



# Drinking Water Audit Report

<b>County:</b>	Galway	<b>Date of Audit:</b>	30 March 2015
<b>Plant(s) visited:</b>	Moyola Park, Galway	<b>Date of issue of Audit Report:</b>	20 April 2015
		<b>File Reference:</b>	DW2015/33
		<b>Auditors:</b>	Ms Derval Devaney
<b>Audit Criteria:</b>	<ul style="list-style-type: none"> <li>• The <i>European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014)</i>.</li> <li>• <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></li> <li>• The recommendations specified in the <i>EPA Drinking Water Report</i>.</li> <li>• The recommendations in any previous audit reports.</li> </ul>		

## MAIN FINDINGS

- i. The kerosene source was traced to a home heating oil contamination issue at one property in Moyola Park. The source was isolated from the water supply. A water restriction was in place for residents of the estate.
- ii. Residents of Moyola Park are being provided with health advice and actions to take to assist in remediation of the water supply. A door-to-door survey was conducted under the advice of the HSE.
- iii. Improvements to responding to incidents have been identified during the audit which Irish Water should address. These include communication on the incident, providing updates to residents and the condition of the tanker used for provision of an alternative water supply while the restriction was in place.

## 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 in response to contact made by Irish Water via email on 24<sup>th</sup> March 2015 of an incident of kerosene contamination in an area of mains located in Moyola Park which Galway City Council became aware of on Saturday 21<sup>st</sup> March 2015.

Moyola Park is supplied from the Galway City Council Public Water Supply. Under Regulation 9 of the *European Union (Drinking Water) Regulations 2014* it is the responsibility of Irish Water to consult with the HSE in relation to exceedances or risks to the supply, and where Irish Water (in consultation with the HSE) considers that the failure constitutes a potential danger to human health, Irish Water (subject to agreement of the HSE) must inform consumers promptly thereof and provide the necessary advice. It is the responsibility of Irish Water to inform the consumer of any failures to meet the standards for drinking water and the remedial action taken.

Photographs taken by Derval Devaney during the audit are attached to this report and are referred to in the text where relevant. Note that for data protection purposes and for the purposes of Irish Water's

investigations and follow-up of this incident, Photographs 2-7 have been removed from the audit report published on the EPA's webpage.

The opening meeting commenced at 11.30 am at Moyola Park. 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 area of the incident. 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:

Anne Bonner, Water Compliance Liaison Specialist

Frank Clancy, Acting Senior Engineer, Water Services, Galway City Council

Martin Lydon, Clerk of Works, Water Services, Galway City Council

Representing the Environmental Protection Agency:

Derval Devaney, 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. Timeline of Events

The timeline of events was reported as follows:

#### Saturday 21 March 2015

- Galway City Council (GCC) received a complaint from No. [redacted] Moyola Park of an oily odour coming from their kitchen tap. GCC visited the house. According to GCC they found a definite kerosene odour or similar type petrol product. A sample of water was taken from the kitchen tap at about 09.30 prior to flushing the tap. GCC then flushed a nearby hydrant in the park (see Photo 1) for 45 minutes and what seemed like a plug of petroleum smelling water came out. The water was flushed until the water ran without odour.
- A revisit to house No. [redacted] showed no odour in the water and a second sample was taken.

#### Sunday 22 March 2015

- No calls were made to GCC, there was an on-call plumber available all day.

#### Monday 23 March 2015

- GCC carried out additional hydrant flushing in the park and water was clear without odour.
- Contact was made with NUIG, UCHG maintenance departments, neither had anything unusual to report. GCC are not aware of any private wells drilled along this distribution route.
- It is understood that the HSE visited No. [redacted] Moyola Park in response to a complaint by its tenants.
- At 13.02 GCC contacted the Environmental Health Officer (EHO) of the HSE to inform them that there was a complaint of oil contamination and the source was being investigated. The EHO responded by email to GCC at 16.33 stating that a complaint was received by email on Saturday 21<sup>st</sup> March 2015 from tenants/owner of No. [redacted] Moyola Park regarding their public health concerns after an oil company mistakenly filled their water tank with home heating oil (kerosene) on Thursday 19<sup>th</sup> March 2015. The residents noted their concerns for their health and can neither wash themselves, cook or wash their dishes, etc. They stated that their house smells like oil and the water is also murky.

