



Drinking Water Audit Report

County:	Waterford	Date of Audit:	26 th February 2015
Plant(s) visited:	LCB Lismore PWS	Date of issue of Audit Report:	19 th March 2015
		File Reference:	DW2015/1
		Auditors:	Ms Yvonne Doris
Audit Criteria:	<ul style="list-style-type: none"> • The <i>European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014)</i>. • The <i>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>. • The recommendations in any previous audit reports. 		

MAIN FINDINGS

- i. **The LCB Lismore public water supply does not have adequate treatment of the source water to ensure compliance with the Drinking Water Regulations 2014. THM exceedances occurred in 2009 and 2014. It is unlikely that the current operation of slow sand filters will ensure compliance with the THM parametric limit.**
- ii. **Irish Water should investigate the high chlorine demand in this supply.**
- iii. **The investigation of the benzene exceedance should have included monitoring at nearby properties to ensure other properties were not affected.**

1. INTRODUCTION

Under the *European Union (Drinking Water) Regulations 2014* 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 drinking water.

The LCB Lismore PWS is sourced from the Glenakeefe river. The supply serves 1000 persons. An exceedance of the Benzene parametric limit was notified to the EPA in 2015. Exceedances of the THM parametric limit have occurred in this supply in 2009 and 2014.

Photographs taken by Yvonne Doris during the audit are attached to this report and are referred to in the text where relevant.

The opening meeting commenced at 10.30am at the LCB Lismore treatment plant. 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 Section 2 and 4 of this report. The following were in attendance during the audit.

Representing Irish Water:

Name – Job Title

Deirdre O’Loughlin, Compliance Analyst, Southern Region, Irish Water.

Liam Buckley, caretaker, Waterford County Council

Declan Halpin Technician, Waterford County Council

Tom Rogers, Waterford County Council

James Murray, Water Caretaker, Waterford County Council

Representing the Environmental Protection Agency:

Name – Job Title

Yvonne Doris, Inspector

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

1.	Source Protection <ul style="list-style-type: none">a. LCB Lismore is supplied by two intakes, 0.75 miles apart, from the Glenakeefe river, 3.5 miles from the treatment plant. The source was not inspected as part of this audit.b. The raw water pipe is asbestos cement and is extremely prone to bursts. Raw water is gravity fed to the plant. Any disruption to the water in the inlet pipe (for example if a slow sand filter were to be refurbished) has the potential to cause bursts on the intake pipe.c. Sheep have access to the river. The intakes are screened <10mm and 20mm. There is no forestry or landspreading in the catchment. There is rough grazing in the catchment. The <i>Cryptosporidium</i> risk assessment score is 62.d. The Ammonia monitor on the raw water intake has not been commissioned. Waterford County Council (WCC) stated that the turbidity and ammonia monitors need to be relocated to the intake to allow the option of not abstracting raw water when but this may cause bursts upstream
2.	Filtration <ul style="list-style-type: none">a. Four slow sand filters built in the 1950s with an estimated 2 feet of sand over pea gravel. The sand and pea gravel was replaced about 19 years ago. The filters have never been refurbished. They are cleaned and skimmed every four months but sand is not regularly topped up after cleaning. Cleaning should be done based on headloss but this cannot be done because the ball valves to the reservoir need to be replaced. New valves have been purchased but have not been installed yet (WCC stated that this should be done within four weeks of the audit).b. The integrity of the slow sand filter walls are unknown but highly likely to be compromised. The dividing walls between filters are seeping.c. There is a turbidity monitor on the combined filtered water. There are no turbidity monitors on each individual filter to determine performance of each of the filters.
3.	Chlorination and Disinfection <ul style="list-style-type: none">a. 14/15% sodium hypochlorite is dosed at 9.5mg/l neat into a clear water tank onsite. Chlorine dosing is flow proportional and linked to the residual chlorine levels. The chlorine monitor alarm setpoint is 1.5mg/l. The alarm only goes to the caretaker. Waterford County Council is moving to a cascade system.b. The chlorine residual leaving the plant is typically 3.6mg/l. The network extends for 1.5 miles from the treatment plant to the reservoir and from there for a further 2.5 miles more to Lismore town. There is no chlorine monitor at the reservoir. Residual chlorine in Lismore is between 0.5 and 0.6mg/l and is usually 0.1 to 0.2mg/l at the end of the network. Residual chlorine at Ballinaspick was 0.08mg/l on 12/1/15 and on 22/1/15.
4.	Treated Water Storage <ul style="list-style-type: none">a. The reservoir was built in the 1950s and has a capacity of 580m³, approximately one day storage. The reservoir was cleaned and integrity tested about 3 years ago and was not found to be leaking. A new floor was laid to improve scouring. Repairs were made to the roof) and walls.b. A new crack in the roof of the reservoir needs to be repaired (photograph 1).c. New vents were installed about 3 years ago and new locked access hatches about 1.5 years ago.

