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**NUTRIENT POLLUTION AND  
NUTRIENT NEUTRALITY  
IS UK HOUSEBUILDING CULPABLE  
OR JUST A MORE CONVENIENT  
WAY TO FUND REGULATORY  
FAILURE?**

**AN INDEPENDENT REPORT**

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This Report is the product of research conducted by W A Consultancy and Technical Development Services. It relies on information disclosed under the Freedom of Information Act in addition to evidence that exists in the public domain. It is further informed by the outcome of related discussions over the last four years involving Defra, Ofwat, CCWater, Water UK, individual Water and Sewerage Companies, and Developers/House Builders.

This is not an official publication. The views expressed in this Report are those of respective authors, several peer group Consultants and Developer Clients.

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# INTRODUCTION

## NUTRIENT POLLUTION AND NUTRIENT NEUTRALITY

### IS UK HOUSEBUILDING CULPABLE OR JUST A MORE CONVENIENT WAY TO FUND REGULATORY FAILURE?

To answer this question, we need to start with house building's relationship with environmental legislation from the late 19th century. Equally important is how house building, and UK construction in general has had to remain cognisant of progressive changes in legislation – principles that apply equally to those statutory bodies tasked with ensuring there is effective legislative governance.

Regrettably, recent media reports have exposed a litany of excessive sewage discharges to sensitive water bodies, largely as a consequence of under-investment by the water and sewerage sector in England and Wales, coupled with poor regulatory control/intervention.

A High Court decision, handed down on 15th September 2023, i.e., [2023] EHC 2285 (Admin)], and related to the issue of nutrient neutrality, acknowledged the existence of long-established law to protect rivers (and sensitive water receptors) from untreated sewage, namely, the Urban Wastewater Treatment Regulations (England and Wales) 1994. Moreover, the Court's decision asserted that the principles enshrined in this strand of earlier environmental legislation must be applied with immediate effect – see paragraph 56 et seq of the Court's decision.

This latest twist in the debacle relating to nutrient neutrality begs a principal question – why has the statutory duty imposed on all sewerage companies decades ago not been rigidly enforced either by Defra and/or their statutory arms-length bodies from the outset, i.e., Ofwat/NRA/EA, and since October 2006, Natural England.

In the context of nutrient neutrality, this paper does not dwell on the shortsightedness of the political class. Irrespective of political persuasion, there is widespread culpability when it comes to not marshalling the material facts and evidence that have a direct bearing on nutrient pollution. Instead, the paper focuses on the inherent shortcomings of Natural England's advice to Local Planning Authorities but not before providing a more informative overview of how progressive changes in related environmental legislation have or should have been overseen by various competent bodies.

Moreover, if there was ever an environmental matter demanding of evidence-based resolution by relying on experience and cognitive diversity as opposed to ill-informed evaluation and direction, enter nutrient neutrality.

What the housebuilding industry has endured in the last 4 years stems from a reliance on poor qualitative and quantitative evidence – an approach that nearly always results in ill-considered and irrational outcomes. A consequence articulated over 2000 years ago:

***“The good functioning of democracy is inextricably linked to the quality of its deliberations.”***  
**(Socrates- 470 – 399BCE).**

# 1 HOUSEBUILDING'S LONG-TERM RELATIONSHIP WITH ENVIRONMENTAL LEGISLATION

In a modern-day context, despite counter assertions that are often poorly informed, responsible developers continue to be sector-leading when it comes to compliance with environmental legislation. Likewise, supporting standards and technical guidance.

In reality, successive governments have placed an increasing dependency on the house-building industry to provide innovative solutions in response to publicised environmental policy objectives and aspirations. For example, the extensive seminal work undertaken by the house building industry's Zero Carbon Hub (ZCH) - June 2008 to March 2016 - and which provided the foundation for improved building energy performance standards delivered through new and/or finessed legislation/regulations. The ZCH has been one of many Government engagement initiatives involving the house building industry, so what deterred Defra, Natural England, DLUHC, the Environment Agency, and Ofwat from engaging with the industry when it came to nutrient neutrality, and, more importantly, before Natural England issued any directive to local planning authorities?

For those actively involved in house building, innovation and environmental sustainability have been crucial and ongoing principles for any competent and responsible business. A lack of respect and/or commitment on both counts results in either loss of market share, or in the latter case, potential prosecution.

For those seeking additional examples of earlier house builder innovation and the industry's response and commitment to environmental sustainability need to take a closer look at events involving the water and sewerage sector. Nearly half a century ago (mid to late 1970's) effective flood risk mitigation was delivered on a major scale by relying on what we euphemistically call SuDS infrastructure. Following a catchment flood risk analysis surface water run-off from a large residential development (c.980 dwellings) located in Stockport, Cheshire was one of the first large-scale house builder initiatives to rely on above ground surface water run-off attenuation and controlled discharge. Moreover, this was not the only occasion the concept of effective management and control of surface water run-off relying on what we now call SuDS infrastructure has been applied.

