

Report

# Uisce Éireann Report

Compliance Report of Boherbue  
Primary Effluent Discharge, Co. Cork.

December 2025



# Delivering Water Services for Ireland

If you have any questions or need more information please contact us:

## Contact details

**Web:**  
[www.water.ie](http://www.water.ie)

**Twitter:**  
[@IWCare](https://twitter.com/IWCare)

Uisce Eireann  
PO Box 860  
South City Delivery  
Office  
Cork City

## Account information or account enquiries

**9am–5.30pm, Mon–Fri**

**Phone:**  
**0818 778 778** or **+353 1 707 2827**

**ITRS:**  
1800 378 378 (for hard of hearing customers)

## Water supply queries and emergencies

**24 hours a day, 7 days a week**

**Phone:**  
**0818 778 778** or **+353 1 707 2827**

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**1800 378 378** (for hard of hearing customers)

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## 1.1 Introduction

The Environmental Protection Agency (EPA) has identified no. 12 agglomerations where wastewater treatment must improve to help protect freshwater pearl mussels. The EPA listed the no. 12 agglomerations in the Priority Areas List (PAL), which included the Boherbue agglomeration. Corrective action works on Boherbue Wastewater Treatment Plant (WwTP) have been completed. The assessment to demonstrate the impact of the WwTP on the receiving watercourse was pending. This report details the improvement works undertaken and effluent and ambient monitoring data with respect to the primary effluent of Boherbue WwTP, Co. Cork.

## 1.2 Boherbue Agglomeration

The Boherbue agglomeration consists of three pumping stations; Gneevies Road WWPS, which is situated on the southeast side of the agglomeration, and the Lahern and Secondary School pumping stations, which are situated on the Northeast side of the agglomeration. The Lahern WWPS has an emergency overflow which discharges to the River Brogeen. The three pumping stations pump wastewater to header manholes, and from these the wastewater gravitates to the WWTP with flows from 150 – 450 m<sup>3</sup>/day.

## 1.3 Improvement Works

A 15-million-euro upgrade project was delivered by Uisce Éireann and commissioned during the first quarter of 2024. The upgrade project comprised the construction of a new WwTP.

The Boherbue agglomeration was originally issued with a Wastewater Discharge license D0437-01 by the EPA on the 23<sup>rd</sup> of July 2013. This certified a Primary Discharge and 1No. Stormwater Overflow (SWO) from the wastewater works, both of which discharged to the River Brogeen\_010 18 Blackwater (Munster) waterbody.

The new license application for the Boherbue Agglomeration (D0437-02) has been submitted and is still currently under assessment with the EPA.

### **Old WWTP:**

The old plant that has since been decommissioned was designed to cater for a population Equivalent of 800. The plant design consisted of the following:

Influent gravitated to the Inlet Works which comprised of a grit trap and automatic screen. Flow then gravitated to an Imhoff Tank for primary treatment and from there to 2 No Trickling Filters, which were followed by final settlement in 2 No Humus Tanks. Flow of the treated effluent was then discharged to an Integrated constructed wetlands (ICW) (added in 1998) for Tertiary Treatment. The outlet flow from the ICW was via a headwall with grid reference 126,750E, 101,936N, which is still the existing Primary Discharge Point (SW001) for the newly constructed plant. There is an open channel between the headwall and River Brogeen (21m in length from headwall to river). The channel meets the river at grid reference 126,755E and 101,960N. There was 1 x SWO (SW002) associated with the Boherbue Agglomeration. The SWO was at the inlet works within the confines of the WwTP site. SW002 combined with the secondary treated effluent prior to discharging into the ICW. SW001 and SW002 discharged at the same location – headwall - 126,750E, 101,936N.

### **Upgraded WwTP:**

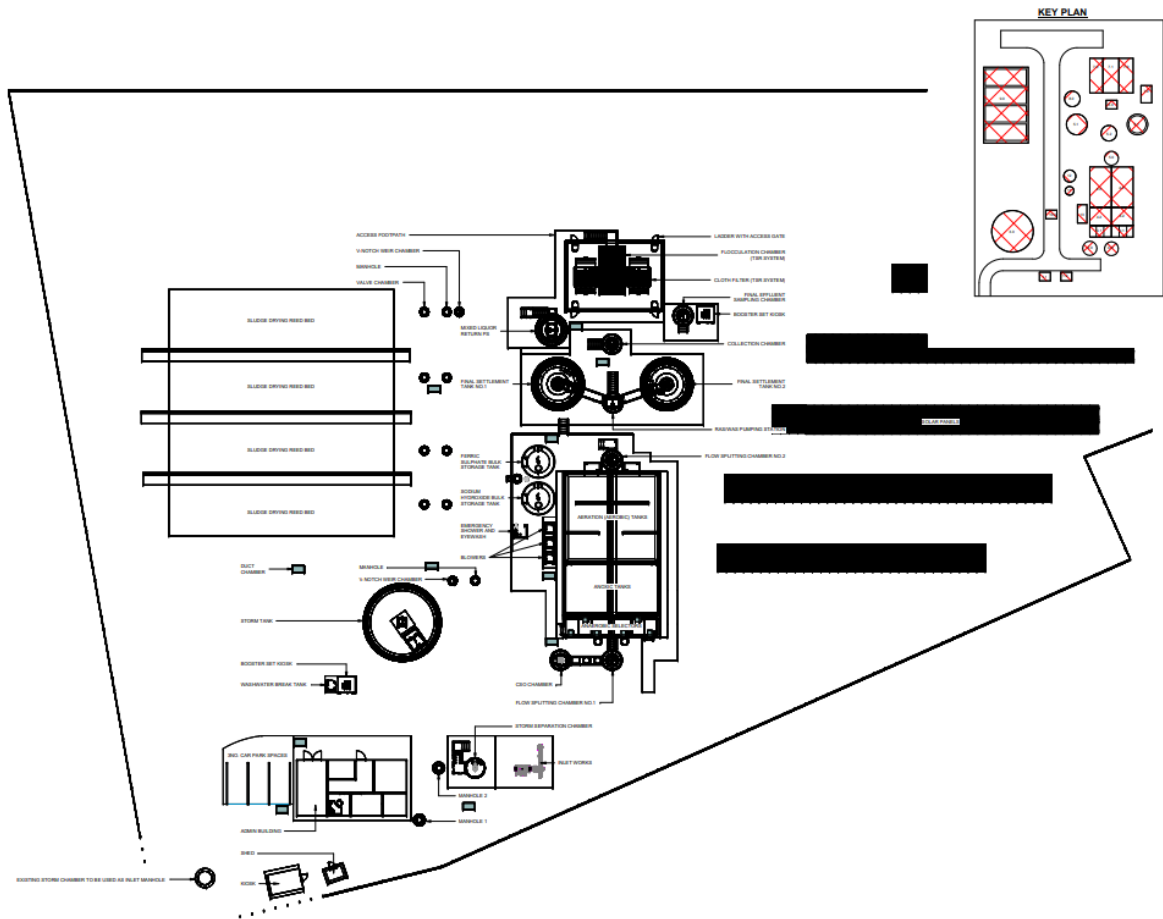
Boherbue WwTP provides tertiary treatment for a total design population equivalent of 1350. The current collected load at the plant is 748PE. The new plant consists of the following:

**Inlet Works:** Incoming flows pass through the inlet works for screening and grit removal. Fine screening to 6mm in 2D and a manual bypass screen to 19mm are provided. The screens are designed to cope with a minimum of 150% of the design capacity for the works.

