



DŴR CYMRU WELSH WATER
EVENT DURATION MONITORING

30/11/2017

Document ID:

**EDM TBN Investigation Final Report
BW3206201 - Penybont (Merthyr Mawr)
Disposal Works
Asset ID 52891**

DOCUMENT CONTROL

Version	Status	Date	Author(s)	Description of Change
1	Initial Draft	30/11/2017	G. Griffiths	
2	Draft Review Approved	30/12/2017	C. Jones	
3	Approved for Issue	09/01/2018	S. Ellwood	

Abbreviations

EDM.....	Event and Duration Monitoring
TBN.....	Trigger Breached 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

1.0 Executive Summary

This asset is consented under BW3206201 'Penybont WwTW Storm Tanks'. Penybont WwTW is consented to discharge on the condition that the storm storage of at least 21,896m³ is fully utilised, that 6mm 2-dimensional (2D) screening has been undertaken on the storm flows and the pass forward flow at the storm sewage separating weir is in excess of 1650l/s. The asset reached the trigger level and breached on 26/07/2017 as a result of discharging 5 times, using the agreed Spill Block Counting Method within a Bathing season.

Desktop studies and operational investigations have been undertaken, the root cause has been identified as inlet screen operation failure. This restricted the maximum PFF capacity resulting in premature diversion to the storm system and subsequent spills. An operational notice (OPNOT) was issued to the NRW, which was subsequently closed out in September 2017 when the screen was repaired and PFF requirements achieved.

A scheme has commenced on site to replace both screens and install a third standby screen. This will ensure the PFF can be met during future screen repair periods. This scheme is currently scheduled for completion by the end of 2019.

2.0 Site Information

2.1 Site Location

Penybont (Merthyr Mawr) WwTW is located 4 miles south west of Bridgend and serves the town of Bridgend and Porthcawl and the surrounding area. The population served by the WwTW is approximately 170,000.

The storm overflow is situated at the inlet of the WwTW which discharges via a 1675mm diameter outfall pipe to Ogmore Estuary.

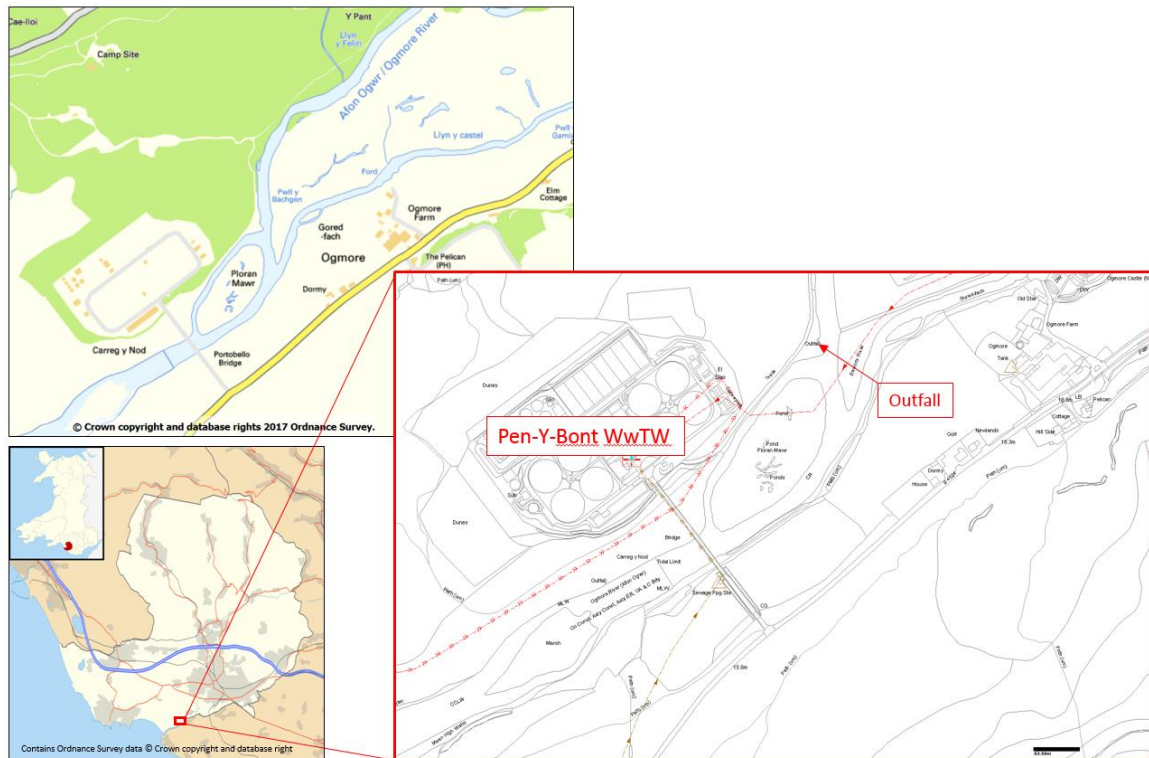


Figure 1: Location of Pen Y Bont WwTW, and catchment near Ogmore, Bridgend, Wales

2.2 Consent and EDM Requirements

This asset is consented under BW3206201 'Penybont WwTW Storm Tanks'. Penybont WwTW is consented to discharge on the condition that the storm storage of at least 21,896m³ is fully utilised, 6mm 2D screening has been undertaken on the storm flows and the pass forward flow at the storm sewage separating weir is in excess of 1650l/s.

