



Event Duration Monitoring Trigger Exceedance Notification

Document ID

Report type: Stage 2: Full Investigation Proposal

Permit Number: BP0237413

Receiving / Impacted waters: (BW)

Location: CSO and EO at East Burrows Road Car Park, Swansea

DCWW Asset ID: 52487

CAR References: CAR_NRW0045720

Document Control



Version	Status	Date	Author(s)	Description of Change
1	Stage 2: Full Investigation Proposal - Draft	30/01/25	J.Turner	Initial report - Draft
2	Stage 2: Full Investigation Proposal - Draft	12/02/25	G. Griffiths	Full investigation report – with proposal
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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 East Burrows Road CSO is BP0237413. The EDM classification for this asset is Bathing Water and has a limit of 5 spills. The asset breached its EDM requirements on the 6th of September 2024 when it spilt for the 6th time as per the Spill Block Counting Method. On the issue of the TEN 1/10/2024 it had spilt 10 times.

Initial desktop studies and operational investigations have identified the root cause to be Hydraulic capacity of the downstream catchment.

Further information is needed for detailed root cause to be completed. This is detailed beneath.

1.1. Stage 1: Spill Frequency Trigger Summary

- Consent Number BP0237413 = BW/6 spills in bathing season (as per the spill block counting method)

TEN History:

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

- Stage 1 Acceptance of the TEN by DCWW 01-10-2024

1.2. Stage 2: Initial Investigation Summary

Through desk top analysis & onsite investigation, the root cause has been determined as hydraulic overload.



2. Stage 2: Initial Investigation

2.1. Site Location

East Burrows Road CSO is situated in on the Marina in Central Swansea. The CSO is situated in the foreshore carpark on East Burrows Road . Flows gravitate to the CSO before entering the trunk sewer to Langdon Road SPS the terminal pumping station to Swansea Bay Treatment works.



Figure 1: Location of the East Burrows Road CSO

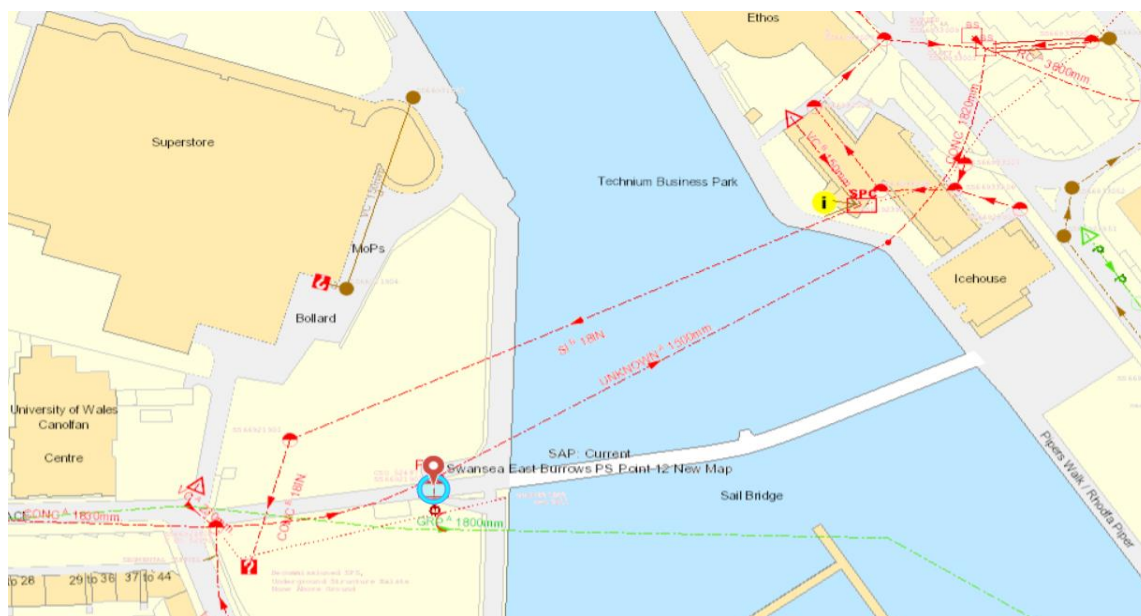


Figure 2: Plan of East Burrows Road CSO and surrounding Network



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
A1 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	5 spills	15 th May to 30 th September 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	15 th May to 30 th September inclusive	N/A	15 minutes	N/A
	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
A2 Sewage in an emergency via Point of Discharge	Discharge start and end times	N/A	N/A	N/A	Whenever a discharge occurs	N/A

Table S3.2 Discharge points			
Effluent Name	Discharge Point	Discharge point NGR	Receiving water / Environment
A1 Storm sewage	Point of Discharge	SS 66591 92506	Estuarial Waters of River Tawe via surface water sewer
A2 Sewage in an emergency	Point of Discharge	SS 66591 92506	Estuarial Waters of River Tawe via surface water sewer

