



Alcock Crest

Nutrient Neutrality Assessment and Mitigation Strategy

December 2024

Prepared for:
Selwood Housing Society
Ltd



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1 INTRODUCTION

1.1 Appointment

WCI have been appointed by Selwood Housing Society Ltd. (the 'Client') to prepare a nutrient neutrality assessment and mitigation strategy (NNMAS) to support a planning application on Alcock Crest, Warminster, Wiltshire, BA12 8NE

1.2 Purpose

This assessment aims to establish the current and proposed total phosphorous (TP) levels of the site and present a strategy for achieving nutrient neutrality.

Nutrient neutrality is a requirement for planning permission for river catchment areas affected by high levels of phosphorous as indicated in Natural England advice letter for proposed developments, dated 16 March 2022¹.

2 EXECUTIVE SUMMARY

This report presents the Nutrient Neutrality Assessment and Mitigation Strategy for the erection of 14 no. affordable residential units following demolition of existing flats and associated works at Alcock Crest, Warminster, Wiltshire, BA12 8NE.

The development site lies within the hydrological catchment of the River Avon and is subject to Phosphate Neutrality requirements.

The development will generate a residual total phosphorus load of -0.95 kg.TP/yr without any mitigation in place.

The proposed development will be phosphate neutral as a result of betterment generated from the reduction of occupation.

3 SITE DESCRIPTION

3.1 Proposed development

The proposed development is for the erection of 14 no. affordable residential units following demolition of existing flats and associated works. Please refer to the BBA architects & planners for details of the development.

3.2 Site location

The site is Alcock Crest, Warminster Wiltshire with postcode BA12 8NE and is centred on grid reference ST 86581 44518.

¹ Natural England letter (March 2022) – "Advice for development proposals with the potential to affect water quality resulting in adverse impacts on habitats sites."

