

Addendum to the Water Cycle Study (produced by AECOM, 2022)

A Water Cycle Study (WCS) was produced by consultants AECOM in 2022. This addendum provides a number of updates in response to issues that have arisen since its publication. The issues are set out under a number of separate sections, as set out below:

1. Policy and legislative drivers shaping the WCS (updated)
2. Emerging draft Water Resource Management Plans
3. Best Practice Guidance on Water Cycle Studies (Environment Agency) including site infrastructure assessment
4. AECOM's response to Whitchurch Conservation Group's critique of the Water Cycle Study
5. Nutrient neutrality update

Each of these issues is considered in turn below. Since publication of the Water Cycle Study, officers and representatives of the Whitchurch Conservation Group have met with the Environment Agency to consider relevant issues. Meetings have also taken place with the three water companies operating in the borough. Memoranda of Understanding (MoU) are being prepared with these organisations, to ultimately lead to Statements of Common Ground where feasible, to ensure a robust understanding of the position regarding water issues. It will set out the roadmap to be followed through the Local Plan Update process in relation to water supply, water quality and water infrastructure, and set out points of agreement, roles, responsibilities and commitments by all parties.

1. Policy and Legislative Drivers Shaping the WCS (updated)

1.1 Appendix A of the Water Cycle Study listed policy and legislative drivers shaping the study. The legislation list below has been updated in light of changes/new legislation (shown in **bold**).

Directive/Legislation/Guidance	Description
The Conservation of Offshore Marine Habitats and Species Regulations 2017	Provides for the designation of Special Protection Areas.
Building Regulations Approved Document G – sanitation, hot water safety and water efficiency (March 2010)	The current edition covers the standards required for cold water supply, water efficiency, hot water supply and systems, sanitary conveniences and washing facilities, bathrooms and kitchens and food preparation areas.
Environment Act 1995	Sets out the role and responsibility of the Environment Agency.
Environment Act 2021	Provides a legal framework for environmental governance in the UK. Brings in measures for improvement of the environment in relation to waste, resource efficiency, air quality, water, nature and biodiversity, and conservation. The Act places a duty on water companies to secure a reduction in adverse impacts of discharges from storm overflows on the environment. The Act makes drainage and sewerage planning a statutory duty through the requirement for water companies to produce Drainage and Wastewater Management Plans. The Act provides powers to enable the Secretary of State to maintain the list of priority substances used to assess the chemical status of water bodies. The Act enables the revocation or variation of permanent abstraction licences where the change is necessary to protect the environment or where the licence is consistently underused.
Environmental Improvement Plan 2023	This is the first revision of the 25 Year Environment Plan. Includes more detailed plans and targets to meet goals set out in the Environment Act, including targets to restore protected sites and reduce water demand.
Environmental Protection Act 1990	Integrated Pollution Control (IPC) system for emissions to air, land and water.
Flood & Water Management Act 2010	<p>The Flood and Water Management Act 2010 is the outcome of a thorough review of the responsibilities of regulators, local authorities, water companies and other stakeholders in the management of flood risk and the water industry in the UK. Its key features relevant to this WCS are:</p> <ul style="list-style-type: none"> To give the Environment Agency an overview of all flood and coastal erosion risk management and unitary and county councils the lead in managing the risk of all local floods. To encourage the uptake of sustainable drainage systems by removing the automatic right to connect to sewers and providing for unitary and county councils to adopt SuDS for new developments and redevelopments. To widen the list of uses of water that water companies can control during periods of water shortage and enable Government to add to and remove uses from the list. To enable water and sewerage companies to operate concessionary schemes for community groups on surface water drainage charges. To make it easier for water and sewerage companies to develop and implement social tariffs where companies consider there is a good cause to do so, and in light of guidance that will be issued by the Secretary of State following a full public consultation.
Future Water, February 2008	Sets the Government's vision for water in England to 2030. The strategy sets out an integrated approach to the sustainable management of all aspects of the water cycle, from rainfall and drainage, through to treatment and discharge, focusing on practical ways to achieve the vision to ensure sustainable use of water. The aim is to ensure sustainable delivery of water supplies and help improve the water environment for future generations.
The Groundwater (Water Framework Directive) (England) Direction 2016	To protect groundwater against pollution by 'List 1 and 2' Dangerous Substances.
The Conservation of Habitats and Species Regulations 2017	To conserve the natural habitats and to conserve wild fauna and flora with the main aim to promote the maintenance of biodiversity taking account of social, economic, cultural and regional requirements. In relation to abstractions and discharges, can require changes to these through if they are impacting on designated European Sites. Also the legislation that provides for the designation of Special Areas of

