Portsmouth City Council

Interim Nutrient Neutral Mitigation Strategy for New Dwellings

for the 2019 - 2023/ 24 period

November 2019

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1. Introduction

1.1 High levels of nitrogen draining from the Solent catchment area have caused excessive growth of green algae (a process called eutrophication), which is having a recognised, detrimental impact upon the region's internationally protected habitats.

1.2 Following changes in European Case law, Natural England (the government's advisor for the natural environment) has advised Local Planning Authorities (LPAs) that all new development involving, or generating additional, overnight stays should be 'nutrient neutral', as one means of ensuring that development does not add to the existing nutrient burdens. Impacts from additional wastewater generated by new development on water quality must be appropriately addressed in order for the Appropriate Assessments[1] of proposals to conclude that there are no adverse effects on habitat sites (and for the Council's decisions to be legally compliant).

1.3 Mitigation measures to become 'nutrient neutral'[2] are therefore required for additional dwellings (inc. the intensification of dwellings), tourism related development and any other development likely to generate an overnight stay, due to the additional wastewater generated.

1.4 Where applicants are unable to provide their own mitigation, the provisions of the Strategy will enable applicants to make a monetary developer contribution for the Council's 'nutrient neutral' mitigation package. Developers are still encouraged to put forward own mitigation proposals, for either part or all of the impact of the proposal where possible. However, it is acknowledged that as the majority of proposals in the city are small scale and/ or within tightly constrained brownfield sites, a contribution under the Interim Strategy may be more practicable.

1.5 The aim of this Interim Strategy is to help the Council meet the tests of the Habitat Regulations in perpetuity, avert the potential risk of legal challenge and to provide certainty for applicants. All applications, and the associated nitrate neutral mitigation proposals, will still be determined on a case by case basis in consultation with Natural England and other key consultees.

1.6 The Interim Strategy is intended to provide a mitigation solution for the short term (three to four years) to enable house building to continue in Portsmouth. The Council, together with the *Partnership for South Hampshire* (PfSH) authorities, will continue to develop a comprehensive, longer term strategic solution and lobby the Government to address the main sources of water pollution.

1.7 This Strategy does not deal with any other impacts from new dwellings on the Solent habitat sites (such as loss of habitat or increased noise) or the potential impact of other types of development (such as new employment sites). Separate mitigation may be required to address these additional impacts on the SPAs that arise from new development. The impact of in-combination recreational visits

[1] An assessment required by the Habitats Directive (transposed by the *Conservation of Habitats and Species Regulations 2017* (as amended)) to determine whether a plan or project is likely to have a significant impact on a Natura 2000 site.

[2] 'Nutrient neutrality' would be achieved where the wastewater output of a development (calculated by water use in litres per person per day) sent to Wastewater Treatment Works can be offset by other measures.

arising from housing is still addressed separately by the Solent SPAs by the *Solent Recreation Mitigation Strategy* (known as 'Bird Aware').[3]

1.8 This document sets out the background to the water quality issue affecting the Solent; the roles of different agencies; what types of development require mitigation; mitigation options, a schedule for developer contributions and the expected arrangements for implementation, monitoring and review of the Strategy.

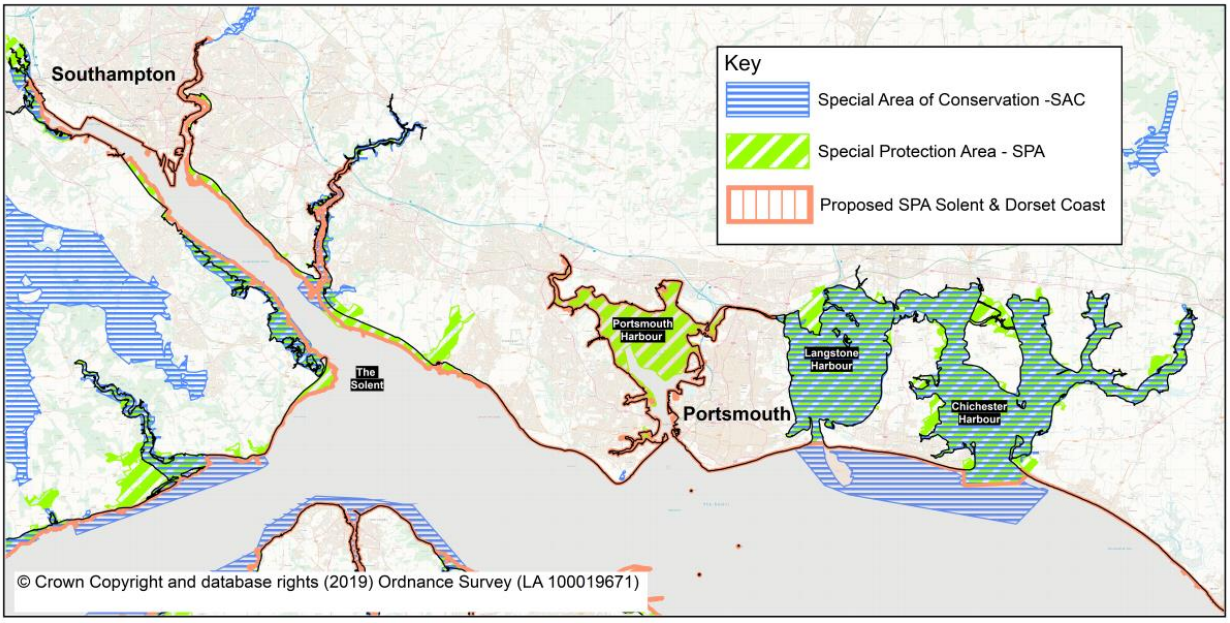
2. Background

2.1. Why is Mitigation Needed?

2.1.1 The Solent's water environment is protected under the *Water Environment Regulations*[4] and the *Conservation of Habitats and Species Regulations*[5] and has national protection for parts of the coastline and seas[6].

2.1.2 The best available up-to-date evidence identified that some areas of the internationally designated Solent habitat sites (Special Protection Areas (SPAs), Special Areas of Conservation (SACs), and potential Special Protection Areas (pSPAs) are in an 'unfavourable' condition due to existing levels of nutrients (causing eutrophication) and therefore have an **unfavourable conservation status** under the Habitats Regulations[7]. Eutrophication also restricts the growth, distribution and variety of food available for wading birds also protected under the Habitat regulations.

