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The Bridgeway Centre, Wrexham Industrial Estate, LL13 9QS- Nutrient Neutrality Statement

Introduction

This statement presents the findings of the Welsh Government Nutrient Budget Calculator assessment undertaken for the proposed development at The Bridgeway Centre, Wrexham. The assessment has been completed to determine the phosphorus budget associated with the proposed development, taking account of the proposed Sustainable Drainage Systems (SuDS), in accordance with the Welsh Government Nutrient Budget Calculator Guidance. The completed Welsh Government Nutrient Budget Calculator outputs are appended to this statement.

Proposed Development

The proposed development comprises the redevelopment of the site to provide 48 commercial units. Surface water will be managed in accordance with the approved Drainage Strategy, incorporating filter drains, permeable paving, bioretention, cascading swales, a retention basin and geocellular attenuation storage prior to controlled discharge to the existing ditch.

Assessment Methodology

The nutrient budget assessment has been undertaken using the Welsh Government Nutrient Budget Calculator in accordance with the published guidance. The calculator assesses the nutrient effects of the proposed development through a staged approach, comprising:

- Stage 1 – wastewater contribution;
- Stage 2 – the existing nutrient loading associated with the current land use;
- Stage 3 – the nutrient loading associated with the proposed development; and
- Stage 3S – the nutrient reduction achieved through the proposed SuDS.

These stages are combined to determine the overall nutrient budget for the proposed development.

Stage 1- Additional Nutrient Loading from Wastewater

Stage 1 of the Welsh Government Nutrient Budget Calculator assesses the additional nutrient loading associated with wastewater generated by the proposed development. The assessment requires details of the receiving Special Area of Conservation (SAC), the proposed development, anticipated occupancy and water usage, together with the receiving Wastewater Treatment Works (WwTW).

The following inputs were applied within the calculator:

- Special Area of Conservation: 'River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid'
- Postcode: LL13 9QS
- Development Type: Commercial
- Development Proposal (number of additional units): 48

- Number of employees per unit: 1.875 (90 across whole developed site)
- Water usage per employee (litres/person/day): 50
- Percentage of employees from outside the catchment: 20
- Wastewater Treatment Works: Five Fords STW

Based on these inputs, the calculator determined an additional population equivalent of 18, generating an annual wastewater volume of 328,725 litres. This equates to an annual phosphorus load of **0.33 kg TP/year**.

Stage 2 - Nutrient Loading from Pre-Existing Landcovers

Stage 2 of the Welsh Government Nutrient Budget Calculator assesses the nutrient loading associated with the existing land use within the site. Existing land uses were identified from the Ordnance Survey mapping and assigned to the closest corresponding land cover categories within the Welsh Government Nutrient Budget Calculator. The default soil drainage and rainfall parameters were reviewed and verified using Soilscales and NRFA data to better reflect site-specific conditions.

The land use areas derived from the OS MasterMap dataset totalled approximately 3.55 Ha, compared with the more accurate AutoCAD measured total site area of 3.40 Ha. As OS mapping is intended for general mapping rather than precise area measurement, a scaling factor of 0.95775 was applied to all land use categories. This proportionally reduced each area whilst maintaining the original land use ratios, ensuring the total area aligned with the verified CAD red line boundary.

The following land uses were entered into the calculator:

- Open land – built environment: 3.18 Ha
- Commercial/industrial land: 0.21 Ha
- Greenspace : 0.01 Ha

Based on the above land uses, the calculator determined an annual phosphorus load of **2.56 kg TP/year**.

Stage 3 – Nutrient Loading from New Landcovers

Stage 3 of the Welsh Government Nutrient Budget Calculator assesses the nutrient loading associated with the proposed development. Proposed land use areas were measured from the proposed Drainage Plan Layout (Drawing No. BCW-BML-ERD-ZZ-DR-C-0500 Rev P06) in CAD and assigned to the closest corresponding land cover categories within the calculator.

The following land uses were entered into the calculator:

- Open land – built environment: 1.62 Ha
- Commercial/industrial land: 0.82 Ha
- Greenspace : 0.96 Ha

Within the calculator, the land uses were subdivided into smaller areas which collectively total the overall land use areas stated above. This was undertaken to facilitate completion of Stage 3S, which requires landcover areas to be split where different SuDS drainage configurations are present.

Based on the above inputs, the calculator determined an annual phosphorus load of **2.05 kg TP/year**.

Stage 3S – Design-Level SuDS Treatment Detail

Stage 3S of the Welsh Government Nutrient Budget Calculator accounts for the phosphorus removal provided by the proposed Sustainable Drainage Systems (SuDS). The proposed SuDS measures were identified from

the Drainage Strategy and comprise filter drains, permeable surfacing, a bioretention zone, a swale and a retention basin.