The WwTW underwent investment in AMP3 with the bathing water driver U16 BATH5 BATH13. In 2003 a major upgrade to the works was undertaken to reduce odour complaints, this included automation of the storm storage system. In 2007 further modifications were made to the storm management system. The EDM classification for this asset is 'Bathing Water', the asset breached its EDM requirements on 26/07/17 when it split for the sixth time since the beginning of Bathing Season.

2.3 Asset and Telemetry Description

Penybont WWTW works provides treatment by means of screening, grit removal, primary settlement, aeration, final clarification and UV disinfection.

Flows arrive at the works through a gravity network from Bridgend and a pumped main from Porthcawl Beach Road SPS. Gravity flows arrive at the inlet pumping station, where they are lifted into the inlet channel; the pumped flow from beach road enters at the inlet channel.

The inlet channel flows via gravity into the storm screen channel. In storm conditions, flows overtop the weir walls and discharge through 2 screens into the storm storage tanks (capacity of 21,896m³). The consented pass forward flow of 1650l/s is controlled by an automated penstock. When all 8 storm tanks are full, excess storm water entering the system discharges to the storm water outlet channel. Flow is measured prior to discharge to the Ogmore Estuary via a 1675mm diameter outfall pipe (Nat. Grid Ref. SS 87825 76852). After storm cessation, the storm tanks are emptied and their contents returned for full treatment.

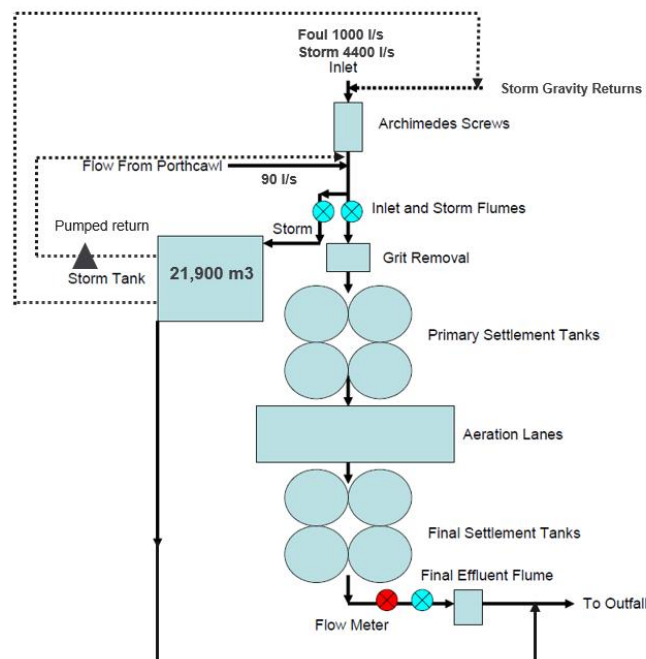


Figure 2: Schematic representation of the Penybont WwTW process

Monitoring of the spills from the storm tanks is undertaken in the outlet storm channel via an ultrasonic level sensor reporting back through the site telemetry SCADA system.

3.0 Desk Top Study

3.1 Telemetry Data Analysis

A review of the telemetry data has been carried out for the period of recorded spills across the 2017 bathing water season. Data sets identify a consistent PFF performance issue.

3.2 Catchment Review

A Sustainable Drainage Plan is currently underway for the Pen-Y-Bont catchment with completion estimated for Dec 2019.

4.0 Initial Investigation Conclusions

4.1 Root cause statement

The root cause has been identified as inlet screen operation failure. This restricted the maximum PFF capacity resulting in premature diversion to the storm system and subsequent spills. An operational notice (OPNOT) was issued to the NRW, which was subsequently closed out in September 2017 when the screen was repaired allowing PFF requirements to be achieved.

4.2 Further Investigations and Work Required

A scheme has commenced on site to replace both screens and install a third standby screen. This will ensure the PFF can be met during future screen repair periods. This scheme is currently scheduled for completion by the end of 2019.

4.3 Initial Investigation Recommendations

The defective inlet screen has been rebuilt and is now operational. There is a scheme in place to replace both inlet screens with the addition of a standby unit. This will allow for the service and repair of the inlet screen whilst maintaining full pass forward flow to treatment.