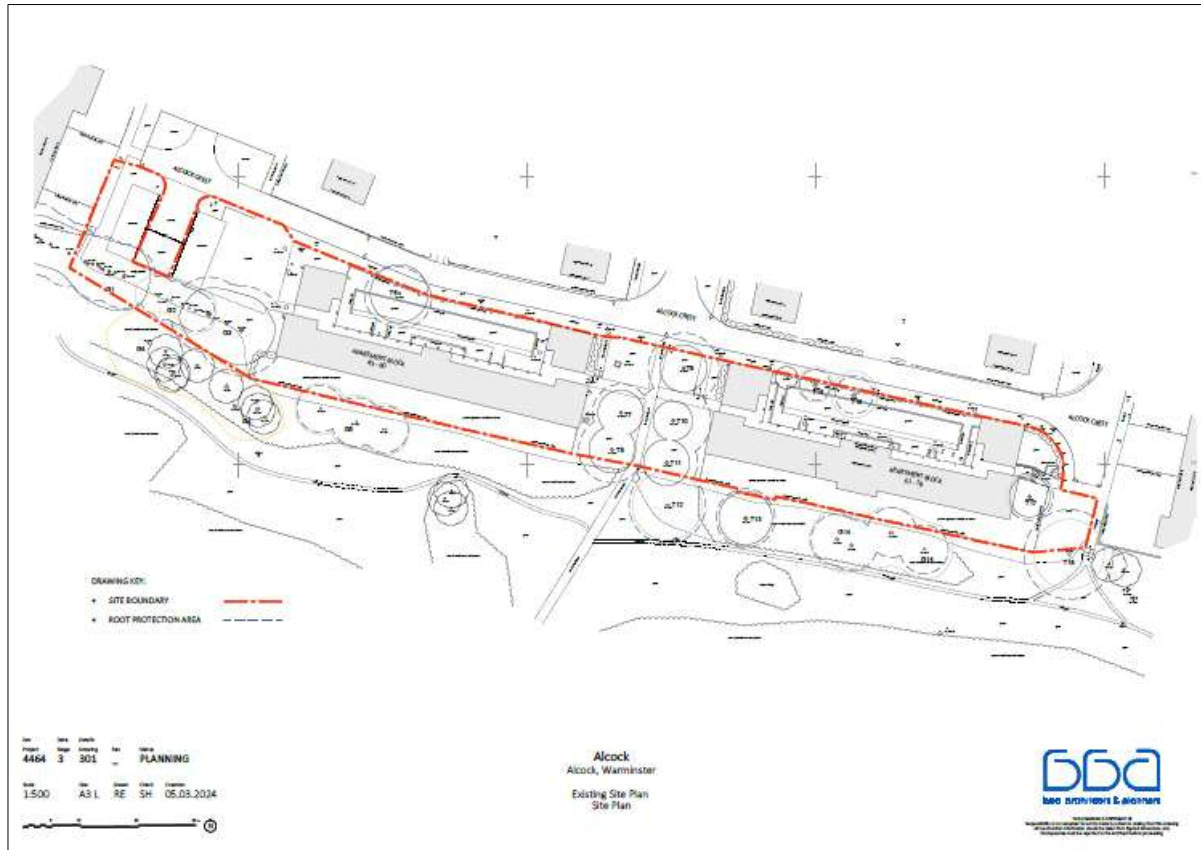


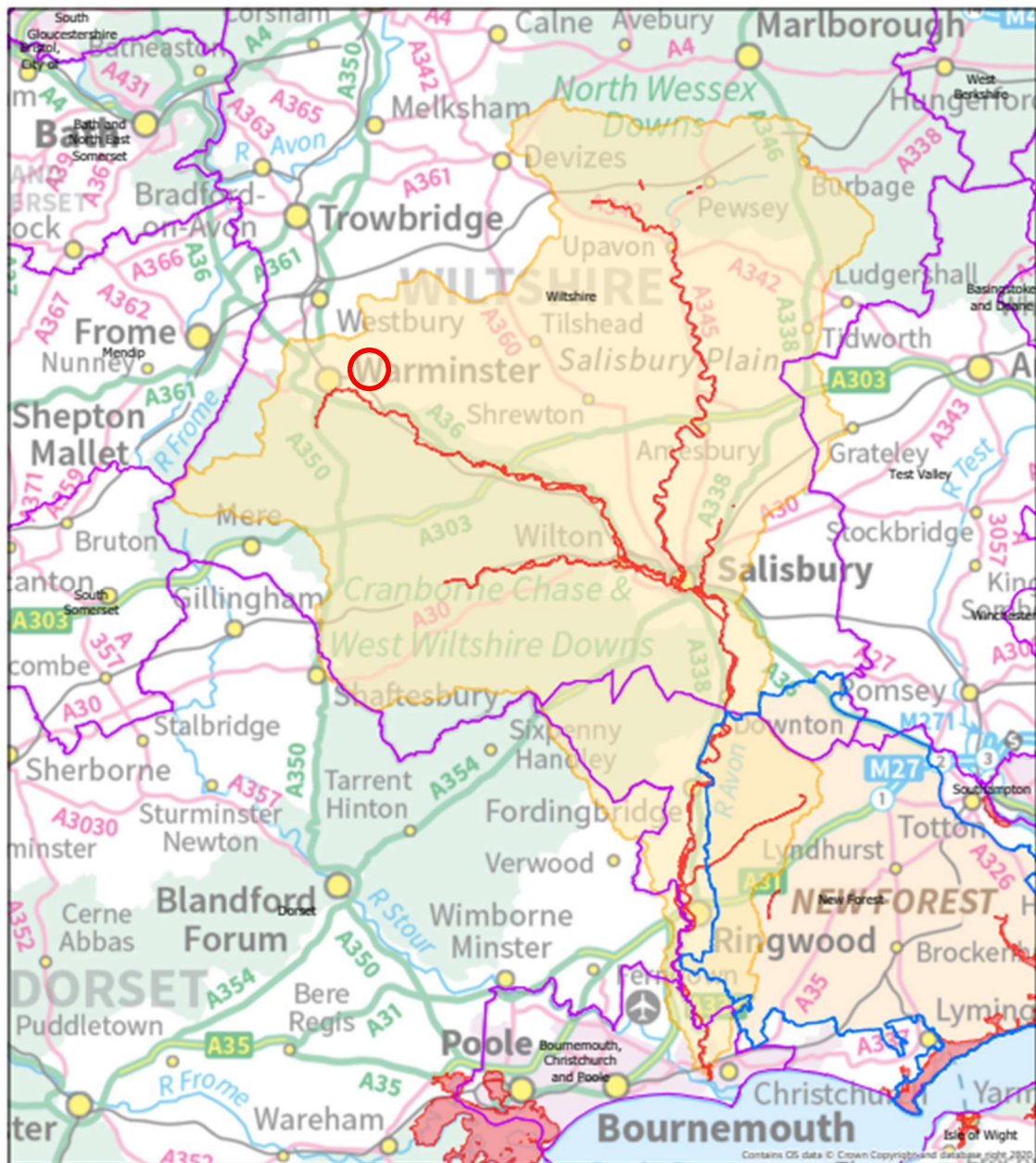
Figure 1: Existing Site Plan



Figure 2: Proposed Site Plan

3.3 Hydrological catchment

The site lies within the hydrological catchment of the River Avon. The River Avon is a key tributary of the River Avon Special Areas of Conservation (SAC) and is a designated SSSI site.



European protected sites requiring nutrient neutrality strategic solutions

**Component SSSIs of
River Avon SAC**

- Local Authorities
- SSSI subject to nutrient neutrality strategy
- Nutrient neutrality SSSI catchment
- National Parks

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Figure 3 - River Avon Hydrological Catchment

3.4 Existing drainage arrangements

There is currently a private foul drainage network on site which is understood to discharge to the public foul sewer along Alcock Crest foot path.

3.5 Drainage strategy

The site lies within the Wessex Water area of operation. Wessex Water asset maps indicate that there is a public foul sewer which runs along Alcock crest Road. See Appendix A – Wessex water asset maps.

Sewage from the proposed development is assumed to be discharged into the same public foul sewer which ultimately connects into the Warminster WRC.



4 NUTRIENT NEUTRALITY ASSESSMENT

4.1 Basis for assessment

This assessment of phosphate load and mitigation has been undertaken in accordance with the guidance available at the time of writing and may be subject to change as guidance evolves.

