

## Long Lane, Newbury

### Technical Note on Nutrient Neutrality

#### 1.0 Introduction

- 1.1 This Technical Note has been prepared by Glanville Consultants on behalf of Donnington New Homes to accompany a consultation for a potential development site at Long Lane, Newbury.
- 1.2 West Berkshire Council (WBC) as Lead Local Flood Authority (LLFA) and Local Planning Authority (LPA) are responsible for reviewing and commenting on Planning Applications in the area, taking into consideration National and Local Policy.
- 1.3 The proposed development site is located at National Grid Reference SU 48244 68800 and approximate postcode RG14 2ED. A site location plan is given in Appendix A of this note.
- 1.4 The site location lies within the River Lambourn Special Area of Conservation (SAC). The River Lambourn SAC Catchment Map is given in Appendix B. In March 2022 the River Lambourn SAC was found to have significant levels of phosphate pollution and was classified as being in a "poor state". Natural England (NE) therefore advised WBC that they should carefully consider the nutrients impact of any new plans and projects including new development proposals, including through the use of NE's "nutrient neutrality" methodology. WBC (and other LPAs) will only grant permission for development where it can be demonstrated that it will not adversely affect the protected habitats site.
- 1.5 Subsequently WBC have issued their own guidance, including a "Nutrient Budget Calculator", for the River Lambourn SAC specifically. The Calculator assesses the phosphate load generated by a proposed development by assessing the load generated by wastewater from the new development and the load generated by surface water run-off from the new development, and comparing the total of those values to the existing phosphate load generated by run-off from the pre-development site.
- 1.6 This technical note assesses WBC's guidance as it relates to the potential development site and aims to demonstrate that the site could be developed for residential use without adding to the existing nutrient burden, and therefore that the potential allocation of the site should not be rejected on the basis of nutrient neutrality concerns.

#### 2.0 Wastewater

- 2.1 Thames Water have been contacted and have confirmed that the foul water from the potential site area discharges to the Newbury STW Wastewater treatment works, which itself discharges into the River Kennet and not into the River Lambourn SAC. Thames Water's correspondence confirming the treatment plant that the site would discharge to is given in Appendix C.
- 2.2 The River Lambourn is not the outfall for the Newbury STW Wastewater treatment works. This means that foul water generated by the proposed site does not impact the nutrient load to the River Lambourn SAC.

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- 2.3 West Berkshire's guidance states "If a development is located within an affected catchment but is served by a wastewater treatment works that discharges outside of the sensitive catchment, the wastewater element of the proposed development can be excluded."
- 2.4 Wastewater drainage from the proposed development site would therefore not need to be considered for nutrient impact on the SAC.

### **3.0 Existing Site Load**

- 3.1 The nutrient load from surface water run-off leaving the existing site with the existing land use must be considered to calculate the net nutrient load.
- 3.2 The parameters that affect this value are the size of the site, the average rainfall, the existing land use, and the existing drainage regime of the site – that is, whether a large proportion of rainfall at the site typically runs off into the local watercourses or whether rainfall is instead absorbed into the site soils and subsoils.
- 3.3 The WBC guidance recommends assessing the existing drainage regime of the site using the "Soilscapes" mapping undertaken by Cranfield University for Defra which is available via Defra's MAGIC interactive portal. The Soilscapes mapping indicates that the site lies at a boundary between "freely draining" soils and soils with "impeded drainage", meaning that either could be the dominant drainage regime.
- 3.4 Historic borehole logs published by the British Geological Survey (BGS), demonstrate that clay is present at several points on the site. Overall, therefore the preliminary assessment is that the site should be assumed to have impeded drainage.
- 3.5 The potential development site is 16.74 ha in area.
- 3.6 The annual average rainfall identified from the National River Flow Archive lies in the range 700.1 – 750 mm.
- 3.7 The existing land use must be chosen from a list of typical agricultural and non-agricultural uses supplied in Natural England's guidance. While a proper investigation into the existing use of the site would need to be undertaken at the appropriate stage in the development of the site, for the purposes of the preliminary assessment the "general" agricultural use category has been adopted.
- 3.8 On this basis, using the River Lambourn Nutrient Budget Calculator, an estimate of the current Annual phosphorus nutrient export of the site is calculated to be 11.22 kg Total Phosphorus (TP). An extract from the relevant section of the Calculator is given in Appendix D.

