



**BIODIVERSE**  
**CONSULTING**

## **CWMANN, LAMPETER**

**SHADOW HABITAT REGULATIONS  
ASSESSMENT (sHRA): NUTRIENT  
NEUTRALITY**

**FOR: LIDL GB LTD**

**REF: BIOC24-093 | V3.0**

| CLIENT                                                                                                   | PROJECT       |                                                    |
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# 1 INTRODUCTION

## 1.1 BACKGROUND

The Afon Teifi Special Area of Conservation (SAC) is considered by Natural Resources Wales to be in unfavourable condition due to nutrient enrichment (eutrophication). The SAC catchment includes freshwater and estuarine areas in which qualifying bird species are being negatively affected by eutrophication due to the resultant growth of algal mats on their key foraging habitats. As such, Natural Resources Wales has advised that new developments should not result in additional nutrients entering the catchment of the Teifi River upstream of the SAC (Appendix A).

The Conservation of Habitats and Species Regulations 2017 (as amended) place a duty on a competent authority (rather than the planning applicant) to undertake a 'Habitat Regulations Assessment' (HRA) of the impacts of the project on the SAC Site. Biodiverse Consulting Ltd. has been commissioned to prepare this report to assist Ceredigion County Council, as the competent authority, in discharging this duty, and hence the term shadow HRA (sHRA) is used to describe this document.

## 1.2 DEVELOPMENT PROPOSALS

The Development consists of a Lidl Foodstore and associated infrastructure and landscaping (Appendix C). The Development Site is located at Pencarreg, Cwmann, Carmarthenshire, SA48 8DT at an approximate central grid reference of SN 58266 47326. The 1.48ha Site comprises grassland, shrubs, and areas of hardstanding. The immediate surrounding landscape includes urbanised residential areas to the southeast, and agricultural areas to the north, east and west. The River Teif flows 60m to the East of the Site.

## 1.3 HABITAT REGULATIONS ASSESSMENT (HRA)

HRA refers to the several distinct stages of assessment which must be undertaken in accordance with the Conservation of Habitats and Species Regulations 2017 (as amended) to determine if a plan or project may affect the qualifying features of an internationally protected Habitats Site before deciding whether to undertake, permit or authorise it.

Habitat sites include:

- SPAs and potential SPAs (pSPAs),
- Special Areas of Conservation (SACs) and candidate SACs (cSACs),
- Listed or proposed Ramsar sites and
- Sites identified (or required) as compensatory measures for adverse effects on all such sites.

HRA follows a stepwise process through four stages:

- **Stage 1 – Screening:** Assessing whether or not the project would have a 'Likely Significant Effect' (LSE) on a Habitats Site, either alone or in combination with other plans or projects. This assessment is carried out without consideration of mitigation. If Screening cannot conclude that there will not be an LSE on a Habitats Site, then Stage 2 – Appropriate Assessment (AA) – would apply. Otherwise, the project may be authorised.
- **Stage 2 – Appropriate Assessment:** The AA is undertaken by the competent authority responsible for determining the application. The purpose is to assess the implications of the project in respect of the conservation objectives for the Habitats Site which should enable the competent authority to determine whether or not the project would adversely affect the integrity of the Site. If it can be ascertained beyond reasonable scientific doubt that the project would not adversely affect the integrity of the Habitats Site, then it can be authorised; if not, Stages 3 and 4 would apply.
- **Stage 3 – Alternative Solutions:** Where the project would damage the integrity of a Habitats Site, alternative solutions which would deliver the project objective(s) need to be considered. If there are no alternatives that do not also affect the integrity of the Habitats Site, Stage 4 applies.
- **Stage 4 – Imperative Reasons of Overriding Public Interest (IROPI):** Projects that adversely affect the integrity of a Habitats Site may proceed for imperative reasons of overriding public interest, subject to compensatory measures being secured.

### 1.3.1 Screening

Natural Resources Wales has established that wastewater from developments in the catchments of Habitats Sites with unfavourable condition as a result of eutrophication, may undermine the recovery of such sites.

