

## Land East of Southbourne: Nutrient Neutrality assessment

### 1.0 INTRODUCTION

1.1 This technical note has been prepared by Barton Willmore, with input from Ecological Planning and Research (EPR) to undertake the requisite Nutrient Budget calculation, to provide an assessment of potential for Land East of Southbourne ("the site") to achieve nutrient neutrality.

#### **The Issue**

1.2 The Solent region contains some of the most important wildlife in the United Kingdom and is internationally recognised and is protected under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 and the Conservation of Habitats and Species Regulations 2017 (as amended), colloquially known as the Habitats Regulations.

1.3 There is evidence that high levels of nutrients, principally nitrogen (N) and phosphates (P), entering protected ecological sites from Wastewater Treatment Works (WwTW) discharge and other sources, is causing eutrophication, which leads to an increase in algae growth that adversely affects the food source of protected birds.

1.4 The issue is widespread across the central south coast, and affects as a minimum:

- Chichester and Langstone Harbours Special Protection Area (SPA) and Ramsar,
- Portsmouth Harbour SPA and Ramsar,
- Solent and Southampton Water SPA and Ramsar,
- Solent and Isle of Wight Lagoons Special Area of Conservation (SAC),
- Solent Maritime SAC
- Solent and Dorset Coast SPA.

1.5 In 2018, Chichester District published its Water Quality Assessment which concluded that the projected increases in nitrogen discharge from three WwTWs in the district may require mitigation to prevent harm to designated sites.

1.6 Whilst 70-80% of excess nutrients comes from agriculture, because the Habitats Regulations apply to planning decisions a focus has been placed on the impact of new residential development contributing to additional nutrients within these protected areas.

1.7 A Court of Justice of the European Union (CJEU) judgment, generally known as the Dutch Nitrogen Case, led to revisions to Natural England's (NE) advice on planning applications. This meant that achieving nutrient neutral development became an immediate and critical issue for local authorities whose catchments lead to the above protected sites, until such a time as detailed work to understand the impact of growth across the south coast on the designated sites is understood.

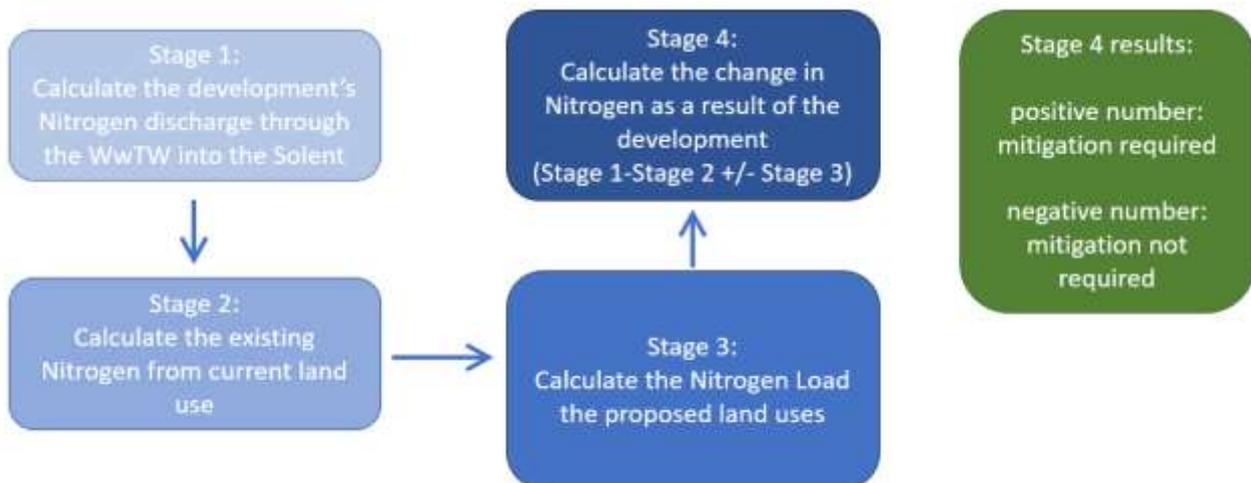
1.8 The requirement to demonstrate nutrient neutrality affects any new housing, or any new overnight accommodation such as hotels or student accommodation and major tourist facilities, which discharges into the Solent directly or indirectly via one of its river catchments.

- 1.9 Overall, whilst achieving nutrient neutral development will not address the existing problem, any planning decision will need to establish that the proposed development will not make the issue worse, in order to satisfy an Appropriate Assessment under Regulation 63 of the Habitats Regulations.
- 1.10 Given any increase in nutrient loading is deemed to be significant, because of the in-combination impact on the protected sites, all housing development irrespective of size is required to demonstrate nutrient neutrality.

