



WATER DESIGN ENGINEERS

— Solving water in the landscape —

NUTRIENT NEUTRALITY ASSESSMENT & MITIGATION STRATEGY

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1 Introduction

The client, Perseus (Havant) Limited, proposes the construction of an 86-bed C2 care home, including associated amenity facilities, incoming utility services, car parking, and landscaping works, at Land North of Lavant Drive, Havant, PO9 2AW.

The client has appointed Water Design Engineers (WDE) to undertake a nitrate mitigation strategy to support the planning application.

This revised assessment has been prepared on the basis that the proposed development is an 86-bed C2 care home. The wastewater calculation has therefore been based on the maximum resident bedspace capacity of the care home, being 86 residents, rather than a C3 dwelling-based occupancy calculation.

The proposed development is expected to discharge foul wastewater to the public sewer network, with flows conveyed to Budds Farm Wastewater Treatment Works (WwTW), operated by Southern Water.

1.1 Purpose

The purpose of this nitrate mitigation strategy is to quantify the impact of the proposed development on the catchment, as measured in the amount of additional Total Nitrogen (kgTN/yr), and to identify the scale of mitigation required to achieve nutrient neutrality.

Nitrate neutrality is a requirement of Natural England (NE), a statutory consultee to the Local Planning Authority on developments affecting the Solent designated sites, including the Havant area. Nitrate neutrality is required to prevent further deterioration of the designated sites, as legally required by the Habitats Regulations.

1.2 Scope & Limitations

This assessment is based upon information available at the time of preparation. If additional information relating to the site, foul drainage strategy, proposed development, water-use assumptions, or mitigation strategy becomes available at a later stage, this assessment may need to be amended and resubmitted.

The assessment has been completed using WDE's own nutrient budget calculation, as set out step-by-step within the main body of this report and summarised in Appendix A.

The wastewater calculation has been prepared using the confirmed care-home capacity of 86 residents and a water consumption rate of 110 litres/person/day. Where reliance is placed on water-efficient fittings to support this rate, evidence should be provided separately by the applicant/design team. If the target water use changes, or if evidence is not available to support the adopted water-use rate, the nutrient budget may need to be updated.

Staff have not been included as additional residential occupants within the nutrient budget. Staff attendance is shift-based and does not represent new permanent residential occupation at the site.

It is also reasonable to assume that a proportion of staff will live within the local catchment, such that their domestic wastewater load is already accounted for within the existing baseline. Staff welfare use, visitor use, cleaning, commercial kitchen use and laundry use are considered ancillary to the operation of the C2 care home and are assumed to be accounted for within the adopted water-use allowance, subject to confirmation by the project design team.

2 Site Location

The site is located at Land North of Lavant Drive, Havant, PO9 2AW.

2.1 Local Authorities

The Local Planning Authority Havant Borough Council

The Lead Local Flood Authority (LLFA) is Hampshire County Council

2.2 Designated Sites

The 'designated international sites' are sensitive to the effects of increasing water pollution (i.e., eutrophication) from both point and diffuse sources in the wider catchment:

- Solent Maritime SAC



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3 No Exemption from Nitrate Neutrality

Havant Borough Council requires that new development affecting protected coastal areas must be nutrient neutral, ensuring no increase in nitrate levels that could harm designated habitats.

An exemption from this requirement will only be considered where it can be clearly demonstrated that there is no pathway between the development and the sensitive sites, such that nutrients from the development cannot impact the protected features.

The proposed development falls within the catchment of Budds Farm WwTW, operated by Southern Water. It is assumed that foul wastewater from the development will connect to the public sewer network, with flows conveyed to Budds Farm WwTW for treatment.

Wastewater from the site will therefore be collected, conveyed and treated within the existing sewer infrastructure prior to discharge. Treated effluent from Budds Farm WwTW is discharged via the Eastney long sea outfall into the mid-Solent marine environment.

It is clear that there is hydraulic connectivity between the proposed development and the designated sites. Therefore, nutrient neutrality will be required. The following sections of this report provide an assessment of the Total Nitrogen budget.