Figure 1: Map of the Solent's Internationally Designated Habitat Sites



[3] Solent Recreation Mitigation Partnership (December 2017) *Solent Recreation Mitigation Strategy*. See https://www.birdaware.org/
[4] *The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017*
[5] *Conservation of Habitats and Species Regulations (England and Wales) Regulations 2017 (as amended)*
[6] Including *Wildlife and Countryside Act 1981* (as amended), *Countryside and Rights of Way Act 2000*, *Marine and Coastal Access Act 2009* and *Natural Environment and Rural Communities Act 2006*.
[7] Natural England's Condition Assessments of the Solent habitat sites were undertaken in the summer of 2018 summarised in Natural England (June 2019) Advice to LPAs: Advice On Achieving Nutrient Neutrality For New Development In The Solent Region

2.1.3 While the PfSH *Water Quality Working Group* was in the process of preparing a long term strategy to address the impacts of anticipated growth in south Hampshire on the water environment beyond the year 2020, changes in European case law resulted in nutrient enrichment becoming an immediate planning issue for Local Authorities. A Court of Justice of the European Union (CJEU) decision, known as the 'Dutch Case'[8] (in combination with the 'Sweetman' judgement[9]) has implications for areas where the conservation status of a habitat type is already know to be “unfavourable” (as in the case in the Solent) and the authorisation of activities (i.e. new housing) which would add further nitrogen loading to that habitat (through additional sewage output). The judgement therefore applies to the decisions of LPAs within the Solent area.

2.1.4 Natural England advise that the uncertainty about the impact of new development on designated sites therefore now needs to be recognised for all proposals that are subject to new planning permissions and have inevitable wastewater implications from additional overnight stays. Any increase is deemed significant, however small (e.g. one additional dwelling), due to the in-combination impacts.

2.1.5 Natural England's stance is that the achievement of **nutrient neutrality**, with a calculated nitrogen budget, if scientifically and practically effective, is a means of ensuring that development does not add to existing nutrient burdens and will enable Appropriate Assessments to conclude no adverse effects on international sites.

2.2. Sources of Nutrient Enrichment

2.2.1 Nutrient cycles are natural processes. However, these systems have been overloaded in a relatively short span of time (post-industrialisation), and this has been particularly attributed to application of synthetic fertilisers in agricultural practices.

2.2.2 An excessive richness of nutrients (including Nitrogen and Phosphorous) can cause a dense growth of plant life and algae (a process known as Eutrophication); this depletes the oxygen in the water body, which can result in reduced biodiversity. Reduced oxygen in drinking water can also be harmful to people[10]. Nutrient pollution can also damage terrestrial habitats by altering plant growth rates, changing plant communities and disrupting the food chain for wildlife.

2.2.3 Nitrogen is converted into its multiple forms as it circulates among the atmospheric, terrestrial and marine ecosystems. There are two main forms of nitrogen - organic and inorganic. Within certain levels, nitrogen is beneficial to animals, plants and the wider environment, but if highly concentrated (in oxidised form as nitrates (stable compound) or nitrites (unstable compound))

[8] Joined CJEU Cases C-293/17 and C-294/17 Coöperatie Mobilisation for the Environment UA and Others v College van gedeputeerde staten van Limburg and Others issued on 07 November 2018.
[9] CJEU Case C-323/17 People Over Wind, Peter Sweetman v Coillte Teoranta judgement issued in April 2018
[10] *Water Supply (Water Quality) Regulations 2000* impose stringent standards for over 50 different parameters that are used to assess the quality of drinking water; 50 mg/l (milligrams per litre) of nitrate are allowed in drinking water. Portsmouth Water have install blending arrangements to meet these limits. For more information see: https://www.portsmouthwater.co.uk/about-us/water-quality/

can have a damaging impact on ecosystems and the organisms that depend on them.

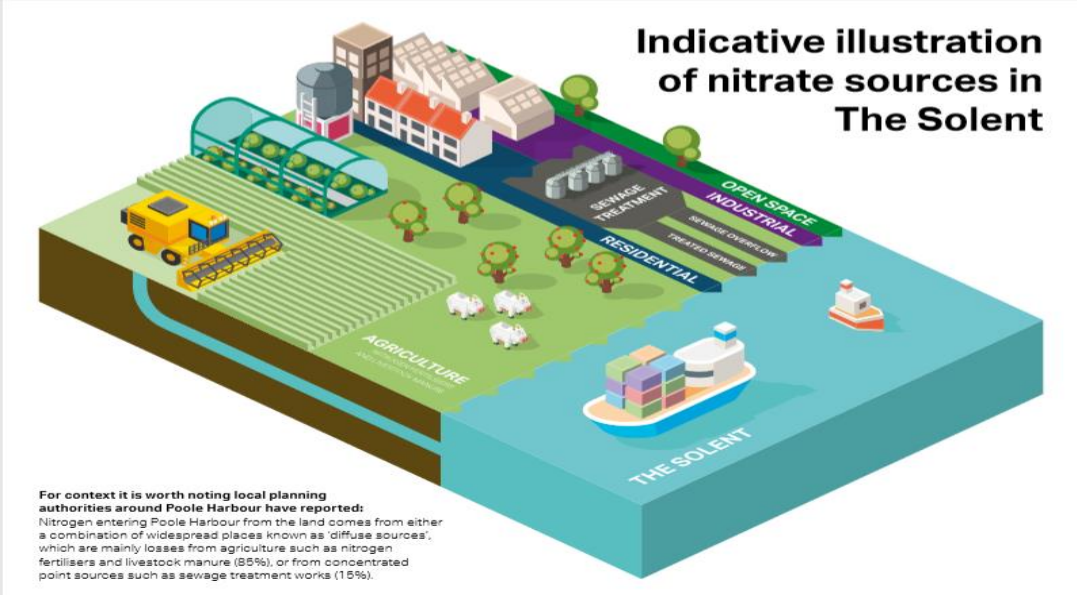
2.2.4 Phosphorous is an essential nutrient for plant growth'; in fertiliser it helps plants convert other nutrients into usable building blocks for growth. Phosphorous is not part of the nitrogen cycle but has similarities with nitrates as a pollutant; run-off from agriculture use and sewage output can cause eutrophication and ecological deterioration of surface waters. Generally, phosphorous is considered to be more of a pollutant in rivers than other water bodies and groundwater sources, though this is depends upon the local geology.