**Stormwater Management:** The upgrade includes works for stormwater management. Prior to the Inlet Works, stormwater arriving at the plant in excess of Formula A is directed through the Integrated constructed wetlands (ICW) to discharge at existing headwall (SW001). Downstream of the inlet works, stormwater in excess of FFT is diverted to a new stormwater holding tank. Overflows from the stormwater tank is also directed through the ICW to discharge at the existing headwall (SW001)

**Secondary Treatment - Biological Treatment Stage:** Flows to full treatment pass to a biological treatment stage, where carbonaceous oxidation, nitrification and suspended solids separation is carried out in order to achieve the required treated effluent quality. Coagulant dosing is carried out at the outlet of the biological treatment stage (but upstream of the secondary settlement stage) to promote chemical phosphorus removal.





**Summary of discharge points and SWO’s:**

The original SWO has been decommissioned and are succeeded by 2 new SWO’s designated as SW004 and SW005 which are constructed upstream of the inlet works and at the Storm water holding tank respectively. These SWO’s divert stormwater overflow to the original ICW that was built in 1998. Flows filter through the ICW and rejoin with the primary discharge pipe to the river.

As stated previously there is one emergency overflow (EO) in the agglomeration at the Lahern WWPS, which discharges to the river Brogeen.

**1.4 Incidents**

There is currently only one incident open for the Boherbue agglomeration which pertains to the ELV breaches that were experienced for ammonia and Orthophosphate prior to the upgrade works taking place. Since the upgrade there has been 1 non-reportable exceedance for both ammonia and Orthophosphate. There have been no further reoccurrences of ELV breaches since May 2025.

## 1.5 Results

### 1.5.1 Effluent Monitoring Data

Treated effluent monitoring data from 2025 is presented in table 1.0 below for the WwTP. Additionally, histograms for the individual parameters are also presented, displaying the data and the associated ELV's for each parameter. The majority of samples collected for effluent monitoring at the WWTP are compliant with the exception of two Mandatory ELV breaches. One for Ammonia on 28/01/2025 and one for Orthophosphate on 27/06/2025 which are highlighted in yellow below.

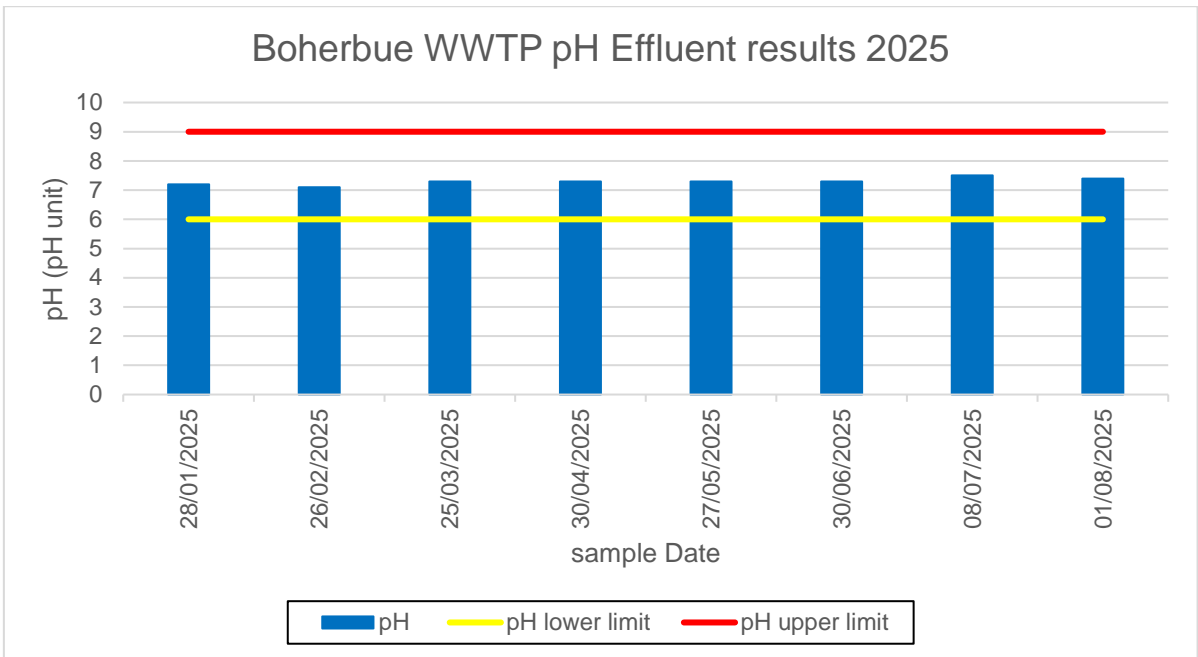
**Table 1.0: Boherbue ELV limits for current licence (D0437-01)**

	pH	BOD	COD	Suspended Solids	Total Ammonia	Ortho-P
	pH Unit	mg/L	mg/L	mg/L	mg/L	mg/L
ELV breach	6-9	25	125	25	0.5	0.3
Outright failure		30	250	62.5	1	0.6

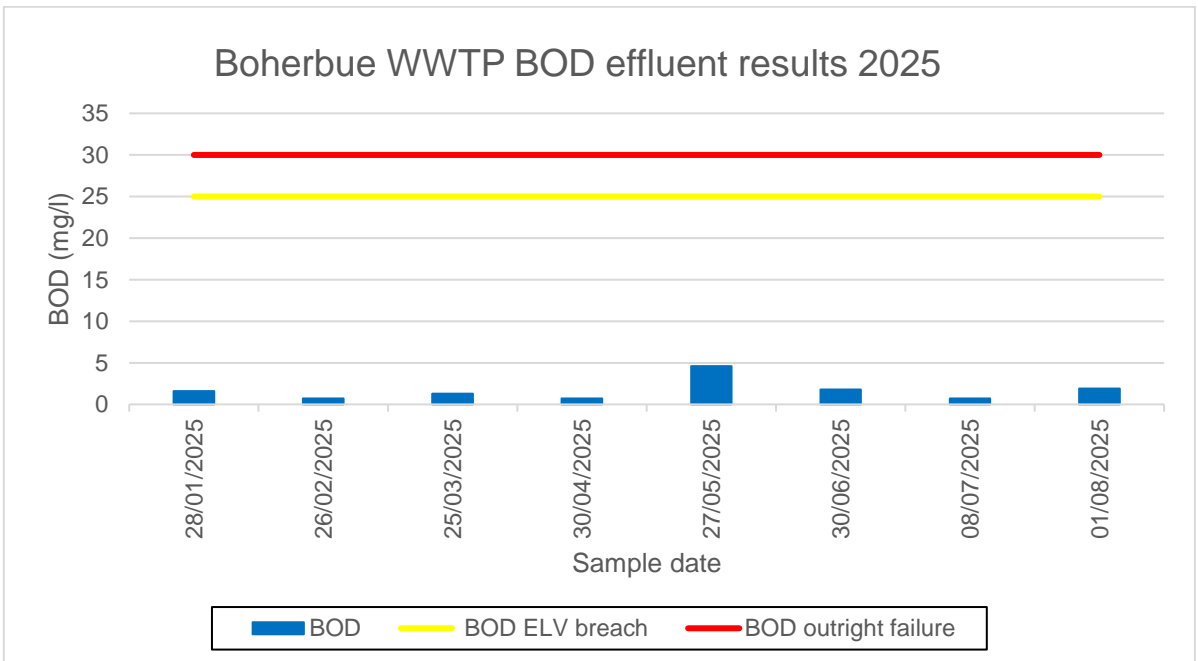
**Table 2.0: WWTP Effluent Monitoring Data 2025.**