Post-privatisation of the water and sewerage sector in 1989 saw an increasing reliance having to be placed on alternative means of surface water disposal other than unattenuated discharge to public surface water/combined sewers. The reason(s) - a consequence of a notable decline in sector investment in sewerage assets, including the effective maintenance and upgrading thereof. The latter continues to be a principal issue in the context of nutrient-related pollution.

(As an aside but still relevant in the context of water and sewerage sector investment is the post-privatisation decommissioning of established reservoirs by water companies with the subsequent land asset sold for housing development. One of the writers working for a major house builder at the time having been involved in such).

The lack of sewerage infrastructure investment at the expense of significant shareholder dividends has been exposed in robust research undertaken by academia, in addition to being frequently reported in most media outlets during the last two years. This underlying lack of investment, coupled with a perceptibly relaxed, arms-length approach to regulatory governance/control of a water and sewerage sector made up of a series of monopoly businesses, has seen the house-building industry become a convenient proxy to leverage inequitable financial contributions to offset the required investment by the water and sewerage sector pursuant to its statutory duties under ss37 and 94 of the Water Industry Act 1991 (WIA 91). These same inequitable fiscal principles have been applied by other statutory bodies, via the planning process, with nutrient neutrality having become a prime example in this regard.

That said, the house-building industry has always accepted the principle of contributions towards infrastructure and wider environmental/community-related benefits when such contributions are legitimate and underpinned by robust evidence-based legislation and technical evaluation. With regard to Natural England's advice to local planning authorities, this appears to fall short of these basic tests and for reasons articulated later.

From a legislative perspective, the Public Health Act of 1875 effectively started the environmental evolution. One of the key aspects of this earlier consolidating legislation required statutory bodies (mainly local Councils) to provide clean water and dispose of all sewage. Importantly, the 1875 Act also gave these same bodies power(s) to ensure that homes, especially those newly constructed, were connected to the main sewerage system.



Since the late 19thC through to today, we have seen numerous iterations of established domestic legislation. Likewise, improved public health and municipal engineering standards. Moreover, as the UK's scientific and technical expertise has evolved, so too has our reliance on responsive legislation and accompanying statutory guidance. More recently, the importance of social value if not social engineering, has started to be recognised and reflected in a growing number of legislative reforms. Furthermore, since the year 2000, corporate responsibility reporting has been a key feature of the annual accounts of many of UK house-building business. More recently, annual accounts have also included reference to company environmental sustainability credentials.

From the late 1930s up to the mid-1990s, the progressive introduction of new and updated legislation, together with accompanying statutory guidance, gained increasing momentum. For example, introduction of the Public Health Act 1936, the Water Act 1945, the Planning Act of 1947, Highways Act 1959, Water Act 1973, the Control Of Pollution Act 1974, the Environment Protection Act 1974, Water Resources Act 1991, the Urban Wastewater Treatment Regulations (England and Wales) 1994, the Environment Act 1995, and importantly, the EU Groundwater and Nitrate Directives respectively, to cite just a few of many that have and continue to have a direct bearing on wastewater collection and treatment. Moreover, all parts of the agricultural sector are similarly affected and should therefore remain cognisant of such important legislative changes.

The UK's subsequent membership of the EU (1973 to January 2020) also saw an exponential increase in EU environmental Directives and their subsequent transposition into UK law. Many of these legislative changes have had far-reaching repercussions for UK house building, especially from an environmental sustainability perspective. In response, many house builders have repositioned their respective businesses in addition to their making significant capital contributions to environmental and/or community infrastructure.

When respective writers entered the construction industry, house building was a relatively simple task when compared to the complex land acquisition and development due-diligence processes that exist today. Over the years we have moved from having been informed by 'smart' clear and easily understood legislative governance to a regulatory compliance environment embracing a litany of affecting legislation and statutes (sometimes conflicting in their requirements) – there are far too many to cite in this short informative. But each has to be given due cognisance as any land acquisition due diligence procedural flow chart will identify.



To add further complexity (for all actors involved in the development process), the planning system has entered a period of stasis to such an extent that we are witnessing a frustrating paralysis in housing delivery unlike anything experienced in the past. Likewise, the impact of ill-considered environmental compliance requirements that either fail the test of proportionality or which rely on the naive concept of development land value capture at the expense of taking due note of established statutory duties imposed on recognised competent arms-length bodies. In such an environment even experienced consultants together with major house builders find it difficult to navigate the various legislative provisions that take us to the point when we can actually begin on-site construction. Project viability is becoming a serious concern and in the present environment, it is hardly surprising that the important contribution to new housing from SMEs is rapidly diminishing.

