Basingstoke and Deane Water Cycle Study: Main Report

A1-C02

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This report describes work commissioned by Basingstoke and Deane Borough Council, by an instruction dated 22 April 2025. The Client's representative for the contract was Anne Shattock of Basingstoke and Deane Borough Council. Aida Reyhani, James Fitton and Richard Pardoe of JBA Consulting carried out this work.

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Abbreviations

ALS	Abstraction Licencing Strategy
AMP	Asset Management Plan
AMP8	Eighth Asset Management Plan period (runs 2025-2030)
BKTNEEC	Best Known Technology Not Entailing Excessive Costs
BNG	Biodiversity Net Gain
BRE	Building Research Establishment
CaBA	Catchment Based Approach
CAMS	Catchment Abstraction Management Strategy
CAPEX	Capital Expenditure
CFMP	Catchment Flood Management Plan
CIRIA	Company providing research and training in the construction industry
CIWEM	Chartered Institution of Water and Environmental Management
CSO	Combined Sewer Overflow (usually referred to as storm overflows)
DCG	Design and Construction Guidance
DEFRA	Department of the Environment, Food and Rural Affairs
DrWPA	Drinking Water Protected Areas
DWMP	Drainage and Wastewater Management Plan
DYAA	Dry Year Annual Average
EA	Environment Agency
EC	European Community
FCT	Favourable Condition Targets
FRA	Flood Risk Assessment
FWMA	Flood and Water Management Act
GEP	Good Ecological Potential
GES	Good Ecological Status
GIS	Geographical Information System
GWMU	Groundwater Management Unit
GWDTE	Groundwater Dependent Terrestrial Ecosystem
HoF	Hands-off Flow
HoL	Hands-off Level
ID	Identifier
IWM	Integrated Water Management
JNCC	Joint Nature Conservation Committee
LLFA	Lead Local Flood Authority

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LNR	Local Nature Reserve
LNRS	Local Nature Recovery Strategy
LPA	Local Planning Authority
l/p/d	Litres per person per day
NBS	Nature Based Solutions
NE	Natural England
NFM	Natural Flood Management
NPPF	National Planning Policy Framework
OEP	Office for Environmental Protection
OfWAT	Water Services Regulation Authority
PPG	Planning Practice Guidance
PR	Price Review
PTP	Package Treatment Plant
RBD	River Basin District
RBMP	River Basin Management Plan
rdWRMP	Revised Draft Water Resources Management Plan
REUL	Retained European Union Law
SABs	SuDS Approval Bodies
SAC	Special Area of Conservation
SEW	South East Water
SFRA	Strategic Flood Risk Assessment
SPA	Special Protection Area
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest
STW	Sewage Treatment Works
SuDS	Sustainable Drainage Systems
SW	Southern Water
SWMP	Surface Water Management Plan
TW	Thames Water
UKWIR	UK Water Industry Research
uPBT	Ubiquitous, Persistent, Bioaccumulative or Toxic
UWWTD	Urban Wastewater Treatment Directive
WaSC	Water and Sewerage Company
WCS	Water Cycle Study
WFD	Water Framework Directive

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WINEP	Water Industry National Environment Programme
WRE	Water Resources East
WRSE	Water Resources South East
WRMP	Water Resources Management Plan
WRZ	Water Resources Zone
WwTW	Wastewater Treatment Works

Definitions

Term	Description
Abstraction Point	The location where water is either taken or extracted from either a surface or groundwater waterbody.
Agricultural Management	The farming techniques and practices used to produce food and manage livestock.
Abstraction Licencing Strategy	The Abstraction Licencing Strategy sets out the Environment Agency's approach to managing new and existing abstraction and impoundments within their river management catchments.
Asset Management Plan (AMP) Period	Price limit periods in the water sector are sometimes known as Asset Management Plan (AMP) periods. The current period (2025-30) is commonly known as AMP 8 because it is the eighth price review period since privatisation of the water industry in 1989. AMP periods are five years in duration and begin on 1 April in the years ending in 0 or 5. Every five years the industry submits a Business Plan to OfWAT for a Price Review (PR). These plans set out the companies' operational expenditure (OPEX) and capital expenditure (CAPEX) required to maintain service standards, enhance service (for example where sewer flooding occurs), to accommodate growth and to meet environmental objectives defined by the Environment Agency. OfWAT assesses and compares the plans with the objective of ensuring what are effectively supply monopolies and operating efficiently.
Aquifer	An aquifer is a rock and/or sediment body that holds groundwater.

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Term	Description
Determinand	In a water quality assessment, a water sample may be tested to determine one or more properties of the sample or the environment it is taken from. The properties measured are called determinands. A determinand defines both the result that is measured (for example a concentration of ammonia), and the method for carrying out the measurement, including its unit.
Dry Weather Flow	Dry weather flow is the average daily flow of wastewater to a wastewater treatment works during a period without rain.
Effluent	Effluent discharge is the liquid waste produced from residential, commercial and industrial processes.
Environmental Flow Indicator	The Environmental Flow Indicator (EFI) is the proportion of natural flows that are required to support the environment of a waterbody.
Groundwater Body	A Groundwater Body is the management unit under the Water Framework Directive which represents a distinct body of groundwater with its own hydrogeological characteristics.
Lead Local Flood Authority	A county council or unitary authority which leads in managing local flood risks (i.e., risks of flooding from surface water, ground water and ordinary (smaller) watercourses). Their duties are outlined in the Flood and Water Management Act.
Natural Flood Management	Natural flood management is the use of natural processes to reduce the risk of flooding and coastal erosion.
Permitted Headroom	The difference between the volume of treated wastewater a treatment works is allowed to discharge under its environmental permit, and volume it currently discharges. It can be used to estimate the number of properties that could be connected to a WwTW catchment before a flow permit is exceeded.
Sustainable Drainage Systems (SuDS)	Sustainable drainage systems are drainage solutions that provide a natural alternative to the direct channelling of surface water through an artificial network of pipes and sewers to nearby watercourses.
Waterbodies	Water bodies constitute areas of water – both salt and fresh, large and small – which are distinct from one another in various ways. All surface waters (including rivers, lakes, estuaries and stretches of coastal water) and groundwaters have been divided up into discrete units called water bodies. Water bodies are the basic unit that are used to assess the quality of the water environment and to set targets for environmental improvements.

Term	Description
Water Framework Directive (WFD)	The Water Framework Directive is a river basin management planning system which was implemented to help protect and improve the ecological health of the UK's rivers, lakes, estuaries and coastal and groundwaters.
Water Framework Directive Classification Status	Rivers, lakes, estuaries and coastal waters can be awarded one of five WFD statuses: High, Good, Moderate, Poor or Bad Groundwater can be awarded one of two statuses: Good or Poor.
Water Framework Directive – Reasons for not achieving good (RNAG)	Where a WFD element is classified as being at less than good status, a reason for the failure to meet the good status is attributed, including the sector deemed responsible or a pressure affecting a biological element.
Water Framework Directive objectives	The Water Framework Directive objectives are set out in Regulation 12 and Regulation 8 of the Water Environment Regulations 2017.
Water Industry National Environment Programme	The Water Industry National Environment Programme is the programme of work in which water companies in England must meet their obligations from environmental legislation and UK government policy.
Water Resource Management Plan (WRMP)	Water Resource Management Plans are statutory documents that all water companies must produce at least every five years. They set out how the water company intends to achieve a secure water supply for their customers while protecting and enhancing the environment.
Water Resource Zone (WRZ)	A Water Resource Zone is an area in which the abstraction and distribution of water is self-contained and is used to meet demand within that area.
Wastewater Treatment Works (WwTW)	A wastewater treatment works receives flows from the sewerage system and treats it so it can be discharged back into a river. They may also be called Sewage Treatment Works (STWs) or Water Recycling Centres (WRCs).

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Executive Summary

JBA Consulting was commissioned by Basingstoke and Deane Borough Council (BDBC) to undertake a Water Cycle Study (WCS) to inform the Council's emerging Local Plan. The purpose of the WCS is to form part of a comprehensive and robust evidence base for the Local Plan which will set out a vision and framework for development in the area up to 2042 and will be used to inform decisions on the location of future development.

Unmitigated future development and climate change can adversely affect the environment and water infrastructure capability. A WCS will provide the required evidence, which can be used to help inform a strategy to ensure that planned growth can occur within environmental constraints, and with the appropriate infrastructure in place in a timely manner so that planned allocations are deliverable. This study assesses the potential issues relating to future development that will need to be planned for within the Basingstoke and Deane Borough Council Local Plan, and the impact on water supply, wastewater collection and treatment and water quality.

Water resources

Water resources in England are under considerable pressure. The Environment Agency has stated that "the scale of the challenge we face increases with time and, by 2050, we are looking at a shortfall of nearly 5 billion litres of water per day between the sustainable water supplied available and the expected demand."

The majority of the predicted growth in BDBC is within SEW's Bracknell WRZ. SEW have advised that the housing numbers shared with them are considerably higher than they have factored into their WRMP24. The increase is likely to cause stress in their water supply network that they would be unable to resolve until a new major infrastructure scheme (a transfer pipeline from Surrey Hill service reservoir towards Basingstoke) is completed in 2033. They advise that they "would not be able to accommodate any level of growth in excess of our current WRMP24 forecast assumptions". This effectively puts a cap on the amount of development that is possible within the Bracknell WRZ, which also includes other LPAs. Careful coordination of development plans in the early part of the Local Plan period, in collaboration with neighbouring authorities, is required in order to ensure that growth does not exceed the WRMP24 forecast.

Approximately 2,500 dwellings are planned within the two SW WRZs. SW have confirmed that there is sufficient time to adapt to the additional planned growth beyond that accounted for in the WRMP24.

There are 1,125 dwellings planned in the TW WRZ. From a total planned growth of 25,550 during the plan period. As the growth from BDBC is a small proportion of the overall growth, there is likely to be sufficient time to adapt to any increase beyond that accounted for in the WRMP24.

Part G of Building regulations currently states that new build housing should achieve a minimum of 125 l/p/d. A tighter target of 110l/p/d is allowed if the local authority can establish a clear need based on available evidence. Many LPAs are now going further than

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this. The Written Ministerial Statement (WMS) by the former Secretary of State for Levelling Up, Housing and Communities (DLUHC) states that "…in areas of serious water stress, where water scarcity is inhibiting the adoption of Local Plans or the granting of planning permission for homes, I encourage local planning authorities to work with the Environment Agency and delivery partners to agree standards tighter than the 110 litres per day that is set out in current guidance."

Basingstoke and Deane is in an area classified by the Environment Agency as being under serious water stress. It is also home to several chalk streams - a globally rare ecosystem that is sensitive to abstraction.

The Catchment Based Approach (CaBA) Chalk Stream Strategy recommends that a water efficiency target of 90l/p/d is adopted in chalk stream areas. The Government's EIP23 states that the "Chalk Stream strategy should be supported".

In their responses to the draft Water Cycle Study, the Environment Agency, Natural England and Southern Water were supportive of a water efficiency target that goes beyond building regulations.

In view of the sensitive environmental sites in the area, and the long-term national target of 110l/p/d across all housing (including existing), it is recommended that a water efficiency target of 90l/p/d is adopted across the BDBC area. This should be achieved using a fittings-based approach and supported by an equivalent non-household target where development will aim to achieve full credits in the BREEAM water calculator with a minimum of 3 credits in WAT01.

Water supply

An increase in water demand due to growth can exceed the hydraulic capacity of the existing supply infrastructure. This is likely to manifest itself as low pressure at times of high demand. An assessment is required to identify whether the existing infrastructure is adequate or whether upgrades will be required. The time required to plan, obtain funding, and construct major pipeline works can be considerable and therefore water companies and planners need to work closely together to ensure that the infrastructure is able to meet growing demand.

SW and TW provided a site-by-site assessment of potential allocations in their supply areas. This identified two sites where further modelling by TW would be required. And upgrades to the network were likely to be required. SEW were not able to provide a site-by-site assessment within the timescales of the WCS.

Upgrades to the local supply network would be funded as part of the water company infrastructure charges. Early engagement between developers, BDBC and the water companies is recommended to ensure upgrades are in place prior to occupation

Wastewater network

Increased wastewater flows into collection systems due to growth in population or per-capita consumption can lead to an overloading of the infrastructure, increasing the risk of

sewer flooding and, where present, increasing the frequency of discharges from storm overflows.

Development in areas where there is limited wastewater network capacity will increase pressure on the network, increasing the risk of a detrimental impact on customers, and increasing the likelihood of storm overflow operation. Early engagement with developers, Southern Water and Thames Water is required, and modelling of the network may be required at the planning application stage.

Where network capacity constraints are identified, network reinforcement may be required which would be funded as part of the developer infrastructure charge. It may be necessary for development sites to be phased in line with the provision of any network upgrades.

Storm overflows

Storm overflows are an essential component in the sewer network – however when they operate frequently, they can cause environmental damage. They occur on combined sewer systems where the sewer takes both foul flow (sewage from homes and offices) and rainwater runoff.

