

**Shadow Habitat Regulation Assessment (HRA)
Screening Report & Appropriate Assessment**

Prepared for:

Bishopstone, Wiltshire

Local Planning Authority	Wiltshire Council
Application Reference	PL/2025/03116
Application Address	Land at Whitlocks, Bishopstone, Wiltshire,
Application Description	The proposal consists of the erection of 15no. residential dwellings.

Date

February 2026

Revision 1

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1 Introduction

The proposed development involves the construction of 15no. residential dwellings with associated gardens and amenity space.

The site is in the catchment of the River Avon Special Area of Conservation (SAC) and Ramsar site and is therefore subject to phosphorus neutrality requirements. The proposed development will lead to an increased discharge of phosphorus through foul and surface water discharge.

A Nutrient Neutrality Assessment and Mitigation Strategy (NNAMS) has been undertaken, and the report is appended.

1.1 HRA Requirement

Under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended), a competent authority is required to conduct a Habitat Regulations Assessment (HRA) for any plans or projects that could impact a European Site. However, a 'shadow' HRA can be completed by the applicant and adopted by the competent authority. In this case Wiltshire Council is the competent authority responsible for undertaking the HRA.

Nutrient Neutral has been requested to undertake a shadow HRA in support of the Planning Application for the proposed development at Whitlocks, Bishopstone, Wiltshire. This report will mainly reference the regulations set out by Wiltshire Council, as this is the competent authority. Wiltshire Council is required to assess the Local Plan through the HRA process as policies and site allocations in the Local Plan can potentially affect the national site network of European Sites in the UK, as well as Ramsar sites.

This sHRA comprises two stages: Stage 1 'Screening Assessment' and Stage 2 'Appropriate Assessment'.

The Screening Stage is the first stage of the process and determines if a project or plan is likely to have a significant impact on a European Site's conservation objectives. It identifies the potential impacts of a project or plan and identifies any Likely Significant Effects. If an LSE, alone or in combination, is predicted to occur due to the development then the project or plan must proceed to Stage 2.

The Appropriate Assessment determines the likely significant effects of a proposed site on the integrity of the designated site and its conservation objectives. It considers ways to avoid or reduce (mitigate) any potential for an adverse effect on the integrity of the designated site.

This sHRA has been prepared due to an identified hydrological link between the proposed development at Whitlocks, Wiltshire and the River Avon SAC European Site. This proposed development has the potential to cause adverse impact with regard to nutrient pollution. This triggers the need for a HRA for water quality only, other potential impacts are not triggered and are not discussed in this report.

1.2 European Sites of potential impact

The River Avon is designated as a Special Area of Conservation (SAC) under the Habitats Regulations 2017. The River Avon SAC is designated due to its unique and diverse ecological features. This designation is aimed at protecting several important habitats and species, specifically Freshwater and Anadromous Aquatic Species.

Natural England advises that any plans or projects in an SAC site which require an Appropriate Assessment, need to demonstrate beyond reasonable scientific doubt that there will be no likely additional phosphorus output which could prejudice the ability to restore the protected site.

1.3 Data sources

All references in this assessment to the 'Habitats Regulations' refer to The Conservation of Habitats and Species Regulations 2017 (and as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019). The following data sources have been referred to in this report:

- Natural England Nutrient Neutrality budget calculator for the River Avon V3.1 (Ricardo) (March 2024)
- Wiltshire Council Nutrient Neutrality budget calculator (Royal Haskoning)
- Wiltshire Local Plan HRA (adopted January 2021)
- River Avon SAC Conservation Objectives (JNCC website accessed on 21st May 2025)

2 Stage 1 – HRA Screening Assessment

The purpose of the Screening Assessment is to provide evidence so that a judgement can be made as to whether there could be any potential significant impacts; "Likely Significant Effects" of the development on the integrity of the Ramsar and SPA site.

Likely Significant Effects must be assessed in the absence of mitigation measures other than those which are standard construction practices, such as pollution control or those incorporated into the scheme. This assessment has been made with awareness of the conservation objectives for the features of the identified European Sites.

