



DŴR CYMRU WELSH WATER

EVENT DURATION MONITORING

November 2023

Document ID:

**EDM TEN Investigation Initial Report – BP0315201
Ben Hughes Foundry CSO, Loughor, Swansea**

Asset ID No. 52307

DOCUMENT CONTROL

| Version | Status | Date | Author(s) | Description of Change |
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| 1 | Initial draft | 24/11/2023 | A. Moule | Initial Report Draft |
| 1 | Draft Check approved | 27/11/2023 | G. Griffiths | Asset Manager review |
| 1 | Client Manager (Delegated) Review | 20/02/2024 | Helena Hopkins | Review and Approval of Initial Report |
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Abbreviations

| | |
|-------------------|--|
| EDM..... | Event and Duration Monitoring |
| DCWW..... | Dwr Cymru Welsh Water |
| SOAF..... | Sewer Overflow Assessment Framework |
| NGR..... | National Grid Reference |
| AMP..... | Asset Management Plan |
| TEN..... | Trigger Event Notification |
| CSO..... | Combined Sewer Overflow |
| SPS..... | Sewage Pumping Station |
| WWTW..... | Wastewater Treatment Works |
| DWF..... | Dry Weather Flow |
| PFF..... | Pass Forward Flow |
| STMF..... | Storm Tank Flow |
| STMRF..... | Storm Tank Return Flow |
| FFT..... | Flow to Full Treatment |
| SAS..... | Surplus Activated Sludge |

1. Executive Summary

Ben Hughes Foundry CSO is permitted to discharge storm sewage under Permit BP0315201 to Loughor Estuary shellfish waters.

The asset breached its EDM requirements on 20/9/2023 when it spilt for the 15th time during the year as per the Spill Block Counting Method.

Desktop studies and operational investigations have been undertaken, however the root cause for spill frequency cannot be established at present. Further investigation work is required to confirm root cause.

2.3. Asset and Telemetry Description

Ben Hughes Foundry CSO receives flows from an area consisting of the Northeast Loughor and Foreshore areas. The rising main from nearby Gwynfe Road SPS also connects in the chamber downstream of the CSO. The catchment upstream of this consists of mainly residential properties covering an area of approximately 0.436km²

During normal operation, flows pass through the CSO chamber and twin 750mm weholite storage pipes. At the end of the storage is a flow control chamber (SS57981403) which restricts pass forward flow to 43l/s, by means of an Alpheus flow control device. When flows exceed this limit, flow will back up and fill the storage. If the capacity of the storage is exceeded, the level in the CSO chamber rises and the spill flow will pass over the spill weir, through a screen, to the outfall.

Once the PFF is reduced below the PFF setting, the flow within the storage pipes is returned by gravitating back into the downstream sewer.

Discharges are monitored with a 'CELLO' ultrasonic sensor in the CSO chamber, used for EDM purposes.

3. Desktop Study

3.1. Telemetry Data Analysis

A review of the telemetry data has been carried out for the period of recorded spills in 2023. Data sets for spills are consistent with response to rainfall events in the catchment: pumps operating at Gwynne Road SPS and other monitored assets in the surrounding area.

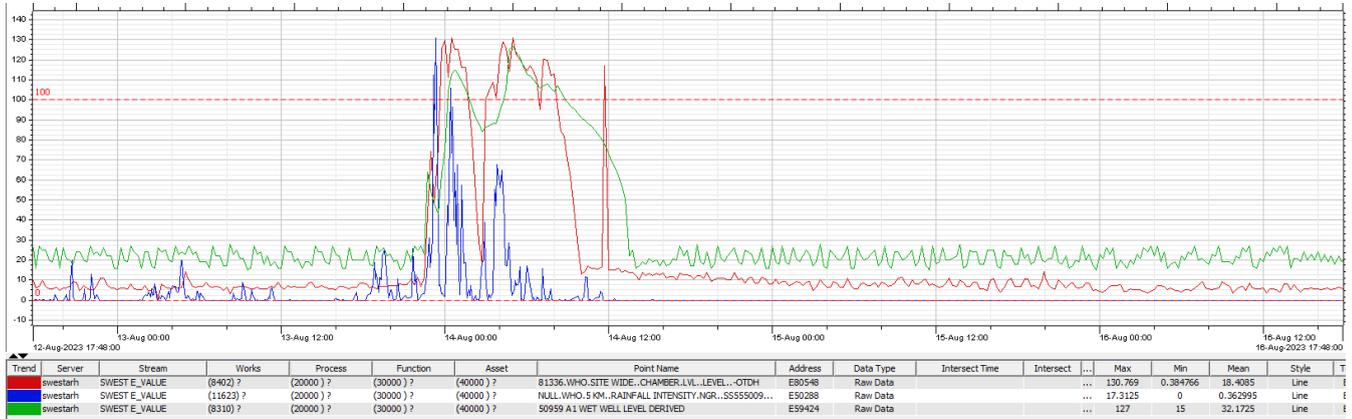


Figure 2 – Red (solid line) trend displays the CSO flow level. Red dotted line indicates the CSO spill level. Blue trend displays the recorded rainfall. Green trend displays the wet well level at Gwynne Road SPS.

3.2. Catchment Review

A Sustainable Drainage Plan was undertaken for the catchment during AMP6.

Ben Hughes Foundry CSO was identified as a high spilling asset in the catchment, but no solutions were developed directly related to this asset.

4. Initial Investigation Conclusions

4.1. Root cause statement

The root cause of CSO spill frequency cannot be established at this time but is likely to be attributed to hydraulic overload of the sewerage system, coupled with operational maintenance issues. Further investigation is required to confirm.

4.2. Root cause Investigations and work undertaken.

Upon notification of the asset breaching its' EDM conditions, CCTV investigations of the downstream network were undertaken to check for any obstructions that may be impeding PFF through the CSO. No obstructions were identified, but the survey of the tanks and flow control could not take place, as DCWW were unable to gain safe access to the asset. The condition of the storage tanks and flow control remains unknown.

4.3. Further Work Required

A formal land entry process is required by the DCWW Estates Department to facilitate access to the assets for inspection, survey and to undertake any maintenance work that may be identified.

DCWW Estates Department will initiate the land entry process to obtain access to all assets.

4.4. Initial Investigation Recommendations

- A Formal land entry process to facilitate safe access to the assets for inspection, survey and undertake any maintenance work that may be identified.

DCWW will gain access to the assets and complete the investigations by a target date of 31st June 2024.