

# 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	
<b>Name of Installation</b>	Templetuohy
<b>Organisation</b>	Irish Water
<b>Scheme Code</b>	2800PUB1013
<b>County</b>	Tipperary
<b>Site Visit Reference No.</b>	SV20095

Report Detail	
<b>Issue Date</b>	03/03/2020
<b>Prepared By</b>	Criona Doyle

Site Visit Detail			
<b>Date Of Inspection</b>	12/02/2020	<b>Announced</b>	Yes
<b>Time In</b>	10:30	<b>Time Out</b>	12:30
<b>EPA Inspector(s)</b>	Criona Doyle Orla Harrington		
<b>Additional Visitors</b>			
<b>Company Personnel</b>	Irish Water: Catherine Rice; Patrick Duggan; Duane O'Brien. Tipperary County Council: Aidan Delaney; Shane Boland; D. Ryan; John Lloyd.		

## > Summary of Key Findings

1. A Drinking Water Restriction Notice for infants under 6 months of age was placed on the Templetuohy public water supply on 31/01/2020 due to elevated levels of nitrates above the parametric value in the final water. This was as result of the nitrate levels in one of the two boreholes (Togher borehole) being above the drinking water limit. Irish Water propose to cease the abstraction of water from the Togher borehole. At the time of the audit the Drinking Water Restriction Notice was still in place.
2. The Templetuohy borehole is to be retained and the supply is to be augmented by connecting to the Templemore Regional Water Supply (RWS). A booster pumping station needs to be constructed at the Templetuohy pump house to facilitate pumping of treated water from the Templemore RWS to the Tullow reservoir to serve the Templetuohy supply area.

## > Introduction

The raw water for the Templetuohy public water supply (PWS) is obtained from two boreholes. The Templetuohy borehole is located in a pump house in the centre of Templetuohy village. The Togher borehole is located approximately 2.5km north of Templetuohy village. Treatment includes disinfection by chlorination. A separate pump house is provided at each borehole source where the water is chlorinated. The treated water from both pump houses is then pumped to the Tullow reservoir where it is blended. The Templetuohy PWS (EDEN figures) produces 316m<sup>3</sup>/d and serves a population of 819.

On the advice of the HSE an advisory notice was placed on the supply on the 31/01/2020 due to elevated nitrate levels in the supply. The notice specified that babies under the age of 6 months should not consume the water.

## > Supply Zones Areas Inspected

The purpose of the audit was to examine the operation of the water treatment plant following the nitrate exceedances which lead to the issuing of an advisory notice on 31/01/20. The treatment plant processes were examined including the 2 no. borehole sources, chlorination disinfection system at both pump houses and the storage reservoir.



## 1. Incident Management

1.1

	Answer
Was the incident suitably alerted to the plant operators, escalated and managed in order to maintain water quality and protect public health?	Yes
<p><b>Comment</b></p> <p>The water for the Templetuohy Public Water Supply is obtained from 2 no. boreholes. Monitoring data was provided at the audit for 2017, 2018, 2019 and 2020 for the Templetuohy borehole source, the Togher borehole source and the final treated water which is a blend of both sources.</p> <p>The Templetuohy borehole is located in the centre of Templetuohy village and provides approximately 180m<sup>3</sup>/d. The borehole is located within a pump house where disinfection takes place and the treated water is pumped to the storage reservoir at Tullow. The nitrate levels in the Templetuohy borehole are less than the 50 mg/l limit set in the Drinking Water Regulations.</p> <p>The second borehole is located at Togher and provides approximately 132m<sup>3</sup>/d. A pump house is located adjacent to the borehole where the water is disinfected prior to being pumped to the Tullow reservoir. The nitrate levels in the Togher borehole exceeded the 50 mg/l limit set in the Drinking Water Regulations.</p> <p>The water from the two boreholes is pumped to the Tullow Reservoir where it is blended prior to being discharged to the supply network.</p> <p>The final water (2 no. sources blended) exceeded the 50 mg/l nitrate limit on the following dates: 51 mg/l (04/09/19); 83 mg/l (23/01/20); 69 mg/l (28/01/20) and 71 mg/l (20/02/20). The nitrate concentration in both sources is above the background levels that would be expected in groundwater indicating diffuse pollution. The monitoring data indicates higher nitrate levels in the Togher borehole: 81 mg/l (18/06/19); 107 mg/l (21/01/20), 119 mg/l (28/01/20), 62 (06/02/20) and 85 (10/02/20). The nitrate concentration in the Templetuohy borehole has been &lt; 50 mg/l on all dates sampled.</p> <p>Irish Water placed an advisory notice on the Templetuohy PWS on the 31/01/2020, on the advice of the Health Service Executive (HSE), due to elevated nitrate levels in the supply. The notice specified that babies under the age of 6 months should not consume the water. Tipperary County Council staff hand delivered the notice to all properties served by the supply on the 31/01/2020.</p> <p>The notice remained in place on the date of the audit.</p> <p>An investigative monitoring programme was in place at the time of the audit which included weekly monitoring of the nitrate concentration in both individual borehole sources and in the final blended water going into supply.</p>	