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
A1 Storm sewage via Point of Discharge	Storm sewage	3024	No greater than 6 mm in more than 1 dimension	6 mm x 6 mm	12948

Figure 3: East Burrows Road CSO Discharge Permit Details



The CSO consists of a concrete chamber with a 1830mm diameter incoming pipe and a 1500mm diameter continuation pipe connecting to the downstream network. The PFF is controlled via penstock. The CSO is permitted to spill when the storage of 12,948 cubic metre capacity is fully utilised, and the rate of flow pumped forward into the rising mains from the Langdon Road Pumping Station is at least 3024 litres per second. Stored storm sewage should be returned to the pass forward flow as soon as possible.

Spill events are monitored using the level sensor that controls the operation of the screen.



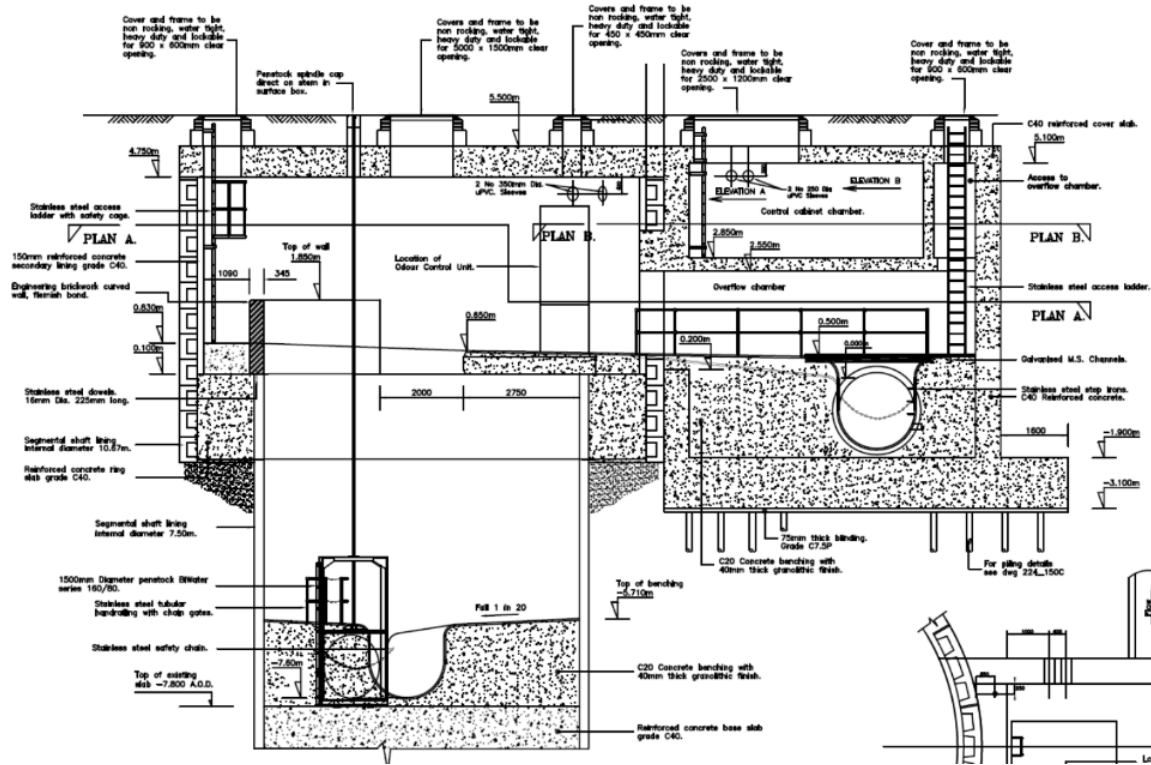


Figure 5: Section of CSO chamber

2.4. Telemetry Data Analysis

- Bathing season spills occurred from 15/07/2024 – 08/09/2024 as shown in the screen shot below (Figure 6) taken in from Scopex / Prism telemetry data.

