

Impacts of Development in the Nailbourne / Little Stour Catchment on the Stodmarsh designated sites and priority/designated river habitats.

Aims of the Study

- To review available evidence on how housing development within the Nailbourne/Little Stour catchment is likely to impact on nutrient loading issues reported at the Stodmarsh designated sites;
- To consider impacts on other designated and priority habitats within the Little Stour catchment itself, including key chalk stream habitat.

Summary of Conclusions

- There is incontrovertible evidence that wastewater derived within the Nailbourne/Little Stour catchment has a significant negative impact on the nutrient neutrality objectives defined by Natural England (2020) in relation to housing development and the Stodmarsh designated sites, especially those protected by the Habitat Regulations. These sites include: Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR), Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar site.
- The cause of this lies in the specific hydrological conditions along the Nailbourne/Little Stour characterised by regular high groundwater levels and persistent groundwater infiltration into the wastewater/sewerage infrastructure, combined with the inability of wastewater treatment infrastructure in the catchment to deal with this. During wet periods this often results in costly and socially undesirable emergency measures being imposed by the water company (Southern Water) within catchment villages. Measures include tanker use, overpumping and reduced recreational access.
- More specifically, the deployment of tankers along the catchment to take excess untreated wastewater from the sewerage network and deposit this for treatment at Canterbury wastewater treatment works (WwTW), provides a significant 'nutrient impact link' between the Nailbourne/Little Stour catchment and the ongoing pollution problems at Stodmarsh.
- Investment by Southern Water in upgrading the existing wastewater infrastructure to avoid these measures and to provide a network able to meet current and future demands for new housing outlined under NPPF, has been inadequate.
- It is highly likely that climate change will increase the incidence of wet weather / flooding events, and that any upgrading already undertaken by Southern Water to mitigate infiltration will be offset.
- For the Nailbourne/Little Stour catchment as a whole, the implications of the above are that further housing or other development that could lead to increasing volumes of wastewater and polluting nutrient flows, carries a severe risk of negative downstream consequences not only for the Stodmarsh designated sites, but also for the protected and priority habitats along the stream.
- Competent authorities should reflect carefully on the social, economic and environmental risks involved in approving housing development proposals that fail to properly and thoroughly address nutrient loading into the Little Stour chalk stream. Current relevant national regulation include Water Framework Directive, the Environment Act, NERC Act and National Policy Planning Framework.

1. BACKGROUND

1.1 Characteristics of the Little Stour valley

The Little Stour Valley extends along a narrow, traditionally grazed, floodplain corridor from its source at Well near Garrington farm, Littlebourne, to the grasslands near West Stourmouth and Pluck's Gutter. Large man-made lakes from earlier gravel extraction are major landscape features near Wickhambreaux and are now designated, along with this section of river, as Seaton Pits and Wenderton Manor Woods Local Wildlife Sites (LWS). This is an important wetland containing a rich flora with rare plant species and large reed beds. Preston Marshes Site of Special Scientific Interest (SSSI) contains the last significant area of fenland vegetation in the Little Stour valley. Although less well known than Stodmarsh, it is also important for iconic wetland and migratory birds. Fauna ranging along the Little Stour corridor includes native brown trout, European eels, perch. Recent works being undertaken by the Environment Agency are seeking to facilitate fish migration. Small mammals such as water voles, water shrew and harvest mouse along with beaver, brown hare and otter are recorded in the area. Invertebrates are abundant with regular

ongoing riverfly surveys under the [Riverfly Partnership](#) centred on Littlebourne and Wingham have been yielding good scores.

1.2 Nailbourne / Little Stour: Chalk Streams

The Little Stour is an excellent example of a relatively pristine small chalk stream. Chalk streams are a priority Habitat of Principal Importance under the NERC Act 2006. Kent County Council's *Kent Biodiversity Strategy 2020 to 2045* points to chalk streams being globally rare habitats, noting that there are only about 250 chalk streams in the world, about 160 of them being in England, with several emerging from the North Downs chalk aquifer underlying Kent (Darent, Great Stour, Little Stour, Nailbourne, Dour and North and South Streams). They are characterised by stable flow and temperature regimes, low energy and sediment inputs from groundwater spring sources, which has made them productive environments rich in aquatic ecology that has evolved and specially adapted to this character. An important 'ecosystem service' offered by the Nailbourne/Little Stour river valley is in terms of its increasing recreational use by local people and visitors to the region who strongly value the natural integrity of the landscape and relative purity of the stream water for a range of outdoor activities including walking, bathing, boating, ornithology, fishing activities, etc.

