

# NUTRIENT IMPACT ASSESSMENT - THE OLD ALMA, CHILHAM.

February 2021.

TN Total Nitrogen

TP Total Phosphorous

Catchment Area - Lower Stour

Wastewater Treatment Works (WwTW) for the Chilham Area do not have a permit limit for either TN or TP. Currently Southern Water do not routinely monitor N or P where there is no permit in the Stour catchment. In the Southern Water WwTW in the Solent an average of 27 mg/l for Nitrogen is used and have confirmed this may be used in the Stour catchment. Southern Water have advised they would assume an approx. upper figure of 8mg/l TP for works without a P permit in the Stour catchment for planning purposes.

The development will drain to mains network and therefore methodology from Section A will be used.

## STAGE 1

Section A

1. Calculate TN and TP in kilograms per annum derived from the development that would exit the WwTW after treatment.
2. Confirm water use
3. Confirm WwTW and permit level
4. Calculate TN and TP in kilograms per annum that would exit the WwTW after treatment derived from the proposed development

Calculation of TN and TP load from development wastewater

Proposal	New Dwellings = 6	
Step 1	Additional Population = 14 persons	(4x1 bed=4 + 2x2bed=8)
Step 2	Wastewater Volume = 1,540 lt/day	(14 x 110 litres)
Step 3	Receiving WwTW = 27mg/l Nitrogen and 8mg/l Phosphorous	
Step 4	TN discharged after WwTW treatment = 41,580 mg TN/day	(1,540 x 27)
	TP discharged after WwTW treated= 12,320 mg TP/day	(1,540 x 8)
Total Nitrogen	= 15.18 kg TN/yr	(41,580/1000000 x 365)
Total Phosphorous	= 4.5 kg TP/yr	(12,320/1000000 x 365)

## STAGE 2

Existing Building 1 dwelling + B&B accommodation

Calculations to be based on 8 persons

Step 1	Existing Population = 8 persons	
Step 2	Wastewater Volume = 880 lt/day	(8x 110 litres)
Step 3	Receiving WwTW = 27mg/l Nitrogen and 8mg/l Phosphorous	
Step 4	TN discharged after WwTW treatment = 23,760 mg TN/day	(880 x 27)
	TP discharged after WwTW treated= 7,040 mg TP/day	(880 x 8)
Total Nitrogen	= 8.67 kg TN/yr	(23,760/1000000 x 365)
Total Phosphorous	= 2.6 kg TP/yr	(7,040/1000000 x 365)

## STAGE 3

Land use remains unchanged -Residential.

## STAGE 4

Net change in nitrogen and phosphorous loads from development

$$\begin{aligned}\text{Nitrogen/ Phosphorous Budget} &= 6.51 \text{ kg TN/yr} && (15.18-8.67) \\ &= 1.9 \text{ kg TP/yr} && (4.5-2.6)\end{aligned}$$

Nutrient Budget	Buffer of 20%	<u>= 7.81 kg N/yr</u>	( 6.51/5 = 1.3)
		<u>= 2.28 kg N/yr</u>	(1.9/5 = 0.38)