Where possible, the principles and data included in the Avon Nutrient Budget Calculator (ANBC) has been applied. For ease of presentation and interpretation, some of the calculations included in the ANBC are re-created in spreadsheet format referencing the appropriate sources where necessary.

Not all assessments and mitigations are covered by the ANBC and in these instances, separate calculations are made using reputable sources.

A summary of the phosphate balance calculations can be found in Appendix B – Phosphate Balance.

4.2 Stage 1 – Phosphate load due to occupancy

It was agreed with Wiltshire Council that the occupation of the 34 no. of flats prior to its demolition could be used as the current occupation as part of this nutrient neutrality assessment (planning officer email 26.03.25).

The ANBC provides no guidance on the level of occupancy of flats versus houses. For the purposes of this assessment, the same level of occupancy (2.4 persons per unit) is assumed.

As such, the existing 34 units implies occupancy of 81.6 persons with sewage being treated at the Warminster WRC. Warminster WRC treats phosphates to 0.5 mg/l currently and will reduce to 0.25 mg/l post 2030. The existing occupation of the site therefore implies a phosphate load of 1.61 kg.TP/yr.

The proposed development is for 14 housing units with an implied occupancy of 33.6 persons. The phosphate load of the proposed development will therefore be 0.66 kg.TP/yr reducing to 0.33 kg.TP/yr post 2030.

The proposed occupation of the site therefore implies a reduction in phosphates of -0.95 kg.TP/yr.

