

Site:	Land Off Cowplain School, Waterloooville
Client:	Frontier Estates Ltd
Job Number:	784-B030429
Report Type(s):	Nitrogen Balancing Assessment
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INTRODUCTION

Tetra Tech was appointed by Frontier Developments in June 2021 to calculate the change in nutrient outputs from existing to future use associated with the proposed development at Land Off Cowplain School, Waterloooville centred on OS grid reference SU 68472 10807.

The proposed development comprises two plots. Plot 1 is for a 64-bed care home with parking, access and gardens. Plot 2 is for a residential development of six dwellings with gardens and access off Hart Plain Avenue.

The calculations are required in response to recent consultation with Natural England on residential projects in the vicinity of the Solent following the findings of the Integrated Water Management Study for South Hampshire, published by the Partnership for Urban South Hampshire¹. The calculator was used to establish the Total Nitrogen (TN) for the proposed development and also the maximum TN load as a result of land use changes associated with the development proposals.

Due to the uncertainty over whether new development can be accommodated by existing wastewater treatment infrastructure without causing harm to coastal European sites, Natural England advise that all residential development should achieve nitrogen neutrality.

The purpose of this assessment is to provide guidance at an early stage relating to the likely impacts of the proposed scheme relating to TN and the potential requirement for mitigation.

Following the previous issues of nutrient assessments for the site, updated guidance has been issued by Natural England which has been taken into account for this update assessment.

This report has been prepared by Consultant Ecologist Emma Taylor and the conditions pertinent to it are provided in Appendix A.

METHODOLOGY

To make the assessment, the following guidance documents were used:

- Advice for development proposals with the potential to affect water quality resulting in adverse nutrient impacts on habitats sites (Natural England, 16th March 2022);
- Nutrient Neutrality Generic Methodology Issue 1 (Natural England and Ricardo Energy and Environment, February 2022);

¹ PUSH, (2018), Integrated Water Management Study, [online] Available at <https://www.push.gov.uk/wp-content/uploads/2018/07/IWMS-Appendix-1.pdf>, Accessed February 2021 .

- Nutrient Budget Calculator Guidance Document (Natural England and Ricardo Energy and Environment, March 2022); and
- Nutrient Neutrality Budget Calculator Solent v2 (Natural England and Ricardo Energy and Environment, April 2022).

ASSUMPTIONS

The assumptions relevant to this project in addition to those included in the Natural England methodology are provided in Table 1.

Table 1: Project Assumptions

Plot	Plot 1	Plot 2
Number of proposed units:	64 units ¹	6 units
Occupancy rate:	1.0	2.77 ²
Water consumption:	120 l/person/day	120 l/person/day
The total site area:	0.53 ha	0.20 ha
The current land uses are:	0.53 ha Open urban land ³	0.20 ha Open urban land
The future land uses will be:	0.53 ha Residential urban ⁴	0.20 ha Residential urban
The waste water from the site will be treated at this wastewater treatment works (WwTW):	Budds Farm	Budds Farm
The consent limit for the WwWT is:	9.7 mg/l TN	9.7 mg/l TN
Surface water catchment:	East Hampshire Rivers	East Hampshire Rivers
Standard annual average rainfall:	750.1-800 mm	750.1-800 mm
Soilscape category:	Impeded drainage (Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils)	Impeded drainage (Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils)
Nitrate Vulnerable Zone:	Yes	Yes

¹64 care beds, assessed as having an occupancy of one per bed.

²Calculated using Havant Borough Council's Occupancy Calculator.

³The existing site comprises school playing fields. These do not fall under the Natural England categories for Open Space (designated open space, SANG, nature reserves), nor do they fall under the Residential or Commercial urban categories. Open urban land has a lower leachate rate therefore this is used as a precaution.

⁴There are areas of gardens proposed as part of the care home, however these fall below the threshold for inclusion as open space within the Natural England guidance.

RESULTS AND SUMMARY

The results using the method for determining the nitrogen budget for the proposals are provided in Table 2. The full workings are shown in Appendix B for Plot 1 and Appendix C for Plot 2.

Table 2: Summary of the results

Plot	Calculating Total Nitrogen (TN) Load From Development Wastewater	Calculating TN Load From Current Land Use	Calculating TN Load From Future Land Uses	Calculating Net Change in TN From the Development	Apply 20% Buffer
Plot 1	19.44 Kg/TN/yr	4.51 Kg/TN/yr	7.66 Kg/TN/yr	22.58 Kg/TN/yr	27.10 Kg/TN/yr
Plot 2	5.05 Kg/TN/yr	1.70 Kg/TN/yr	2.89 Kg/TN/yr	6.23 Kg/TN/yr	7.48 Kg/TN/yr

The calculations show that the development of both Plots 1 and 2 would result in an increased TN budget of 34.58 Kg/yr TN.

It is therefore considered that in the absence of mitigation or amendments to the scheme, the development proposals would have the potential to result in an adverse effect on the integrity of the Solent European sites.

It is recommended that mitigation is provided through procurement of nitrogen credits from a suitable offsetting scheme within the appropriate catchment for Budds Farm WwTW.

Document Control

Revision:	B	Status:	Final
Date:	May 2022		
Prepared by: Emma Taylor	Checked by David West		Approved By: David West

APPENDIX A: REPORT CONDITIONS

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APPENDIX B: NUTRIENT BALANCING CALCULATIONS – PLOT 1

See attached nutrient budget calculator.

APPENDIX C: NUTRIENT BALANCING CALCULATIONS – PLOT 2

See attached nutrient budget calculator.

APPENDIX D: OCCUPANCY RATE CALCULATOR – PLOT 2

See attached occupancy rate calculator.