In many respects, legislation established in 1974 together with an acceptance of the OECD Polluter Pays principle (subsequently enshrined in EU and UK domestic law) meant that house builders had to take even greater cognisance of extant environmental legislation, but more importantly, the environmental consequences of their business decisions and actions. Nowhere was this more prevalent than in the 1980's when it came to the investigation and remediation of contaminated land. After a series of serious, high-profile incidents involving the hazards/blight associated with the uncontrolled, lateral migration of landfill gas, underscored by poor regulatory oversight, housebuilders ignored environmental and ethical considerations at their peril. Ref: the incidents at Loscoe in Derbyshire (1986), North Yorkshire (1987), and Wigan Road, Leigh, Lancashire (1988).

With regard to wastewater collection and treatment the onset of the EU Urban Wastewater Treatment Directive (91/271/EEC), together with its' transposition into UK law, i.e., the Urban Wastewater Treatment Regulations 1994, crystallised not just the importance of effectual wastewater management/treatment but also the need to ensure final treated effluent quality meets the required standard(s).

⚠ However, this key strand of environmental legislation did not remove or alter the statutory duties imposed on all sewerage companies to effectually drain their area, and at their solus cost – the principle first consolidated in 1875.



As for the statutory duties imposed on all sewerage authorities/companies, these are currently defined by s94 of the Water Industry Act 1991. (Previously, s14 of the Public Health Act 1936). The relevance of s94, especially in the context of nutrient neutrality, merits repeating verbatim:

*"It shall be the duty of every sewerage undertaker,*

- to provide, improve and extend such a system of public sewers (whether inside its area or elsewhere) and so to cleanse and maintain those sewers and any lateral drains which belong to or vest in the undertaker as to ensure that that area is and continues to be effectually drained; and*
- to make provision for the emptying of those sewers and such further provision (whether inside its area or elsewhere) as is necessary from time to time for effectually dealing, by means of sewage disposal works or otherwise, with the contents of those sewers."*

Importantly, this statutory duty includes effective wastewater treatment at all WWTWs – a duty re-affirmed by Defra many times over and in series of decisions handed down by the Courts, including the Supreme Court on 9th of December 2009.

What is both interesting and relevant is that the duties established in 1875 were still referred to in the Supreme Court decision referred to previously – see *Barratt versus Welsh Water*[2009] UKSC 13, in particular para 23 of the decision. Given its' importance in the context of nutrient neutrality it has been recited below:

*"The right to connect to a public sewer afforded by section 106 of the 1991 Act and its predecessors has been described as an "absolute right". The sewerage undertaker cannot refuse to permit the connection on the ground that the additional discharge into the system will overload it. The burden of dealing with the consequences of this additional discharge falls directly upon the undertaker and the consequent expense is shared by all who pay sewerage charges to the undertaker. Thus, in *Ainley v Kirkheaton Local Board (1891) 60 LJ (Ch) 734 Stirling J held that the exercise of the right of an owner of property to discharge into a public sewer conferred by section 21 of the 1875 Act could not be prevented by the local authority on the ground that the discharge was creating a nuisance. It was for the local authority to ensure that what was discharged into their sewer was freed from all foul matter before it flowed out into any natural watercourse."**

The 'Act' referred to in the judgement is the Water Industry Act 1991.

Leaving aside the 2018 ECJ 'nitrate' decision ('The Dutch Case'), when it comes to nutrient neutrality, it is worth considering what progressive legislative and other changes have taken place that could have had an impact on house building – the summary that follows is not exhaustive:



*Above ground surface water attenuation pond designed and constructed in the late 1970's/early 1980's – Stockport, Greater Manchester.*

- 1989 – water & sewerage sector privatisation – Statutory Regulator appointed, i.e., Ofwat. But no changes in the statutory duties imposed on all water and sewerage companies, e.g., ss 37 and 94 WIA 1991.
- For foul sewers, the absolute right to connect to the public sewerage system under s106 of the WIA 1991 continues to this day.
- The Polluter Pays principle still applies – see Part IIA of the Environmental Protection Act 1990. Note: house building as a commercial enterprise activity does not generate nutrients, i.e., nitrates and phosphates, it is the occupier of any new building irrespective of building typology. In many respects, there is an established industry parallel that defines the polluter pays principle, namely the automotive industry. It constructs new cars but pays for neither the fuel required to power a vehicle, nor for the cost of dealing with the resultant pollutant emission(s) – this remains the car owner's responsibility.
- The Habitats Directive (92/43/EEC) came into being in 1992. It was subsequently transposed into UK legislation in 1994. (Conservation (Natural Habitats & C.) Regulations 1994). But earlier iterations were silent when it came to nutrient pollution.
- Since sector privatisation in 1989, housebuilders have paid a conservatively estimated £2.9 billion in water and sewerage infrastructure charges to water and sewerage companies. The raison d'être for these charges being to ensure new development did not place an undue burden on existing customers/infrastructure. Up to April 2018, capital investment arising from these significant contributions had never been categorised in company accounts and/or audited, – even by Ofwat. This was despite the ring-fenced intention associated with such a considerable house builder contribution. It remains moot whether house builder infrastructure charge payments found their way into shareholder dividends rather than the infrastructure for which it was meant to provide. Over the last 5 years and despite assurances from Ofwat, there has still been no reconciliation of infrastructure charge income versus supposedly ring-fenced expenditure specific to wastewater collection and treatment.