2.1 Current condition of designated sites

Natural England has advised that, based on the best available up-to-date evidence, the River Avon SAC is failing its water quality target in relation to phosphorus and therefore has an 'unfavourable' conservation status under the Habitats Regulations.

2.2 European Sites potentially impacted by the proposed development

A list of European Sites that may be impacted by the proposed development is provided below in Table 1.

European Site Name	Designation	Approx distance and direction from site
River Avon	SAC	9.7 km E
Reasons for designation		
Annex I: Habitats that are a primary reason for selection of this site	Watercourses of plain to montane levels with the Ranunculus fluitans and Callitriche – Batrachium vegetation	
Annex I: Habitats present as a qualifying feature, but not a primary reason for selection of this site	N/A	
Annex II: Species that are a primary reason for selection of this site	Desmoulin's whorl snail – <i>Vertigo moulinsiana</i> Sea lamprey – <i>Petromyzon marinus</i> Brook lamprey – <i>Lampetra planeri</i> Atlantic salmon – <i>Salmo salar</i> Bullhead – <i>Cottus gobio</i>	
Annex II: Species present as a qualifying feature, but not a primary reason for site selection	N/A	

2.3 Screening Assessment

2.3.1 Water quality

With respect to water quality, a likely significant effect is considered where a hydrological connection exists. The proposed site is within the River Avon Hampshire Operational Catchment and therefore within the catchment of the River Avon SAC. Therefore, **it is likely that without mitigation, a significant effect will occur.**

The proposed development would lead to an increase in phosphorus without the implementation of mitigation. Accordingly, Wiltshire Council must not screen out the requirement for appropriate assessment in respect of this impact pathway on the SPA/ Ramsar site.

2.3.2 Potential in-combination effects

Any plan or project likely to have a significant effect on a European site, either individually or in combination with other plans or projects, shall undergo an Appropriate Assessment to determine its implications for the site. This is to prevent sites, which would not have a significant effect on a site, combining with other plans or projects to the point where an in-combination effect of all of these plans or projects, which would otherwise not be assessed, and becoming significant. The only impact that could cause an in-combination effect is water quality.

As a result, the potential for an impact because of in-combination effects on water quality should not be ruled out at the screening stage.

2.4 Conclusion of Screening Assessment

Table 2 below provides a summary of the Screening Assessment of the proposed development in-isolation and in-combination:

<i>Table 2: Summary of screening assessment</i>			
Site	Interest feature	Potential impact pathway – alone & in-combination	Likely significant effect?
River Avon SAC	Freshwater and Anadromous Aquatic Species	Water quality	Yes
		Potential in-combination effects (water quality)	Yes

The Screening Assessment concludes that a likely significant effect on the Avon SAC could result due to an increased discharge of phosphorus through foul and surface water discharge. Therefore, it cannot be screened out and an Appropriate Assessment is required.

3 Appropriate Assessment

3.1 Nutrient calculations

A detailed assessment of the phosphorus loading to the environment from the proposed development is provided in the Nutrient Neutral Assessment and Mitigation Strategy (NNAMS) in Appendix 1.

Phosphorus loading calculations have been undertaken in using the Natural England River Avon SAC Nutrient Budget Calculator V3.

3.2 Wastewater discharge

The wastewater generated by this development will be discharged to a newly installed Fuji Clean Package Treatment Plant (PTP) which has a certified treated effluent phosphorus concentration of 0.6 mg TP/l. The manufacturer's certificate confirming these discharge concentrations can be found in Appendix 3 of the NNAMS report.

Assuming the occupancy rate per dwelling as being 2.4, and the water usage per person per day at 95 litres

Additional wastewater loading has been assessed as 0.45 kg TP/yr.

3.3 Land use change

The nutrient balance due to changing land use at the site has been assessed. The current land use at the site is 0.55 ha commercial/industrial land and 0.74 ha lowland grazing. This results in a TP generation from the pre-development land use of **0.83 kg/yr**.

The post-development land use comprises 0.6 ha of urban residential land and 0.69 ha greenspace. The post-development land use phosphorus discharge has been calculated using the Modified Rational Method to estimate the volume of effluent that will discharge to ground at the site. The resultant post export of phosphorus is reduced to **0.18 kg TP/yr**

Therefore, net change in phosphorus export due to change in land use is – **0.52 kg TP/yr (0.18-0.83 kg TP/yr)**.