The River Teifi Catchment has been identified by Natural Resources Wales as being in unfavourable condition as a result of eutrophication, principally from phosphate loading in the Teifi River Catchment (Appendix A), within which the Development is located.

Natural Resources Wales has established that eutrophication can lead to a range of deleterious effects on the qualifying features of the designated sites, mainly due to opportunistic macroalgal and phytoplankton blooms. Consequently, it is not necessary for this report to screen LSEs since this has been established by Natural Resources Wales and, by extension, it is not necessary to explore the biological mechanisms by which eutrophication affects qualifying features<sup>1</sup>.

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<sup>1</sup> Summarised in Appendix B

The Development is not directly connected with or necessary to the favourable management of the Habitats Site and the potential for LSEs has been established, therefore an AA is required. The AA will assess the pathways by which the Development has the potential to contribute to eutrophication and, if necessary, identify suitable mitigation.

### 1.3.2 Competent Authority

The planning application for the Development will be determined by Ceredigion County Council. It is also the responsibility of Ceredigion County Council, as the competent authority, to undertake any AA that may be required under the terms of the Habitat Regulations, with statutory advice provided by Natural Resources Wales.

Whilst the competent authority will ultimately undertake the AA, it is the responsibility of the Applicant to provide the relevant information to enable them to do so. This AA is intended to provide Ceredigion County Council with the relevant information to discharge their duties under the Habitat Regulations.

---

## 2 APPROPRIATE ASSESSMENT

### 2.1 NUTRIENT NEUTRALITY

Ceredigion County Council, in authorising a project, must ascertain beyond reasonable scientific doubt that it will not adversely affect the integrity of the Habitats Sites. Natural Resources Wales has introduced the concept of Nutrient Neutrality to help developments demonstrate that they do no harm and thus can be authorised. They have provided evidence and tools to support decision-making, including a Nutrient Budget Calculator (NBC)<sup>2</sup> for West Wales which determines the net change in nutrients entering the catchment as a result of a development and thereby determining the need for and efficacy of mitigation. This report is informed by the Sites Nutrient Neutrality Mitigation Strategy provided to Lidl by Lucion Group<sup>3</sup>.

Developments have the potential to contribute nutrients to a catchment via two main pathways:

- Wastewater
- Surface water runoff

Determining changes to the inputs and outputs from these two pathways provides the basis for the calculations in the NBC and the assessment of associated mitigation.

### 2.2 NUTRIENT BUDGET CALCULATOR

The NBC is used in this report to assess Nutrient Neutrality by calculating the Total Phosphorus (TP) budget for the Development Site expressed as kg TP/year. The NBC is calculated in four stages:

1. The increase in nutrient loading to a Habitats Site that results from the increase in wastewater from a new development.
2. The nutrient loading from the past/present land use of the development site.
3. The nutrient loading from the future mix of land use on the development site.
4. Calculation of the net change in nutrient loading to a Habitats Site with the addition of a precautionary buffer. The net change in nutrient loading and the buffer is the nutrient budget.

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<sup>2</sup> Natural Resources Wales (2024) Nutrient\_Budget\_Calculator\_west\_wales\_2-3-5-1.xlsx

<sup>3</sup> Lucion Delta Simons (2024) Nutrient Neutrality Mitigation Strategy

## 2.2.1 Wastewater

Wastewater typically includes the foul water emanating from within a property that is subsequently processed by a Wastewater Treatment Works (WwTW) before being discharged to the environment. The nutrient budget of wastewater is determined in Stage 1 of the NBC by the following parameters:

- Development Proposal – the total number of dwellings/units.
- Employee Count – the number of employees required
- Percentage of Employees from outside the catchment – the percentage of employees from outside the hydrological catchment.
- Water Usage – the average volume of water used by a person in a day.
- Wastewater Treatment Works (WwTW) – the efficacy of the relevant WwTW.

The NBC includes default values for some of the above but, in line NBC guidance<sup>4</sup>, it is acceptable to include well-evidenced site-specific values. The sections below describe how site-specific values for the above factors have been determined for the Development.

### 2.2.1.1 Development Proposal

The Development proposal is for 1 commercial Foodstore and its associated infrastructure and landscaping to be developed on previously developed land. (Appendix C).