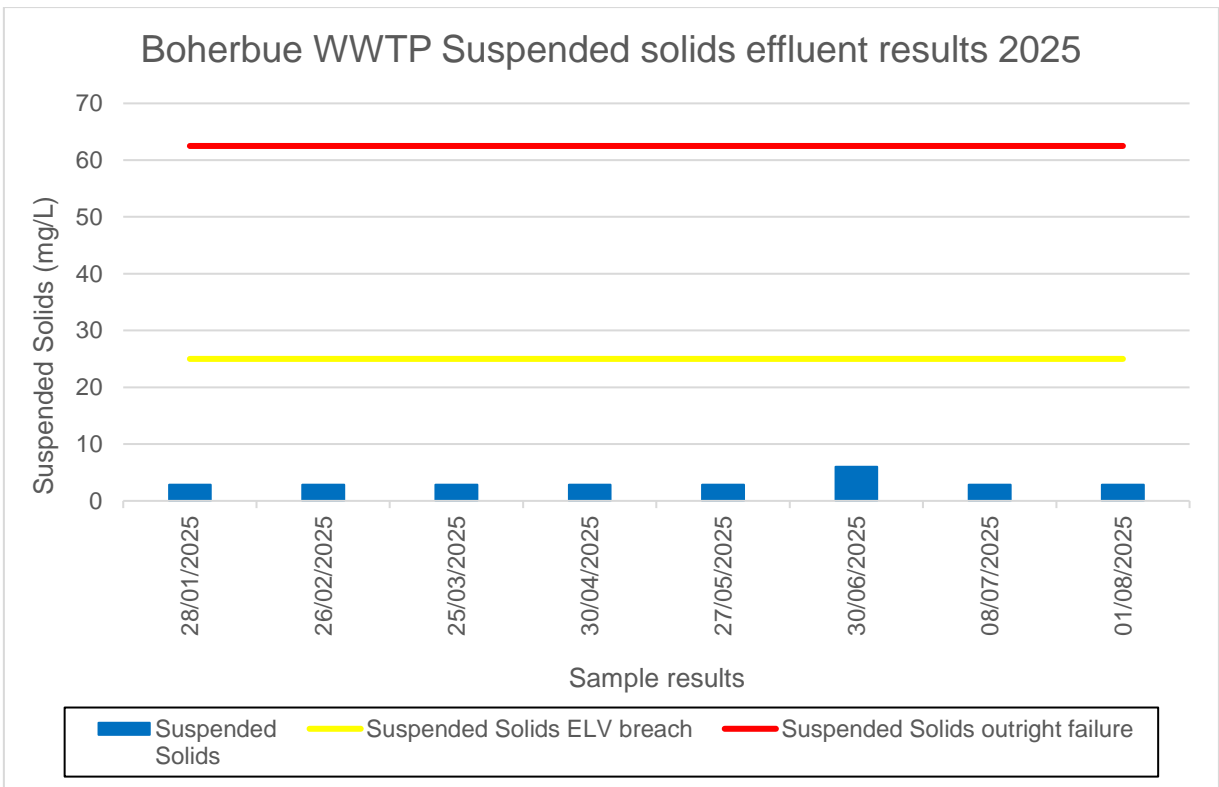
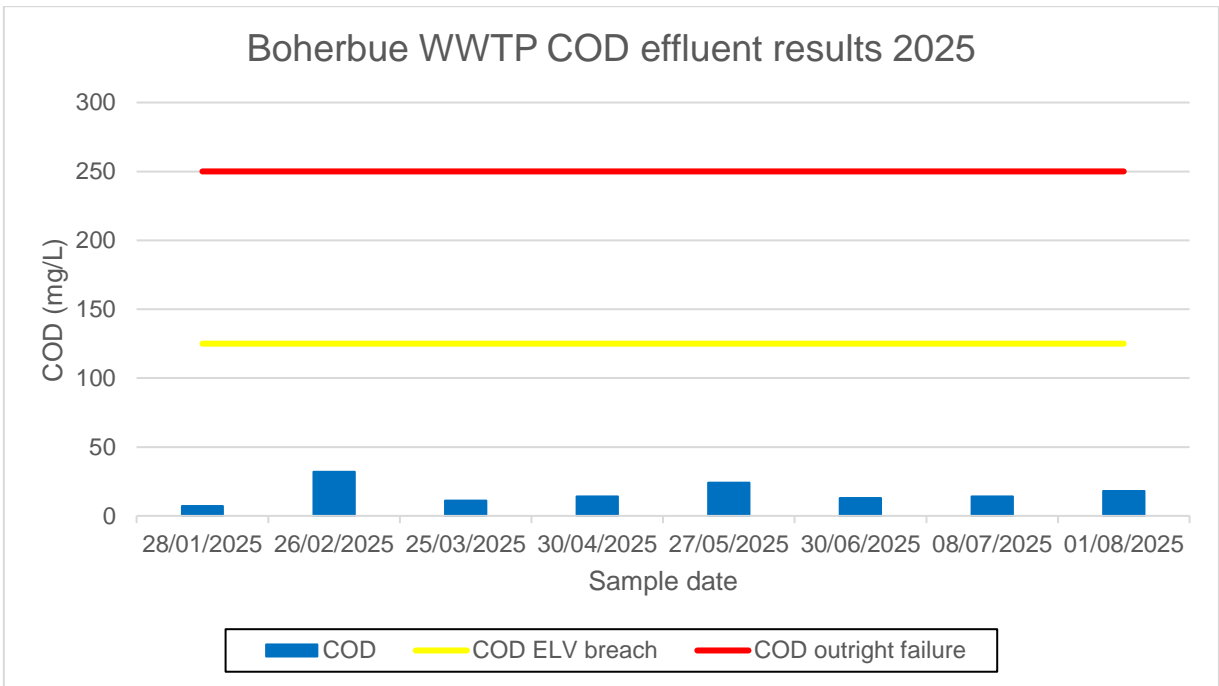
Matrix	Sample Date	pH	BOD	COD	Suspended Solids	Total Ammonia	Ortho-P	Total Phosphorous	Total Nitrogen
		pH Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Effluent	28/01/2025	7.2	1.6	7.07	2.83	0.6	0.02	0.05	4.3
Effluent	26/02/2025	7.1	0.71	32	2.83	0.03	0.09	0.29	3.7
Effluent	25/03/2025	7.3	1.3	11	2.83	0.04	0.12	0.16	4.5
Effluent	30/04/2025	7.3	0.71	14	2.83	0.05	0.18	0.3	5.6
Effluent	27/05/2025	7.3	4.6	24	2.83	0.08	0.34	0.39	6.8
Effluent	30/06/2025	7.3	1.8	13	6	0.014	0.03	0.11	6.3
Effluent	08/07/2025	7.5	0.71	14	2.83	0.06	0.06	0.08	6.4
Effluent	01/08/2025	7.4	1.9	18	2.83	0.09	0.13	0.13	7.1