## 2. Source Protection

2.1

	Answer
Is the abstraction source(s) adequately protected against contamination?	No
<p><b>Comment</b></p> <p>No borehole logs were available for the Templetuohy borehole or Togher borehole. No information is available on the depth of the boreholes or the construction details to confirm that the boreholes have been properly constructed.</p> <p>The Templetuohy borehole is located in the centre of the village in a pump house. The borehole is completed flush with ground level and it could not be confirmed if it was completed in accordance with EPA Advice Note 14: Borehole Construction and Wellhead Protection. The landuse surrounding the Templetuohy borehole is a mixture of houses, shop with fuel pumps, school buildings and an amenity area.</p> <p>The Togher borehole is located approximately 3km from the village. The borehole is completed flush with ground level adjacent to the pump house and roadway. The borehole was not adequately sealed and does not meet the requirements of EPA Advice Note 14. When the cover was removed from the chamber ponding of surface water runoff was visible at the top of the borehole and the borehole is vulnerable to contamination from the surface. The landuse surrounding the borehole is agricultural. No livestock were observed on the day of the audit but a water trough was observed indicating that livestock may have grazed in proximity to the borehole. There are also a number of houses served by septic tanks in the surrounding area.</p> <p>There was also a historic borehole located at the reservoir compound at Tullow. This borehole is not completed in accordance with EPA Advice Note 14: Borehole Construction and Wellhead Protection. This borehole was not in use but has not been properly decommissioned.</p> <p>A turbidity monitor was not installed to monitor the raw water turbidity at either borehole.</p>	



### 3. Disinfection

		Answer
3.1	Is the disinfection system verified using monitors and alarms, with trended data recorded and accessible?	No
<b>Comment</b>		
<p>There is no facility for viewing residual chlorine trends at either the Templetuohy or Togher pump houses. It was outlined at the audit that the chlorine trends are stable with little variation and are regularly checked via the website by Tipperary County Council. The trends were not accessible for viewing on the day of the audit.</p> <p>The chlorine dosing pumps in both pumphouses were due to be calibrated on the 09/02/2020 but this had been rescheduled to take place in conjunction with the works for the installation of the booster pumping station at the Templetuohy pump house.</p> <p>The low chlorine alarm level is 0.5 mg/l and the high chlorine alarm level is 1.2 mg/l. There is no automatic plant shut down linked to the residual chlorine alarms at the Templetuohy or Togher pump houses. The alarms generate a text alert to caretaker and relief caretaker. There is a residual chlorine monitor on the inlet to the reservoir and the target level is 0.6 to 0.7 mg/l.</p>		

		Answer
3.2	Are duty and standby chlorine pumps/ UV units in operation?	Yes
<b>Comment</b>		
<p>There is a set of duty / standby chlorine dosing pumps installed at both pump houses. The pumps are switched over on a 24 hour frequency. The pumps at the Templetuohy pumphouse switch over automatically in the event of a breakdown of the duty pump. There is no automatic switch over between the duty and standby pumps at the Togher pumphouse in the event of a problem with the duty pump.</p>		

		Answer
3.3	Is the chlorine dosed appropriately?	Yes
<b>Comment</b>		
<p>The chlorine dosing at both pump houses is flow proportional and linked to the residual chlorine alarm.</p>		

		Answer
3.4	Is the residual chlorine monitored at a suitable sample location after contact time has been completed?	Yes
<b>Comment</b>		

Chlorine dosing takes place in the pump houses for each groundwater source. Monitoring of the residual chlorine level takes place at both pump houses and at the inlet to the reservoir (combined flow) and the levels are cross checked with the hand held chlorine monitor once a day. A copy of the Irish Water contact time calculation was not available at the audit. There is approximately 5km of pipework to the reservoir providing additional contact time. A contact time of 374 mg/min/l was reported as having previously been calculated for the supply.

