SOAF Investigation Output Summary

Reference: SOAF.R 00001

Please see Audit Statement Technical Guidance for further information

ASSET INVESTIGATION DETAILS					
SAP Asset Name:	LLANGOLLEN STW		**Asset Template reference**	CM0005501-LLANGOLLEN PUMPING STATION-2790-Stage 4 - Non CBA-Denbighshire	
Investigation Type	SOAF (River)				
Year of breach:	*2019*	**Spill Trigger cause:**	*OC Continuation Restriction (Maintenance)*		
Year of Investigation:	*2022*	**Investigation year performance:**	*35*		
Population of Asset	*3257*	**Modelled Performance: (DESIGN) / (CALIBRATED)**	*23 / 21*		
Permit Details					
Storm Permit ID:	CM0005501	**Storm Permit Name:**	LLANGOLLEN PUMP STATION (STW CSO)		
Asset NGR:	SJ2183742049	**Waterbody ID**	GB111067052060		
Discharge NGR:	SJ2184742014	**Water body Discharge location**	Dee - Ceiriog to Alwen		

Brief description of asset
(Screen, PFF flow control, Storage, outfall)

Inlet Wet Well:
Incoming line: 2 x 300mm gravity; CSO Type: Storm Pumps discharging overflows to the storm tank; Screening:None; Flow Control: Foul pumps; FFT Pipe: Rising Main; PFF Consent: 38.87 l/s; 3DWF: 27.785 l/s.

Storm tank spill point
Consented Storage: 177 m3; Modelled Storage: 154 m3; Spill level: 79.245 mAOD; Tank emptying philosophy: Unknown; Tank emptying Rate: Unknown

If the incoming flow exceeds the capacity of the flow restriction, the level in the wet well rises. Spill flows pass to the storm tank. Once full, spill flows pass through the screen, discharging over the weir to the outfall pipe

SOAF STAGE 1	
Details of assessment:	Asset condition surveys supported by hydraulic model assessment of the asset performance against available telemetry information (EDM and radar rainfall datasets). Additional flow and rainfall monitoring was undertaken to improve the baseline model accuracy and assist in defining the root cause of spills.
Permit Compliance	
PFF	Compliant
Storage	Compliant
Screening	Compliant
Bespoke/Other	N/A

SOAF Stage 1 findings

Primary Cause: OC Maintenance

Following the hydraulic model assessment, the cause of the high spills at the asset is concluded to be OC Continuation Restriction (Maintenance). The pumped pass-forward flow has been reviewed as not consistently meeting PFF condition, likely suffering operational issues. The model is fit for use in working operational conditions, based on the reported spill numbers and telemetry trends.

Assessment of the pump taken from the telemetry data and previous study suggest the pumps preformance varies and has has pumping issues in the past. Due to limitations in ICM a fix pump has been modelled which results in a slightly under-represented spill count, however, a best fit has been achieved.

Asset spills on average 54 times a year since 2020, therefore asset is considered to be a SOAF triggered spill site. Year of breach (2019) asset spilled 85 times, however, only the 2022 rainfall data was available at the time of the assessment, hence this year has been used to check full year spills.

Cause of spill count :	**Other Cause**	**OC Continuation Restriction (Maintenance)**	**Catchment Hydraulic**	**No**	**Infiltration & IRP required**	**No**
Future Operational Management Proposal:	*The primary cause of the spills are operational factors that have been assessed as deliverable in the short term. The asset has been added to the SOAF Intervention programme with the details outlined below.*					
Operational intervention required:	*Following maintenance activities, the asset will continue to not be compliant with the permit and investigation of the appropriateness of the current discharge permit/design set up will be required.*					

SOAF Operational Intervention					
Start Date:	**Nov-24**	**Completion Date:**	*TBC*	**Indicative future annual spill performance** *(less than 40 do not continue to stage 2)*	23