European protected sites requiring nutrient neutrality strategic solutions
Component SSSIs of Solent: Includes Chichester and Langstone Harbours SPA/Ramsar, Solent and Southampton Water SPA/Ramsar, Solent Maritime SAC, Portsmouth Harbour SPA/Ramsar

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

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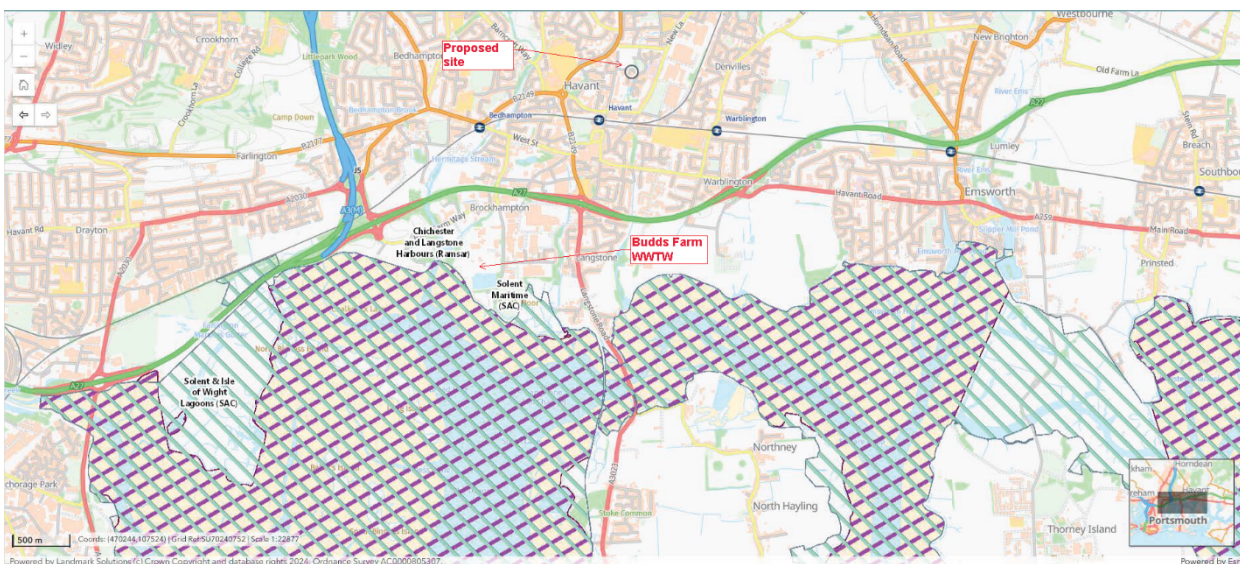


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The proposed development at land north of Lavant Drive, Havant, will discharge wastewater to the local sewer network, with flows conveyed via the trunk sewer system to Budds Farm Wastewater Treatment Works (WWTW), operated by Southern Water.

Wastewater from the site will therefore be collected, conveyed, and treated within the existing sewer infrastructure prior to discharge. Treated effluent from Budds Farm WWTW is discharged via the Eastney long sea outfall into the mid-Solent marine environment. The WWTW does not discharge directly into, or via a fluvial pathway to, the estuarine components of the Solent Maritime SAC, as the treated effluent is released offshore into a dispersive marine environment.



It is clear that there is hydraulic connectivity between the proposed development and the designated site. Therefore, nutrient neutrality will be required. The following sections of this report provide an assessment of the nitrogen budgets.

4 Total Nitrogen Load from Wastewater

The first stage of the NNAMS is calculating the nutrient load that the wastewater from the proposed development will generate.

The proposed development is situated within the catchment of Budds Farm WwTW. It is therefore assumed that the proposed development will connect to the public sewer network, with flows conveyed to Budds Farm WwTW for treatment.

The first step in determining the Total Nitrogen load from wastewater is to calculate the additional resident population that will occupy the new development.

Step 1 – Additional population

The proposed development comprises an **86-bed C2 care home**. For the purposes of this assessment, the resident population has been taken as the maximum bedspace capacity of the care home.

Staff have not been included as additional residential occupants within the nutrient budget. Staff attendance is shift-based and does not represent new permanent residential occupation at the site. It is also reasonable to assume that a proportion of staff will live within the local catchment, such that their domestic wastewater load is already accounted for within the existing baseline. Staff welfare use, visitor use, cleaning, commercial kitchen use and laundry use are considered ancillary to the operation of the C2 care home and are assumed to be accounted for within the adopted water-use allowance, subject to confirmation by the project design team.

Additional resident population = 86 residents

Step 2 – Volume of wastewater generated by additional population

A volumetric rate of **110 litres/person/day** has been used for this assessment.

$86 \times 110 = 9,460$ litres/day

The use of 110 litres/person/day is subject to confirmation by the project design team. Where reliance is placed on water-efficient fittings to justify this rate, supporting evidence should be provided separately by the applicant/design team

Step 3 – Receiving WwTW environmental permit for TN

It is understood that Budds Farm WwTW has a discharge permit in place for Total Nitrogen of 9.7 mgTN/l. This rate has been used to complete the nutrient budget calculation.

Where a permit for Total Nitrogen is in place, it is assumed that the WwTW produces a discharge of up to 90% of the permitted limit.