	Conservation provides special protection to certain non-avian species and sets out the requirement for Appropriate Assessment of projects and plans likely to have a significant effect on an internationally designated wildlife site.
Land Drainage Act 1991	Sets out the statutory roles and responsibilities of key organisations such as Internal Drainage Boards, local authorities, the Environment Agency and Riparian owners with jurisdiction over watercourses and land drainage infrastructure.
Levelling Up and Regeneration Act 2023	Makes provision for the setting of levelling-up missions and reporting on progress in delivering them. The Levelling Up and Regeneration Act introduces a new duty on water companies to upgrade WwTWs (in specified circumstances). They will be required to achieve the highest technological levels for nutrient removal by 1 April 2030. Wherever possible, nature-based solutions should form part of the upgrades. It is understood that a list of treatment works to be upgraded will be published before the beginning of February 2024.
National Planning Policy Framework	Planning policy in the UK is set by the National Planning Policy Framework (NPPF). NPPF advises local authorities and others on planning policy and operation of the planning system. A WCS helps to balance the requirements of various planning policy documents and ensure that land-use planning and water cycle infrastructure provision is sustainable.
Pollution Prevention and Control Act (PPCA) 1999	Implements the IPPC Directive. Replaces IPC with a Pollution Prevention and Control (PPC) system, which is similar but applies to a wider range of installations.
Ramsar Convention	Provides for the designation of wetlands of international importance
Urban Waste Water Treatment Directive (UWWTD)	This Directive concerns the collection, treatment and discharge of urban waste water and the treatment and discharge of waste water from certain industrial sectors. Its aim is to protect the environment from any adverse effects caused by the discharge of such waters.
Water Act 2003	Implements changes to the water abstraction management system and to regulatory arrangements to make water use more sustainable.
The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017	The WFD, combines water quantity and water quality issues together. An integrated approach to the management of all freshwater bodies, groundwaters, estuaries and coastal waters at the river basin level has been adopted. The overall requirement of the directive is that all river basins must achieve ‘Good ecological status’ by 2015 or by 2027 if there are no grounds for derogation. The Environment Agency is the body responsible for the implementation of the WFD in the UK. The Environment Agency have been supported by UKTAG¹, an advisory body which has proposed water quality, ecology, water abstraction and river flow standards to be adopted in order to ensure that the water bodies in the UK (including groundwater) meet the required status². Standards and waterbody classifications are published via River Management Plans (RBMP).
Natural Environment & Rural Communities Act 2006	Covering Duties of public bodies – recognises that biodiversity is core to sustainable communities and that Public bodies have a statutory duty that states that “every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.
Water Resources Act 1991	Protection of the quantity and quality of water resources and aquatic habitats. Parts have been amended by the Water Act 2003.
Wildlife & Countryside Act 1981 (as amended)	Legislation that provides for the protection and designation of SSSIs and specific protection for certain species of animal and plant among other provisions.

¹ The UKTAG (UK Technical Advisory Group) is a working group of experts drawn from environment and conservation agencies. It was formed to provide technical advice to the UK’s government administrations and its own member agencies. The UKTAG also includes representatives from the Republic of Ireland.

² UK Environmental Standards and Conditions (Phase I) Final Report, April 2008, UK Technical Advisory Group on the Water Framework Directive.

2. Emerging draft Water Resource Management Plans

- 2.1 The water supply for Basingstoke and Deane is primarily provided by Southern Water (western area), and South East Water (Basingstoke and eastern area), with a small part of Tadley being provided by Thames Water. As set out in the Water Cycle Study (WCS), each water company sets out how demand for water from growth within a water company's supply area can be met, taking into account the potential impacts of climate change and the need for the environment to be protected. As part of the statutory process, the plans must be approved by the Environment Agency and Natural England (as well as other regulators) and hence the outcomes of the plans can be used to directly inform whether growth levels being assessed within a WCS can be supplied with a sustainable source of water supply. The statutory Water Resource Management Plan (WRMP) is produced every five years to coincide with each of the water companies' five-yearly asset management (or business) plans, although each WRMP looks ahead at the water supply for at least 50 years. The WCS reviewed the adopted WRMP's for Southern Water and South East Water and established that the growth figures assessed for the WCS are catered for in the prediction of supply and demand deficits under average conditions.
- 2.2 Since completion of the WCS, Water Resources South East (WRSE) have published a draft regional water management plan³ and all three water companies have also published their draft WRMP's 2025-2075. South East Water⁴ and Thames Water⁵ have subsequently published Revised Water Resource Management Plans.
- 2.3 The draft regional plan sets out the future challenge to water supply across the region: if no action is taken, there could be a significant shortfall in water supply per day by 2075. This is driven by:
- The need for additional water as a result of the need to improve the environment, through abstraction reduction
 - Population growth and non-household growth
 - Making water supplies resilient to more extreme drought events
 - Climate change
- 2.4 Along with the individual WRMP's, the regional plan is an adaptive plan - as the future situation can't be predicted exactly, the plan needs to be able to adapt further in the future. The WRSE draft plan therefore plans for uncertainty with the identification of nine different pathways, based on three scenarios each for high/medium/low population growth. The regional plan and individual WRMP's all include measures relating to:
- Water efficiency and leakage reduction