Storm overflow performance in the BDBC area is generally poor, with ten out of twelve storm overflows present in the study area currently operating above the threshold for investigation. 2024 was a particularly bad year, in part because it was a wetter than average year, for example the Basingstoke WwTW catchment has issues with groundwater infiltration and so a wet year makes a significant difference to storm overflow performance. This was not the case in 2022 and 2023 when many of the storm overflows also operated well above the threshold.

Further development in catchments where there are poorly performing overflows increase the risk of storm overflow operation due to increased sewage flows and surface runoff.

There are opportunities through the planning system to ease pressure on the wastewater network by separating foul and storm flow in existing combined systems and not allowing new surface water connections. Surface water can also be better managed by retrofitting SuDS in existing residential areas, and in new development, ensuring SuDS are incorporated into designs at the master planning stage to maximise the potential benefits.

Water and Sewage Companies (WaSCs) should ensure that sufficient investment is available to meet the Storm Overflow Assessment Framework commitments to be delivered by 2035 in the area.

Wastewater treatment

Each Wastewater Treatment Works (WwTW) has a permit detailing how much treated effluent can be discharged either into rivers or to ground. Headroom - the different between the current discharge and the permitted discharge, can be eroded by growth in population or per-capita consumption, requiring investment in additional treatment capacity. There are

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22 WwTWs within or serving BDBC. Of these 16 are expected to serve growth during the Local Plan period.

The majority of the planned growth is expected to be served by Basingstoke WwTW. In the exceptionally wet year of 2024, it failed its maximum permitted volume. It is expected to remain comfortably compliant with its permit limit in 2025. Despite this, it is anticipated that wastewater treatment capacity at Basingstoke WwTW is not likely to restrict growth, as long as an upgrade to re-permit the site including allowance form planned growth is implemented in AMP9. It is recommended that the Council maintains regular communications with Thames Water and the Environment Agency regarding this matter, and may wish to develop a Statement of Common Ground with TW and EA for inclusion within the Local Plan evidence base.

Upgrades may also be required at Barton Stacey, Overton, North Waltham and Whitchurch WwTWs in order to serve growth during the plan period

The odour screening assessment identified 11 sites within 800m of a WwTW where an odour impact assessment would be recommended. This should be funded by the developer.

As assessment of the impact of additional effluent flows on flood risk showed that it is not predicted to have a significant impact on flood risk in any of the receiving watercourses.

Water quality

An increase in the discharge of effluent from WwTW because of development and growth in the area which they serve can lead to a negative impact on the quality of the receiving watercourse. Under the Water Framework Directive (WFD), a watercourse is not allowed to deteriorate from its current WFD classification (either as an overall watercourse or for individual elements assessed).

The EA reasons for not achieving good (RNAG) dataset indicates that the water industry (sewage discharges) and urbanisation are among the main reasons for watercourses not achieving good status in this area. Growth during the local plan period will increase the discharge of treated wastewater from WwTWs in BDBC. There is potential for this to cause a deterioration in water quality in the receiving watercourses if no action were taken. This impact has been modelled in the WCS.

The modelling indicates the growth during the Local Plan period would not result in a significant deterioration (10% or greater or deterioration in class) in water quality at any of the modelled WwTWs and growth alone will not prevent good ecological status being achieved in the future should improvements in upstream water quality be made (for example land management improvements or storm overflow upgrades).

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Environmental impact

Development has the potential to cause an adverse impact on the environment through several routes such as worsening of air quality, pollution to the aquatic environment or disturbance to wildlife or an increase in abstraction for public water supply.

Abstraction of water within a catchment, either from groundwater or surface water sources, is necessary to provide a public water supply, for industrial processes and for agriculture. When the volume of water being abstracted becomes too high, it can cause environmental damage by reducing river flow or lowering the water table

The potential impact of development on a protected sites within and downstream of BDBC should be considered in future plan making. This applies to both the impact of abstraction and of additional wastewater discharge as well as the impact of surface water runoff.

Water quality modelling has predicted no significant deteriorations in water quality at environmental sites down stream of WwTW serving growth. 20 allocations are located within groundwater Source Protection Zones. The EA has published management advice for development within these zones.

Development sites within the study area could be sources of diffuse pollution from surface runoff. SuDS are required on all development sites. Their design should consider both water quantity and water quality and site-level investigations should be undertaken to define the most appropriate SuDs types for each specific development. BDBC should be consulted at an early stage of development to ensure that SuDS are implemented and designed in response to site characteristics and policy factors.

In the wider area, opportunities exist to implement natural flood management techniques to achieve multiple benefits of flood risk, water quality and habitat creation.

BDBC is home to a number of chalk streams - an important and globally rare habitat. There is an opportunity for Local Plan policy to contribute to their protection. The WCS makes recommendations for policies to enhance protection, such as a tighter water efficiency standard and a riparian buffer zone to prevent encroachment of development.

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1 Introduction

1.1 Terms of reference

JBA Consulting was commissioned by Basingstoke and Deane Borough Council to undertake a Water Cycle Study (WCS) to inform the Council's emerging Local Plan. The purpose of the WCS is to form part of a comprehensive and robust evidence base for the Local Plan which will set out a vision and framework for development in the area up to 2042 and will be used to inform decisions on the location of future development.

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1.2 Structure of report

The requirements and objectives of the WCS are set out in the section below. Environmental, planning and water industry policy and legislation relevant to development and water is summarised in Section 2. Growth within and sharing infrastructure with Basingstoke and Deane is summarised in Section 3. This provides an outline of the growth option and is the basis for the assessments throughout the study. Sections 4 to 11 assess the impact of the growth forecast on each element of the water cycle. A summary of the conclusions and recommendations is contained in section 12.

1.3 The Water Cycle

Planning Practice Guidance on Water Supply, Wastewater and Water Quality (Department for Levelling Up, Housing and Communities, 2019) describes a water cycle study as:

"A voluntary study that helps organisations work together to plan for sustainable growth. It uses water and planning evidence to understand environmental and infrastructure capacity. It can identify joined up and cost-effective solutions, that are resilient to climate change for the lifetime of the development.

The study provides evidence for plans and sustainability appraisals and is ideally done at an early stage of plan-making. Local authorities (or groups of local authorities) usually lead water cycle studies, as a chief aim is to provide evidence for sound plans, but other partners often include the Environment Agency and water companies."

The Environment Agency's Guidance on WCS (Environment Agency, 2021) recommends a phased approach:

Stage 1: Scoping study, identifies if the water infrastructure capacity could constrain growth and if there are any gaps in the evidence you need to make this assessment:

- The area and amount of proposed development;
- The existing evidence;
- Main partners to work with; and
- Evidence gaps and constraints on growth.

Stage 2: Detailed study, to provide the evidence to inform an integrated water management strategy. It will identify the water and flood management infrastructure that will mitigate the risk from too little or too much water. It will also identify what you need to do to protect and enhance the water environment.

Figure 1.1 below shows the main elements that comprise the Water Cycle and shows how the natural and artificial processes and systems interact to collect, store or transport water in the environment.

The natural water cycle describes the continuous transfers of water around the planet, from atmosphere to surface and back via evaporation, transpiration and precipitation, and the various flows and storage processes that occur. The artificial water cycle looks at the availability of water resources for human consumption, its treatment and supply to homes and business, its use and consequently the generation of wastewater. It then looks at how wastewater is taken away, treated, and finally what happens when it is returned to the environment.

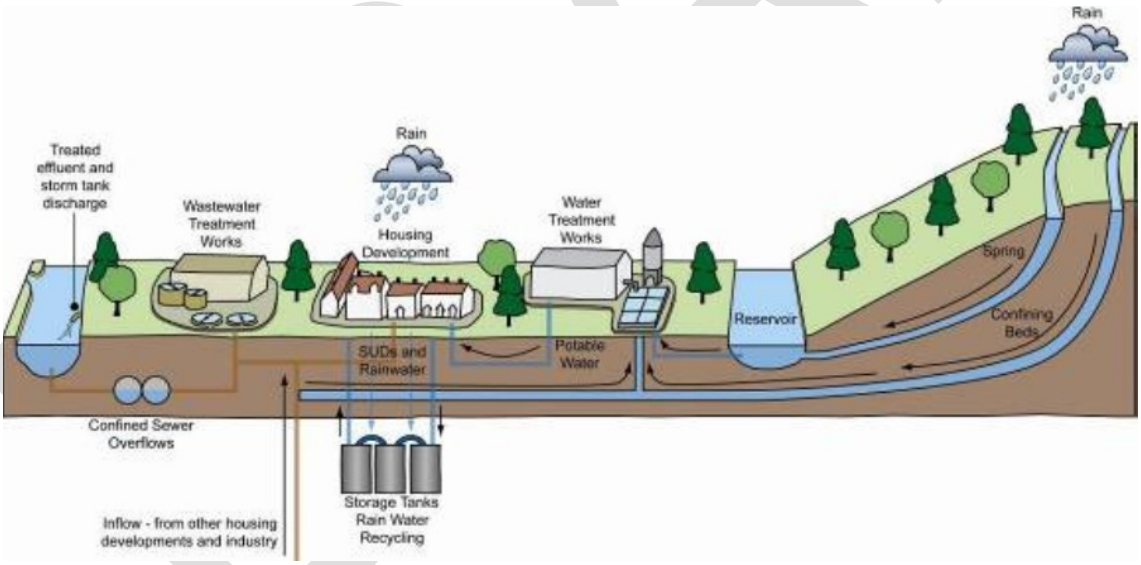

Figure 1.1 The Water Cycle

1.4 Impact of Development on the Water Cycle

New homes and employment infrastructure require the provision of clean water, safe disposal of wastewater and limitation of flood risk. It is possible that allocating large numbers of new homes at some locations may result in the capacity of the existing available infrastructure being exceeded. This situation could potentially lead to service failures to water and wastewater customers, have adverse impacts on the environment or

cause the high cost of upgrading water and wastewater assets being passed on to bill payers. Climate change presents further challenges such as increased intensity and frequency of rainfall that can be expected to put greater pressure on the existing infrastructure. Development, when planned correctly, can also offer opportunities to reduce flood risk to existing properties and increase community resilience, contribute to nature recovery, and allow a collaborative approach to infrastructure.

1.5 Objectives

Since the previous WCS was completed in 2022, the National Planning Policy Framework (NPPF) has been updated, changing the method used to calculate a Local Planning Authority's (LPA's) housing need. In Basingstoke and Deane, as in many LPA areas, this has resulted in a significant uplift in the forecast housing need. The WCS therefore needs to be updated to take this into account. Due to the previous WCS having been prepared relatively recently (2022 with an addendum in 2024), a Preliminary Assessment Report was prepared instead of a full Stage 1 Scoping Study. This Stage 2 Detailed WCS addresses the gaps in knowledge identified in the Preliminary Assessment.

1.6 Study Area

The Local Planning Authority (LPA) area for Basingstoke and Deane Borough Council is shown in Figure 1.2 BDBC study area. The study area covers 630km^2 in the north of Hampshire. It is relatively rural with less than 8% of the land "built up"[1], and 60% of the population living in the main settlement of Basingstoke.

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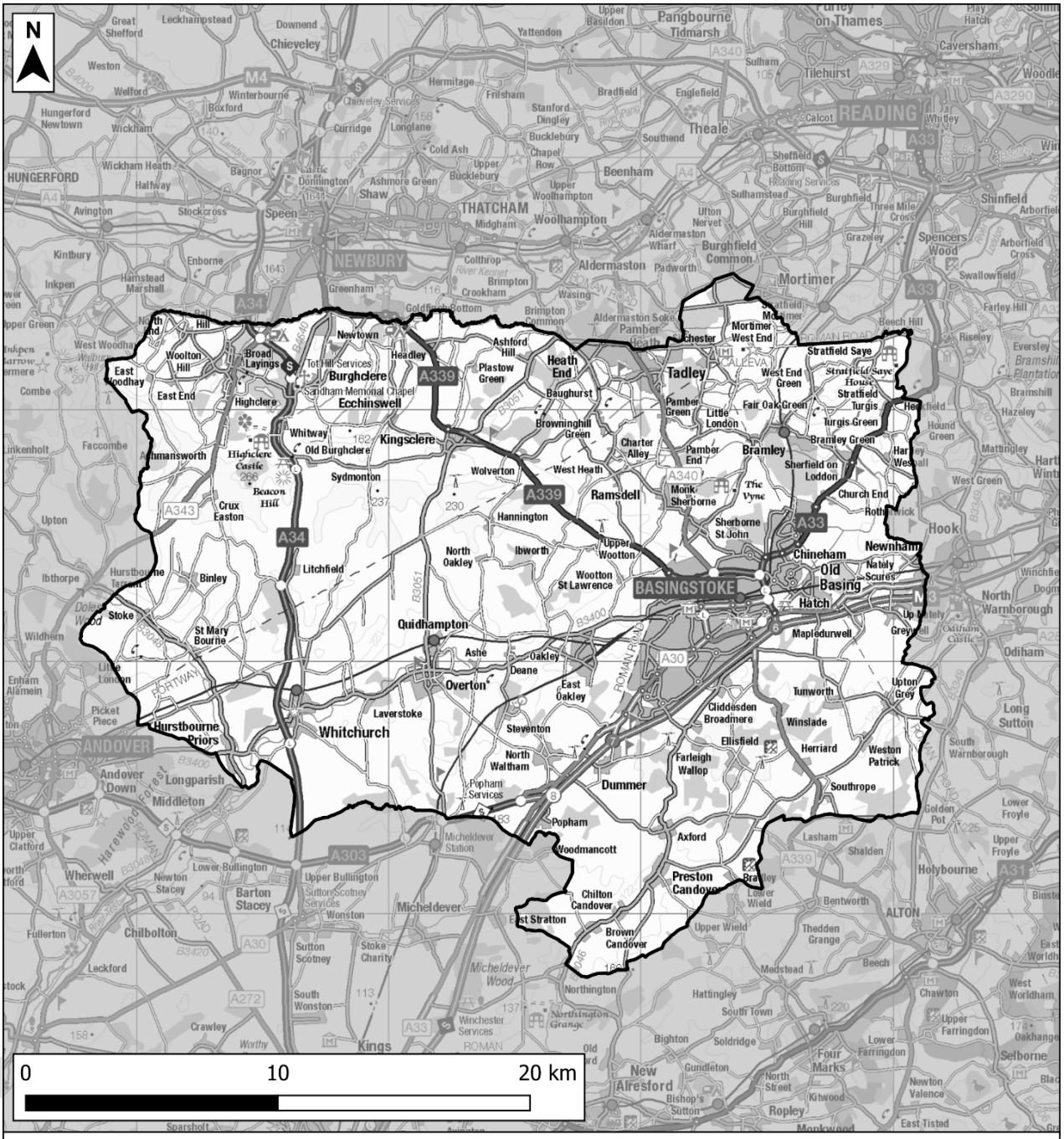
1 Basingstoke and Deane Key Facts, Basingstoke and Deane Borough Council (2016). Accessed at: https://www.basingstoke.gov.uk/content/doclib/1876.pdf on: 20/05/2025



