

Technical Note

Project:	Land South of Park Street, Heytesbury, Wiltshire	Date:	26 th March 2026 Updated 8 th September 2026
Subject:	Nutrient budget	Author:	Nicola French

1.0 Background

- 1.1. This Technical Note has been prepared to provide information to Wiltshire Council (WC) in support of a full planning application for 9 residential dwellings, of which 3 will be self-build and 6 will be open market. The information is provided under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations).
- 1.2. In January 2024, Defra issued a policy paper¹ notifying the designation of sensitive river catchments sensitive to nutrient pollution. This includes the River Avon Special Area of Conservation (SAC), identified as being in unfavourable condition on account of phosphorous pollution². The implication of this is that any local planning authority within the catchment of the Hampshire Avon cannot grant consent for new residential development unless it can be shown to be net phosphorous neutral. A phosphorous calculation is therefore required to ensure that WC has sufficient information to carry out an appropriate assessment to consider impacts of the application on the River Avon SAC, required to approve the RMA.
- 1.3. This note takes full account of all information provided by WC on the Council's dedicated nutrient neutrality website³ and draws on the calculator and guidance resources on the Government website *Tools and resources for calculating nutrient neutrality*⁴, most recently updated on 27th May 2025.

2.0 Nutrient neutrality calculations

- 2.1. **Box 1** on the following page sets out the parameters and assumptions used to assess the additional phosphorous loading that the 9 new dwellings will generate.

¹ January 2024, DEFRA. The Designation of Sensitive Catchment Areas Notice 2024

² <https://www.gov.uk/government/publications/notice-of-designation-of-sensitive-catchment-areas-2024/notice-of-designation-of-sensitive-catchment-areas-2024>

³ <https://www.wiltshire.gov.uk/planning-bio-phosphorous-nitrogen-mitigation>

⁴ <https://www.gov.uk/government/collections/tools-and-resources-for-calculating-nutrient-neutrality>

Box 1: Assumptions relevant to the assessment of additional nutrient loading for x9 new dwellings on land at Park Lane, Heytesbury

- **Residential occupancy for the new dwellings:** 2.4 occupants
- **Total wastewater produced by single person:** 120 litres per day.
- **Method of waste processing:** Heytesbury falls outside of the catchment of Warminster WWTW and there is no mains sewer within the village. It is not therefore possible to connect to the public sewer. Instead, the dwellings will be served by a system comprising a Graf One2Clean coupled with a PhosClear⁵ which polishes the effluent to further remove phosphorus and *E.Coli*. The Graf One2Clean discharges effluent with a Total Phosphorous concentration of 1.6mg/litre, which the PhosClear further reduces to 0.8mg/litre (see **Appendix 1**). Neither the Graf One2Clean or the PhosClear rely on dosing with ferric sulphate or other inorganic compound to optimise phosphate removal.
PhosClear is routinely used to polish treated effluent in other catchments affected by nutrient neutrality and can be relied on in nutrient budgets calculations as an effective and legitimate means of phosphorous strip.
- **Total plot area:** The total area of the plot is 0.5ha.
- **Land use:** the area of the red line comprises part of a field down to permanent pasture. It is best described **lowland**.
- **Proposed development:** The residential scheme, once developed, is classed as **residential urban land** (0.5ha) and will comprise a change of land.

2.2. The most recent Natural England Phosphorous Calculator for the River Avon has been used to calculate the nutrient load generated by the treated foul from the nine new residential units.