- Homeowners both existing and new continue to pay for effectual wastewater collection and treatment through domestic water and sewerage charges. Based on current, (cumulative) annual charges c.£30m of this revenue stream appears to be allocated across the sector for wastewater collection/treatment – a clear demonstration of the ‘polluter pays’ principle.
- House builders are obligated to ‘gift’ newly constructed water and sewerage assets to water and sewerage companies, i.e., for no payment whatsoever and unlike the procedures in place in Scotland. These assets are income generating in perpetuity yielding an income to companies worth around £90 – £100 million/year.
- In the context of regulatory control, there have been few, if any, water and sewerage company records and/or Ofwat disclosed audits identifying what investment in infrastructure has been committed to meeting the needs of a plan-led planning system and ever since sector privatisation. This includes investment in wastewater treatment in response to a growing population and progressive changes in environmental legislation per se both EU and domestic.

From a house builder perspective, the legislative status quo governing wastewater collection and treatment had remained unchanged until Natural England, without adequate consultation or any form of regulatory impact assessment, imposed the requirement for new development to demonstrate nutrient neutrality in certain areas of England and Wales. The fact that Natural England had two attempts to introduce its advice to planning authorities stands testimony to the ill-considered way the concept of nutrient neutrality has been imposed.

Yes, key aspects of legislation had previously been challenged in the Courts but the principles relating to wastewater collection/treatment, together with the right to connect to the public foul sewerage system have been repeatedly upheld. That said, from April 2018 Ofwat embarked on a series of progressive market reforms stemming from the Water Act 2014. These reforms have culminated in significant cost increases for water and sewerage infrastructure provision – every house builder is affected. Unless there is a willingness (and leadership) to revisit the facts and evidence underpinning the current disproportionate approach to nutrient neutrality, matters are likely to get much worse, with the embargo currently affecting the delivery of much-needed new housing likely to continue.



# 2 WATER AND SEWERAGE SECTOR ROLE IN ENVIRONMENTAL LEGISLATION

Since sector privatisation in 1989, progressive changes in environmental legislation have had a direct bearing on the operational compliance of wastewater treatment works (WwTWs), including treated effluent quality standards. Following a formal request for disclosure under the Environmental Information Regulations (EIR) in July 2022 – sent to three separate sewerage companies in England in addition to Ofwat – the writers received a series of interesting if not concerning responses. (There was a perceptible reluctance on the part of the sector in general to disclose. For clarity, and to provide an informed perspective, the questions asked at the time, based on the EIR preamble provided, have been repeated).

“The questions relate specifically to the following progressive changes in environmental legislation, and which had and continue to have a direct bearing on the s94 statutory duty imposed on all sewerage companies in terms of effectual wastewater treatment and treated effluent quality standards:

- July 1989 – Water Act 1989
- May 1991 – Urban Wastewater Treatment Directive
- July 1991 – Water Industry Act 1991
- July 1991 – Water Resources Act 1991
- December 1991 – Nitrates Directive
- May 1992 – Habitats Directive
- November 1994 – Urban Wastewater Treatment (England & Wales) Regulations
- December 2000 – Water Framework Directive
- December 2006 – Groundwater Directive
- 2006 – Bathing Water Directive
- April 2010 – The Conservation of Habitats & Species Regulations
- May 2014 – Water Act 2014 (s22 & s23)
- November 2017 – Conservation of Habitats & Species Regulations 2017”

## The Questions Posed to OFWAT

1. Since sector privatisation in 1989, what steps has Ofwat taken to ensure sewerage companies meet their s94 statutory duties in response to the progressive changes in environmental legislation (both EU and domestic) and specific to the effectual management and control of all WwTWs, especially the statutory obligations relating to treated effluent quality?
2. What level of Sewerage Company-related capex has Ofwat sanctioned/approved as part of the AMP process to meet these progressive obligations?
3. If compliance exemptions were deemed appropriate, what legal justification supported such decisions?

## The Questions Posed to 3 Individual Sewerage Companies

1. Did .... take cognisance of these (legislative) changes or rely on directive guidance from Ofwat on the presumption that Ofwat had considered the implications for all sewerage companies?
2. What level of Sewerage Company-related capex has Ofwat sanctioned/approved as part of the AMP process to meet these obligations arising from the progressive changes in legislation?
3. Was any committed/directive expenditure on in-consequence (environmental) WwTW upgrades/improvements sufficient?
4. What was the Ofwat approved/sanctioned capex quantum specific to WwTW improvements, especially in the context of the requirements for treated effluent quality?
5. If compliance exemptions were deemed appropriate, what legal justification supported such decisions?

