Site Visit Report

Under the European Union (Drinking Water) Regulations 2014 as amended, the Environmental Protection Agency is the supervisory authority in relation to Irish Water and its role in the provision of public water supplies. This Audit was carried out to assess the performance of Irish Water in providing clean and wholesome water to the visited public supply.

The audit process is a sample on a given date of the facility's operation. Where a finding against a particular issue has been reported this should not be construed to mean that this issue is fully addressed.

Water Supply Zone

Name of Installation	Ballymacarbry
Organisation	Irish Water
Scheme Code	3100PUB1014
County	Waterford
Site Visit Reference No.	SV25598

Report Detail

Issue Date	10/06/2022
Prepared By	Regina Campbell

Site Visit Detail

Date Of Inspection	02/06/2022	**Announced**	Yes
Time In	10:30	**Time Out**	12:20
EPA Inspector(s)	Regina Campbell Lorcan Farrell		
Additional Visitors	Cormac MacGearailt		
Company Personnel	Irish Water: Samantha Keane, Ronan Walsh Waterford City & County Council (acting under service level agreement to Irish Water): Maura Phelan, David Hourigan, Martin Kerins, Brian Power		

Summary of Key Findings

1. A boil water notice was placed on the Ballymacarbry PWS (Public Water Supply) on 13/05/22 due to turbidity issues in the supply. It was still in place on the day of the audit. Irish Water said that elevated turbidity in the production borehole was caused by the drilling of a new trial borehole in close proximity to the existing source. On the day of the audit the borehole was running to waste and water was being tankered from other supplies to fill the Ballymacarbry reservoirs. The audit found that the incident was escalated satisfactorily to the relevant authorities.

2. Irish Water are assessing what remedial actions will be required to address the elevated turbidity in the supply and ensure ongoing security of the supply.

Introduction

The Ballymacarbry Public Water Supply (PWS) serves a population of 660 and produces 184 m3/day (EDEN figures). The source is a borehole located in the treatment plant house. EDEN lists two sources Ballymacarbry 1 and 2, but the audit confirmed that there is one production borehole only.

The audit was undertaken to assess Irish Water's performance in producing clean and wholesome water following the imposition of a Boil Water Notice (BWN) on the supply on 13/05/22 which was still in place on the day of the audit.

Supply Zones Areas Inspected

The boreholes and chlorination disinfection system at the water treatment plant were inspected.

1. Incident Management

		Answer
1.1	Was the incident suitably alerted to the plant operators, escalated and managed in order to maintain water quality and protect public health?	Yes

Comment

A boil water notice (BWN) was placed on the Ballymacarbry supply on 13/05/22 and was still in place on the day of the audit. The BWN was placed due to turbidity rising above 1 NTU in the production borehole (known as Ballyrohan borehole) which meant disinfection would be compromised.

The elevated turbidity in the production borehole was caused by drilling works for a new trial borehole which is located approximately 6 m from the production borehole. Irish Water said the new borehole is being drilled to provide a more secure source in the long term as the existing borehole has experienced production problems during drier weather in recent years. Drilling works commenced on 4th of May which is when turbidity issues were first experienced. Irish water said that water was running to waste at all times when turbidity was > 1 NTU. There is autoshutdown in place that shuts down the borehole pump when turbidity is > 1 NTU for more than 3 minutes.

On the day of the audit the existing borehole was running to waste, and tankering of treated water from other supplies was being used to feed the reservoirs for the Ballymacarbry supply. Irish Water said that overall, turbidity levels are improving in both the production and trial well but that turning on and off pumps is still causing spiking of turbidity. At the audit the turbidity in the existing borehole was reading 2.159 NTU.

Irish Water said there is no decision on whether the trial well will become a permanent production well yet. Irish Water said it is looking into the possible installation of a filtration step at the plant to address any spikes in turbidity.

The audit found that the turbidity incident was escalated promptly to the relevant authorities.

2. Source Protection

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

Comment

The existing borehole is located in the planthouse. When in use it produces 12-13 m3/hr. At the audit the cap was off the borehole as the pump had recently been replaced and the cap had not been replaced yet. Waterford City and County Council (WCCC) staff said that the existing borehole was constructed around 1997 and is 33.5m deep. The borehole log was not available at the audit and a recent camera survey had been completed by Irish Water.

The new trial well is 175m deep and has not been sealed yet.

Landuse in the immediate vicinity is predominantly agriculture and forestry. WCCC could not confirm when landowners had last been written to in relation to the requirements of the European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (SI No.31 of 2014).

There is a turbidity monitor with alarm and shutdown on the production borehole. There is also an online pH monitor which was reading 6.61 at the audit.

3. Disinfection

		Answer
3.1	Is the disinfection system verified using monitors and alarms, with trended data recorded and accessible?	Yes

Comment

Irish Water have reported the Ballymacarbry disinfection system as having been upgraded and commissioned under the Irish Water National Disinfection Programme in 2017.