### 2.2.1.2 Employee Count

The development proposal will require 10 employees for commercial use upon completion.

### 2.2.1.3 Employees from Outside the Hydrological Catchment

The percentage of employees from Outside the Hydrological Catchment is 41%<sup>5</sup>.

Based on the 2021 Census Data for Occupations, distances travelled to work of “10km to less than 30km”, and “30km and over” can be categorised as ‘outside the hydrological catchment’ for the purposes of this Nutrient Neutrality Assessment, while the remaining distances are categorised as within. This classification reveals that 706 out of 1703 workers (41.46%), travel from outside the hydrological catchment.

### 2.2.1.4 Water Usage

The water usage for the development is 120 litres/person/day.

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<sup>4</sup> Ricardo and Natural Resources Wales (2023) Nutrient Budget Calculator Guidance. ED16771103 (April 2023)

<sup>5</sup> Lucion Delta Simons (2024) Nutrient Neutrality Mitigation Strategy Lidl Lampeter

The Ricardo Nutrient Budget Calculator Guidance Document<sup>6</sup> identifies three categories of water efficiency standard:

- *“The Building Regulations legal maximum water use per person standard of 125 litres/person/day should be used where no higher standard is secured through a planning condition.*
- *The optional higher Building Regulations water use per person standard of 110 litres/person/day should be used where this is secured through a planning condition.*
- *A water use per person standard that is even higher than the optional higher Building Regulations water efficiency standard where this is secured through a planning condition.”*

The water usage for the Development falls under the second category and will be secured through a planning condition.

In accordance with the Nutrient Neutrality Generic Methodology<sup>6</sup>, an additional 10 litres/person/day has been added to the secured 110 litres/person/day water usage to account for potential changes to less efficient fittings throughout the lifetime of the development.

#### 2.2.1.5 Wastewater Treatment Works (WwTW)

The Development site is to discharge to the Lampeter Sewage Treatment Works which has an annual Phosphorous discharge limit of 0.90kg TP/year.

### 2.2.2 Surface Water

Surface water is the runoff from a Development that discharges directly into a catchment (i.e. it does not pass through a WwTW) and thus carries a nutrient load from the land over which it passes. The land use on a development site therefore has an associated level of nutrient export (the export coefficient) that will impact a habitat site. The nutrient budget of surface water is determined in Stages 2 and 3 of the NBC by the following parameters:

- Type and Area of Land Use (existing and new) – different land use types have different nutrient export coefficients.
- Rainfall – determines the total amount of surface water runoff.
- Soil Drainage Type – affects how quickly water permeates or runs off.

Values for Rainfall and Soil Drainage Type have been determined by the NBC.

#### 2.2.2.1 Land Use

The existing land use of ‘shrub’ and ‘commercial/industrial land’, has been determined from aerial imagery, reports completed by Lucion Delta Simons, and consultation with the landowner.

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<sup>6</sup> Ricardo and Natural Resources Wales (2023)Nutrient Budget Calculator Guidance. ED16771103 (April 2023)

The proposed new land use of 'commercial/industrial land' has been determined from the site layout plans for the Development (Appendix C).

All habitats have been categorised according to the broad land use types defined in the NBC guidance<sup>4</sup> (Appendix D) and maps of the baseline and post-development land uses are provided in Appendix E. The NBC, including all defined parameters, is provided in Appendix F.

### 2.2.3 Assessment

Taking into account the above, the NBC estimates the total annual Phosphorus load to mitigate is 3.57 kg TN/year (Appendix F). This additional TP would contribute to the eutrophication of the Teifi River SAC Site and thus constitutes an adverse effect on the integrity of the Habitats Site. Mitigation is therefore required to reduce this nutrient load and to allow the development to receive planning approval.

## 2.3 MITIGATION

HRA requires that mitigation used to inform decisions about the effects on integrity needs to be sufficiently secured and likely to work in practice. The mitigation outlined below is based on the NBC, follows prevailing good practice and can reasonably be expected to provide sufficient mitigation.

### 2.3.1 On-site Mitigation

#### *SuDS Retention Basin*

A Retention Basin to an area of 0.052ha designed following Ciria C808<sup>7</sup> guidelines. The Whole site will drain to the SuDS feature.