2.2.5 Water quality is affected by a combination of different pollutants, including nitrogen and phosphorous. It is considered that the cycle of both nutrients, and their interaction with each other, need to be understood to improve the ecological status of water sources[11].

2.2.6 Notwithstanding the above, there is evidence that the principal nutrient that tends to drive eutrophication in the marine environment is nitrogen, and this is supported by modelling and research undertaken by the Environment Agency within the Solent estuaries**. The best available evidence at this time therefore indicates that the focus within the Solent catchment should be on nitrogen reduction.**

2.2.7 Overall it is thought that around 75% of nitrogen pollution arises from agriculture land uses and 25% from urban land uses. See Figure 2 and Table 1 for more information on the sources of excess nitrogen and its impacts. Nitrate enrichment is not an issue exclusive to the Solent catchment; about 58% of land in England was within a 'Nitrate Vulnerable Zone' (NVZ) in 2017, designated as at 'risk from agricultural nitrate'[12].

Figure 2: Sources of Nutrients



[11] House of Commons Environmental Audit Committee: UK Progress on Reducing Nitrate Pollution, Eleventh Report of Session 2017–19

[12] NVZ land is comprised of rivers breaching the 50 mg/l nitrate limit (47%); groundwater breaches the 50 mg/l limit (25%) and eutrophication in estuaries and lakes/reservoirs (6% (13 estuaries and 68 lakes/ reservoirs)).

Table 1: Source of Nitrogen Pollution and Impact Pathways[13]

Source of Nutrients	Pathway/ Impact
Agricultural practices	Manufactured fertiliser (containing urea, ammonium and nitrate) increases agricultural production by replacing naturally occurring nitrogen in soil, but excess can run off and leach from crops and grasslands into water systems causing pollution. Animal wastes can also result in nitrate and phosphorous leaching into water systems if poorly managed.
Sewage	Nutrient enrichment from treated and untreated domestic and industrial wastewater outputs. This can occur from permitted discharges from Wastewater Treatment Works (WwTs), unpermitted spills and other wastewater infrastructure failures (including urban runoff and overflows).
Urban Runoff	Leaching of pollutants (e.g. atmospheric deposition, lawn fertiliser, pet waste) from urban areas carried by rain and stormwater from roads and other impermeable surfaces into sewers and watercourses.
Atmospheric Deposition	The emission of pollutants from the energy (inc household heating), transport, agriculture and industrial sectors also form part of the wider nitrogen cycle. This includes nitrogen oxides[14], as well as ammonia and particulate matter (PM10 and PM2.5) which can mix with other pollutants such as ozone and sulphur dioxide. Such emissions can lead to negative impacts on human health and ecosystems; for instance when nitrogen oxides dissolve in water and decompose, they forms nitric or nitrous acids which can lead to acidity and eutrophication.
Natural Sources	The build-up and/ or run off of algal growth, organic decay and faecal matter.
Past Agricultural and Industrial practices	The gradual leaching of nitrates into groundwater sources from high historic use, despite current controls and decreases in use over the last 35 years, due to the geology in some parts of the UK (particularly in chalk and thick saturated zones). It is estimated that pollution from such sources may not peak for another 60-100 years.[15]
Potential Future Sources/ Increases	- Increased effluent from population growth. - Increased land pressures from increasing demand for food from population growth and the UK's potential departure from the EU. - Changes to the stability of nitrate in soils from climate change increasing the frequency and intensity of rainfall and drought.

[13] Table adapted from Annex 1 of the House of Commons Environmental Audit Committee UK Progress on Reducing Nitrate Pollution Eleventh Report of Session 2017–19.
[14] Nitrogen oxides are the generic name for a range of gases, including nitrous oxide, nitrogen dioxide, nitric oxide and nitrous oxide.
[15] House of Commons Environmental Audit Committee UK Progress on Reducing Nitrate Pollution Eleventh Report of Session 2017–19, para. 35.

2.3. Regulatory Regimes and Government Agency's Positions

2.3.1 The regulation of the water industry and the agricultural sector are matters for the Government and its agencies and, as indicated in the previous section, the nitrogen output of new dwellings is relatively minor compared with other sources. Nevertheless, the planning system provides the comprehensive regulatory mechanism to address such impacts explicitly for each new consent. This is in contrast to the other contributing sources of nitrate pollution, which tend to operate within existing consent regimes or through voluntary agreements.

2.3.2 The roles of the relevant bodies are as follows:

The **Department for Environment Food and Rural Affairs (Defra)** issues guidance relating to the natural environment and the food and farming industries, and sets the overall water and sewerage policy framework in England. This includes limits on the maximum average amount of manufactured fertiliser and organic manure that can be applied to most crops in NVZs, and the conditions in which this can be done. Defra's Catchment Sensitive Farming (CSF) programme works with farmers to take voluntary actions to reduce diffuse water pollution fertiliser and slurry run-off. Natural England and the Environment Agency are executive non-departmental public bodies of Defra.

The **Environment Agency** is the water industry's environmental regulator and defines the environmental permits that water companies are required to meet. These permits set limits on the amount of certain pollutants that can be released. The EA works with water companies, including Southern Water, to develop the Water Industry National Environment Programme (WINEP) which includes schemes and investigations that protect and enhance the environment.

Natural England is the government's adviser on the natural environment with duties for protecting and enhancing biodiversity for the benefit of present and future generations.

Ofwat are the economic regulator of the water and sewerage sectors in England and Wales. They sure that the water companies properly carry out their functions and protect the interests of consumers.

Southern Water is the relevant statutory undertaker for wastewater services in the PfSH area. It is regulated by a permit system set by the Environment Agency which limits the amounts of nitrates and phosphates which can enter water courses from Southern Water's infrastructure. **Portsmouth Water** are the drinking water supplier to Portsmouth and the surrounding area. As part of Ofwat's 2019 price review (PR19), all water companies must submit a detailed business plan to Ofwat, outlining how they will meet the needs of their customers from 2020 to 2025 and beyond; covering investment proposals, how they will ensure the long-term resilience of their infrastructure and operations and fee proposals.

