitoring of treated effluent from Millstreet WWTP.

Parameter Tested	pH (pH unit)	BOD (mg/L)	COD (mg/L)	Suspended Solids (mg/L)	Total Ammonia (mg/L)	Ortho-P (mg/L)
ELV	6-9	25	125	25	0.8	0.5
Uisce Éireann 22/07/2025	7.3	4.3	7.07	2.83	0.03	0.18
Uisce Eireann 19/08/2025	7.1	2.8	22	<4	4.44	0.6

Samples that exceed the upward deviation tolerance provided by Condition 2.1.2 of the WWDL are highlighted in salmon colour.

In addition to sampling the final discharge, Uisce Éireann sampled the Finnow River u/s and d/s (1.5km d/s) of the wastewater discharge from the WWTP on the 19th August 2025. As shown in Table D below, the d/s results for the parameters BOD, Ammonia and Orthophosphate indicate that the receiving water quality met the environmental surface water quality standards for rivers. The EPA took ambient samples upstream and downstream of the discharge September 9th. The downstream results indicate that the receiving water quality met the environmental surface water quality standards for rivers.

Table D: Uisce Éireann's u/s and d/s of the discharge from Millstreet WWTP.

Parameter Tested	pH (pH unit)	BOD (mg/L)	Total Ammonia (mg/L)	Ortho-P (mg/L)
EQS[20] – River Good Status	Soft Water: 4.5 – 9.0 Hard Water: 6.0 – 9.0	≤1.5 (mean) and ≤2.6 (95%tile)	≤0.065 (mean) and ≤0.140 (95%tile)	MRP ≤0.035 (mean) and ≤0.075 (95%tile)
Uisce Éireann upstream 19/08/2025	7.3	3.5	0.06	0.18
Uisce Éireann downstream 19/08/2025	7.7	1.1	<0.02	0.01
EPA upstream 9/09/2025		1.1	0.02	0.021
EPA downstream 9/09/2025		1.0	0.023	0.025

[20] Environmental Quality Standard (EQS) - European Communities Environmental Objectives (Surface Water) Regulations 2009, as amended (Irish Statute Book).

Wastewater discharge from Bweeng and Environs WWTP to the Clyda River:

The wastewater discharge from Bweeng WWTP is to a tributary which flows into the Clyda River, a tributary of the Blackwater River. The discharge from the WWTP is approximately 14.5 km upstream from the confluence with the Blackwater River. Uisce Éireann provided the EPA with their last analysis of wastewater effluent from Bweeng WWTP. These results of this analysis is described in Table E below. Treated wastewater effluent was sampled on the 8th July 2025. The parameters BOD, suspended solids and Total ammonia exceeded the WWDL Emission Limit Values. The BOD result exceeded the ELV by 28% which does not exceed the upward deviation tolerance provided by Condition 2.1.2 of the licence. The EPA inspected Bweeng wastewater treatment plant on September 4th and samples were taken of the discharge and upstream and downstream of the discharge. The plant was found to be non-compliant with Ammonia on this date. Ambient data for the plant is provided in Table F below. The downstream results indicate that the receiving water quality met the environmental surface water quality standards for rivers.

Table E: Monitoring of treated effluent from Bweeng WWTP.

Parameter Tested	pH (pH unit)	BOD (mg/L)	COD (mg/L)	Suspended Solids (mg/L)	Total Ammonia (mg/L)	Ortho-P (mg/L)
ELV	6-9	10	100	35	1	0.5
Uisce Éireann 08/07/2025	7	12.8	17	90	3.7	0.24
EPA 04/09/2025	7	4	30		8.4	0.11

Samples that exceed the upward deviation tolerance provided by Condition 2 of the WWDL are highlighted in salmon colour.

Further occurrences of ELV breaches for Ammonia, BOD, COD, Orthophosphate and Suspended Solids have been reported earlier in 2025.

Table F: Ambient monitoring u/s and d/s for Bweeng WWTP.

Parameter Tested	pH (pH unit)	BOD (mg/L)	Total Ammonia (mg/L)	Ortho-P (mg/L)
Uisce Éireann upstream 12/03/2025	7.2	1.3	<0.02	0.02
Uisce Éireann downstream 12/03/2025	7.5	1.1	<0.02	0.03
Uisce Éireann upstream 14/05/2025	7.2	<1.0	<0.02	0.01
Uisce Éireann downstream 14/05/2025	7.4	<1.0	0.03	0.02
Uisce Éireann upstream 08/07/2025	7.4	<1.0	<0.02	0.02
Uisce Éireann downstream 08/07/2025	7.5	<1.0	0.08	0.04
EPA upstream 04/09/2025	7.3	<1.0	<0.02	<0.01
EPA downstream 04/09/2025	7.3	<1.0	<0.02	0.037
Mean downstream*	n.a.	0.65	0.033	0.032

*Results below Limit of Detection taken at half the Limit of Detection.