The retention basin will facilitate 50% removal of Dissolved Phosphorous (DP) from the surface water runoff that enters it (Taguchi *et al.*, 2020<sup>8</sup>).

Sedimentation within the SuDS feature will remove 28% of the Particulate Phosphorous (PP) from the surface water that enters it (Lucion Group, 2024<sup>3</sup>)

As demonstrated within the NBC, 2.41 kg TP/yr would be generated from surface water runoff associated with the proposed development. See Nutrient Budget Calculator in Appendix F.

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<sup>7</sup> CIRIA Report C808: Using SuDS to Reduce Phosphorous in Surface Water Runoff (2024)

<sup>8</sup> Taguchi, V.J., Olsen, T.A., Natarajan, P., Janke, B.D., Gulliver, J.S., Finlay, J.C. and Stefan, H.G., 2020. Internal loading in stormwater ponds as a phosphorus source to downstream waters. *Limnology and Oceanography Letters*, 5(4), pp.322-330

- Dissolved Phosphorous mitigated by the retention basin was calculated as follows:

$$2.41 \text{ kg TP/yr} \times 0.5 = 1.205 \text{ kg DP/yr}$$

- Particulate Phosphorous mitigated by the retention basin was calculated as follows:

$$2.41 \text{ kg TP/yr} \times 0.28 = 0.6748 \text{ kg PP/yr}$$

Therefore, the retention basin mitigates the following TP:

$$0.6748 \text{ kg PP/yr} + 1.205 \text{ kg DP/yr} = 1.8798 \text{ kg TP/yr}$$

The remaining Nutrient Load to be mitigated is:

$$3.57 \text{ kg TP/yr} - 1.8798 \text{ kg TP/yr} = 1.6902 \text{ kg TP/yr}$$

## 2.3.2 Off-site Mitigation

### 2.3.2.1 Septic Tank Replacement

A property on Falcondale Drive, Lampeter, SA48 7SB, will have its existing septic tank replaced with a biological GRAFUK One2Clean package treatment plant. The proposed upgrade will be undertaken with the property owner's consent and to building control standards.

The existing septic tank provides no restriction to phosphorus discharge and as such discharges at 1.17 kg TP/yr<sup>3</sup> overground to a drainage field, which ultimately discharges into Afon Teifi SAC.

The proposed package treatment plant limits phosphorus discharge to 1.6 mg TP/l, equivalent to 0.16 kg TP/yr. See the package treatment plant performance certificate in Appendix G.

Overall, the replacement of the Septic Tank with a GRAFUK One2Clean package treatment plant provides a net change in wastewater phosphorus loading of:

$$0.16 \text{ kg TP/yr} - 1.17 \text{ kg TP/yr} = -1.01 \text{ kg TP/yr}$$

The remaining Nutrient Load to be mitigated is:

$$1.6902 \text{ kg TP/yr} - 1.01 \text{ kg TP/yr} = 0.6802 \text{ kg TP/yr}$$

### 2.3.2.2 Package Treatment Plant Drainage Field Orchard

Cox Apple *Malus domestica* 'Cox's Orange Pippin' Trees will be incorporated into the landscaping design around the SuDS Retention Basin and within the drainage field of the newly installed Package Treatment Plant (PTP). This approach has been successfully applied in Carlisle (Cumberland LPA) planning application number 24/0089

Each Cox Apple Tree has a Phosphorous Absorption Rate of 0.0687 kg TP/yr. <sup>9</sup>

A total of 15 Cox Apple trees are to be incorporated into the final landscaping design of the Site.

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<sup>9</sup> Waterway Drainage Engineering (2024) [Nutrient Neutrality Mitigation Strategy for Land between 36 and 44 Brromfallen Road](#)

The potential additional phosphorus mitigation is as follows:

$$15 \times 0.0687 \text{ kg TP/yr} = 1.03 \text{ kg TP/yr}$$

The 15 Cox Apple trees provide a combined phosphorus mitigation of 1.03 kg TP/yr, is in excess of the remaining Nutrient Load of 0.6802 kg TP/yr. The Development will therefore achieve Nutrient Neutrality with the appropriate implementation of the mitigation measures.

