

Introduction

This report details the nutrient loading calculated for land adjacent to St. Peters Road , Northney Hayling Island, Hampshire PO11 0RT (APP/19/01131). The nutrient calculation has been performed using Natural England's Solent Nutrient Budget Calculator (version 2 21/04/2022) obtained from the Partnership for South Hampshire (PUSH) and can be found [here](#) and also Natural England's Nutrient Neutral Generic Methodology published March 2022.

The report has been prepared by Dr Simon Coles, PhD, MRSC, CChem who is an Environmental Chemist. His PhD specialised in the detection and monitoring of Nitrogen species in freshwater and was sponsored by the Natural Environment Research Council.

Executive Summary

1. For APP/19/01131 and using Natural England's Solent Nutrient Budget Calculator (version 2 21/04/2022) obtained from the Partnership for South Hampshire (PUSH) and also Natural England's Nutrient Neutral Generic Methodology published March 2022.

The Total Nitrogen loading for this site is 2.19 TN kg/year.

2. For the occupancy calculation, Havant Borough Council (Havant BC) have directed through their Position Statement and Management Plan for Nutrient Neutral Development the use of their calculator. A flat rate of 2.0 (totalling 6.0) has been applied in accordance with Natural England's endorsement (Consultee response 05 Mar 20) of Havant BC's Habitat Regulations Assessment (HRA) and Appropriate Assessment (AA) conducted 4 Mar 20.

Mitigation

3. As this will be considered under a Grampian discharge of condition 11 of (APP/19/01131) the site does not lend itself to retrospective on-site mitigation without considerable costs. Therefore, it has been confirmed with the applicant the intent to use Havant BC's Warblington Farm nitrate credit mitigation scheme at the rate provided in Havant BC's Position Statement and Management Plan for Nutrient Neutral Development (para. 3.13) of £1308 per TN kg/year.

Natural England's Solent Nutrient Budget Calculator (version 2 21/04/2022) **Overview of the stages of the generic nutrient budget methodology¹.**

A nutrient budget is calculated in four stages:

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

Stage 1 Calculations

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<https://www.push.gov.uk/wp-content/uploads/2022/04/Natural-England-Nutrient-Neutral-Generic-Methodology-March-2022.pdf>

Step	Description	Calculation	Output
Step 1: Calculate increase in population due to the development	Calculates the additional population that will result from the development.	No. of new dwellings/units x residents per dwelling value (number of people)	Total additional population (number of people)
Step 2: Calculate the increase in wastewater production due to the development.	The additional population results in additional water usage and therefore additional production of wastewater with its associated nutrient load.	Additional population (number of people) x daily per person water usage (litres/person/day)	Total daily water use (litres/day)
Step 3: Deductible acceptable loading (not relevant to all Habitats sites)	This step results in a reduction in the estimated nutrient loading from treated wastewater from the development. The reduction accounts for the concentration of nutrients in surface water and groundwater that would reach a Habitats site in the absence of a development, with this concentration deemed compatible with restoration of the site to favourable condition.	No calculation – the deductible acceptable loading value (mg/l) is used in Step 4.	Deductible acceptable loading value (mg/l)
Step 4: Determine the concentration of nutrients in wastewater and calculate additional wastewater nutrient load.	Combine the daily rate of additional wastewater by the development with the concentration of nutrients (nitrogen or phosphorus) after wastewater treatment to get the additional nutrient load that will discharge to the Habitats site.	Daily water use (litres/day) x wastewater nutrient concentration (mg/l)	Nutrient load (kg/day)

Stage 1

User Inputs

Date of first occupancy:	09/06/2023
Average occupancy rate:	2.00
Water usage (litres/person/day):	120
Development Proposal (dwellings/units):	3
Include deductible acceptable loading?	Yes
Wastewater treatment works:	Budds Farm WwTW ▼
Wastewater treatment works TN permit (mg TN/litre):	7.7

Stage 1 Calculated Loading

Stage 1 Nutrient Loading		
Additional population	6	people
Wastewater by development	720	litres/day
Annual wastewater TN load	1.82	kg TN/yr

Figure 1: Screenshot from Natural England's Solent Nutrient Budget Calculator (version 2 21/04/2022) of Stage 1 inputs for APP/19/01131