On the day of the audit the chlorination disinfection system was not in operation as the plant was running to waste. Under normal circumstance, the raw water is dosed with 10 % sodium hypochlorite. Dosing is flow proportional with residual trim and duty/standby dosing pumps with automatic switchover are in place. Pumps also automatically changeover every 2 hours. Trends are available for viewing on the HMI panel. There are two chlorine monitors: CL001 after chlorine dosing and CL002 after the first reservoir which is used to verify chlorine levels after contact time has been achieved.

The following chlorine alarms were displayed at the plant:

CL001 Low alarm at 0.3 mg/l and shutdown at 0.25 mg/l; High alarm at 1.25 mg/l and shutdown 1.35 mg/l

CL002 Low alarm at 0.55 mg/l and shutdown at0.45 mg/l; High alarm at 1.15 mg/l and shutdown 1.25 mg/l.

WCCC said that an alarm and inhibit review would be undertaken at the plant once the turbidity issue is resolved in the supply.

		Answer
3.2	Are monitors and alarms operational via dial out and being responded to with a suitable cascade system in place?	Yes

Comment

The caretaker and relief caretaker receive alarms via dial out.

		Answer
3.3	Is the residual chlorine monitored at a suitable sample location after contact time has been completed?	Yes

Comment

The CL002 residual chlorine monitor is located at the outlet of the reservoir which is after chlorine contact time has been achieved. Irish Water confirmed that an effective chlorine contact time of 31.04 mg.min/ is achieved which is adequate.

		Answer
3.4	Is there a suitable monitoring frequency for residual chlorine in the network with records available?	Yes

Comment

Regular monitoring of residual chlorine in the network is undertaken with records reviewed showing levels ≥ 0.1 mg/l.

4. Treatment Process Chemicals

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

Comment

The date on the sticker on the drums of 10% sodium hyphochlorite was 08/04/22. It was unclear at the audit if this date was the date of manufacture or the date of expiry.

5. Management and Control

		Answer
5.1	Has the protozoal compliance log treatment requirement been identified for the water treatment plant?	No

Comment

Irish Water said that the protozoal compliance log treatment requirement has not been identified for the water treatment plant. There is no protozoal barrier at the plant.

		Answer
5.2	Is there a documented alarm response procedure?	Yes

Comment

There is a documented incident reporting procedure at the plant.

		Answer
5.3	Are suitable plant shutdowns/inhibits in place to prevent the entry of inadequately treated water entering the distribution network?	Yes

Comment

There are suitable chlorine and turbidity alarms and shutdowns in place at the plant.

6. Drinking Water Quality

		Answer
6.1	Is Cryptosporidium monitoring being carried out in accordance with Irish Water's 'Rationale for Determining the Frequency of Cryptosporidium Monitoring in Public Water Supplies'?	No

Comment

Irish Water said that the supply is not currently being monitored in accordance with the Irish Water Rationale for Monitoring of *Cryptosporidium* in Public Water supplies.

Recommendations

Subject	Ballymacarbry Audit Recommendations	Due Date	10/07/2022
Action Text	**Recommendations** **Irish Water is responsible for ensuring a safe and secure supply of drinking water. To address these issues Irish Water should implement the following recommendations without delay.** 1. Irish Water should a) notify the EPA when the BWN is lifted and b) put remedial measures in place to ensure that future occurrence of elevated turbidity do not impact on the security of the supply. 2. Irish Water should a) complete drilling works on the new borehole and b) confirm if the new borehole will go into production. 3. Irish Water should a) confirm the log treatment requirement for the plant, b) address how the log treatment deficit will be addressed and c) commence monitoring of the supply in accordance with the Irish Water Rationale for Monitoring of *Cryptosporidium* in public water supplies. 4. Irish Water should ensure that all borehole linings and seals are maintained in accordance with EPA Advice Note No. 14: Borehole Construction and Wellhead Protection. 5. Irish Water should liaise with Waterford City and County Council and confirm that relevant landowners have been written to in relation to requirements under the *European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2014 (SI No.31 of 2014)*. 6. Irish Water should confirm the expiry date for the disinfectant in use at the plant. 7. Irish Water should confirm the alarms and inhibits at the plant after the alarm and inhibit review is undertaken. 8. Irish Water should update EDEN with the current source for the supply. **Follow-Up Actions required by Irish Water** During the audit, Irish Water representatives were advised of the audit findings and that action must be taken as a priority by Irish Water to address the issues raised. This report has been reviewed and approved by Dr. Michelle Minihan, Senior Inspector, Drinking Water Team. Irish Water should submit a report to the Agency on or before 10/07/2022 detailing how it has dealt with the issues of concern identified during this audit. The report should include details on the action taken and planned to address the various recommendations, including time frame for commencement and completion of any planned work. The EPA also advises that the findings and recommendations from this audit report should, where relevant, be addressed at all other treatment plants operated and managed by Irish Water. Please quote the Action Reference Number DW20220056 in any future correspondence in relation to this Report.		