³ <https://www.wrse.org.uk/media/osjgqafk/wrse-revised-draft-regional-plan-august-2023-v1-1.pdf>

⁴ <https://billexplained.southeastwater.co.uk/about/resources/publications/water-resources-management-plan-2024/>

⁵ <https://www.thameswater.co.uk/about-us/regulation/water-resources>

- New sources of water
- Water transfers around the region
- Catchment management and nature-based solutions
- Drought Orders and Drought permits

2.5 Basingstoke and Deane Borough Council has met with all of the relevant water companies, and discussed projected growth (as set out in the draft Local Plan Update) and water supply related issues. All water companies use Edge Analytics, a specialist demographic forecasting consultancy, to develop property and population forecasts at a water resource zone level, in line with water resource planning guidelines.

South East Water:

2.6 South East Water (SEW) supply Basingstoke Town and the surrounding area, comprising the eastern part of the borough. The proposed housing led allocation of Popham Garden village (draft policy SPS5.5) straddles SEW and Southern Water's supply area and the actual water supply will depend on further discussion and the layout of the development, but the allocation site has been flagged to both water companies. SEW have confirmed that their plans accommodate a level of growth discussed with the council in recent years (although final refinement may be required) to ensure that sufficient water is available within the local area to meet a supply-demand balance. The interventions required to meet this balance are a mix of new water supplies and demand management initiatives as provided by SEW and set out below:

New Water Supplies and Infrastructure Development

In the period 2025 to 2030 SEW are undertaking schemes to provide improved connectivity and resilience to the Basingstoke system. This includes:

- *Trunk main improvements from Surrey Hills to increase transfers into Basingstoke.*
- *Increasing the storage for the Basingstoke system and provide resilience in the event of outages.*
- *Pipeline schemes to connect the Basingstoke system to the existing WRZ5 trunk main system. This provides improved resilience to Basingstoke and an alternative supply route in the event of a site outage in the Eastern WTWs.*

In 2040 a new transfer spur from the Thames to Southern strategic resource option (SRO) will provide 10 Ml/d in our WRZ4 (Bracknell). This scheme will use water from proposed new strategic treated water pipeline between Thames and Southern Water and transfer to the existing service reservoir south of Basingstoke.

2.7 South East Water recognise that their water efficiency strategy is ambitious, and rely on other initiatives such as water labelling of all water using products, as well as national water efficiency messaging, policies and targets, and sustainable design standards for all residential and non-residential developments, in order to reach its per capita consumption ambition of 110 l/h/d by 2050.

Southern Water:

- 2.8 Southern Water (SW) supply the western part of the borough, including Overton and Whitchurch. They have published a draft WRMP⁶ but are due to publish a further revised draft WRMP in Spring 2024. The current draft WRMP includes: ambitious demand management measures including leakage reductions; water recycling schemes, a new reservoir in West Sussex and desalination plant; water transfers; the use of drought orders: and catchment management schemes.
- 2.9 Following a meeting with SW, they have confirmed that the scale of development proposed broadly aligns with the projections in the emerging WRMP, although specific development sites are not included in a water company's assessments until they are allocated in consultation local plans and have more certainty (i.e. a Regulation 19 plan, or a Regulation 18 plan if it includes a large strategic site). SW are also encouraging local planning authorities to incorporate the tighter building regulations optional standard for water efficiency of 110 litres/person/day, or more advanced aspirational targets, in line with their 'target 100' campaign to support customers reducing consumption to 100l/per person/day.

Thames Water:

- 2.10 As with the other water companies, Thames Water includes ambitious proposals to reduce leaks and water use; provide further sources of water from abstraction, water transfers, water recycling and a new strategic reservoir supply (Abingdon); and use temporary drought measures. Thames Water supply water to only a small area of the borough in the Silchester, Burghfield and Tadley area. They have not identified any anticipated network supply issues for this area taking into account the current proposed level of development, as set out in the draft LPU.

⁶ <https://www.southernwater.co.uk/our-story/water-resources-management-plan/our-draft-water-resources-management-plan>

