



Drinking Water Audit Report

County:	Kerry	Date of Audit:	09/04/2019
Plant(s) visited:	Castlecove Public Water Supply (1300PUB1052)	Date of issue of Audit Report:	09/05/2019
		File Reference:	DW2009/206
		Auditors:	Cliona Ní Eidhin
Audit Criteria:	<ul style="list-style-type: none"> • The <i>European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014), as amended.</i> • <i>The EPA Handbook on the Implementation of the Regulations for Water Services Authorities for Public Water Supplies (ISBN: 978-1-84095-349-7)</i> • The recommendations specified in the <i>EPA Drinking Water Report.</i> • EPA Drinking Water Advice Notes No.s 1 to 15. • The recommendations in any previous audit reports. 		

MAIN FINDINGS

- i. **The Castlecove Public Water Supply (PWS) has been on the EPA’s Remedial Action List (RAL) since 2009 due to inadequate treatment for *Cryptosporidium* and elevated levels of both trihalomethanes (THMs) and aluminium above the standard in the Drinking Water Regulations. The audit found that significant upgrading works are at an advanced stage at the Castlecove treatment plant to address all three RAL headings. Final commissioning of all treatment processes at Castlecove awaits connection to 3-phase power. Removal from the RAL can be considered by the EPA when this connection has been made, process-proving completed and verification data collected.**
- ii. **On the day of the audit, the pressure filtration and UV treatment processes were not operational; these processes will resume operation once connection is made to 3-phase power supply.**

1. INTRODUCTION

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 suitability of the Castlecove Public Water Supply (PWS) for removal from the EPA’s Remedial Action List (RAL).

The Castlecove PWS serves a population of approximately 190. Raw water for the supply is sourced from the Behagane mountain streams supplemented by a borehole located on the site of the drinking water treatment plant. Treatment consists of pH adjustment, coagulation and flocculation, clarification, rapid gravity filtration, and chlorination. Containerised pressure filtration and ultra violet (UV) treatment are in place at the treatment plant but were not operational on the day of the audit.

The opening meeting commenced at 16:00 at Castlecove drinking water treatment plant (DWTP). The scope and purpose of the audit were outlined at the opening meeting. The audit process consisted of interviews with staff, review of records and observations made during an inspection of the treatment plant. The audits observations and recommendations are listed in Sections 2 and 4 of this report.

The following were in attendance during the audit.

<p>Representing Irish Water: Kian Guihen – Drinking Water Compliance Analyst Ian O’Mahony – Water Lead Oliver Harney – Water Engineer</p>
<p>Representing Kerry County Council: John Horgan - Technician John-Paul O’Sullivan – Caretaker Seamus O’Mahony – Executive Engineer Kathleen McSweeney Casey – Senior Executive Technician Brian Lennon – A/Senior Executive Engineer Niall O’Connor - LAPM</p>
<p>Representing the Environmental Protection Agency: Cliona Ní Eidhin – Inspector</p>

2. AUDIT OBSERVATIONS

The audit process is a random sample on a particular day of a facility's operation. Where an observation or recommendation against a particular issue has not been reported, this should not be construed to mean that this issue is fully addressed.