1.3 Existing Threats

Inadequate wastewater (aka sewage) management within the catchment already represents a serious threat to the ecological and socio-economic integrity of the Little Stour. Inappropriate changes in land use including large scale housing development or inappropriate agricultural practices within the catchment could exacerbate this threat, leading to progressive irreversible damage.

These and other aspects are presented and discussed below mainly from two perspectives:

- Impacts on Stodmarsh Designated Sites and key causes;
- Impacts within the Nailbourne / Little Stour catchment, including lower reaches from Wingham through to Pluck's Gutter.

2. STODMARSH

2.1 Nutrient Neutrality

In its *Advice on Nutrient Neutrality for New Development in the Stour Catchment*, Natural England (2020) raised concerns over the impacts of increasing levels of river-borne pollutants based on *nitrogen* and *phosphorus*, which are having a progressively deleterious effect on the internationally designated sites at Stodmarsh. These nutrients originate mainly from sewage wastewater from housing and are normally reduced to environmentally safe limits by wastewater treatment works (WwTW). Investment by water companies (in this case Southern Water, but also reflected nationally) in updated plant and processing infrastructure has failed to keep pace with pressing development requirements, leading to increasing numbers of serious pollution 'incidents' in streams, rivers and the sea. Eutrophication (excessive plant growth due to these 'fertilising' nutrients, which removes oxygen from the aquatic habitat) has been one of the major negative impacts at Stodmarsh that has affected several endangered species.

Natural England defines the Nailbourne/Little Stour catchment as part of the Great Stour. This is justified given that the former drains into the Stour near Pluck's Gutter some 7 km downstream of Stodmarsh. Despite being tidal at this confluence, recent modelling commissioned by Dover CC ([APEM, 2022](#)) has shown that it is improbable that polluting nutrients in the Little Stour at this point (primarily derived from Dambridge and Newnham Valley WwTWs) could have a **direct** impact on nutrient loading at Stodmarsh. However, this picture is not straightforward. Indeed, data show there are already very significant **indirect** impacts on Stodmarsh from Nailbourne/Little Stour wastewater. The causes and mechanisms behind this are described below.

2.2 Infrastructure Issues in our Catchment

Very specific hydrological conditions exist within in the Nailbourne/Little Stour catchment, which adversely affect the management of wastewater and its infrastructure. During periods of wet weather, such as during 2014/15, but more recently in 2020/21, groundwater levels become very high, and once raised, typically persist for many weeks or months. The pressure exerted by high groundwater levels forces water into the 'leaky' sewerage network leading to flow volumes along

the sewer network increasing regularly by several fold for many months. Such *groundwater infiltration* has been recognised as a major problem by Southern Water who have been undertaking a rolling programme of repair and mitigation works such as sewer lining, under their Infiltration Reduction Plans over the last decade. Although this effort has demonstrably helped reduce infiltration (see for example [IRP 2021](#)), the improvements are small. Increasing rainfall and general climate change trends towards much wetter weather tend to offset any improvements. For example, during 2020/21 when ground water levels reached unprecedented levels, Southern Water data shows wastewater flow volumes into Newnham WwTW were actually higher than any previous year (**Table 1**).

Table 1: Groundwater Infiltration in the Nailbourne Little Stour Catchment
Southern Water data for Newnham Valley WwTW 2015-20

Year	Wastewater Flow (m3)
2015	2,176,724
2016	1,995,381
2017	637,081
2018	952,597
2019	1,174,623
2020	2,446,461

Note for clarification: variation in flows are due to varying infiltration rates which are higher during wet weather when ground water level is higher, and vice versa.

Excessive wastewater volumes during wet periods regularly inundate the Newnham Valley WwTW to the extent its maximum flow volumes under Environment Agency discharge permits during dry weather are already exceeded (Southern Water comm.; *Water for Sustainable Growth Report*, Kent County Council, 2017). Southern Water does recognise this and the need for further investment in its network, plant and processing capacity. The company has indicated (Southern Water response to CA/21/01657) that developments should be constrained until adequate wastewater management infrastructure is in place to reduce infiltration and enhance capacity at its Newnham Valley works.

2.3 Current Emergency Measures

Acknowledging these shortcomings, during wet spells when wastewater flows reach specific limits, Southern Water is currently obliged regularly to impose **emergency measures** within the villages in an attempt to reduce the risk of sewage pollution. Published Southern Water data show that these measures include (a) the deployment of a **fleet of tanker lorries**; and (b) **overpumping of wastewater** into the adjacent water course. Parallel measures of considerable local concern in the villages have involved restrictions on toilet use (which even has its own acronym - “RTU”) and prohibition of recreational activities near the streams (notices posted at access points warning users to stay away from the water course).