### 2.3.3 Summary

- A retention basin on-site will provide mitigation for 1.8798 kg TP/yr; and
- Off-site mitigation is to be provided through the upgrade of an existing septic tank with a GRAFUK One2Clean package treatment plant, mitigating a further 1.01kg TP/yr; and
- 15 Cox apple trees will be planted on-site above the drainage field, providing a further 1.03kg TP/yr mitigation.

The total phosphorus mitigation provided by the above mitigation strategy is as follows:

$$1.8798 \text{ kg TP/yr} + 1.01 \text{ kg TP/yr} + 1.03 \text{ kg TP/yr} = 3.7498 \text{ kg TP/yr}$$

This exceeds the final nutrient budget associated with the development of 3.57 kg TP/year. The development will result in a net change in phosphorus loading to the catchment of -0.1798 kg TP/yr, thereby achieving nutrient neutrality.

### 2.3.4 Certainty of Outcome

Achieving nutrient neutrality through mitigation has a degree of uncertainty. To some extent, this uncertainty is inherent in all ecological systems, but it is more pronounced for newly emerging and untested measures. Nonetheless, the proposed mitigation has adopted the precautionary principle and so accounts for some of the uncertainty by:

- The over-specification of design elements – the proposed mitigation exceeds the minimum required to achieve neutrality.
- Applying precautionary multipliers – including a 20% uplift buffer in the NBC.
- Monitoring of and improvements to mitigation - an adaptive monitoring plan will be developed to ensure that the efficacy of the mitigation is regularly evaluated, and that timely remedial action is taken as necessary. The plan will be in place for the lifetime of the mitigation. The plan and its outputs will be approved by the competent authority and will be made a condition of planning approval.

Taking into consideration this precautionary approach, there can be sufficient certainty in the efficacy of the mitigation such that there is no reasonable scientific doubt about the absence of effects.

### 2.3.5 Conclusion

The above NBC demonstrates beyond reasonable scientific doubt that the Development will not increase nutrient loading into the Afon Teifi SPA. Consequently, the Development will not undermine conservation objectives to improve the unfavourable condition of the Habitats Site with respect to eutrophication.

The Development will not adversely affect the favourable conservation status of the qualifying features of the Afon Teifi SAC and Ramsar site, nor the integrity of the Habitats Site.

### 2.4 IN-COMBINATION EFFECTS

In-combination effects occur when multiple developments have impacts on ecological features, and small, individual (but otherwise not likely or significant) effects can cumulatively become significant. Ceredigion County Council will only authorise a development if it can demonstrate that it achieves Nutrient Neutrality. By definition, any such development will not contribute excess nutrients to the Afon Teifi SAC and Ramsar site and thus will not have a significant effect either alone or in combination with other plans or projects.

## 3 CONCLUSION

This report demonstrates that the Development will conform to Natural Resources Wales's concept of Nutrient Neutrality. In doing so it will not increase nutrient loading into the Afon Teifi SAC and thus will not undermine the conservation objectives or integrity of the Habitats Sites. The Development will therefore have no adverse effects on the Afon Teifi SAC and Ramsar site either alone or in combination.