Source: PRP_JBAU-XX-XX-MX-EN-0001-S0-P01 Study Area
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Figure 1.2 BDBC study area

2 Policy and legislation

2.1 Introduction

The following sections introduce several national, regional, and local policies that must be considered by the Local Planning Authority (LPA), water companies and developers during the planning stage. Key extracts from these policies are presented as well as links to the full text. Whilst care has been taken to ensure that the information presented in this report was up to date at the time of writing, policy and guidance can change rapidly and the reader should ensure that the most up to date information is sought.

References contained within this section (and elsewhere in the report) can be found at the back of this report.

2.2 Plan-making

The National Planning Policy Framework (NPPF) (Department for Levelling Up, Housing and Communities, 2023) was originally published in 2012, as part of reforms to make the planning system less complex and more accessible, to protect the environment and to promote sustainable growth.

Local Plans are the primary mechanism by which plan-led spatial planning is implemented in England. Local Plans must be prepared by Local Planning Authorities (LPAs) and include:

- Strategic policies which set out the "overall strategy for the pattern, scale and design duality of places", including for the provision of infrastructure, transportation and community facilities.
- Non-strategic policies, which "set out more detailed policies for specific areas, neighbourhoods or types of development. This can include allocating sites, the provision of infrastructure and community facilities at a local level."

Under the Localism Act (HM Government, 2011) new rights were provided to allow local communities to come together and shape the development and growth of their area by preparing Neighbourhood Development Plans, or Neighbourhood Development Orders, where the ambition of the neighbourhood is aligned with strategic needs and priorities for the area. Neighbourhood Plans can make non-strategic policies, aligned to the strategic policies of the Local Plan. As neighbourhoods draw up their proposals, Local Planning Authorities are required to provide technical advice and support to communities.

2.3 Water and the Planning System

2.3.1 National Planning Policy Framework and water

The NPPF provides guidance to planning authorities to take account of flood risk and water and wastewater infrastructure delivery in their Local Plans. It underwent a significant

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revision in December 2024, the previous paragraph numbers are noted for reference. Key paragraphs include:

- Paragraph 35 (previously paragraph 34): "Plans should set out the contributions expected from development. This should include setting out the levels and types of affordable housing provision required, along with other infrastructure (such as that needed for education, health, transport, flood and water management, green and digital infrastructure). Such policies should not undermine the deliverability of the plan".
- Paragraph 162 (previously paragraph 158): "Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply…"
- Paragraph 187e (previously paragraph 180e): preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans".

Of note to the WCS is the re-instatement of mandatory housing targets, and a change to the way housing need is calculated. In many LPA areas, including Basingstoke and Deane, this has resulted in a large change from the previous target.

A new paragraph has been added (163) to emphasise that that climate change is an important consideration in decision making as well as plan making. The need to mitigate and adapt to climate change should also be considered in preparing and assessing planning applications, taking into account the full range of climate change impacts.

2.3.2 Planning Practice Guidance overview

Planning Practice Guidance (PPG) was originally issued in 2014 by the Department for Communities and Local Government, with the intention of providing guidance on the application of the NPPF. The individual guidance documents are updated periodically. The following guidance documents are particularly relevant to a WCS:

- Water Supply, Wastewater and Water Quality (HM Government, 2019)
- Housing - Optional Technical Standards (HM Government, 2015a)

2.3.3 PPG - Water Supply, Wastewater and Water Quality

Two key passages from the PPG (Para 002) provide an overview of what needs to be considered by plan-making authorities, and provide a basis for the work contained in a WCS or IWMS:

"Early discussions between strategic policy-making authorities and water and sewerage companies can help to ensure that proposed growth and environmental objectives are reflected in company business plans. Growth that requires new water supply should also be

reflected in companies' long-term water resources management plans. This will ensure that the necessary infrastructure is funded through the water industry's price review."

"Strategic policy-making authorities will also need to consider the objectives in the government's 25 Year Environment Plan to reduce the damaging abstraction of water from rivers and groundwater, and to reach or exceed objectives for rivers, lakes, coastal and ground waters that are specially protected."

A summary of the advice for plan-makers and for planning applications is contained below but it is recommended that the full text is reviewed.

Plan-making considerations - Infrastructure (Para 005)

- Identification of suitable sites for new or enhanced infrastructure, including the location of existing and proposed development.
- Consider whether new development is appropriate near to water and wastewater infrastructure (for example due to odour concerns).
- Phasing new development so that water and wastewater infrastructure will be in place when needed. Infrastructure should also be in place before any environmental effects occur on designated sites of importance for biodiversity.

Plan-making considerations - Water quality (Para 006)

- How to help protect and enhance local surface water and groundwater in ways that allow new development to proceed and avoids costly assessment at the planning application stage.
- The type or location of new development where an assessment of the potential impacts on water bodies may be required.
- Whether measures to improve water quality, (e.g., SuDS schemes) can be used to address water quality in addition to flood risk.

Plan-making considerations - Wastewater (Para 007)

- The sufficiency and capacity of wastewater infrastructure.
- The circumstances where wastewater from new development would not be expected to drain to a public sewer (such as via a package treatment sewage treatment works or septic tank).
- The capacity of the environment to receive effluent from development without preventing statutory objectives being met.

Early engagement with the LPA, the EA, and relevant water and sewerage companies can help establish whether any particular water and wastewater issues need to be considered.

Considerations for planning applications - Water supply (Para 016)

Water supply planning would normally be addressed through the LPA's strategic policies and reflected in the water companies WRMPs. Water supply is therefore unlikely to be a consideration for most planning applications. However, some exceptions might include:

- Large developments not identified in plans that are likely to require a large volume of water; and/or
- significant works required to connect the water supply; and/or

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- where a plan requires enhanced water efficiency in new development as part of a strategy to manage water demand locally.

Considerations for planning applications - Water quality (Para 016)

Water quality is only likely to be a significant planning concern where a proposal would:

- Involve physical modifications to a water body such as flood storage areas, channel diversions and dredging, removing natural barriers, construction of new locks, new culverts, major bridges, new barrages or dams, new weirs, and removal of existing weirs; and/or
- indirectly affect water bodies, for example:
    - As a result of new development such as the redevelopment of land that may be affected by contamination, mineral workings, water and wastewater treatment, waste management facilities and transport scheme including culverts and bridges.
    - Result in runoff into surface water sewers that drain directly, or via a combined sewer, into sensitive waterbodies e.g., waterbodies with a local, national or international habitat designation.
    - Through a lack of adequate infrastructure to deal with wastewater.
    - Through a lack of adequate infrastructure to deal with wastewater where development occurs in an area where there is strategic water quality plan e.g., a nutrient management plan, River Basin Management Plan, Water Cycle Study, Diffuse Water Pollution plan or sewerage undertakers' drainage strategy which set out strategies to manage water quality locally and help deliver new development.

2.3.4 PPG - Housing - Optional Technical Standards

This guidance advises planning authorities on how to gather evidence to set optional requirements, including for water efficiency. It states that “all new homes already must meet the mandatory national standard set out in the Building Regulations (of 125 litres /person /day). Where there is a clear local need, local planning authorities can set out Local Plan policies requiring new dwellings to meet the tighter Building Regulations optional requirement of 110 litres/person/day. Planning authorities are advised to consult with the EA and water companies to determine where there is a clear local need, and also to consider the impact of setting this optional standard on housing viability.

2.3.5 PPG - Climate Change

This guidance (Department for Levelling Up, Housing and Communities, 2019) advises how to identify suitable mitigation and adaptation measures in the planning process to address the impacts of climate change. Planning can help increase resilience to climate change impact through the location, mix and design of development. There is a statutory duty on local planning authorities to include policies in their Local Plan to tackle climate change and its impact.

2.3.6 Levelling-up and Regeneration Act 2023

The Levelling-up and Regeneration Act (HM Government, 2023) aims to support the Government's commitment to reducing geographical disparities between different parts of the UK. Within the Act are several parts relating to the water environment.

Part 7 relates to nutrient pollution standards. Where the Secretary of State considers that a habitats site that is wholly or partly in England is in an unfavourable condition by virtue of pollution from nutrients in water comprising phosphorus or compounds, or nitrogen or compounds, the Secretary of State may designate the catchment area for the habitats site as a phosphorus or nitrogen sensitive area.

It requires sewerage undertakers in England to upgrade phosphorus or nitrogen significant plants in its sewerage system by 2030 in order to meet phosphorus or nitrogen pollution standards.

A phosphorus or nitrogen significant plant is defined as one that discharges treated effluent into a sensitive catchment area and is not exempt in relation to the pollution standard. Unless otherwise defined, the treatment standard for phosphorous is 0.25mg/l, and for nitrogen is 10mg/l.

2.4 Water and design

2.4.1 Building Regulations

The Building Regulations (2010) Part G was amended in early 2015 to require that all new dwellings must ensure that the potential water consumption must not exceed 125 litres/person/day, or 110 litres/person/day where required under planning conditions (HM Government, 2015b) (see 2.3.4).

The Environmental Improvement Plan (discussed in 2.7.2) contains a commitment to consider a new standard for new homes in England of 105 litres per person per day (l/p/d) and 100 l/p/d where there is a clear local need, such as in areas of serious water stress. Whilst this new standard is only under consideration, it demonstrates the direction of travel for water efficiency standards, and it is highly likely that this or a similar standard will be adopted.

2.4.2 Building Research Establishment

The Building Research Establishment (BRE) publish an internationally recognised environmental assessment methodology for assessing, rating, and certifying the sustainability of a range of buildings.

New homes are most appropriately covered by the Home Quality Mark (BRE, 2023a), and commercial, leisure, educational facilities and mixed-use buildings by the Building Research Establishment Environmental Assessment Methodology (BREEAM) UK New Construction Standard (BRE, 2018b).

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Using independent, licensed assessors, BREEAM/HQM assesses criteria covering a range of issues in categories that evaluate energy and water use, health and wellbeing, pollution, transport, materials, waste, ecology, and management processes.

In the Homes Quality Mark, 400 credits are available across 11 categories and lead to a star rating. 18 credits are available for water efficiency and water recycling. A greater number of credits are awarded for homes using water efficient fittings (with the highest score achieving 100l/p/d or less), and further credits are awarded for the percentage of water used in toilet flushing that is either sourced from rainwater or from grey water.

The BREEAM New Construction Standard awards credits across nine categories, four of which are related to water: water consumption, water monitoring, leak detection and water efficient equipment. This leads to a percentage score and a rating from “Pass” to “Outstanding”.

Through the Local Plan, the Council has the opportunity to seek BREEAM or HQM status for all new, residential, and non-residential buildings.

2.4.3 Energy and Water

18% of the UK’s domestic energy usage is for water heating (Department for Energy Security and Net Zero, 2022). If less water was being used within the home, for instance through more water efficient showers, less water would need to be heated, and overall domestic energy usage would be reduced.

The Government is currently analysing the results of a 2019 consultation on a Future Homes Standard that will involve changes to Part L (conservation of fuel and power) of the Building Regulations for new dwellings. Whilst there is no direct mention of water efficiency in this consultation, there is an important link between water use and energy use, and therefore between water use and the whole-life carbon cost of developments.