**Natural England’s Methodology for calculating Nutrient Neutrality**

- 1.11 To address the issue, Natural England has published a guidance document titled “Advice on achieving nutrient neutrality for new development in the Solent region”. Version 5 was published in June 2020 and is the basis for the assessment carried out for the site.
- 1.12 The methodology for calculating the nutrient budget for the site has 4 stages, as set out below:

*Figure 1: Natural England Methodology for calculating Nutrient Neutrality*



**2.0 ASSESSMENT OF NUTRIENT NEUTRALITY**

- 2.1 The assessment set out below seeks to understand whether the site can achieve nutrient neutrality without reliance on off-site mitigation which could result in the delay to the delivery of homes within the potential allocation site.
- 2.2 The land areas used for the assessment includes:
- Option 1: The land within the proposed allocation boundary, excluding the land that is subject to permissions secured by Rydon and Beechcroft that are not therefore required to demonstrate neutrality.
  - Option 2: The land within the proposed allocation boundary, together with the wider land under the consortium’s control.

**Stage 1: Nitrogen discharge from Wastewater Treatment Works from proposals**

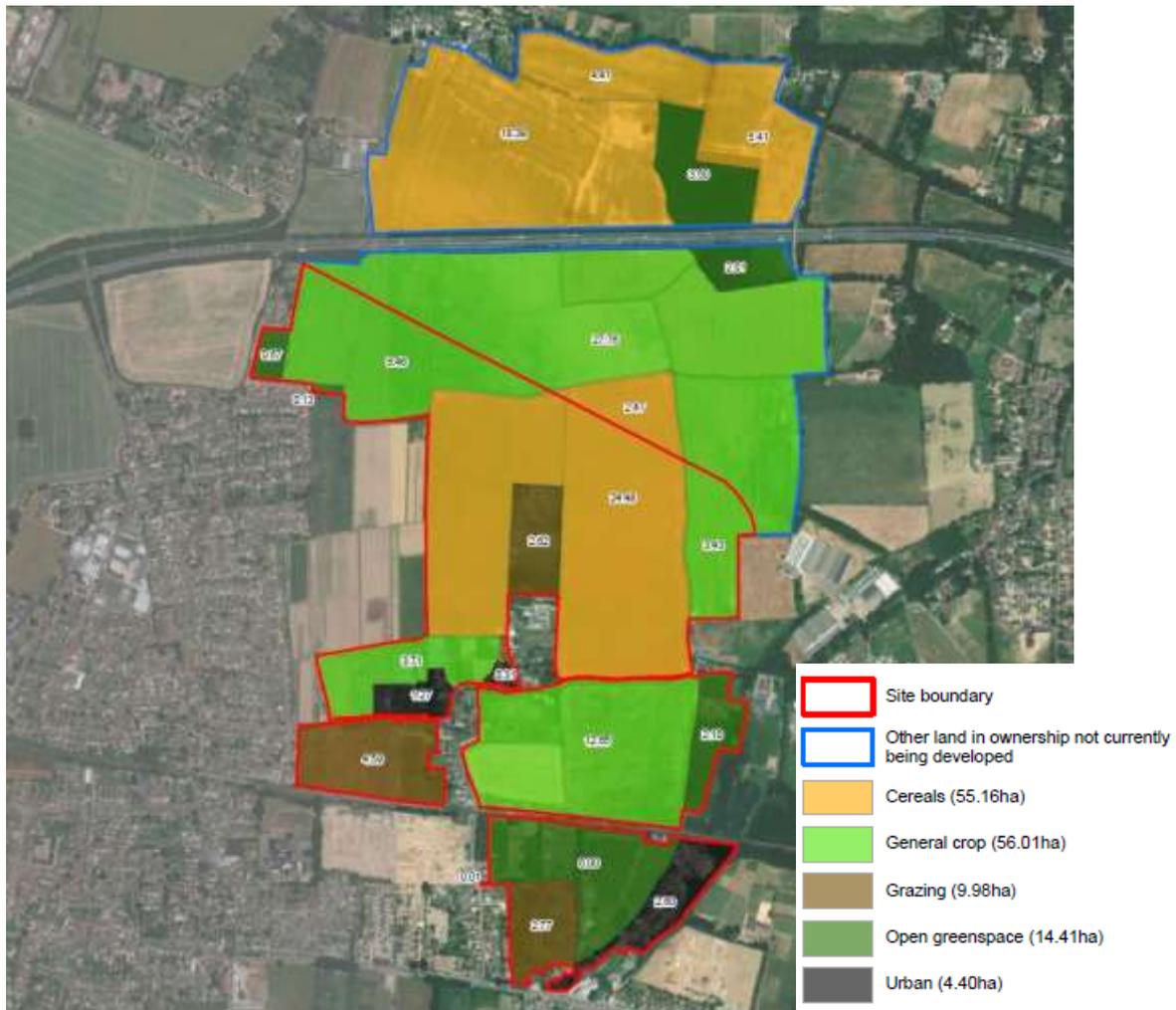
- 2.3 To calculate the nitrogen discharge from the Wastewater Treatment Works for the proposed development (c. 1250 dwellings), an assumption has been made that the Nitrogen permit limit for Thornham WwTW is 10mg/l (based on published online information). This limit applies to Total Nitrogen (TN) not just inorganic Nitrogen.
- 2.4 Based on the above a wastewater total nitrogen load of **843.15kg/TN/yr** for 1250 dwellings is anticipated.

