Tier Consult Ltd
Unit 5 Office Village, Sandpiper Court,
Chester Business Park, Chester CH4 9QZ
01244 684900

Strategic Ecological Corridor, Wrexham,

Phosphate Assessment

August 2026

Version 1.2

Registered Company No. 04638546

DOCUMENT CONTROL

Project No:	**T/25/2894**
Report Status:	**Preliminary**
Version No:	**1.2**
Project Engineer:	**Stephen Mills**
Date of Issue:	**20/08/2026**

This report has been prepared by Tier Consult with all reasonable skill, care and diligence, within the best practice and guidance current at the time of issue within the scope of works which have been agreed with the Client. This report is confidential to the Client and Tier Consult accepts no responsibility whatsoever to third parties to whom this report, or any part thereof is made presented, unless this is formally agreed in writing by a Director of Tier Consult before any reliance is made. Any such party relies upon the report at their own risk. Tier Consult disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

Version	Date Issued	Purpose of Issue	Author	Reviewed	Approved
V1.0	12/11/2025	Phosphate Assessment	SM	WNL	WNL
V1.1	09/03/2026	Phosphate Assessment	SM	WNL	WNL
V1.2	20/08/2026	Phosphate Assessment	SM	WNL	WNL

Contents

1. Introduction
2. Site Description and Development Proposal
3. Stage 1: Additional Nutrient Loading from Wastewater
4. Stage 2: Nutrient Loading From Pre-Existing Landcovers
5. Stage 3: Nutrient Loading From New Landcovers
6. Stage 3S: Nutrient Loading Removed From SuDS
7. Stage 4: Total Phosphorus Budget
8. Conclusions & Results

List of Appendices

Appendix A Stage 2 Worksheet

Appendix B Stage 3 Worksheet

Appendix C Stage 4 Worksheet

Appendix D Nutrient Budget Calculator Guidance

Introduction

1.0 Tier Consult have been appointed by Net World Sports, to undergo a phosphate assessment for the creation of a Strategic Ecological Corridor following guidance from Natural Resources Wales and Wrexham County Borough Council

2.0 Site Description and Development Proposal

2.1 The site is located in Wrexham, Wales. The approximate National Grid Reference for the centre of the site is SJ397501 with coordinates Easting: 339710, Northing: 350116 at postcode LL13 9RN.

2.2 The proposed development is 17.56 ha. The Proposed Development involves the change of use of agricultural land into ecology land. It is subject to a live planning application (P/2025/0431).

2.3 The Proposed Development will support delivery of several Net World Sport projects within the Wrexham Industrial Estate including Utopia City (P/2023/0497), Land South of Bryn Lane (P/2025/0143), and HQ Extension (pre-planning)

3.0 Stage 1: Additional Nutrient Loading from Wastewater

3.1 The Stage 1 worksheet calculates the additional phosphorus load associated with wastewater generated by the proposed development. Two tables are used to estimate the load based on site-specific inputs and pre-set calculation parameters.

3.2 Within the phosphate assessment, user inputs are highlighted in lilac, while calculated fields appear in light orange. Inputs include site location, local planning authority, rainfall data, and wastewater treatment details.

3.3 As the proposed development is designed as an ecological development with no residential or commercial occupancy, there is no additional nutrient loading from wastewater.

4.0 Stage 2: Nutrient Loading From Pre-Existing Landcovers

4.1 The Stage 2 worksheet quantifies the baseline phosphorus load from existing land uses within the red line boundary prior to development (Appendix A).

4.2 Soil characteristics were derived from the Soilscapes database, which identifies the site as having impeded drainage. Rainfall data were obtained from the National River Flow Archive (NRFA), with higher rainfall values generally correlating to increased phosphorus export potential.

4.3 The baseline land cover was classified in accordance with ARUP's Nutrient Budget Calculator Guidance, as referenced in the Welsh Government Nutrient Budget Calculator (Appendix D), into a single land use category:

- Mixed landcover

4.4 Mixed land cover has been applied within the nutrient budget calculations following a review of the Welsh Government's predictive Agricultural Land Classification (ALC) mapping, which identifies the site as Grade 3b, defined as moderate quality agricultural land. This classification typically supports a range of agricultural uses rather than a single intensive land use. In preparing the calculations, the methodology outlined in the guidance referenced by Natural Resources Wales (NRW), specifically the ARUP Nutrient Budget Calculator Guidance (Appendix F), has been followed. This guidance sets out the accepted land cover categories within the phosphate assessment calculator and explains how baseline land use should be selected where agricultural activities are varied.
Evidence indicates that the land has historically been subject to rotational and varied agricultural management throughout the year. As such, assigning the site to a single category such as horticulture or lowland grazing would not accurately reflect the typical nutrient export associated with the site's agricultural baseline. Given the variability in agricultural use and the moderate land classification, the application of the 'mixed land cover' category provides a more representative and precautionary baseline for the purposes of the phosphate budget calculation.

4.5 Based on the areas, a phosphorus load for each landcover is calculated and added together to give an overall phosphorus load for the pre-existing landcover of 14.52 kg TP/year.

5.0 Stage 3: Nutrient Loading From New Landcovers.

5.1 The Stage 3 worksheet estimates phosphorus export from the proposed (post-development) land uses within the site boundary (Appendix B).

5.2 The development has been subdivided into one land use category:

- Greenspace

Based on the areas, a phosphorus load for each landcover is calculated and added together to give an overall phosphorus load for the post development of 0.22 kg TP/year.

6.0 Stage 3S: Nutrient Load Removed through SuDS

6.1 The Stage 3S worksheet quantifies phosphorus removal achieved through Sustainable Drainage Systems (SuDS) implemented across the site.