### **4.0 Surface Water Run-Off**

- 4.1 The nutrient load from surface water leaving the post development site must be considered to calculate the net nutrient load.

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- 4.2 WBC's Nutrient Budget Calculator automatically uses the same parameter values entered when calculating the pre-development nutrient run-off, so the only new information to be determined at this stage is the new post-development land uses, which in the case of a residential site would be split between "residential urban land" (comprising new dwellings and hardstanding as well as managed urban green spaces including gardens and road verges) and "greenspace" for unmanaged wild green space.
- 4.3 A fully developed layout for the proposed site is not available at this stage, but in the interests of understanding the magnitude of the values involved in order to assess the feasibility of the site we have undertaken a preliminary calculation assuming that 100% of the site area, 16.74 ha, is altered to the "residential urban land" use type.
- 4.4 On this basis, using the River Lambourn Nutrient Budget Calculator, an estimate for the annual phosphorus nutrient export for the site if it was developed with the whole site area considered to be "residential use" would be 24.28 kg TP per annum. An extract from the relevant section of the Calculator is given in Appendix E.
- 4.5 This is greater than the 11.22 kg TP produced from the pre-development site annually and demonstrates that without mitigation measures a development of this magnitude would not be acceptable as it would result in an increase in loading.

## 5.0 Mitigation Measures

- 5.1 Since the potential phosphate load impact is generated by the surface water run-off from the developed site, reducing phosphorus from the surface water run-off would reduce or negate the unacceptable adverse impact.
- 5.2 The most appropriate on-site mitigation option to reduce the nutrient load of surface water run-off is to include the use of treatment SuDS features such as swales, detention basins, porous paving and bioretention systems.
- 5.3 Bioretention features (bioswales and ponds/wetlands) remove a proportion of the phosphorus from the surface water runoff. Bioretention features designed and constructed according to the CIRIA SuDS Manual C753 will reduce the level of phosphorus in surface runoff by an average of 80% (SuDS Manual Table 18.1).
- 5.4 The CIRIA SUDs Manual C753 also states that grass swales features have a median pollutant mass removal rate of 55% for phosphorus (SuDS Manual section 17.5).
- 5.5 In the preliminary calculation outlined above for the potential development site, if the post-development surface water run-off phosphorus load of 24.28 kg TP could be reduced by 80%, only 4.86kg TP would be exported annually. Since the pre-development site exports 11.22 kg TP, there would be a net benefit of 7.00 kg TP per annum after development.
- 5.6 Even when using a lower pollutant removal rate of 55%, 14.28 kg TP could be reduced to 10.93 kg TP, with a net benefit of 0.29 kg TP per annum after development.

- 5.7 While the above assessment provides preliminary estimates it has been prepared on a robust basis using conservative assumptions and clearly demonstrates that adverse impact to the River Lambourn SAC can be avoided, and even betterment provided, as long as suitable mitigation is provided on site using well designed SuDS bioretention features to treat surface water run-off prior to discharge from site.

## **6.0 Conclusions**

- 6.1 This Technical Note has been prepared by Glanville Consultants on behalf of Donnington New Homes for consultation on a proposed development site at Long Lane, Newbury.
- 6.2 It has been demonstrated that wastewater from the site will not impact the nutrient load on the River Lambourn SAC, as wastewater from the site will discharge to a treatment plant which does not outfall into the SAC
- 6.3 It has also been demonstrated that it will be possible to provide suitable mitigation on site to treat the nutrient load of surface water run-off to avoid any adverse impact on the SAC.
- 6.4 In conclusion, provided a suitable SuDS scheme is implemented into the design it can be ensured that development achieves nutrient neutrality and does not add to existing nutrient burdens. It is even possible that betterment could be provided.
- 6.5 Therefore, while nutrient neutrality will remain a consideration for planning and design at the site, it should not be considered a reason to prevent a successful allocation or planning permission for the intended end use.