Wastewater discharge from Dromahane WWTP to the Clyda River:

The wastewater discharge from Dromahane WWTP is to the Clyda River a tributary of the Blackwater River which is located approximately 2.25km u/s of its confluence with the River Blackwater. The latest treated wastewater samples from Dromahane WWTP taken by Uisce Éireann for analysis were taken on the 8th July 2025, 13th August 2025, 14th August 2025 and the 18th August 2025; results are shown in Table G below. All samples taken show exceedances of emission limit values. The EPA sampled the discharge on August 13th and September 3rd and discharges show exceedances of emission limit values, excluding Ammonia.

Table G: Monitoring of the treated effluent from Dromahane WWTP.

Parameter Tested	pH (pH unit)	BOD (mg/L)	COD (mg/L)	Suspended Solids (mg/L)	Total Ammonia (mg/L)	Ortho-P (mg/L)	Total Phosphorus (mg/L)	Total Nitrogen (mg/L)
ELV	6-9	15	125	25	3	1	N/A	N/A
Uisce Éireann 8/07/2025	7.1	516	1050	1036	0.74	1.27	20.4	64.2
Uisce Éireann 13/08/2025	7.2	53.1	255	244	0.15	2.03	5.35	42.1
EPA 13/08/2025 Grab	7.4	21	127	109	0.79	2.2		
EPA 13/08/2025 composite	7.3	110	533	450	0.56	2.2		
Uisce Éireann 14/08/2025	7.1	16.9	70	76	0.05	2.03	2.36	36.8
Uisce Éireann 18/08/2025	7.0	88.2	175	132	0.25	2.54	3.93	39.4
EPA 03/09/2025 grab	6.6	44	360		0.1	1		
EPA 03/09/2025 composite	6.4	63	481		0.085	0.99		

Samples that exceed the upward deviation tolerance provided by Condition 2.1.2 of the WWDL are highlighted in salmon colour.

In addition to sampling the final discharge, Uisce Éireann sampled the Clyda River u/s and d/s of the wastewater discharge from the WWTP on the 14th August 2025. Uisce Éireann have provided the EPA with the analysis of these samples. The EPA took ambient samples of the Clyda River on 12/08 and the 03/09. As shown in Table H below, the d/s results for the parameters BOD, Ammonia and Orthophosphate indicate that the receiving water quality met the environmental surface water quality standards for rivers.

Table H: Ambient Monitoring u/s and d/s of the discharge from Dromahane WWTP to the Clyda River.

Parameter Tested	pH (pH unit)	BOD (mg/L)	Total Ammonia (mg/L)	Ortho-P (mg/L)
EQS[21] – River Good Status	Soft Water: 4.5 – 9.0 Hard Water: 6.0 – 9.0	≤1.5 (mean) and ≤2.6 (95%tile)	≤0.065 (mean) and ≤0.140 (95%tile)	MRP ≤0.035 (mean) and ≤0.075 (95%tile)
EPA downstream 12/08/2025	7.9	1.1	<0.02	
Uisce Éireann upstream 14/08/2025	7.8	<1	<0.02	0.03
Uisce Éireann downstream 14/08/2025	7.8	2.1	0.03	<0.01
EPA upstream 03/09/2025	7.5	<1	<0.02	0.019
EPA downstream 03/09/2025	7.3	<1	<0.02	0.025

Wastewater certificates of authorisation

Eight of the nine Certificate of Authorisations discharge to tributaries of the Blackwater River at distances of 2km+ upstream of the Blackwater River main channel. No dead fish were reported in these tributaries' u/s of their confluence with the Blackwater River. No incidents were reported by Uisce Éireann at these eight

Certificate of Authorisation WWTPs plants in 2025. No issues of concern in relation to the fish mortalities were identified at the eight Certificate of Authorisations on inspection by the EPA.

Wastewater discharge from Lombardstown WWTP to the Blackwater River:

Lombardstown WWTP, which consists of a septic tank system providing primary treatment, discharges directly to the Blackwater River main channel. This WWTP is operating above capacity and is listed on the EPA's Wastewater Priority Areas List. Uisce Éireann has reported that it proposes to upgrade the WWTP and that the plant is currently progressing through the workshop stage. The latest treated wastewater samples from Lombardstown WWTP were taken by the EPA. The results of analysis are shown in Table I below.

Table I: EPA sample analysis of the Lombardstown final effluent.

Parameter Tested	BOD (mg/L)	COD (mg/L)	Suspended Solids (mg/L)	Total Ammonia (mg/L)	Ortho-P (mg/L)	Total Nitrogen (mg/L)
Result 12/08/2025	270	662	117	54	6.9	63

[21] Environmental Quality Standard (EQS) - European Communities Environmental Objectives (Surface Water) Regulations 2009, as amended (Irish Statute Book).