$9.7 \times 90\% = 8.73$ mgTN/l



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Step 4 – TN discharged from the WwTW following treatment

$$9,460 \times 8.73 = 82,585.8 \text{ mgTN/day}$$

Step 5 – Convert mgTN to kgTN per day

$$82,585.8 / 1,000,000 = 0.0826 \text{ kgTN/day}$$

Step 6 – Convert kgTN per day to kgTN per year

$$0.0826 \times 365 = 30.14 \text{ kgTN/yr}$$

Total Nitrogen Load from Wastewater = 30.14 kgTN/yr

5 Total Nutrient Load from Land Use

The second stage of the NNAMS is to calculate the nutrient load generated by the current and proposed land uses, in order to derive the net change in leaching rates, measured in kgTN/ha/yr.

Nutrient leaching rates from the wider agricultural landscape vary according to land use, soil type, annual rainfall and whether the area is part of a Nitrate Vulnerable Zone. For non-agricultural land uses, the leaching rates used within this assessment are fixed input values derived from the relevant nutrient neutrality methodology.

Land Use	Nitrogen Leaching Rates kgTN/ha/yr
Open Urban Land	7.96
Residential Urban	13.51

5.1 Current Land Use (TN)

Step 1 – Identify current land usage

WDE understands that the existing site area is **0.53 ha**. The site is currently vacant and disused, following the demolition of previous structures several years ago, and falls under the category of **Open Urban Land**.

Step 2 – Calculate Nitrogen load produced by leaching from current land use

According to the nutrient budget calculator, the applicable rate for Open Urban Land is **7.96** kgTN/ha/yr

Therefore, the total load is as follows:

$$0.53 \times 7.96 = 4.22 \text{ kgTN/yr}$$

Nitrogen load from current contributing land use = 4.22 kgTN/yr

5.2 Proposed (Future) Land Use (TN)

Step 1 – Total area of future site

The total site area will remain **0.53 ha** and will be developed to construct an **86-bed C2 care home** with associated amenity facilities, utility services, car parking and landscaping works.

For the purposes of the nutrient budget calculation, the proposed developed area has been categorised as **Residential Urban Land**, as this is considered the closest available future land-use category for a residential care-home development.

Step 2 – Identify land use and confirm nutrient leaching rates

Using the approved calculator, the applicable leaching rates:

Residential Urban Land leaching rate = 13.51 kgTN/ha/yr

Step 3 – Multiply area by nutrient leaching rate

$0.53 \times 13.51 = 7.16 \text{ kgTN/yr}$

Nitrogen load from future land use = 7.16 kgTN/yr

6 Net Change in Total Nitrogen Load

The last stage of the NNAMS is to calculate the net change in the nutrient loads to the catchment of the designated sites resulting from the proposed development.

6.1 Net Change in Total Nitrogen Load

Step 1 – Identify Total Nitrogen load from wastewater (from section 4)

Total Nitrogen Load from Wastewater = 30.14 kgTN/yr

Step 2 – Calculate the net change in Total Nitrogen load from the change in land use

Subtract current land use TN load from future land use TN load:

$7.16 - 4.22 = 2.94$ kgTN/yr (net change is positive)

Step 3 – Determine the Total Nitrogen budget

The Total Nitrogen budget is the sum of the TN load from wastewater and the net change in TN load from change in land use:

$30.14 + 2.94 = 33.08$ kgTN/yr

Step 4 – Where the Total Nitrogen budget is positive add 20% precautionary buffer

Currently, $33.08 + 20\% = 39.70$ kgTN/yr

Total Nitrogen that needs to be neutralised = 39.70 kgTN/yr

7 Mitigation Measures

The nutrient budget assessment has established that there will be a Total Nitrogen surplus due to the proposed development, meaning that mitigation is required to achieve nutrient neutrality.

Based on the revised C2 care-home wastewater calculation, the development generates a Total Nitrogen budget of **39.70 kgTN/yr**, including the 20% precautionary buffer. This is the amount of Total Nitrogen that will need to be neutralised through an appropriate mitigation strategy.

The client has confirmed that the preferred mitigation route is the purchase of nutrient credits. The purchase of credits will be subject to availability, allocation by an appropriate mitigation provider, legal securing where required, and acceptance by Havant Borough Council as competent authority.

Havant Borough Council's European Site Avoidance and Mitigation Checklist identifies a mechanism whereby the provision of the required nutrient mitigation package may be secured through a Grampian condition. Under this approach, the applicant commits to providing the required avoidance and mitigation package prior to the relevant planning condition trigger, with the precise mitigation arrangement being confirmed subsequently. The applicant accepts the associated risk of progressing prior to the final mitigation package being secured.