2.4.4 Viability

The evidence for the costs of meeting the optional 110l/p/d water efficiency target in new homes indicate that the costs are minimal:

- A 2014 study into the cost of implementing sustainability measures in housing found that meeting a standard of 110 litres per person per day would cost only £12 (at 2023 prices) for a four-bedroom house (EC Harris, 2014).
- The Committee on Climate Change report - UK Housing: Fit for the Future - stated that the cost of "requiring all homes in England to be built to 110 l/p/d is possible under Part G of regulations and would be no additional cost." (Committee on Climate Change, 2019)
- Heating water accounts for 18% of energy used in the home (Department for Energy Security and Net Zero, 2022) This would cost a 2-3 person, 3-bed household an average of £352 per year in energy at 2023 costs (British Gas, 2023). Water efficiency is therefore not only viable but of positive economic benefit to both private homeowners and tenants.

There is less evidence available on the costs of going below 110l/p/d. The Sussex North Water Neutrality Strategy (JBA Consulting, 2022) found that the additional cost to meet 85l/p/d using water efficient fittings would be between £349 and £431 per dwelling, or £1,049 to £1,531 where white-goods appliances would not otherwise have been installed in the dwelling (2022 prices).

2.5 The Water Industry

2.5.1 The Water Industry in England

Water and sewerage services in England and Wales are provided by eleven Water and Sewerage Companies (WaSCs) and six 'water-only' companies. The central legislation relating to the industry is the Water Industry Act 1991. The companies operate as regulated monopolies within their supply regions, although very large water users and developments are able to obtain water and/or wastewater services from alternative suppliers - known as inset agreements.

The Water Act 2014 aims to reform the water industry to make it more innovative and to increase resilience to droughts and floods. Key measures that could influence the future provision of water and wastewater services include:

- Non-domestic customers are able to switch their water supplier and/or sewerage undertaker;
- new businesses will be able to enter the market to supply these services;
- measures to promote a national water supply network; and
- enabling developers to make connections to water and sewerage systems.

The water industry is primarily regulated by three regulatory bodies:

- **Economic regulation:** Office of Water Services (Ofwat) are the economic regulator. They have a statutory duty to protect the interests of consumers, ensuring water companies carry out their functions (customer service standards, environmental rules, drinking water standards etc) and can finance them. Part of this role is setting the limits on pricing of water and sewerage services.
- **Environmental regulation:** The Environment Agency are the environmental regulator. They are responsible for monitoring the impact of the water industry (as well as others) on the environment and issuing permits for abstraction of water and discharge of wastewater.
- **Drinking water regulation:** Finally, the Drinking Water Inspectorate (DWI) implement standards for drinking water and can take enforcement measures against water companies if those standards are not met.

As a result of the Independent Water Commission, the Government have announced that Ofwat would be abolished and replaced by a new regulator taking responsibility for water functions across Ofwat, Environment Agency, Natural England and Drinking Water Inspectorate (UK Government, 2025). This is described in more detail in 2.8.2.

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2.5.2 Planning and funding of the water industry

The water industry works on a five-year cycle called the Asset Management Plan period or AMP periods. Every five years a water company submits a Business Plan to Ofwat for a Price Review. These plans set out the companies' operational expenditure (OPEX) and capital expenditure (CAPEX) required to maintain service standards, enhance service (for example where sewer flooding occurs), to accommodate growth and to meet environmental objectives defined by the Environment Agency. Ofwat assesses and compares the plans with the objective of ensuring what are effectively supply monopolies are operating efficiently, and that the company is meeting its obligations. It then sets the allowable price increase for consumers based on the retail prices index, the business plan, and taking into consideration affordability for consumers. The current AMP period is AMP 8 (2025-2030), and the price of water for this period was set by Ofwat late in 2024 in a process referred to as Price Review 24 (PR24). The new prices came into effect in April 2025. The next price review will be 2029 (PR29) and will set prices from 2030 to 2035. This system gives stability in pricing. Within this price review process there may also be incentives and penalties on the water company for exceeding or failing to meet targets.

When considering investment requirements to accommodate growing demand, water companies are required to ensure a high degree of certainty that additional assets will be required before funding them. Longer term growth is, however, considered by the companies in their internal asset planning processes and in their 25-year Strategic Direction Statements and Water Resource Management Plans (WRMPs).

The Water Industry National Environment Programme (WINEP) is a set of actions that are defined by the EA and given to all water companies operating in England for completion during a particular AMP period. The aim of the programme is to support the objectives in the Environment Act, Water Framework regulations, Habitats regulations and other environmental objectives. Examples of typical actions could include investigations into the sustainability of an abstraction, a reduction in an abstraction to support river flows, or new permit limits at a wastewater treatment works.

Water and wastewater infrastructure requires significant lead-times to plan, obtain planning and other permissions, finance and construct. The time required to provide new or upgraded infrastructure to serve a development or a larger spatial plan is highly locally specific. The following is provided as an indicative guide to lead-times.

Table 2.1 Indicative lead-times (years) for new infrastructure to serve development

Scale of development	Water supply	Water resources	Wastewater network	Wastewater treatment
Minor	1	N/A	1	N/A
Major	1-3	5-10	1-5	3-5
Strategic / Plan	3-5	10-20	5-10	5-10

2.5.3 Planning for Water

Water resource management plans

Water Resource Management Plans (WRMPs) are 25-year strategies that water companies are required to prepare, with updates every five years. In reality, water companies prepare internal updates more regularly. WRMPs are required to assess:

- Future demand (due to population and economic growth).
- Future water availability (including the impact of sustainability reductions).
- Demand management and supply-side measures (e.g., water efficiency and leakage reduction, water transfers and new resource development).
- How the company will address changes to abstraction licences.
- How the impacts of climate change will be mitigated.
- Where necessary, they set out the requirements for developing additional water resources to meet growing demand and describe how the balance between water supply and demand will be balanced over the period 2015 to 2040.
- Using cost-effective demand management, transfer, trading and resource development schemes to meet growth in demand from new development and to restore abstraction to sustainable levels.
- In the medium to long term, ensuring that sufficient water continues to be available for growth and that the supply systems are flexible enough to adapt to climate change.

South East Water[2] and Southern Water's[3] draft WRMP for 2024 are published online.

These documents are reviewed in detail for the study area in section 4.6.3.

Drought Plan

Linked to the WRMP is a water company's drought plan. This is a requirement under the Water Industry Act 1991 (as amended by the water Act 2003). A water company must state how it will maintain a secure water supply and protect the environment during dry weather and drought. The plan will contain:

- Drought triggers - these are points where a water company will take action to manage supply and demand. They are based on monitoring of rainfall levels, river flows, groundwater levels and reservoir stocks.
- Demand management actions - how a water company will reduce demand for water during a drought. Actions that save water before taking more water from the environment must be prioritised. These could include:
  - reducing leakage;
  - carrying out water efficiency campaigns with customers;
  - reducing mains pressure; and
  - restricting water use, for example through temporary use bans which limit hosepipe and sprinkler use.

2 Water resources management plan 2024 | South East Water

3 Water Resources Management Plan - Southern Water

- Supply management actions - how a water company will maintain water supply during a drought. Actions that have the least effect on the environment must be prioritised. This could include:
  - carrying out engineering work to improve its supply;
  - transferring water in bulk from other water companies;
  - using drought permits and drought orders to abstract more water;
  - using desalination - permanent or temporary plants; and
  - using tankers to supply customers with water directly.
- Extreme drought management actions - the actions it could take in an extreme drought. These could delay the need to use emergency restrictions standpipes and rota cuts.
- Communicating during a drought - a water company must set out how it will communicate in a clear and timely way during a drought with customers, partners or other stakeholders.
- Environmental assessment, monitoring and mitigation. A drought plan must include:
  - an environmental assessment;
  - an environmental monitoring plan for each supply management action; and
  - details of mitigation measures the company plans to take for each supply management action.
- End of a drought - a water company must explain how it will identify when a drought is over or ending and the actions it will take during this stage, communicate this information to customers, and review its performance.

Regional water resource planning

Water resource planning is taking an increasingly regional focus, recognising the need for collaboration between water companies and sectors in order to address the challenges of climate change, increasing demand for water and protecting the water environment. Five regional groupings having been formed, including the Water Resources South East (WRSE) group which covers BDBC. An advisory group consisting of their regulators (Environment Agency and Ofwat) and Defra regularly attend meetings of WRSE.

WRSE published their Final Regional Plan in 2025. This will inform the next round of water company WRMPs to be published in 2029.

2.5.4 Planning for Wastewater

21st Century Drainage

The UK Water Industry Research (UKWIR) “21st Century Drainage” programme has brought together water companies, governments, regulators, local authorities, academics, and environmental groups to consider how planning can help to address the challenges of managing drainage in the future. These challenges include climate change, population growth, urban creep and meeting the Water Framework Directive.

The group recognised that great progress has been made by the water industry in its drainage and wastewater planning over the last few decades, but that, in the future, there

needs to be greater transparency and consistency of long-term planning. The Drainage and Wastewater Management Plan (DWMP) framework (Water UK, 2018) sets out how the industry intends to approach these goals. Companies published finalised DWMPs in 2023 to inform their business plans for the 2024 Price Review.

Drainage and Wastewater Management Plans (DWMPs)

DWMPs are consistently structured plans delivered at three spatial scales; company-wide, regional groupings and individual wastewater catchments. The framework defines drainage to include all organisations and all assets which have a role to play in drainage, although, as the plans will be water company led, it does not seek to address broader surface water management within catchments.

LPAs and LLFAs are recognised as key stakeholders and are invited to join, alongside other stakeholders, the Strategic Planning Groups (SPGs) organised broadly along river basin district catchments.

DWMPs aim to provide more transparent and consistent information on sewer flooding risks and the capacity of sewerage networks and treatment works, and this should be taken into account in SFRAs, Water Cycle Studies, as well as in site-specific FRAs and Drainage Strategies.

Thames Water final DWMP is published here. Southern Water final DWMP is published here. These plans have been taken into account in Sections 0, 7 and 8. Interactive mapping for both plans is also available via the links to allow readers to view the status of individual WwTWs.

2.5.5 Developer Contributions and connection charges

A significant part of water company business is the interface with developers to facilitate connection to the public water supply and sewerage systems, through their developer services functions. Developments with planning permission have a right to connect to the public water and sewerage systems, (where this is for domestic use), however, there is no guarantee that the capacity exists to serve a development.

Developers may requisition a water supply connection or sewerage system or self-build the assets and offer these for adoption by the water company or sewerage undertaker. Self-build and adoption are usually practiced for assets within the site boundary, whereas requisitions are normally used where an extension of upgrading the infrastructure requires construction on third party land. The cost of requisitions is shared between the water company and developer as defined in the Water Industry Act 1991.

The above arrangements are third party transactions because the Town and Country Planning Act Section 106 agreements and Community Infrastructure Levy agreements may not be used to obtain funding for water or wastewater infrastructure.

OfWAT, the water industry's economic regulator, published revised rules covering how water and wastewater companies may charge customers for new connections (OfWAT,

2020). These rules have applied to all companies in England since April 2018. The key changes include:

- More charges will be fixed and published on water company websites. This will provide greater transparency to developers and will also allow alternative connection providers to offer competitive quotations more easily.
- There will be a fixed infrastructure charge for water and one for wastewater.
- The costs of network reinforcement will no longer be charged directly to the developer in their connection charges. Instead, the combined costs of all of the works required on a company's networks, over a five-year rolling period, will be covered by the infrastructure charges paid for all new connections.
- The definition of network reinforcement has changed and will now apply only to works required as a direct consequence of the increased demand due to a development. Where the water company has not been notified of a specific development, for example when developing long-term strategic growth schemes, the expenditure cannot be recovered through infrastructure charges.

Thames Water publish their charging arrangements annually here. These include incentives to encourage good design by developers, including:

- Incentive scheme for sustainable development consuming <100l/p/d

An Environmental Discount Scheme available for development consuming <100l/p/d evidenced by the WRC calculator.

- A sewerage Environmental Discount Scheme available if there is no surface water connection made to the public sewer.

2.5.6 Water companies and the planning system

Water companies are currently not statutory consultees to planning applications, although they do monitor planning applications and respond to potentially significant applications, or where requested to do so by the LPA. Defra are intending to consult on making water companies statutory consultees for some applications (Department for Environment, Food & Rural Affairs, 2023).

Where a water company is concerned that a new development may impact upon their service to customers or the environment (for example by causing foul sewer flooding or pollution) they may request the LPA to impose a Grampian condition, whereby the planning permission cannot be implemented until a third-party secures the necessary upgrading or contributions.

Defra has issued National Policy Statements (NPSs) on Nationally Significant Infrastructure Projects (NSIPs) for wastewater (Department of Environment, Food & Rural Affairs, 2012) and water (Department of Environment, Food & Rural Affairs, 2023), to be used as the primary basis when considering applications for Development Consent Orders (DCOs).

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2.6 Flood Risk and Surface Water

2.6.1 Flood and Water Management Act 2010

The Flood and Water Management Act (FWMA) aims to improve both flood risk management and the way water resources are managed (HM Government, 2010).

The FWMA has created clearer roles and responsibilities and helped to define a more risk-based approach to dealing with flooding. This included the creation of a lead role for LAs, as LLFAs, designed to manage local flood risk (from surface water, ground water and ordinary watercourses) and to provide a strategic overview role of all flood risk for the EA.

The content and implications of the FWMA provide considerable opportunities for improved and integrated land use planning and flood risk management by LAs and other key partners. The integration and synergy of strategies and plans at national, regional, and local scales, is increasingly important to protect vulnerable communities and deliver sustainable regeneration and growth.