Stage 1 inputs

Average Occupancy rate² = **2.0** (although units are not occupied for 365 days)

As per Havant BC's Position Statement and Management Plan for Nutrient Neutral Development

² From <https://www.havant.gov.uk/nutrient-neutrality-what-developers-need-know>

Occupancy calculator			
Date	29/06/22		
Site name	Land adj to Mandai, PO11 0RT		
Site address	Land adj to Mandai, PO11 0RT		
	Gross new homes proposed	Gross losses proposed	Net new homes proposed
1 bed			0
2 bed	3		3
3 bed			0
4 bed			0
5+ bed			0
Total	3	0	3
Average occupancy to include in Solent Nutrient Calculator:			2.00

Instructions

This calculator is intended to be used alongside Natural England's Solent Nutrient Budget calculator. It will provide the average occupancy rate to be used in stage 1 of the budget calculations.

Please input the gross new homes to be built in the scheme subject to the planning application together with any losses which are proposed. These must match exactly the units proposed through the application form for the development.

The result of the calculator can be printed or saved as a pdf.

This calculator, together with Natural England's Nutrient Budget must be submitted with your planning application alongside the Council's European Sites Avoidance and Mitigation Checklist.

Water Usage = 120 litres per person per day³
Dwellings = 3 (touring caravans)

Deductible acceptable loading = Yes, Budds Farm WwTW has a 2mg/l (lookup tables in nutrient calculator) deductible pre and post 2025 limits. In accordance with the Natural England Nutrient Neutrality Generic Methodology deductible loading is accepted when the water supply comes from within the same operational catchment.

Extract from page 12 of [Natural England Nutrient Neutrality Generic Methodology](#) (Step 3 of Stage 1)

'Thus, deductible acceptable loading is the concentration and associated load of nutrients that would enter a Habitats site in the absence of a new development. A deductible acceptable loading is only relevant when the water supplied to the development is taken from within the Habitats site catchment. This is because if the development was not built and the water supplied to it was not diverted to the development, it would still flow into the Habitats site via rivers and/or groundwater flow. Therefore, the river flow and/or groundwater flow with its associated concentration of nutrients that is compatible with restoration of the site to favourable

³ As per Havant BC's updated My 2022 Position Statement and Management Plan for Nutrient Neutral Development
https://cdn.havant.gov.uk/public/documents/Position%20statement%20and%20mitigation%20plan_0.pdf

conservation status and that is diverted to the development can be “deducted” from the nutrient budget. This deduction accounts for the “loading” of nutrients that would happen regardless of the construction of a new development and is thus considered “acceptable” as it won’t hinder restoration of the site.’

For this site:

Portsmouth Water supplies this site and the water comes from within the same catchment area as shown on Portsmouth Water’s [website](#) and on page 8 of their [Annual review report 2021](#).

Therefore:

Deductible loading applied to the Nutrient Calculator is valid.



Figure 2: Screenshot from Portsmouth Water’s website showing the supply catchment area.

WwTW = [Budds Farm](#)

Stage 1 Nutrient Loading

Additional population = 6 people
Wastewater = 720 litres/ day
Annual wastewater TN load = 1.82 kgTN/yr

Stage 2 Calculations

Step	Description	Calculation	Output
Step 1: Obtain nutrient export values from current land use(s)	The current land use or land uses on a development site have associated levels of nutrient export that will currently impact the Habitats site. This step provides details on how to obtain nutrient export coefficients to calculate the level of nutrient export from a development site pre-development.	Various calculations depending on the land uses	Nutrient export coefficient (kg/ha/year)
Step 2: Calculate the annual nutrient export from current land use(s)	The nutrient export coefficients obtained in Step 1 of Stage 2 are used along with areas of land under each land use to calculate the total export of nutrients from the development site pre-development.	Nutrient export coefficient (kg/ha/year) x area of land (ha)	Nutrient load (kg/year)

Stage 2 inputs

[illegible]

Figure 3: Screenshot from Natural England's Solent Nutrient Budget Calculator (version 2 21/04/2022) of Stage 2 inputs for APP/19/01131

Existing land use = Greenspace @ 0.1 ha.

