

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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1. Summary of material changes

- 1.1. 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.
- 1.2. Version 2 updated guidance document was subsequently released June 2019. This report was revised in September 2019 to reflect two key changes:
 - a) 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.
 - b) 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 in line with the new guidance.
- 1.3. Subsequently on 25 February 2020 further advice was issued by Rachel Jones, Natural England, Thames Solent Area Team to further adjust those areas designated as mitigating the nitrogen produced from the proposed development. Rachel's email to David Eaves, Principal Planning Officer, Havant District Council stated:

Provided you are satisfied that the amenity grassland area and the ecological area and pond to west of the site can be secured as designated open space, it is our view that these larger areas could be included as offsetting. The competent authority will need to be assured for perpetuity that this open space will be managed as such and there will be no additional inputs of nutrients or fertilisers onto this land. Appropriate planning and legal measures will be necessary to ensure it will not revert to agricultural use or change to alternative uses that affect nutrient inputs on the long term. These sites will also need long term management to ensure the provision of dog bins and that these are regularly emptied.

As you are aware, small areas of open space within the urban fabric should be excluded, such as road verges, gardens, children's play areas and other small amenity areas. Based on the plan submitted, we recommend that the swales, the roadside shrub planting areas and other small areas are removed as these form part of the urban fabric. These areas would be covered by urban nitrogen deposition rate. The buffer to the ancient woodland as shown on plan 2 would be appropriate alternative area in our view.

- 1.4. Taking this advice into account Alison Galbraith, Associate Director of The Terra Firma Consultancy Ltd has updated the site landscape plan Camp Field, Havant 1917-SK-20200228-001 Nutrient Budget Areas to reflect the required changes. The revised plan is provided in Appendix 1 of this report. It identifies new areas of the site that also provide mitigation within the proposed development:

Mitigation Area	Area (ha)
Wildflower and native shrubs	0.59
Pond	0.2
Traditional Orchard	0.37
Amenity grass	0.12
18 m wide native shrub planting to buffer ancient woodland	0.29
Total Area	1.57

2. Calculations

- 2.1. A nitrogen budget has been undertaken following the “Nutrient Neutrality Approach for New Development” provided by Natural England.
- 2.2. This will show that the development either avoids harm to the Chichester and Langstone Harbours Special Protection Area and the Solent Maritime Special Area of Conservation or will suggest mitigation measures required to ensure that there is no adverse effect and that the development will achieve nitrogen neutrality.
- 2.3. Calculations are provided as a series of tables. A maximum water use efficiency of 110 litres per day per person has been used within these calculations. The receiving waste water treatment works for the foul water from the development is Budds Farm, Havant which has a discharge limit for total nitrogen of 9.7 mg/l.
- 2.4. Calculations have been carried out following four stages:
- Stage 1: Total Nitrogen (TN) load from the development wastewater
 - Stage 2: Total nitrogen load to be offset from the current land use
 - Stage 3: The total nitrogen load for the proposed development is adjusted to consider proposed land uses
 - Stage 4: The net change in total nitrogen load from the development.

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	172.80	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	9.70	mg/l TN	
Step 4	TN discharged after WWTW treatment	165,939.80	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.	31.20	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	1.57	Hectares	Area of development that will change from agricultural land to SANG / open space 1.57 ha
4	Total Nitrogen load from SANG / open space	7.85	kg/N/yr	1.57 ha x 5.0 kg/N/yr ²
	Combine Total Nitrogen load from future land uses	38.73	kg/N/yr	30.88 kg/N/yr + 7.85 kg/N/yr

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.

2.5. Stage 3 calculations have been revised to reflect the new identified mitigation areas.

2.6. **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.

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 the net change in nitrogen from land use change – subtract existing land use nitrogen load (stage 2) from future land uses nitrogen load (Stage 3)	-74.21	Kg/N/yr	=38.73 (Stage 3)-112.94 (Stage 2)
3	Determine Nitrogen Budget – the difference between the Total Nitrogen load for the proposed development and the existing uses	-13.64	Kg/N/yr	=60.57 Kg/N/yr (step 1) + – 74.21 Kg/N/yr (step 2)
4	Nitrogen Budget 20% Buffer not applied as negative balance achieved	-13.64	Kg/N/Yr	
Total Nitrogen Budget		-13.64 Kg/N/yr		

3. Conclusion

3.1. This development does not give rise to a surplus of nitrogen, a deficit of **-13.64 kg N/yr** is calculated and therefore the development avoids potential harm to the Chichester and Langstone Harbours Special Protection Area and the Solent Maritime Special Area of Conservation.

Appendix 1 Camp Field, Havant - Nutrient budget areas



CAMP FIELD, HAVANT
1917-SK-20200228-001
Nutrient Budget Areas