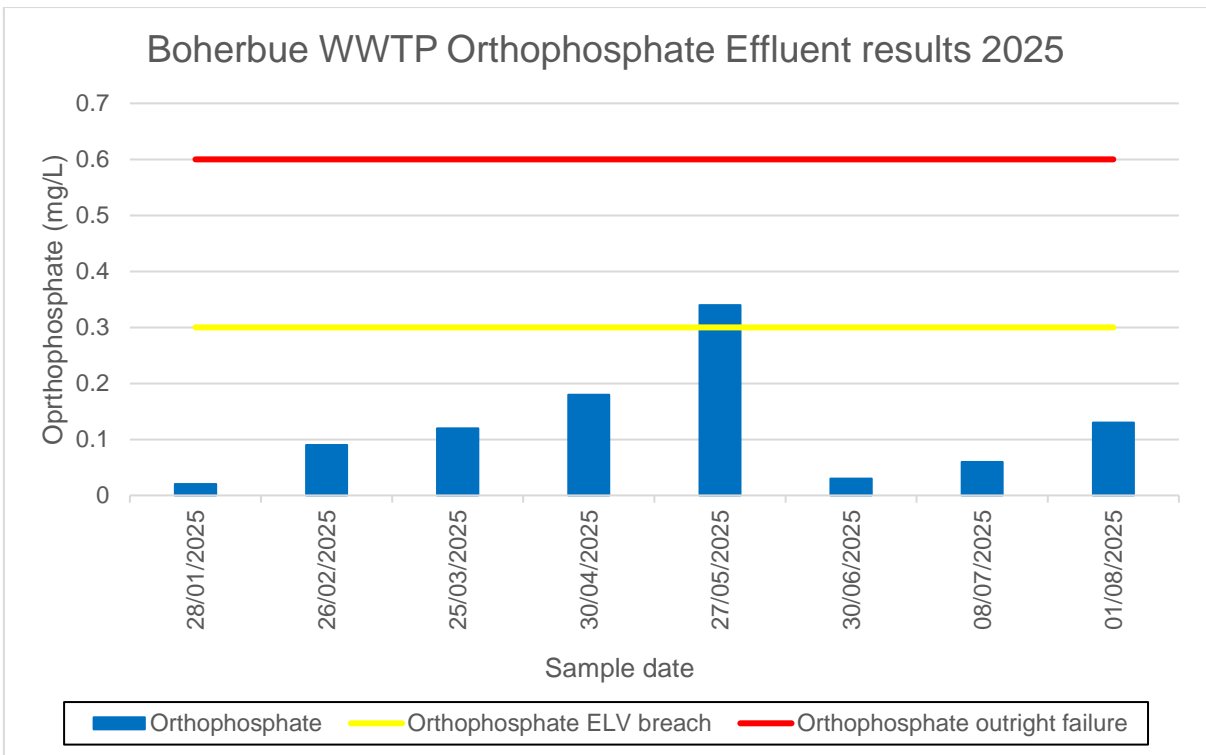
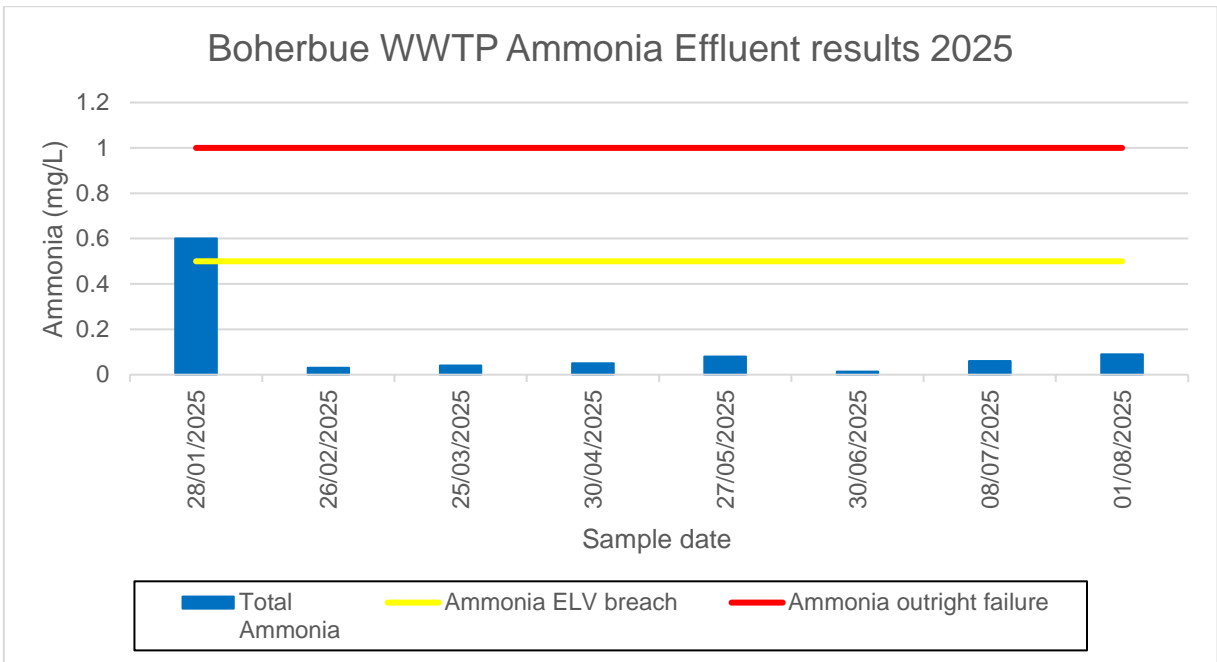
The following graphs display the effluent data for pH, BOD, COD, suspended solids, Ammonia, ortho-P and the associated ELV's associated with each parameter listed individually for the WWTP.



All pH results are within the limits of the 6 – 9 pH range.







### 1.5.2 Ambient Monitoring Data

Ambient monitoring results (2025) are presented in Tables 3.0 and 4.0 below. Ambient monitoring data is available for no. 2 locations on the River Brogeen\_010 18 Blackwater (Munster) (Figure 1.0). Relevant Environmental Quality Standards (EQSs) as set out in Schedule 5 of the EC Environmental Objectives (Surface Water) Regulations 2009 (S.I. No. 272 of 2009), as amended, are also included in Tables 3.0 and 4.0. In addition, histograms for the individual parameters are

also presented, displaying the data and the associated EQS values for each parameter. It should be noted that WFD status is assigned at a waterbody scale and the data presented below is to provide an indication of recent localised water quality in the river Brogeen up and downstream of the Boherbue Primary Discharge. The data in Tables 3.0 and 4.0 does not provide an indication as to the WFD status for the waterbody as a whole. The ambient data values shown in Table 3.0 and 4.0 have been examined in relation to the 95%ile EQS parameter values.

### **Br N of Islandav (RS18B060100) Monitoring Station:**

Ambient sampling was conducted on the River Brogeen at monitoring station, RS18B060100, 'Br N of Islandav'. This monitoring station is located upstream of Boherbue WwTP Primary Discharge and the EO at Lahern PS.

