



Event Duration Monitoring

Trigger Exceedance Notification

Document ID

Report type: Stage 2: Full Investigation Proposal

Permit Number: BP0315201

Receiving / Impacted waters: SFW14

Location: Loughor Borough Road O/S Rev James Ph

DCWW Asset ID: 52307

CAR References:



Document Control

Version	Status	Date	Author(s)	Description of Change
1	Stage 2: Full Investigation Proposal - Draft	19/05/25	J.Turner	Initial report - Draft
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1. Summary of Each Stage

This TEN document follows the six Spill Frequency Trigger stages as detailed in the “*Water and Sewerage Company actions following a spill frequency trigger permit condition exceedance*” guidance document (GN005) to comply with the associated permit conditions.



The consent for asset Combined Sewer Overflow at Loughor Borough Road O/S Rev James Ph is BP0315201. The EDM classification for this asset is Shellfish Water and has a limit of 14 spills. The asset breached its EDM requirements on the 15th of April 2025 when it spilt for the 15th time as per the Spill Block Counting Method. On the issue of the TEN 15/04/2025 it had spilt 18 times.

Initial desktop studies and operational investigations have identified the root cause to be Hydraulic Overload. We have already undertaken the maintenance related tasks in the previous breaches.

Detailed root cause analysis, optioneering and solution development is currently being carried out, this will be delivered by 30th Sept 2026

1.1. Stage 1: Spill Frequency Trigger Summary

- Consent Number BP0315201 = SFW 14 spills in a year (as per the spill block counting method)

TEN History:

Year	2022	2023	2024	2025	2026	2027	2028	2029
TEN ?	No	Yes	Yes	Yes	-	-	-	-

- Stage 1 Acceptance of the TEN by DCWW 15-04-2025

1.2. Stage 2: Initial Investigation Summary

Through desk top analysis & onsite investigation, detailed Root cause could not be determined.



2. Stage 2: Initial Investigation

2.1. Site Location

The area of Loughor is a town in the SA4 region, approximately 5 miles North-West of Swansea city centre.



