

# 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>	Barndarrig Public Supply
<b>Organisation</b>	Irish Water
<b>Scheme Code</b>	3400PUB1039
<b>County</b>	Wicklow
<b>Site Visit Reference No.</b>	SV22221

Report Detail	
<b>Issue Date</b>	11/03/2021
<b>Prepared By</b>	Aoife Loughnane

Site Visit Detail			
<b>Date Of Inspection</b>	02/03/2021	<b>Announced</b>	Yes
<b>Time In</b>	14:30	<b>Time Out</b>	15:30
<b>EPA Inspector(s)</b>	Aoife Loughnane Daryl Gunning		
<b>Additional Visitors</b>	Orla Harrington		
<b>Company Personnel</b>	Irish Water: Andrew Boylan, Edward Haythornthwaite, Ger Brady, Peter Thornton, Mark Claffey, Liliane Mereacre  Wicklow County Council: Tom O'Leary, Tom Griffin, Noel Doody  EPS: Padraic Dunne, David Logue  HSE: Triona McNicholas		

## > Summary of Key Findings

1. Irish Water issued a Do Not Consume Notice to 220 consumers of Barndarrig public water supply on 09/02/21 due to nitrite exceedances in the final water at Barndarrig water treatment plant. The incident was suitably escalated and managed in order to protect public health.
2. Investigations into the cause of the nitrite contamination have been inconclusive to date. Irish Water and Wicklow County Council should complete the investigations and identify any remedial measures necessary to address potentially polluting activities in the zone of contribution to the borehole source.
3. On the day of the audit, the Do Not Consume Notice remained in place to protect public health. Irish Water plans to install a continuous nitrite monitor at Barndarrig water treatment plant to provide real time data and to serve as a warning system if nitrite levels rise again. In the meantime, Irish Water should undertake daily monitoring of ammonium, nitrite and nitrate in the final water at Barndarrig water treatment plant.

## > Introduction

Barndarrig public water supply serves a population of 220 people, and supplies a volume of up to 72 m<sup>3</sup>/day. Barndarrig water treatment plant is operated by EPS Ireland on behalf of Irish Water. The plant abstracts groundwater from a borehole and provides treatment by pH correction and disinfection by chlorination.

This audit was carried out in response to the Do Not Consume Notice placed on this supply on 09/02/21 due to nitrite exceedances in the final water at Barndarrig water treatment plant.

## > Supply Zones Areas Inspected

The audit comprised of a video conference meeting on 2nd March 2021. A site visit was not undertaken due to Covid-19 risk.



## 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
<b>Comment</b>	
<p>1. Irish Water notified the EPA of two nitrite exceedances in the final water at Barndarrig water treatment plant:</p> <ul style="list-style-type: none"> <li>• 1.21 mg/l nitrite on 19/01/21, and</li> <li>• 2.328 mg/l nitrite on 08/02/21.</li> </ul> <p>Following consultation with the HSE regarding risk to public health, Irish Water issued a Do Not Consume Notice on 09/02/21 to all consumers of Barndarrig public water supply due to nitrite exceedances in the final water at Barndarrig water treatment plant.</p> <p>2. Irish Water and Wicklow County Council's investigations into the cause of the nitrite exceedances has involved the following:</p> <ul style="list-style-type: none"> <li>• Inspection of wellhead protection at the abstraction borehole found no issues. Wicklow County Council plans to inspect the nearby historical trial well in an overgrown area near the borehole.</li> <li>• A catchment inspection by Wicklow County Council on 11/02/21 identified slurry spreading in two areas, however the locations were more than 200m from the borehole and were not believed to be directly upgradient of the borehole.</li> <li>• A camera survey to assess the condition of the sewer network in the vicinity of the abstraction borehole found no obvious defects.</li> <li>• Irish Water has engaged a hydrogeologist to examine the zone of contribution to the borehole source.</li> <li>• Investigative sampling has shown no further nitrite exceedances. Drinking water quality has been compliant since 09/02/21. This indicates that the issue may be transient or intermittent. Daily samples are taken (Monday to Friday) for analysis of nitrite. The samples taken during the week 01/03/21 to 05/03/21 are being analysed for ammonium, nitrite and nitrate.</li> </ul> <p>To date, the investigation has been inconclusive in determining the cause of the nitrite contamination of the borehole source.</p> <p>3. Wicklow County Council representatives confirmed there is no history of nitrite exceedances in Barndarrig water supply, and no evidence of microbiological contamination in raw water.</p> <p>4. Irish Water plans to install a continuous nitrite monitor at Barndarrig water treatment plant to provide real time data and to serve as a warning system if nitrite levels rise again. The expected timeframe for installation of the continuous monitor is by the end of April.</p> <p>5. On the day of the audit, the Do Not Consume Notice remained in place to protect public health. Irish Water could not confirm how long the notice will need to remain in place.</p>	