## Appendices

**Appendix A**  
**Site Location Plan**



**NOTES**

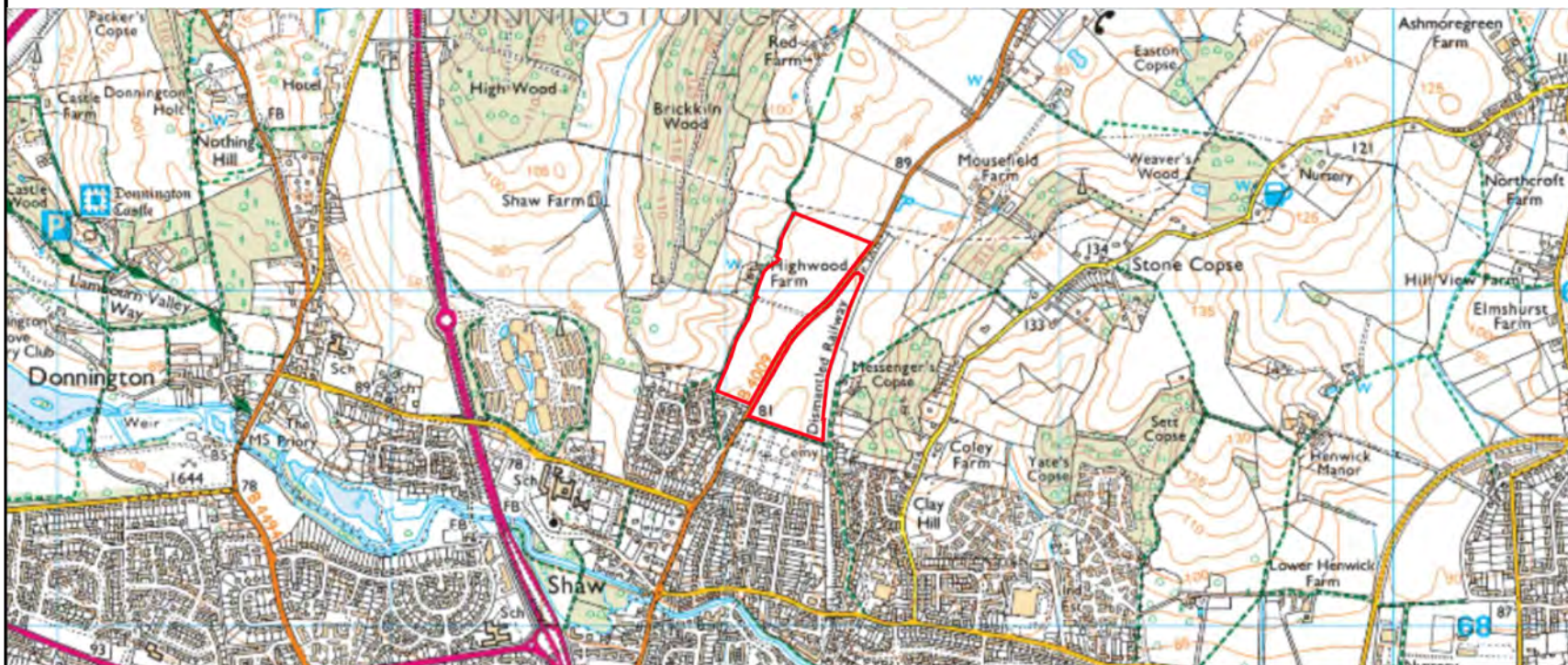
1. This drawing is to be read in conjunction with all other documents and specifications
2. Dimensions not to be scaled from drawing

**LOCATION**

Nearby postcode: RG14 2ED  
 Grid reference: Easting: 448244  
 Northings: 168800