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# APPENDICES

## APPENDIX A – AFON TEIFI SAC AND RAMSAR SITE CATCHMENT



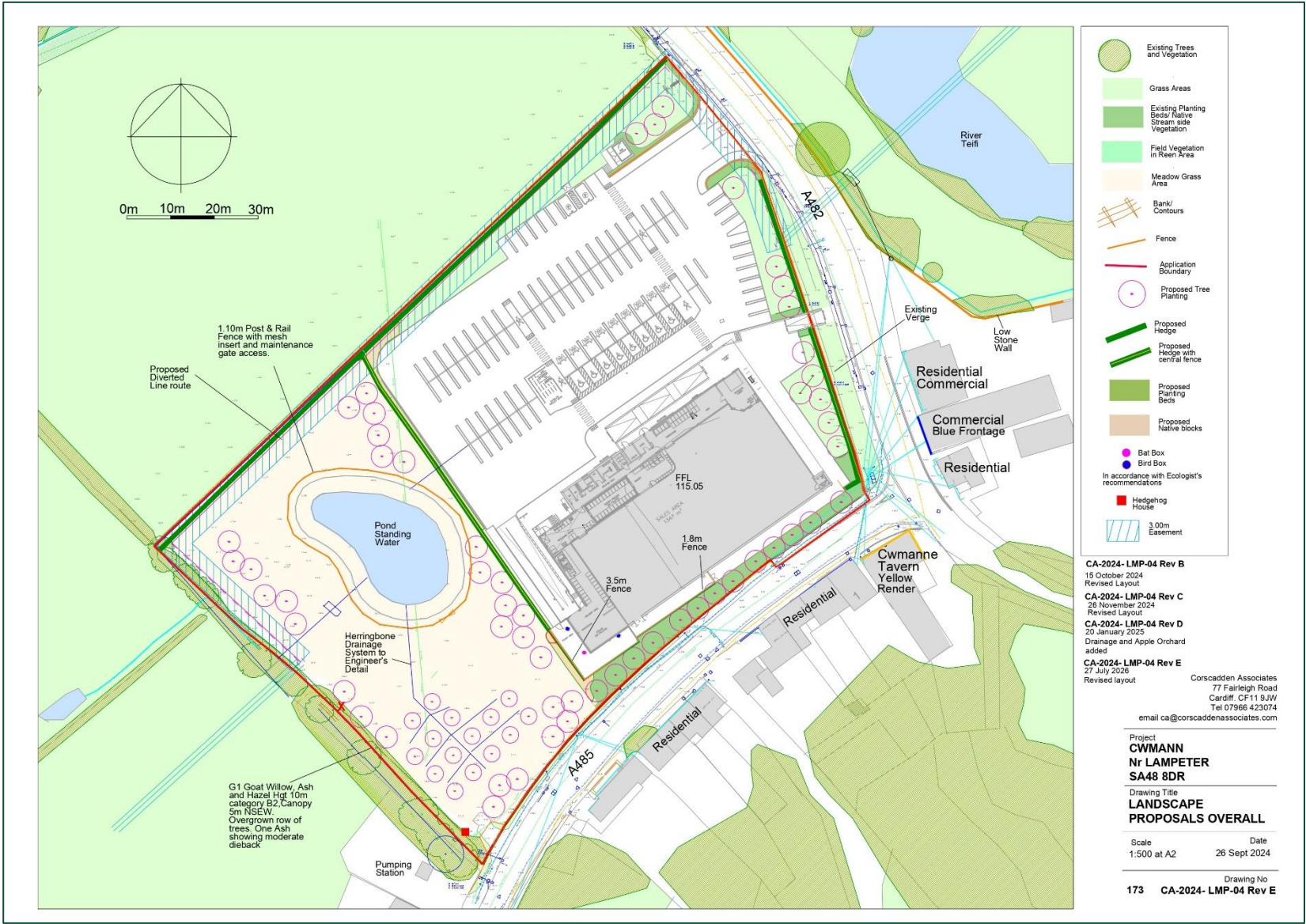
## APPENDIX B – QUALIFYING FEATURES OF HABITAT SITES

| SITE NAME                    | DESIGNATION | QUALIFYING FEATURES                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Afon Teifi SAC and SSSI Site | SAC         | <p>The Afon Teifi is one of the longest rives in Wales and one of the most pristine river catchments in lowland Britain with an extensive mosaic of hydrological and riparian habitats. The qualifying features of the site include the following species:</p> <p><u>Fish:</u></p> <p>Brook Lamprey</p> <p>River Lamprey</p> <p>Atlantic Salmon</p> <p>Bullhead</p> <p><u>Mammals:</u></p> <p>European Otter</p> <p><u>Plants:</u></p> <p>Floating Water-plantain</p>         |
| Afon Teifi SAC and SSSI Site | SSSI        | <p>The SSSI boundary is congruent with the SAC boundary. The principal features of the site include the following habitat, species, birds, and assemblages:</p> <p><u>Habitat:</u></p> <p>Running Water</p> <p>Standing Water</p> <p>Marginal Inundation Communities</p> <p>Marshy Grassland</p> <p>Semi-natural Woodland</p> <p><u>Plants:</u></p> <p>Water Sedge</p> <p>Dotted Sedge</p> <p>Multi-fruited River Moss</p> <p><u>Insects:</u></p> <p>Toadflax leaf beetle</p> |