3.4 Summary of nutrient budget

The final nutrient balance for the site is given below:

Phosphorus budget	
DESCRIPTION	VALUE KG TP/YR
TP wastewater, post-treatment	0.45
Pre-development land use	0.83
Post-development site loss	0.18
Land use net change	-0.52
Phosphorus budget	-0.07
20% buffer	0.00
Phosphorus budget + 20% buffer	0.00

The total phosphorus budget for the proposed development is **-0.07 kg TP/yr** and **no mitigation is required**.

4 Conclusion

Nutrient calculations demonstrate that the development is neutral and a likely significant effect on the River Avon SAC can be ruled out.

It can be concluded that there will be no adverse effect on the integrity of conservation objectives of the River Avon SAC either in-isolation or in-combination with other developments within the catchment.

Appendix 1

Bishopstone NNAMS – January 2026



Nutrient Neutral Assessment and Mitigation Strategy

Report Ref: NNAMS/264

Whitlock Rise,

Bishopstone,

Wiltshire

SP5 4AG

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264/NNAMS/01 Land use

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1 Introduction

Nutrient Neutral has been commissioned by Cherrington Planning to undertake an assessment of the phosphorus generated by a proposed residential development at Whitlock Rise, Bishopstone, Wiltshire, SP5 4AG and to develop a mitigation strategy for any residual. The site is located within the River Avon Special Area of Conservation (SAC) which has been identified as failing its water quality targets, with respect to phosphorus.

To ensure compliance with the requirements of the Habitats Regulations and Water Framework Directive, new development around the catchment must not (alone or in combination) result in non-compliance with River Avon SAC water quality targets or compound existing problems of target exceedance in those parts of the catchment already failing standards. Furthermore, new developments must not prejudice achievement of Conservation Objectives for the River Avon SAC over the long-term.

The phosphorus load generated by the proposed development has been calculated according to the generic nutrient methodology and a mitigation solution developed to ensure the proposed development is neutral.

The assessment has been prepared using the River Avon SAC calculator (Natural England and Ricardo).

1.1 Site characteristics

1.1.1 Site location

The site is located in the village of Bishopstone. The proposed development comprises 15 residential dwellings. The application area extends to approximately 1.29 hectares (ha). The site is currently used for beef cattle production and lowland grazing. It is centred around National Grid Reference (NGR) SU 07521 26343 (Appendix 1).

1.1.2 Topography

The site is located at the base of a fairly steeply sloped valley. The elevations on site decrease from 85 metres Above Ordnance Datum (AOD) in the north of the site to 75 mAOD in the south of the site. To the south of the site, the land levels out and elevations decrease gradually to a local low of 70 mAOD some 0.44 km southeast. Elevations increase north-westwards to a local high of 180 mAOD some 2.79 km north of the site.

1.1.3 Geology

Bedrock geology at the site is the Seaford Chalk Formation, which comprises chalk. Superficial deposits overlying the chalk comprise River Terrace Deposits, which consist of sand and gravel. Clay, silt and sand Alluvium overlies the River Terrace Deposit. Superficial deposits are locally confined to the river valley and occur south of the site.

1.1.4 Groundwater Vulnerability

The groundwater vulnerability at the site and the surrounding area is indicated as 'high', defined as areas that can easily transmit pollution to groundwater. They are characterised by high-leaching soils and the absence of low-permeability superficial deposits (source <https://magic.defra.gov.uk/magicmap.aspx>).

1.1.5 Source Protection Zones and Nitrate Vulnerable Zones

The site and the surrounding area is located within a Nitrate Vulnerable Zone but is not within a Source Protection Zone (source <https://magic.defra.gov.uk/magicmap.aspx>).

1.1.6 Aquifer Designation

The chalk underlying the proposed development is designated a 'Principal' aquifer. This means that it exhibits high intergranular and/or fracture permeability. A high level of water storage is provided and it can support water supply and/or base flow to rivers, lakes and wetlands on a strategic scale (source <https://magic.defra.gov.uk/magicmap.aspx>).