Schedule 3 of the Act has not yet been enacted in England. It was expected to be implemented in 2024, but this was delayed and no new date has been published. The enactment of schedule 3 will have the following implications for the planning process:

- Designation of local authorities as SuDS Approval Bodies (SAB) which have a duty to adopt new drainage systems.
- The cessation of the automatic right for new developments to connect to the existing sewer system.
- Developers must ensure that drainage systems are built as per the approved drainage plan that complied with mandatory national standards as outlined in the NPPF and the PPG.

2.6.2 Local Flood Risk Management Strategy (LFRMS)

Local Flood Risk Management Strategies set out how Lead Local Flood Authorities (LLFA) will manage local flood risk from surface water runoff, groundwater and ordinary watercourses, for which they have a responsibility as LLFA. They also set out the work that other Risk Management Authorities are doing to manage flood risk within the area.

The Hampshire Local Flood Risk Management Strategy [2020] sets out the following objectives:

- Understanding and communicating flood risk in Hampshire
- Ensuring effective collaboration between risk management partners
- Develop a catchment approach to flood and water management
- Managing the likelihood and impacts of flooding
- Helping the Hampshire’s citizens to manage their own risk
- Ensuring appropriate development in the Hampshire
- Improving flood prediction, warning and post flood recovery
- Work in partnership with others to deliver the Local Strategy

2.6.3 Strategic Flood Risk Assessment (SFRA)

All LPAs are required, under NPPF, to prepare a SFRA, which forms a key part of the evidence base for their Local Plan. The SFRA must consider flood risks from all sources, collating up-to-date flood risk data and in some cases developing new flood risk modelling. The SFRA is used to inform the Sequential Test, by which Local Plan allocations should be sequentially selected to direct development towards areas of lower flood risk, taking into consideration the vulnerability to flooding of the proposed land use. The current SFRA for Basingstoke and Deane Borough Council was published in July 2021 and is available here. This document was being updated at the time of writing.

2.6.4 Surface Water Management Plan

Surface Water Management Plans (SWMPs) outline the preferred surface water management strategy in a given location and establish a long-term action plan to manage surface water. SWMPs are undertaken, when required, by LLFAs in consultation with key local partners who are responsible for surface water management and drainage in their area. Hampshire County Council has published a catchment management plan for part of Basingstoke, which can be accessed here.

2.6.5 Sustainable Drainage Systems

From April 2015, Local Planning Authorities (LPA) were given the responsibility for ensuring that sustainable drainage is implemented on all major developments, including developments of 10 or more homes, or commercial developments creating 1,000m^2 of new floor space.

Previously SuDS guidance was developed by Defra to sit alongside the NPPF Planning Practice Guidance (PPG) and provide non-statutory standards as to the expected design and performance for SuDS.

As of July 2025, the Defra National standards for sustainable drainage systems (SuDS) (gov.uk) were brought in to comply with the principles of surface water drainage design.

The national standards contain two sets of standards. The first type (Standard 1) is known as the hierarchy standard and sets the criteria for the prioritisation of final surface water runoff destinations. The other standards (Standards 2-7) detail the minimum design criteria that SuDS should satisfy alongside how they are to be appropriately built, maintained, and operated.

Whilst remaining as a non-statutory specification, these now form a material consideration for LPAs when assessing planning applications. These standards aim to reflect and reinforce good practice and use of SuDS, reflecting the four pillars of SuDS design. All appropriate planning applications should demonstrate how the national standards have been met in the site design (Principle 10).

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Standard 1: runoff destinations

Runoff from development shall be discharged to the following final destinations, to the maximum extent practicable, in accordance with the below hierarchy:

Priority 1: collected for non-potable use (rainwater harvesting)

Priority 2: infiltrated to ground

Priority 3: discharged to an above ground surface water body

Priority 4: discharged to a surface water sewer, or another piped surface water drainage system

Priority 5: discharged to a combined sewer.

Non-potable use

There is potential for rainwater harvesting for non-potable uses to decrease the water demand from new developments and help improve water efficiency.

Rainwater harvesting shall be considered in all circumstances where any of the following apply:

- There is a demand for non-potable water and available contributing catchment area that will deliver safe and efficient water savings.
    - Examples include industrial, commercial, horticultural, educational, public sector, residential and multiple-occupancy buildings.
- There is a need for landscape irrigation.
- The development is in an area identified as seriously water stressed - this includes the South East Water, Southern Water and Thames Water areas.

Other key policy and standards relating to the application of SuDS to new developments are:

- The National Planning Policy Framework, which requires that development in areas already at risk of flooding should give priority to sustainable drainage systems.
- The House of Commons written statement (Pickles, 2014) setting out Government's intentions that LPAs should “ensure that sustainable drainage systems for the management of run-off are put in place, unless demonstrated to be inappropriate” and “clear arrangements in place for ongoing maintenance over the lifetime of the development.” This requirement is also now incorporated in the 2023 update of the NPPF (paragraph 175). In practice, this has been implemented by making Lead Local Flood Authorities (LLFAs) statutory consultees on the drainage arrangements of major developments.

Hampshire County Council are the LLFA and play a key role in ensuring that the proposed drainage schemes for all new developments comply with technical standards and policies in relation to SuDS.

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An updated version of the CIRIA SuDS Manual was published in 2015. The guidance covers the planning, design, construction and maintenance of SuDS for effective implementation within both new and existing developments. The guidance is relevant for a range of roles with the level of technical detail increasing throughout the manual. The guidance does not include detailed information on planning requirements, SuDS approval and adoption processes and standards, as these vary by region and should be checked early in the planning process. The manual itself can be found here.

CIRIA also publish “Guidance on the Construction of SuDS” (C768), which contains detailed guidance on all aspects of SuDS construction, with specific information on each SuDS component available as a downloadable chapter.

2.6.6 Design and Construction Guidance

The Design and Construction Guidance (DCG), part of a new Codes for Adoption covering the adoption of new water and wastewater infrastructure by water companies, contains details of the water sector’s approach to the adoption of SuDS, which meet the legal definition of a sewer. This replaces the formerly voluntary Sewers for Adoption The new guidance came into force in April 2020 and compliance by water companies in England is mandatory.

The previous standards, up to and including Sewers for Adoption Version 7, included a narrow definition of sewers to mean below-ground systems comprising of gravity sewers and manholes, pumping stations and rising mains. This essentially excluded the adoption of SuDS by water companies, except for below-ground storage comprising of oversized pipes or chambers.

The new guidance provides a mechanism for water companies to secure the adoption of a wide range of SuDS components which are now compliant with the legal definition of a sewer. There are however several non- adoptable components such as green roofs, pervious pavements, and filter strips. These components may still form part of a drainage design so long as they remain upstream of the adoptable components.

The Design and Construction Guidance states that the drainage layout of a new development should be considered at the earliest stages of design. It is hoped that the new guidance will lead to better managed and more integrated surface water systems which incorporate amenity, biodiversity, and water quality benefits.

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2.7 Environmental Protection and Biodiversity

2.7.1 The Environment Act 2021

The Environment Act (HM Government, 2021) came into UK law in November 2021 with the aim of protecting and enhancing the environment. The Act has objectives to improve air and water quality, biodiversity, waste reduction and resource efficiency. The implementation of the policies within the Environment Act has begun and legally binding environmental targets are being developed. This will be enforced by the newly created Office for Environmental Protection (OEP, more information available here).

The Environment Act (Part 5) contains policies concerning improvements to the water environment. These policies have the following aims:

- Effective collaboration between water companies through statutory water management plans.
- Minimise the damage that water abstraction may cause on environment.
- Modernise the process for modifying water and sewerage company licence conditions.

Further to this, there is specific legislation regarding storm overflows aiming to reduce the discharge of untreated sewage into waterways. This plan includes requirements for water companies to:

- report on the discharges from storm overflows;
- monitor the quality of water potentially affected by discharges;
- progressively reduce the harm caused by storm overflows; and
- report on elimination of discharges from storm overflows.

2.7.2 25-year Environment Plan

The Environmental Improvement Plan (EIP) is the first revision of the 25-year environment plan (25YEP) published in 2018. It contains ten goals which are shown in Figure 2.1. The full text of the EIP can be found here. Government must review and revise the plan, if needed, every five years to ensure continued progress against the ten 25YEP goals.

Of particular importance to a WCS is Goal 3 - Clean and plentiful water.

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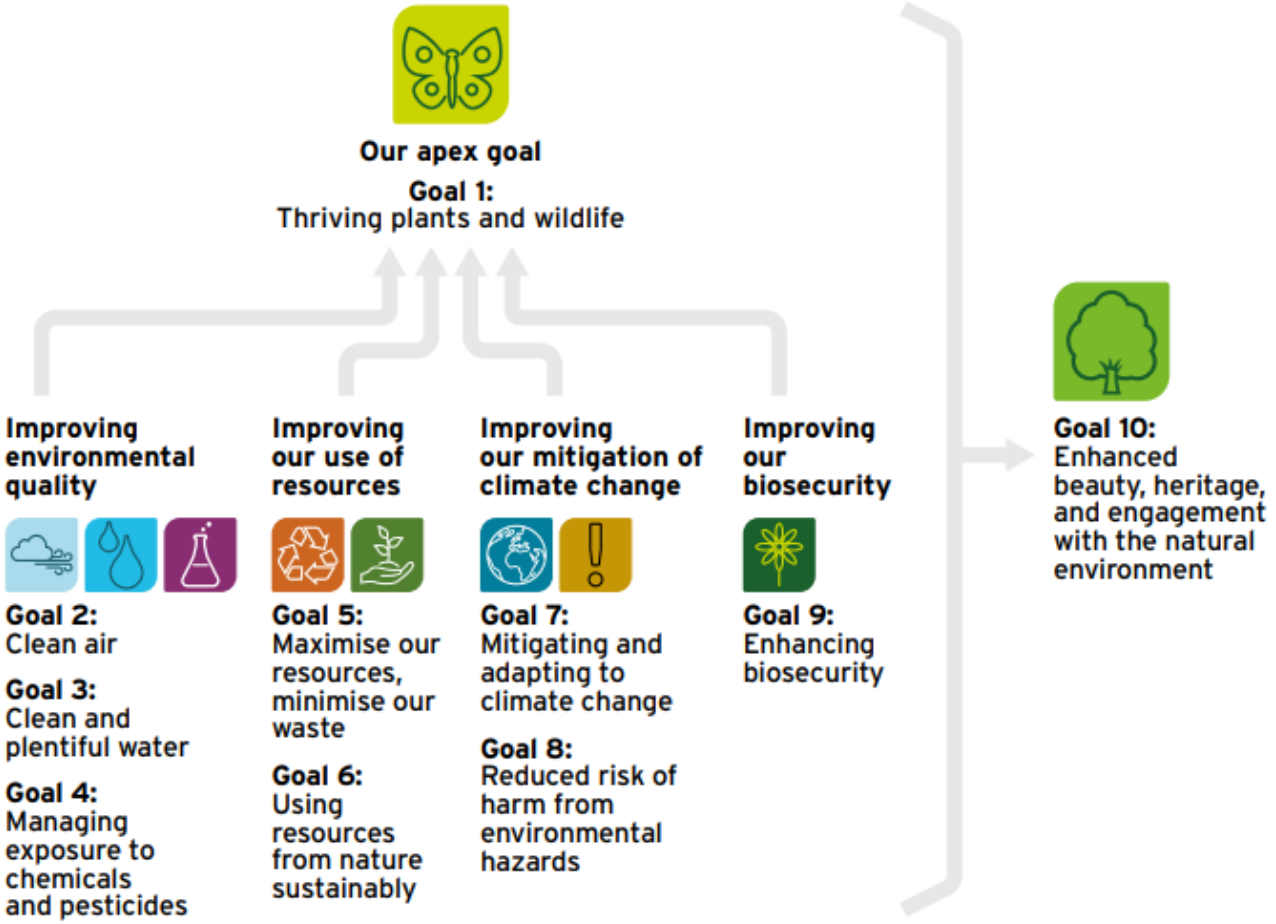

Figure 2.1 The 10 Environmental Improvement Plan goals

Under Goal 3 - Clean and plentiful water, there are eight sets of targets and commitments relating to different aspects of the water environment:

- "Reduce nitrogen, phosphorus, and sediment pollution from agriculture into the water environment by at least 40% by 2038, compared to a 2018 baseline, with an interim target of 10% by 31 January 2028, and 15% in catchment containing protected sites in unfavourable condition due to nutrient pollution by 2028.
- Reduce phosphorus loadings from treated wastewater by 50% by 2028 and 80% by 2038 against a 2020 baseline.
- Halve the length of rivers polluted by harmful metals from abandoned mines by 2038, against a baseline of around 1,500km (approximately 930 miles).
- Reduce the use of public water supply in England per head of population by 20% from the 2019-20 baseline, 2038, with interim targets of 9% by 2027 and 14% by 2032, and to reduce leakage by 20% 2027 and 30% by 2032.
- Restore 75% of our water bodies to good ecological status.
- Water companies to cut leaks by 50% by 2050. Leakage will be cut by 20% by 2027 and 30% by 2032.
- Require water companies to have eliminated all adverse ecological impact from sewage discharges at all sensitive sites by 2035, and at all overflows by 2050.