Ministry of Housing, Communities and Local Government (MHCLG) is the government department with responsibility for increasing the housing supply in England and boosting local economic growth. MHCLG

sets out planning policy guidance for Local Authorities, including the Housing Delivery Test; if a Local Authority falls 5% below its set housing requirement, the government will introduce sanctions depending on the extent of the shortfall.

Local Planning Authorities (LPAs) are responsible for carrying out planning functions (plan-making and the determination of planning applications) for their authority area. As a public body, LPAs also have a duty to conserve and enhance biodiversity under the Natural Environment and Rural Communities Act 2006.

2.3.8 At the time of preparing this Strategy, there were contradictory positions on the matter from Central Government, both within Defra and between Defra and Ministry of Housing, Communities and Local Government (MHCLG).

2.3.9 As explained in Section 2.1, Natural England has advised that under the requirements of the Habitat Regulations, the existing uncertainty about the deterioration of the water environment must be appropriately addressed in order for the assessment of a proposal to be legally compliant. LPAs are therefore advised to be 'as precautionary as possible' when addressing uncertainty and calculating nutrient budgets.

2.3.10 In contrast, a Technical Guidance Note issued by the Environment Agency (June 2019)[16] states that 'Using our evidence we have confirmed that no further investment is needed to treat wastewater to a tighter nitrogen limit for any of the treatment works in the Solent area'. The Environment Agency go on to say that: 'Where new development can be accommodated within the current wastewater discharge activity permit limits of individual Wastewater Treatment Works (i.e. that there is capacity to take the extra wastewater flows from new development whilst still treating effluent to the same standard) then we consider the development would be acceptable'.

2.3.11 Another dimension to the issue is whether the current wastewater permit limits issued by the Environment Agency are fit for purpose. A report published by Ofwat, in June 2019[17], identified that Southern Water were responsible for serious failings in its statutory duties as between 2010 and 2017, including significant unpermitted and premature spills of wastewater (amounting to thousands of hours), insufficient planning and investment in their infrastructure and intentional misreporting of permit breaches. Ofwat proposed a financial penalty for these breaches, the majority of which would be a customer rebate. PfSH made representations the Ofwat report, expressing on concern on the scale of the incidences and suggest that financial penalty ought to address the harm caused, potentially in the form of a Remediation Fund[18]. It is acknowledged that Southern Water have since started to improve its practices, and are working with the PfSH Local Authorities through the *PfSH Water Quality Working Group*.

2.3.12 The Council, through PfSH. has engaged with Government on the need for a joined up approach and the need to develop a comprehensive, long-term, funded

[16] Environment Agency (June 2019) Technical Guidance Note Solent and South Downs: *Wastewater treatment capacity for new development in the Solent Area*. Available from: https://www.push.gov.uk/wp-content/uploads/2019/08/Environment-Agency-Technical-Guidance-Note-on-Wastewater-Treatment-Capacity-in-the-S.. .pdf

[17] Ofwat (June 2019) Notice of Ofwat's proposal to impose a penalty on Southern Water Services Limited

[18] PfSH (31 July 2019) Report to the Partnership for South Hampshire Joint Committee: *Nutrient Neutrality Update*

mitigation strategy for the Solent area, given the clear conflict of these issue with the urgent need to deliver housing and support local economic growth. MHCLG confirmed, in September 2019, it was working closely with colleagues in Natural England, the Environment Agency and DEFRA to understand potential resolutions to this issue. One proposal, promoted by PfSH, is that the Environment Agency should be instructed to commence reviews of the existing wastewater treatment permit levels for nitrogen, with robust Appropriate Assessments.

2.3.13 The on-going work of the PfSH *Water Quality Working Group*[19] will include a review of the PfSH 2018 *Integrated Water Management Strategy* (IWMS)[20] . The review will assess the sensitivity of the whole catchment and address water resource capacity, supply and quality issues as well as testing some of the underlying assumptions in the original 2018 IWMS.

[19] PfSH Water Quality Working Group is comprised of representatives from the South Hampshire Local Authorities (Hampshire County Council; the unitary authorities of Portsmouth Southampton and district authorities of Eastleigh, East Hampshire, Fareham, Gosport, Havant, New Forest, Test Valley and Winchester and New Forest National Park Authority), Chichester District Council, South Downs National Park Authority, Natural England, Environment Agency, Southern Water and Portsmouth Water.

[20] PfSH (March 2018) *Integrated Water Management Study* prepared by Amec Foster Wheeler Environment & Infrastructure UK Limited

3. The Interim Mitigation Measures

3.1 The mitigation options in this Interim Strategy provide a possible framework for applicants to demonstrate and secure 'nutrient neutrality' in perpetuity for their proposals, whilst a longer term strategy for the Solent is being developed.

3.1 What type of development requires mitigation?

3.1.1 Mitigation is required for development that results in a net increase in population, or draw additional visitors from beyond the catchment, due to the inevitable additional wastewater implications. This is expected to apply to planning applications, permissions in principle and prior approvals[21] for the following:

- New dwellings and residential accommodation, including changes of use (e.g. office to residential)
- Homes in Multiple Occupation enlargements (Class C4 Use to Sui Generis Use)
- Student accommodation
- Dwellings to be used as holiday accommodation (e.g. caravans)
- Hotels
- Tourism attractions

3.1.2 Mitigation should not be required for wastewater arisings from:

- Household (Class C3 Use) extensions for extra bedrooms, or for conversions from a dwelling (Class C3 Use) to a House in Multiple Occupation (HMO) (C4 Use). This is because there is no upper limit on household (Class C3 Use) occupation within a single family and therefore such applications do not necessarily result in a net increase in population.

- Other uses that do not involve overnight accommodation or generate overnight stays. E.g. Commercial development, employment uses or community facilities. This is because it is assumed, to avoid double counting of wastewater arisings, that anyone living in the catchment also works and uses facilities within the catchment.

3.1.3 The need for mitigation for applications for temporary/ transit pitches and/ or permanent accommodation for gypsies and travellers would be assessed on a case-by-case basis by the Council in consultation with Natural England.

3.1.4 Early discussion with the Council on the need for mitigation, determining the impact of the proposal and potential mitigation options is strongly encouraged.

