Site Visit Report

Under the *European Union (Drinking Water) Regulations 2023*, the Environmental Protection Agency (EPA) is the supervisory authority in relation to Uisce Éireann and its role in the provision of public drinking water supplies. This audit was carried out to assess the performance of Uisce Éireann in providing clean and wholesome water to the public water supply named below.

The audit process is a sample of the performance of a water treatment plant and public water supply on a given date.

Water Supply Zone

Name of Installation	Mountbellew PWS
Organisation	Uisce Éireann
Scheme Code	1200PUB1039
County	Galway
Site Visit Reference No.	SV31994

Report Detail

Issue Date	22/04/2025
Prepared By	Maria O'Connell

Site Visit Detail

Date Of Inspection	12/03/2025	**Announced**	Yes
Time In	11:00	**Time Out**	13:35
EPA Inspector(s) **Additional Visitors**	Maria O'Connell		
Company Personnel	Uisce Éireann: Vincent McGrath Working in partnership with Galway County Council: Tomás Higgins, Terry McDermott, Ronan Mannion.		

Summary of Key Findings

1. Duty and standby UV Units are utilised as primary disinfection at this plant. Uisce Éireann is requested to submit copies of calibration/servicing records for the UV disinfection units on site to confirm that servicing of the UV units is aligned with the requirements of the EPA's Water Treatment Manual: Disinfection (2011).

2. Alarms and inhibits in place at the Mountbellew WTP should be reviewed in order to enhance operational control and provide appropriate alerts on deteriorating water quality.

3. Previous EPA audit recommendations as regards aluminium testing and recording on occasion when PAC is in use and on the insulation of the PAC and (pre) chlorine dosing lines remain outstanding.

4. This site is used as a chemical storage hub for neighbouring plants. Current storage arrangements at this site are not appropriate. The site operator outlined that works are planned to update the storage facilities on site

Introduction

The Mountbellew Public Water Supply (PWS) serves a population of 2,447. Raw water is sourced onsite from the Meelick Spring and the average daily production of treated water from the water treatment plant ranges from 1200 - 1400m3. The treated water design volume of the plant could not be confirmed at the time of the audit. Treatment consists of pre-chlorination for manganese and iron reduction , rapid gravity filtration, UV disinfection, chlorine disinfection and fluoridation. Poly aluminium chloride (PAC) is dosed prior to filtration at times when the raw water turbidity approaches 1 NTU.

This audit was undertaken to assess Uisce Éireann's performance in producing clean and wholesome water with a focus on the alarms and inhibits in place at the treatment plant to ensure the appropriate oversight of treatment processes.

Supply Zones Areas Inspected

The audit included a site tour of treatment processes at Mountbellew Water Treatment Plant with site personnel.

1. Source Protection

		Answer
1.1	Is the abstraction source(s) adequately protected against contamination?	No

Comment

1.The raw water abstraction point was enclosed and fenced however a significant amount of vegetation was observed on the water at the entrance to this area. The site operator advised that this area was due for cleaning.

2. Coagulation Flocculation and Clarification (CFC) Stage

		Answer
2.1	Is the CFC process optimised to respond to changes in raw water quality?	No

Comment

1. Raw water is continuously monitored and alarmed for turbidity at 0.5 NTU (high) and also pH at pH 8.5 (high) and pH 6.5 (low). There are no inhibits on raw water.

2. Poly aluminium chloride is manually dosed prior to the filters on occasion when the raw water turbidity approaches 1NTU. There are no jar tests conducted on site to determine dose according to raw water quality. PAC usage is recorded in the plant log.

3. Refer to Section 5.1 in relation to aluminium testing is undertaken on the final water.

4. The PAC (and prechlorination) dosing lines were not insulated to protect operations from the impacts of severe weather. This issue was previously raised during EPA Audits 2012 and 2015. The site operator outlined that the insulation material had been ordered however a timeframe for the completion of such works was not available.

3. Filtration

		Answer
3.1	Are the filters designed and managed in accordance with EPA guidance?	No

Comment

1. Filter media specification and the current filter media depths could not be provided at the time of the audit

2. Filter maintenance records are not maintained as per *EPA Water Treatment Manual: Filtration.*

4. Treatment Process Chemicals

		Answer
4.1	Are treatment process chemicals appropriately managed and stored?	No

Comment

1. Chemical containers were observed on pallets in an outdoor unbunded area of the site. The site operator outlined that Mountbellew WTP is utilised as a holding area for the storage of water treatment chemicals by neighbouring water treatment plants and that the development of an appropriate external chemical storage area for the site is planned. A timeframe for the completion of these works was not available.

5. Alarms, Inhibits & Oversight Audits 2025

		Answer
5.1	Is suitable continuous monitoring in place to verify treatment performance?	No

Comment

1. Aluminium monitoring in the final water is conducted via monthly operational monitoring and periodically recorded by the site operator on some occasions of the PAC being in use. Testing for aluminium levels in the final water should take place and be recorded in the plant log on occasions when PAC is in use. This was previously recommended via an EPA audit in 2015.