This approach is also consistent with the nutrient neutrality condition imposed in Appeal Decision 6004299, which provides for the final nutrient neutrality scheme to be submitted and approved prior to commencement and permits the mitigation to comprise either a bespoke mitigation solution or the purchase of nutrient credits. Where nutrient credits are relied upon, the condition requires confirmation that the credits have been secured, together with details of the mitigation provider and associated credit allocation.

Accordingly, this assessment establishes the nutrient mitigation requirement for the proposed development. The final mitigation provider, credit allocation and evidence that sufficient credits have been secured will be provided separately by the applicant in accordance with the requirements of the Local Planning Authority and any planning condition or obligation imposed on the development.

7.1 Purchasing Credits

The proposed mitigation strategy is the purchase of nutrient credits sufficient to offset the Total Nitrogen surplus identified by this assessment.

The required mitigation is:

Total Nitrogen mitigation requirement = 39.70 kgTN/yr

The applicant will be required to secure sufficient nutrient credits to offset this nutrient burden for the period required by the Local Planning Authority.

The specific nutrient credit provider and mitigation scheme have not been selected at this stage. The final provider will therefore be confirmed by the applicant as part of the process for satisfying the relevant nutrient neutrality planning condition or obligation.

Potential nutrient mitigation suppliers for the East Hampshire Rivers catchment, which includes Budds Farm WwTW, are listed below:

- Little Duxmore and Nunwell Estate / Hampshire and Isle of Wight Wildlife Trust
nitrates@hiwwt.org.uk
- Warnford Park Estate
mark@land-consult.com
- Whitewool Stream Wetland / Meon Springs
jamie@meonsprings.com
- Knowle
jason@ciceroestates.co.uk
- Warblington
via Havant Borough Council
- Stubbington Meadows / Solent Mitigation Partnership
EnvironmentalMitigation@fareham.gov.uk
- Wild Stubbington
info@wild-capital.co.uk

The above providers are identified as potential sources of nutrient mitigation only. Inclusion within this assessment does not represent confirmation of availability, allocation or purchase of credits from any particular provider. The applicant must confirm credit availability and suitability before discharge of the relevant planning condition.

8 Conclusion & Recommendations

The Nutrient Neutrality Assessment has demonstrated that the proposed development at Land North of Lavant Drive, Havant, PO9 2AW will generate a surplus of Total Nitrogen, requiring mitigation to achieve nutrient neutrality.

The proposed development comprises an 86-bed C2 care home. The wastewater calculation has therefore been based on the maximum resident bedspace capacity of 86 rather than a C3 dwelling-based occupancy calculation.

Based on the step-by-step calculation set out in this assessment, the development has a Total Nitrogen budget of **39.70 kgTN/yr**, including the 20% precautionary buffer. This represents the quantity of Total Nitrogen that will need to be mitigated to achieve nutrient neutrality for the proposed development.

The applicant has confirmed that the intended mitigation route is the purchase of nutrient credits. The specific nutrient credit provider and associated allocation have not yet been selected or secured at the time of preparation of this assessment.

Havant Borough Council's European Site Avoidance and Mitigation Checklist requires the nutrient mitigation package to be secured through a Grampian condition. On this basis, the applicant will provide the final mitigation provider, credit allocation, and evidence that sufficient credits have been secured, in accordance with the requirements of the Local Planning Authority and any nutrient neutrality condition or planning obligation imposed upon the development.

This assessment therefore establishes the nutrient burden arising from the proposed development and the corresponding mitigation requirement of **39.70 kgTN/yr**. The final arrangements to secure that mitigation will be confirmed separately before the applicable planning condition trigger.

The wastewater calculation has been prepared using a water consumption rate of 110 litres per person per day. If this rate is justified by the use of water-efficient fittings, supporting evidence should be provided separately by the applicant/design team, including the proposed sanitaryware and fittings specification. If this evidence is not available, or if the target water use changes, the nutrient budget may need to be updated.

APPENDIX A

Nitrate Budget Assessment – Summary Sheets



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Nitrate Budget Assessment

Site:
Client:
Date:

Land North of Lavant Drive, Havant, PO9 2AW

Perseus (Havant) Limited

08/07/2026

Rev:

01

1. Total Nitrogen Load from Wastewater

No. of new dwellings	86	
Occupancy per dwelling	1	
Wastewater per occupant	110	lcd ⁻¹

Total additional population	86	
Total wastewater production	9460.00	ld ⁻¹

1. A. Foul Drainage to: Budds Farm WwTW

WwTW Discharge Permit	9.70	mgTN/l
90% Permit Limit if < 27	8.73	mgTN/l

Total TN Load (1A) 30.14 kgTN/yr

Drainage Mitigation Strategy

Foul drainage to Budds Farm WwTW

N-stripping permit discharge = 9.7 mgTN/l

Surface water drainage either to soakaways (infiltration) or attenuation on site with controlled discharge off site.