**KEY**

Approximate site boundary



Rev.	Description	Date	Chkd
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Client : Donnington New Homes

Project : Land at Long Lane  
 Newbury  
 RG14 2ED

Title : Site Location Plan

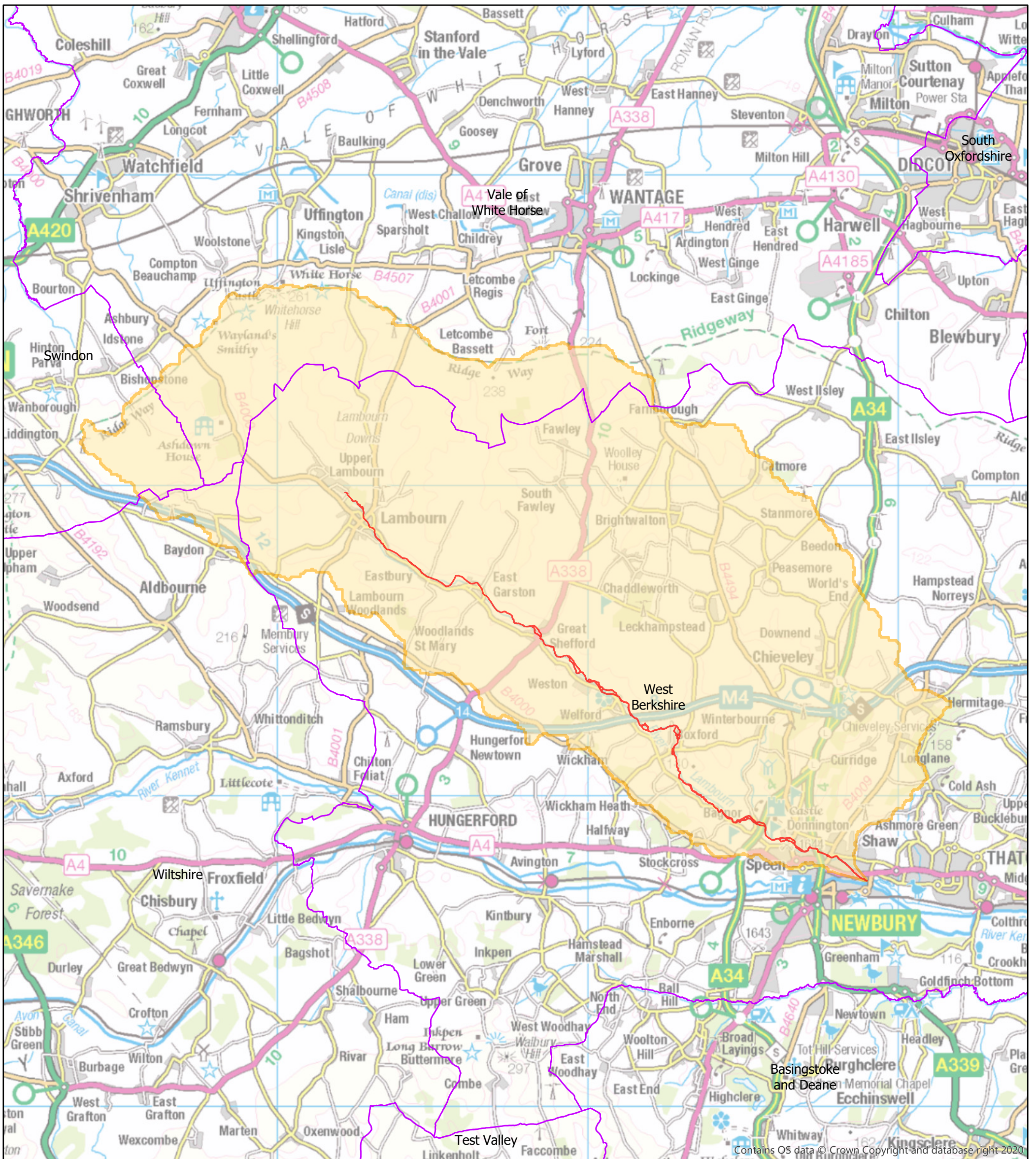
Project Engineer : A.Quigley Scale : NTS  
 Project Director : K. Rayner Date : January 2021  
 Status : Preliminary