3. Best Practice Guidance on Water Cycle Studies (Environment Agency) including site infrastructure assessment

- 3.1 Work on the Water Cycle Study was advanced when the Environment Agency published update best practice guidance on Water Cycle Studies. This suggested that an assessment of site infrastructure requirements and capacity be carried out. All three water companies have been involved in the production of the Water Cycle Study and are aware of proposed allocation sites and growth figures in the draft Local Plan Update (Regulation 18). Some comments have been received on wastewater/sewer network infrastructure provision for individual sites, as set out below. Discussions between the developer, water company and council will continue through the Local Plan update process as individual proposals become more detailed.
- 3.2 With regards to water supply network infrastructure, further to their infrastructure comments outlined above, South East Water have set out that as applications are made through their developer enquiry process, they will work with local authorities and developers to carry out the appropriate detailed network modelling assessments, to ensure that any necessary infrastructure reinforcement is delivered (to move water to where is needed at a development level) ahead of the occupation of development. Where there are infrastructure constraints, sufficient time will be required to deliver necessary infrastructure therefore early engagement and communication is supported.
- 3.3 Popham Garden Village lies on the boundary of Southern Water and South East Water's supply areas, and provision may be shared between both companies. However, the boundaries are not precise and this may depend on how the housing is distributed across the site. For this scale of development, there is inadequate water supply network capacity (Southern Water) but this is not a showstopper to development as additional capacity could be provided in line with development. The developer will need to engage further with the water companies with more detailed proposals.

Key to RAG assessment

Colour coding	Assessment
	There are no identified infrastructure concerns regarding water supply network, wastewater network or sewage treatment infrastructure
	Upgrades to the water supply network, wastewater network, sewage treatment infrastructure may be required but no identified issues
	Upgrades to the water supply network, wastewater network, or sewage treatment infrastructure are required and potential issues have been identified.

Site: SPS5.4 - Southern Manydown		
Water cycle element	Summary	Overall assessment
Wastewater/ sewer network	The scale of development is likely to require upgrades to both the wastewater network and sewage treatment	

infrastructure requirements	infrastructure. It is recommended that the developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing and infrastructure phasing plan. The plan should determine the magnitude of spare capacity currently available within the network and what phasing may be required to ensure development does not outpace delivery of essential network upgrades to accommodate future development.	
-----------------------------	---	--

Site: SPS5.5 Popham Garden Village		
Water cycle element	Summary	Overall assessment
Wastewater/sewer network infrastructure requirements	The nearest wastewater treatment works does not currently have capacity to treat wastewater and is some distance from the site. This is not a showstopper to development and capacity can be increased. Where environment constraints limit the capacity that can be provided at a wwtw, alternative solutions can be found. The developer is considering technical options and will need to engage further with the water company.	

Site: SPS3.6 – East of Basingstoke		
Water cycle element	Summary	Overall assessment
Wastewater/sewer network infrastructure requirements	Thames Water do not envisage infrastructure concerns regarding wastewater network or treatment infrastructure for this site. It is recommended that the developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing and infrastructure phasing plan.	

SPS5.7 - Sherfield Hill Farm		
Water cycle element	Summary	Overall assessment
Wastewater/sewer network infrastructure requirements	The scale of development is likely to require upgrades to both the wastewater network and sewage treatment infrastructure. It is recommended that the developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing and infrastructure phasing plan. The plan should determine the magnitude of spare capacity currently available within the network and what phasing may be required to ensure development does not outpace delivery of essential network upgrades to accommodate future development.	

Site: SPS5.8 - Land west of Marnel Park, Basingstoke		
Water cycle element	Summary	Overall assessment

Wastewater/sewer network infrastructure requirements	Thames Water do not envisage infrastructure concerns regarding wastewater network or treatment infrastructure for this site. It is recommended that the developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing and infrastructure phasing plan.	
--	---	--

Site: SPS5.9 - Weybrook Park Golf Course		
Water cycle element	Summary	Overall assessment
Wastewater/sewer network infrastructure requirements	The scale of development is likely to require upgrades to both the wastewater network and sewage treatment infrastructure. It is recommended that the developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing and infrastructure phasing plan. The plan should determine the magnitude of spare capacity currently available within the network and what phasing may be required to ensure development does not outpace delivery of essential network upgrades to accommodate future development.	

Site: SPS5.10 – Overton Mill		
Water cycle element	Summary	Overall assessment
Wastewater/sewer network infrastructure requirements	To be confirmed by Southern Water	

Site: SPS5.11 - Redlands Lodge		
Water cycle element	Summary	Overall assessment
Wastewater/sewer network infrastructure requirements	Thames Water do not envisage infrastructure concerns regarding wastewater network or treatment infrastructure for this site. It is recommended that the developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing and infrastructure phasing plan.	

Site: SPS5.12 - Land adjacent to Weybrook Park Golf Course		
Water cycle element	Summary	Overall assessment
Wastewater/sewer network infrastructure requirements	The scale of development is likely to require upgrades to both the wastewater network and sewage treatment infrastructure. It is recommended that the developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing and infrastructure phasing plan. The plan should determine the magnitude of spare capacity currently available within the network and what phasing may be required to ensure	

	development does not outpace delivery of essential network upgrades to accommodate future development.	
--	--	--

Site: SPS5.13 - 16 Southern Road, Basingstoke		
Water cycle element	Summary	Overall assessment
Wastewater/sewer network infrastructure requirements	Thames Water do not envisage infrastructure concerns regarding wastewater network or treatment infrastructure for this site. It is recommended that the developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing and infrastructure phasing plan.	