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):	01/01/2027	
Average occupancy rate (people/dwelling or people/unit):	2.40	
Water usage (litres/person/day):	120	
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	0.8
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):	2592.00	
Annual wastewater TP load (kg TP/yr):	0.76	

⁵ <https://trichel.co.uk/sewage-treatment/wp-content/uploads/2025/07/Trichel-UK-PhosClear-Brochure.pdf>

- 2.3. The calculations show that the treatment of foul from the nine units will generate **0.76kg** of Total Phosphorous per year. Note that the 20% buffer has not been applied at this stage. Rather it is applied to the final calculation once the overall budget for the site is established.
- 2.4. To address the overall net nutrient budget for the scheme, it is important to also consider how rates of phosphorous leaching from the ground will change in response to a changed land use. Stages 2 & 3 of the calculation assess the Total phosphorous loading to the water environment that is currently taking place and compares this to the loading that will occur once the site has been developed. Both stages are set out below, using the categorisations and land area set out in Box 1.

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):	850.1 - 900	
Within nitrate vulnerable zone (NVZ):	Yes	
Current land uses		
Existing land use type(s) - user inputs required	Area (ha) - user inputs required	Annual phosphorus export (kg TP/yr)
Lowland	0.50	0.04
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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	0.50	0.88
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Totals:	0.50	0.88

- 2.5. Finally, the calculator generates a net phosphorous loading for the scheme to take account of both loading from treated foul and the change of use of the land for development. This is set out in Stage 4, below.

Total nutrient budget calculations	
Description of values generated	Values generated
Wastewater TP load (kg TP/year):	0.76
Net land use TP change (kg TP/year):	0.84
TP budget:	1.60
TP budget + 20% buffer:	1.92
Annual nutrient budget	
The total annual phosphorus load to mitigate is (kg TP/yr):	1.92

- 2.6. The calculations show that construction of 9 new residential units on land south of Park Street, Heytesbury, Wiltshire will generate **1.92kg** of total phosphorous per year once built out and occupied.
- 2.7. To ensure net nutrient neutrality, **mitigation is required** to address the additional phosphorous load that the new dwelling will generate.

3.0 Mitigation

- 3.1. Three Chimneys sits immediately adjacent to the site on which the new residential units are proposed (see plan at **Appendix 2**). It is served by an existing septic tank on land owned by the applicants. The tank capping to the tank is broken and the interior is exposed to the elements (**Appendix 3**). The age of the septic tank is unclear but is understood to be more than 25 years old.
- 3.2. The existing septic tank drains to ground and does not meet the small-scale thresholds guidance i.e. it's nutrient load to the water environment is material and cannot be discounted (see **Appendix 4**). This is because it sits within 200m of a number of other private drainage services.
- 3.3. Note too that upgrade of this septic tank for use as an offset for the new residential dwellings proposed on land south of Park Street is also consistent with recent advice from Natural England. This states that septic tank / Package Treatment Plant (PTP) upgrades that discharge to ground can only be used for development where it too, also discharges to ground. In this instance, both the existing and proposed tanks for the new housing will drain to ground.
- 3.4. Replacement of the existing septic tank for Three Chimneys with a new PTP will reduce nutrient loading to the water environment. This saving can be used as an offset against which to reduce the net nutrient budget for the new dwellings.
- 3.5. The River Avon nutrient calculator can be used to calculate an estimate of the nutrient loading of the existing septic tank to the water environment. Assuming a default septic tank setting, the standard occupancy rate and a daily water usage of 150 litres per person (advised as appropriate by Natural England because an existing property is very unlikely to have the water saving features required of new build by Building Regulations), the nutrient calculator calculates that the tank will release **1.53kg** of TP/year (see Stage 1 below).

Water infrastructure information	
Description of required information	Data entry column - user inputs 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):	150
Development proposal (dwellings/units):	1
Wastewater treatment works:	Septic Tank default
Current wastewater treatment works P permit (mg TP/litre):	11.60
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):	2.40
Wastewater by development (litres/day):	360.00
Annual wastewater TP load (kg TP/yr):	1.53

3.6. Stages 2 & 3 of the calculator are not relevant to this calculation as the replacement of the old septic tank for new provision in the adjacent development plot does not involve a change of land use. Furthermore, advice received from Natural England is that it is not appropriate to apply the 20% buffer to this calculation, because it works in the other direction to the assessment of the loading from the proposed solution. This would mean that inclusion of the 20% buffer would result in a less precautionary calculation. Stage 4 is therefore excluded from this assessment, to leave the final loading of the existing septic tank to the water environment as **1.53kg** of TP/year.