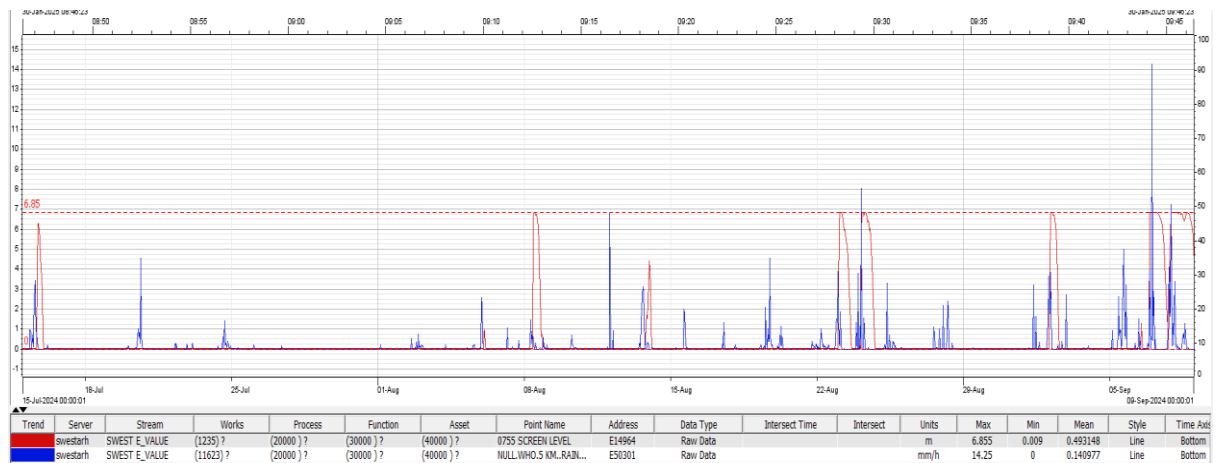


Figure 6: Scopex / Prism telemetry data.

Figure 6: graph showing –

— = CSO Levels

— = Rainfall Intensity



From reviewing the telemetry and rainfall data, it is evident that all spills from the asset coincide with rainfall.

It is not possible to ascertain if the pass forward flow of 3024 l/s was being achieved from Langdon road SPS as there is no flow monitor on the asset.

The Telemetry at this site didn't work between 15/08/2023 and 12/06/2024. Using level data at Langdon road SPS, it is likely that East Burrows was spilling on 2nd May 2024 and 13th May 2024 but no working telemetry to catch these events.

3.1. Catchment Review

At the time of the spills from East Burrows CSO, Swansea WWTW was also spilling to its storm tank.

3.2. Root Cause Statement

A detailed Root cause cannot be determined at this stage

3.3. Stage 2: Next Steps

More information is needed to ascertain the full root cause, a gap analysis has been undertaken, with required information documented in the full investigation plan.

3.4. Stage 2 Full Investigation Plan

- There appears to be an issue with the spill level reading of the asset. This is resulting in the asset over recording spill duration.
- There isn't a flow monitor indicated on the telemetry for Langdon road SPS, this needs to be checked on site.
- The storage tunnel may be being utilised too early. This needs to be checked on site to see if the pumps are switching on at the correct levels.
- It appears that 2 of the pumps at Langdon road are not in operation, this needs to be checked on site.
- in storm conditions there are usually 3 pumps running in Langdon road, however this sometimes drops to 2, investigate why.

Table X: Full Investigation Plan

Action Ref.	Action Required	Action Due Date	Comments	Complete (Y/N)	Completion Date
1	Re-calibrate spill monitor	1 st April 2025		Y	
2	Check Langdon Road flow monitor on site.	1 st April 2025	Operations check if flow meters are operational and put onto Prism	Y	
3	check pumps are switching on at the correct levels. Langdon road.	1 st April 2025	Check what the operation of the PLC to the FDS	Y	
4	Check for pump inhibit at Langdon Road	1 st April 2025	Complex interlocks with WwTW – being picked up as part of Maintenance plan for Swansea WwTW	N	
5	Add flow monitor data from SCARDA to Prism	1 st Oct 2025		N	



6	Check operation of pumps at Langdon Road	1 st May 2025	If flow meters are available – review data for corrective actions	Y	
7	Operational review with Pumping and WwTW colleague's	1 st June 2025	Internal meeting will be setup when the data is received and reviewed	Y	
8	Modelling exercise to check root cause	1 st August 2026			

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

Carry out the work described in the approved FIP (if applicable).

Detail the reason for the trigger exceedance. Supply any supporting evidence.

Once the reasons for the exceedance are identified then move onto section 6 and produce a Stage 4 Spill Reduction Plan (SRP) that identifies how the number of spills will be reduced.



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

DCWW will implement actions outlined in the SRP. There is no permit requirement to send NRW any documents during this stage. However, NRW expect DCWW stay in communication with NRW's lead officer during this stage. This will enable discussion to take place such as progress on completing the actions to the approved deadlines agreed in the SRP.

Detail how NRW will be updated e.g. Tech surgery, TOG, regular update emails etc. and the frequency of these.



7. Stage 6: Close Out Report

7.1. Spill Reduction Performance

Summarise effectiveness the of effectiveness of the completed actions.

Demonstrate, with appropriate evidence, that the work carried reduced the number of spills to below the trigger. Information should consist of narrative supported by photographs, engineering reports, CCTV footage and plans/maps or any other relevant information.

7.2. Trigger Exceedance Close Out Statement

Produce a formal closeout 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