3.2 Mitigation Options

3.1.5 To address the uncertainty about the impact of new development on designated habitat sites in the Solent, applications for development requiring mitigation must submit information on how it is proposed to achieve Nutrient

[21] Under the provisions of Schedule 2 of *the Town and Country Planning (General Permitted Development) Order (England) 2015* (as amended)

Neutrality, including a calculated **Nitrogen Budget of the proposal** and the options explored and discounted as applicable.

3.1.6 For advice on calculating a Nitrogen Budget see Natural England's Methodology for further details and the calculation worksheet provided by the Council (separate Appendix 1).

3.1.7 The following approaches are currently considered to be acceptable, in principle, as means of achieving or contributing to nutrient neutrality:

> **Mitigation Option 1:** Offsetting against the existing lawful land use (water use) on an application site, extant permissions or other land controlled by the applicant; and/ or
>
> **Mitigation Option 2:** Other bespoke direct and in-direct mitigation measures, agreed in discussion with the Council and Natural England. For instance, Sustainable Urban Drainage Systems (SUDS), interception or wetland creation; and/ or
>
> **Mitigation Route 3:** Purchasing of 'mitigation credit' from the control of, and water efficiency improvement works to, the Council's own property assets or other recognised source of 'credit' in perpetuity.

3.1.8 A mix of options can be applied and the Council would expect the potential for mitigation via Options 1 and 2 above to be fully explored by applicants before the purchase of the Council's mitigation credit (Option 3) is sought**. All mitigation proposals would be considered on a case by case basis in consultation with Natural England.**

3.1.9 Proposed mitigation measures would need to be delivered prior to first occupation, which is when the harm would occur in this instance. A phasing of delivery and mitigation is possible for larger developments.

3.1.10 It is worth noting that the practicable mitigation options for the majority of proposals in Portsmouth (small scale brownfield development plots) are likely to be related to the water output of the proposed development. The estimated scale of water use is also the starting point for Natural England's methodology (see Appendix 1) for determining the nitrogen load of a proposed development.

Mitigation Option 1: Off-Setting Solutions

3.1.11 In some instances the existing lawful use (water output) or application history of a development site could be taken into account for the Nitrogen Budget of the proposal to help reduce or negate the impact of the proposed use. The following examples could be discussed as potential off-setting measures:

- Redevelopment to a lower or equal occupancy.
- Dwellings numbers/ estimated water use[22] from extant planning permissions.[23]

[22] Best available evidence.

[23] The account to be taken of extant planning permissions will be determined on a case by case basis considering the status of the extant permission, the likelihood of implementation and with acknowledgement of the Council's discretionary power to revoke permissions under s97 of the Town and Country Planning Act when it

- Changes of use on other land which drains into the same catchment and is controlled by the applicant (either directly or by agreement) in perpetuity. For example, the ceasing of a relevant wastewater generating use, or a change of use to land with a lower nitrogen loss (e.g. agricultural land to open space). Any changes of land use would need to be enforceable in perpetuity.
- Other significant water savings which can be sufficiently evidenced (e.g. ultra high water efficiencies). .

3.1.12 All proposals will be expected to implement higher standards of water efficiency (no more than 110 litres per person per day), to be secured by condition.

Case Study of Mitigation from Direct Off-setting

Site: Longdean Lodge, Hilsea

Developer: Portsmouth City Council

Proposal: Development of 13 supported living flats

Mitigation: The site previously contained 48 bedspaces in a care home occupied with poor water efficiency, creating 7,584 litres of waste water per day. However this use was ceased and the building demolished more than three years ago such that the previous wastewater impacts cannot be 'credited' against the new development. The developer (Portsmouth City Council) has accepted a condition on the development of the site for 13 supported living flats, requiring higher water efficiency of 110 litres per person per day. This therefore requires direct mitigation for 1,430 litre of wastewater per day from the proposed new units. Edinburgh House previously contained 32 units/ bedspaces, meaning its permanent vacancy results in a wastewater reduction of 4,653 litres per day*, an improvement adequate to mitigate the development of Longdean (an estimated output of 3432 / 1430 lpppd), with the excess 'credit' being added to the Council's 'Nutrient Neutral' Mitigation Credit bank.

A resolution from Cabinet/ the relevant portfolio Member(s) will ensure that Edinburgh House is not to be occupied or disposed of without securing its own nutrient mitigation measures in accordance with this strategy. The resolution would be noted with the property and GIS reports; if Edinburgh House was to the sold in future, a s.111 agreement could be entered into with a prospective purchaser, appending a form of s.106 obligation to be entered into upon transfer

*Calculated at the average water consumption rate for Portsmouth of 145.4 lpppd.

is expedient to do so to support the general duty to take appropriate steps to avoid significant deterioration of habitats and disturbance of species in accordance with Article 6(2) of the Habitats Directive.

Mitigation Option 2: Bespoke Mitigation Solutions

3.1.13 If direct off-setting is insufficient to result in nitrate neutrality other bespoke mitigation options should be explored to be incorporate in the design or delivery of the proposed relevant development. Examples of options supported in principle by Natural England include the following:

- Measures that will remove nitrogen draining directly from individual development sites, such as incorporating on-site wetland or reed beds designed as part of a sustainable urban drainage (SUDs) system. Wetlands receiving nitrogen-rich water can remove a proportion of this nitrogen through processes such as denitrification and sedimentation.
- The creation of wetlands, SANG, woodlands, nature reserves and other Green Infrastructure (GI) from agricultural land, leading to a change in land use to a lower level of nitrogen input within the same catchment and securing this in perpetuity.
- The creation of agreements, either within the authorities and Southern Water or with third parties to provide and maintain an increase in nitrogen offsetting from catchment management measures. This could include interceptor wetlands or woodland planting schemes on a farm in the catchment.

Case Study of Mitigation from Bespoke Solutions

Site: St James Hospital

Developer: Homes England and partners

Proposal: Development of 107 dwellings

Mitigation: To secure nitrate neutrality Homes England have offered to secure the change of use of an area of agricultural land within the relevant catchment to a use with significantly less nitrogen deposition. Using the standard methodology (summarised below), the reduction in total nitrogen has been identified as sufficient to mitigate the increased nitrate production from the redevelopment of land at St James Hospital, and further sites in Portsmouth as well as sites in the wider catchment outside of Portsmouth.