The proposed SuDS treatment arrangements were entered into the Welsh Government Nutrient Budget Calculator in accordance with the published guidance. Each contributing sub-catchment was assigned a single SuDS treatment feature reflecting the proposed drainage arrangement, and the corresponding phosphorus reduction was determined for that feature.

Within the calculator, the landcover areas were subdivided into smaller sub areas which collectively total the overall landcover areas presented in Stage 3. This enabled the individual drainage catchments associated with each SuDS feature to be represented, allowing the appropriate proportion of each landcover served by the proposed SuDS treatment measures to be entered into the calculator.

The phosphorus removal rates were derived from CIRIA C808: Using SuDS to Reduce Phosphorus in Surface Water Runoff. The proposed SuDS features were matched to the most appropriate CIRIA C808 SuDS category, with the corresponding Total Phosphorus (TP) removal rates entered into the calculator.

The proportion of each landcover served by the proposed SuDS was determined from the available CAD drainage layout and associated Drainage Strategy. Where detailed subcatchment extents were not explicitly defined, the contributing drainage areas were interpreted from the proposed layout to best represent the intended drainage arrangement.

The following SuDS measures and contributing areas were entered into the calculator:

SuDS Component	Phosphorus Removal Rate (%)	Phosphorus Removed (kg TP/year)
Filter Drains	12.1	0.01
Bioretention Zones	24.2	0.04
Permeable Pavement	20.9	0.08
Retention Basin	37.9	0.06
Swale	15.4	0.05

Based on the proposed SuDS treatment arrangements, the calculator determined a total phosphorus removal of **0.24 kg TP/year**. This reduction has been incorporated into the nutrient budget assessment to determine the post development phosphorus loading and overall nutrient budget for the proposed development.

The proposed SuDS will be secured through the SAB approval process and maintained for the lifetime of the development in accordance with the approved Drainage Strategy and associated maintenance arrangements, ensuring the long term effectiveness of the proposed nutrient reduction measures.

Stage 4 – Final Nutrient Budget Calculation

Stage 4 combines the outputs from Stages 1, 2, 3 and 3S to determine the overall phosphorus budget for the proposed development. In accordance with the Welsh Government Nutrient Budget Calculator Guidance, a 20% precautionary buffer has been applied to the calculated phosphorus budget.

Assessment Stage	Result (kg TP/year)
Stage 1 – Additional wastewater load	0.33
Stage 2 – Existing land use reduction	2.56
Stage 3 – Proposed development load	2.05
Stage 3S – Phosphorus removed through SuDS	0.24
Phosphorus Budget	0
Phosphorus Budget + 20% Buffer	0

The assessment identifies a final phosphorus budget of **0 kg TP/year** following application of the required 20% precautionary buffer. The proposed SuDS provide a phosphorus reduction of 0.24 kg TP/year, which has been incorporated into the overall nutrient budget calculation. As a result, the proposed development does not give rise to an increase in phosphorus loading and achieves a neutral nutrient budget.

Conclusion

The nutrient budget assessment has been completed in accordance with the published guidance using the proposed development layout and approved Drainage Strategy. The assessment considers the additional wastewater contribution, existing and proposed land uses, together with the phosphorus reduction provided by the proposed Sustainable Drainage Systems.

The completed assessment identifies a final phosphorus budget of **0 kg TP/year** following application of the required 20% precautionary buffer. The assessment therefore demonstrates that the proposed development does not result in an increase in phosphorus loading and achieves nutrient neutrality. The completed calculator outputs are provided in Appendix A to support the planning application and any subsequent discussions regarding nutrient neutrality requirements.

Please do not hesitate to contact us should any further clarification be required.

Yours faithfully,



Lucy Antell, BSc (Hons), MCIWEM
Senior Flood Risk and Drainage Consultant – Water Environment Team

Appendix A- Welsh Government Nutrient Budget Calculator Outputs

Stage 1

Wastewater load input data	
Description of required information	Data entry column – user inputs required
Special Area of Conservation (SAC):	River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid
Postcode:	LL13 9QS
Local Planning Authority (LPA):	Wrexham County Borough Council
Rainfall:	693
Project type:	Commercial
Development proposal (number of additional units):	48
Not applicable	
Not applicable	Not applicable
Not applicable	
Number of customers / users per unit:	
Water usage per customer / user (litres/person/day):	
Percentage of customers / users from outside catchment:	
Number of employees (per unit):	1.875
Water usage per employee (litres/person/day):	50
Percentage of employees from outside catchment:	20
Wastewater treatment works:	Five Fords STW
Not applicable	
Not applicable	
Phosphorus permitted limit (mg TP/l):	1.00
Nitrogen permitted limit (mg TN/l):	27.00
Final calculation of nutrient load from wastewater	
Description of values generated	Values generated
Additional population:	18.00
Annual wastewater production (litres):	328725.00
Annual phosphorus load (kg TP/year):	0.33
Annual nitrogen load (kg TN/year):	8.88