The response from each organisation was somewhat startling.

Ofwat provided little if anything of a meaningful response – two of the questions were not answered at all. Two of the three sewerage companies provided no answers. A third sewerage company, following a further line of EIR questioning, confirmed the following:

**“... there is often guidance (for example, from Ofwat, the Environment Agency, the Drinking Water Inspectorate and Natural England about how we should comply with our statutory obligations, which helps us.”**



However, when asked which if any of the bodies/ organisations referred to had offered such guidance, the sewerage company didn't answer.

More recent evidence, i.e., Ofwat's recent publication "Ofwat: Final Methodology for PR24" (13th December 2022) contained an important material statement on page 23 of Appendix 9 and, specific to nutrient neutrality:

"Companies are subject to statutory requirements in relation to the removal of nutrients. Ahead of every price control period, **a programme of works to reduce nutrients is agreed with the Environment Agency, Natural England, and Natural Resources Wales to ensure wastewater treatment works (WWTWs) comply with the permitted level of nutrients in their discharge permits.** We engage on the optioneering process and assess the cost efficiency of the agreed schemes."  
(Underling for emphasis)

In the round, the responses from the water and sewerage sector beg a fundamental question, namely, if this is an engagement process involving statute-defined competent bodies, why did Natural England not advise Ofwat what was required as part of a sewerage company's s94 statutory duty. This is particularly relevant in the context of progressive changes in environmental legislation, which have a direct impact on the functionality of WWTWs, especially the standard(s) of treated effluent quality discharged into sensitive water bodies?

In reality, up to the point of the CJEU decision in late 2018, euphemistically referred to as the Dutch 'Nitrate' case, the issue of nutrient neutrality had rarely, if ever, featured as a concern for house builders. Why was this the case? In simple terms, the reasonable house builder expectation that the polluter pays principle would continue to apply and that sewerage companies regulated by Ofwat and the Environment Agency would deal with such matters as part of their statutory duty pursuant to s94 WIA 1991. (In this context, in issuing its directive to planning authorities, could it be argued that Natural England has actually exceeded its powers? Perhaps a matter for the Courts to consider).

It was not until Natural England issued the first strand of its' advice to certain local planning authorities (June 2019) that the matter began to gain prominence. Later directive advice from Natural England (March 2022) resulted in a total of 74 planning authorities being affected. In short, planning authorities were advised not to determine any planning applications, including those for reserved matters subsequent to the granting of outline planning consent if the development involved overnight accommodation in those areas where sensitive water bodies/receptors had been identified. If it could be demonstrated, using calculation methodology imposed by Natural England, that nutrient loading, i.e., phosphates and nitrates from the proposed development, would not increase prevailing nutrient levels, then planning consent could be granted. In its' crudest form, the concept of nutrient neutrality. What was and is still concerning is the fact that the calculation methodology is based on subjective input parameters and application of a skewed precautionary principle.



# 3 NATURAL ENGLAND'S NUTRIENT ADVICE & CALCULATION METHODOLOGY

Scrutiny of Natural England's advice to Local Planning Authorities considered to be affected by nutrient pollution, together with the nutrient budget calculation methodology, reveals a series of important quantitative and qualitative exclusions. This brings into question the veracity and representative input and therefore output from any calculation(s) undertaken, i.e.,

- The legislative requirement that the 'polluter pays' appears to be totally ignored.
- Potable water leakage currently stands at around 3.0 billion litres/day (cumulative) as reported by the sector – see Ofwat Report "Leakage in the Water Industry (21st November 2022). Moreover, the Environment Agency publication, "2021 River Basin Management Plan – Nitrates" (23rd October 2019)" includes the following material statement:

*"... the contribution water main leakage makes to nitrate pollution, i.e., 3.6kt of nitrogen/year to ground and surface waters in England represents c. 20% of total nitrogen inputs into water in urban areas."*

Mains water leakage, as reported by the sector in November 2022, represents c.120 litres/dwelling/day (based on an average household occupation of 2.4p/dwelling). As with nitrates, it is also a significant source of phosphorous entering the environment – **estimated at 1200 tonnes/year.**

Reference to British Geological Survey (BGS) data also confirms the level of phosphorous added to the water supply means that current levels of leakage could well be adding c.120mg/dwelling of phosphorous to already established sensitive water bodies and/or the environment, and by default – see later.