## 2. Source Protection

2.1

	Answer
Is the abstraction source(s) adequately protected against contamination?	No
<b>Comment</b>	
<p>1. Irish Water and Wicklow County Councils' investigations so far have been inconclusive in determining the cause of the nitrite contamination of the borehole source. During the audit, neither Irish Water or Wicklow County Council could rule out the possible impact of recent slurry spreading in the area or leakage from the sewer network in the vicinity.</p> <p>2. The borehole is located in a locked underground chamber within a secure compound approximately 200m south-east of Bardarrig water treatment plant. The surrounding land-use is residential in the immediate vicinity, and agricultural beyond that.</p> <p>3. Photographs show that the borehole has been capped since the previous EPA audit in 2015. The borehole construction log is not available, however Irish Water's borehole investigation report states that a CCTV survey showed the approximate borehole depth of 46 metres and water level of 22 metres below the top of the casing. The report states that the borehole is not lined and it could not be confirmed if the borehole casing is grouted/sealed.</p> <p>4. An unused historical trial well is located in an overgrown area near the borehole. Wicklow County Council plans to examine the trial well to verify if the cap is still in place. During the audit they stated that previous pumping tests of the abstraction borehole showed no impact on the trial well, which indicates a lack of groundwater connectivity between the two wells.</p> <p>5. Following the audit, Irish Water provided a copy of the hydrogeologist's report on the zone of contribution to the borehole source. The groundwater vulnerability is predominantly extreme in the vicinity of the source. The report states that based on topography and bedrock aquifer, it is assumed that the catchment area to the borehole lies mainly upgradient up to the top of the hill.</p>	



### 3. Drinking Water Quality

3.1

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

**Answer**

No

**Comment**

Under the Drinking Water Regulations, there are two parametric values for nitrite in drinking water; 0.5 mg/l at consumers taps and 0.1 mg/l ex water treatment works. Following the audit, Irish Water identified that an operational result of 0.46 mg/l nitrite (ex water treatment works) on 08/12/20 had not been reported to the EPA due to an oversight. They have issued a reminder to all DBO operators that a limit of 0.1 mg/l nitrite applies to water leaving a treatment plant.



## 4. Site Specific Issues

	Answer	
4.1	Is there a treated water storage reservoir in Barndarrig public water supply?	Yes
<b>Comment</b>		
EPS Ireland representatives confirmed there is 36 to 48 hours storage of treated water in the reservoir at Barndarrig water treatment plant. This will allow the plant to be shut down temporarily if nitrite levels exceed a critical level, when the continuous nitrite monitor is in place at the plant.		

	Answer	
4.2	Is there a Drinking Water Safety Plan for Barndarrig public water supply?	No
<b>Comment</b>		
Irish Water confirmed there is no Drinking Water Safety Plan (DWSP) for Barndarrig public water supply, and it is not included in Irish Water's list of DWSPs to be developed in 2021.		

	Answer	
4.3	Has Irish Water published communications updates on their website regarding the Do Not Consume Notice affecting Barndarrig public water supply?	Yes
<b>Comment</b>		
<ol style="list-style-type: none"><li>1. At the time of the audit, there was no update on Irish Water's website regarding the Do Not Consume Notice, since the original notice was posted on 09/02/21.</li><li>2. Following the audit, Irish Water updated their website on 03/02/21 to remind people that the Do Not Consume Notice remains in place, and there is no conclusive timeframe for when it can be lifted.</li><li>3. Irish Water confirmed that they sent reminder press releases to local media and business stakeholders, Irish Water social media, Wicklow elected representatives and Irish Water's call centre on 12th, 15th and 19th February and 3rd March 2021.</li></ol>		

## Recommendations

<b>Subject</b>	Barndarrig PWS - Virtual Audit Recommendations	<b>Due Date</b>	12/04/2021
<b>Action Text</b>	<p><b>Recommendation</b></p> <ol style="list-style-type: none"><li>1. Irish Water, in conjunction with Wicklow County Council, should complete the investigation into the cause of the nitrite exceedances in Barndarrig public water supply, and undertake any remedial measures necessary to address potentially polluting activities within the zone of contribution to the borehole source.</li><li>2. Irish Water should expedite the installation of a continuous nitrite monitor at Barndarrig water treatment plant. In the meantime, Irish Water should undertake daily monitoring of ammonium, nitrite and nitrate in the final water until the continuous nitrite monitor is installed.</li><li>3. Irish Water should ensure that the borehole is lined, sealed and capped in accordance with EPA Drinking Water Advice Note No. 14: Borehole Construction and Wellhead Protection.</li><li>4. Irish Water should ensure that any further exceedances of the 0.1 mg/l limit for nitrites (ex water treatment works) are notified promptly to the EPA.</li><li>5. Irish Water should publish regular communication updates on their website while the Do Not Consume Notice remains in place in Barndarrig public water supply.</li><li>6. Irish Water should prepare and implement a Drinking Water System Plan for Barndarrig public water supply.</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 Dr. Michelle Minihan, Senior Inspector, Drinking Water Team.</p> <p>Irish Water should submit a report to the Agency on or before 12/04/21 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.</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 Compliance Plan DW20210012 in any future correspondence in relation to this Report.</p>		