The plant is small, with a discharge of ~20 m3/day, which is <0.01% of the 95%ile flow (i.e. low flow) in the River Blackwater. There was no visible plume from the discharge in the Blackwater River. The most recent ambient monitoring by Uisce Éireann in April and May 2025 and by Cork County Council d/s of the WWTP on the 12th August 2025, were within environmental surface water quality standards22.

Drinking water

Drinking water plants were in compliance with Drinking water quality standards

[22] European Communities Environmental Objectives (Surface Water) Regulations 2009, as amended (Irish Statute Book).

APPENDIX 3: CORK COUNTY COUNCIL REPORT

Title: Cork County Council Report into August 2025 Munster Blackwater Fish Mortalities

Date: 24/09/2025

Comhairle Contae Chorcaí
Cork County Council

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Contents

1.0 Role of Cork County Council

Cork County Council delivers a number of statutory and regulatory inspection and monitoring programmes in the area of water quality protection. These are outlined in the annual Recommended Minimum Criteria for Environmental Inspections (RMCEI) Plan.

National Enforcement Priorities (NEPs) are identified by the EPA and underpin the development and implementation of the council's RMCEI plan. The 2025 2027 NEPs programme identify twenty NEPs, including four in water:

- Pressures from Agriculture (Farmyards)- soiled water/slurry collection and storage;
- Pressures from Agriculture (Farmland) -slurry and fertiliser spreading;
- Section 4 (Local Government (Water Pollution) Act 1977 to 2007 discharge licences /misconnections;
- Local water quality issues including septic tanks and private water supplies;

The RMCEI plan is subject to annual review and assessment by the EPA, with performance benchmarked against performance indicators and environmental outcomes, across the local authority sector in the annual Local Authority Performance Framework report.

Cork County Council performance in environmental protection is also subject to audit by the EPA.

The statutory and regulatory functions of Cork County Council are across several sectoral activities, including:

- Ensuring sustainable development in accordance with Planning and Development Legislation, national policy and the County Development Plan as well as implementing water quality objectives under the Habitats and Water Framework Directive.
- Monitoring of compliance with Good Agricultural Practice (Nitrate) regulations by reference to targets specified by EPA in the National Agricultural Inspection Plan (NAIP). The NAIP is the national risk-based inspection plan based on risk to ground and surface waters from agricultural activities. Cork County Council is required to undertake 586 NAIP first time inspections in 2025. Where non-compliances are detected, appropriate enforcement action including cross-reporting to DAFM is taken.
- Inspection of residential septic tanks in accordance with targets specified by the Environmental Protection Agency (EPA) in the National Inspection Plan (NIP). The NIP is a national risk-based inspection plan based on risk to ground and surface waters from domestic wastewater treatment systems. An annual target of 136 domestic wastewater systems inspections is established for Cork County Council.
- Licensing and ongoing regulation of trade effluent and sewage effluent discharges (as defined) under Section 4 of the Local Government (Water Pollution) Acts 1977 to 2007, which are not Scheduled Activities under the 1992 EPA Act. Taking appropriate enforcement action when noncompliances are detected up to and including prosecution. An annual inspection programme compromising of 227 inspections of S4 licences are scheduled in 2025 across the county.

- Responding to and investigating reported water pollution incidents and complaints. Taking enforcement action as appropriate where Cork County Council is the competent authority, and liaising with other responsible agencies such as EPA, UÉ, IFI etc. as appropriate.
- Cork County Council supports the EPA Water Framework Directive sampling programme by undertaking collection of samples on behalf of the EPA and sending samples to the EPA for analysis.
- Delivering actions assigned to us under the Water Action Plan 2024 (National River Basin Management Plan) as funded by the Department Housing, Local Government and Heritage. Cork County Council is supported in the discharge of its regulatory functions by Local Authority Waters Programme Office (LAWPRO) – a national local authority shared service, established to coordinate the efforts of the 31 local authorities and other public bodies in the implementation of the River Basin Management Plan, whose objective is to protect and restore good quality water in rivers, lakes, estuaries, ground and coastal water.

2.0 Investigation

Cork County Council was first notified by Inland Fisheries Ireland (IFI) at 12:15 hrs on Monday the 11/08/2025 of a reported fish kill at Mallow Bridge.

A Cork County Council officer attended the scene at 14:30 hrs with IFI.

Cork County Council carried out an inspection of the river in the vicinity of the reported fish kill and upstream of Mallow Bridge. No discharge, plume or other matter was evident.

Several dead and injured fish (brown trout) were observed by the Cork County Council officer and IFI inspectors, among seemingly unaffected fish.