| SITE NAME | DESIGNATION | QUALIFYING FEATURES                                                                                                                                                                                                                                                                                                                                                             |
|-----------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |             | Club-tailed dragonfly<br>Blackfly<br>Brown Hairstreak<br><u>Birds:</u><br>Assemblage of Lowland Open Waters Breeding Birds and their margins<br>Cetti’s Warbler<br><u>Plants:</u><br>Assemblage of Nationally Scarce and/or Atlantic British Bryophytes<br>Assemblage of Nationally Scarce Vascular Plants<br>Cornish Moneywort<br>Graceful Pondweed<br>Floating Water-plantain |



APPENDIX C – SITE LAYOUTS AND PLANTING PLANS





## APPENDIX D – NUTRIENT NEUTRALITY CALCULATOR LAND USE TYPES

| LAND USE TYPE                    | 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 farmed indoors.                                                                                                                                                                                                                                                                                                            |
| Outdoor Pig Farming              | Agricultural areas on which pigs 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 a Less Favoured Area (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 more than 50 per cent of its total area is classed as a lowland grazing area.                                                                                                                                                       |
| 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                                                                                                                                                                                                      |
| Greenspace                       | Natural and semi-natural outdoor spaces provided for recreational use where fertilisers will not be applied and dog waste is managed, e.g. seminatural parks. This does not include green infrastructure within the built urban environment, such as sports fields, gardens, or grass verges, as these are included in the residential urban land category. |
| Woodland                         | Natural and semi-natural outdoor wooded areas.                                                                                                                                                                                                                                                                                                              |
| Shrub                            | Natural and semi-natural outdoor shrubland area.                                                                                                                                                                                                                                                                                                            |
| Water                            | Areas of surface water, including rivers, ponds and lakes.                                                                                                                                                                                                                                                                                                  |
| Residential land                 | Areas of houses and associated infrastructure. This is inclusive of roads, driveways, grass verges and gardens                                                                                                                                                                                                                                              |



| LAND USE TYPE                       | DESCRIPTION                                                                                                                                                                                                                                              |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 urban land – built environment | Area of land in urban areas used for various purposes, e.g. leisure and recreation - may include open land, e.g. sports fields, playgrounds, public squares or built facilities such as sports centres.                                                  |
| Community food growing              | Areas that are used for local food production, such as allotments.                                                                                                                                                                                       |



APPENDIX E – BASELINE AND POST DEVELOPMENT LAND USE







## APPENDIX F – NUTRIENT BUDGET CALCULATOR RESULTS

## STAGE 1

|                                                                 |                                                                                                   |            |    |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------|----|
|                                                                 | Please enter the total number of employees required for commercial uses in the cell to the right: |            | 10 |
| Percentage of employees from outside of hydrological catchment: |                                                                                                   | 41         |    |
| Water usage (litres/person/day):                                |                                                                                                   | 120        |    |
| Development Proposal (dwellings/units):                         |                                                                                                   | 1          |    |
| Wastewater treatment works:                                     | Lampeter STW                                                                                      |            |    |
| Wastewater treatment works P permit (mg TP/litre):              |                                                                                                   | 5          |    |
|                                                                 |                                                                                                   |            |    |
| Additional population                                           | 4.1                                                                                               | persons    |    |
| Wastewater by development                                       | 492                                                                                               | litres/day |    |
| Annual wastewater TP load                                       | 0.90                                                                                              | kg TP/yr   |    |

|                               |           |                                                |
|-------------------------------|-----------|------------------------------------------------|
| Local Authority:              |           | Carmarthenshire                                |
| Soil drainage type:           |           | Freely draining                                |
| Annual average rainfall (mm): |           | 1343                                           |
|                               |           |                                                |
| Existing Land Use Type(s)     | Area (ha) | Annual phosphorus nutrient export (kg TP/year) |
| Greenspace                    | 1.2133    | 0.02                                           |
| Commercial/industrial land    | 0.1922    | 0.31                                           |
| Shrub                         | 0.0738    | 0.00                                           |
| Water                         | 0.0009    | 0.00                                           |
|                               |           |                                                |
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|                               |           |                                                |
| Total:                        | 1.4802    | 0.34                                           |