2. Prechlorination of the raw water takes place on site for iron and manganese removal. Specific sampling to determine the effectiveness of this regime, such as was agreed during the 2015 audit, was not available.

		Answer
5.2	Are suitable alarm settings in place to alert operators to deteriorating water quality or the failure of a critical treatment process?	No

Comment

1. All alarms and inhibits for chlorine, turbidity, pH, UVT were set with a time delay of 15 minutes.

2. There are no warning alarms to alert operators of deteriorating turbidity levels post filtration. There was final water turbidity inhibit in place at 0.7 NTU with a time delay of 15 minutes.

3. The UV validation certificate presented for the units on site was detailed the date of expiry (11/07/2021) and file number 16-0331-WNV. A manufacturer's plate was displayed on the UV units which described the applicable ranges of UVT and maximum flow per hour. Operational staff outlined that a UV failure or dose failure will result in WTP shutdown. Only one calibration/servicing certificate was available for the UVI and UVT sensors dated 05/02/2025.

4. An inhibit on treated water flow was enabled at 150m3 with a time delay of 15 minutes. The maximum design capacity of the plant could not be confirmed at the time of the audit. Maximum flow to the UV units according to the manufacturers plate was 135m3.

		Answer
5.3	Is there appropriate oversight of alarm responses?	No

Comment

1. The site operator outlined that oversight of plant alarms and performance trends on a routine basis is limited at this time due to resource shortages. Trends are available for operational staff to review on mobile devices.

2. Although some alarm history was available via the plant HMI there was no record of critical alarm responses retained at the plant and verification of appropriate managerial oversight on such responses not recorded.

		Answer
5.4	Is there a documented procedure for responding to specific alarms?	No

Comment

1. While there was an Uisce Éireann Drinking Water Incident Response Form (Ref: COO-AO-PR-024-FM-01) on site there were no detailed alarm response procedures.

		Answer
5.5	Are there appropriate procedures covering verification of alarms and inhibits status following maintenance or other work on site?	No

Comment

1. There were no written procedures covering verification of alarms and inhibits status following maintenance work on site however the site caretaker is present when works are undertaken on site. Maintenance contractors produce a work sheet which is retained on site following the completion of works. There were no records to confirm that an alarm and inhibit status check is undertaken by operational staff post the completion of contractor works.

Recommendations

Subject	Mountbellew Audit 2025	Due Date	12/05/2025
Action Text	**Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendations without delay.** 1.Confirm the maximum design treated flow volume for the Mountbellew Water Treatment Plant. 2. Alarms: (i) Conduct an alarm and inhibit review at Mountbellew WTP to enhance operational control and provide appropriate alerts on deteriorating water quality; and (ii) develop and implement an appropriate system for responding to and recording critical plant alarms and ensuring periodic managerial oversight and verification can of such records. 3. UV: (i) Submit a copy of the validation certificate retained onsite for the UV disinfection units; (ii) submit copies of calibration/servicing records for the UV disinfection units on site for the period 01/01/2024 – 31/03/2025 to confirm that servicing of the UV units is aligned with the requirements of the EPA's *Water Treatment Manual: Disinfection* (2011) i.e. (a) that the UV system is operated and maintained in accordance with the validation certification, (b) mercury lamps and other components are replaced after stipulated maximum usage periods (c) monitoring instrumentation is calibrated and where necessary replaced at the frequency stipulated in the validation standards and in the manufacturers instructions. The *EPA's Water Treatment Manual: Disinfection* recommends that the calibration of duty UV sensors be verified with respect to a replacement reference UV sensor at least monthly and that on-line UVT analyzers should be evaluated at least weekly by comparing the on-line UVT measurements to UVT measurements using a bench-top spectrophotometer. 4. PAC: (i) Assess the feasibility of enhancing PAC dosing and mixing mechanisms to protect filter operations at Mountbellew WTP; (ii) provide for monitoring and recording aluminium levels in the final water when the PAC is in operation; and (iii) progress works to ensure that the PAC and chlorine dosing lines are insulated and submit a timeframe for the completion of this work. 5. Filtration: (i) Submit details of filter media specification and current filter media depth; (ii) progress the installation of filter depth markers; and (iii) maintain records of filter maintenance as per the EPA's *Water Treatment Manual: Filtration* (2020). 6. Conduct an assessment on the need for the continued use of prechlorination for manganese and iron treatment at this water supply and submit results to the EPA. 7. Ensure that treatment process chemicals are appropriately managed and stored. The development of any external chemical storage area should have regard to the EPA's *Guidance Note on the Storage and Transfer of Materials for Scheduled Activities* (2004). 8. Progress works to remove the build-up of vegetation adjacent to the abstraction point. Uisce Éireann should submit a report to the EPA on or before 12/05/2025 detailing the actions taken and planned, with timescales, to close out the above recommendations. The EPA advises that the findings and recommendations from this audit report should, where relevant, be addressed at other public water supplies.		