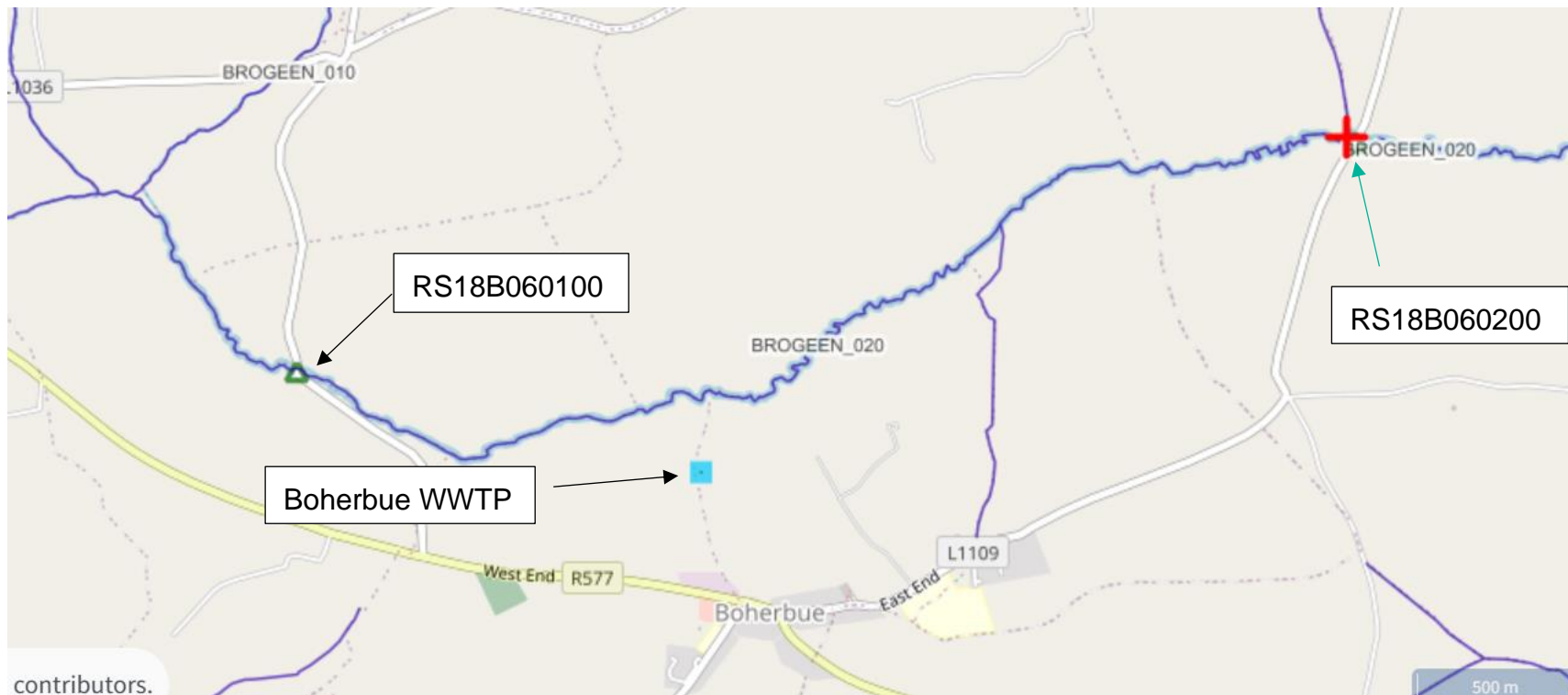
- The ambient water quality data collected so far from 2025 show that 4 of seven results for BOD are in alignment with the 'High' status EQS's with the exception of 3 results which fail to meet the 'good status EQS.
- 2 of the orthophosphate results meet the 'high' status EQS, 4 of the Orthophosphate results meet the 'good' status EQS and one result fails to meet the 'good' EQS status.
- 6 of the 7 Ammonia results meet the 'high status EQS where one result taken on the 27/05/2025 fails to meet the 'good status EQS.

### **Brogeen Br (RS18B060200) Monitoring Station:**

Ambient sampling was conducted at monitoring station RS18B060200, 'Brogeen Br' on the River Brogeen. This station is located downstream of the Boherbue WwTP Primary Discharge and the EO at Lahern PS. The ambient water quality data collected so far from 2025 recorded at this monitoring station show alignment with the 'good' status EQSs for Ammonia, BOD and Orthophosphate.

- 3 of 7 BOD results align with the 'good' status EQS whereas the remaining 4 results align with the 'high' status.
- 2 of the 7 orthophosphate results align with the 'good' status EQS and the remaining 5 results align with the 'high' status
- All of the ammonia results align with the 'high' status EQS

It Should be noted that the results with high levels of BOD, orthophosphate and ammonia obtained from the upstream samples are not reflected in the downstream results.



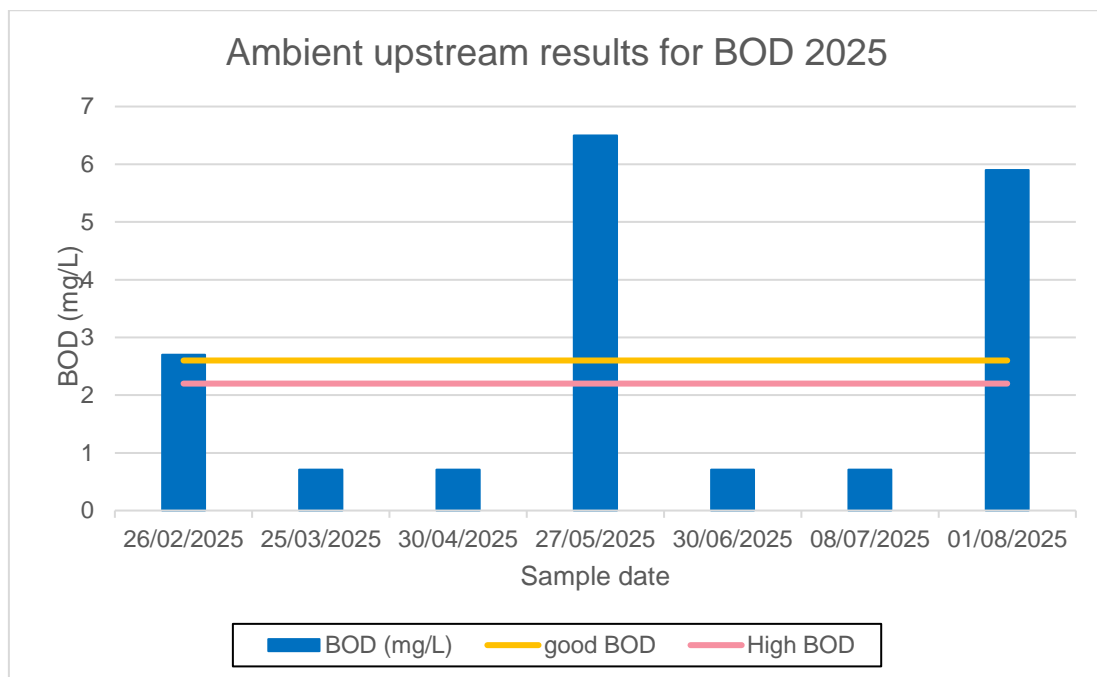
**Figure 1.0: Map showing the locations of the ambient monitoring points on the Brogeen river and the WWTP.**