1. B. Foul Drainage to Package Treatment Plant (PTP)

PTP Discharge N total* 0.00 mgTN/l

Total TN Load (1B) 0.00 kgTN/yr

*following treatment (supported with evidence)

2. Current Land Use

Total area of cont. use 0.530 ha

Area of lowland	0.000	ha
Area for commercial/industrial	0.000	ha
Area of residential urban	0.000	ha
Area of open urban	0.530	ha
Area of open green space	0.000	ha
Area of woodland	0.000	ha

Total TN Load (2) 4.22 kgTN/yr

Cont. use = land use actively contributing to N leaching from site

Open Urban Land Leaching rate¹ 7.96 kgTN/ha/yr

Notes

1 - determined from The Solent Marine Sites Nutrient Budget Calculator

3. Future Land Use

Area for commercial 0.530

Area of lowland	0.000	ha
Area for commercial/industrial	0.000	ha
Area of residential urban	0.530	ha
Area of open urban	0.000	ha
Area of open green space	0.000	ha
Area of woodland	0.000	ha

Total TN Load (3) 7.16 kgTN/yr

Cont. use = land use actively contributing to N leaching from site

Residential Urban Leaching rate¹ 13.51 kgTN/ha/yr

Notes

1 - determined from The Solent Marine Sites Nutrient Budget Calculator

4. Total Nitrogen Budget

Net change in land use (Δ) 2.94 kgTN/yr

$\Delta = \text{Load (3)} - \text{Load (2)}$

4A. Total Nitrogen Budget - WwTW

TN Budget (4A) 33.09 kgTN/yr
(4A) = (1A) + Δ

4B. Total Nitrogen Budget - PTP

TN Budget (4B) 0.00 kgTN/yr
(4B) = (1B) + Δ

Budget is POSITIVE: 20% buffer added, mitigation required

Final TN Budget (4A) 39.70 kgTN/yr

Final TN Budget (4B) 0.00 kgTN/yr

APPENDIX B

Natural England Nutrient Neutrality Budget Calculator Extracts,
included for LPA reference