1.	<p>Raw Water Quality</p> <p>a. The sources were not inspected as part of this focussed audit. Irish Water informed the auditor that raw water quality is consistently good with turbidity typically < 0.50 NTU from both the stream and borehole sources. Raw water turbidity from the borehole was 0.4 NTU at the time of the audit whilst the stream source had a turbidity of 0.21 NTU.</p>
2.	<p>Coagulation, Flocculation, Clarification</p> <p>a. No observations of concern were recorded during an inspection of the coagulation, flocculation and clarification treatment stages.</p> <p>b. It was reported by Irish Water that the raw water is consistently of good quality and, consequently, floc formation and sludge blanket formation is minimal. This could not be verified visually as lamellae plates are in place in the clarifiers. It was verified that there was no visible floc carryover into the decanting channels.</p>
3.	<p>Rapid Gravity Sand Filtration</p> <p>a. Two rapid gravity sand filters are in place with dual media; sand and anthracite. A continuous turbidity monitor is in place on the outflow from each rapid gravity sand filter. They were reading 0.062 NTU and 0.037 NTU on inspection during the audit.</p>
4.	<p>Pressure Filtration</p> <p>a. Containerised pressure filtration is in place but was not operating on the day of the audit as it is awaiting connection to 3-phase power. Use of a generator at this location for prolonged periods is not feasible due to proximity to dwelling houses.</p>
5.	<p>Ultra Violet Treatment</p> <p>a. Containerised UV treatment was confirmed to be in place but was not operating on the day of the audit as it is awaiting connection to 3-phase power.</p>
6.	<p>Chlorination</p>

	<p>a. The audit confirmed that the disinfection criteria for chlorination as set out in EPA guidance are met at the Castlecove Drinking Water Treatment Plant.</p>
7.	<p>Management and Control</p> <p>a. Shutdown based on final water turbidity is in place. Final treated water turbidity at the time of the audit was 0.03 NTU.</p> <p>b. All monitors were verified to be calibrated with next calibration due dates clearly indicated by labels.</p> <p>c. Full commissioning of containerised pressure filtration and UV at Castlecove awaits connection to 3-phase power supply. It was estimated by Irish Water that this connection will be secured before June 2019 but confirmation of this timeframe is awaited. During the audit, new poles which will convey the new power line were visible on the approach to the treatment plant.</p> <p>d. An operating manual and standard operating procedures governing the treatment processes in place at Castlecove were not inspected as part of the audit.</p>

3. AUDITORS COMMENTS

The Castlecove PWS benefits from a good quality raw water source which Irish Water report as having very little variability in terms of quality. Significant upgrades are at an advanced stage and close to final commissioning at the Castlecove plant to ensure adequate treatment for *Cryptosporidium* and for the prevention of trihalomethane formation and aluminium exceedances. Connection to 3-phase power is awaited and, when delivered and process-proving takes place, will mark the end of the commissioning phase. There have been no exceedances in water produced by the Castlecove plant since 2017. Castlecove will be considered for removal from the RAL once commissioning has been completed and the necessary RAL verification data captured for consideration by the EPA. The continued security of the Castlecove supply, thereafter, will rely on continued effective management of the processes in place, facilitated by the necessary maintenance and operational duties and interventions.

4. RECOMMENDATIONS

Management and Control

1. Irish Water should secure connection to 3-phase power as discussed during the audit and confirm to the EPA when complete. Any issues that may arise associated with the changeover from generator to the new power supply should be communicated to the EPA.
2. Irish Water should ensure that, following connection to 3-phase power and completion of process-proving, that verification data, as set out in Section 6 of the EPA Handbook on the implementation of the Regulations for Water Service Authorities for Public Water Supplies, are gathered to support proposing the Castlecove PWS for removal from the Remedial Action List.
3. Irish Water should ensure that:
 - a. A Water Treatment Plant manual is compiled for the Castlecove Drinking Water Treatment Plant detailing technical specifications for all plant, structures, materials and consumables relevant to the plant's operation; and that
 - b. Standard operating procedures are developed for routine and periodic check and maintenance activities required to be undertaken by the plant operator. Template record sheets should be developed and maintained to record completion of daily/weekly/monthly (etc.) checks required in the operation of the plant.

FOLLOW-UP ACTIONS REQUIRED BY IRISH WATER

During the audit Irish Water representatives were advised of the audit findings. This report has been reviewed and approved by Regina Campbell, Drinking Water Team Leader.

Irish Water should submit a report to the Agency within one month of the date of this audit report 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 timeframe 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 File Reference DW2009/206 in any future correspondence in relation to this Report.

Report prepared by:

CNE

Date:

09/05/2019

Inspector