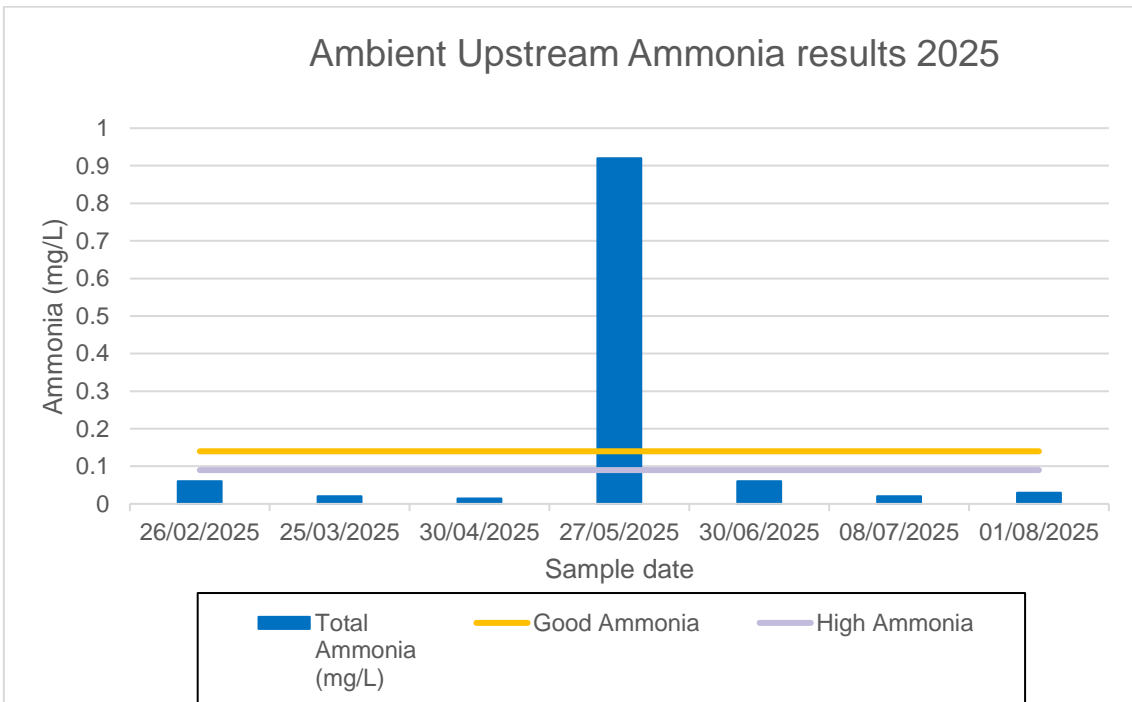
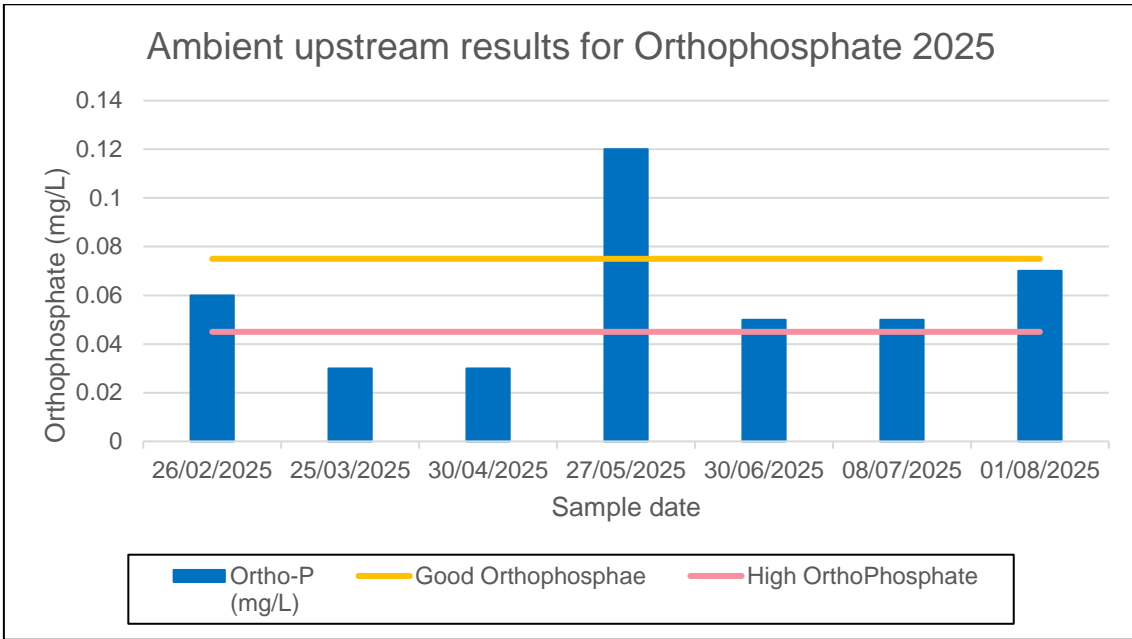
**Table 3.0: Ambient Upstream Water Quality Monitoring Data 2025.**

Parameters	BOD	OrthoP (mg/l)	Ammonia
SW EQS	95%ile: ≤2.6 (good) ≤2.2 (high) Mean: ≤1.5 (good) ≤1.3 (high)	95%ile: ≤0.075 (good) ≤0.045 (high) Mean: ≤0.035 (good) ≤0.025 (high)	95%ile: ≤0.140 (good) ≤0.090 (high) Mean: ≤0.065 (good) ≤0.040 (high)

Site	Matrix	Sample Date	pH (pH unit)	BOD (mg/L)	Total Ammonia (mg/L)	Ortho-P (mg/L)	DO (%)	DO (mg/l)	Temperature (°C)
Boherbue	U/S	26/02/2025	7.2	2.7	0.06	0.06	102.07	9.12	9.1
Boherbue	U/S	25/03/2025	7.3	0.71	0.02	0.03	102.27	9.32	11.1
Boherbue	U/S	30/04/2025	7.5	0.71	0.014	0.03	105.75	9.43	8.2
Boherbue	U/S	27/05/2025	7.5	6.5	0.92	0.12	89.25	8.15	19.8
Boherbue	U/S	30/06/2025	7.6	0.71	0.06	0.05	96.83	8.72	18.6
Boherbue	U/S	08/07/2025	7.7	0.71	0.02	0.05	101.6	8.53	16.7
Boherbue	U/S	01/08/2025	8.1	5.9	0.03	0.07	100.94	9.76	15.1

The following graphs display the upstream Ambient data for BOD, Ortho-P and Ammonia for the Boherbue agglomeration and showing the 95%ile good and high EQS's associated with each parameter.