In the case of the chalk aquifer, fracture flow is the dominant flow mechanism.

1.1.7 Soils

Based on the Cranfield University Soilscales webtool (<http://www.landis.org.uk/Soilscales>), the soils at the site are classified as 'Soilscales 7' which are freely draining, slightly acid but base rich soils.

1.1.8 Hydrology

The nearest watercourse, the River Ebbles, is located approximately 310 m south of the site. It flows south-eastwards to its confluence with the River Avon, southwest of Alderbury at NGR SO 37933 65272.

The site is in Flood Zone 1 and therefore has a 'low probability' of flooding.

1.1.9 Rainfall

The 1991-2020 annual average rainfall was sourced from the National River Flow Archive at 930 mm/yr (<https://nrfa.ceh.ac.uk/data/search>).

2 Calculation of nutrient export from the proposed development

Phosphorus calculations have been undertaken using the River Avon nutrient budget calculator (Natural England). Full calculation sheets are attached (**Appendix 2**), and the pertinent information summarised below.

2.1 Proposed development

The proposed development is on the periphery of Bishopstone and comprises 9 dwellings with associated amenity space. The site extends to approximately 1.29 hectare (ha) and the current land use comprises a livestock yard, cereal land and associated grazing pasture. There is one main barn onsite that is used for over-wintering beef cattle and an associated cattle pad/exercise yard.

2.2 Calculation of wastewater load

The site is not located within a sewered area. Therefore, it is proposed to install an onsite package treatment plant, which will discharge to ground. A Fuji Clean is suggested which is a purely biological system and does not require chemical dosing. This system has a treated effluent phosphorus concentration of 0.6 mg/l. The manufacturer's certificate to confirm the discharge quality of the system is provided in **Appendix 3**.

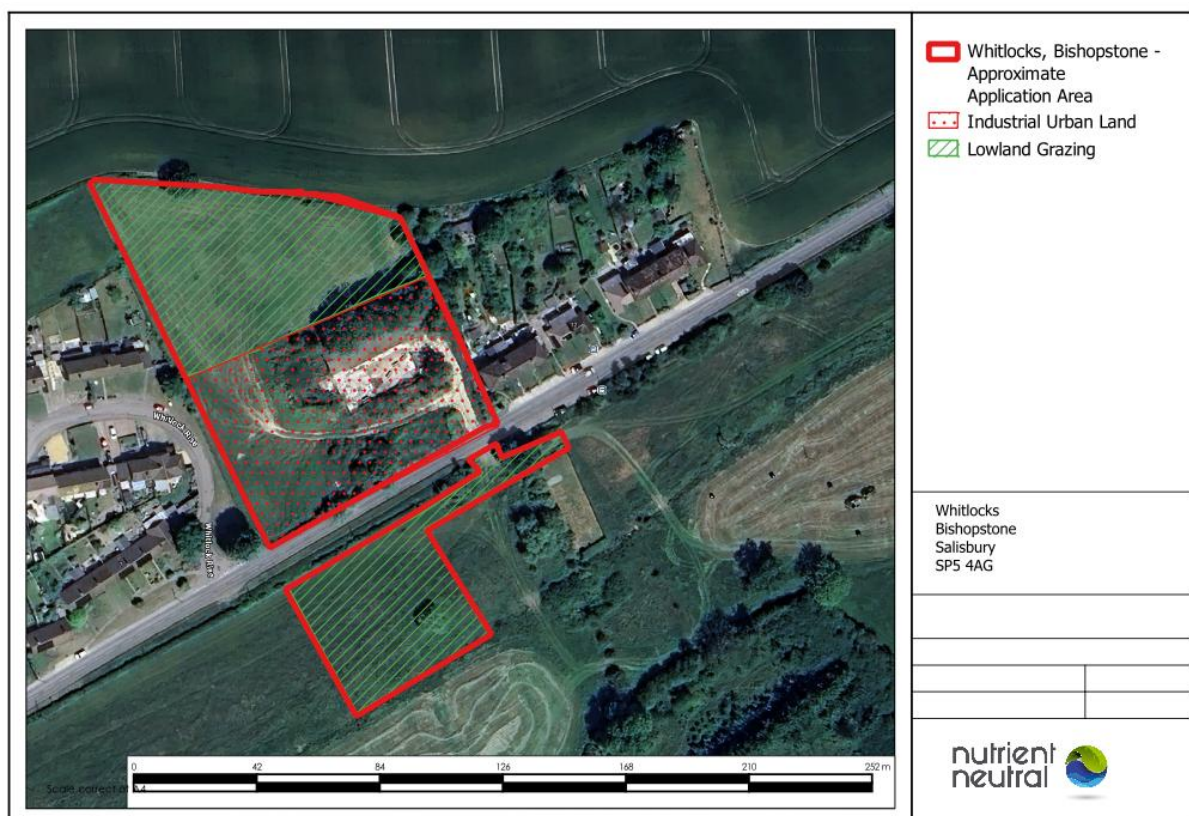
For the development of 9 dwellings, an occupation of 2.4 people per dwelling is assumed. An average water use of 95 litres per person per day has been confirmed by John Stobart of Natural England. This would result in a Total Phosphorus (TP) load of **0.45 kg TP/yr**.