Methodology:

Total area of land to be used for mitigation = 4.13 ha
Current Nitrogen deposition from the land = 128.856 kg/
Proposed Nitrogen deposition from the land = 20.650 kg/ yr

(A) Net Nitrogen reduction = 108.206kg /yr

Proposed dwellings at St James Hospital = 107
Nitrogen production per dwelling (with water efficiency) = 1.0009kg/ yr

(B) Total Nitrogen production = 108.013kg/ yr

Net Nitrogen introduced to catchment (A-B) = -0.193 kg/ yr

Mitigation Route 3: The Council's 'Nutrient Neutral' Mitigation Credit

3.1.14 Once a developer has fully considered and evidenced the opportunities for off-setting the proposed development's Nitrogen Budget by maximising any potential opportunities under Options 1 & 2 (i.e. offsetting against relevant previous on-site uses and potential alternative uses on other land that can be bought into the developers control, and design and delivery opportunities to mitigate any remaining excess nitrogen); then support from the Council's 'Nutrient Neutral' mitigation credit bank can be sought.

3.1.15 The Council is able to use its influence [as landowner] to make permanent changes and decisions regarding its existing property holdings, and has the flexibility to consider other mitigation options. Accumulated water efficiency improvements, and other water savings from the control of the Council's own assets, can be used to provide wastewater 'headroom' (or 'credit') for new development. These savings, in combination with securing higher water efficiency standards for new development by condition, should ensure that there is no net increase in wastewater from the city area to its Wastewater Treatment Works[24] (WwTW). If less water is sent to the WwTW for processing, less treated wastewater can be released in the Solent under its permitted concentration limit for nitrogen which is measured in milligrams per litre.

3.1.16 These savings will be quantified and accrued in a live database for the Council to monitor and release as 'credit' that can be purchased to offset the potential impact of new development. These mitigation credits will be non-transferable, and may only be used to mitigate development within the administrative area of Portsmouth City Council, unless specifically agreed in writing by the Council as part of an agreed Duty to Co-operate arrangement.

3.1.17 As Natural England expects any mitigation measures to be secured 'in perpetuity', it will accept such water saving measures (in principle) made by a public body about changes to its own assets to qualify. In general, Natural England do not accept such measures within the private sector at this time, due to uncertainties in whether such improvements can be secured over the long term.

3.1.18 The Council is currently able to accumulate 'mitigation credit' to help offset new development from the following:

a. Water efficiency improvements to the Council's housing stock

3.1.19 It is known that annual improvement works to the Council's housing stock by PCC Housing, Neighbourhood and Building Services lead to an average reduction in water consumption of 48 litres per person per day (lpppd)[25]. For an average UK household (2.4 persons) this equates to a saving of 115 litres per day. On this basis, improvement works to two (2.29) homes could provide enough wastewater headroom (264 litres), in the form of 'mitigation credit', for one new dwelling. The addition of a precautionary buffer[26] to account for any uncertainties, as recommended by Natural England's methodology, would bring the estimate up to one new dwelling for every 2.5 dwellings upgraded.

[24] The Budds Farm WwTWs located in Havant.
[25]Based on four years of monitoring data by PCC Housing, Neighbourhood and Building Services, as set out in the separate Appendix B: PCC Water Efficiency Measures Data.
[26] PCC have added a 10% precautionary buffer.

3.1.20 Portsmouth City Council owns and manages nearly 15,000 homes in Portsmouth and Havant, which are entirely in the relevant catchment zone. Currently water efficiency upgrades are undertaken in response to tenant requests throughout the year throughout this stock holding. These expected reactive upgrades to the Council's housing stock will also be supplemented by proactive annual improvement works to void properties as they arise. There is also a small amount of (net) credit which has been gained from retrospective water efficiency improvements carried out during the strategy period (from January 2019) minus the estimated wastewater output from the dwellings granting permission during this time (from1st January and 24th April 2019).

3.1.21 The reactive upgrades over the last four years have seen the installation of an estimated annual average of 600 new over bath showers and 715 replacement dual flush WC cisterns each year. As noted above this will be supplemented with a comprehensive upgrade of an additional 700 void properties, again based on a past average of the number of voids that become available within Portsmouth City Council stock. This will allow enough 'credit' for 243.2 and 274.9 dwellings respectively including the 10% precautionary buffer; an intended total of **518 new dwellings per annum**.

b. Vacant Council assets due for redevelopment

3.1.22 There are a number of PCC residential institutions[27] that are currently vacant pending full redevelopment of the building (as opposed to temporary vacancies between occupancies). An initial assessment, as of October 2019, has identified over 300 units that are likely to be vacant for a number of years as planning permission, demolition and redevelopment occurs (the assets are detailed in the trajectory in Appendix 3).. The Council, as part of its role as a housing authority, has detailed records of the current water consumption with its stock and this demonstrates that the water consumption in such older PCC facilities are above that expected for typical residential accommodation The reduction in waste water created by vacating these units, and holding them vacant, allows the direct water savings to be utilised as offsetting for new development

3.1.23 The wastewater savings from the above, minus a precautionary buffer to account for any uncertainties as recommended by Natural England's methodology, will offset **an initial 342 dwellings**. PCC assets that become vacant during the life of the Interim Strategy will also be added as 'credit' to the live database.

3.1.24 An **appropriate internal agreement** will be created to recognise that the water saving, and associated 'credit', has been made available to offset new development. This will be maintained as per the monitoring of the 'nitrate bank' (see Section 4),

3.1.25 The future redevelopment of sites which have been utilised for offsetting will need to identify further mitigation at the relevant time to satisfy the likely outcome of an Appropriate Assessment. However, if monitoring of the cumulative 'nitrate

[27] This excludes the Council's general housing stock which are utilised for part 3a of this strategy, with the exception of Horatia House & Leamington House, where a significant number of units (274) are being held vacant following the evacuation of the building (completed in spring 2019), ahead of the anticipated demolition of the buildings.

bank' (as described as part of approach in 'a' above) indicates that there is sufficient 'credit' for the estimated date of occupation and intended scale of redevelopment this may be utilised. This matter will of course be the subject of assessment on its own merits at the time of future determination of a relevant planning application.

Mitigation Credit Bank

3.1.26 Currently all of the Council's mitigation credit is formed of savings from water efficiency measures. There may be scope to add 'credit' from other sources in future, see *Section 5: Other Mitigation Schemes* for examples, subject to further investigation of these options and discussion with Natural England.