In addition, excessive extraneous water infiltration into public foul/combined sewers, including potable water from leaking water mains, is exacerbating the problem of nutrient pollution. Therefore, why have these phenomena not been recognised by Natural England as key offset components within the calculation? It can be credibly argued that by default house builders are actually being called upon to fund the consequences of water and sewerage companies failing to deal more effectively with potable water leakage. Likewise, excessive infiltration into the existing public foul/combined sewer network, as and when house builders are being forced to fund/acquire costly nutrient offset mitigation measures.

- Natural England have set an arbitrary water use figure as part of the calculation methodology. However, house builders use comparatively little, if indeed any potable water during the construction process. New homeowners, through domestic annual water and sewerage charges, are supposedly paying for the resultant additional wastewater treatment, i.e., a strict application of the polluter pays principle. Why has Natural England not recognised this principle?



- Natural groundwater contains nitrate concentrations <10mg/litre). How has this been reflected and/or accounted for in the Natural England calculation methodology? (See current UK soil and rock geochemistry data from BGS). It is reasonable to presume Natural England accounted for this when conceiving the calculation methodology, but this does not appear to be the case. When asked a specific question by one of the writers relating to this phenomenon, Natural England did not wish to respond.
- New housing accounts for c.10% of all annual housing transactions with water consumption in the existing housing stock reported by water companies to be in the order of 145 - 151 litres/person/day on average – i.e., much greater than the mandated water use limitation (125 l/p/d) specified in Approved Document 'G' of the Building Regulations. Therefore, the existing housing stock and other building typologies are already making a substantial contribution to phosphate and nitrate pollutant loadings. By comparison, new housing represents a mere 1% annual addition to the current housing stock of c.26 million.
- It is accepted that 95% of water supplied to a new home enters public foul/combined sewers – this has not been reflected in the Natural England calculation methodology.
- As reported by BGS and others, 95% of drinking water is dosed with phosphorous (c.1mg/litre) to mitigate the dissolution of lead from old lead pipe distribution infrastructure. Natural England do not appear to have accounted for this.
- In corroborating established house builder market research, more recent investigations undertaken by Lichfields on behalf of the HBF has shown the net increase in population in most WwTW catchments continues to be exceedingly small. The reason – the majority of new housing is purchased by catchment incumbent residents. This has not been accounted for by Natural England.
- Confined aquifers are unlikely to be affected by nitrate and phosphate pollution – this is not recognised and accounted for in the Natural England advice? In 2005, the Environment Agency issued the following publication: "Attenuation of Nitrate in the Sub-surface Environment". Why has this known phenomenon not been considered as part of the Natural England advice and calculation methodology, especially given the decade or longer diffusion and travel times associated with many aquifer systems – see subsequent BGS reference?

Even if new residential development were to achieve nutrient neutrality, its efforts would effectively succumb to the law of diminishing returns as the background rate of emissions will continue to deteriorate the quality of protected habitats – see British Geological Survey (BGS) publication "Nitrate in Water Timeline – 7th October 2021". This will continue to be the case, especially in those parts of England and Wales adversely affected by continued diffuse agricultural pollutant run-off.

Taking all these factors into consideration, the cumulative nitrate (and phosphate) contribution from new housing is indeed exceptionally low – a material fact finally conceded by Defra, Natural England and DLUHC. But just how low is this contribution when considered alongside the declared total nutrient pollutant loading from agriculture (70%) and sewerage companies (25 – 30%)?



# 4 THE NUTRIENT LOADING FROM NEW HOUSING



Reference to table 3.4 of the publication "Urban Drainage 4th Edition: Butler, Digman, Markopoulis and Davies 2018")states the pollutant loading from domestic sewerage is in the following range(s):

Total Nitrates: 30 – 85mg/litre/person/day (average 60mg/litre)  
Total Phosphates: 15mg/litre/person/day

To assess the basic domestic wastewater loading from new housing, the following factors also need to be considered:

- 1.Current mandated water use – 125 l/p/d (AD 'G' Building Regulations)
- 2.Average household occupation – 2.4 persons per dwelling (National Statistics – 2021 Census data.)Declining numbers in household occupation up to 2030 are ignored.
- 3.95% of water supplied is discharged to sewer
- 4.Water leakage is excluded
- 5.Infiltration into existing foul sewers is excluded
- 6.A factor of 20% needs to be included in any calculation to reflect the relatively low net new home/population additions to an existing WwTW catchment – see Lichfield Report March 2022 (Achieving Nutrient Neutrality for New Housing Development – Demographic Analysis of Natural England's Advice)(1)
- 7.The phosphorous dosing of potable water supplied (c. 6%) is ignored

The following calculation can therefore be applied to determine both nitrate and phosphate contributions from domestic wastewater:

- Nitrate:  $2.4 \times 125 \times 60 \text{ mg/l} \times 0.95 = 17,100 \text{ mg/day/dwelling}$  (0.0171 kg/day)
- Phosphate:  $2.4 \times 125 \times 15 \text{ mg/l} \times 0.95 = 4275 \text{ mg/day/dwelling}$  (0.0043 kg/day)

On an annualised basis respective contribution(s) would therefore be in the order of 6.24 kg/year (nitrate) and 1.56 kg/year (phosphate) per dwelling. (In defined water sensitive areas these contributions will be less given personal water use would be restricted to 110 l/p/day). Importantly, because of established demographic evidence not all newly constructed dwellings will result in an increase in nitrate and phosphate discharges within WwTW catchments – see later calculation. Similarly, newly constructed dwellings located in areas planned to achieve water neutrality.