2.3 Land use change

Calculations of land use change have been undertaken as per the River Avon nutrient calculator whereby pre- and post-development land use is considered.

The current land use at the site comprises approximately 0.55 hectares (ha) of commercial/industrial urban land, and approximately 0.74 ha lowland grazing. This results in an annual TP generation of **0.83 kg TP/yr**. The land use breakdown is provided below:

Drawing 264/NNAMS/01: Land use



2.4.5 Post-development nutrient export

Post-development, the site will comprise urban development (approximately 0.6 ha) and greenspace (0.69 ha). This will result in the generation of a TP load of **1.12 kg TP/yr** based on the generic calculation method.

However, within Part 2.1.C of the generic methodology guidance, it is stated that where specific measures are incorporated to support a different event mean concentration (EMC) and/or percentage of impermeable area, the Modified Rational Method can be used to calculate a more locally specific rainfall runoff, considering different land cover, and hence export coefficient. This results from the attenuating properties of the soil with respect to phosphorus. Due to the high charge on the phosphate molecule, it adheres to clayey soil particles and becomes immobilised. The generic methodology, used above, assumes an 80% impervious area. However, of the total developable area of 0.6 ha the precautionary impervious area is calculated at 45% (0.27 ha).

The subsequent site-specific surface water runoff has been calculated, using a bespoke Modified Rational Method to obtain a more accurate runoff and hence urban load for the development. The results of the Modified Rational Method indicate that approximately 27% of rainfall falling on the site would generate surface water runoff, with the remaining 73% expected to infiltrate to ground (Appendix 3).

This calculation has been replicated in the SuDS worksheet of the nutrient budget which demonstrates 73% of the runoff discharges to ground.

This will reduce the post-development export by **0.94 kg TP/yr**. Therefore, the post development export is reduced to **0.18 kg TP/yr**.

3 Summary of the phosphorus balance for this development

A summary of the pertinent calculations is presented in the table below.

Table 2: Phosphorus budget	
Description	Value kg TP/yr
TP wastewater, post-treatment	0.45
Pre-development land use	0.83
Post-development site loss	0.18
Land use net change	-0.52
Phosphorus budget	-0.07
20% buffer	0.00
Phosphorus budget + 20% buffer	0.00

The total phosphorus budget for the site is **-0.07 kg TP/yr** and therefore the proposed development is nutrient neutral.

4 Conclusion

It is proposed to construct 9 new dwellings at Whitlock Rise, Bishopstone, Wiltshire, SP5 4AG.

The proposed development will generate -0.07 kg TP/yr and is therefore nutrient neutral. It can therefore be concluded that the proposed development will not prevent the Conservation Objectives of the River Avon SAC from being achieved.