3.1.27 Table 2 below shows the expected credit to be accrued from annual improvement works to PCC housing stock alone (Mitigation Route 3, part a) for the anticipated Interim Strategy period (2019-2023).

3.1.28 The current projections for life of the strategy, factoring in the expected credit supply minus the currently anticipated demand, are shown in the *Appendix 3: PCC Mitigation Credit Bank and Trajectory* (separate document), which will be made available on the Council's website and regularly updated. See Section 4 for further details on monitoring.

Table 2: 'Mitigation Credits' from Expected Water Efficiency Improvement Works to PCC Housing Stock for the Interim Strategy Period

Mitigation Credit Forecast (based on the past 4 year average)					
Period	**Expected Property Upgrades**		**Additional Void Property Upgrades**		**Total**
	Average Annual	**Average Monthly**	**Average Annual**	**Average Monthly**	
Aug 2019 - Jul 2020	243.2	20.3	274.9	22.9	518.1
Aug 2020 - Jul 2021	243.2	20.3	274.9	22.9	518.1
Aug 2021 - Jul 2022	243.2	20.3	274.9	22.9	518.1
Aug 2022 - Jul 2023	243.2	20.3	274.9	22.9	518.1
Aug 2023 - Jul 2024	243.2	20.3	274.9	22.9	518.1
Totals:	1215.8		1374.5		**2590.4**

4. Developer Contributions, Implementation and Monitoring

4.1 Implementation of Mitigation Route 3, the Council's 'Nutrient Neutral' mitigation credit, set out in the preceding section, will require resourcing. Cost recovery will be secured through a proportionate contribution from developers as appropriate, collected and pooled through S.106 agreements.

4.2 This Strategy mitigates the impact of additional wastewater for an interim period, potential up to 2023/ 24, but the mitigation measures will need to be in place for the duration of the impact. The payment therefore includes an appropriate amount to ensure the Council is capable of maintaining the water efficiency improvements 'in-perpetuity'

4.3 From the detailed work undertaken by the Council, a charging (cost recovery) schedule has been established covering the direct costs of water efficiency and on-going maintenance (Table 3). This enables a proportionate cost of creating sufficient 'credit' (the water savings to enable the headroom for overnight stays) to be calculated and the relevant amount will then be secured by planning obligation.

Table 3: Mitigation Credit Bank Charging Schedule (Cost Recovery in Perpetuity) for Major Development

Water efficiency intervention	Savings (litre per household per day)	Cost per unit	Maintenance contribution per unit
Over Shower Bath	96	£1,200	£500
Dual Flush Cistern upgrade	19.2	£200	£0
Total Efficiency intervention	115.2	£1,900	
Average cost for efficiency upgrades to allow one new dwelling (2.4 occupants[28] x 110 lpppd = 264 litres/ day)		£4,354.17	
Expected cost for efficiency upgrades per person (at 110 lpppd) as applicable (e.g. C2 uses, HMO, student accommodation)		£1,814.24	
Average cost for efficiency upgrades to allow one new overnight stay for tourism use (at an assumed average of 54.8 L[29]/ bedspace/ day)		£903.82	

[28] The average occupancy of a new dwelling is assumed to be 2.4 people, in-line with Natural England's guidance (June 2019).

[29] Water use benchmark for a 2-3 star hotel, no pool. Source: Environment Agency (2010) Energy and carbon implications of rainwater harvesting and greywater recycling, p41.

4.4 To ensure the cost recovery of the Council's work to improve water efficiency in its housing stock does not have a disproportionate impact on development viability and cash flow direct, **full cost recovery will only be sought from Major development schemes** (10 units and above). The payment for Major development schemes can be individually negotiated having due regard the individual scheme viability and to ensure the cost of securing of mitigation will not prejudice the delivery of development with Affordable Housing provision. In such circumstances, on an individual basis the Council may choose to offer, and preserve in perpetuity, its mitigation credit at a level that does not fully recover the costs of delivery and maintenance.

4.3 **For smaller (Minor and Other) development schemes** the Council does not intend to attempt to recover the full costs of installing and maintaining the mitigation work, in order to prevent disadvantaging small and medium sized enterprise builders. For smaller development proposals that are seeking to utilise the mitigation credit, the Council will instead offer such credit in perpetuity for a £200 per unit administration and monitoring fee, rather than seeking the full costs recover detailed in Table 3 above.

4.4 Contributions received would be transferred to the Council's Housing Revenue Account (HRA) to offset the costs of the strategy.

4.5 Further guidance on calculating fees by type of planning application is set out in Appendix 4.

S106 Agreement and Planning Conditions

4.5 Contribution for the Council's nitrate neutral mitigation credit will need to be secured through s106 planning obligations prior to occupation of the development.

4.6 In addition to the payment required, new development will be granted with standard conditions to require higher levels of water efficiency (110 lpppd) and to prevent occupation until such time as the 'Nutrient Neutral' mitigation credit has been funded through the s.106 obligation. A template s.106 agreement will be developed and Standardised wording for the appropriate conditions can be found in Appendix 4.

4.7 Any such agreement will recognise that mitigation credits are non-transferable, and may only be used to mitigate development within the administrative area of Portsmouth City Council, unless explicitly authorised in writing by Portsmouth City Council as part of a formal Duty to Co-operate agreement.

4.1 Monitoring and Reporting

Monitoring the 'Mitigation Credit Bank'

4.8 The current trajectory for the availability of the cumulated 'nutrient neutral' mitigation credit is detailed in Appendix 3 (separate document). It is anticipated, on the assumption that alternative off-setting measures (Option 1) and other bespoke mitigation solutions (Option 2) will be fully explored by applicants, that there will be sufficient 'credit' for the number of units likely to be permitted and occupied within the Strategy period (up to 2023/ 24).

Monitoring of the Interim Strategy will be essential to determine the actual availability, demand and use of the mitigation credit, and to inform the on-going projected trajectory for the lifetime of the Strategy. The following will be monitored and published on a quarterly basis:

- The number of water efficiency upgrades undertaken on the PCC housing stock.
- Dual monitoring of the actual and anticipated uptake of nitrate credit by applicants, both at the grant of planning permission (in principle use) and at the point of occupation of the proposal (credit implementation) for the strategy period
- Whether any further PCC controlled residential institutions, due for redevelopment, become available to be held vacant (by agreement) to be added to the mitigation credit bank.