#### Tuesday 24 March 2015

- A call was entered on the MAXIMO system used by the local authority at 08.00 regarding a complaint from a builder working at No. [redacted] Moyola Park of a kerosene smell from the tap water

(complainant had contacted Galway Co Co and not GCC directly).

- GCC visited No. ■ Moyola Park and met two of its tenants. A spot check of the pressure of the supply using an internal pressure gauge showed a reading of 60 psi which was nearly twice the public mains pressure (35psi) at that time. A new water tank had been fitted (see Photos 2 and 3) at this premises since their water tank became contaminated with kerosene on 19<sup>th</sup> March 2015. GCC disconnected the water supply to the house. The stopcock was dug out by GCC to remove any possibility of backflow (see Photo 4) at No. ■ Moyola Park, using its powers under Water Services Act 54(3). The old water tank was removed off-site by GCC.
- GCC spoke to builder next door in No. ■ who said he complained to Galway Co. Co. as his workers complained that when they went to make tea Monday morning (23<sup>rd</sup>) there was an odour off the water. GCC personnel on-site checked MAXIMO, which records complaints, and found a call was logged that morning with the text “*Got this email from Galway CoCo regarding the smell of kerosene coming off the water. Can someone investigated this please*”.
- Mid-morning GCC received a phone call from No. ■ Moyola Park where a lady and her 4 month old baby were ill. GCC informed No. ■ that the water is contaminated with kerosene and to contact their GP to discuss and receive health advice.
- GCC called to No. ■ and included it in the weekly monitoring as arranged with the owner previous day.
- GCC rang the owner of No. ■ Moyola Park at 16.50 and explained that GCC had disconnected the house supply as it was the source of contamination of the PWS.
- An alternative water source was put in place at No. ■ Moyola Park (see Photo 5).
- At 23.05 Irish Water (IW) notified the EPA inspector for Galway City via email of an incident of “*kerosene contamination of an area of mains located in the Moyola Park Saturday 21st March*”. It stated that GCC received a complaint of a smell of kerosene in a kitchen tap. The IW email lists details of the investigations and action to be undertaken by GCC. There is no mention of the source being from No. ■ Moyola Park.

#### **Wednesday 25 March 2015**

- Samples were taken from Moyola Park at No. ■■■■■ for petrochemical analysis and sent to CLS for analysis based on advice received from CLS and HSE.
- GCC, HSE, IW meet at 10.30 to discuss the incident and investigation.
- The HSE agree a leaflet drop to all houses (70-80 houses in Moyola Park) to notify residents of a water restriction – a do not drink, do not bathe notice.
- Upon receiving the email from IW, the EPA phone GCC to discuss the investigation. GCC phone the EPA immediately after meeting the HSE. At this stage the EPA becomes aware of the source of contamination being from No. ■ Moyola Park. GCC provide details of sampling programme agreed and email correspondence between the HSE and GCC sent on Monday 21<sup>st</sup> March.
- IW and GCC visit No. ■ Moyola Park immediately after the meeting with the HSE.
- The EPA is notified of incident at 15.31 via ODWNS.
- Water restriction notices are delivered to the households of Moyola Park. A water tanker was put in place that evening at Moyola Park for residents to use as an alternative supply and “Boil Before Use” notices are displayed on it.

#### **Thursday 26 March 2015**

- Samples taken at No ■■■■■ before and after flushing the taps.

#### **Friday 27 March 2015**

- Samples taken at Croí Building, No. ■ and No. ■■■■■. A sample was also taken from No. ■ Greenfields as a background check from the same reservoir supply (circa. 500m from Moyola Park) before and after flushing.
- A meeting took place between IW, GCC and the HSE.
- An updated notice was issued to all residents to flush internal domestic plumbing and storage systems and states that the water supply can now be used for bathing, showering & washing clothes if households cannot smell oil-like odour in the water and do not have a skin condition e.g. eczema, psoriasis etc. IW states that water will be delivered to the homes of vulnerable customers who have requested it.
- IW issued a notice to landowner under the EU (Drinking Water) Regulations 2014 by email to investigate cause of contamination and proposals to remediate and put measures in place to ensure the incident does not re-occur. This report is to be submitted by 4pm Thursday 2<sup>nd</sup> April 2015.