5.	<p>Exceedances of the Parametric Values</p> <ol style="list-style-type: none"> a. A customer complained of a smell/taste from their drinking water and on 12/11/15 a sample was taken from the property. Benzene was detected in the sample at a concentration of 1.2 ug/l – the parametric limit is 1 ug/l. On 14/2/15 a sample was taken from the stopcock to the property which was compliant with the Benzene parametric limit. b. Council staff observed that the customer’s home heating system was leaking and may have caused the exceedance. The property owner has undertaken remedial work (new pipework and removal of contaminated soil) and further works are required. At the time of the audit further samples at nearby properties have not been taken. c. HSE advice was to continue monitoring for benzene/hydrocarbons, retest the original location and monitor customer remedial action works.
6.	<p>Management and Control</p> <ol style="list-style-type: none"> a. Irish Water is modelling whether LCB Lismore can be connected to the Conna PWS – there is no timeframe for completion of this assessment. b. The fluoride dosing system was not operational at the time of the audit.

3. AUDITORS COMMENTS

The LCB Lismore intake is at risk of failure. The current treatment using slow sand filters is inadequate to treat the raw water from the Glenakeefe river to ensure compliance with the Drinking Water Regulations 2014. Chlorine demand in this supply is very high in this supply and should be investigated by Irish Water. The investigation of the benzene exceedance should have including monitoring of nearby properties.

4. RECOMMENDATIONS

Source Protection

1. Irish Water should consider an alternative raw water source or connection to another supply.
2. Irish Water should carry out regular monitoring of the raw water and assess the characteristics of the raw water to determine the degree of treatment and controls required in the supply.
3. Irish Water should install a turbidity meter and an ammonia meter on the raw water to alert plant operators of any changes in raw water quality.

Slow Sand Filtration

4. Irish Water should establish documented quality criteria to outline when the filter is due to be skimmed or resanded.
5. Irish Water should ensure that the minimum depth of filter media (excluding the gravel layer) is as per the design specification of the treatment plant and as a minimum no less than 300mm.
6. Irish Water should review procedures for the maintenance of the slow sand filter such that it is in accordance with the recommended procedure as specified in the *Water Treatment Manual: Filtration*.
7. Irish Water should ensure that, following media replacement or skimming (i.e. removal of the schmutzdecke), the filters are run to waste for an appropriate period of time. This period of time should be determined on the basis of predetermined water quality criteria specific to the plant.

Disinfection

8. Irish Water should investigate the residual chlorine levels (0.08mg/l) at Ballinaspick and to take measures to ensure that 0.1mg/l free chlorine is achieved at the ends of the network.
- 9.
10. Irish Water should carry out an investigation to determine the cause of the high chlorine demand in the

supply.

Treated Water Storage

11. Irish Water should ensure that the crack in the roof of the reservoir is repaired as soon as possible.

Distribution System

12. Irish Water should instigate a regular programme of flushing and scouring of the mains.

Exceedences of the Parametric Values

13. Irish Water should prepare an action programmes to deal with the exceedances of the bromate and trihalomethane parametric values in accordance with EPA Drinking Water Advice Note - Advice Note No 4. Version 2: Disinfection By-Products in Drinking Water available at <http://www.epa.ie/pubs/advice/drinkingwater/>.

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 Darragh Page, 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 Number in any future correspondence in relation to this Report.

Report prepared by:

Yvonne Doris

Date:

19/3/2015

Yvonne Doris

Inspector



Photograph 1: Repaired crack in reservoir roof in need of further repairs.