Figure 1: Location of Loughor Borough Road O/S Rev James Ph CSO

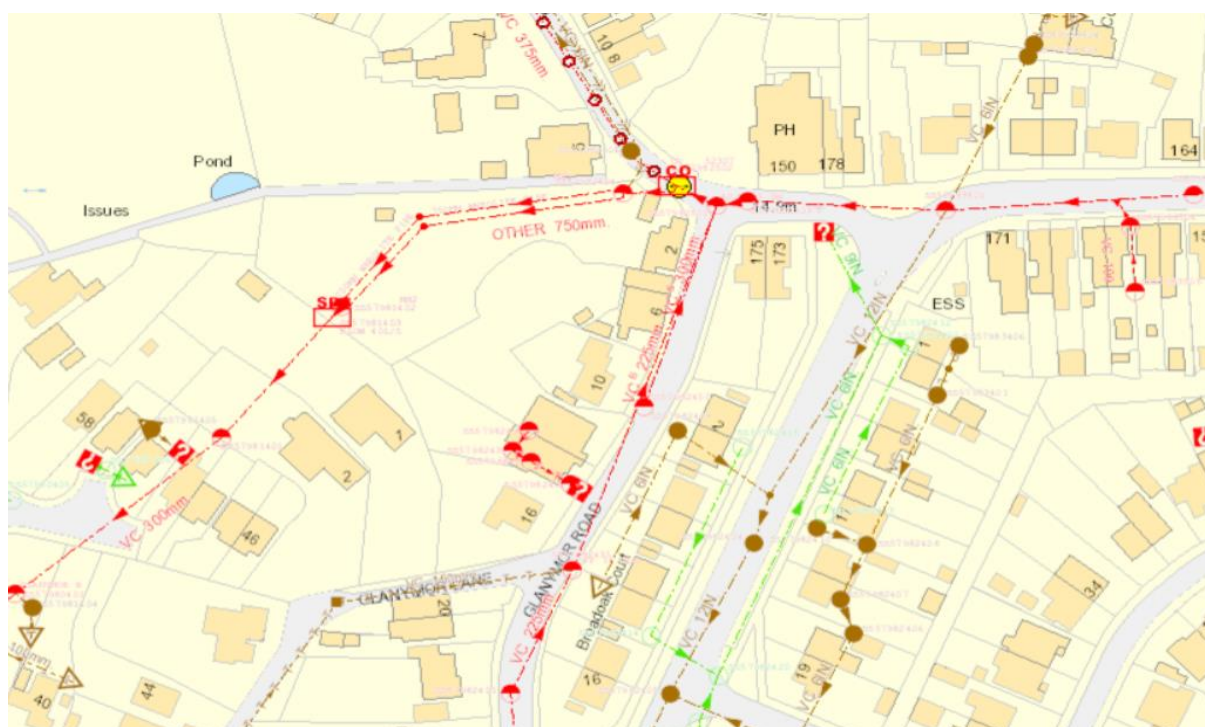


Figure 2: Loughor Borough Road O/S Rev James Ph CSO and surrounding Network



2.2. Permit & EDM Requirements

Table S3.1 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements						
Effluent and discharge point	Parameter	Limit (including unit)	Reference Period	Limit of effective range	Monitoring frequency	Compliance Statistic
Storm sewage via POINT OF DISCHARGE	Discharge start and end times	N/A	N/A	N/A	Whenever a discharge occurs	N/A
	Block-counted significant spills	14 spills	1 st January to 31 st December inclusive	N/A	15 minutes	Condition 3.1.2 applies - the spills threshold is a trigger for investigation only and not a statistic for use in compliance of asset
	Block-counted spills	N/A	1 st January to 31 st December inclusive	N/A	15 minutes	N/A
	Event recorder status operational	N/A	N/A	N/A	15 minutes	N/A

Table S3.2 Discharge points			
Effluent Name	Discharge Point	Discharge point NGR	Receiving water/Environment
Storm sewage	POINT OF DISCHARGE	SS 57026 98708	Loughor Estuary

Table S3.3 Storm sewage discharge settings					
Effluent and discharge point	Description of discharge	Overflow setting l/s	Maximum size of solid matter	Screen aperture size	Minimum storage capacity m ³
Storm sewage via POINT OF DISCHARGE	Storm sewage	43	No greater than 6 mm in more than 1 dimension	6 mm x 6mm	75

Table S3.4 Monitoring points			
Effluent and discharge point	Monitoring type	Monitoring point NGR	Monitoring point reference
Storm sewage via POINT OF DISCHARGE	Effluent sampling	SS 57250 98531	POINT OF OVERFLOW
	Event duration monitoring	SS 57250 98531	

Figure 3: Loughor Borough Road O/S Rev James Ph CSO Discharge Permit Details



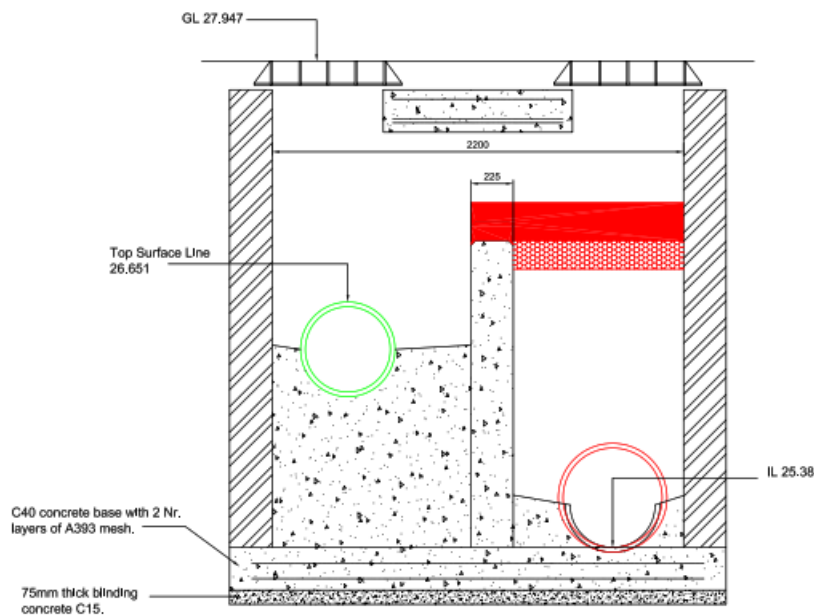
2.3. Asset and Telemetry Description

Loughor Borough Road O/S Rev James Ph 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 a Split Orifice 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.



Section B - B

Figure 4: Section View of CSO chamber

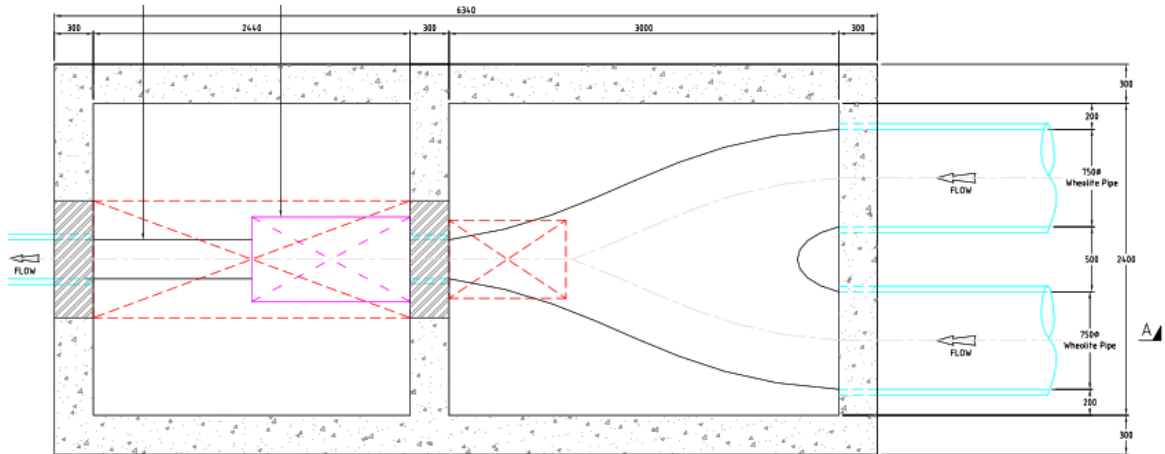


Figure 5: Plan View of Flow control chamber and storage pipes downstream of CSO chamber