4.3 Stage 2 – Pre-development phosphate load due to land-use

The ANBC presents phosphate loads according to different land use definitions. These land uses are defined according to the CORINE 2018 land use data. A full list of land use definitions is included in Appendix C – Land use Definition

Other defining land-use characteristics within the ANBC are soil drainage type, annual average rainfall (AAR) and whether the site lies within a nitrate vulnerability zone (NVZ). These have been summarised below for the site:

Catchment characteristics	Result
Phosphate Catchment	Avon Hampshire
Soil drainage type	Freely draining
Annual Average Rainfall (AAR)	850-900 mm/yr
Nitrate Vulnerable Zone (NVZ)	Yes

Table 1 - Catchment characteristics

The site covers an area of **1.51 ha** and is currently classed as residential urban which carries an export coefficient of 1.75 kg.TP/yr/ha and therefore generates a TP load of 2.64 kg.TP/yr.

4.4 Stage 3 – Post development phosphate load due to land-use

The proposed development will retain the same land use class of 'residential urban' and will therefore also generate 2.64 kg.TP/yr.

As such, there will be **0.00kg.TP/yr** increase in TP through change of land use.

4.5 Phosphate summary

Description	Load (kg.TP/yr) ²
TP from Current Occupation	1.61
TP from Proposed Occupation	0.66
Change in TP due to Change in Occupation	-0.95
TP from Current Land Use	2.64
TP from Proposed Land Use	2.64
Change in TP due to Change in Land Use	0.00
Net Change in TP due to Development	-0.95
Precautionary Buffer (+20%)	0.00
TP produced by the development before mitigation	-0.95