**Stages 2 and 3: Pre- and post-development land use**

*Stage 2: Pre-development land uses*

- 2.5 The current use of the site has been assessed from a site visit and using online mapping. The current uses are assessed to be a mix of urban land use, open greenspace, cereals, general cropping and lowland grazing, as shown on Figure 2 below:

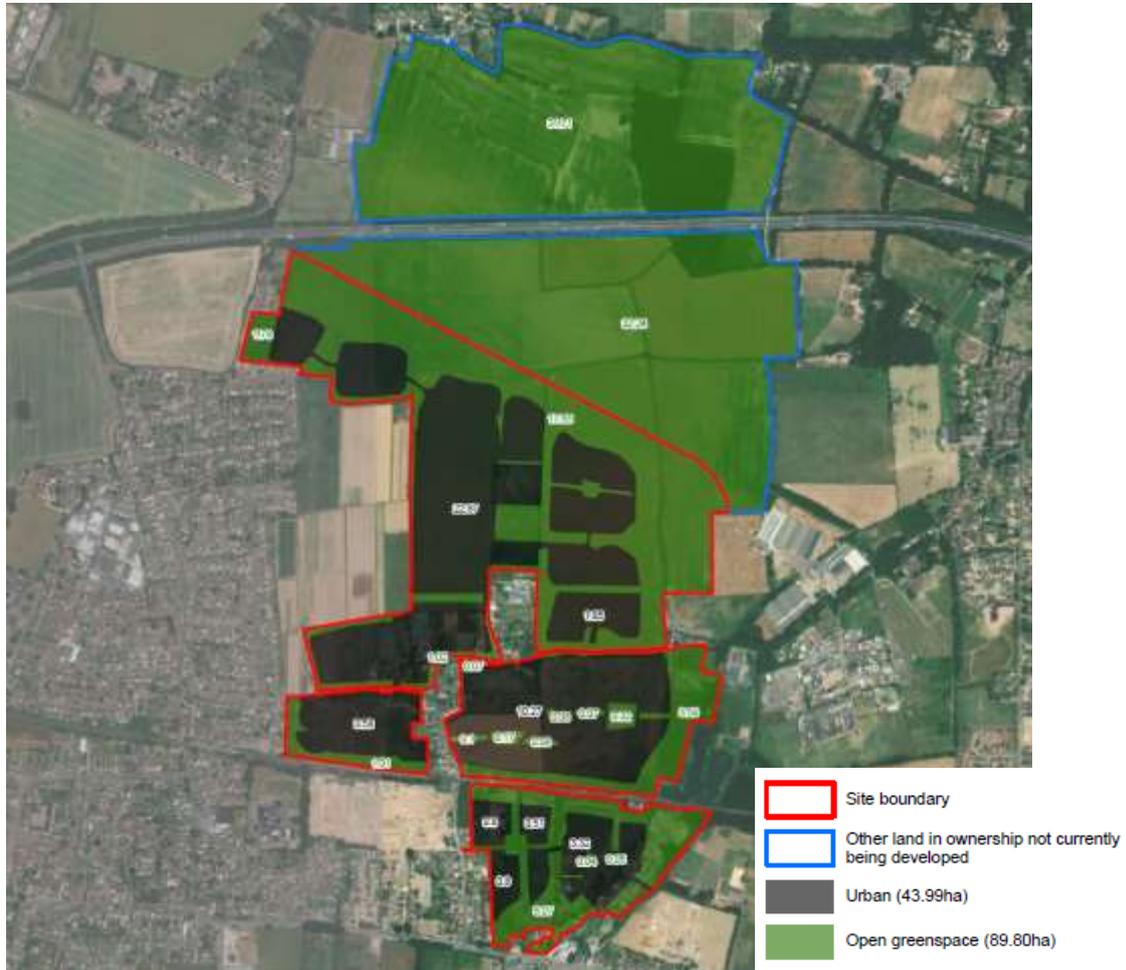
*Figure 2: Pre-development land use*



*Stage 3: Post-development land uses*

2.6 The proposed land use (Figure 3) includes urban and open greenspace. The green space within the development (pocket parks, green corridors) and 50% of the 'green ring' have been assumed to be 'urban' as there will be a requirement for sports pitches, play space, footpaths, allotments and other uses to form a multifunctional greenspace area.