Stage 2

Physical characteristics			
Description of required information	Data entry column - user inputs required		
Soil drainage:	Impeded drainage		
Rainfall identified using postcode (mm/year):	693		
Is this rainfall value correct?	Yes		
Not applicable			
Pre-existing landcovers			
Landcover	Area (hectares)	Phosphorus load (kg TP/year)	Nitrogen load (kg TN/year)
Open land – built environment	3.18	2.35	24.17
Commercial/industrial land	0.21	0.21	1.44
Greenspace	0.01	0.00	0.03
		0.00	0.00
		0.00	0.00
		0.00	0.00
		0.00	0.00
		0.00	0.00
		0.00	0.00
		0.00	0.00
		0.00	0.00
		0.00	0.00
		0.00	0.00
		0.00	0.00
Total:	3.40	2.56	25.64

Stage 3

New landcovers				
Landcover	Area (hectares)	Phosphorus load (kg TP/year)	Nitrogen load (kg TN/year)	Notes on data
Greenspace	0.96	0.02	2.88	Not applicable
Open land – built environment	0.15	0.11	1.14	Not applicable
Open land – built environment	0.48	0.36	3.65	Not applicable
Open land – built environment	0.28	0.21	2.13	Not applicable
Open land – built environment	0.71	0.53	5.40	Not applicable
Commercial/industrial land	0.34	0.34	2.34	Not applicable
Commercial/industrial land	0.46	0.46	3.16	Not applicable
Commercial/industrial land	0.02	0.02	0.14	Not applicable
		0.00	0.00	Not applicable
		0.00	0.00	Not applicable
		0.00	0.00	Not applicable
		0.00	0.00	Not applicable
		0.00	0.00	Not applicable
		0.00	0.00	Not applicable
		0.00	0.00	Not applicable
Total:	3.40	2.05	20.84	Not applicable

Stage 3S

SuDS information							
Landcover	Area (hectares)	Proportion of landcover area served by SuDS feature (%)	SuDS feature	P removal rate for SuDS feature	N removal rate for SuDS feature	Phosphorus load removed through SuDS (kg TP/year)	Nitrogen load removed through SuDS (kg TN/year)
Greenspace	0.96	0	Filter drain	12.1		0.00	0.00
Open land - built environment	0.15	65.8	Filter drain	12.1		0.01	0.00
Open land - built environment	0.48	33.6	Bioretention zone	24.2		0.03	0.00
Open land - built environment	0.28	36	Permeable pavement	20.9		0.02	0.00
Open land - built environment	0.71	57.8	Permeable pavement	20.9		0.06	0.00
Commercial/industrial land	0.34	47.3	Retention basin	37.9		0.06	0.00
Commercial/industrial land	0.46	72	Swale	15.4		0.05	0.00
Commercial/industrial land	0.02	100	Bioretention zone	24.2		0.00	0.00
Not applicable	0.00					0.00	0.00
Not applicable	0.00					0.00	0.00
Not applicable	0.00					0.00	0.00
Not applicable	0.00					0.00	0.00
Not applicable	0.00					0.00	0.00
Not applicable	0.00					0.00	0.00
Not applicable	0.00					0.00	0.00
Total:	3.40	Not applicable	Not applicable	Not applicable	Not applicable	0.24	0.00

Stage 4

Total phosphorus budget	
Description of phosphorus values generated	Values generated
Stage 1 phosphorus load (kg TP/year):	0.33
Stage 2 phosphorus reduction (kg TP/year):	2.56
Stage 3 phosphorus load (kg TP/year):	2.05
Stage 3S phosphorus load removed through SuDS (kg TP/year):	0.24
Phosphorus budget ((Stage 1 - Stage 2) + (Stage 3 - Stage 3S)):	0.00
Phosphorus budget + 20% buffer	0 kg TP/year requires mitigation
Total nitrogen generated	
Description of nitrogen values generated	Values generated
Stage 1 nitrogen load (kg TN/year):	8.88
Stage 2 nitrogen reduction (kg TN/year):	25.64
Stage 3 nitrogen load (kg TN/year):	20.84
Stage 3S nitrogen load removed through SuDS (TN kg/year):	0.00
Nitrogen budget ((Stage 1 - Stage 2) + (Stage 3 - Stage 3S)):	4.08
Nitrogen budget + 20% buffer:	4.9 kg TN/year will be generated
Calculator version 4.0 - February 2026	