

ASSET INVESTIGATION DETAILS						
SAP Asset Name:	LLANBERIS STW STORM			Asset Template reference	CG0089101-LLANBERIS STW (STORM) LLANBERIS-3156-Stage 4 - Non CBA-Mon ac Arfon	
Investigation Type	SOAF (River)					
Year of breach:	2018	Spill Trigger cause:	Hydraulic			
Year of Investigation:	2022	Investigation year performance:	109			
Population of Asset	1915	Modelled Performance: (DESIGN) / (CALIBRATED)	145 / 143			
Permit Details						
Storm Permit ID:	CG0089101	Storm Permit Name:	LLANBERIS SEWAGE TREATMENT WORKS			
Asset NGR:	SH5837859938	Waterbody ID	GB110065054010			
Discharge NGR:	SH5850060200	Water body Discharge location	Nant Peris			
Brief description of asset (Screen, PFF flow control, Storage, outfall)						
<p>Inlet Spill point (SPS) Incoming line: 600mm and 300mm gravity; CSO Type: wet well storm pump; Screening: storm screen microstrainer; Flow Control: pump; FFT Pipe: rising main; Consent: 19.8 (Permit); 3xDWF: 17.7 l/s.</p> <p>Storm tank spill point Volume: 600 m3 (Modelled); Spill level: 109.732mAOD; Tank emptying philosophy: Unknown; Tank emptying Rate: Unknown</p> <p>The storm tanks are filled by the storm pumps at 832 Llanberis Main SPS. Storm flows are pumped to a storm screen from where they gravitate into the storm storage tanks. Once the tanks are full, excess flow spills over the weirs at the end of the tanks into the storm overflow pipe which joins with the final effluent discharge pipe.</p>						
SOAF STAGE 1						
Details of assessment:	<p>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.</p>					
Permit Compliance						
PFF	Compliant					
Storage	Not Compliant – further investigation required					
Screening	Compliant					
Bespoke/Other	N/A					
SOAF Stage 1 findings						
<p>Following the hydraulic model assessment, the cause of the high spills at the asset is concluded to be hydraulic.</p> <p>The predicted pass-forward flow greater than consent prior to the first spill.</p> <p>The model is fit for use, based on the reported spill numbers and telemetry trends.</p> <p>The modelled storage available for the storm and blind tank in the model is 600m3. This is below the consented storage of 704m3. The storm and blind tank are modelled as per the latest survey information.</p> <p>Overpredicting the spill count in the calibrated model was considered a conservative compromise to better align with incoming flow monitors and the continuation pass-forward flow sensor (3E71323). Two factors could explain the asset spill count mismatch: (a) RADAR rainfall depths hold lower confidence due to the mountainous terrain of the contributing area; and (b) variability in the performance of the upstream pumping station (specifically the storm pump rate where there is limited visibility on pump output).</p>						
Cause of spill count :	Other Cause	No	Catchment Hydraulic	Yes	Infiltration & IRP required	No
Future Operational Management Proposal:	<p>The primary cause of spills was found to be hydraulic, and as such the asset progressed through to Stage 2 of the SOAF process.</p>					
Operational intervention required:	<p>Confirm compliance of asset storage provision. Increase storage provision at asset if storage is found to be below the permit requirement.</p> <p>Once these interventions are in place, the hydraulic modelling indicates the asset will be compliant with its discharge permit</p>					
SOAF Operational Intervention						
Start Date:	Nov-24	Completion Date:	TBC	Indicative future annual spill performance (less than 40 do not continue to stage 2)	145	

Intervention Description:					
Target Completion by Date:	-	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	2024	Aesthetic Total score (inclusive of amenity classification, previous complaints & pollutions)	170	Severe Impact
	Autumn	2024		170	Severe Impact
Stage 2b				Yes / No, unable due to culverted watercourse	
Invertebrate survey:	Spring	-	Invertebrate survey score:	-	-
	Autumn	-		-	-
Stage 2c Required:				Yes / No	
Stage 2c screening:	Required	Progressed through screening?	Yes	Stage 2c water quality assessment Score:	0 - No Impact

SOAF STAGE 3 - STEP 1>3						
Options assessed	Rainscape		Traditional Storage	Y	PFF Increase	N
Equivalent storage volume required	1286m3	Rainscape Cost		£3,315,000.00	CBR	0.0
Bespoke future trigger agreement	21	Traditional Storage		£3,958,667.41	CBR	0.0
		Other		N/A	CBR	N/A
Key Constraints	None Identified					
Future Active Management Proposal	<p>The primary cause of spills was hydraulic and Stage 2 impact assessments have shown that the asset was having a significant effect on the receiving waterbody, with the waterbody itself currently achieving a good or higher status. Assessment of the potential high-level solutions have indicated that any solution entailed excessive costs for the benefit it provided and thus the asset does not pass the SOAF Cost Benefit threshold and will not progress to detailed benefits assessment. Further details are shown below detailing DCWW's plans for storm overflow spill reduction</p>					

Conclusion and Future Spill Reduction Proposals				
Summary	<p>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.</p> <p>With a large programme of assets requiring improvement priority will be given to CSOs having the greatest impact in the most sensitive receiving waters.</p> <p>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.</p> <p>This approach has formed the basis of DCWW's portfolio investment plan for Storm Overflows.</p> <p>LLANBERIS SEWAGE TREATMENT WORKS was Shown to have a No / Very low Impact therefor as set out above based upon our Long Term Delivery Strategy a spill reduction scheme to eliminate this level of impact is Profiled to be delivered between 2040-2050</p>			
Asset Prioritisation Level	Priority 5		Delivery Predicted Period	AMP11/12
Asset NEP ID	N/A	Asset NEP Driver Code	N/A	Detailed Design Predicted Period
Progression to Stage 5 In AMP	No	Proposed Solution yet to be taken through detailed design developed		

SOAF AGREEMENT						
	Date	SOAF STAGE		Name	Contact Details	Location of Output
DCWW Approval	23/11/2024	Stage 4 - Non CBA		Christian Phillips Adams	<a href="mailto:christian.phillipsadams@dwrcymru.com">christian.phillipsadams@dwrcymru.com</a>	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?	<b>Y</b>	Does not have sufficient hydraulic capacity compared to accepted minimum design standards	<b>N</b>
Any significant visual or aesthetic impact due to solids or sewage fungus?	<b>Y</b>	Risks becoming unsatisfactory because discharges have increased beyond the original design due to infiltration, growth and urban creep	<b>N</b>
Cause or significantly contributes to a deterioration in the biological or chemical status of the receiving water?	<b>N</b>		
Causes or significantly contributes to failures in bathing water quality standards for identified bathing waters?	<b>N/A</b>		
Causes or significantly contributes to failures in shellfish quality standards for identified shellfish waters	<b>N/A</b>		
Causes or significantly contribute to failures in water quality standards in coastal and transitional waters?	<b>N/A</b>		
Causes pollution of groundwater?	<b>N/A</b>		