	<p><b>Saturday 28 March 2015</b></p> <ul style="list-style-type: none"> <li>▪ Samples taken at No. ■, ■■■■■■■■, No. ■ and at the water works (note there were no reports of an oil odour or contamination at the water works and this was sampled for comparison purposes). GCC distributed bottled water to the houses that require it. Houses got at least 2 x 2 litres of water, some more depending on their circumstance and requirements for the weekend.</li> </ul> <p><b>Monday 30 March 2015</b></p> <ul style="list-style-type: none"> <li>▪ A notice is issued by registered post signed by IW and GCC to the landlord of No. ■ Moyola Park following the email sent Friday 27<sup>th</sup> March.</li> <li>▪ The EPA carries out a site audit and meets with IW and GCC representatives at Moyola Park. The area of the source of contamination is inspected, a review of the sampling results is carried out and the investigations taken to date are discussed. The alternative water supply is discussed and the remedial actions proposed.</li> </ul>
2.	<p><b>Examination of the source of the home heating oil contamination</b></p> <ol style="list-style-type: none"> <li>a. An examination of the source of the home heating oil contamination of the network was carried out by the EPA at No. ■ Moyola Park at 11.30 Monday 30<sup>th</sup> March. Irish Water and Galway City Council representatives were present. The house appeared to be vacant. A small water tanker providing an alternative water supply for No. ■ was evident outside the front of the house. There was no sign on it to state “boil before use” (see Photo 5).</li> <li>b. The boiler house at the back of No. ■ also housed a water tank. It was here that the Oil Company mistakenly began to fill the water tank that served No. ■ with home heating oil (kerosene) on 19<sup>th</sup> March 2015. GCC explained that on Tuesday 24<sup>th</sup> March they disconnected the supply of water serving this house and took away the water tank. It was stated that the water tank had a sticker referring to it as being an oil tank; they also noted that the pressure serving this tank was higher than the mains water pressure. It is believed that water from this tank served No. ■’s kitchen tap and other domestic uses such as showers, baths etc. A new water tank was installed in the shed (possibly on Saturday 21<sup>st</sup> by the Oil Company) however this tank also had a sticker on it referring to it as being a tank for oil storage (see Photo 6). The actual oil tank that serves the house was behind the boiler house out of direct view when you walk around to the rear of the house (see Photo 7). During the visit a very strong smell of oil was evident near the shed /boiler house which also houses the water tank and fumes were very strong in this boiler house. Green absorbent material was present on the ground of the shed presumably to mop up any oil that had spilled to ground from the incident (see Photo 3).</li> <li>c. House No. ■ Moyola Park is disconnected from the mains (since Tuesday 24<sup>th</sup> March) and Irish Water/GCC has written to the landlord to notify him of this. GCC also telephoned him on the day of the disconnection regarding this. Irish Water/GCC has directed the landowner to undertake an investigation of the incident and report back by 4pm April 2<sup>nd</sup> 2015 on the remedial measures to be taken to rectify the matter. The landlord was instructed to use an appropriately qualified person to conduct this investigation.</li> <li>d. It was explained that the supply’s network is looped inside the estate and is not connected outside the estate, there is just one take off from the public supply main for Moyola Park. Photo 1 shows where the grass is burnt from flushing the contaminated water at this hydrant location on Saturday 21<sup>st</sup> March and subsequent days. Also Photo 8 shows oily water entering the drain next to this hydrant.</li> <li>e. The updated advice issued on Friday 27<sup>th</sup> March 2015 to households within the park to flush their internal plumbing systems will further assist in the remediation of the water supply. GCC had flushed the park on the morning of the audit and CLS were undertaking sampling as part of the sampling programme agreed with the HSE, GCC and IW (3 samples per day with one sample per location, also sampling at Gort Caoin – a sample outside the estate for comparison purposes).</li> <li>f. It was explained that the HSE advised to carry out a door-to-door survey within Moyola Park to collate information from consumers on their water supply (e.g. had residents of Moyola Park experienced taste and odour and if there is a taste or odour currently present in their water supply). This survey was carried out on 26<sup>th</sup> March 2015 within the park and IW stated the results would be forward to the EPA. IW stated that a further door-to-door leaflet drop would be carried out later that evening by GCC staff advising residents that sampling of the water in Moyola Park is ongoing and that residents should continue to not drink the water.</li> <li>g. It was stated that there were 3 complaints received in addition to the complaint received by the HSE from No. ■ – these include a complaint from No. ■ Moyola Park (sampled Saturday 21<sup>st</sup>),</li> </ol>