6.2 SuDS mitigation values were applied based on the proportion of runoff from each landcover draining to a specific SuDS feature. Removal efficiencies for both particulate and dissolved phosphorus were taken from the CIRIA C808F: "Using SuDS to Reduce Phosphorus in Surface Water Runoff" and the SuDS Manual

(C753). Each feature's overall phosphorus removal rate was adjusted using the CIRCA index, as recommended by NRW.

6.3 No SuDS features are proposed on this development.

7.0 Stage 4: Total Phosphorus Budget

7.1 The Stage 4 worksheet automatically calculates the final nutrient budget using the results from Stages 1–3S (Appendix C)

7.2 The final phosphorus budget is determined using the following equation:

(Stage 1 – Stage 2 + (Stage 3 – Stage 3S)) × 1.2 = Total Phosphorus Budget

This formula accounts for:

- The additional wastewater loading (Stage 1)
- The net change in phosphorus export between pre- and post-development land uses (Stage 3 – Stage 2)
- The phosphorus removal achieved through SuDS mitigation (Stage 3S)
- A 20% precautionary buffer, as required by NRW guidance to account for modelling uncertainty.

7.3 Based on the calculation, the proposed landcovers offsets the existing landcovers use by 23 kg TP/year.

8.0 Conclusion & Results

8.1 Comparison of the Stage 2 (pre-development) and Stage 3 (post-development) results demonstrates that the existing landcover generates a higher phosphorus export than the proposed post-development condition. Based on the outputs of the phosphate assessment, the post-development landcover achieves a reduction of approximately 14.3 kg TP/year compared to the baseline, indicating an overall net improvement in phosphorus loading across the site. The combined phosphorus loading associated with Phase 1 Utopia (4.97 kg TP/year), Phase 2 Utopia (4.12 kg TP/year), the HQ Extension (2.86 kg TP/year), and Land South (2.35 kg TP/year) is 14.30 kg TP/year. Based on the calculated phosphorus loading, a total of 10.92 hectares of the Ecological Land is required to provide sufficient mitigation for these developments.

Appendix A
Stage 2 Worksheet

Description of required information	Data entry column - user inputs required	
Soil drainage:	Impeded drainage	
Rainfall identified using postcode (mm/year):	**680**	
Is this rainfall value correct?	No	
Rainfall (mm/year):	900.1 - 950	
Pre-existing landcovers		
Landcover	**Area (hectares)**	**Phosphorus load (kg TP/year)**
Mixed	10.92	**14.52**
		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:	**10.92**	**14.52**

Appendix B
Stage 3 Worksheet

Landcover	Area (hectares)	Phosphorus load (kg TP/year)
Greenspace	10.92	0.22
		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:	**10.92**	**0.22**

Appendix C
Stage 4 Worksheet

Description of phosphorus values generated	Values generated
Stage 1 phosphorus load (kg TP/year):	**0.00**
Stage 2 phosphorus reduction (kg TP/year):	**14.52**
Stage 3 phosphorus load (kg TP/year):	**0.22**
Stage 3S phosphorus load removed through SuDS (kg TP/year):	**0.00**
Phosphorus budget ((Stage 1 - Stage 2) + (Stage 3 - Stage 3S)):	**-14.30**
Phosphorus budget + 20% buffer	**No TP mitigation needed**

Appendix D
Nutrient Budget Calculator Guidance

Land use types used in the calculator tool	Description
Cereals	Agricultural areas on which cereals, combinable crops and set aside are farmed.
General	Agricultural areas on which arable crops (including field scale vegetables) are farmed.
Horticulture	Agricultural areas on which fruit (including vineyards), hardy nursery stock, glasshouse flowers and vegetables, market garden scale vegetables, outdoor bulbs and flowers, and mushrooms are farmed.
Indoor Pig farming	Agricultural areas on which pigs are farmed indoors.
Outdoor Pig farming	Agricultural areas on which pigs are farmed outdoors.
Poultry	Agricultural areas on which poultry are farmed.
Dairy	Agricultural areas on which dairy cows are farmed.
Less Favoured Area (LFA) grazing	Agricultural areas on which cattle, sheep and other grazing livestock are farmed in locations where agricultural production is difficult. An area is classified as an LFA holding if 50 per cent or more of its total area is classed as LFA.
Lowland grazing	Agricultural areas on which cattle, sheep and other grazing livestock are farmed. A holding is classified as lowland if less than 50 per cent of its total area is in the LFA.
Mixed	Agricultural areas in which none of the above categories are farmed or where it is too difficult to select a single category to describe the farm type. This farm type does not include horticultural crops or outdoor pig farming.
Greenspace	Natural and semi-natural outdoor spaces provided for recreational use where fertilisers will not be applied and dog waste is managed, e.g. semi-natural parks. This does not include green infrastructure within the built urban environment, such as gardens, or grass verges, as these are included in the residential urban land category for residential developments, or the open land – built environment category for all other development types.
Woodland	Natural and semi-natural outdoor wooded areas.
Shrub	Natural and semi-natural outdoor shrubland area.
Water	Areas of surface water that remain inundated all year round, including rivers, ponds, and lakes.

Land use types used in the calculator tool	Description
Residential land	Areas of houses and associated infrastructure. This is inclusive of residential roads, driveways, grass verges, gardens and SuDS infrastructure that drains a residential development[4].
Commercial/industrial land	Areas that are used for industry. These are businesses that typically manufacture, process or otherwise generate products. Included in the definition of industrial land are factories and storage facilities as well as mining and shipping operations.
Open land – built environment	Areas of land in urban areas used for various purposes, e.g. main roads, built facilities such as schools, sports centres, areas used for leisure and recreation - this may include open land, e.g. caravan sites, camping sites, sports fields, playgrounds, and public squares.
Community food growing	Areas that are used for local food production, such as allotments.