Site: SPS5.14 – 65 New Road, Basingstoke		
Water cycle element	Summary	Overall assessment
Wastewater/sewer network infrastructure requirements	Thames Water do not envisage infrastructure concerns regarding wastewater network or treatment infrastructure for this site. It is recommended that the developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing and infrastructure phasing plan.	

Site: SPS5.15 – Land off Ashwood Way, Basingstoke		
Water cycle element	Summary	Overall assessment
Wastewater/sewer network infrastructure requirements	Thames Water do not envisage infrastructure concerns regarding wastewater network or treatment infrastructure for this site. It is recommended that the developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing and infrastructure phasing plan.	

4. AECOM'S response to Whitchurch Conservation Group's critique of the Water Cycle Study

- 4.1 Following publication of the Water Cycle Study, consultants Archon Environmental prepared a review of the Water Cycle Study, on behalf of the Whitchurch Conservation Group. Consultants AECOM have provided the following response to the main issues raised in this review (which largely relate to the Upper Test catchment).

WCS Review

Whitchurch Conservation Group commissioned Archon Environmental to undertake a review of the final Outline WCS (referred to as the WCS Review). The WCS Review report (Archon Environmental, 2022) outlines that it “considered the implications of the WCS on future groundwater and surface water quantity and quality in the Upper Test, and the associated effects on dependant ecology and habitat sites”. The principal findings of the review were summarised under the following headings:

- General scope and content of the WCS
- Water supply
- Wastewater
- Flood risk
- Climate change
- Specific evidence gaps

Response to principal WCS Review findings

AECOM have examined the WCS Review (Archon Environmental, 2022) and provided a response to the principal findings as outlined below. The principal findings have been summarised below (*in italics*) for context but please refer to the WCS Review report (Archon Environmental, 2022) for the full text.

General scope and content of the WCS:

- *Based on appropriate information and used established methodologies*
- *Lacks technical detail and is not a rigorous scientific assessment of the potential impacts of future housing and population growth on the water environment.*(in respect of the groundwater discharges)
- *Should include an assessment of evidence gaps as recommended by the Environment Agency's Water Cycle Study guidance (January 2021)*

The draft Outline WCS (September 2020) was developed in accordance with the national guidance at the time, as outlined in the background section above. The subsequent updates were only required to certain assessments/sections of the already substantially completed report following publication of the latest WCS guidance being released by the Environment Agency (January 2021). As acknowledged in the WCS Review, the Outline WCS was developed using established methodologies that were discussed and agreed with BDBC, Environment Agency and water companies in advance of development of the WCS.

Water supply:

- *The WCS did not include any critical review or verification of the water company Water Resource Management Plans - uncertainty as to whether they can be delivered. Therefore, the WCS does not demonstrate certainty that adequate water supplies will be available.*

It is a key assumption of the WCS that the Water Company Water Resource Management Plans (WRMP) and draft regional Water Resource Plans can be used as an established evidence base to support the Local Plan. The WRMP is a statutory process, regulated by the Environment Agency, the Drinking Water Inspectorate (DWI) and Ofwat. Natural England are also consulted with respect to impacts on designated sites and final decisions on WRMP acceptability are often made by the Secretary of State (SoS) for the Environment; the SoS can direct

changes to statutory WRMPs before they are adopted in each 5 year cycle and following Public Inquiry if any of the outcomes are found unsound. Water Companies spend significant resource and expenditure in developing and seeking approval for their cyclical WRMPs in what is a continual process of updating and forecasting supply and demand and managing new and existing resources. It is not possible within the budget of a WCS (as a Local Plan evidence base) to 'verify' the WRMP process or findings thereof. What the WCS does do, is confirm whether the Local Plan growth forecasts reflect assumptions made in the WRMP demand forecast; if they do (as was the case for the Basingstoke and Deane Local Plan update), then it is considered that the findings of the adopted WRMP with respect to managing the future supply and demand balance can be used to inform the WCS and the Local Plan.

The WCS reviewed the current WRMPs and liaised with Southern Water and South East Water to establish that the growth figures assessed in the Outline WCS study are catered for in the prediction of supply and demand deficits in the relevant water resource zones. Water resource planning for the south-east includes varying pathways to allow for uncertainties, particularly regarding population growth and climate change. The three Water regulators, the Environment Agency, Ofwat and The DWI, have responsibilities to ensure sufficient quantity and quality of water supplies and the proper use of water resources. The National Water Resource Planning Guidance (2022) states that 'planned property and population forecasts, and resulting supply, must not constrain planned growth (section 6.3)'. Water companies should base forecast population and property figures on the Local Plan published by the local council.