Catchment = East Hampshire Rivers

East Hampshire Rivers Operational Catchment

Viewing latest data (Updated on 20 May 2022). [Switch to draft river basin management plan data](#)

Water bodies

There are 12 water bodies in this operational catchment.

[Alver](#)

[Hermitage Stream](#)

[Horton Heath Stream](#)

[Lavant \(Hants\)](#)

[Main River Hamble](#)

[Meon](#)

[Moors Stream](#)

[Potwell Trib](#)

[Titchfield Haven](#)

[Upper Hamble](#)

[Upper Wallington](#)

[Wallington below Southwick](#)



[Filter map layers](#)

Figure 4 Screenshot from Environmental Agency using hyperlink provided in 'Instructions Tab' of Natural England's Solent Nutrient Budget Calculator (version 2 21/04/2022)

Soil Drainage Type = Soilscape 6. Freely draining slightly acidic loamy soils.

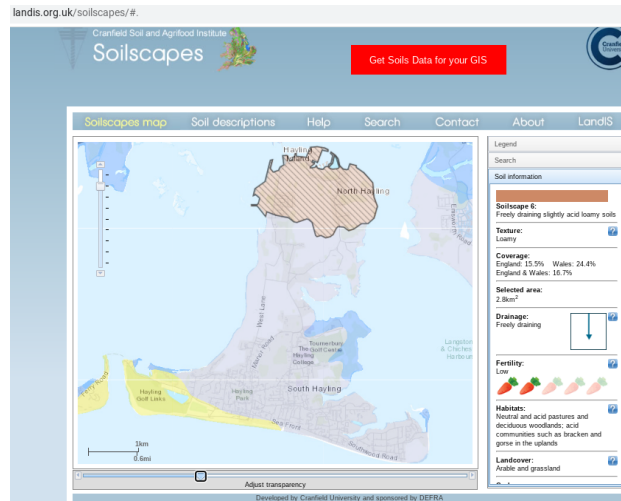


Figure 5 Screenshot from LandIS ([here](#)) using hyperlink provided in ‘Instructions Tab’ of Natural England’s Solent Nutrient Budget Calculator (version 2 21/04/2022)