Figure 3: Post-development land use



*Summary of Land Use Nitrogen Loads*

2.7 The existing and proposed land use nitrogen loads for Options 1 and 2 are set out below, based on the land uses identified within Figures 2 and 3 and nitrogen loads per use as set out by Natural England guidance (June 2020):

Table 1: Stages 2 and 3 Existing and proposed land use nitrogen load

	<b>Existing Land Use Nitrogen Load</b>	<b>Proposed Land Use Nitrogen Load</b>
Option 1 – within red line	1718.486Kg/Yr	956.0613 Kg/Yr
Option 2 – including wider land (blue line)	3408.356 Kg/Yr	1276.005 Kg/Yr

#### Stage 4: Calculation of Net Change in Nitrogen

- 2.8 To calculate the net change in nitrogen, Stages 1 and 3 are added together to give the total proposed nitrogen load from the proposed residential development (i.e. nitrogen arising from the wastewater discharge and the physical land-use discharging into watercourses and sewers).
- 2.9 The difference between the total proposed nitrogen load from the development, against the existing nitrogen load identifies whether the development can achieve nutrient neutrality.
- 2.10 Given the figures used in the Nutrient Budget Calculator (as prepared by Natural England) are based on scientific research and modelled catchments, utilising best available evidence, there are uncertainties. Therefore, Natural England recommend a 20% buffer to any proposed nitrogen loading result, to ensure the approach prevents any adverse effect on site integrity. This buffer has been built into the calculation results.
- 2.11 By taking this approach, the Nutrient Budget for each Option is set out below:

*Table 2: Nutrient budget calculation = (Stage 2 - (Stage 1 + Stage 3)) + 20% buffer*

	Nutrient Budget
Option 1 – within red line	96.67 Kg/TN/yr
Option 2 – including wider land (blue line)	-1289.51 Kg/TN/yr

- 2.12 **As per Figure 1, where a positive number is achieved, mitigation is required. Where a neutral or negative number is achieved, mitigation is not required.**
- 2.13 As set out in paragraph 2.6, the calculation has been based on the assumption that green space within the development (pocket parks, green corridors) and 50% of the 'green ring' are classified as 'urban' as there will be a requirement for sports pitches, play space, footpaths, cycle paths, allotments and other land uses to form a multifunctional greenspace area. Urban land use has a greater nitrogen load than Open greenspace.
- 2.14 Based on the assumptions made under Option 1 in relation to the proportion of open greenspace and 'urban' area within the Green Ring, to mitigate 96.67 Kg/Tn/yr of nitrogen load, conversion of only 3.69ha of existing 'cereal cropping' land or 4.74ha of 'general cropping' land to open greenspace would be needed. As per Figure 2, this could be achieved through the conversion of land within the wider consortium's control.
- 2.15 However, once more detailed design of the open greenspace within the development and the Green Ring is undertaken, it is considered reasonable that the ratio of 'urban' to 'open greenspace' could be reduced, and therefore additional mitigation land could partially be accommodated within the allocation boundary area. There is also the opportunity to incorporate features such as reedbeds within the surface water drainage strategy to further reduce nutrient outputs from the post development land uses.

### **3.0 CONCLUSIONS**

- 3.1 The above results demonstrate that land to the east of Southbourne will achieve nutrient neutrality without reliance on any wider 'strategic' initiatives by Natural England or Chichester District Council. Therefore, an allocation to the east can be delivered without delay, subject to a comprehensive masterplanning and allocation policy.
- 3.2 The above results further demonstrate that there is sufficient capacity within the land controlled by the consortium to have confidence that any evolution of the proposals over time would be unlikely to result in any need for strategic mitigation initiatives to deliver homes.
- 3.3 It is anticipated that in the preparation of a more detailed scheme for application, in collaboration with the Neighbourhood Plan Steering Group, a more detailed nutrient assessment would be undertaken. This would set out the key measures incorporated into any development site to meet nutrient neutrality. At this stage it is anticipated this would predominantly incorporate measures such as restricted water consumption (up to 110litres/person/day as per Natural England advice) as well as conversion of land to natural greenspace and inclusion wetlands that act as nitrate sinks in any sustainable drainage strategy.
- 3.4 The above provides great opportunity to deliver a multifunctional green ring together with any additional land needed within the wider consortium's control, to achieve both nutrient neutrality but also deliver meaningful biodiversity improvements, recreational opportunities and the creation of wildlife corridors within the site to the benefit of both existing and future communities.
- 3.5 Overall, the above assessment provides assurance that through the comprehensive planning of the land to the east of Southbourne, any allocation could be nutrient neutral, and therefore would be able to come forward in collaboration with Southbourne Neighbourhood Plan Steering Group and Chichester District Council to deliver homes, community facilities and a multi-functional green ring without delay.