3.7. To establish whether the proposed mitigation strategy is effective, the question arises as to whether this figure is more or less than the nutrient loading that will arise from the proposed new dwelling in conjunction with the new loading that will arise from Three Chimneys once the existing septic tank is replaced with a **new Graf One2Clean PTP coupled with a Phos-Clear filter unit**.

3.8. Stage 1 sets out the loading for Three Chimneys using a new PTP.

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):	01/01/2027	
Average occupancy rate (people/dwelling or people/unit):	2.40	
Water usage (litres/person/day):	150	
Development proposal (dwellings/units):	1	
Wastewater treatment works:	Package Treatment Plant user defined	
Current wastewater treatment works P permit (mg TP/litre):	Enter value in cell C10	0.8
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):	2.40	
Wastewater by development (litres/day):	360.00	
Annual wastewater TP load (kg TP/yr):	0.11	

3.9. Stages 2 & 3 of the calculator are not relevant to this calculation as the replacement of the old septic tank for new provision does not involve a change of land use.

3.10. Stage 4, on the following page, concludes the calculation of nutrient loading with the application of a 20% buffer to the results of stage 1:

Total nutrient budget calculations	
Description of values generated	Values generated
Wastewater TP load (kg TP/year):	0.11
Net land use TP change (kg TP/year):	0.00
TP budget:	0.11
TP budget + 20% buffer:	0.13
Annual nutrient budget	
The total annual phosphorus load to mitigate is (kg TP/yr):	0.13

3.11. This shows that Three Chimneys with a new PTP will load **0.13kg/TP** to the water environment per year.

3.12. To calculate the overall loading to the environment of the treatment of foul from the x9 new residential units and the adjacent existing property, with all using a Graf One2Clean PTP, together with the land use change associated with the planning application, it is necessary to sum the outputs of both calculator results, as follows:

$$\text{Total loading of phosphorous} = 0.13 + 1.92 = \mathbf{2.05\text{kg TP/year}}$$

3.13. Table 1 below compares the nutrient loading deriving from the new dwelling together with the existing property, all with an upgraded PTP, and compares this to the existing situation whereby the existing property is served by an old septic tank.

Scenario	Existing dwelling	Proposed dwelling + existing, with new PTP	Difference in nutrient loading
Total phosphorous	1.53kg of TP/year	2.05kg of TP/year	Surplus of 0.52 kg TP per year

3.14. Table 1 clearly shows that the improved treatment of foul from Three Chimneys as an existing property using its own new PTP will reduce the overall net loading of the nine new residential properties. However, the offset that it can provide is not sufficient to fully address the additional loading that the nine new dwellings will generate. So whilst it will result in an overall **net overall reduction** in nutrient loading to the water environment, this is not sufficient to deliver a nutrient neutral scheme.

3.15. To ensure net nutrient neutrality, further **mitigation is required** to address the residual phosphorous load that the nine new dwellings will generate.

Top up mitigation

- 3.16. A Council-led scheme to provide phosphorus credits is available for planned development. The credits can be purchased to offset the additional loading identified and demonstrate nutrient neutrality. Wiltshire Council must consider that development schemes are planned development to qualify for the scheme.
- 3.17. This scheme is not currently considered planned development because the site lies outside the limits of development of Heytesbury and is considered to lie in the open countryside. However, Wiltshire Council has a significant shortfall in housing land supply such that the tilted balance applies, bringing the scheme into the category of planned development and allowing the scheme to qualify for the allocation of nutrient credits.
- 3.18. Wiltshire Council has therefore confirmed it will supply credits for this scheme allowing it to be delivered as nutrient neutral.
- 3.19. In the timescales relevant for determination of the planning application, it is possible that alternative solutions will come forward to secure the scheme as nutrient neutral, as follows:
- Natural England could deliver an Environmental Delivery Plan (EDP) in line with the provisions of the Planning & Infrastructure Act 2025, providing opportunity to pay into the Nature Restoration Fund to discharge nutrient neutrality obligations; or,
 - a third party commercial provider may come forward with an alternative scheme for the purchase of nutrient credits e.g the Environmental Farmers Group.
- 3.20. In the instance that one of these alternatives becomes relevant, a comparison will be undertaken to establish the most cost-effective solution for the delivery of a nutrient neutral scheme. The applicant will secure mitigation through whichever scheme performs best.

