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REVISION HISTORY DISCIPLINE / POSITION KEY									
P – Process Engineer	PEM –Process Engineering Manager	LDE – Lead Design Engineer							
M – Mechanical Engineer	MEEM – Mechanical & Electrical Engineering Manager	PM – Project Manager							
E – Electrical Engineer	CEM –Civil Engineering Manager	PC – Project Co-ordinator							
C – Civil Engineer	A –Automation Engineering Manager	DelM – Delivery Manager							
A – Automation Engineer		DM – Design Manager							

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Appendix I – WwTW Standard Sign Off Sheet

1 Asset Summary

1.1 Description

Llys y Fran Dam WwTW is located adjacent to Llys y Fran Village and Llys y Fran Country Park in Pembrokeshire (NGR SN 03956 24251).

Table 1.1: Asset Summary Table

Asset name:	Llys y Fran Dam WwTW	Continuous Discharge Consent No:	BP0366401
DC Asset Number:	50696	Intermittent Discharge Consent No:	N/A
Driver:	Growth	Receiving water:	Un-named Tributary of the Afon Syfynwy

Incoming flows gravitate to the existing WwTW. The existing permanent works at the site consist of a septic tank and biofilter.

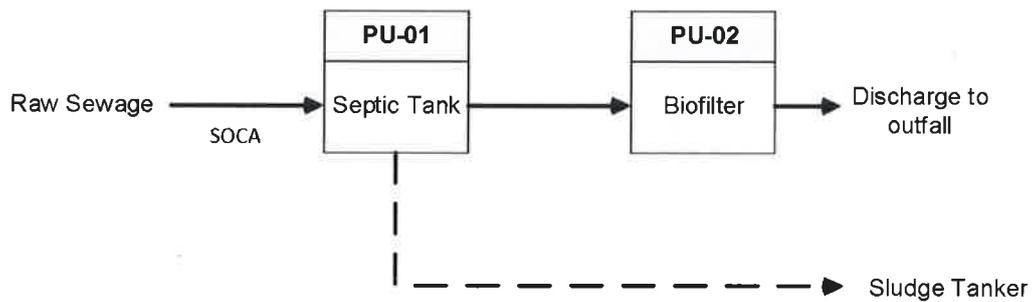


Figure 1.1: Existing Asset Schematic

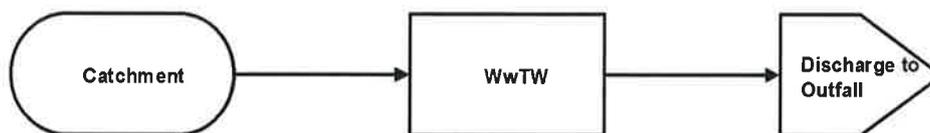


Figure 1.2: Llys y Fran Catchment Overview

The theoretical flows to the treatment based on the population equivalent and an infiltration value of 40% PG is summarised below.

The car park toilets of the adjacent country park are connected to the treatment works, the number of visitors here are expected to vary seasonally.

The below assessment (Table 1.2) of the existing flow and load is based on the peak visitors to the car park toilets. As all combined flows are treated the calculated existing peak flow to treatment is based on SOCA figures.

Table 1.2: Existing theoretical Flows for Llys y Fran WwTW

DWF	4.7 m ³ /d	0.05 l/s
SOCA	34.9 m ³ /d	0.40 l/s

2 Drivers and Expectations

The adjacent Llys y Fran Country Park facilities are being redeveloped. The existing visitor centre is to be expanded and a new Outdoor Activity centre is to be built. The foul flows generated from both of these buildings will require treatment.

The existing visitor centre currently sends its foul flows to a dedicated septic tank and soak away. However as a result of the increased visitor numbers due to the planned redevelopment, the existing septic tank and soak away will be undersized to receive all flows. Ground investigations were carried out to determine whether another location for a larger septic tank and drainage field could be used, however ground conditions were found to be unsuitable for this solution according to British Standard BS6297.

Therefore there is a requirement to send the foul flows from the redeveloped visitor centre and Outdoor Activity Centre to Llys y Fran Dam WwTW for treatment.

3 Population Summary

The population equivalent of the catchment is based on a count of the connected local village's residential houses. A population equivalent for the visitor's to the country park facilities has been determined following typical figures from the British Water Code of Practice Flow and Load Figures.

No growth has been forecast in this catchment for the 2040 design horizon, other than the redevelopment of the country park facilities.

The reported OFWAT June Return Value of 205 PE is incorrect for the WwTW, as it uses an incorrect commercial water metered value. This value has therefore not been used for the calculation of any population equivalents or flows.

Table 3.1: Population Summary for Llys y Fran Catchment

Deduced PE	
Current	22
Future	69

4 Local Inputs

N/A

5 Consents

5.1 Summary of Continuous Permits

The current descriptive consent is for a treatment works with biological treatment discharging to an unnamed tributary of the Afon Syfynwy. The future consent is shown below. The proposed PFF value is based on SOCA as the works will treat all incoming flows.

Table 5.1: Summary of future consent

AMP6 Output	Permit No.	DWF (m ³ /d)	PFF (l/s)	BOD (mg/l)	Solids (mg/l)	Ammonia (mg/l)	Phosphorus	Other
N/A	BP0366401	14.5	0.7	40 (Descriptive)	60 (Descriptive)	20 (Descriptive)	-	-

There is potential for this discharge to be given a descriptive consent.