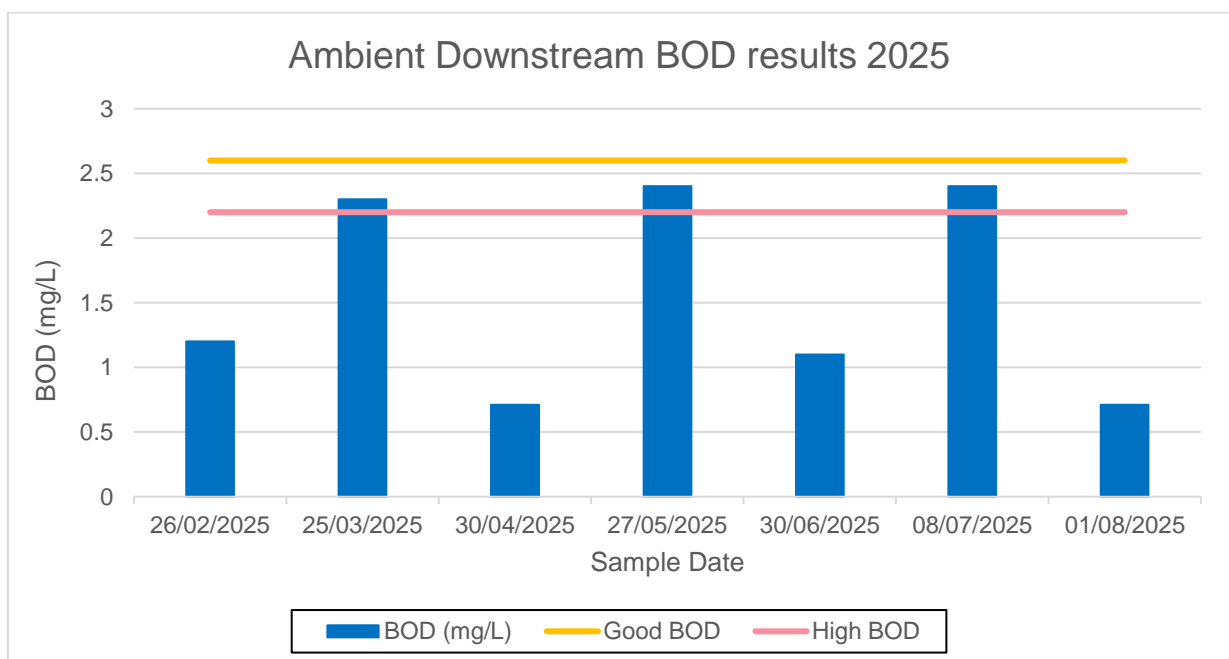


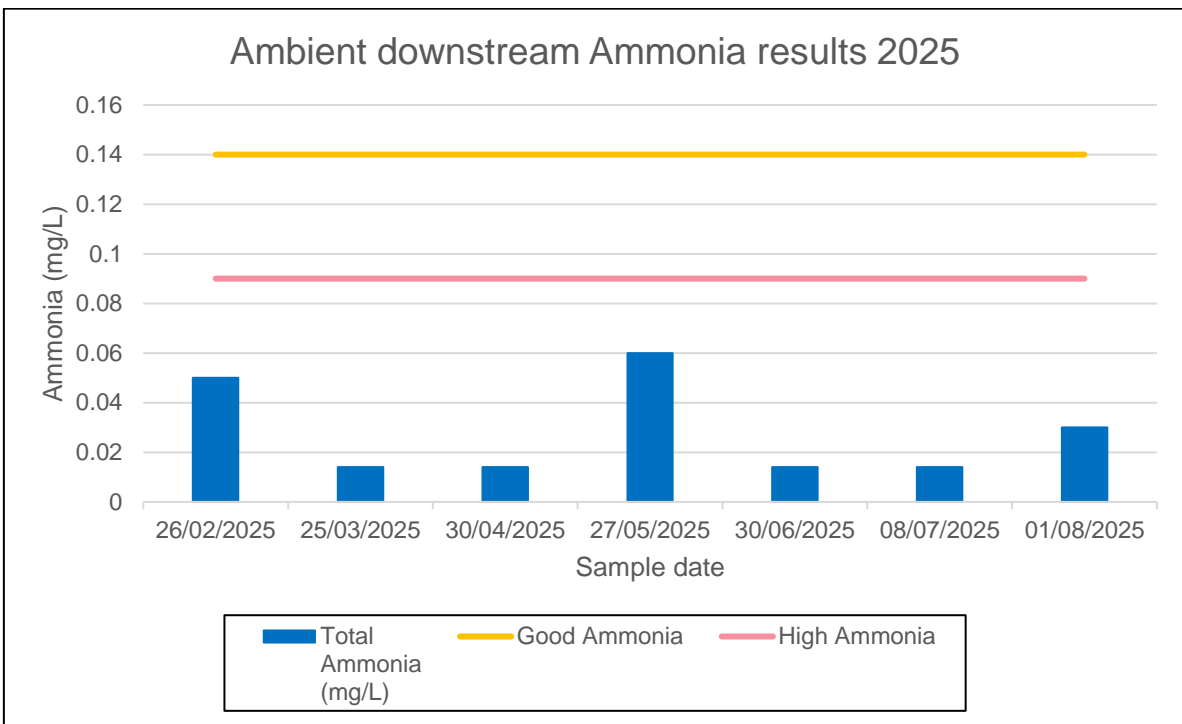
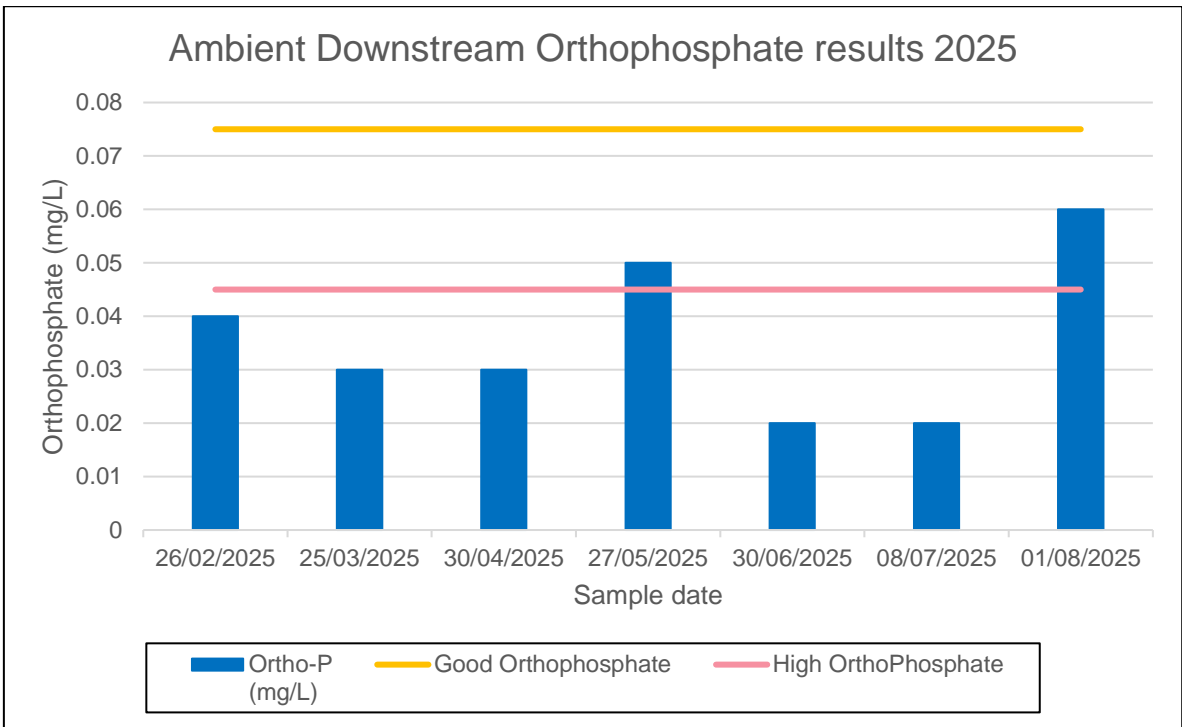
**Table 4.0: Ambient downstream Water Quality Monitoring Data 2023 & 2024.**

Parameters	BOD	OrthoP (mg/l)	Ammonia
SW EQS	95%ile: ≤2.6 (good) ≤2.2 (high) Mean: ≤1.5 (good) ≤1.3 (high)	95%ile: ≤0.075 (good) ≤0.045 (high) Mean: ≤0.035 (good) ≤0.025 (high)	95%ile: ≤0.140 (good) ≤0.090 (high) Mean: ≤0.065 (good) ≤0.040 (high)