Given that the borough is within an area of identified 'water stress', and the water companies are reliant on making more use of water resources and demand reduction from customers, the WCS delivered an additional scope item to provide support to the consideration of policies on water use which could provide benefit to managing the future supply and demand balance. This was an assessment of the measures required for water neutrality to be achieved i.e. the total demand for water within a planning area after development has taken place is the same as it was before development took place. This assessment has been used to inform the council's policy approach to water consumption in the Local Plan update and any other corporate initiatives that would support water efficiency across the borough.

Wastewater:

- *'Load standstill' does not provide any betterment that may be needed to reverse ecological decline*

The WCS provides an assessment of whether the scale and location of potential development could be met without adversely impacting on the borough's water environment. The aim of the WCS in this case was not to consider betterment to reverse existing ecological decline - measures to achieve that are considered by the Environment Agency, Natural England and other bodies through the River Basin Management Planning process, the Catchment Based Approach, the Water Industry National Environment Programme (WINEP) and other policy, plan and strategy development. The WCS aims to ensure these measures are not compromised due to growth.

- *Under conditions of reducing low flows, load standstill will result in concentration increases during low flow periods compared to the baseline, and it is the concentration rather than the load that causes adverse effects.*

The load standstill approach is a simplified way of determining how permit quality limits may need to change to improve the concentration of discharge. The new conditions calculated are based on percentile compliance values which differs for different parameters (e.g. 95%ile compliance for BOD) and which, when set by the Environment Agency, are put in place to take account of the variability of water available in the receiving water.

- *The WCS does not propose that discharge limits based on maximum allowable concentrations should also be proportionately reduced.*

The WCS uses tools to calculate how percentile based quality limits may need to change based on percentile compliance. It does not consider maximum allowable concentrations.

- *The WCS should, but does not, propose that emission controls in the WWTW permits should be upgraded to a common standard with each WWTW required to meet the same limits for the same suite of contaminants.*

Ultimately it is for the Environment Agency to impose permit controls dependant on the presence of contaminants and the sensitivity of recipient water body; in particular for chemical pollutants required to be controlled under the WFD. For physico-chemical parameters, the WCS calculates what these would need to be for each WwTW based on treated flow volumes and, in the case of RQP calculations, the flow statistics and existing quality of the receiving water body.

- *The WCS does not acknowledge discharges for which there are no permits/limited monitoring e.g. priority substances such as PBDE. Any increase in the volume of wastewater would result in a proportional increase in these contaminants.*

It does not necessarily follow that increases in wastewater volumes arriving at a WwTW would proportionately increase chemical substances discharged in wastewater because national and international measures are in place to prevent the use of many contaminants such as PBDE in new products for example. The forthcoming Chemicals Strategy will set out the government's vision for the emerging Chemicals Framework including details on the statutory regime, direction of travel on policies the Environment Agency's work on monitoring and data and how the water industry should tackle treatment of these substances as part of the now statutory Drainage and Wastewater Management Plans.

- *The WCS did not adequately consider the effect of contaminant storage and transport in the aquifer.*

The WCS focused on what changes were required to existing permits for discharge to ground in relation to growth which were set by the Environment Agency. It will be for the Environment Agency to determine whether additional changes or controls are required on new permits to take account of the specific aquifer properties. The Environment Agency did not highlight any concerns with the permit changes set out as required in the WCS.

- *There is a risk that contaminants have accumulated in the groundwater/soil beneath the WwTWs and that they may be mobilised by the increased volume and change in chemical character of the wastewater.*

It will be for the Environment Agency to determine whether additional changes or controls are required on new permits to take account of the specific aquifer conditions at each discharge location; as part of the decision process, Southern Water will be expected to undertake risk assessments to support application for a change to future discharge permits. The Environment Agency did not highlight any concerns with the permit changes set out as required in the WCS.

- *The obligations placed on the water companies and industry are not on a level playing field e.g. Portals was subject to phosphorus control, Whitchurch WwTW is not.*

If controls on discharge substances are required to protect aquifers or rivers from discharges where these are not currently controlled with permit quality limits, the Environment Agency will determine that and impose it when pre-application discussions for a new permit is made.

Flood Risk:

- *The WCS did not consider the effects of increased wastewater flows on flood risk for those wwtw that discharge to ground - therefore the effect on the Upper Test catchment was not considered.*

This was not explicitly assessed because the volume of discharge compared to the aquifer storage volume is considered to be small.

- *The WCS does not explain whether the increased WwTW flows included an allowance for climate change.*

Increased wastewater flows identified within the WCS do not include an allowance for climate change. The calculated 1 in 100 year river flow did not include climate change; however, the exercise demonstrated that the increase in wastewater flow was a small and insignificant percentage compared to the 1 in 100 year flow and allowing for climate change in the flood flow allowance would make that percentage smaller.