Natural England Nutrient Neutrality budget calculator for the The Solent Marine Sites	
This calculator was created by Ricardo Energy and Environment.	
This calculator contains 6 worksheets with 9 tables in total.	
This is the instructions cover sheet. It tells you how to use the calculator and gives an overview of each worksheet.	
You can move between worksheets using the tabs at the bottom of the page.	
If you use screen reading software, you can use 'Ctrl' + 'Page Down' keys to move between the tabs.	
If you use a keyboard only, to open any link in this form first select the cell with the link and then press the 'Shift' + 'F10' keys or the 'Fn' + the 'Menu' keys, then press the letter 'O' twice to highlight 'Open Hyperlink' and press 'Enter'.	
If you use a keyboard only, access dropdown lists by clicking the dropdown arrow or pressing the 'Alt' + 'Down' keys when the cell is selected.	
Table of contents	
Topic of each table	Link to each worksheet
Worksheet 1 Nutrient loading from additional wastewater	Nutrients from wastewater
Worksheet 2 Nutrient loading from current land use	Nutrients from current land use
Worksheet 3 Nutrient loading from future land use	Nutrients from future land use
Worksheet 4 Nutrient loading from future land use after treatment through a sustainable urban drainage system (SuDS)	SuDS
Worksheet 5 Nutrient budget calculations	Final nutrient budgets
General information about the calculator	
This calculator helps you calculate the nutrient budget for a new residential development.	
The nutrient budget for a site is calculated in 4 key stages with an additional optional stage in which information about the SuDS features on the site can be entered. Each stage is implemented in worksheets 1-5 of this calculator.	
Each worksheet is connected through a set of formulas which calculate the nutrient budget. As such, all sheets which represent the four key stages require data inputs in order to calculate the nutrient budget.	
The total nutrient budget is calculated automatically by adding the values from the 'Nutrients_from_wastewater' and the outputs from the 'Nutrients_from_future_land_use' minus the 'SuDS' (if applicable), and then subtracting the values from the 'Nutrients_from_current_land_use', then adding a 20% precautionary buffer to the result. This calculation is completed in the 'Final_nutrient_budgets' worksheet.	
Before a nutrient budget can be completed using the methodology, certain site-specific details for the development site need to be determined.	
The guidance to this calculator and gives further information on the user inputs required.	
The instructions for completing each stage of the nutrient budget methodology are shown in cell A2 of each worksheet.	
This calculator uses a set of lookup tables to find relevant values in a hidden spreadsheet titled the 'Value_look_up_tables' worksheet.	
It is advisable to retain a blank copy of this calculator and 'Save as' a new copy each time you calculate a budget to minimise the risk of using incorrect data inputs and to ease the calculation of new nutrient budgets.	
The values already included have been chosen based on research to determine suitable inputs to the nutrient budget that meet the Habitat Regulations Assessment (HRA) tests of beyond reasonable scientific doubt, in perpetuity (practically speaking this is 80 to 125 years) and in accordance with the precautionary principle.	
If editing any values in this calculator, you must make sure there is a sufficient evidence base to justify these changes and that the new inputs are selected in accordance with the precautionary principle.	
Notes about the nutrients from wastewater worksheet	
This sheet contains 2 tables.	
The table under the heading 'Water infrastructure information' allows the user to enter key information about the wastewater generated and water infrastructure on the site. This table contains a mix of user specified values and values that are calculated automatically depending on the user selected inputs.	
The date of first occupancy is required because some wastewater treatment works (WwTW) may be due an upgrade in 2025 or 2030 which will change the nutrient concentration permit values. This will be shown through 2 or 3 values for the permits and nutrients load from before and after the upgrade.	
The amount of wastewater generated as a result of the population needs to be calculated using the following: - an average occupancy rate - a per capita water usage figure - the number of new developments	
The default water usage value is preset in the worksheet. The default setting for the average occupancy rate is preset in the worksheet and is the national occupancy rate of 2.4 people per dwelling or unit. Only change this value if there is sufficient evidence that the development will be different to the national average. The number of new developments is not preset and must be a whole number.	
If it is uncertain what WwTW the development will drain into, find this information from your sewerage company before completing the calculator. If it is not feasible to connect to a WwTW and a septic tank or package treatment plant is being used, select this option.	
If the total nitrogen (TN) final effluent concentrations (in mg/l) are specified by the manufacturer, select 'Septic Tank user defined' or 'Package Treatment Plant user defined' and enter the manufacturer specified value in the cell where prompted.	
The table under the heading 'Final calculation of nutrient load from wastewater' contains the calculation of the nutrient load from additional wastewater. This table may present up to 3 different values for the nutrient load.	
If a nutrient permit is changing for the selected WwTW as of 01/01/2025, or 01/04/2030, the table will be broken down into up to 3 parts: - post-2030 wastewater nutrient loading - pre-2030 wastewater nutrient loading - pre-2025 wastewater nutrient loading	
If applicable, 3 nutrient budgets will be calculated for the loading before and after the 2030 and 2025 WwTW permit upgrades, and will be presented in cells B19, B21, or B23.	

Notes about the nutrients from current land use worksheet
<p>This worksheet contains 2 tables that are used for calculating the annual nutrient load from existing (pre development) land use on the development site. Environmental information about the current site is required for the first table. The second table requires the user to input the existing type(s) and area(s) of landcover present in order to generate nutrient loads associated with the current landcovers on the site. Only landcovers for the land that is being altered by the development should be entered.</p>
<p><u>The dropdown list of landcover types contains up to 8 agricultural landcover types and 8 different non-agricultural landcover types. The full list of landcovers can be found in the calculator guidance or in the dropdown list. Find out what landcover types are within the development before completing this table. If there is a landcover within the development area that is not in the list select the most similar landcover type.</u></p>
<p><u>The calculator guidance gives further information about the landcover types used.</u></p>
Sources of information required for nutrients from current land use worksheet
Description of the information:
<p><u>The operational catchment within which the development is located can be found using the Environment Agency Catchment Data Explorer</u></p>
<p><u>The drainage associated with the predominant soil type within the development site can be found using the Soilscales Map</u></p>
<p><u>The annual average rainfall that the development will receive can be found using the National River Flow Archive for the '42019- Tanners Brook at Millbrook'</u></p>
<p><u>Whether the development is located within a nitrate vulnerable zone (NVZ) can be found using the UK Soil Observatory 'Nitrate Vulnerable Zones - England' map</u></p>
Notes about the nutrients from future land use worksheet
<p>This worksheet contains one table which is used to calculate the annual nutrient load from new (post-development) land use on the development site. The type(s) and area(s) of landcover present on the new development is required to generate nutrient loads associated with the current landcovers on the site.</p>
<p>The type(s) of landcover present on the new development site can be selected from a list of 8 different landcover types:</p> <ul style="list-style-type: none"> - greenspace - woodland - shrub - water - residential urban land - commercial or industrial urban land - open urban land - community food growing
<p>Find out what landcover types will be within the development site before completing this table. If there is a landcover within the development site that is not in the list select the most similar landcover type.</p>
<p><u>The calculator guidance gives further information about the landcover types used in this calculator.</u></p>
Notes about the SuDS worksheet
<p>This worksheet contains one table in which the user can enter key information about the use of SuDS to treat the runoff from the site and reduce the nutrient loading from future land uses.</p>
<p>The table allows the user to enter the SuDS features or SuDS management trains that are proposed to treat the nutrient loading from future land uses. The land covers within the SuDS catchment area and the areas of these landcovers can be entered. Only landcovers entered into the 'Nutrients from future land use' worksheet can be selected. The nutrient loads associated with these landcovers are automatically calculated using the values from the worksheet 'Nutrients from future land use'.</p>
<p>The user must enter the percentage of flow that will be directed through the SuDS. Any numerical value less than or equal to 100% can be entered for the percentage of flow.</p>
<p>Any numerical value less than or equal to 100% can be entered for the removal rates. However, the user will be required to present all evidence of these removal rates to the competent authority. As such, the most up to date SuDS guidance on SuDS for nutrient removal should be followed.</p>
<p>The user can enter any text for the SuDS feature to allow for variability in the names of the SuDS features or management trains planned.</p>
Notes about the final nutrient budgets
<p>This final stage automatically calculates the results from worksheets 1-5.</p>
<p>The value(s) shown represent the nutrient mitigation required in kilograms per year to achieve nutrient neutrality.</p>
<p>If there are 2 or 3 values due to changing permits, the calculator will show the total amount of nutrient mitigation that is needed before and after the changing permit date.</p>