# 5 THE NUTRIENT LOADING FROM AGRICULTURE

This is not an easy exercise as various bodies/organisations use different metrics when citing pollutant nutrient loading from various sources.

It has been suggested that the residual nitrate contribution from agriculture is around 96.8kg/hectare/year and phosphate c.8kg/hectare/year – see evidence presented to the House Of Commons Environment Audit Committee: UK Progress on Reducing Nitrate Pollution – 11th Report of Session November 2018.

However, the actual volumetric discharge of respective pollutants from agriculture into sensitive water bodies is influenced by a number of factors, typically, rainfall intensity/duration, site location, soil type/geology, soil permeability, hydrogeology, time of year, agricultural type/intensity, nutrient quantities used or discharged, etc.

Reference to a Defra-funded project (WT0701CSF – 25th October 2006) provided some indication as to the average quantum of phosphorous discharged into established water bodies in England, (TP 0.551kg/hectare) but more recent evidence disclosed by Defra, i.e., “Water Targets: Detailed Evidence Report (6th May 2022) appears to provide more up to date data in respect of agricultural discharges – ref. Fig 4 of the report:

**Total Nitrogen: 9 – 32kg/hectare  
(average – 20.5 kg/hectare)**

**Total Phosphorous: 0.1 – 1.6 kg/hectare  
(average 0.85kg/hectare)**

i.e., reasonably close to the figure previously quoted by Defra six years earlier and possibly reflective of known increases in pollutant loading from agriculture in subsequent years.

If we take Defra’s latest agricultural land use figure for just England, i.e., a utilised agricultural area (UAA) of c.8.8 million hectares and accounting for 68% of the total area of England, (see Gov.UK National Statistics – 1st June 2023)we can begin to determine the potential net phosphorous and nitrogen pollutant loading from agriculture, i.e.,

Nitrogen:  $(20.5 \times 8.8 \times 10^6)/1000 =$   
**180,400 Tonnes of TN/year**

Phosphorous:  $(0.85 \times 8.8 \times 10^6)/1000 =$   
**7480 Tonnes of TP/year**



# 6 PERCENTAGE CONTRIBUTION FROM NEW HOUSING WHEN COMPAIRED WITH AGRICULTURE

To determine a comparative percentage from housing versus agriculture, we need to rely on metrics that are consistent. Taking the latest data available from Government relating to annual net new housing completions, over the last 2 years these have averaged around 200,000/year. But, in the context of nutrient neutrality and as stated earlier it is important for any calculation to reflect the actual demographic of net new additions within a defined WwTW catchment area, i.e., taking the previously stated allowance of 20%. Incorporating these material parameters, we can arrive at a comparative pollutant loading from new housing:

Nitrogen/Nitrate:  $(0.017 \text{ kg/day/dwelling} \times 200,000 \times 365 \times 0.2) / 1000 = \mathbf{248.2 \text{ tonnes/year}}$

Phosphorous/Phosphate:  $(0.0043 \text{ kg/day/dwelling} \times 200,000 \times 365 \times 0.20) / 1000 = \mathbf{62.8 \text{ tonnes/year.}}$

As a simple percentage, the contribution from new housing when compared against nutrient pollution from just agriculture, is a mere **0.14% TN/year and 0.84% TP/year**, respectively. Moreover, agricultural pollution is stated as being c.70% of all eutrophic pollution discharges with virtually all of the balance attributed to sewerage companies, and which will capture a range of building typologies, together with industrial wastes. Therefore, on a simple pro-rata basis, the contribution from new housing is indeed exceedingly small.





# 7 CLOSING OBSERVATIONS

The legal precedent of the ‘polluter pays’ – enshrined in established UK legislation – must surely have remained at the core of any advice by Natural England to local planning authorities. This is clearly not the case.

It is a reasonable expectation that any competent body defined by statute would have undertaken a comprehensive analysis, including the usual regulatory impact assessment, before issuing directive guidance to local planning authorities that has resulted in the current paralysis in the provision of much needed new homes. Alas, this does not appear to have been the case. Moreover, it is manifestly inequitable for the house building industry to have been required to fund the consequences of a water and sewerage sector that has clearly failed to invest. Ofwat’s declared arms-length management and control of the Water and Sewerage Sector has clearly not been a success – likewise the lack of effective enforcement intervention by the Environment Agency before the current hiatus associated with nutrient neutrality gained traction.

