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	Carrigmore PWS
Organisation	Irish Water
Scheme Code	1900PUB1052
County	Limerick
Site Visit Reference No.	SV18501

Report Detail

Issue Date	05/12/2019
Prepared By	Cliona Ni Eidhin

Site Visit Detail

Date Of Inspection	06/11/2019	**Announced**	No
Time In	10:30	**Time Out**	13:00
EPA Inspector(s)	Cliona Ni Eidhin Orla Harrington		
Additional Visitors	Anne Moriarty, HSE.		
Company Personnel	Irish Water: Ian O'Mahony, Kian Guihen, Oliver Harney. Limerick County Council: Willie Hurley, Diarmuid O'Dea, Pat Coughlan, Declan O'Connor.		

Summary of Key Findings

1. Ion exchange is in place at Carrigmore drinking water treatment plant for removal of nitrate but there is no online monitor on the unit to provide oversight on its performance.
2. It was found that backwash water and run to waste' water volumes were being discharged to an adjacent roadside drain. An alternative, formalised method for disposal of this water from the site is required and should be progressed.
3. The Carrigmore drinking water treatment plant was not operational on the day of the audit pending the resolution of issues with the ion exchange unit by the relevant contractors. Recent upgrades to the Carrigmore treatment plant under Irish Water's disinfection programme were apparent; duty and standby UV is now in place along with upgraded controls. The decommissioning of this supply, as suggested in correspondence from Irish Water during 2016, is now not envisaged in the medium term.

Introduction

The source of the Carrigmore Public Water Supply is a borehole (17.7m deep) located within the treatment plant site. The plant produces 89 m3/day and serves a population of 370. Treatment consists of ion exchange (for removal of nitrates), ultra violet primary disinfection and chlorination with sodium hypochlorite providing secondary disinfection. Treated water is pumped to a reservoir located approximately 400m upgradient from the treatment plant from where it serves the network by gravity.

The treatment plant was not operational on the day of the audit; the Carrigmore network was being fed by neighbouring supplies. This was a temporary arrangement in place to allow remedial actions to be carried out at the Carrigmore treatment plant in response to the recent nitrate exceedances. At the time issue of this report, the supply was still being fed by neighbouring supplies.

The audit was scheduled in response to the notification of Nitrate exceedances in the supply between August and November 2019.

Supply Zones Areas Inspected

Full inspections of the well head, treatment processes and reservoir were completed.

1. Source Protection

		Answer
1.1	Is the abstraction source(s) adequately protected against contamination?	Yes

Comment

1. The well head and its associated pipework were protected within locked, steel housing. It was noted, however, that the housing was not sealed at ground level and the surrounding ground was sloping in its direction thus leading to water draining into the floor around the well head.

2. There was no evidence of practices within the locality of the borehole that are not in compliance with the Good Agricultural Practice Regulations but it was not known to Irish Water when the landowner in the vicinity of the borehole was last written to in relation to his/her obligations under this legislation.

3. Limited raw water monitoring results were available for review on the day of the audit.

2. Filtration

		Answer
2.1	Does monitoring indicate that the filters are operating effectively?	No

Comment

1. Ion exchange has been in place at Carrigmore for removal of nitrates since 2013. Irish Water explained to the auditor that, since the completion of disinfection programme upgrades in Summer 2019, the plant had been shutting down when the ion exchange unit entered backwash mode. Further, Irish Water informed the auditor that the plant could not be operated for long periods on a 'run to waste' basis due to the lack of a facility to manage 'run to waste' (and backwash) water.

2. The auditors noted that there is no monitor on the ion exchange unit to provide oversight of its performance in the removal of nitrate.

3. Backwash water from the ion exchange unit was found to be discharged to a gully trap on the treatment plant site and conveyed under the public road to an existing roadside drain. The same discharge route was used for 'run to waste' water. It was noted that this practice was not appropriate, particularly given the 'extreme' vulnerability classification of the groundwater aquifer at this location.

3. Disinfection

		Answer
3.1	Is the UV system suitably validated?	Yes

Comment

1. Duty and standby UV units were confirmed to be in place and were inspected. There was no printed plate on the units summarising the equipment specification and validated operating ranges for the relevant parameters. Validation information was not available for inspection. It was confirmed from a control panel that the unit is alarmed at 85% UVT.

4. Reservoirs and Distribution Networks

		Answer
4.1	Is treated water in tanks and reservoirs suitably protected against contamination?	No

Comment

The reservoir had 2 inspection hatches and 2 vents in place. It was observed that vents were not secured against ingress of animals or deliberate introduction of contaminants.

5. Treatment Process Chemicals

		Answer
5.1	Are treatment process chemicals appropriately managed and stored?	Yes

Comment

While the sodium hypochlorite drums stored on the floor were empty during the audit, Irish Water should ensure a bunded area capable of containing at least 110% of the volume of chemicals stored therein is provided at the treatement plant for the storage of any full container brought to site.

6. Management and Control

		Answer
6.1	Are relevant alarms dialled out via a cascade system to allow a timely response by plant operators?	Yes

Comment

1. While procedures for responding to triggered alarms are established and followed, these are not documented within a plant manual for reference or training of staff.

7. Drinking Water Quality

		Answer
7.1	Have relevant failures to comply with the requirements of the European Union (Drinking Water) Regulations 2014, as amended, been notified to the EPA?	Yes

Comment

1. By the audit date, all exceedances had been notified to the EPA. There had been some delay in the notification of exceedances to the EPA with the initial exceedance dated 26/08/2018 only notified to the EPA on 24/10/2019. Irish Water informed the auditor that the cause of this delay had been identified and actions taken to prevent such a delay from reoccurring in the future.

Recommendations

Subject	Carrigmore DW Audit	Due Date	04/12/2019

Action Text

Recommendations

Irish Water should:

i. Source protection: ensure that the housing around the well head is sealed and site drainage is diverted away from the well head to prevent the ingress of surface water to the well chamber.
ii. Source protection: write to the landowner to ensure that he/she is aware of his/her obligations under the Good Agricultural Practice Regulations.
iii. Source protection: submit raw water monitoring results for the last 2 years.
iv. Nitrate removal: continue with work to address the issues encountered with the ion exchange unit and operate the treatment plant on a 'run to waste' basis, if possible, to determine whether these measures have been successful, before returning it to service the network.
v. Nitrate removal: install a nitrate monitor to verify the performance of the ion exchange unit in the removal of nitrates and ensure that it is calibrated and maintained.
vi. Nitrate removal: make provision at the Carrigmore treatment plant for the formalised management of waste streams generated by backwashing and running to waste to allow the discharging of backwash water and 'run to waste' water to the roadside drain to cease. An alternative solution should be put in place at the site as a permanent measure
vii. Disinfection: submit UV Validation information, confirm what parameters are monitored continuously, confirm details of the alarm and shut down setpoints and confirm that the units have operated within their validated range at all times of plant operation since their installation. It should also be ensured by Irish Water that validation information is displayed at the treatment plant to facilitate verification by the plant caretaker.
viii. Treated water storage: ensure that all vents on the reservoir are secured against ingress of animals or deliberate introduction of any contaminant or acts of vandalism.
ix. Management and control: ensure that procedures for responding to triggered operational alarms are documented within a plant manual for the Carrigmore plant.
x. Management and control: ensure that all non-compliances are notified to the EPA in accordance with the European Union (Drinking Water) Regulations 2014, as amended.

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 Regina Campbell, Drinking Water Team Leader.

Irish Water should submit a report to the Agency on or before 06/01/2020 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 DW2019/185 in any future correspondence in relation to this Report.