- *The WCS does not consider whether there is sufficient development land in areas with low flood risk to accommodate the growth scenarios.*

This assessment is a key function of the Strategic Flood Risk Assessment (SFRA) and Sequential Test process. The SFRA for the borough (2021) assesses the risk to the borough from flooding from all sources, now and in the future, taking into account the impacts of climate change. The SFRA is being used to inform the Sustainability Appraisal of the Local Plan Update, site assessment work, and the sequential test for site allocations. These consider in more detail the flood risk of potential development sites and there is no need for the WCS to also consider this. The WCS does, however, considered whether increased discharge from wastewater treatment works will increase flood risk - given that the additional flow from WwTW's as a result of growth is minimal (for most WwTW's less than 0.24% increase and all less than 1%) it is considered unlikely that these additional flows would result in a significant increase in flood levels and therefore further detailed assessment is unnecessary.

- *The WCS does not consider the flood risk effects of increased runoff from new housing development*

The SFRA considers runoff from new developments, including policy recommendations to ensure that runoff is attenuated in new developments and not increased.

Climate Change:

- *The effects of climate change are not considered in the WCS*

The Environment Agency guidance on Water Cycle Studies (2021) covers both strategic assessments and individual developments. The Outline WCS produced for the borough is at a strategic level and doesn't include detailed assessment of sites. References to climate change in the Environment Agency guidance are in respect of specific developments - this can be addressed through policies in the Local Plan update and the consideration of specific development allocations and planning applications.

- *Probable that climate change will cause average river flows on the Test to increase. However, the increased rainfall variability, shorter recharge periods and increased potential evaporation is likely to result in more extreme low flows - less dilution of wwtw discharges, especially in the summer.*

The effect of climate change is considered within the WRMP process in terms of water resource availability and the supply and demand balance and this is used within the WCS. For water quality, the Environment Agency will consider future changes in flow statistics as part of ongoing permitting regimes.

Specific Evidence Gaps:

- *The WCS did not attempt to identify evidence gaps in the WRMPs.*

As above (under Water Supply).

- *There are evidence gaps in the wastewater proposals e.g. monitoring data for the River Test, groundwater in the Test aquifer. The WCS did not access the detailed quantitative monitoring results on the EA's Water Quality Data Archive (Open WIMS) system.*

The WCS focused on what changes were required to existing permits for discharge to ground in relation to growth which were set by the Environment Agency. It will be for the Environment Agency to determine whether additional changes or controls are required on new permits to take account of the specific aquifer properties. The Environment Agency did not highlight any concerns with the permit changes set out as required in the WCS. It should be noted that the river modelling process did use data on the Water Quality Data Archive to characterise the input water quality to the modelling tool.

5. Nutrient neutrality update

- 5.1 Since publication of the Water Cycle Study, the Levelling Up and Regeneration Act 2023 has become law (with a requirement for some wastewater treatment works to be upgraded in respect of nutrient treatment), and further work has been carried out in respect of nutrient neutrality for the Local Plan Update. The Local Plan Update Habitats Regulations Assessment (HRA)⁷ provides an initial assessment of the Regulation 18 Local Plan against the Conservation of Habitats and Species Regulations 2017 (as amended) and sets out the latest position on nutrient neutrality for the borough (section 6.2).
- 5.2 The potential impact of increased nutrient loading resulting from development proposed in Local Plans is determined using nutrient neutrality calculations. This will inform if mitigation is required to achieve nutrient neutrality, and if so, how much. A calculation methodology covering both nitrogen and phosphorus has been developed by Natural England, using the most up-to-date scientific evidence base at the time of publication. This has been published as the 'Nutrient Budget Calculator Guidance Document' (latest version May 2022⁸).
- 5.3 The LPU HRA provides an indication of estimated dwellings likely to come forward in the affected River Test and Itchen catchments (section 6 of that document, available on the council's website⁹). The table below provides an estimation of the resultant annual nutrient budget in terms of the amount of nitrogen and phosphorus to be discharged from the new development. It is based on LPU allocations in the affected area, any proposed housing requirement given to rural towns and villages, and a windfall allowance, set out for the estimated trajectory of when they are expected to come forward in the plan period. As the specific location of the new dwellings is often unknown at this stage (with the exception of two allocations), the nutrient budget assessment does not include any allowance for current land use, which may include some nitrogen inputs that can be subtracted from the calculation (for example nitrogen inputs may be reduced by taking land out of agricultural use) and is therefore a precautionary estimate. For the proposed Popham garden village allocation (SPS5.5), the site promoter has submitted initial technical information indicating that the development will result in a nutrient deficit, therefore further mitigation is not required. The nutrient budget calculation below (nitrogen) therefore does not include any nutrient generation from this development.
- 5.4 For nitrogen, this calculation uses the expected annual dwelling number and a multiplier dependant on the permit in place for nitrogen treatment at the relevant wastewater treatment works. The Levelling Up and Regeneration Act (LURA) 2023 introduces a legal requirement for certain wastewater treatment works (designated by Defra) to be upgraded by 2030 (to specific Technically Achievable Limits for each nutrient), making them more efficient at removing nutrient pollution before it reaches water bodies. The