It is a logical and reasonable expectation that the water and sewerage sector, including Ofwat should have taken cognisance of the progressive changes in environmental legislation, especially the impact on WwTW compliance functionality. Likewise, the requirements for responsive treated effluent quality standards. No evidence has been seen to say this crucially important part of the regulatory governance process has in fact been effectively administered. The results of the EIR requests referred to earlier provided substantive support for such an observation. Attempts to redress years of under-investment by the sector, compounded by the failure to respond to progressive changes in environmental legislation has left a legacy of pollution that is hardly the responsibility of the house building industry to address.

The statutory obligations placed on the water and sewerage sector have not changed but conversely, since 2018 Ofwat has relied on the considerable power it has to ensure the house building sector fills a substantial part of the sectoral investment black hole. This is despite the huge contributions

for infrastructure investment made by the house building industry since sector privatisation in 1989 in order to avoid the situation that we now have.

From a legal perspective, attempts to secure clarity and/or direction through the Courts or by relying on Counsel’s Opinion have only added to what is already a confused state of affairs. Moreover, the inference that all previous case law, including Supreme Court decisions have been subjugated by strict adherence to the Habitats Regulations is difficult to understand. But this is where we appear to be.

More importantly, before issuing their guidance it was surely incumbent on Natural England to consider an inventory of nitrate and phosphate contributions from all recognised sources and to arrive at a more accurate quantum before crystallising its’ calculation methodology, i.e., determine on a more accurate and representative basis what the contribution from new housing actually is. Could this be construed as being negligent on the part of Natural England?

Going forward, the house building industry is entitled to be consulted on a frank and detailed evidential basis with Natural England, the Environment Agency and Ofwat concerning the many issues identified in this informative paper. It is quite clear that the mitigation measures that are being imposed by Natural England are not only very costly but wholly disproportionate. Moreover, the present level of drinking water leakage and the nutrient pollution train it introduces, is a significant exclusion on the part of Natural England. Why should the house building industry be forced to pay for something for which it has absolutely no responsibility?

In summary, it is quite clear that the house building industry has indeed become a proxy for funding the solus statutory duties imposed on all water and sewerage companies which both Defra and Ofwat have condoned by their failure to exercise appropriate sectoral governance. It remains moot whether the various statutory stand accused of not discharging their statutory duties.



Environmental sustainability remains a principal consideration for any reputable house building business, many of whom having recognised the importance of such several years ago. Protection and enhancement of the environment comes at a cost, but any such costs must be proportional and representative of reality and cognisant of the requirements of established legislation – Natural England’s approach and the position(s) taken by Defra, DLUHC, the Environment Agency and Ofwat do not pass muster in this regard. An over-reliance on the principle of development land value capture paying for most things is naïve. In many respects it can act as a deterrent to future development needs. That said, how we approach the concept of nutrient neutrality needs to be revisited as a matter of urgency as a reliance on future provisions pursuant to the Retained EU Law (Revocation and Reform) Act 2023, offers no guarantees in effectively resolving the issue. With Government having decided to exclude from the King’s Speech intended legislation to deal specifically with Nutrient Neutrality, and therefore allow house building to get under way was seriously disappointing. Moreover, whilst the Chancellor’s Autumn Statement committed around £100 million for nutrient mitigation measures, it still leaves the issue only partially addressed. It is estimated that these measures will enable the construction of 40,000 much needed new homes but it represents a mere 27% of all new housing currently embargoed as a consequence of Natural England’s advice to 74 planning authorities. Furthermore, there are no clear-cut indications of when these measures will be provided or at what cost to the housebuilder community. In essence, a continuing lack of effective resolution.

Unlike the agricultural industry that is given public funds to mitigate/reduce the effects of nutrient pollution, by comparison, housebuilders are being called upon as a proxy resource to fund significantly disproportionate mitigation measures.

Ray Farrow Dip Eng Surv, MCIHT

Stephen Wielebski CEnv; C Build E; MSc (Dist); FCIQB;  
FCABE; MIET; ACI Arb; FRSA  
Chartered Environmentalist  
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Technical & Development  
Services Holdings Ltd.  
West End House,  
60 Oxford Street,  
Wellingborough,  
Northants,  
NN8 4JJ

Tel: 01933 423720  
Mob: 07939 595778  
Email: [enquiries@t-d-s.com](mailto:enquiries@t-d-s.com)  
Web: [www.t-d-s.com](http://www.t-d-s.com)



Stephen Wielebski  
Principal Partner & Consultant  
WA Consultancy Limited  
3 Carmarthen Close  
Callands  
Warrington  
Cheshire  
WA5 9UT

Email: [sew@waconsultancy.co.uk](mailto:sew@waconsultancy.co.uk)  
Company Reg: 626981