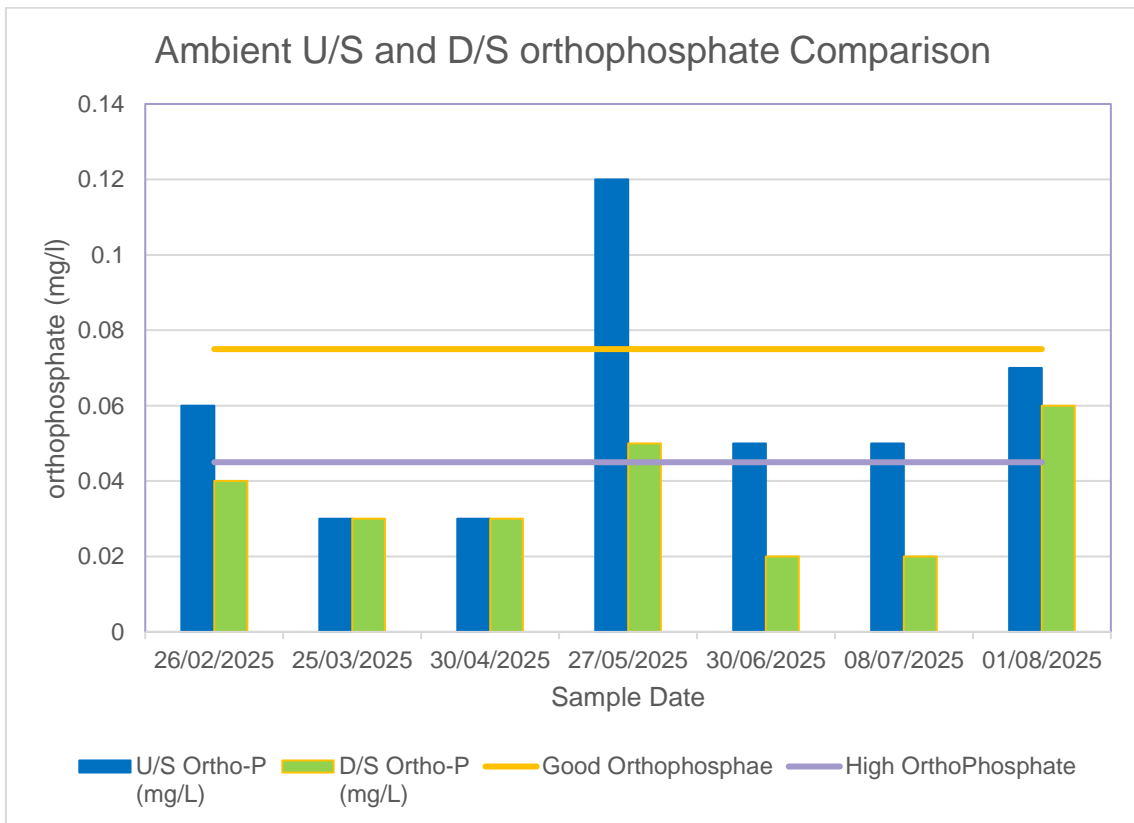
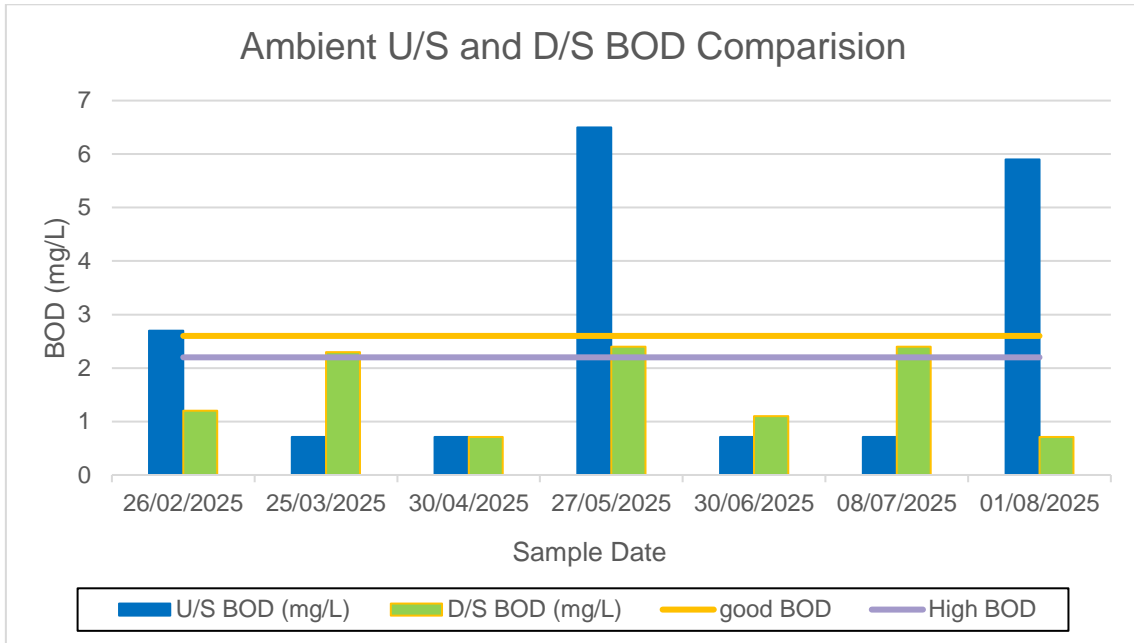
Site	Matrix	Sample Date	pH (pH unit)	BOD (mg/L)	Total Ammonia (mg/L)	Ortho-P (mg/L)	DO (%)	DO (mg/l)	Temperature (°C)
Boherbue	D/S	26/02/2025	7.2	1.2	0.05	0.04	105.66	9.44	8.7
Boherbue	D/S	25/03/2025	7.6	2.3	0.014	0.03	100.7	9.27	11.1
Boherbue	D/S	30/04/2025	7.8	0.71	0.014	0.03	111.69	9.96	9.1
Boherbue	D/S	27/05/2025	7.5	2.4	0.06	0.05	85.54	7.78	20
Boherbue	D/S	30/06/2025	8	1.1	0.014	0.02	95.53	8.62	18.3
Boherbue	D/S	08/07/2025	7.9	2.4	0.014	0.02	103.7	9	16.6
Boherbue	D/S	01/08/2025	7.9	0.71	0.03	0.06	102.08	9.87	15.8

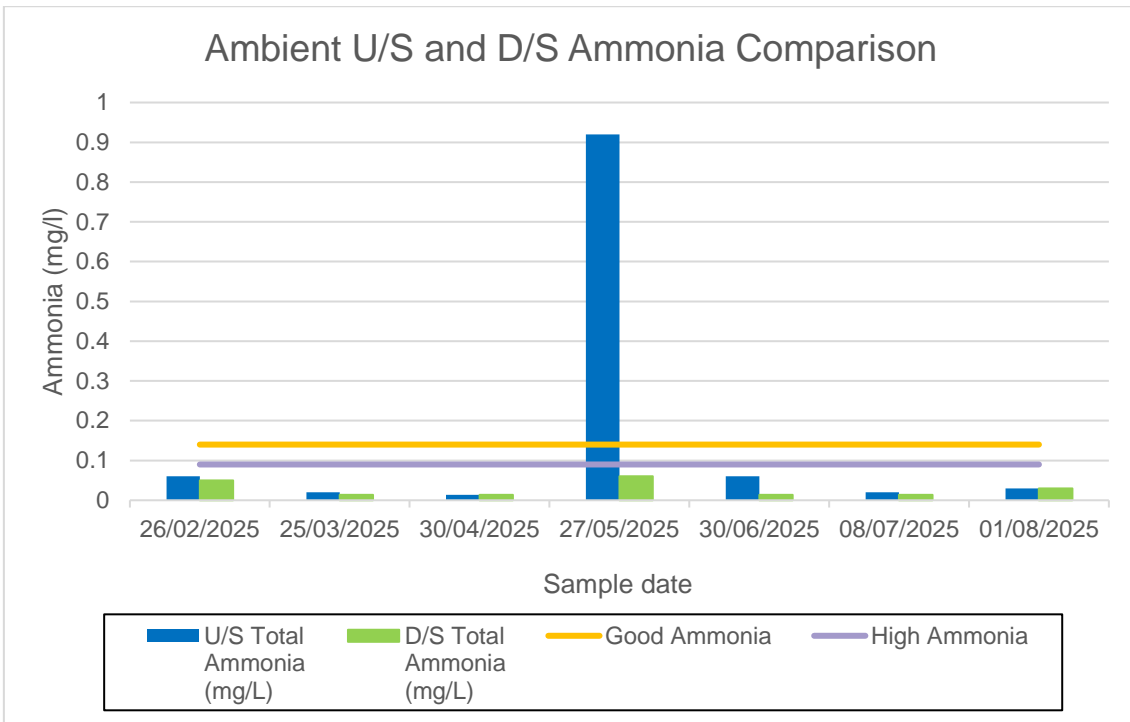
The following graphs display the downstream Ambient data for BOD, Ortho-P and Ammonia for the Boherbue agglomeration and showing the 95%ile good and high EQS's associated with each parameter.





## Comparison of Ambient Upstream and Downstream results





The graphs Above displaying the comparison between upstream and downstream clearly show that the upstream results have higher overall levels of the parameters.

## 1.6 Conclusion

The improvement works at the Boherbue WWTP comprised of a newly constructed treatment plant with tertiary treatment capabilities including screening, biological treatment using carbonaceous oxidation, nitrification and suspended solids separation, final settlement, phosphate removal using chemical phosphate removal and finally cloth filters to further remove TSS, associated BOD, phosphorus and other pollutants.

Given the improvement works undertaken in the Boherbue agglomeration with the construction of a new WwTP, the ambient monitoring data outlined in this report, in-combination with the primary effluent data of Boherbue WwTP, it can be concluded that Boherbue WwTP is not negatively impacting the water quality of the River Brogeen. Thus, Uisce Éireann propose that the Boherbue agglomeration be removed from the EPA's Priority Areas List.