		<b>Answer</b>
<b>3.5</b>	Does the trend in chlorine residual at the treatment plant indicate adequate and stable levels of disinfection?	Yes
<b>Comment</b>		
While Irish Water and Tipperary County Council reported stable chlorine trends at the audit the residual chlorine trends could not be examined at the pump houses to verify this. However the caretaker records the chlorine residual levels on a daily basis and these were checked at both pumphouses and indicated stable daily records of disinfection levels.		

		<b>Answer</b>
<b>3.6</b>	Are manual chlorine tests carried out and recorded on final treated water to compare with the continuous monitor results?	Yes
<b>Comment</b>		
The caretaker undertakes regular manual checks on the treated water and cross checks these against the continuous residual chlorine monitor results. The records were available to view onsite.		

		<b>Answer</b>
<b>3.7</b>	Is there a chlorine residual $\geq 0.1$ mg/l throughout the network?	Yes
<b>Comment</b>		
The monitoring results reviewed at the audit indicated that monitoring of the chlorine residual is undertaken at the end of the network on a regular basis and adequate levels are being maintained.		



## 4. Reservoirs and Distribution Networks

	Answer
4.1 Is treated water in tanks and reservoirs suitably protected against contamination?	No
<b>Comment</b>	
<p>A locked and sealed access cover was present on the reservoir. There were two vents in the roof of the reservoir which did not have insect proof mesh.</p> <p>The date when the reservoir was last inspected or cleaned could not be provided at the audit.</p>	

## Recommendations

<b>Subject</b>	Templetuohy Audit	<b>Due Date</b>	03/04/2020
<b>Action Text</b>	<p><b>Recommendation(s)</b></p> <ol style="list-style-type: none"> <li>1. Irish Water should confirm the proposed action programme with timeframes for the connection of the Templetuohy PWS to the Templemore Regional Water Supply (RWS).</li> <li>2. Irish Water should continue the investigative monitoring programme until works have been completed to connect the supply to the Templemore RWS.</li> <li>3. Irish Water should ensure the Templetuohy borehole is lined, sealed and capped in accordance with EPA Drinking Water Advice Note 14: Borehole Construction and Wellhead Protection.</li> <li>4. Irish Water should (a) confirm the reservoir is on the inspection and reservoir cleaning programme and (b) install insect proof mesh on the vents on the reservoir.</li> <li>5. Irish Water should ensure that the Togher and Tullow boreholes are lined, sealed and capped in accordance with EPA Drinking Water Advice Note 14: Borehole Construction and Wellhead Protection if they are being retained as a source. If the boreholes at Togher and Tullow are not being retained as a source they should be properly decommissioned.</li> <li>6. Irish Water should install a duty and standby chlorine dosing pump at the Togher borehole pump house with automatic switch over in the event of the failure of one of the pumps if the borehole is being retained.</li> <li>7. Irish Water should submit a copy of the residual chlorine trends for the last 2 months for the Templetuohy pump house, Togher pump house and the residual chlorine monitor on the inlet to the reservoir.</li> <li>8. Irish Water should install a continuous turbidity monitor on the borehole sources to alert plant operators of any changes in the raw water quality.</li> </ol> <p><b>Follow-Up Actions required by Irish Water</b></p> <p>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.</p> <p>This report has been reviewed and approved by Regina Campbell, Drinking Water Team Leader.</p> <p>Irish Water should submit a report to the Agency on or before 03/04/20 detailing how it has dealt with the issues of concern identified during this audit.</p> <p>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.</p> <p>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.</p> <p>Please quote the Action Reference Number DW2019/162 in any future correspondence in relation to this Report.</p>		