- Target a level of resilience to drought so that emergency measures are needed only once in 500-years."

To deliver these goals, the EIP outlines action across these areas:

- Ensure water companies are delivering on our targets and commitments through enhanced transparency and monitoring mechanisms in the Environment act, targeted enforcement from regulators and increasing the maximum fines.
- Direct water company fines relating to environmental breaches to improving the water environment.
- Crack down on sewage pollution by holding water companies to account for delivering the targets set out in the Storm Overflows Discharge Reduction Plan.
- Require water companies to upgrade 160 of their wastewater treatment works to meet the strictest phosphorus limits by 2028, and upgrade a further 400 by 2038, to reduce harmful nutrient pollution from wastewater.
- Reduce agricultural pollution across England by paying farmers to protect and enhance watercourses through new farming schemes and investing in improved slurry storage and management through our grants, providing advice to farmers to improve their practices through the expanded Catchment Sensitive Farming partnership scheme, and ensuring farmers are meeting legal standards of responsible farming through our expanded and targeted farm visits programme.
- Increase our resilience to drought by working with regulators and water companies to reduce household and non-household water use, and ensuring water companies are delivering a 50% reduction in leakage by 2050.
- Roll out new water efficiency labelling and deliver our ten actions in the Roadmap to Water Efficiency in new developments.
- Deliver a ten-fold increase in the Water and Abandoned Metal Mines programme, upscaling the existing three treatment schemes with 40 more by 2038, to tackle harmful pollutants from abandoned metal mines.
- Protect our chalk streams by supporting the Chalk Stream Strategy.
- Make Sustainable Drainage Systems mandatory in new developments subject to final decisions, following consultation, on scope, threshold and process.

Progress towards delivering the EIP will be monitored annually.

2.7.3 Defra Plan for Water

Defra's Plan for Water (Department for Environment, Food & Rural Affairs, 2023) provides further detail on the actions towards achieving Goal 3 of the EIP23. It promotes an integrated approach to water management as the foundation of the plan. Whilst many of the actions contained within the Plan for Water are outside of the responsibilities of areas of influence of the LPAs, the following summarises those actions that LPAs should have regard to:

- Require standardised sustainable drainage systems (SuDS) in new housing developments in 2024, subject to final decisions on scope, threshold, and process following consultation in 2023.

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- Designate all chalk catchments as water stressed and high priority under the sewer overflows reduction plan, driving action to improve water management.
- The plan reflects the predicted 4 billion litre per day (4,000 ml/d) gap between supply and demand across England and contains measures to both boost supply and reduce demand. Of interest to LPAs is the plan to reduce demand which will address half of the gap.
- A key component in reducing demand for water is improving water efficiency and there is a target under the Environment Act to reduce the use of public water supply in England per head of population by 20% by 2038.A road map on water efficiency in new developments and retrofits has been developed with ten actions to improve water efficiency:
    - Action 1 - Implement schedule 3 to the Flood and Water Management Act 2010. A consultation will consider rainwater harvesting in developing the statutory SuDS National Technical Standards.
    - Action 2 - Review the Water Supply (Water Fittings) Regulations 1999, the Water Supply (Water Quality) Regulations 2016 and/or any other relevant legislation to address wasteful product issues with toilets and enable new water efficient technologies.
    - Action 3 – Develop clear guidance on ‘water positive’ or ’net zero water’ developments and roles for developers and water companies.
    - Action 4 – Review water efficiency options in planning, building regulations and through voluntary schemes for non-household buildings.
    - Action 5 – Work with Ofwat to ensure the water industry can play a central role in retrofitting water efficient products in households, businesses, charities and the public sector.
    - Action 6 – Work across government to integrate water efficiency into energy efficiency advice and retrofit programmes.
    - Action 7 - Review the Building Regulations 2010, and the water efficiency, water reuse and drainage standards including considering a new standard for new homes in England of 105l/p/d and 100 l/p/d where there is a clear local need.
    - Action 8 –Mandatory water efficiency labelling scheme.
    - Action 9 – Investigate dual pipe systems (rainwater harvesting) and water reuse options for new housing development as part of the review of the planning framework.
    - Action 10 – Enable innovative water efficiency approaches in buildings, including technologies and approaches to funding and maintenance.

2.7.4 Biodiversity Net Gain

Biodiversity net gain (BNG) is designed to contribute to the recovery of nature while developing land. The principle is that the natural environment is in measurably better state after development than it was before. The Environment Act 2021 requires all planning

permissions granted in England (except for small sites) to achieve 10% BNG since January 2024. This was also required on small sites since April 2024.

Defra has published a biodiversity metric tool, the latest version of which must be used for calculating the BNG deriving from a proposed development. The government has developed guidance on how land managers and developers can meet BNG requirements.

2.7.5 Local Nature Recovery Strategy

The Environment Act (HM Government, 2021) also established a duty to prepare, by March 2025, Local Nature Recovery Strategies (LNRS), recognising that England is one of the most nature-depleted countries in the world. The Hampshire County Council (HCC) are the authority responsible for preparing the LNRS in the study area. They are tasked with working with local partners to agree priorities for nature recover and identify "practical, achievable proposals" (Department for Environment Food & Rural Affairs, 2023) to address these priorities. The LNRS should also co-ordinate with neighbouring strategies to form a national Nature Recovery Network.

There is a close linkage with BNG, as developments proposing to create, enhance or recover habitat in locations mapped by the LNRS receive a higher value in the biodiversity metric calculator than in other locations.

2.7.6 Storm Overflow Reduction Plan

The Environment Act placed a legal duty on water companies to progressively reduce the adverse impacts of discharges from storm overflows.

The 2018 Storm Overflow Assessment Framework (SOAF) was replaced in 2025 by an updated framework. This guidance builds on the implementation of the SOAF during the PR19 period (2020 to 2025) to improve and make the process more effective. Changes since the first framework include:

- a reduction in the trigger threshold for high spill frequency overviews to reflect requirements to improve storm overflow performance;
- linking to the most up to date process for water quality modelling investigations; and
- updates to related documentation including that on the process of the cost benefit assessment.

The SOAF investigation process is expected to be conducted outside of the Water Industry National Environment Programme (WINEP) process, although SOAF may identify requirements for future investment. The Environment Agency (EA) expects that investigations will be carried out over a "period that is as soon as reasonably practicable".

Since the original framework all storm overflows are now monitored, increasing the amount of data that is available. A five-stage process is now in place:

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Stage 1:

Storm overflows are identified for investigation based on the spill frequency triggers defined in Table 2.2 The threshold varies based on the number of years available data. The cause of the high spill frequency will also be identified.

Table 2.2 Storm overflow investigation trigger thresholds

Time period of available data	Investigation trigger (average number of spills per year)
1	Greater than 30
2	Greater than 20
3	Greater than 10

Stage 2: the level of environmental impact will be quantified.

Stage 3: improvement options are assessed, including analysis of the costs and benefits.

Stage 4: a decision is made based on the cost benefit results.

Stage 5: delivery of the identified "Best Known Technology Not Entailing Excessive Costs" (BTKNEEC) solution (subject to appropriate funding and prioritisation) to reduce environmental impact and reduce the frequency of discharges.

This methodology is currently focused on inland overflows. A methodology for overflows to transitional and coastal (TRaC) waters is expected to be created once ecological harm standards have been agreed.

2.7.7 The Water Framework Directive (WFD) and Water Environment Regulations

Introduction

The European Union Water Framework Directive (WFD) 2000 is currently transposed into English and Welsh law by the Water Environment Regulations (HM Government, 2017). They apply to all waterbodies (watercourses, canals, lakes, estuaries and coastal waters), with the objective of meeting Good Ecological Status (GES) or, where heavily modified, Good Ecological Potential (GEP) To meet GES or GEP, a water body must achieve a good or high score for all elements - in the case of surface water, these are biological, physico-chemical, specific pollutants and hydromorphology (Figure 2.2). UK policy remains to meet GES or GEP for all waterbodies by 2027.

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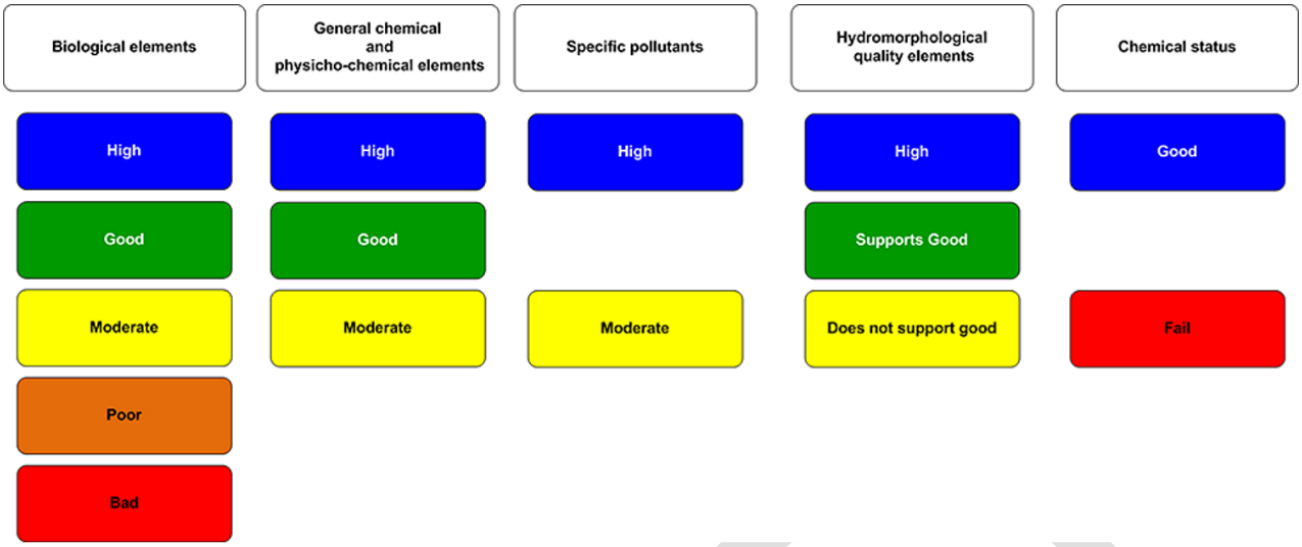

Figure 2.2: Status classification for surface water

(Environment Agency, 2023a)

Chemical Status is separately assessed. The Water Framework Directive and the EA recognise a group of ubiquitous chemicals which are persistent, bioaccumulative or toxic (uPBT), and without which over 90% of England's waterbodies would achieve Good Chemical Status. Mercury, PFOS and PBDE are the most ubiquitous causes of failures. Due to the persistent nature of these chemicals, the date for getting all waterbodies to Good Chemical Status is set for 2063.

River Basin Management Plans

River Basin Management Plans (RBMP) are required under the WFD and document the baseline classification of each waterbody in the plan area, the objectives, and a programme of measures to achieve those objectives. Basingstoke and Deane falls within the Thames RBMP and South East RBMP. The third cycle RBMPs were published in 2022. A primary WFD objective is to ensure 'no deterioration' in environmental status, therefore all water bodies must meet the class limits for their status class as declared in the Thames and South East River Basin Management Plans.

Another equally important objective requires all water bodies to achieve good ecological status. Future development needs to be planned carefully so that it helps towards achieving the WFD and does not result in further pressure on the water environment and compromise WFD objectives. The WFD objectives as outlined in the updated RBMPs are summarised below:

- Preventing deterioration of the status of surface waters and groundwater.
- Achieving objectives and standards for protected areas.
- Aiming to achieve good status for all water bodies.
- Reversing any significant and sustained upward trends in pollutant concentrations in groundwater.

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- Cessation of discharges, emissions and losses of priority hazardous substances into surface waters.
- Progressively reducing the pollution of groundwater and preventing or limiting the entry of pollutants.
- Local Planning Authorities (LPAs) must have regard to the Water Framework Directive as implemented in the RBMPs. It is of primary importance when assessing the impact of additional wastewater flows on local river quality.
- Alongside the RBMP documents, the data behind them can be explored further using the Catchment Data Explorer (Environment Agency, 2023a) and map viewer (Environment Agency, 2023b).

Protected Area Objectives

The Water Environment Regulations specify that areas requiring special protection under other EC Directives, and waters used for the abstraction of drinking water, are identified as protected areas. These areas have their own objectives and standards.

Some areas may require special protection under more than one piece of EU-derived legislation or may have additional (surface water and/or groundwater) objectives. In these cases, all the objectives and standards must be met.

The types of protected areas are:

- Areas designated for the abstraction of water for human consumption (Drinking Water Protected Areas);
- areas designated for the protection of economically significant aquatic species (Freshwater Fish and Shellfish);
- bodies of water designated as recreational waters, including Bathing Waters;
- nutrient-sensitive areas, including areas identified as Nitrate Vulnerable Zones under the Nitrates Directive or areas designated as sensitive under Urban Waste Water Treatment Regulations; and
- areas designated for the protection of habitats or species where the maintenance or improvement of the status of water is an important factor in their protection including relevant Natura 2000 sites.