IFI shared their initial assessment suggesting a possible fungal outbreak or disease, exacerbated by low water levels and high temperatures, as early investigation yielded no signs of pollution.

IFI engaged The Marine Institute, Fish Health Unit, to assist in their investigation by way of pathological testing.

Investigations by IFI and Cork County Council officers continued, in order to ascertain the extent of the area impacted, and what rivers could potentially be affected.

Cork County Council received a number of complaints from the public on the 12/08/2025.

Cork County Council carried out sampling at the River Clyda and River Blackwater (Mallow) on the 12/08/2025. Results from these samples showed that ammonia, dissolved oxygen were within normal range. These results were shared with IFI.

From 12/08/2025 through to 22/08/2025, the investigation was primarily supporting IFI in their investigation to establish the scale and extent of affected catchment, following up and investigating reported mortalities and reports from the public about activities that may be responsible for this incident.

Fig 1. below shows the extent of the affected waterbodies. The main Blackwater channel from Clonmeen, Banteer to the confluence of the Awbeg with the Blackwater at Castletownroche, and

approximately 2.5km of the Cylda river. The Allow, Glen and Lombardstown rivers appeared to be unaffected.

Figure 1 Affected Waterbodies

On the 22/08/2025 based on the Marine Institute Fish Health Unit, IFI confirmed they were satisfied the cause was not a fungal infection as previously suggested, and the likely cause was an "*environment insult or irritant*" that caused or contributed to the fish mortalities, and the exposure may have occurred in the days previous to the 11/08/2025.

Minister T. Dooley (Minister State Department Agriculture Food and the Marine) on the 22/08/2025 established an IAG to be led by IFI, which consisted of agencies including EPA, Cork County Council, Marine Institute, Uisce Éireann – eventually expanding to include HSE, DAFM, NPWS, LAWPRO.

On 25/08/2025, the interagency group convened for an online meeting. IFI was confirmed as the lead agency and chaired the meeting. The EPA and Cork County Council attended the first IAG meeting.

IFI have to date been the lead agency on this case and have co-ordinated and chaired a series of inter-agency meetings. The initial meeting took place on the 25/08/2025. Cork County Council attended further meetings on the 01/09/2025, 03/09/2025, 08/09/2025, 11/09/2025, 12/09/2025,16/09/2025 and 23/09/2025.

The IAG meetings agreed specific actions, including further analysis of tissue samples by a contracted laboratory on behalf of IFI, as well as further catchment macroinvertebrate assessments at agreed locations, these assessments to be undertaken by Cork County Council, EPA and IFI. These assessments found no evidence of an impacted macroinvertebrate population.

Between 13/08/2025 and 27/08/2025, Cork County Council staff inspected twenty light industrial and commercial sites within the catchment, compromising of businesses licensed under Section 4 of the Local Government (Water Pollution) Acts 1977 to 2007, and other commercial operators. No issues were identified that might give rise to an incident of this nature. Any minor non-compliant activities detected as part of these investigations are being pursued as appropriate under the enforcement provisions of the Local Government (Water Pollution) Act.

Cork County Council undertook fourteen investigations of agricultural activities within the catchment. These investigations established no causal link with this incident.

Cork County Council sent samples taken on 12/08/2025 for additional testing (heavy metals) on the 25/08/2025. The result was discussed at Inter Agency Meeting (11/09/2025) and consensus was it was

these results were within the normal range of monitoring data and was unlikely to be indicative or of evidential value in establishing any analysed heavy metals as being the cause of the kill.

Between 12/08/2025 and 05/09/2025 a total of twenty complaints have been received from members of the public in respect of this incident. All complaints were triaged and assigned for inspection where deemed appropriate. Arising from the investigation of these complaints, no causal link to the fish kill was found.

Results from fish tissue testing undertaken by specialist laboratory on behalf of IFI, found no specific factors that could be conclusively said to have caused the incident.

Cork County Council briefed their elected members of the Northern Committee (In-Committee) on the 08/09/2025 and 22/09/2025.

Cork County Council has supported IFI (lead agency) and has worked closely with other state agencies throughout this investigation.

Cork County Council will continue to provide support to the investigation on an Inter-Agency basis.

3.0 Conclusion

- Cork County Council staff inspected twenty light industrial and commercial sites within the catchment, compromising of all businesses licensed under Section 4 of the Local Government (Water Pollution) Acts 1977 to 2007, and other commercial operators. No causal link to the incident was identified during inspections.

- Cork County Council undertook fourteen investigations of agricultural activities within the catchment. These investigations established no causal link to this incident.

- Cork County Council undertook nine macro-invertebrate assessments in the catchment. No evidence of the source of a potential environmental insult or irritant was found.

- Twenty complaints were received from members of the public in respect of this incident. All complaints were investigated, and no causal link was found.