	<p>No. ■ Moyola Park and No. ■ Moyola Park (both sampled Wednesday 24<sup>th</sup> March). GCC visited the complainants to discuss their concerns and provided the necessary advice.</p> <ul style="list-style-type: none"> <li>h. IW stated that it is continuing to sample the water in the park and liaise with the HSE regarding appropriate health advice and will continue to do this and to flush the network until it is advised otherwise.</li> <li>i. The EPA visited the site (Moyola Park) at approximately 8pm on 30<sup>th</sup> March 2015 and noticed the door-to-door survey was being carried out on behalf of IW as stated that morning during the audit. The water tanker was in place and the 7 litre bags were evident in a bin next to the large tanker. There were “Boil Before Use” notices next to the tap on the tanker. The tanker had a significant amount of rust on the outside of the tanker. The outside of the tanker was also dirty in many places.</li> <li>j. It was confirmed that there are no lead connections serving this estate (all are MDPE pipes).</li> </ul>
<p><b>3.</b></p>	<p><b>Monitoring and Sampling Programme</b></p> <ul style="list-style-type: none"> <li>a. Samples were reviewed during the audit. A sample taken at No. ■ Greenfields on 27<sup>th</sup> March 2015 and at the treatment plant on 28<sup>th</sup> March 2015 are free from contamination with oil. These samples were used for comparison purposes as these were taken up-gradient of the source of contamination and were free from contamination as expected.</li> <li>b. Samples taken within Moyola Park however show that kerosene did enter the looped supply chain post the incident on 19<sup>th</sup> March 2015 (e.g. at No. ■ Moyola Park’s tap on Saturday 21<sup>st</sup> March). It appears from the results taken up to and including the 28<sup>th</sup> March 2015 that the disconnection of the supply at No. ■ (the source of the kerosene) on Tuesday 24<sup>th</sup> March and flushing at a hydrant within the park on this day and subsequent days has assisted in the removal of oil from the water supply in the park.</li> <li>c. Sample results show the sample taken at No. ■, prior to flushing, on Saturday 21<sup>st</sup> March was significantly contaminated with Benzene and other oil derivatives. The sample taken at No. ■ on Wednesday 25<sup>th</sup> showed levels of xylene above the limits of detection.</li> <li>d. CLS are undertaking sampling as part of the sampling programme agreed with the HSE, GCC and IW (3 samples per day with one sample per location).</li> <li>e. Irish Water mentioned during the audit that CLS were “not accredited for analysis of hydrocarbons” While accredited analysis is not currently mandatory, the EPA recommends that laboratories carrying out analysis of drinking water attain accreditation for all parameters. Irish Water should ensure that analysis meets the requires of guidance on analysis published in the EPA “<i>Handbook on the implementation of the regulations for water service authorities for public water supplies</i>”</li> <li>f. GCC stated that there was a stainless steel tanker in place in the park as alternative supply source for the residents of the estate and 7 litre bags were available for residents to use to collect the water. The tanker was not on-site during the audit, as it was being re-filled from the mains at the docks area of Galway City. GCC stated that there were “Boil Before Use” notices on the tanker. IW stated that it is mainly students and elderly persons residing in the park and any vulnerable customers are being provided with bottled water delivered to their door.</li> <li>g. GCC stated that the water tanker was not emptied or re-filled since it went on-site on Wednesday 25<sup>th</sup> March and was not sampled. The procedures outlined in the EPA’s Handbook were explained during the visit which includes the need to sample the water, if the water remains in the tanker for longer than 48 hours. It was stated however that records, also required under this procedure (for e.g. on the supply of water, times tanker was filled, emptied and re-filled and the cleaning of the tanker before and after use), were being maintained. GCC stated it would refer to and adhere to the procedures in the Handbook for sampling as required.</li> </ul>
<p><b>4.</b></p>	<p><b>Communication with Stakeholders</b></p> <ul style="list-style-type: none"> <li>a. Some updates on this incident on Irish Water’s website were misleading, with incorrect (older) dates displayed when new information was posted.</li> <li>b. There was a failure by Irish Water personnel to notify the EPA promptly using the correct forms of communication channels. It is apparent that Irish Water was aware of the incident but did not notify the EPA until after 11pm on Tuesday 24<sup>th</sup> March 2015. In addition, the notification was made by email to an individual EPA inspector rather than following the EPA’s notification procedures and using the drinking water email address. Irish Water is to make contact with the EPA of an incident by email, telephone and by submitting a notification using the ODWN</li> </ul>

