

Addendum to: Nutrient Budget for the Camp Field, Bartons Road, Havant Development within the Solent Region (APP/19/00007)

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QUALITY CONTROL

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Summary of material changes

In May 2019 a nitrogen budget was calculated following the guidance document “Methodology to calculate the nitrogen budget for development in the Solent and achieve nitrogen neutrality”, Natural England Working Draft August 2018, provided as a supporting document to the consultee response.

Version 2 updated guidance document was subsequently released June 2019. This Addendum report contains revised calculations that reflect two key changes:

1. Natural England recommends that an occupancy rate of 2.4 is used within the calculations. This has been changed from the previous value of 2.3.
2. Previous calculations assumed the average nitrogen loss from low intensity grazing land of 13 kg/ha/yr for new designated open space or Suitable Alternative Natural Greenspace (SANG), which has now been concluded to be too high. The revised figure of 5 kg/ha/yr has now been used.

An area of 2.56 ha of arable land (31.2 kg/ha nitrate-N loss) will be lost to the development of which 1.46 ha (0.4 ha is considered as Public Open Space (POS) and 1.06 ha Biodiversity mitigation and enhancement features from which the average nitrogen loss equates to 5 kg/ha/yr.

The net change in total nitrogen load for the development is calculated to be -11.35 kg/N/yr ± a 20% Buffer for margin of error. Thus, development proposals have achieved better than nutrient neutrality.

Should 1.9 ha of the current arable field also be allocated for an additional 50 dwellings by East Hants District Council, 0.11 ha of additional amenity grass, wildflower area, and hedgerow would provide nutrient mitigation on site and land elsewhere on the land owners holding could be changed from arable production to lower nutrient impact land management use.

STAGE 1 - TOTAL NITROGEN (TN) LOAD FROM DEVELOPMENT WASTEWATER				
Step	Measurement	Value	Unit	Explanation
Development proposal	Residential dwellings	72	Residential dwellings	
Step 1	Additional population	172.8	Persons	Uses an average household size of 2.4 x 72 dwellings (greenfield site).
Step 2	Wastewater volume generated by development	19,008	litres/day	172.8 persons x 110 litres
Step 3	Budds Farm, Havant WWTW environmental permit limit for TN	9.7	mg/l TN	
Step 4	TN discharged after WWTW treatment	165,939.8	mg/TN/day	90% of the consent limit = 8.73 mg/l TN. 19,008 x 8.73
	Convert mg/TN to kg/TN per day	0.1659398	kg/TN/day	Divide by 1,000,000
	Convert kg/TN per day to kg/TN per year	60.57	kg/TN/yr	X 365 days
Wastewater total nitrogen load	60.57 kg/TN/yr			

STAGE 2 - TOTAL NITROGEN LOAD FROM CURRENT LAND USE

Step	Measurement	Value	Unit	Explanation
1	Total area of existing agricultural land	3.62	Hectares	2.56 ha is the area of agricultural land that will be lost due to Development and a further 1.06 ha will now be included within biodiversity mitigation and enhancement features
2	Identify farm type and confirm nitrate loss.	31.2	kg/ha/yr	Land is currently in cereals
3	Multiply area by nitrate loss	112.94	kg/N/yr	3.62 ha x 31.2 kg/N/yr
Total nitrogen load - current land use	112.94 kg/N/yr			

STAGE 3 - TOTAL NITROGEN LOAD FROM FUTURE LAND USES				
Step	Measurement	Value	Unit	Explanation
1	New urban area	2.16	Hectares	Area of development that will change from agricultural land to urban land use (1.94 ha residential area plus 0.22 ha access road)
2	Total Nitrogen Load from future urban area	30.88	kg/TN/yr	2.16 ha x 14.3 kg N/ha/yr ¹
3	New SANG / open space and	1.46	Hectares	Area of development that will change from agricultural land to SANG / open space 0.4 ha plus biodiversity mitigation and enhancement features of 1.06 ha.
4	Total Nitrogen load from SANG / open space	7.3	kg/N/yr	1.46 ha x 5.0 kg/N/yr ²
5	Combine Total Nitrogen load from future land uses	38.18	kg/N/yr	30.88 kg/N/yr + 7.3 kg/N/yr
Total Nitrogen Load - future land uses		38.18 kg/N/yr		

Stage 3 calculations have been revised as previous calculations assumed the average nitrogen loss from low intensity grazing land of 13 kg /ha/yr which has now been concluded to be too high. The revised figure of 5 kg/ha/yr for new designated open space or Suitable Alternative Natural Greenspace (SANG) has now been used within the above calculations.

Note: It is recognised that the open space will be required to be managed in perpetuity as such and there will be no additional inputs of nutrients or fertilisers on to this land. Provision of dog bins should be made that are regularly emptied.

¹ Nitrogen leaching from urban land equates to 14.3 kg/ha/yr, Supplementary Planning Document – Achieving Nitrogen Neutrality in Poole Harbour

² Revised average nitrogen loss from low intensity grazing land of 13 kg/ha/yr to 5 kg/ha/yr evidence 2 June 2019.

STAGE 4 - THE NET CHANGE IN TOTAL NITROGEN LOAD FROM THE DEVELOPMENT

Step	Measurement	Value	Unit	Explanation
1	Identify Total Nitrogen load from wastewater (stage 1)	60.57	Kg/N/yr	See Table 1
2	Calculate Total Nitrogen from land use - subtract Total Nitrogen load from future land uses (stage 3) from existing land uses (stage 2)	74.76	Kg/N/yr	=112.94 Kg/N/yr – 38.18 Kg/N/yr
3	Determine Nitrogen Budget – the difference between the Total Nitrogen load for the proposed development and the existing uses	-14.19	Kg/N/yr	=60.57 Kg/N/yr (step 1) – 74.76 Kg/N/yr (step 2)
4	Nitrogen budget without 20% error buffer	-14.19	Kg/N/yr	
5	Divide Nitrogen Budget without buffer by 5	2.84		-14.19 Kg/N/Yr divide by 5 = ±2.84 Kg/N/Yr
6	Identify Nitrogen Budget with 20% Buffer	-11.35	Kg/N/Yr	
Total Nitrogen Budget		-11.35 Kg/N/yr		