

Site:	Toynbee Road and Romsey Close, Eastleigh
Client:	Planning Issues Ltd.
Job Number:	784-B041847
Report Type(s):	Nutrient Balancing Assessment
File Location:	\\ds-dc-vm-101\Data\Projects\784-B041847 Romsey Close Toynbee Road \60 Project Output\61 Work in Progress\

INTRODUCTION

Tetra Tech was appointed by Planning Issues Ltd. in August 2022 to calculate the change in nutrient outputs from existing to future use associated with the proposed development at Toynbee Road and Romsey Close, Eastleigh centred on OS grid reference SU 45259 19252.

The calculations are required in response to recent consultation with Natural England on residential projects in the vicinity of the River Itchen SAC 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 Phosphorus (TP) and Total Nitrogen (TN) for the proposed development and also the maximum TP and 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 the River Itchen SAC, Natural England advise that all residential development should achieve nutrient neutrality.

This report has been prepared by Associate Ecologist Kevin Wood 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);
- Nutrient Budget Calculator Guidance Document (Natural England and Ricardo Energy and Environment, March 2022); and
- Nutrient Neutrality Budget Calculator River Itchen v2 (Natural England and Ricardo Energy and Environment, April 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 October 2022.

ASSESSMENT

There is the requirement for developments within the River Itchen Catchment to work out the Total Phosphorus (TP) and Total Nitrogen (TN) from the development.

The proposals for the site are for the construction of an 83-unit care home. The average occupancy rate within the nutrient budget calculator is 2.4. The average occupancy rate for sites operated by Churchill Retirement living is 1.33 (Appendix B) and has therefore been used for this assessment.

Eight residential dwellings are currently present on the site and the number of existing occupants based on the 2.4 occupancy rate will be deducted from the proposals. Table 1 shows the net change in occupancy for the proposals.

Table 1: Net Change in Occupancy

Existing dwellings (8) 2.4 occupancy rate	Proposed 83 x 1.33 occupancy rate	Net Change
19.2	110.39	91.19

The net increase of 91.19 is equivalent to 68.56 units (69) which is based on the average occupancy rate of 1.33 ($91.19 / 1.33 = 68.56$).

The assumptions relevant to this project in addition to those included in the updated Natural England methodology are provided in Table 2.

Table 2: Project Assumptions

Number of proposed units:	83 (69 units used for the calculator based on net change in occupancy)
Existing number of dwellings present	8
Occupancy rate:	1.33 (average occupancy rate based on other sites operated by Churchill Retirement living, Appendix B)
Water consumption:	110 l/person (Churchill Retirement living has an agreed water consumption of 110 l/person)
The total site area:	0.41
The current land uses are:	Residential urban land
The future land uses will be:	Residential urban land
The wastewater from the site will be treated at this wastewater treatment works (WwTW):	Chickenhall Eastleigh WwTW
The consent limit of Phosphorus for the WwTW, Pre 2025 is:	1 mg/l TP
The consent limit of Phosphorus for the WwTW, Post 2025 is:	0.6 mg/l TP
The consent limit of Nitrogen for the WwTW is:	27 mg/l TN

Surface water catchment:	Itchen
Standard annual average rainfall:	700.1 – 750 mm
Soilscape category:	Freely draining
Nitrate Vulnerable Zone:	Yes

TOTAL PHOSPHORUS PRE 2025

If the proposed development is built and occupied before January 2025 then the current permit level 1.0 mg TP/Ltr will stand. The results using the method for determining the phosphorus budget for the proposals pre 2025 are provided in Table 3.

Table 3: Pre 2025 summary of the results

Calculating Total Phosphorus (TP) Load From Development Wastewater	Calculating TP Load From Current Land Use	Calculating TP Load From Future Land Uses	Calculating Net Change in TP From the Development	Apply 20% Buffer
3.32 kg TN/yr	0.59 kg TP/yr	0.59 kg TP/yr	3.32 kg TP/yr	3.98 kg TP/yr

The calculations show that the development would result in an increased TP budget of **3.98 Kg/TN/yr** for the pre 2025 scenario.

TOTAL PHOSPHORUS POST 2025

If the development is not occupied till after December 2024 then the new proposed permit level of 0.6 Kg/TP/yr will be used. The results using the method for determining the phosphorus budget for the proposals post 2025 are provided in Table 4.

Table 4: Post 2025 summary of the results

Calculating Total Phosphorus (TP) Load From Development Wastewater	Calculating TP Load From Current Land Use	Calculating TP Load From Future Land Uses	Calculating Net Change in TP From the Development	Apply 20% Buffer
1.99 kg TN/yr	0.59 kg TP/yr	0.59 kg TP/yr	1.99 kg TP/yr	2.39 kg TP/yr

The calculations show that the development would result in an increased TP budget of **2.39 Kg/TN/yr** for the post 2025 scenario.

TOTAL NITROGEN

The results using the method for determining the nitrogen budget for the proposals are provided in Table 5.

Table 5: Summary of the results

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
92.18 kg TN/yr	5.54 kg TN/yr	5.54 kg TN/yr	92.18 kg TN/yr	110.61 kg TN/yr

The calculations show that the development would result in an increased TN budget of **110.61 Kg/TN/yr**.

SUMMARY

The proposed development will result in an increase in TP and TN. 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 River Itchen SAC.

The River Itchen SAC Nutrient Budget Calculator has been added to the report under Appendix B.