4.0 Conclusion & analysis

- 4.1. A nutrient budget calculated in line with the current Natural England guidance and calculator for x9 new residential dwellings on land south of Park Street, Heytesbury, Wiltshire shows that the proposed scheme will generate increased loading of 1.92kg TP per year.
- 4.2. To reduce this additional loading, an existing septic tank serving the adjacent property (Three Chimneys) will be upgraded to improve performance. The new

PTP arrangement will be installed prior to the first occupation of the new dwellings and will be secured through a S106 Agreement. The S106 Agreement will also require that the PTP is regularly maintained according to the manufacturers recommendation.

- 4.3. The increased efficiency of nutrient stripping of the new PTP in treating the foul from Three Chimneys will mean that the overall nutrient loading to the environment will reduce and can be used to reduce the net nutrient budget for the nine new dwellings to 0.52kg TP per year.
- 4.4. To offset this residual loading, and in line with advice available from Wiltshire Council's website, consent can be granted with a Grampian condition precluding the start of development until mitigation has been secured from WC's own mitigation scheme, or other, alternative ratified scheme if it becomes available. With this condition in place, WC can conclude that the proposed residential properties will not adversely affect the integrity of the River Avon SAC, either alone or in combination with other plans and projects.

NF080926

Appendix 1
Performance Certification: Graf One2Clean

PERFORMANCE RESULTS

Otto Graf GmbH

Carl-Zeiss-Str. 2 - 6, 79331 Teningen, Germany

EN 12566-3

Small wastewater treatment systems for up to 50 PT

Small wastewater treatment system one2clean

SBR plant in one two-zone polypropylene tank

Test report PIA2014-216B14.01.e

Nominal organic daily load*	0.27	kg/d		
Nominal hydraulic daily load	0.75	m³/d		
Material	polypropylene			
Treatment efficiency (nominal sequences)			Efficiency	Effluent
	COD		94.2 %	43 mg/l
	BOD ₅		98.0 %	7 mg/l
	SS		96.3 %	14 mg/l
	NH ₄ -N**		98.3 %	0.5 mg/l
	N _{tot} **		87.0 %	7.9 mg/l
	P _{tot}		80.2 %	1.6 mg/l
Electrical consumption	0.63	kWh/d		

*at a test influent of ≥ 300 mg/l BOD₅ (mean)

**determined for temperatures $\geq 12^\circ\text{C}$ in the bioreactor

Performance tested by:

PIA – Prüfinstitut für Abwassertechnik GmbH

(PIA GmbH)

Hergenrather Weg 30

52074 Aachen, Germany

This document replaces neither the declaration
of performance nor the CE marking.



Notified Body
No.: 1739



Certified according to
ISO 9001:2008



Deutsche
Akkreditierungsstelle
D-PL-17712-01-00

Prüfinstitut für Abwassertechnik GmbH

prüft - tested - testet

Elmar Lancé

November 2014

Report on the treatment efficiency test according to EN 12566-7 of the small tertiary wastewater treatment plant

Fosforfilter Polonite®

Biotech AB

Test report – No PIA2015-T7-265S13.02

Aachen, November 2015, revised December 2015

Dipl.-Ing. Elmar Lanoë

PIA GmbH
Prüfinstitut für Abwassertechnik
Hengener Weg
52074 Aachen



Table 1: Treatment efficiencies under nominal loading conditions (100%)