4.9 Natural England has recommended that the monitoring of the Interim Strategy is also accompanied by a Water Consumption Monitoring Strategy to indicate whether the predicted water saving efficiencies from works to PCC stock are being realised, with provisions for adaptive management as necessary. This will be explored in conjunction with Natural England in due course.

Internal Governance

4.10 The Mitigation Credit Bank will be administered and monitored by the Planning Obligations Lead Officer. The Council's Mitigation Credit for individual applications will be allocated as appropriate through discussions with the relevant Case Officer. For any initial 'backlog' of applications, applications will be prioritised by date of validation, assuming there are no other issues outstanding. Final decisions on the use of the mitigation credit for individual applications are at the discretion of the Head of Development Management and the Assistant Director of Planning and Economic Growth, in agreement with the relevant Directorate Director and Cabinet Member(s) where PCC assets are concerned as necessary.

4.11 Part b. of Mitigation Route 3, holding Council properties (residential institutions and significant residential blocks) due for redevelopment vacant, will require an appropriate internal agreement for transparency, to avoid any unintentional 'double counting' of credit and to formally recognise the that:

- sites utilised for off-setting are will not subsequently be brought back into use (occupied, redeveloped or disposed of); but
- any future redevelopment at the vacant/ previous site cannot rely upon its extant use for offsetting, would therefore need to secure its own nutrient neutral mitigation measures in accordance with this strategy.

4.12 Such as agreement is likely to be in the form of resolution from the Council's Cabinet or the relevant Portfolio Members, as appropriate. The resolution would be noted with the property and GIS reports; if the assets was to the sold a s.111 agreement could be entered into with a prospective purchaser, appending a form of s.106 obligation to be entered into upon transfer.

4.13 While there may be sufficient mitigation credit available to help enable redevelopment, accumulated from Mitigation Route 3, Part A works, development proposals by PCC Housing, Neighbourhood and Building Services

directorate would not incur a fee since this would entail 'charging itself' for cost recovery for works carried out by its own department. Instead credit would be reserved and utilised by internal monitoring procedures and agreed by cabinet/ portfolio resolution.

Review of the Strategy

4.14 If the quarterly monitoring of the Interim Strategy indicates that demand for 'nitrate credit' mitigation appears to be outstripping the anticipated supply, necessary revisions or additions to the Strategy may be considered. For instance, it may be possible to accelerate the Council's planned water efficiency improvements in order to generate further wastewater 'headroom' for new development. A new charging schedule may need to accompany such changes.

4.15 The Council remains committed to developing and securing a wider, long term solution for 'nutrient neutral' development, beyond the life of this interim solution, in conjunction with the relevant government agencies, utilities providers and other LPAs within the Solent catchment.

5. Exploring Further Mitigation Options

5.1	The council, together the other Local Authorities within the Solent catchment, will continue to investigate a range of possible mitigation options, with a strong preference for schemes that will deliver wider benefits for the city, particularly in light of the climate emergency declared by the Council in March 2019. Where savings can be evidenced and monitored, and subsequently agreed in principle by Natural England quantified savings could be added to the Mitigation Credit Bank.
	1. PCC Housing, Neighbourhood and Building Services will continue to explore other means of providing additional water efficiency measures throughout PCC assets, including exploring retro fitting measures and partnership arrangements (with Portsmouth Water for example) to further the promotion of water efficiency for all residents in Portsmouth. This could include encouraging the installation of water meters in private sector housing stock to effect behavioural change by raising awareness of water use.
	2. The provision of active capture measures such as oyster beds or other interventions designed to reduce nitrates. Shellfish have been found to be effective at reducing excess nutrients in estuaries in some situations. Oysters filter feed on the harmful algae and remove the nitrogen from the water by storing it in their shells and tissues, and also through their faeces which get broken down by microbes. However, there have been declines in native oysters in the Solent in recent years, the causes for which are unclear; there is research project underway by the University of Portsmouth and the Environment Agency to investigate the topic. This work combined with other research and evidence may help to inform levels of nitrogen removal and effectiveness from these measures on the long term.
	3. A further review of the use and quantity of fertilisers on the Council's parks, open spaces, playing pitches and other green space under the Council's management. The review would need to balance the need to ensure continuation of the quality of the Council's outdoor spaces. To be an effective mitigation options, reductions in nitrogen would need to be measurable and enforceable in perpetuity,
5.2	The following options will be further explored together with the PfSH authorities and statutory agencies/ undertakers:
	4. Continued testing and challenging of Natural England's position to ensure a robust case exists to justify the requirements for mitigation (nitrate neutrality) and to ensure any interim or future mitigation strategy is fit for purpose.
	5. Ongoing discussion with Southern Water to secure agreements to maintain an increase in nitrogen removal at the WwTW either by agreement or through an imposed reduction in the permit limit for nitrogen, where there is a current limit in place, or through agreement with the EA and OFWAT to introduce permit level limits for nitrogen on

	those WwTW which do not currently have such a permit and therefore where no nitrogen stripping is taking place.
	6. Securing offsetting through the change of use of additional land, from uses with higher rates of nitrate deposition; such as agricultural land (which loads around 26.9 kg of nitrogen per hectare per year), to uses with lower rates; such as open space (5 kg of nitrogen per hectare per year) or urban development (14.3 kg of nitrogen per hectare per year). This approach requires changing the land use in perpetuity (ideally to woodland, heathland, saltmarsh, wetland or conservation grassland) to remove more nitrogen loss from this source and/or, if conditions are suitable, provide measures that will remove nitrogen on drainage pathways from land higher up the catchment (e.g. interception wetland). Such changes of use would prioritise offsetting projects with wider environmental and recreation benefits for communities and wildlife such as carbon capture from woodland planting.

Appendices

All separate documents.

Appendix 1: Natural England's guidance (1A) and PCC excel Nitrogen Budget (1B)

Appendix 2: PCC Water Efficiency Data

Appendix 3: PCC Mitigation Credit Bank and Trajectory

Appendix 4: Fee Calculation Advice

Appendix 5: Water Efficiency standardised condition