2.4 Tanker Impacts on Stodmarsh

The regular deployment of tankers to deposit untreated wastewater from the Nailbourne/Little Stour catchment to Canterbury WwTW creates a specific impact pathway to Stodmarsh. Southern Water provided data for the period April 2019 to February 2022 on the number and volumes of untreated tanker transfers from the villages together, along with the final discharge site (Environment Information Request 1110, 2022). **Over 10 million litres (10,000 tons) of raw, untreated sewage was taken from Newnham Valley catchment villages for discharge almost entirely at Canterbury’s WwTW situated directly upstream of Stodmarsh. Around 500 road**

tankers were deployed during this period. In other words, a significant proportion of the wastewater from the Nailbourne and Little Stour catchment currently contributes to the nutrient issues at Stodmarsh.

In light of the above evidence alone, it is clear that any proposed housing developments within this catchment must continue to take full consideration of the nutrient neutrality requirements under the Habitats Regulations. Furthermore, these should also consider other key development implications such as water use efficiencies or groundwater drainage.

3. CONSERVATION AND SUSTAINABLE DEVELOPMENT WITHIN LITTLE STOUR HABITATS: Having examined Stodmarsh impact pathways, in this Section, we take a brief look at how wastewater impacts the Little Stour especially the lower catchment areas, and why it is important to identify and enhance approaches to mitigation.

3.1 Impacts on Little Stour

Of key specific concern to the Little Stour are the wastewater infrastructure and management issues referred to above in sections 2.2 and 2.3, which have led to sewage being over-pumped / discharged directly into the streams and which evidently contribute to undesirable social, economic and environmental outcomes within our villages and valued chalk stream environment. These impacts need to be better understood and addressed before commitments are made to new developments -even small ones- that could exacerbate the problem and jeopardise efforts aimed at protecting vulnerable sites such as Preston Marshes SSSI and Seaton Pits and Wenderton Manor Woods LWS. Of particular concern are the incremental nutrient levels especially phosphorus, in lower reaches of the stream. These need to be addressed to avoid further deterioration the aquatic habitats. A recent study commissioned by Dover CC ([APEM, Nov 2020](#)) observed “measurably large” levels of orthophosphate from Dambridge WwTW effluent into the Wingham River and which assumed similar levels for Newnham Valley effluent. Although the Environment Agency aims to impose new permit limits for phosphorus in effluents, this will require process investment and rigorous long-term monitoring.

3.2 Considerations on Relevant Policy and Regulations

While there is no doubt that the issues and constraints outlined above are of specific and direct relevance to Stodmarsh, under the government’s NPPF we are also required to consider the so-called ***presumption in favour of sustainable development*** in all development proposals, especially for new housing. This *presumption* is a sound basis from which to work in that it aims to force planners and policy makers as well as developers to take account of the three supporting UN ‘pillars’ of ‘sustainable development’ - **economic, social and environmental**. The presumption is that each pillar contributes, mutually and individually, to “meeting the needs of the present without compromising the ability of future generations to meet their own needs”.

An important focus of the NPPF is the duty of Local Planning Authorities to deliver policy that promotes the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

Key amongst existing regulations in force that support this is the **Water Framework Directive** (WFD). Although this Directive comes from EU legislation, it has been retained under UK law and aims “to prevent deterioration of the water environment and improve water quality by managing water in natural river basin districts, rather than by administrative boundaries”. The **Environment Act** and **NERC Act 2006** are also important instruments in this regard.

Of final note, a specific **Chalk Streams (Protection) Bill** is currently moving through a 2nd Reading Stage in Parliament. This aims to identify a category of protection for chalk streams for the purpose of providing additional protections from pollution, abstraction and other forms of environmental damage. The recent Catchment Based Approach **Chalk Stream Restoration Strategy** (2021) highlights several of these points and calls for the government to create overarching statutory protection and priority status for chalk streams and their catchments.

4. CONCLUSION

For the Nailbourne/Little Stour catchment as a whole, the implications of the above are that further housing or other development that could lead to increasing volumes of wastewater and polluting nutrient flows, carries a severe risk of negative downstream consequences not only for the Stodmarsh designated sites, but also for the protected and priority habitats along the stream. Competent authorities should reflect carefully on the social, economic and environmental risks involved in approving housing development proposals that fail to properly and thoroughly address nutrient loading into the Little Stour chalk stream.

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Littlebourne, October 2022.