Intervention Description:	**Pump Performance has been identified as a factor in excess spills at this asset, the assessment has determined that the pump performance requires a review and implementation of recommendations in order to achieve PFF.**				
Target Completion by Date:	**Nov-25**	**Data years to be excluded from future SOAF triggers calculations**	-	**Request to hold stage 2 surveys for environment recovery**	

SOAF STAGE 2					
Receiving Waterbody WFD Status			Good		
Stage 2a					
Aesthetic survey:	Spring	N/A	**Aesthetic Total score** (inclusive of amenity classification, previous complaints & pollutions)	N/A	N/A
	Autumn	N/A		N/A	N/A
Stage 2b				*Yes / No unable due to culverted watercourse*	
Invertebrate survey:	Spring	N/A	**Invertebrate survey score:**	N/A	N/A
	Autumn	N/A		N/A	N/A
Stage 2c Required:				*Yes / No*	
Stage 2c screening:	Not Required	**Progressed through screening?**	No	**Stage 2c water quality assessment Score:**	N/A

SOAF STAGE 3 - STEP 1>3							
Options assessed	Rainscape		Traditional Storage	N	PFF Increase	N	
Equivalent storage volume required	-	**Rainscape Cost**		-	**CBR**	-	
Bespoke future trigger agreement	40	**Traditional Storage**		-	**CBR**	-	
		Other		-	**CBR**	-	
Key Constraints							
Future Active Management Proposal							

Conclusion and Future Spill Reduction Proposals					
Summary	*LLANGOLLEN PUMP STATION (STW CSO)Based on the direction from the Welsh Government led Better River Quality Task Force, DCWW Storm overflow spill reduction programme will target the elimination of ecological harm and prevention of adverse ecological impact of any SO.* *With a large programme of assets requiring improvement priority will be given to CSOs having the greatest impact in the most sensitive receiving waters.* *To ensure that the improvement delivered is long term, the improvements for each site will be based on the expectation that water quality upstream of the discharge meets good or high ecological status (GES) irrespective of the actual status of the water.* *This approach has formed the basis of DCWW's portfolio investment plan for Storm Overflows.* *LLANGOLLEN PUMP STATION (STW CSO) was Shown to have an other cause issue resulting in higher spills which are expected to reduce once a resolution has been implemented.* *The asset will under take classification as part of DCWW's GN066 in AMP8, to establish any impact that there might be.*				
Asset Prioritisation Level	-			**Delivery Predicted Period**	-
Asset NEP ID	*N/A*	**Asset NEP Driver Code**	*N/A*	**Detailed Design Predicted Period**	-
Progression to Stage 5 In AMP	*No*	-			

SOAF AGREEMENT					
	Date	**SOAF STAGE**	**Name**	**Contact Details**	**Location of Output**
DCWW Approval	23/11/2024	*Stage 4 - Non CBA*	**Christian Phillips Adams**	christian.phillipsadams@dwrcymru.com	*Email*
Regulator Liaison Date	Click here to enter a date.				
CSO Classification					
Satisfactory	**N**	Unsatisfactory	**Y**	Sub Standard	**N**
		Any operation in dry weather conditions?	**N**	Does not meet modern standards of engineering and aesthetic control for storm overflow structures set out in the British standard BS EN 752:2017 drain and sewer systems outside buildings	**N**

Any operation in breach of permit conditions?	**Y**	Does not have sufficient hydraulic capacity compared to accepted minimum design standards	**N**
Any significant visual or aesthetic impact due to solids or sewage fungus?	**N/A**	Risks becoming unsatisfactory because discharges have increased beyond the original design due to infiltration, growth and urban creep	**N**
Cause or significantly contributes to a deterioration in the biological or chemical status of the receiving water?	**N/A**		
Causes or significantly contributes to failures in bathing water quality standards for identified bathing waters?	**N/A**		
Causes or significantly contributes to failures in shellfish quality standards for identified shellfish waters	**N/A**		
Causes or significantly contribute to failures in water quality standards in coastal and transitional waters?	**N/A**		
Causes pollution of groundwater?	**N/A**		