	system. The incident notification was not submitted via ODWN until Wednesday 25 <sup>th</sup> March 2015.
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### 3. AUDITORS COMMENTS

The EPA audit has identified a number of shortcomings of Irish Water. The EPA suggests that Irish Water review this incident (e.g. its incident reporting, communication with stakeholders, procedures around provision of alternative supply, etc.) and take on board the lessons learned. Irish Water should continue to keep residents updated as the incident unfolds. In addition, Irish Water should put in place action to ensure a similar incident does not occur again.

### 4. RECOMMENDATIONS

1. Irish Water should keep residents of Moyola Park updated and the EPA promptly informed on the incident investigation, including sampling results, advice issued by the HSE and/or Irish Water, the lifting of the water restriction, any remediation of the soils/water in the wider park area and any further action that is required to remediate this incident.
2. Irish Water should prepare a summary report of the incident for the residents of Moyola Park (e.g. how the incident occurred, what is being done to rectify the matter, action residents may need to take, how this can be prevented in future, who to contact if there are concerns, etc.).
3. Irish Water should ensure that notifications, incidents, complaints and concerns are communicated to the appropriate persons in a timely manner using factual information and the correct form of communication channels.
4. Irish Water should ensure that Section 4, Paragraph 5 of the EPA's Handbook is adhered to regarding notices to be displayed and compliance sampling to be carried out on water from tankers supplied in the event of an emergency or incident and adequate records of the deployment of each tanker are maintained. Also Section 5 should be adhered to in relation to guidance on analysis.
5. Irish Water is requested to submit the material of construction of the internal surface of the tanker on-site the evening of Monday 30<sup>th</sup> 2015 (ideally it should be approved by the Drinking Water Inspectorate of England and Wales or equivalent approval system) and provide details of the cleaning of the tanker before and after use.
6. Irish Water should address any wider contamination of the surface water and/or soils (e.g. remediation of any soil contamination at No. ■■■, contamination due to flushing of hydrants in the park, residual contamination of domestic water systems, etc.) which may have occurred due to this incident at Moyola Park.
7. Irish Water should prepare a report on the lessons learned from this incident that outlines how this incident contaminated the water supply and how it is to prevent similar incidents re-occurring in future. The lessons learned report should include a review of communications covering the incident. Irish Water is to investigate if there are issues nationally of direct connections into internal pressurised systems and how this is to be addressed. This can also occur if private wells are connected to internal plumbing systems for water use which are not separated from public mains by air break to IS EN 1717 standards.

## **FOLLOW-UP ACTIONS REQUIRED BY IRISH WATER**

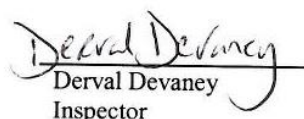
During the audit Irish Water representatives were advised of the audit findings and that action must be taken as a priority by Irish Water to address the issues raised. This report has been reviewed and approved by Mr Brendan Wall, Manager.

Irish Water should submit a report to the Agency by **18<sup>th</sup> May 2015** on 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.

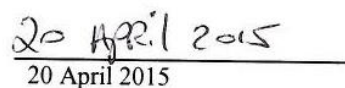
The EPA also advises that the findings and recommendations from this audit report should, where relevant, be addressed at all other treatment plants operated and managed by Irish Water.

Please quote the File Reference Number in any future correspondence in relation to this Report.

**Report prepared by:**

  
Derval Devaney  
Inspector

**Date:**

  
20 April 2015



**Photo 1 Hydrant in Moyola Park that was flushed on Saturday 21<sup>st</sup> March 2015 by Galway City Council. Contaminated water has caused discolouration and burning of grass in the park.**