STAGE 3

| New Land Use Type(s)       | Area (ha) | Annual phosphorus nutrient export (kg TP/year) |
|----------------------------|-----------|------------------------------------------------|
| Commercial/industrial land | 1.48      | 2.41                                           |
|                            |           |                                                |
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|                            |           |                                                |
| Total:                     | 1.48      | 2.41                                           |



STAGE 4

|                                                  |                 |
|--------------------------------------------------|-----------------|
| P loading to WwTW:                               | 0.90            |
| Net P loading from land use change:              | 2.07            |
| P budget:                                        | 2.97            |
| P budget + 20% buffer:                           | 3.57            |
|                                                  |                 |
| The total annual phosphorus load to mitigate is: | 3.57 kg TP/year |



APPENDIX G – DECLARATION OF PERFORMANCE ONE2CLEAN

Declaration of performance

one2clean

Nr. 104/Translation

|                                                                                                                                                            |                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 1. Unique identification code of the product-type                                                                                                          | one2clean                                                                                                   |
| 2. Type, batch or serial number or any other element allowing identification of the construction product as required pursuant to Article 11(4)             | one2clean 3-18 Inhabitants<br>Type size and serial number on control cabinet type plate                     |
| 3. Intended use or uses of the construction product, in accordance with the applicable harmonised technical specification, as foreseen by the manufacturer | EN 12566-3:2005+A2:2013: Prefabricated and/ on-site installations for the treatment of domestic waste water |
| 4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required pursuant to Article 11(5)                      | Otto Graf GmbH Kunststoffserzeugnisse<br>Carl-Zeiss-Str. 2-6<br>79331 Teningen<br>Germany                   |
| 5. System or systems of assessment and verification of constancy of performance of the construction product as set out in Annex V                          | System 3                                                                                                    |
| 6. Name and identification number of the notified body                                                                                                     | PIA - Prüfinstitut für Abwassertechnik GmbH - NB 1739                                                       |

7. Declared performance (with regard to the harmonised standard EN 12566-3:2005+A2:2013)

|                                 | Performance                                                                                                                                                                                                      | Test report No.                                            |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Cleaning capacity               | Nominal organic daily dirt cargo BOD <sub>5</sub> ) = 0.06 kg/d per PE.<br>Nominal daily inflow (Q <sub>N</sub> ) = 150 l per PE.                                                                                |                                                            |
| Treatment efficiency            | COD: 94,2 %    43 mg/l<br>BOD <sub>5</sub> : 98,0 %    7 mg/l<br>NH <sub>4</sub> -N: 98,3 %    0.5 mg/l<br>N <sub>tot</sub> : 87,0 %    8 mg/l<br>P <sub>tot</sub> : 80,2 %    1.6 mg/l<br>SS: 96,3 %    14 mg/l | PIA2014-216B14.01                                          |
| Watertightness                  | Passed                                                                                                                                                                                                           | PIA2016-WD-1509-1050.02/ PIA2021-WD-2101-1002.03 (Carat S) |
| Stability                       | Passed                                                                                                                                                                                                           | PIA2016-ST-PIT-1509-1050.02 (Carat S)                      |
| Durability                      | Passed                                                                                                                                                                                                           | PIA2016-DH-1509-1050.02 (Carat S)                          |
| Reaction to fire                | Class E                                                                                                                                                                                                          | PIA2016-RF-1509-1050.02 (Carat S)                          |
| Release of dangerous substances | NPD                                                                                                                                                                                                              |                                                            |

8. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 7.  
This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.

Signed for and on behalf of the manufacturer by:

i.V. Ralf Oestreichner  
Head of Product Division  
- DIY / garden / waste water treatment -  
Teningen, 22.03.2024



# **BIODIVERSE**

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