

Nitrate Budget Calculation based on Natural England Draft Methodology

Mar-20



Project:	Land at Newgate Lane, Fareham (North)
Project number:	23013
Date:	24-Apr-20

STAGE 1 - CALCULATE TOTAL NITROGEN (TN) LOAD FROM DEVELOPMENT WASTEWATER				
Step	Measurement	Value	Unit	Explanation
Development proposal	Development types that would increase the population served by a wastewater system	75	Residential dwellings	
Population Equivalent	Average household size for new development	2.4	persons	
Step 1	Additional population	180	Persons	Uses an average household size x number of new dwellings (greenfield site)
	Target Water use per person 110l/d is max target average Southern Water area usage currently 130l/d	110	litres/day	Target of 110l/d should be confirmed with water reduction/efficient fittings to new build
Step 2	Wastewater volume generated by development	19,800	litres/day	Where relevant, deduct wastewater volume of population displaced by the proposed development
Step 3	Receiving WWTW environmental permit limit for TN Allow 90% of treatment limit	9 8.1	mg/l TN mg/l TN	Check WWTW Permitted discharge limit for nitrates Natural England and the Environment Agency have agreed to take 90% of the consent value as the closest the water company can reasonably operate works without breaching the consent limit
Step 4	Deduct acceptable TN loading (@2mg/l TN) (as defined in paragraph 4.40 NE Methodology March 2020)	6.1	mg/l TN	8.1(Step 3) - 2mg/l TN
Step 5	TN discharged after WWTW treatment	120,780	mg/TN/day	Step 2 x Step 4
Step 6	Convert mg/TN to kg/TN per day	0.121	Kg/TN/day	Step 5/1000
Step 7	Convert kg/TN per day to kg/TN per year	44.1	kg/TN/yr	Step 6 x 365 days
Wastewater total nitrogen load		44.1	kg/TN/yr	

STAGE 2 - CALCULATE TOTAL NITROGEN (TN) LOAD FROM CURRENT LAND USE				
Step	Measurement	Value	Unit	Explanation
Step 1	Total Area of Existing Agricultural land	3.95	hectares	This is the area of agricultural land that will be lost due to development
Step 2	Farming type	<div>Cereals</div>		The agricultural land lost to development has been used to grow cereal crops for at least the last 10 years and the value for cereal crop nitrate loss has therefore been applied.
	Nitrate loss.	31.2 Kg/ha/yr		
Step 3	Multiply area by nitrate loss	123.24 Kg/TN/yr		
Total nitrogen load - current land use		123.24 Kg/TN/yr		

STAGE 3 - CALCULATE TOTAL NITROGEN LOAD FROM FUTURE LAND USES				
Step	Measurement	Value	Unit	Explanation
Step 1	New urban area	3.37	Hectares	Area of development that will change from agricultural land to urban land use
	Nitrate Leaching to Environment	14.3	Kg/TN/ha/yr	The nitrogen load from the new urban development results from sewer overflows and from drainage that picks up nitrogen sources on the urban land. These nitrogen sources include atmospheric deposition, pet waste, fertilisation of lawns and gardens and inputs to surface water sewers
Step 2	Total Nitrogen Load from future urban area	48.19	Kg/TN/yr	
Step 3	New SANG / open space area	0.58	Hectares	Area of development that will change from agricultural land to SANG / open space
	Nitrate Leaching to Environment	5	Kg/TN/ha/yr	SANG/Open Space Area = 5kg/TN/yr/ha
Step 4	Total Nitrogen load from SANG / open space	2.9	Kg/TN/yr	
Step 5	Combine Total Nitrogen load from future land uses	51.09	Kg/TN/yr	
Total Nitrogen Load - future land uses		51.1	Kg/TN/yr	

STAGE 4 - CALCULATE THE NET CHANGE IN TOTAL NITROGEN LOAD FROM THE DEVELOPMENT				
Step	Measurement	Value	Unit	Explanation
Step 1	Identify Total Nitrogen load from wastewater (stage 1)	44.1	Kg/TN/yr	Stage 1
Step 2	Calculate Total Nitrogen from land use - subtract Total Nitrogen load from future land uses (stage 3) from existing land uses (stage 2)	72.149	Kg/TN/yr	Stage 2 - Stage 3
Step 3	Determine Nitrogen Budget – the difference between the Total Nitrogen load for the proposed development and the existing uses	-28.1	Kg/TN/yr	Stage 4, Step 1 - Step 2
Total Nitrogen Budget		-28.1	Kg/TN/yr	NO MITIGATION REQUIRED