Efficiency [%]	Mean*	Minimum	Maximum	Standard deviation
COD	25.4	0	53.1	15.9
BOD ₅	66.0	0	90.0	24.8
P _{tot}	92.7	71.3	99.1	8.5
SS	12.9	0	50.0	17.2

Table 2: Treated effluent characteristics under nominal loading conditions (100%)

Effluent	Mean	Minimum	Maximum	Standard deviation
COD [mg/l]	31	< 15	55	11
BOD ₅ [mg/l]	2	< 3	8	1
P _{tot} [mg/l]	0.7	0.1	2.4	0.7
SS [mg/l]	17	6	48	11
Settleable solids [ml/l]	0.1	< 0.1	0.2	0.1

Table 3: Bacterial results from 8 weeks consecutive sampling

Test schedule	Test sequence	1	5
	Loading	100 %	100 %
	Date	21.05.2015	16.07.2015
Air Temperature min/max [°C]		5 / 14	17 / 24
Influent:			
Total Coliforms	[1/100ml]	98.000	8.600
E.coli	[1/100ml]	1.000	3.100
Enterococci	[1/100ml]	1.800	311
Effluent:			
Total Coliforms	[1/100ml]	1.000	< 1
E.coli	[1/100ml]	< 1	< 1
Enterococci	[1/100ml]	320	116



Appendix 2
Evidence for existing septic tank
at Three Chimneys

Clouded area shows location of septic tank for Three Chimneys in relation to the proposed residential dwellings (within the red line)



Photographic evidence

Photo to show broken concrete cover for septic tank and water within: the tank is in active use



Appendix 3

Assessment of Three Chimneys septic tank against small scale thresholds

Appendix 3: Assessment of septic tank serving Three Chimneys against the small scale threshold criteria¹

For a septic tank to meet the small-scale thresholds, all of the following conditions must be met:

Threshold	Threshold met	Comment
The drainage field is more than 50m from the designated site boundary (or sensitive interest feature)	Yes	The drainage field at Three Chimneys lies approx. 40m from the River Wyle
The drainage field is more than 40m from any surface water feature e.g. ditch, drain, watercourse, and	Yes	Google Maps shows that the River Wyle is the closest surface water feature and runs to the south of the site, approx. 40m distant
The drainage field in an area with a slope no greater than 15%, and	Yes	The drainage field is not on a slope, but level ground.
The drainage field is in an area where the high-water table groundwater depth is always at least 2m below the surface, and	No	Groundwater is high and normally <2m below the surface.
The drainage field will not be subject to significant flooding, e.g. it is not in flood zone 2 or 3, and	Yes	Drainage field lies in flood zone 1
There are no other known factors which would expedite the transport of phosphorus for example fissured geology, insufficient soil below the drainage pipes, known sewer flooding, conditions in the soil/geology that would cause remobilisation phosphorus, presence of mineshafts, etc. and	Unlikely but not certain	Information not available.
To ensure that there is no significant in combination effect, the discharge to ground should be at least 200m from any other discharge to ground and	No	The septic tank lies within 200m of several other residential properties also served by private drainage systems.
The percolation test has been performed of the proposed location of the drainage field with the resulting value lying within the required range under the Building Regulations 2010, which specify an average Vp value of between 12 & 100	Yes	Percolation tests for the site have established VP values of approximately 28 (see drainage report submitted as part of the application).
Conclusion: the septic tank that serves Three Chimneys does not meet all of the small scale thresholds and cannot therefore be considered a small scale private drainage. It is therefore appropriate to upgrade for purposes of offsetting the additional nutrient loading that the new residential units on land south of Park Lane, Heytsebury.		

¹ Taken from Somerset Council Interim Guidelines Quick Guide: Conditions that must be met to fulfil the Interim guidelines on small scale thresholds