5.2 Summary of Intermittent Permits

There is no intermittent permit at site and the proposed solution will treat all incoming flows during storm conditions.

5.3 Summary of Trade Effluent Consents

There are no trade effluent consents in the catchment.

6 Summary of Receiving Waters

The current works discharges to an unnamed tributary of the Afon Syfynwy at NGR: SN 03963 24241.

The new works will include an extended outfall, discharging into the Afon Syfynwy at NGR: SN 03787 24195, which is the approximate location of the outlet of the tributary of the Afon Syfynwy.

Table 6.1: Summary of Receiving Waters

Stretch / Area	Relevant Standard	Performance against relevant standard	NRW Concerns
Afon Syfynwy	-	-	-

7 Additional Investigations

None.

8 Proposed Solution

The proposed solution consists of installing a Rotating Biological Contactor (RBC) package plant to receive and treat all flows received from the catchment.

The foul flows from the Outdoor Activity Centre will be pumped to the combined wastewater treatment plant via a package pumping station with sufficient storage capacity to ensure an emergency discharge is not required. Foul flows from the redeveloped visitor centre shall gravitate to the new combined wastewater treatment plant.

It is proposed that the treated final effluent will be discharged via an extended outfall to the Afon Syfynwy at NGR: SN 03787 24195.

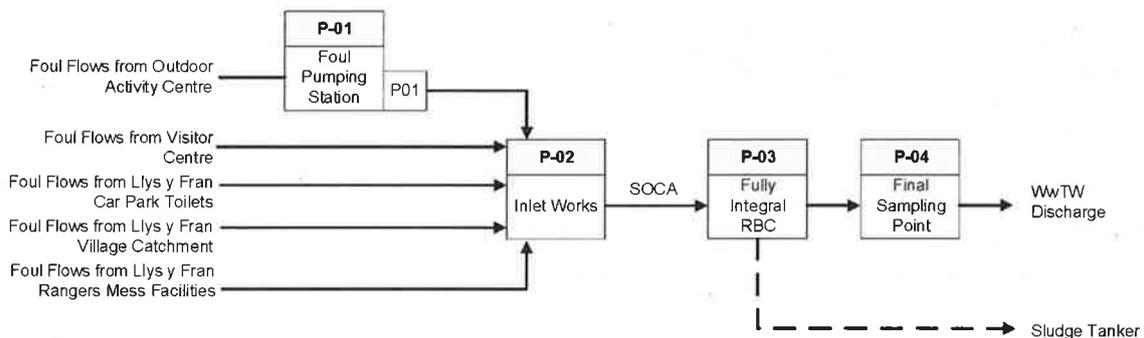


Figure 8.1: Proposed Asset Schematic

Appendix I

WwTW Standard Sign Off Sheet

Consent Limits calculations

Discharge Site Details			
Discharge name:	Llys y Fran Dam WwTW		
Permit Reference:	BP0366401	Date Effective:	July 2007
Discharge Site NGR:	SN 03956 24251	Discharge outlet NGR:	Existing - SN 03963 24241 Proposed - SN 03787 24195
Reason for change:	Growth		
Impact on storm handling?	All flows will be treated by new WwTW.		
Upstream water Details			
Name:	Afon Syfynwy		
Quality ammonia mg/l	-	Source of data	
BOD mg/l	-	Source of data	
Phos mg/l	-	Source of data	
Q95flow	-	Source of data	
ADF	-	Source of data	
	-		
DWF			
Consented DWF (m ³ /day):	9.9	Proposed DWF (m ³ /day):	14.5
Associated storm permit	N/A	Pass forward flow rate (l/s):	0.7

Extant Consent Limits							
BOD (mg/l)		Suspended Solids (mg/l)			Ammonia (mg/l)		
95%ile	UT	95%ile	UT	95%ile	UT		
Descriptive	N/A	Descriptive	N/A	N/A	N/A		
Phosphate		Iron			Aluminium		
annual average	units	AA	MAC	units	AA	MAC	units
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
*Other Substances (list):							
H1 assessment carried out?	No		Provide on separate sheet.				
Population Served							
Extant PE:	22	*Revised PE:	69	**OFWAT PE:	205 (Incorrect metered commercial figure)		
*NRW approved methodology							
*OFWAT PE = population equivalent last reported to OFWAT (include year reported).							
MCERTS Data							
Year (last 3 yrs)	Q80 (m3/day)		Q90 (m3/day)	Annual Mean (m3/day)			
N/A							
Requested /calculated by							
Name and organisation:							
Substance Limits Requested							
Sanitary Substances (yes/no):		No	Other Substances (*yes/no):		No		
*Other Substances (list):		No					

Indicative Consent Limits							
BOD (mg/l)		Suspended Solids (mg/l)			Ammonia (mg/l)		
95%ile	UT	95%ile	UT	95%ile	UT		
40 mg/l (Descriptive)	N/A	60 mg/l (Descriptive)	N/A	20 mg/l (Descriptive)	N/A		
Phosphate		Iron			Aluminium		
annual average	units	AA	MAC	units	AA	MAC	units
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DWF:		14.5 m ³ /d					
*Other Substances (list):		N/A					

WATER QUALITY PLANNING USE ONLY			
Date Received:		Ref.No:	
		Date Returned:	
Indicative limits agreed:		Signed:	
Any caveats of further work required?	Eg Storm improvements needed?		

Agreement of limits does not guarantee that the permit will be issued or that those values will be included. Full internal and external consultation will not be carried out until application is made, results from this may require the limits to be reviewed.