Table 2 - Phosphate summary

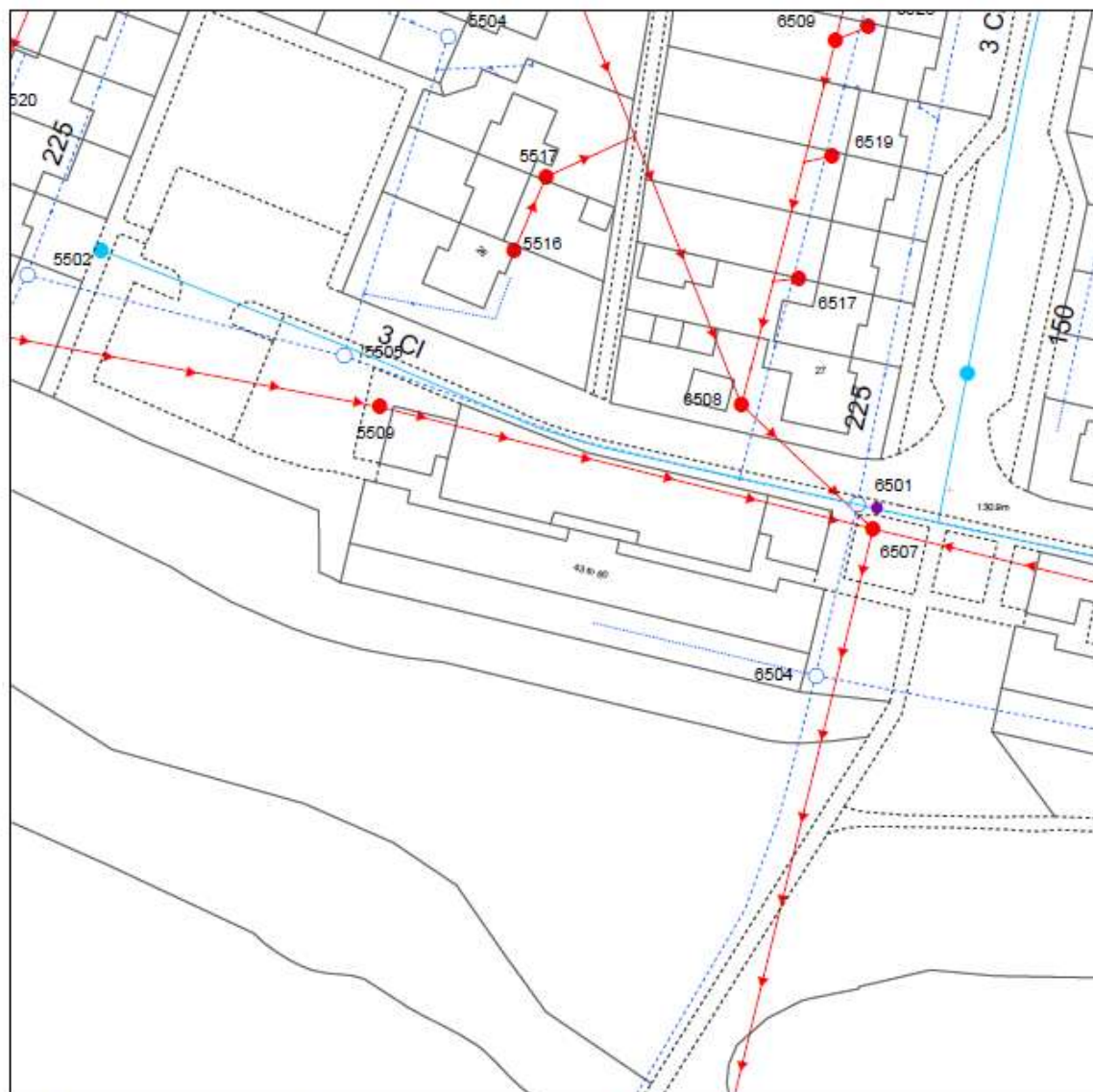
5 CONCLUSION

The development will generate a residual total phosphorus load of -0.95 kg.TP/yr and is subsequently 'nutrient neutral'.

² All values rounded to be in accordance with ANBC calculations.

APPENDIX A – WESSEX WATER ASSET MAPS

Wessex Water Network Map



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APPENDIX B – PHOSPHATE BALANCE

Nutrients from wastewater Current occupation		
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):	01/01/2025	
Average occupancy rate (people/dwelling or people/unit):	2.40	
Water usage (litres/person/day):	120	
Development proposal (dwellings/units):	34	
Wastewater treatment works:	Warminster WwTW	
Current wastewater treatment works P permit (mg TP/litre):	0.50	
Not applicable	Not applicable	
Post 2030 WwTW P permit (mg TP/litre):	0.25	
Final calculation of nutrient load from wastewater		
Description of values generated	Values generated	
Post-2030 wastewater nutrient Loading		
Additional population (people):	81.60	
Wastewater by development (litres/day):	9792.00	
Annual wastewater TP load (kg TP/yr):	0.80	
Pre-2030 wastewater nutrient loading		
Annual wastewater TP load (kg TP/yr):	1.61	
Not applicable		
Not applicable	Not applicable	

Nutrients from wastewater Proposed occupation		
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):	01/01/2026	
Average occupancy rate (people/dwelling or people/unit):	2.40	
Water usage (litres/person/day):	120	
Development proposal (dwellings/units):	14	
Wastewater treatment works:	Warminster WwTW	
Current wastewater treatment works P permit (mg TP/litre):	0.50	
Not applicable	Not applicable	
Post 2030 WwTW P permit (mg TP/litre):	0.25	
Final calculation of nutrient load from wastewater		
Description of values generated	Values generated	
Post-2030 wastewater nutrient Loading		
Additional population (people):	33.60	
Wastewater by development (litres/day):	4032.00	
Annual wastewater TP load (kg TP/yr):	0.33	
Pre-2030 wastewater nutrient loading		
Annual wastewater TP load (kg TP/yr):	0.66	
Not applicable		
Not applicable	Not applicable	

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 B8 in the first table 'Current land use information'. You will need to fill in cells A11 to A27, and B11 to B27 in the second table 'Current land uses'. Cells B28, C11 to C28 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 volume 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 type(s) from the dropdown list.

Cells B11-B27: Enter the area in hectares of each land use type.

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.