Annual Average rainfall = 700.1 - 750 mm

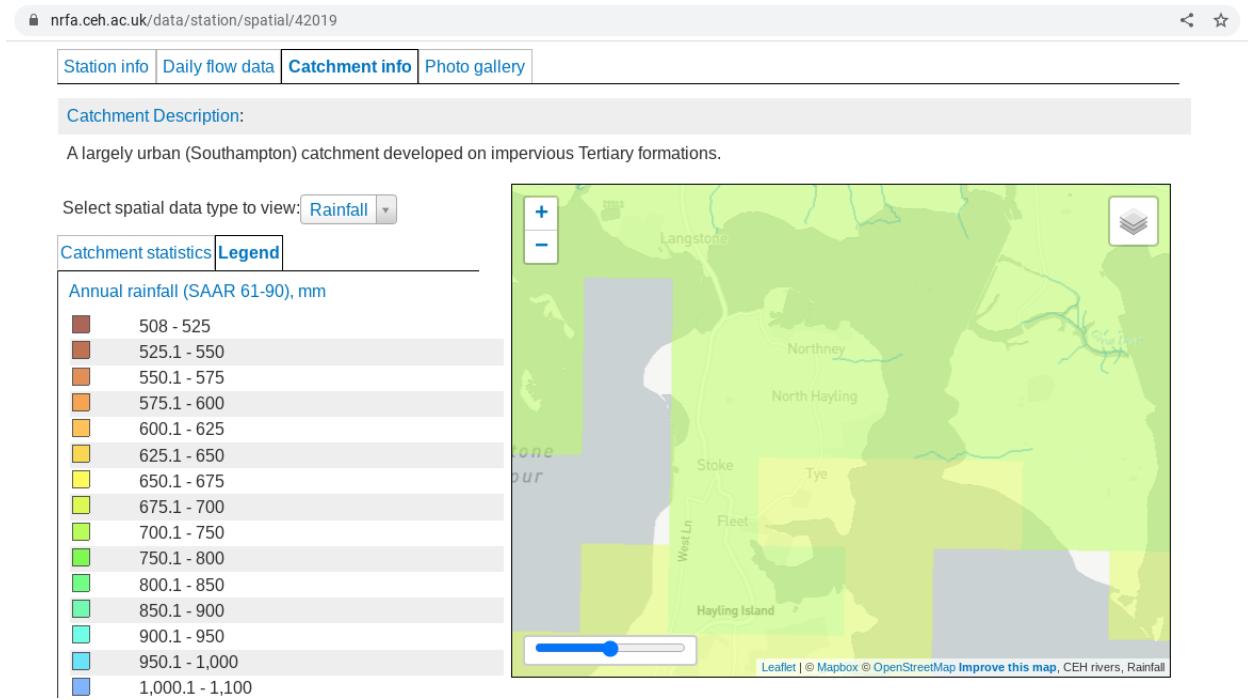


Figure 6 Screenshot from National River Flow Archive using hyperlink provided in 'Instructions Tab' of Natural England's Solent Nutrient Budget Calculator (version 2 21/04/2022)

Within Nitrate Vulnerable Zone = **Yes**, site is located within

NVZ_ID ET2

NVZ-Name Chichester, Langstone and Portsmouth Harbours Eutrophic NVZ (TraC)

NVZ-Type Eutrophic water

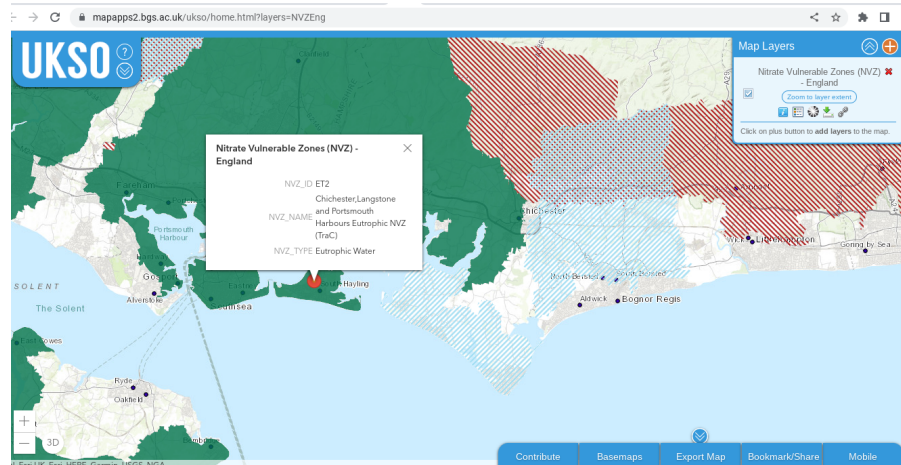


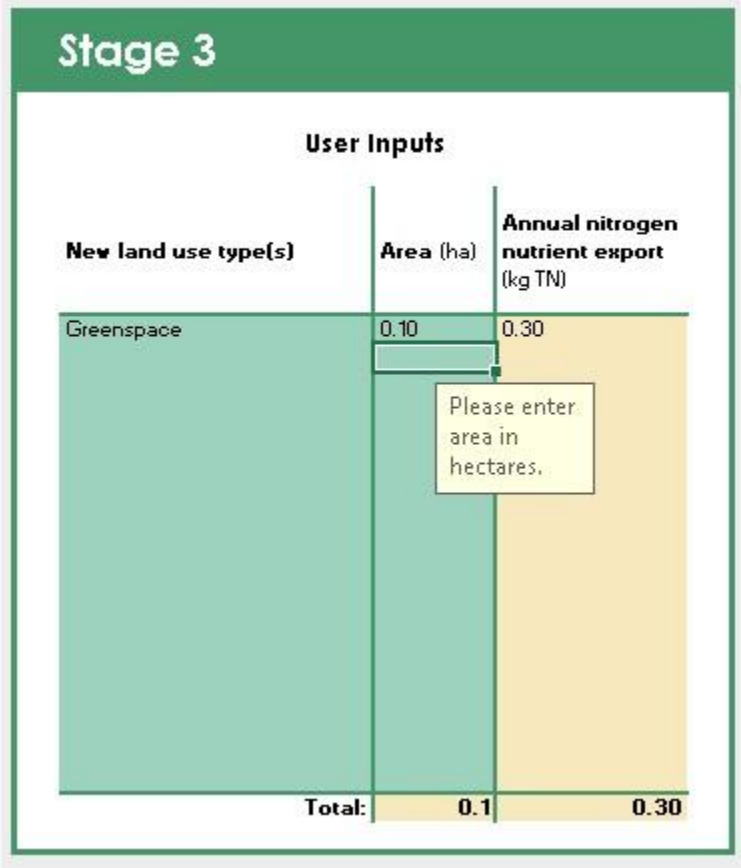
Figure 7 Screenshot from UK Soil Observatory using hyperlink provided in 'Instructions Tab' of Natural England's Solent Nutrient Budget Calculator (version 2 21/04/2022)