Drawing No. CV8200923 - SK01 Rev P1

## **Appendix B**

### **The River Lambourn SAC Catchment Map**





European protected sites requiring nutrient neutrality strategic solutions

Scale: 1:120,000

### Component SSSIs of River Lambourn SAC

- Local Authorities
- SSSI subject to nutrient neutrality strategy
- Nutrient neutrality SSSI catchment
- National Parks



## **Appendix C**

### **Thames Water's correspondence**

## Kerin Hulse

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**From:** DEVELOPER.SERVICES@THAMESWATER.CO.U  
<DEVELOPER.SERVICES@THAMESWATER.CO.UK>  
**Sent:** 30 November 2022 09:30  
**To:** Lucy Moxon  
**Cc:** Kevin Rayner; Philip Simmons  
**Subject:** RE: Long Lane, Newbury - Nutrient Neutrality  
**Categories:** Filed by Newforma

**CAUTION:** This email originated from outside of the organisation. Do not click or open attachments, if you suspect the content may not be safe.

Dear Lucy,

Thank you for your email. The answers to your queries are in blue:

- Which wastewater treatment works does foul sewage from the site area discharge to? [The wastewater treatment works is Newbury STW](#)
- What is the receiving watercourse for the treatment works outfall? [The outfall is River Kennet](#)
- Does the treatment plant have any limit in place on nitrates or other polluting nutrients? [Apologies, I am unable to answer this question, I raised this query to the corresponding team. Once they have responded, I can revert back to you with the answer.](#)

Kind regards,

### Long Tran

Developer Services – Adoptions Engineer  
Mobile: 0774 764 6498  
Office: 0800 009 3921  
[developer.services@thameswater.co.uk](mailto:developer.services@thameswater.co.uk)  
Clearwater Court, Vastern Road, Reading, RG1 8DB  
Find us online at [developers.thameswater.co.uk](http://developers.thameswater.co.uk)

Get advice on making your sewer connection correctly at [connectright.org.uk](http://connectright.org.uk)



Original Text

**From:** Lucy Moxon <lmoxon@glanvillegroup.com>  
**To:** DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>

**CC:** Philip Simmons <philipsimmons@donningtongroup.com>;Kevin Rayner <KRayner@glanvillegroup.com>  
**Sent:** 22.11.22 17:52:08  
**Subject:** Long Lane, Newbury - Nutrient Neutrality

Good afternoon,

My client is considering a development of a site at the north side of Newbury, location plan attached and approximate postcode RG14 2ED.

Since the site is close to the Lambourn SAC, we need to consider nutrient neutrality at the site.

For this reason we request that you could let us know:

- Which wastewater treatment works does foul sewage from the site area discharge to?
- What is the receiving watercourse for the treatment works outfall?
- Does the treatment plant have any limit in place on nitrates or other polluting nutrients?

Thanks very much for your help,

Regards

**Lucy Moxon**

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**Appendix D**

**Current Annual Phosphorus Calculation**

# Stage 2

## User Inputs

<b>Catchment:</b>	Kennet
<b>Soil drainage type:</b>	Impeded drainage
<b>Annual average rainfall (mm):</b>	700.1 - 750
<b>Within Nitrate Vulnerable Zone (NVZ):</b>	Yes

<b>Existing land use type(s)</b>	<b>Area (ha)</b>	<b>Annual phosphorus nutrient export (kg TP)</b>
General	16.74	11.22
<b>Total:</b>	<b>16.74</b>	<b>11.22</b>

**Appendix E**

**Proposed Site Phosphorus Calculation**

# Stage 3

## User Inputs

New land use type(s)	Area (ha)	Annual phosphorus nutrient export (kg TP)
Residential urban land	16.74	24.28
<b>Total:</b>	<b>16.74</b>	<b>24.28</b>