Nutrients from wastewater		
<p>This sheet contains 2 tables. The tables are separated by a heading, which describes the following table.</p> <p>Note: You will need to fill in cells B5 to B10 in the first table 'Water infrastructure information'. Cell B11 is automatically calculated and will state '0.00' unless the user inputs have been entered. Cells A12 to A13 and B12 to B13 are automatically generated and will state 'Not applicable' depending on the inputs to cells B5 and B10. You may need to fill in cell C11 depending on the information you entered in cell B10. Cells C5 to C10 and cells C12 to C13 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 B17 to B19 are automatically calculated and will state '0.00' unless the user inputs have been entered to the first table 'Water infrastructure information'. Cells A20 to A23, cell B21 and cell B23 are automatically generated and will state 'Not applicable' depending on the user inputs to the first table 'Water infrastructure information'. Cell B16, cell B20 and cell B22 are intentionally blank cells.</p> <p>How to fill in the table 'Water infrastructure information'</p> <p>Cell B5: Enter the date of first occupancy.</p> <p>Cell B6: Enter the average occupancy rate of the development. The default rate is 2.4, this should not be edited without sufficient evidence.</p> <p>Cell B7: Enter the water usage. This value should be kept at 120 unless other efficiency measures are used.</p> <p>Cell B8: Enter the total number of dwellings or units that will be within the development site as of the project completion date.</p> <p>Cell B9: Choose whether the development can apply deductible acceptable loading from the dropdown list.</p> <p>Cell B10: Choose the receiving wastewater treatment works (WwTW) from the dropdown list.</p> <p>If you select 'Package Treatment Plant user defined' or 'Septic Tank user defined', you must enter their certified value of total nitrogen (TN) in cell C11. Otherwise the default values will be used in the calculation of the nutrient load associated with wastewater.</p> <p>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 B11 to B13. If applicable, up to 3 values for the nutrient loading associated with wastewater will be presented in cell B19, B21, and B23.</p>		
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):	1.00	
Water usage (litres/person/day):	110	
Development proposal (dwellings/units):	86	
Include deductible acceptable loading?		
Wastewater treatment works:	Budds Farm WwTW	
Current wastewater treatment works N permit (mg TN/litre):	9.70	
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):	86.00	
Wastewater by development (litres/day):	9460.00	
Annual wastewater TN load (kg TN/yr):	30.16	
Not applicable		
Not applicable	Not applicable	
Not applicable		
Not applicable	Not applicable	

Nutrients from current land use				
<p>This sheet contains 2 tables. The tables are separated by a heading, which describes the following table.</p> <p>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 and 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.</p> <p>How to fill in the table 'Current land use information'</p> <p>Cell B5: Choose the operational catchment the site is located within from the dropdown list.</p> <p>Cell B6: Choose the soil drainage type associated with the predominant soil type within the development site from the dropdown list.</p> <p>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.</p> <p>Cell B8: Choose whether the development is in a nitrate vulnerable zone (NVZ) from the dropdown list.</p> <p>How to fill in the table 'Current land uses'</p> <p>Cell A11-A27: Choose the existing (pre-development) land use type(s) from the dropdown list.</p> <p>Cells B11-B27: Enter the area in hectares of each land use type.</p> <p>The nutrient load from current land uses is shown in cells C11-C27 for total nitrogen (TN).</p> <p>The total nutrient load from current land uses is shown in cell C28 for TN.</p>				
Current land use information				
Description of required information		Data entry column - user inputs required		
Operational catchment:		East Hampshire Rivers		
Soil drainage type:		Freely draining		
Annual average rainfall (mm):		700.1 - 750		
Within nitrate vulnerable zone (NVZ):		Yes		
Current land uses				
Existing land use type(s) - user inputs required		Area (ha) - user inputs required	Annual nitrogen nutrient export (kg TN/yr)	Notes on data
Open urban land		0.53	4.22	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
			0.00	Not applicable
			0.00	Not applicable
			0.00	Not applicable
Totals:		0.53	4.22	

