

## Incident Report for Welsh Water burst water main 5<sup>th</sup> December 2018

### Incident description

During Wednesday 5<sup>th</sup> December 2018, the cast iron mains pipe that transfers water from the Alwen Reservoir to Birkenhead via the Wirral failed. Welsh Water reacted to a report of lost water pressure and were following the line to try and detect the leak. Around the time they were in the Loggerheads area, it was noticed by the site that the field opposite was flooded.

### Sequence of events

Date and time	Description of event
Wednesday 5 <sup>th</sup> December	Site experiences loss of water pressure on the Alwen supply.
18:00 to 19:00	Formaldehyde shift supervisor detected low water pressure on site. Production management informed. Site moved from 'Birkenhead main' to Mold town supply. Welsh Water informed via telephone of loss of site water pressure on the Alwen supply and they confirmed that they were dealing with a leak on the Alwen supply.
21:00	Water running onto the site from the field opposite. Welsh Water contacted via telephone about the flooding of the field. Internal Emergency Plan activated and Synthite management on site to monitor and control the incident. Enviroclear contacted to assist with the incident. Welsh Water personnel arrive at the front of site at approximately 21:15 and confirmed that they had been searching for the leak since approximately 16:00. Welsh Water contacted Morrison Utilities to provide some sandbags to site.
22:00	Site made their own sandbags and plugged a gap in the bank opposite site to reduce run off from the field and to protect switch room 1.
23:00	Morrison Utilities arrived on site with 40 sandbags to dam the front of the site. Morrison Utilities leave site at 23:15 to get another 40 sandbags for site. Isolation valve near the pipe fracture cannot be closed. Welsh Water staff working along the pipe to find an isolation valve that can be closed.
00:30	Morrison Utilities return to site with 40 more sandbags. Front of site partially sandbagged, but passing vehicles and vehicles entering the site were causing bow-waves that pushed water over the sandbags onto site. Water running onto site through the right hand side of the formalin loading area. IBCs outside the TS Resins UF plant were diverting the flow through the UF plant and into the effluent pit, causing it to overtop. IBCs moved to allow the floodwater to pass to the lower part of the site via the roadway. All flood water accumulating at the back of site on hardstanding. TS Resins loading operations on hold due to flooding at the lower end of the site.

Date and time	Description of event
Thursday 7 <sup>th</sup> December	Welsh Water contacted resilience Direct. Set up Gold and Silver commands to manage the incident near the site and the subsequent loss of the Alwen water supply. North Wales Fire and Rescue Service contacted (by Welsh Water) Police informed. Did not attend the incident at any time (by Welsh Water)
07:00	Management back on site to continue to manage the incident. Welsh Water/Flintshire CC has reduced A541 to single lane along field boundary with traffic light controlled traffic management.
08:30	Welsh Water incident manager on site (Neil Gore) Welsh Water requires permission from NRW to pump water from the field above the site into the river Alyn. Permission eventually given. Flintshire CC cleaning blocked drains on the highway to improve surface water drainage. Welsh Water gives permission to the site to increase the S1 discharge volume to 14.5m <sup>3</sup> hr <sup>-1</sup> .
11:00 – 12:00	Vacuum tankers on site to remove water from front of site to reduce flow of flood water through the site. NRW contacted G Hickman and left message. GH on leave. Dewatering of the field started (approximately 12:00). Lay flat hose brought in by site had to be loaned to Morrison Utilities to speed up the process.
12:18	GH contacted NRW – no answer, left message. Contacted site to discuss incident. Several calls to NRW and site to discuss incident and request permission to increase the W1 outfall flowrate to prevent water entering the site and picking up potential contamination.
13:58	Confirmation received to increase W1 outfall rate. Two 4" diesel water pumps in operation to reduce water level on site. One pump directing flow from the site entrance direct to the river and the second pump transferring water from the bottom of the site to the lagoons. One 6" diesel water pump on site as a reserve.
16:00 – 17:00	Welsh Water civil engineer inspecting the field. The engineer was of the opinion that the bank in the field was at danger of collapse, which could lead to water surge onto the road and subsequent risk of injury to passing motorists. He recommended that the road is closed. Flintshire County Council informed of the need to close the road. Water level reduced to below the level of the retaining wall at the lower end of the site. Water still flowing onto site but pumping from the front of site and vacuum tanker removal of water has stopped the flow of water through the site.
19:00	Flintshire County Council close the A541 and set up a diversion. Delay as they could not find sufficient staff to man the closure points. North Wales Fire and Rescue Service attend scene. NWFRS left the incident without tending support.