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2.7.8 Conservation of Habitats Regulations 2017 (as amended)

The Conservation of Habitats and Species Regulations 2010 (commonly referred to as the Habitats Regulations) consolidated the Conservation (Natural Habitats, &c.) Regulations 1994, and transposed the EU Habitats Directive in England and Wales which was aimed at protecting plants, animals and habitats that make up the natural environment. The regulations were further amended in 2017.

The Habitats Regulations define the requirement for a Habitats Regulations Assessment (HRA) to be carried out. The purpose of this is to determine if a plan or project may affect the protected features of a "habitats site". These include:

- A Special Area of Conservation (SAC) or candidate SAC.
- A Site of Community Importance (SCI).
- A site hosting a priority natural habitat type or priority species protected in accordance with Article 5(4) of the Habitats Directive.
- A Special Protection Area (SPA) or potential SPA.
- Ramsar sites.

All plans and projects (including planning applications) which are not directly connected with, or necessary for the conservation management of a habitat site require consideration of whether the plan or project is likely to have significant effects on that site.

This is referred to as the "Habitats Regulations Assessment screening" and should take into account the potential effects of both the plan/project itself and in combination with other plans or projects.

Part 6 of the conservation of Habitats and Species Regulations 2017 states that where the potential for likely significant effects cannot be excluded, a competent authority must make an appropriate assessment of the implications of the plan or project for that site, in view of the site's conservation objectives.

The competent authority may agree to the plan or project only after having ruled out adverse effects on the integrity of the habitats site.

If adverse effects cannot be ruled out, and where there are no alternative solutions, the plan or project can only proceed if there are imperative reasons of over-riding public interest and if the necessary compensatory measures can be secured.

The "People over Wind" ECJ ruling (C-323/17) clarifies that when making screening decisions for the purposes of deciding whether an appropriate assessment is required, competent authorities cannot take into account any mitigation measures. This must be part of the appropriate assessment itself.

The implementation of the Conservation of Habitats Regulations have had particular significant implications in two areas related to water and planning:

- Nutrient Neutrality. Natural England (NE) has identified a number of catchment areas where Habitats Sites are in unfavourable condition due to eutrophication (an excess of the nutrients phosphorous and/or nitrogen in water). NE have

advised that developments in these catchments must demonstrate that they do not cause harm, and that one way to do this is to introduce mitigation measures in the catchment area which offset the additional nutrients emitted as a result of the development, an approach known as nutrient neutrality. There are two catchment areas within BDBC where nutrient neutrality is required: the River Test (nitrogen) and River Itchen (nitrogen and phosphorus). See Section 11.3.

- Water Neutrality. Natural England (NE) has issued a position statement that it cannot be concluded with sufficient certainty that groundwater abstractions in the Arun Valley, West Sussex are causing no adverse effect on Habitats Sites. NE have advised that developments in Sussex North Water Resource Zone must demonstrate that they do not cause harm, and that one way to do this is to introduce mitigation measures in the zone which offset the additional water consumed as a result of the development, an approach known as water neutrality. There are no parts of the study area which are currently within a water neutrality zone, however NE may designate additional areas in the future.
- Both nutrient and water neutrality designations have resulted in significant impacts on the granting of planning permission in the designated areas.

2.7.9 Wildlife and Countryside Act

Sites of Special Scientific Interest (SSSI) are designated and legally protected under the Wildlife and Countryside Act 1981, Section 28G places a duty to take reasonable steps, consistent with the proper exercise of the authority's functions, to "further to the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which the site is of special scientific interest." (HM Government, 1981).

The Government's 25-year Environment Plan has a target of "restoring 75% of our one million hectares of terrestrial and freshwater protected sites to favourable condition, securing their wildlife value for the long term." In line with this, and the Wildlife and Countryside Act 1981, Local Authorities should look to put forward options that contribute to conservation or restoration of favourable condition, and at the very least must not introduce policies that hinder the restoration of favourable condition by increasing existing issues.

A site is said to be in "favourable condition" when the designated feature(s) within a unit are being adequately conserved and the results from monitoring demonstrate that the feature(s) in the unit are meeting all the mandatory site-specific monitoring targets set out in the favourable condition targets (FCT).

2.7.10 Ramsar

The Convention on Wetlands of International Importance, more commonly known as the Ramsar convention, aims to protect important wetland sites. Member counties commit to:

- Wise use of all their wetlands.
- Designating sites for the Ramsar list of "Wetlands of International Importance" (Ramsar Sites) and their conservation.

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- Cooperating on transboundary wetlands and other shared interests.
- “Wise use” of wetlands is defined under the convention as “the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development” (Ramsar Convention Secretariat, 2010).
- In the UK, Ramsar Sites are designated by the Joint Nature Conservation Committee (JNCC).

In general, the designation of UK Ramsar sites is underpinned through prior notification of these areas as Sites of Special Scientific Interest (SSSIs). Additionally, the NPPF states that Ramsar sites should be given the same protection in the planning process as sites designated under the EU Habitats Directive.

2.7.11 Bathing Water Regulations

The Bathing Water Directive was first published in 2006 and are currently transposed into English and Welsh law through the Bathing Water Regulations 2013. The aims of the directive are the protection of public health whilst bathing, standardisation of publicly available water quality information and to improve management practices at bathing waters.

The UK has over 600 designated bathing waters defined as areas of inshore waters designated for public swimming, these areas are typically characterised by large numbers of swimmers and visitors per year. The Environment Agency are required to monitor water quality at these sites regularly (usually weekly) throughout the Bathing Water season, between 15th May and 30th September.

Water quality standards are based on the incidence of potentially harmful bacteria, E. coli and intestinal enterococci and are categorised as ‘excellent’, ‘good’, ‘sufficient’ or ‘poor’ on the basis of bacteria levels. Sites are rated annually and on a short-term basis in response to any temporary pollution incidents.

Achieving compliance with the Bathing Water Directive has driven some £2.5bn of investment by UK water companies since the early 1990s to reduce the impact of sewerage systems and treated wastewater discharges. Measures have included storage and surface water management to reduce storm overflow spills, moving or extending effluent outfalls and improving wastewater treatment, including ultra-violet (UV) treatment of final effluent.

In contrast to some other European nations, the UK has not previously designated stretches of river as bathing waters, however five new inland bathing waters have been designated since 2021, and across England there are numerous campaigns by NGOs and members of the public to designate other stretches of river. Defra has published guidance on applying for bathing water status, including a requirement for at least 100 bathers per day during the season (Department for the Environment, Food and Rural Affairs, 2023). There are none currently designated within BDBC.

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2.7.12 Environmental Permitting Regulations

Environmental permitting is a process used to manage and regulate activities which may cause harm to the environment. The Environmental Permitting Regulations (HM Government, 2016) were introduced in order to streamline a wide-ranging number of environmental permitting laws under one set of regulations. These include permits for emissions to air, water and land, and cover a range of industrial sectors and waste management streams.

Of particular relevance to this study are the regulations for permitting sewage effluent discharges to surface waters and groundwaters, known as water discharge activities (Environment Agency, 2022).

- The regulations are used to permit discharges from water company and private wastewater treatment works, and for sewer overflows.
- The Environment Agency will usually object to applications for a new private Package Treatment Plan (PTP) or septic tank where it is feasible to connect the development to a public sewerage system. A general rule of 30 meters per dwelling is used to define a reasonable distance from the site boundary to a public sewer. Hence a development of 10 homes should connect to a public sewer within 300m of the boundary, unless there are significant barriers, such as a river or motorway. A similar rule of thumb applies to non-household development where the maximum discharge volume in cubic metres is divided by 0.75 and the result multiplied by 30 metres to obtain the distance over which a connection would typically be made.
- Where an existing or new development treats its own wastewater, a PTP must be installed if the discharge is directly to surface water. Where the discharge is to ground, a PTP or septic tank may be used, but must be connected to a suitably designed drainage field.

2.7.13 Groundwater protection

Under the regulations, the EA have published a set of position statements on protecting groundwater from various activities (Environment Agency, 2018). The position statements that are relevant to this study with regard to discharges to groundwaters, include surface water drainage and the use of SuDS, discharges from contaminated surfaces (e.g., lorry parks) and from treated sewage effluent.

The EA also maintain a set of maps of Source Protection Zones (SPZs) to help identify high risk areas within which pollution prevention measures should be implemented. The SPZs show the risk of contamination to public water supplies from activities that may cause pollution in the area, the closer the activity, the greater the risk:

- **Zone 1 (Inner protection zone)** This zone is designed to protect against the transmission of toxic chemicals and water-borne disease. It indicates the area in which pollution can travel to the borehole within 50 days from any point within the

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zone and applies at and below the water table. There is also a minimum 50 metre protection radius around the borehole.

- **Zone 2 (Outer protection zone)** This zone indicates the area in which pollution takes up to 400 days to travel to the borehole, or 25% of the total catchment area, whichever area is the largest. This is the minimum length of time the Environment Agency think pollutants need to become diluted or reduce in strength by the time they reach the borehole.
- **Zone 3 (Total catchment)** This is the total area needed to support removal of water from the borehole, and to support any discharge from the borehole.
- **Zone of special interest** This is defined on occasions, usually where local conditions mean that industrial sites and other polluters could affect the groundwater source even though they are outside the normal catchment.

2.8 Summary of key new and emerging policy and legislation

2.8.1 Overview

The policy and legislation covering the water environment, water and wastewater services and planning is wide and frequently changing. The new and emerging policy and legislation below have been identified as particularly important for consideration in the development of the Local Plan:

- In July 2024 a new Labour Government was formed and committed to reform the planning system. As changes to the planning system emerge, this chapter may need to be updated.
- Schedule 3 of the Flood and Water Management Act was expected to be enacted in England in 2024. This would designate Lead Local Flood Authorities as SuDS Approval Bodies (SABs) with a duty to adopt new SuDS and removing the automatic right to connect to public sewers. There is currently no date for this to be enacted.
- Defra have signalled their intention, with the Plan for Water, to review the water efficiency standards for new homes, including consideration of a new national 105l/p/d standard and 100l/p/d where there is a clear local need.
- All development sites are expected to demonstrate at least a 10% net-gain in biodiversity.
- The designation of specific catchments in England that are required to demonstrate Nutrient Neutrality under the Conservation of Habitats Regulations has led to significant limitations to development in these areas, as well as the development of offsetting schemes to enable nutrient-neutral development.

2.8.2 Independent Water Commission

The Independent Water Commission was set up in October 2024 to provide recommendations to Government on reforms to the water sector. The objectives are to ensure a sufficiently robust and stable regulatory framework in order to:

- attract the investment needed for the future
- speed up infrastructure delivery
- restore confidence in the sector

Chaired by Sir John Cunliffe, the resulting report which was published in June 2025 is often referred to as the "Cunliffe Report".

The full report can be found on the gov.uk website. It contains 88 recommendations centred around seven themes:

- Chapter 1: Strategic direction for the water system
- Chapter 2: Planning
- Chapter 3: Legislative framework
- Chapter 4: Regulator reform
- Chapter 5: Regulation reform
- Chapter 6: Company structures, ownership, governance, and management
- Chapter 7: Infrastructure and asset health

It should be noted that the recommendations in the Cunliffe report are not mandatory, and the Government will respond to the report in due course. In the meantime, these recommendations should be treated with the caution.

A simplification of the water planning system is recommended, with a comprehensive systems planning framework for England and Wales with responsibility for integrated and holistic water system planning. It goes on to recommend a review and update to the current legal framework, along with clearer targets to allow water companies to be held to account.

Chapter 4 of the Cunliffe report is designed to restore the confidence of both the public and regulated water companies in the regulatory framework. It recommends that the UK Government should establish a new integrated regulator in England. This should combine the functions of Ofwat, DWI, and water functions from the EA and Natural England (NE). Changes were also recommended to economic and environmental regulations, including strengthening abstraction permitting.

Following the recommendations set out in the Cunliffe Report, the Government announced that Ofwat would be abolished and replaced by "a new, single, powerful regulator" with the objective of cutting water pollution in England's rivers, lakes and seas, and protecting families from large increases in their water bills.

The new regulator will take responsibility for the water functions across Ofwat, EA, NE and Drinking Water Inspectorate (DWI). During the transition to the new regulator, Ofwat will remain in place, and following its creation, the EA and NE will retain their non-water role.

Until there is more information on the role of the new regulator and which other recommendations will be adopted by Government, the LPA should assume the current regulatory environment will continue.

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3 Future growth in Basingstoke and Deane

3.1 Introduction

Basingstoke and Deane Borough Council's Local Plan Update is expected to be adopted in 2027 and covers the period up to 2042. The plan will direct future growth and associated infrastructure across the area and will include new housing and employment requirements for BDBC.

The following section summarises how BDBC is expected to grow during the plan period, this generates a forecast that can be used to estimate the volume of water and wastewater required in the future and assess the impact of the resulting pressure on water infrastructure.