⁷ [Have your say on the draft Local Plan Update \(basingstoke.gov.uk\)](https://www.basingstoke.gov.uk/plan-app-process?chapter=81324#chapter81324)

⁸ <https://www.basingstoke.gov.uk/plan-app-process?chapter=81324#chapter81324>

⁹ <https://www.basingstoke.gov.uk/plan-app-process?chapter=81324#chapter81324>

Nitrogen multiplier used in these calculations is based on current permits at relevant wastewater treatment works, and proposed upgrades to each wwtw during the LPU period as per the LURA requirements. A list of confirmed wastewater treatment works to be upgraded is expected to be published by Defra imminently. In the meantime, the calculations used here take into account the timetable for proposed upgrades to wwtw's as set out in Southern Water's submission Business Plan¹⁰ 2025-2030 (this is yet to be approved by Ofwat):

WWTW	Proposed upgrade
Barton Stacey	Proposed upgrade in the period 2030-2035
North Waltham	No upgrade currently proposed (serves a population of less than 2000 so not required under LURA)
Oakley	Proposed upgrade in the period 2030-2035
Overton	Proposed upgrade in the period 2025-2030
Whitchurch	Proposed upgrade in the period 2030-2035

- 5.5 The estimated annual nutrient budget (kg/nitrogen/year) from development (for each wwtw) is set out in the table below. The total annual figures show the amount of nutrient mitigation expected to be required for the proposed levels of growth in the River Test and Itchen catchment.

Estimated Nutrient Budget (nitrogen) for the Local Plan Update period (kg/Nitrogen/yr) in the River Test and Itchen catchment based on proposed growth:

	2025/25	2026/27	2027/28	2028/29	2029/2030	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/27	2037/38	2038/39	2039/40
Barton Stacey wwtw	10.26	10.26	10.26	10.26	10.26	12.96	12.96	12.96	12.96	12.96	4.8	4.8	4.8	4.8	4.8
North Waltham wwtw	4	4	4	4	4	8	8	8	8	8	8	8	8	8	8
Oakley wwtw	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	4.9	4.9	4.9	4.9	4.9
Overton wwtw	5.13	5.13	5.13	5.13	5.13	1.9	51.9	101.9	101.9	91.9	1.9	1.9	1.9	1.9	1.9
Whitchurch wwtw	14.72	14.72	14.72	14.72	14.72	85.12	85.12	85.12	85.12	85.12	26.6	26.6	26.6	26.6	26.6
TOTAL	51.26	51.26	51.26	51.26	51.26	125.13	175.13	225.13	225.13	215.13	46.2	46.2	46.2	46.2	46.2

¹⁰ [Our plans 2025–30 \(southernwater.co.uk\)](https://www.southernwater.co.uk/our-plans-2025-30)

5.6 With regards to phosphorus, the area of the borough that falls within the River Itchen catchment is predominantly rural and generally not served by mains drainage. The assumption is, therefore, that all new development will be served by a package treatment plant (rather than being treated at a water company wwtw). The estimated nutrient budget calculation for the LPU period, detailed below, is based on estimated new dwellings in the catchment, comprising a windfall allowance and the draft policy requirement for ten dwellings at Preston Candover spread over years 5-15 of the Plan period. The proposed annual number of dwellings has been multiplied by the default permit figure as per Natural England’s Nutrient Calculator Guidance, to provide an indication of the amount of phosphorus mitigation expected to be required over the LPU period.

Estimated Nutrient Budget (phosphorus) for the Local Plan Update period (kg/Phosphorus/yr) in the River Itchen catchment based on proposed growth:

	2025/25	2026/27	2027/28	2028/29	2029/2030	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/27	2037/38	2038/39	2039/40
Phosphorus (kg/year)	2	2	2	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5

5.7 These figures provide an indication of the amount of nutrient mitigation (nitrogen and phosphorus) expected to be required for new development in the LPU period. Those parts of the borough within the Test and Itchen catchment comprise market towns, villages and rural areas, and therefore the strategic housing sites around Basingstoke (which comprise the majority of the housing supply) are not affected by the requirement to achieve nutrient neutrality. Policy ENV4 (Nutrient Neutrality) of the Regulation 18 LPU sets out a policy approach to ensure that new developments are nutrient neutral to ensure that there is no adverse impact on protected nature conservation sites in the Solent and River Itchen. It identifies possible mitigation options that could be used to address any nutrient surplus from development sites. Furthermore, the two allocation policies for development in the River Test and Itchen catchment (SPS5.5 Popham Garden Village and SPS5.10 Overton Mill) encourage on-site mitigation measures. The initial HRA for the LPU provides further information on available mitigation measures, which will be updated as the LPU progresses.