PHOSPHORUS

An appropriate scheme is currently being offered by Eastleigh Borough Council where land under their ownership has been taken out of farming practices. The current scheme offers mitigation on a per dwelling bases for phosphorus at a cost of £4,500 per dwelling.

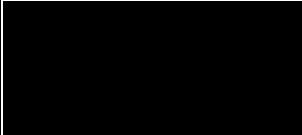
NITROGEN

An appropriate scheme is currently being offered by Eastleigh Borough Council where land under their ownership has been taken out of farming practices. The purchasing of 1 credit within the scheme will offset an increase of **1 Kg/TN/yr** from a development.

The assessment has indicated that the development being assessed will result in an increase of **110.61 Kg/TN/yr** and therefore 111 credits will need to be purchased to offset the increase from the development.

An Expression of Interest form will need to be completed and submitted to Eastleigh Borough Council to enquire about the purchasing of these credits. The purchasing of these credits will need to be secured via a suitable legal agreement.

With the purchasing of these credits the development will result in a net decrease in TN and avoid an adverse effect on the integrity of the River Itchen SAC.

Document Control			
Revision:	1	Status:	Final
Date:	25/11/2022		
Prepared by: Kevin Wood Associate Ecologist 		Checked & Approved by: Danny de la Hey Principal Ecologist 	
Summary of changes:			

APPENDIX A: REPORT CONDITIONS

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The report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary, and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times. No investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather-related conditions. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions. The “shelf life” of the Report will be determined by a number of factors including its original purpose, the Client’s instructions, passage of time, advances in technology and techniques, changes in legislation etc. and therefore may require future re-assessment.

The whole of the report must be read as other sections of the report may contain information which puts into context the findings in any executive summary.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. Tetra Tech accept no liability for issues with performance arising from such factors.

APPENDIX B: SOLENT NUTRIENT BUDGET CALCULATIONS

See associated 784-B041847 Toynbee Road and Romsey Close, Itchen Nutrient Budget Calculator
Version 2.1

APPENDIX C: CHURCHILL RETIREMENT LIVING OCCUPANCY RATES

	Development	Individual?	Couple?		Unit Numbers		Individual total	Couple total	Total number of people
South West occupation stats	Abingdon	9	3		12		9	6	15
	Andover	45	19		64		45	38	83
	Chippenham	6	0		6		6	0	6
	Chichester	18	7		25		18	14	32
	Highcliffe	24	9		33		24	18	42
	Hythe	19	9		28		19	18	37
	Lymington	10	14		24		10	28	38
	Malmesbury	9	7		16		9	14	23
	Newbury	32	16		48		32	32	64
	Newquay	26	17		43		26	34	60
	Park Gate	11	8		19		11	16	27
	Penzance	27	14		41		27	28	55
	Portswood	16	12		28		16	24	40
	Salisbury	34	10		44		34	20	54
	Shaftesbury	26	14		40		26	28	54
	Sidford	14	5		19		14	10	24
	Tavistock	27	14		41		27	28	55
	Torquay	13	14		27		13	28	41
	Truro	38	20		58		38	40	78
	Yate	20	17		37		20	34	54
South East occupation stats	Ashtead	11	6		17		11	12	23
	Bagshot	8	1		9		8	2	10
	Camberley	24	16		40		24	32	56
	Carshalton	27	12		39		27	24	51
	Cheam	23	3		26		23	6	29
	Dartford	45	21		66		45	42	87
	Deal	30	7		37		30	14	44
	East Grinstead	14	5		19		14	10	24
	Eastbourne	17	10		27		17	20	37
	Eltham	12	6		18		12	12	24
	Haywards Heath	27	16		43		27	32	59
	Leatherhead	31	5		36		31	10	41
	Littlehampton	20	9		29		20	18	38
	Maidstone	32	17		49		32	34	66
	Orpington	3			3		3		3
	Peacehaven	18	5		23		18	10	28
	Reigate	4	3		7		4	6	10
	Selsdon	9	4		13		9	8	17
	Shepperton	10	2		12		10	4	14
	Sittingbourne	26	18		44		26	36	62
	Staines	4	2		6		4	4	8
	Tattenham Corner	2	0		2		2	0	2
	Walton	27	14		41		27	28	55
Midlands occupation stats	Aldridge	23	15		38		23	30	53
	Cheltenham	14	8		22		14	16	30
	Cowbridge	25	11		36		25	22	47
	Fishponds	21	8		29		21	16	37
	Knowle	13	6		19		13	12	25
	Ludlow	21	12		33		21	24	45
	Market Harborough	13	10		23		13	20	33
	Shirley	36	12		48		36	24	60
Eastern occupation stats	Aylesbury	16	6		22		16	12	28
	Burnham	7	1		8		7	2	9
	Berkhamsted	34	11		45		34	22	56
	Billericay	17	6		23		17	12	29
	Frinton-on-Sea	20	13		33		20	26	46
	Haverhill	21	11		32		21	22	43
	Hitchin	12	9		21		12	18	30
	Huntingdon	23	11		34		23	22	45
	Marlow	18	5		23		18	10	28
	Pinner	16	8		24		16	16	32
	Princes Risborough	10	7		17		10	14	24
	Thame	4	4		8		4	8	12
	1212	585		1797		1212	1170	2382	

Average Occumancy rate =

1.33