Site plan and location plans



APPENDIX 264/NNAMS/A2

Nutrient Calculations

Nutrients from wastewater		
This sheet contains 2 tables. The tables are separated by a heading, which describes the following table. Note: You will need to fill in cells B5 to B9 in the first table 'Water infrastructure information'. Cells B10 is automatically calculated and will state '0.00' unless the user inputs have been entered. Cells A11 to A12 and B11 to B12 are automatically generated and will state 'Not applicable' depending on the inputs to cells B5 and B9. You may need to fill in cell C10 depending on the information you entered in cell B9. Cells C5 to C9 and cells C11 to C12 are intentionally blank cells. You do not need to fill in any cells in the second table 'Final calculation of nutrient load from wastewater'. Cells B16 to B18 are automatically calculated and will state '0.00' unless the user inputs have been entered to the first table 'Water infrastructure information'. Cells A19 to A22, cells B20 and B22 are automatically generated and will state 'Not applicable' depending on the user inputs to the first table 'Water infrastructure information'. Cell B15, cell B19 and cell B21 are intentionally blank cells. How to fill in the table 'Water infrastructure information' Cell B5: Enter the date of first occupancy. Cell B6: Enter the average occupancy rate of the development. The default rate is 2.4, this should not be edited without sufficient evidence. Cell B7: Enter the water usage. This value should be kept at 120 unless other efficiency measures are used. Cell B8: Enter the total number of dwellings or units that will be within the development site as of the project completion date. Cell B9: Choose the receiving wastewater treatment works (WwTW) from the dropdown list. If you select 'Package Treatment Plant user defined' or 'Septic Tank user defined', you must enter their certified value of total phosphorus (TP) in cell C10. Otherwise the default values will be used in the calculation of the nutrient load associated with wastewater. Nutrient permits may be changing for the WwTW you select, from 01/01/2025, or 01/04/2030. If the date of first occupancy is in-between changing permit dates, multiple permit limits may be automatically generated in cells B10 to B12. If applicable, up to 3 values for the nutrient loading associated with wastewater will be presented in cell B18, B20 or B22.		
Water infrastructure information		
Description of required information	Data entry column - user inputs required	Additional data entry column - user inputs may be required
Date of first occupancy (dd/mm/yyyy):		
Average occupancy rate (people/dwelling or people/unit):	2.40	
Water usage (litres/person/day):	95	
Development proposal (dwellings/units):	9	
Wastewater treatment works:	Package Treatment Plant user defined	
Current wastewater treatment works P permit (mg TP/litre):	Enter value in cell C10	0.6
Not applicable	Not applicable	
Not applicable	Not applicable	
Final calculation of nutrient load from wastewater		
Description of values generated	Values generated	
Wastewater nutrient loading		
Additional population (people):	21.60	
Wastewater by development (litres/day):	2052.00	
Annual wastewater TP load (kg TP/yr):	0.45	
Not applicable		
Not applicable	Not applicable	
Not applicable		
Not applicable	Not applicable	

Nutrients from current land use

This sheet contains 2 tables. The tables are separated by a heading, which describes the following tables.

Note: You will need to fill in cells B5 to B8 in the first table 'Current land use information'. You will need to fill in cells A11 to A27, and B17 to B27 in the second table 'Current land use'. Cells C28 to B48 are automatically calculated, and will state '0.00' unless the user inputs have been entered. Cells D11 to D27 are automatically generated and will state 'Not applicable' depending on automatically generated data in cells C11 to C27. Row 28 is a Total Row. The Total row states 'Totals': in cell A28 and automatically calculates the total sum of cells B11 to B27 in cell B28 and C11 to C27 in cell C28. Cell D28 is intentionally blank.

How to fill in the table 'Current land use information'

Cell B5: Choose the operational catchment the site is located within from the dropdown list.

Cell B6: Choose the soil drainage type associated with the predominant soil type within the development site from the dropdown list.

Cell B7: Choose the annual average rainfall the development will receive from the dropdown list.

If the rainfall value is not on the list, select the nearest value.

Cell B8: Choose whether the development is in a nitrate vulnerable zone (NVZ) from the dropdown list.

How to fill in the table 'Current land uses'

Cell A11-A27: Choose the existing (pre-development) land use and type(s) from the dropdown list.

Cell B11-B27: Enter the area of each land use in m².

The nutrient load from current land uses is shown in cells C11-C27 for total phosphorus (TP). The total nutrient load from current land uses is shown in cell C28 for TP.

