

Threatened Chalk Streams: A Delicate Balance Between Development and Environmental Conservation in East Kent

In the heart of Kent lie several examples of one of England's rarest and most fragile ecosystems — chalk streams. These habitats, including the Nailbourne / Little Stour river system, are under serious threat from pollution, over-abstraction, and urban development. Among these, a large-scale housing proposal on the edge of picturesque Littlebourne village could pose unprecedented challenges, particularly in relation to sustainable water management and wastewater disposal. The urgency of this issue is further amplified by the proximity of these developments to the internationally significant Stodmarsh wetlands, a critical ecosystem that shares a tightly linked food web with the surrounding chalk streams.

This article delves into the myriad challenges posed by new housing developments in the area, focusing on water management, wastewater infrastructure, and the broader environmental implications.

The Fragility of Chalk Streams

Chalk streams, as recently highlighted by renowned conservationists like David Attenborough, are among the rarest ecosystems on Earth. Of the 225 known chalk streams, none are free from significant environmental damage, according to campaigner Feargal Sharkey. The Nailbourne / Little Stour river system, which supports the Stodmarsh wetlands, is a prime example of a habitat under stress. The interdependence of species and habitats across this region underscores the need for careful, well-planned environmental management.

These ecosystems are highly vulnerable to nutrient pollution, urban encroachment, and excessive water abstraction. Environment Agency data and citizen science projects reveal nutrient enrichment as a key contributor to species decline. Despite their designation as a habitat of principal importance under the NERC Act (2006), chalk streams like these face the risk of irreversible damage unless immediate action is taken.

Water Management Challenges

Villages along the Nailbourne / Little Stour valley, including Littlebourne, are facing increasing development pressure, which further strains the area's already fragile water systems. Each new home demands a reliable supply of fresh water and an efficient wastewater disposal system. However, the current wastewater infrastructure is already inadequate and frequently overwhelmed, especially during periods of heavy rainfall when excess groundwater infiltrates the sewer network.

During periods of heavy rainfall, the local sewerage systems struggle to cope with excessive groundwater infiltration, far exceeding their design capacity. This often leads to prolonged disruptions in basic utilities such as bathroom, toilet, and kitchen use, with some restrictions lasting up to six months.

Tankering and Over-Pumping**

To mitigate sewer flooding, Southern Water, the utility company responsible for the area, frequently resorts to emergency measures such as deploying fleets of HGV road tankers and over-pumping excess sewage into local streams. While these actions prevent immediate overflow, they are both environmentally harmful and economically unsustainable.

Although tankering offers a quick, localised response to drainage issues with minimal impact on watercourses and the ability to transport sewage to treatment plants, it has limited effectiveness in reducing overall flow rates. Tankers typically operate daily during wet periods, from October to May, but their constant use causes significant traffic disruption, noise pollution, and road damage, leading to mounting frustration in local communities.

Between October 2023 and May 2024, Southern Water reportedly hired HGV tankers to remove 100,000 to 115,000 cubic meters of raw sewage, at an estimated cost of £4.5 million per season. In terms of carbon impact, Southern Water has noted that tankering produces approximately 1.7kg of carbon dioxide emissions per cubic meter of wastewater, amounting to an estimated 200 to 500 tonnes of CO₂ over the season.

Over-pumping, another emergency measure, involves discharging raw sewage into nearby watercourses. While it relieves pressure on the overloaded sewer network more effectively than tankering, it has severe environmental consequences. The release of untreated wastewater into chalk streams like the Little Stour threatens biodiversity, causing habitat degradation and pollution, with ripple effects across the ecosystem.

No-one wants their sewers to overflow, but these remedial measures are extremely harmful to the environment and clearly demonstrate the significant risks and costs—both environmental and financial—that will arise from building on an already overburdened system.

Wastewater Infrastructure: Inadequacy and Uncertainty

Despite Southern Water's efforts to improve the wastewater system, the infrastructure remains insufficient. The Newnham Valley sewage treatment plant which serves this area has been operating over capacity for over a decade, with reports from Kent County

Council in 2017 indicating that even in dry weather, flow rates exceed the plant's capacity. This issue is worsened by groundwater infiltration and overflows, which strain the system further. Even with a new sewage plant, these underlying problems will persist unless the groundwater infiltration is addressed.

While Southern Water has proposed investment in a new treatment plant, uncertainty surrounds when these upgrades will be completed. Moreover, Southern Water recognise that climate change is expected to increase rainfall by up to 39%, raising groundwater levels and exacerbating infiltration issues unless significant repairs are made. Although expanding the plant's capacity may alleviate some pressure, it does not address the root cause—groundwater infiltration. Without comprehensive investment in sealing the pipes and preventing infiltration at the source, the system will remain fragile.

A key assumption behind the Littlebourne housing development proposal is that Southern Water will complete infrastructure upgrades by 2030, enabling the network to handle the needs of the proposed 300-400 houses. However, Southern Water's Asset Management Plan covering the period 2025 to 2030 (AMP8) indicates that only 20% of the necessary investment will be made by 2030, leaving 80% of the groundwater infiltration remediation work for an unspecified date beyond 2030.

Environmental Impact of Additional Housing

The proposed Littlebourne housing development, along with others in the region, threatens to overwhelm the already stressed sewage system. The additional load from these new homes could lead to more frequent sewer flooding and pollution, particularly if untreated wastewater is discharged into local watercourses, posing risks to public health and biodiversity.

Further concerns have been raised about the surface water drainage from the proposed development. The local land drainage system, which currently serves agricultural fields, will be replaced by runoff from the housing estate, flowing into the Little Stour through a community orchard. This change could increase the risk of flooding and contamination, particularly given that the existing culverts and drainage infrastructure are already damaged and inadequate.

While agricultural runoff tends to be nutrient-rich, runoff from a housing estate is more likely to introduce domestic and chemical pollutants, such as hydrocarbons, heavy metals, and de-icing salts from road surfaces. The higher proportion of impermeable surfaces in a housing development will lead to faster runoff and reduced absorption into the soil, resulting in higher flow rates with a greater risk of flooding.

Risks to Stodmarsh Wetlands and Preston Marshes

One of the most concerning aspects of these proposed developments is the potential impact on downstream ecosystems such as the Stodmarsh wetlands and Preston Marshes—an interconnected habitat with the Little Stour. Data from the Kent and Medway Biological Records Centre (KMBRC) show that 73% of Stodmarsh's qualifying species have also been recorded in the Little Stour catchment, including Preston Marshes SSSI. Nutrient pollution and habitat degradation from new developments could have devastating consequences for these sensitive areas, further emphasising the need for thorough environmental planning.

What Needs to Be Done

The challenges outlined in this article highlight the fragility of Kent's chalk stream ecosystems and the significant risks posed by further development. Southern Water's

ongoing struggles to maintain its infrastructure and the uncertainty surrounding future investments make it clear that immediate action is needed to protect these delicate ecosystems.

In the short term, efforts must focus on addressing groundwater infiltration and improving the integrity of the existing sewage network. Significant investment in infrastructure upgrades, particularly at the Newnham Valley plant, is essential. Long-term solutions must prioritise sustainable development that balances the needs of growing communities with the conservation of natural habitats.

Crucially, planning decisions must not rely on the assumption that Southern Water's upgrades will be completed on time. Developers and policymakers must prioritise environmental conservation, ensuring that Kent's chalk streams and their interconnected ecosystems are protected for future generations. Without urgent action, we risk losing these unique and irreplaceable ecosystems forever.

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