2.4. Telemetry Data Analysis

3. Shell Fish Water spills occurred from 01/01/2025 – 19/05/2025 as shown in the screen shot below (Figure 6) taken in from Scopex / Prism telemetry data.

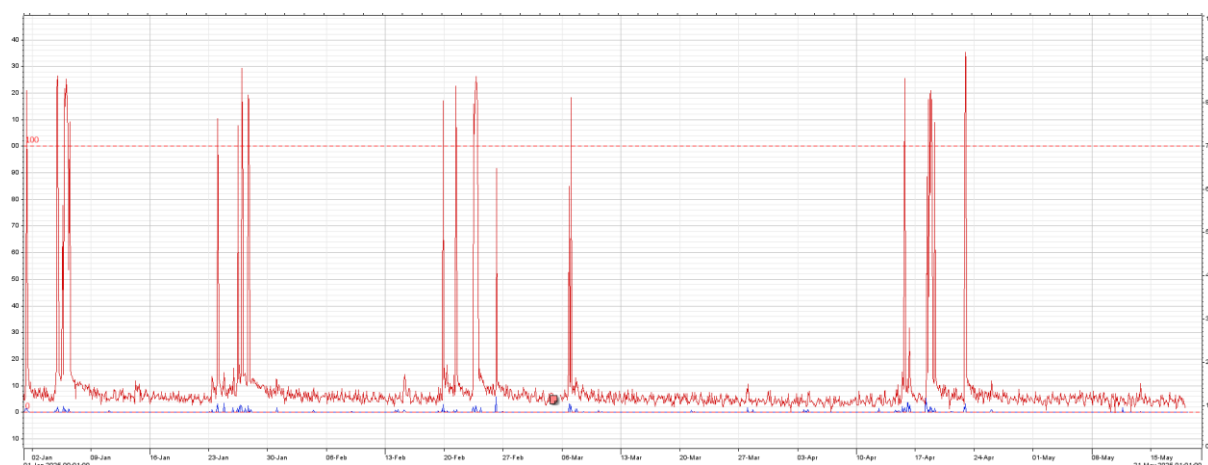


Figure 6: Scopex / Prism telemetry data.

Figure 6: graph showing –

— = CSO Levels

— = Rainfall Intensity

CSO previously contained Alpheus flow control unit which was believed to be defective and potentially restricting flows. This was removed and replaced with a new split orifice flow control unit. These works were completed in March 2025 however asset still operating in line with rainfall events in the area which suggests possible hydraulic overload of the system.

The attenuation tanks at the asset were also inspected and cleaned prior to this breach.

3.1. Root Cause Statement

A detailed Root cause cannot be determined at this stage, however it is likely to be infiltration in the pipe network along with connection of impermeable areas such as roof and yard areas from properties in the catchment.

3.2. Stage 2: Next Steps

Detailed root cause analysis, optioneering and solution development is currently being carried out.

3.3. Stage 2 Full Investigation Plan

Table X: Full Investigation Plan

Action Ref.	Action Required	Action Due Date	Comments	Complete (Y/N)	Completion Date
1.	Modelling assessment of asset and surrounding networks	May 30 th 2026	Asset modelled to confirmed root cause as Hydraulic Overload	N	
2.	Undertake CCTV investigations upstream to identify any water ingress	May 30 th 2026	To identify any flow removal opportunities that may contribute to spill frequency	N	



4. Stage 3: Trigger Exceedance Reason Report (TERR)



5. Stage 4: Spill Reduction Plan

5.1. Spill Reduction Proposal

Identifies how the number of spills will be reduced. The plan must contain reasonable deadlines and be sent to NRW for approval.

Complete Stage 5 which details our communication plan with NRW during the implementation of the SRP.

Table X: Spill Reduction Plan

Action Ref.	Action Required	Action Due Date	Comments	Complete (Y/N)	Completion Date



6. Stage 5: Implement Solutions

6.1. Stakeholder Communication

NRW will be updated via local quarterly meetings and CAR process.



7. Stage 6: Close Out Report

7.1. Spill Reduction Performance

7.2. Trigger Exceedance Close Out Statement

8. Appendices

8.1. Appendix A: Acronyms/Abbreviations



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



8.2. Appendix B: Attachment X1



8.3. Appendix C: Attachment X2