Current land use information

Description of required information	Data entry column - user inputs required
Operational catchment:	Avon Hampshire
Soil drainage type:	Freely draining
Annual average rainfall (mm):	900.1 - 950
Within nitrate vulnerable zone (NVZ):	No

Current land uses

Existing land use type(s) - user inputs required	Area (ha) - user inputs required	Annual phosphorus export (kg TP/yr)	Notes on data
Lowland	0.74	0.09	Not applicable
Commercial/industrial urban land	0.55	0.75	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
Totals:	1.29	0.83	

Nutrients from future land use

This sheet contains one table.

Note: You will need to fill in cells A5 to A21 and B5 to B21. Cells B22 and C5 to C22 are automatically generated calculations and will state '0.00' unless the user inputs have been entered. Row 22 is a Total Row. The Total Row states 'Totals:' in cell A22 and automatically calculates the total sum of cells B5 to B21 in cell B22 and C5 to C21 in cell C22.

How to fill in the table 'Future land uses'

Cells A5-A21: Choose the future (post-development) land use type(s) of landcover present on the new site from the dropdown list
Cells B5-B21: Enter the area in hectares of each land use type.

The nutrient load from future land uses is shown in cells C5 to C21 for total phosphorus (TP).

The total nutrient load from future land uses is shown in cell C22 for TP.

Future land uses

New land use type(s) - user inputs required	Area (ha) - user inputs required	Annual phosphorus export (kg TP/yr)
Residential urban land	0.60	1.11
Greenspace	0.69	0.01
		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
Totals:	1.29	1.12

Nutrients from future land use after sustainable urban drainage system (SuDS) treatment

This sheet contains one table.

Note: You will need to fill in cells C29, cells B5 to B29, cells C5 to C29, cells E5 to E29 and cells F5 to F29 if you are including SuDS to remove nutrients from the surface runoff. Cells B30, D5 to D30 and cells G5 to G30 are automatically calculated and will state '0.00' unless the user inputs have been entered. Cells H5 to H29 are automatically generated and will state 'Not applicable' unless the total area of the landscaped entered is larger than the total area of the landscaped entered into the worksheet 'Nutrients from future_land_use'. Row 30 is a 'Total Row'. The 'Total Row states 'Totals' in cell A30 and automatically calculates the total sum of cells B5 to B29 in cell B30, cells D5 to D29 in cell D30 and cells G5 to G29 in cell G30. Cell C30, cell E30, cell F30 and cell H30 are intentionally blank.

How to fill in the table 'SuDS information'

Cells A5 to A29: Choose the future (post-development) land use type(s) of landcover present on the new site within the SuDS catchment area from the dropdown list. Only landcovers entered into the worksheet titled 'Nutrients_from_future_land_use' can be entered.

Cells B5 to B29: Enter the area in hectares of each new land use type within the SuDS catchment area.

Cells C5 to C29: Enter the percentage of the flow entering the SuDS feature. If all flow is being diverted to the SuDS feature then this value should be set to 100%.

The annual total phosphorus (TP) loads associated with the landcovers in the SuDS catchment area are automatically calculated in cells D5 to D29.

Cells E5 to E29: Enter the name of the SuDS features used to intercept surface flows can be entered in. Any text can be entered into these cells.

Cells F5 to F29: Enter the nutrient removal rates associated with the SuDS features for TP.

Values for column F must be identified by the user and must be specific to the SuDS features being implemented.

The annual TP load removed by the SuDS features are automatically calculated in cells G5 to G29. These values are subtracted from the nutrient budget.

You do not need to fill in column H 'Notes on data'. It will state "Not applicable" unless the total area of each landcover within the SuDS

You do not need to fill in column F 'Notes on data'. It will state 'Not applicable' unless the total area of each landcover catchment area exceeds the area of the landcovers entered into the worksheet titled 'Nutrients from future land use'.