Stage 3 Calculation

Step	Description	Calculation	Output
Step 1: Calculate the annual export from future land use(s)	This step accounts for the nutrient export from land use on the development site after the development has been built. It uses nutrient export coefficient for land uses that were determined in Stage 2.	Nutrient export coefficient (kg/ha/year) x area of land (ha)	Nutrient load (kg/year)

Stage 3 inputs

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Stage 3

User Inputs

New land use type(s)	Area (ha)	Annual nitrogen nutrient export (kg TN)
Greenspace	0.10	0.30
Total:		0.1 0.30

Please enter area in hectares.

Figure 8 Screenshot from Natural England's Solent Nutrient Budget Calculator (version 2 21/04/2022) of Stage 3 inputs for APP/19/01131

Stage 4 Calculation

Step	Description	Calculation	Output
Step 1: Calculate the nutrient budget	The outputs from Stages 1-3 are combined to calculate the nutrient budget for the development.	Final Stage 1 output - Final Stage 2 output + Final Stage 3 output	Nutrient load (kg/yr) – this is the nutrient budget
Step 2: Add the buffer to the nutrient budget	The nutrient budget calculated in Step 1 of Stage 4 is increased by a 20% "buffer". to account for any residual uncertainties in the methods used to derive the various inputs to Stages 1-4 of the nutrient budget.	Nutrient budget (kg/yr) x 1.2	Nutrient load (kg/yr) – this is the final output of the methodology

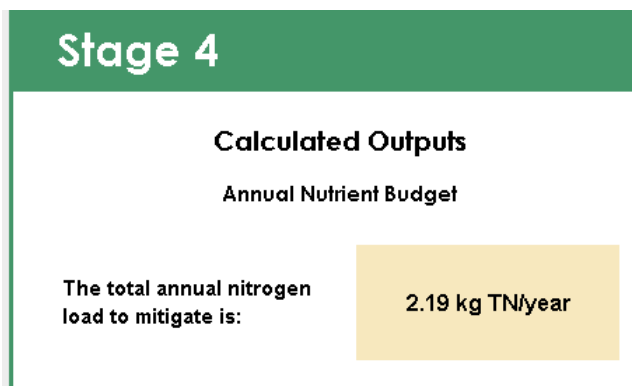


Figure 9 Screenshot from Natural England's Solent Nutrient Budget Calculator (version 2 21/04/2022) of Stage 4 inputs for APP/19/01131

Step 1: Final Stage 1 output - Final Stage 2 output + Final Stage 3 output Nutrient load (kg/yr) = this is the nutrient budget

For this site

Stage 1 output = 1.82 kg TN/year

Stage 2 output = 0.30 kg TN/year

Stage 3 output = 0.30 kg TN/year

Therefore Nutrient Budget is:

1.82 kg TN/year - 0.30 kg TN/year + 0.30 kg
TN/year = 1.82 kg TN/year

Step 2: Add the buffer to the nutrient budget. The nutrient budget calculated in Step 1 of Stage 4 is increased by a 20% “buffer” to account for any residual uncertainties in the methods used to derive the various inputs to Stages 1-4 of the nutrient budget.

Nutrient budget (kg/yr) x 1.2 Nutrient load (kg/yr) = annual Nitrogen load to mitigate.

Therefore annual nitrogen load to mitigate is:

$$1.82 \text{ kg TN/year} \times 1.2 = 2.19 \text{ kg TN/year}$$