<b>Date and time</b>	<b>Description of event</b>
Friday 7 <sup>th</sup> December	Water still trickling onto site but this is now from the blocked highways drain at the front of site.
07:00	Onsite briefing with Welsh Water (Neil Gore) and NRW (Bob Edwards).
10:00	Vacuum tankers start to remove standing water at back of site. River samples taken upstream and downstream of site.
14:00	Last of standing water removed from site and vacuum tankers stood down.
14:54	Results of river samples forwarded to NRW.
15:30	Weighbridge pit emptied using gulley sucker and weighbridge returned to service.
15:50	Trade Effluent sample taken by Welsh Water.
<b>Date and time</b>	<b>Description of event</b>
Saturday 8 <sup>th</sup> December	Normal site operations resumed.
08:00	Field opposite site has been fully drained overnight.
09:00	4" diesel pump at the front of site turned off but left in place until pipe repairs completed and main has been recharged. 4" diesel pump removed from bottom of site and brought to front of site as back up.
10:00	NRW updated on site status and informed that site operations are back to normal.
<b>Date and time</b>	<b>Description of event</b>
10/12/18 – 11/12/18	Alwen main recharged with water.
<b>Date and time</b>	<b>Description of event</b>
12/12/18	Diesel pumps and hoses removed from site after recharging of the Alwen main completed without further incident.
<b>Date and time</b>	<b>Description of event</b>
27/12/18	Welsh Water moved the site back on to the Alwen mains water supply.

## Conclusions

1. This incident was not a result of site operations and the site was an innocent victim of the incident.
2. The site incurred significant costs in managing the incident.
3. There was no pollution of the environment by the site as a result of this incident.
4. The Internal Emergency Plan worked well.
5. The External Emergency Plan was not activated.
6. The site moved from the Birkenhead main to the Mold main. There was no effect on plant operations or emergency cooling and the fire water ring main remained operational.
7. Welsh Water raised the incident via Resilience Direct. This should cascade a response to the emergency services and Flintshire CC.
8. The response from the emergency services was slow and not what was expected by the site. Some emergency services did not attend the incident even though Resilience Direct was involved and Gold/Silver commands were set up.
9. The site had no contact with Flintshire CC.
10. NRW response was slow but they did view the incident from a larger perspective (potential for the off-site floodwater to be contaminated if it entered the site or for site operations to be compromised). Other emergency services seemed to see the incident purely as a release of water.
11. Site controls were good and sampling of the river showed that the management of the site is excellent with any floodwater leaving the site not being contaminated.
12. Welsh Water provided initial sandbags and a quick response to the incident. The sandbags provided consisted largely of stone and were unsuitable. Further sandbags were provided by Enviroclear.
13. The nearest water main isolation valve was not operational and there was a delay in finding another isolation valve leading to a greater release of water.
14. There were no calls to the site by members of the public.

## Recommendations

1. Review SOP to change water over from the Birkenhead main to the Mold main (and back).
2. Review the HAZID to see whether this incident is included and if not to assess and determine whether it is a MAH.
3. The outfall from the ETP is a trade effluent discharge to Welsh Water. Discuss with NRW as to why it is a permitted release when it does not discharge to the environment and NRW are not responsible for permitting discharges to trade effluent. The site believes this is an anachronism that should never have entered the site permit when it was first issued in 2004.
4. Discuss moving the field dewatering operation to above the site rather than through the site. This would remove W1 from the site permit and the need to have a permitted release.
5. Discuss the 'tie-in' of the road drains into the W1 field dewatering operation. The site feels this increases the potential for contamination from road incidents or general road waste (which the site could be liable for) whereas this is a highways issue. The work was carried out by Flintshire CC without the consent of the site. The site feels strongly that this tie-in should be removed and moving W1 to above the site would solve this issue.