SuDS information

New land use type(s) within SuDS catchment area - user inputs required	SuDS catchment area (ha) - user inputs required	Percentage of flow entering the SuDS (%) - user inputs required	Annual phosphorus inputs to SuDS feature(s) (kg Tpyr)	Name of SuDS feature(s) - user inputs required	TP removal rate for features - user specified (%) - user inputs required	Annual phosphorus load removed by SuDS (kg TPYyr)	Notes on data
Residential urban land	0.60	73.00	1.11	Modified Rational Method - 26.91% runoff, therefore 73% discharge to ground	100.00	0.81	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
			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
			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
			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
Totals:	0.60		1.11			0.81	

Final nutrient budgets

This worksheet contains one table. This table is automatically populated using the outputs from the previous worksheets.

Note: You do not need to fill in any cells in the table.

Cells B5 to B8 and cells B10 are automatically calculated and will state '0.00' unless the user inputs have been entered to all of the required worksheets.

Cells A11 to A14, cell B12 and cell B14 are automatically generated and will state 'Not applicable' depending on the user inputs to the worksheet 'Nutrients_from_wastewater'.

Cell B9, B11 and B13 are intentionally blank.

This table presents calculations that underpin the final annual nutrient budget for the development site. Up to 3 values for the nutrient budget may be presented in cells B10, B12 and B24 for total phosphorus (TP).

Total nutrient budget calculations

Description of values generated	Values generated
Wastewater TP load (kg TP/year):	0.45
Net land use TP change (kg TP/year):	-0.52
TP budget:	-0.07
TP budget + 20% buffer:	-0.07
Annual nutrient budget	
The total annual phosphorus load to mitigate is (kg TP/yr):	0.00
Not applicable	
Not applicable	Not applicable
Not applicable	
Not applicable	Not applicable

Modified Rational Method

 			Input Result
Modified Rational Method			
Project	Bishopstone		
Percentage Runoff (Runoff Coefficient)			
Formula			
$Pr (-) = 0.829 * PIMP + 25 * SOIL + 0.078 * UCWI - 20.7$			
<i>Pr</i>	Percentage runoff		
<i>PIMP</i>	Impervious area (%)		
<i>SOIL</i>	WRAP soil index value		
<i>UCWI</i>	Urban Catchment Wetness Index value		
Parameters			
Parameter	Value	Unit	Source
PIMP	45	%	Measured from site plan / Provided by FRA
SOIL	0.1	Index	WRAP map
UCWI	100	Index	Urban Catchment Wetness Index
Results			
Pr	26.91	%	

Manufacturers certificate



Certificate

Nr. 457.1C2

CRX II

Primary settlement zone with electro-coagulation unit and submerged fixed bed biofilm reactor

Fuji Clean Co.,Ltd.

4-1-4 Imaike, Chikusa, Nagoya, Aichi 464-8613, Japan

EN 12566-3:2005+A2:2013, Annex B: Treatment efficiency test

Small wastewater treatment systems for up to 50 PT – Part 3:
Packaged and/or site assembled domestic wastewater
treatment plants

Detailed results and information on the test are provided in
test report PIA2024-457B03.



Extract of performance details (EN 12566-3, Annex B: Treatment efficiency test)

Organic daily load (influent, nominal)	0.21 kg BOD ₅ /d		
Hydraulic daily load (nominal)	0.65 m ³ /d		
Treatment efficiency (nominal)		Efficiency	Effluent
	COD	95.8 %	32 mg/l
	BOD ₅	98.3 %	5 mg/l
	TN _b	71.8 %	18 mg/l
	NH ₄ -N	73.8 %	12.0 mg/l
	P _{tot}	93.5 %	0.6 mg/l
	SS	97.8 %	8 mg/l
Electrical consumption (nominal)	1.75 kWh/d *		
	1.41 kWh/d **		
Number of desludging (complete test – 38 + 4 weeks)	0		
Number of maintenance operations during the test (without start-up phase)	2		

* inclusive of transformer 240 V-110 V

** exclusive of transformer 240 V-110 V

Tested by:

PIA – Prüfinstitut für Abwassertechnik GmbH

Hergenrather Weg 30

52074 Aachen, Germany

This certificate is for information purposes only and
replaces neither the related test report nor the
declaration of performance or the CE marking.
The results relate only to the tested object.



November 2024, Dipl.-Ing. Gabriel Schatzki
Head of department "Wastewater Testing"



Notified Body
No.: 1739



Certified according to
ISO 9001:2015

Appendix 5

Evidence Photos