Description of required information	Data entry column - user inputs required
Operational catchment:	Avon Hampshire
Soil drainage type:	Freely draining
Annual average rainfall (mm):	850.1 - 900
Within nitrate vulnerable zone (NVZ):	Yes

Existing land use type(s) - user inputs required	Area (ha) - user inputs required	Annual phosphorus export (kg TP/yr)
Residential urban land	1.51	2.64
		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
Totals:	1.51	2.64

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	1.51	2.64
		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:	1.51	2.64

APPENDIX C – LAND USE DEFINITION

Land Use	Description
Urban	Development which encompasses the built form, gardens, paths, roads, hardstanding's, parks and small areas of open space, ponds and SuDS. The phosphorous load results from sewer overflows and from drainage that picks up phosphorous on the urban land. Agricultural barns used for storage of materials, farming supplies and temporary livestock can be classified as Urban. However, barns used for a specific farming type (e.g. piggeries and chicken farms) should be classified under the relevant farming land use.
Mineral Workings and Quarries	An open or surface mineral working, usually for the extraction of building stone, as slate, limestone, etc.
Allotment and City farms	Wholly or mainly cultivated for the production of vegetable or fruit crops for consumption by the tenant or local community. In some cases the land will also be used for ornamental plants and the keeping of hens or bees.
Sports and Leisure facilities	Facilities used for recreational purposes such as managed sports pitches, athletic fields, gymnasiums, swimming pools etc.
Transport tracks and ways	Encompasses large infrastructure such as motorways and significant rail infrastructure. Small scale roads and tracks are covered under the Urban land use
Transport terminals	A large scale facility where passengers and freight are assembled or dispersed
Cereals	Holdings on which cereals, combinable crops and set-aside account for more than two thirds of the total standard output.
Dairy	Holdings on which dairy cows account for more than two thirds of their total standard output.
Cropping	Holdings on which arable crops (including field scale vegetables) account for more than two thirds of the total standard output, excluding holdings classified as cereals; holdings on which a mixture of arable and horticultural crops account for more than two thirds of their total SO excluding holdings classified as horticulture and holdings on which arable crops account for more than one third of their total standard output and no other grouping accounts for more than one third.
Horticulture	Holdings on which fruit (including vineyards), hardy nursery stock, glasshouse flowers and vegetables, market garden scale vegetables, outdoor bulbs and flowers and mushrooms account for more than two thirds of their total standard output.
Pig Farming	Holdings on which pigs account for more than two thirds of their total standard output.
Lowland grazing / Paddock	Holdings on which cattle, sheep and other grazing livestock account for more than two thirds of their total standard output except holdings classified as dairy. A holding is classified as lowland if less than 50% of its total area is in the Less Favoured Area (LFA). A paddock is classified as a small enclosure used for grazing horses.
Mixed livestock	Holdings for which none of the other categories account for more than two thirds of total standard output. This category includes mixed pigs and poultry farms as well as farms with a mixture of crops and livestock (which neither accounts for more than two thirds of standard output).
Poultry farming	Holdings on which poultry account for more than two thirds of their total standard output.
General Arable	Use this option if unsure of the breakdown of arable land.
Improved grass	Land used for grazing (other than arable land) where over one third of the sward comprises, singly or in a mixture, ryegrass, cocksfoot or timothy, or land that has been improved by management practices such as liming and top dressing, where there is not a significant presence of sensitive plant species indicative of native unimproved grassland.
Unimproved grass	Land used for grazing or mowing which is not normally treated with mineral fertiliser or lime and contains a significant presence of sensitive plant species indicative of native unimproved grassland.
Open Space / Greenfield	Greenfield areas that have not been in agricultural use for at least 10 years and are not subject to unmanaged recreational use.
Woodland	Tree-covered areas which either arose naturally or as a result of plantations. This includes conifer woodland, mixed woodlands and broad-leaved woodlands etc.
shrub / heathland / bracken / bog	Land that contains extensive areas of either shrubs, heath or bracken. A bog refers to land that is a wetland area of muddy ground that can accumulate peat.
Freshwater marsh	Non-tidal, non-forested marsh wetland that contains fresh water, and is continuously or frequently flooded.
Meadow / semi natural grassland	A meadow is a field habitat vegetated by grass and other non-woody plant that has an open character and is not grazed by livestock
Wetland	Land use specific to constructed wetland only and does not include ponds or SuDS.