Nutrients from future land use	
<p> $\text{N}_{\text{min}} = \text{N}_{\text{min}}^{\text{min}} + \text{N}_{\text{min}}^{\text{max}} \times \text{N}_{\text{min}}^{\text{min}} \times \text{N}_{\text{min}}^{\text{max}}$ $\text{N}_{\text{min}}^{\text{min}} = \text{N}_{\text{min}}^{\text{min}} + \text{N}_{\text{min}}^{\text{max}} \times \text{N}_{\text{min}}^{\text{min}} \times \text{N}_{\text{min}}^{\text{max}}$ $\text{N}_{\text{min}}^{\text{max}} = \text{N}_{\text{min}}^{\text{min}} + \text{N}_{\text{min}}^{\text{max}} \times \text{N}_{\text{min}}^{\text{min}} \times \text{N}_{\text{min}}^{\text{max}}$ </p>	<p> $\text{N}_{\text{min}} = \text{N}_{\text{min}}^{\text{min}} + \text{N}_{\text{min}}^{\text{max}} \times \text{N}_{\text{min}}^{\text{min}} \times \text{N}_{\text{min}}^{\text{max}}$ $\text{N}_{\text{min}}^{\text{min}} = \text{N}_{\text{min}}^{\text{min}} + \text{N}_{\text{min}}^{\text{max}} \times \text{N}_{\text{min}}^{\text{min}} \times \text{N}_{\text{min}}^{\text{max}}$ $\text{N}_{\text{min}}^{\text{max}} = \text{N}_{\text{min}}^{\text{min}} + \text{N}_{\text{min}}^{\text{max}} \times \text{N}_{\text{min}}^{\text{min}} \times \text{N}_{\text{min}}^{\text{max}}$ </p>

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 nitrogen (TN).

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

How to fill in the table 'Future land uses'

Cells B5-B21: Enter the area in hectares of each land use type.

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

Future land uses

New land use type(s) - user inputs required	Area (ha) - user inputs required	Annual nitrogen nutrient export (kg TN/yr)
Residential urban land	0.53	7.16
		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:	0.53	7.16

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 A5 to A29, 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. Cell B30, cells 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 landscape entered is larger than the total area of the landscape entered into the worksheet 'Nutrients from_future_land_use'. Row 30 is a Total Row. The Total Row states 'Totals'. In cell A30, A30 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 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

The annual total nitrogen (TN) 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.

Values for columns F must be identified by the user and must be specific to the SuDS features being implemented. The annual TN loads removed by the SuDS features are automatically calculated in cells G5 to G20 for TN. These values are subtracted

The annual TN loads removed by the SuDS features are automatically calculated in cells G5 to G29 for TN. 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 catchment area exceeds the area of the landcover entered into the worksheet titled 'Nutrients from future land use'.

The total nutrient load removed through the SuDS features is shown in cell G30 for TN.

SuDS information

[illegible]

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 cell 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 B14 for total nitrogen (TN).

Total nutrient budget calculations

Description of values generated	Values generated
Wastewater TN load (kg TN/year):	30.16
Net land use TN change (kg TN/year):	2.94
TN budget:	33.10
TN budget + 20% buffer:	39.72
Annual nutrient budget	
The total annual nitrogen load to mitigate is (kg TN/yr):	39.72
Not applicable	
Not applicable	Not applicable
Not applicable	
Not applicable	Not applicable



WATER DESIGN ENGINEERS

— Solving water in the landscape —

APPENDIX C

Environment Agency Flood Risk Map

Flood map for planning

Your reference
Unspecified

Location (easting/northing)
471985/107087

Created
15 May 2026 05:31

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following**:

- bigger than 1 hectare (ha)
- in an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2026 AC0000807064. <https://flood-map-for-planning.service.gov.uk/os-terms>



Flood map for planning

Your reference

Unspecified

Location (easting/northing)

471985/107087

Scale

1:2,500

Created

15 May 2026 05:31

-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area



0 20 40 60m