This forecast consists of:

- Allocations - sites specifically allocated in the Local Plan, or which are to be considered further for allocation in the Local Plan Review
- Committed sites - unallocated sites which have been granted planning permission
- Recent completions - sites completed in the last year that may not yet appear in flow data provided by water companies
- Windfall - sites that have not been specifically identified in the Local Plan, normally comprised of previously developed sites that have unexpectedly come available
- Neighbouring authority growth - growth served by infrastructure within or shared with the study area

3.2 Growth in Basingstoke and Deane

3.2.1 Summary

The updated Standard Method in the updated NPPF defines an annual housing need of 1,152 houses per year. BDBC provided information on expected growth during the plan period which was collated into a forecast for housing and employment. Changes of use in employment sites may result in a discrepancy between published figures and the WCS assessment. Only new floorspace generating a demand for water is modelled. This is summarised in Table 3.1.

Table 3.1 Overall growth in the Basingstoke and Deane area

Type of Growth	Number of houses	Potential Employment Space (m^2)
Potential allocations (including an allowance for growth beyond identified allocations)	19,110	223,000

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Type of Growth	Number of houses	Potential Employment Space (m^2)
Adopted allocations	1,768	0
Commitments	7,318	83,479
Completions	685	10,783
Windfall	750	-
Total	29,631	317,262

3.2.2 Allocations

Adopted allocations from the current Local Plan were provided by BDBC to include in the growth forecast. As these have been previously assessed by the water companies as part of the previous plan, no further assessment was carried out by water companies, but they were included in overall assessments.

Potential allocations for consideration in the updated Local Plan were provided. The majority of these are found in and around the town of Basingstoke.

3.2.3 Commitments and completions

Existing commitments and recent completions were provided by BDBC. This consists of 465 residential sites, providing 7,869 dwellings, and 53 employment sites providing 94,262m^2 of employment floorspace.

3.2.4 Windfall

Windfall refers to development sites that have not been specifically identified in the Local Plan. They often comprise previously developed sites that have unexpectedly become available. BDBC provided an estimate of 750 dwellings during the Local Plan period to account for windfall growth. By its nature, it is not known where windfall growth will occur, however in general, windfall growth often occurs in built-up areas where other growth is planned. Windfall growth has therefore been distributed between WwTW in the study area based on the distribution of existing commitments and allocations. Table 3.2 shows this distribution.

Table 3.2 Distribution of windfall growth

WwTW	Assumed number of dwellings during plan period
BARTON STACEY	30
BASINGSTOKE STW	315
HARTLEY WINTNEY STW	15
IVY DOWN LANE OAKLEY	45
KINGSCLERE STW	60
OVERTON	15

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WwTW	Assumed number of dwellings during plan period
SHERBORNE ST JOHN STW	60
SHERFIELD-ON-LODDON STW	15
SILCHESTER STW	135
WASH WATER STW	45
Total	**750**

3.3 Growth outside BDBC

3.3.1 General approach

Where growth within a neighbouring Local Planning Authority (LPA) area may be served by infrastructure within or shared with BDBC, the LPA were contacted as part of a Duty to Cooperate request to provide information on:

- The latest growth forecast (housing and employment) for the local plan area.
- Details of future growth within the catchments of WwTW which serve part of their council area and BDBC.

The neighbouring authorities to BDBC are shown in Figure 3.1 these include LPA areas which do not share a border with BDBC, however, are likely to share water infrastructure. The neighbouring authorities in this study are defined in Table 3.3.

Table 3.3 Neighbouring authorities and shared water and wastewater infrastructure

LPA	Water Resource Zone	Wastewater
Bracknell Forest	Bracknell (WRZ04)	None
Chichester	Bracknell (WRZ04)	None
City of Southampton	Hampshire (SW)	None
East Hampshire	Bracknell (WRZ04)	None
Eastleigh	Hampshire (SW)	None
Fareham	Hampshire (SW)	None
Guildford	Bracknell (WRZ04)	None
Hart	Bracknell (WRZ04)	Hartley Wintney STW
New Forest	Hampshire (SW)	None
Rushmoor	Bracknell (WRZ04)	None
Surrey Heath	Bracknell (WRZ04)	None
Test Valley	Hampshire (SW)	Barton Stacey STW
Waverley	Bracknell (WRZ04)	None

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LPA	Water Resource Zone	Wastewater
West Berkshire	None	Greenham Common STW Mortimer STW Silchester STW Wash Water STW
Winchester	Hampshire (SW)	None
Windsor and Maidenhead	Bracknell (WRZ04)	None
Wokingham	Bracknell (WRZ04)	None

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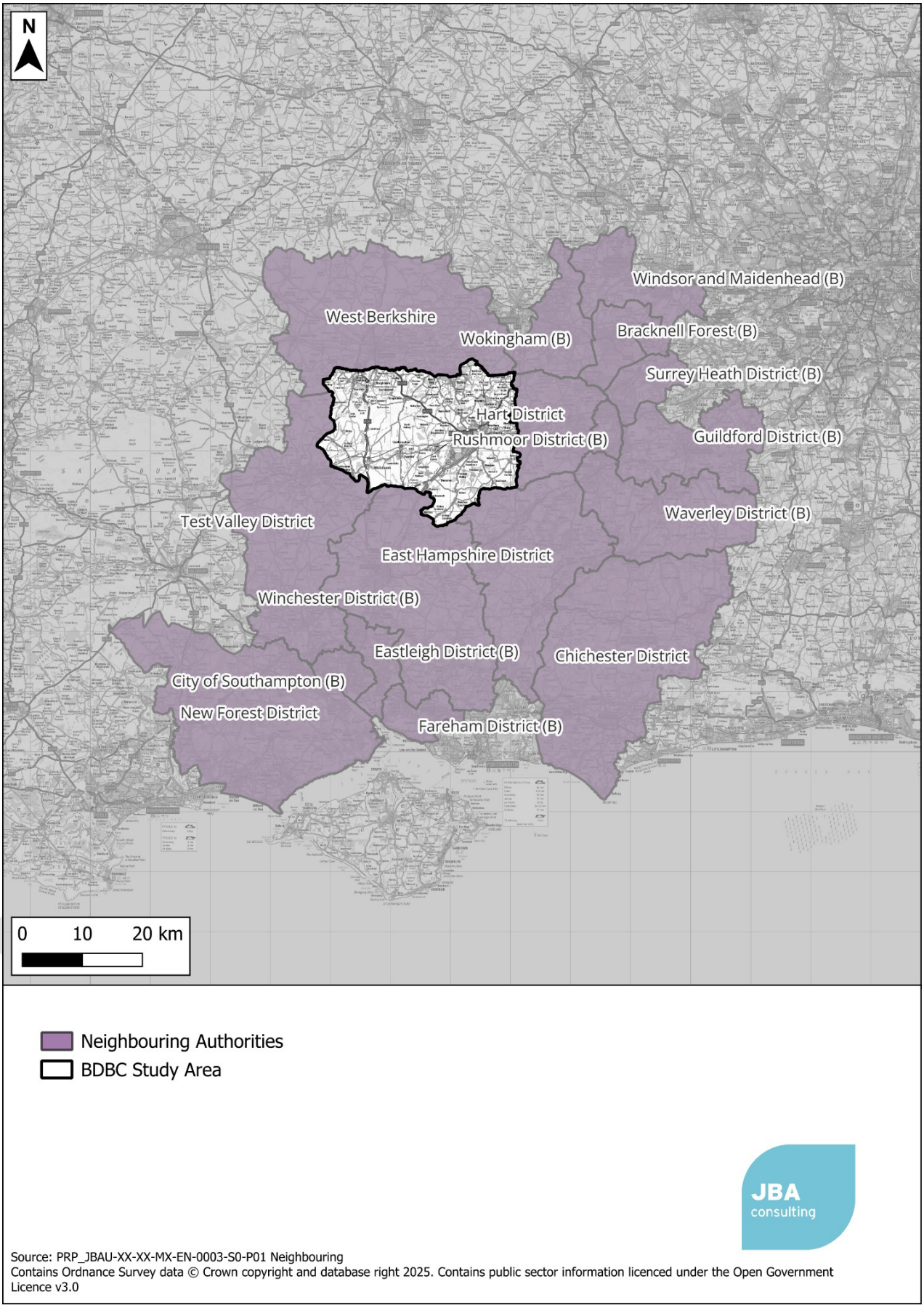

Figure 3.1 Neighbouring authorities to BDBC

3.3.2 Test Valley

Details of growth within wastewater catchments shared with BDBC were provided by Test Valley Borough Council. These sites would be served by Barton Stacy WwTW.

Table 3.4 Summary of growth in Test Valley served by infrastructure shared with BDBC

WwTW	Residential	Employment
Barton Stacy	20	0 m^2

3.3.3 Hart

Details of growth within wastewater catchments shared with BDBC were provided by Hart District Council. These sites would be served by Hartley Wintney WwTW.

Table 3.5 Summary of growth in Hart served by infrastructure shared with BDBC

WwTW	Residential	Employment
Hartley Wintney	134	0 m^2

3.3.4 West Berkshire

Details of growth within wastewater catchments shared with BDBC were taken from the WCS prepared by JBA for West Berkshire Council in 2023, and verified by WBC. These sites would be served by Silchester and Mortimer WwTWs.

Table 3.6 Summary of growth in West Berkshire served by infrastructure shared with BDBC

WwTW	Residential	Employment
Silchester	8	0 m^2
Mortimer	58	0 m^2

3.4 Growth and Water Demand

3.4.1 Water Demand from Housing

The estimate of water demand from each housing site was based on the number of houses, and per capita consumption and average occupancy statistics taken from the relevant water supply companies Water Resource Management Plan (WRMP24) tables. The base year 2024/25 was used and was assumed to stay the same throughout the plan period. This represents the baseline "business-as-usual" scenario, not accounting for water efficient design and supply and demand measures from the water companies' WRMPs.

3.4.2 Water Demand from Employment Sites

Demand from employment sites was calculated assuming a rate of 100l/d per employee. Where the forecast number of employees for a site was not specified by BDBC, employment floorspace and assumed density based on employment use classes was used to calculate an indicative number of employees for a site. Table 3.7 below outlines the assumed densities of employment space derived from the Homes and Communities

Agency (2015) Employment Density Guide 3rd edition. This guide pre-dates recent changes in working practices as a result of the Covid-19 pandemic, technological changes to support working from home and automation.

The water use from hotels and hospital was based on the number of beds, with a bed equivalent to one house.

Table 3.7 Employment use classes and assumed densities used to calculate water demand

Use class	Description	Density (m^2/employee)
B1	Mixed office and industrial (Mean of B1a, B1b and B1c)	32
B1a	Offices	8
B1b	R&D space	40
B1c	Light industrial	47
B2	Industrial and manufacturing	36
B8	Storage and distribution	70
Mixed B	Mixed (mean of B1a, B1b, B1c and B2)	32.75
B1, B2, B8	Mixed	38
SG	Data centres	180
A1	Retail	15
A2	Finance and professional services	16
A3	Restaurants and cafes	15
Mixed A	Mixed	15
C1	Hotels	Requires bed count
C2	Residential institutions	Requires bed count
D1	Cultural Attraction	36
D2	Leisure	65

3.4.3 Water demand forecast

The impact of planned growth across the Basingstoke and Deane's Local Plan Review period on water demand is summarised in Figure 3.2 below, displaying demand from each source of growth. Additional water demand from planned development in BDBC is forecast to be 12.18Ml/d across the five water industry Asset Management Plan (AMP) periods spanning the Local Plan period. This assumes a "business as usual" approach with new housing built to a water efficiency standard of 110l/p/d. Figure 3.3 shows cumulative water demand (Ml/d) across the Local Plan review period.

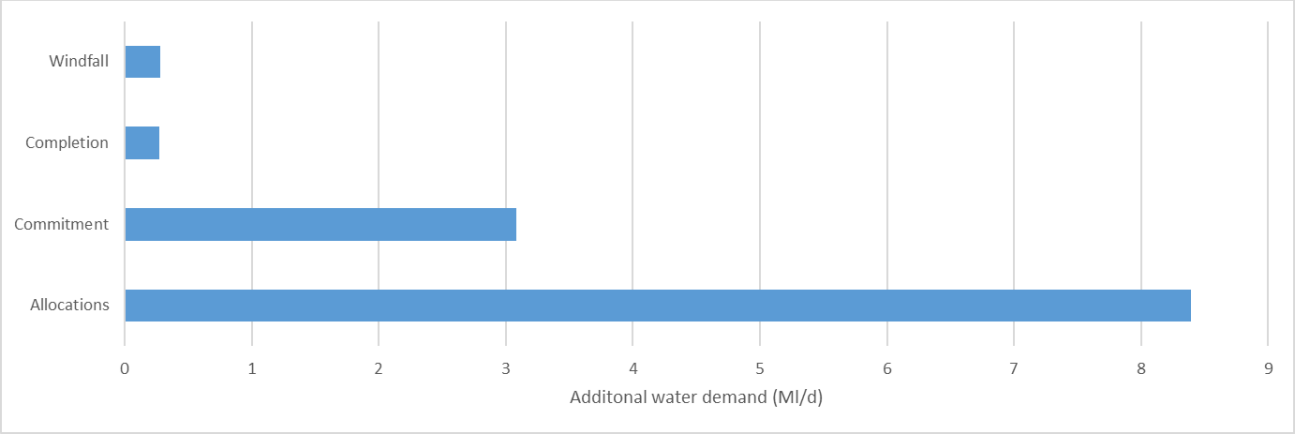

Figure 3.2 Forecast of additional water demand

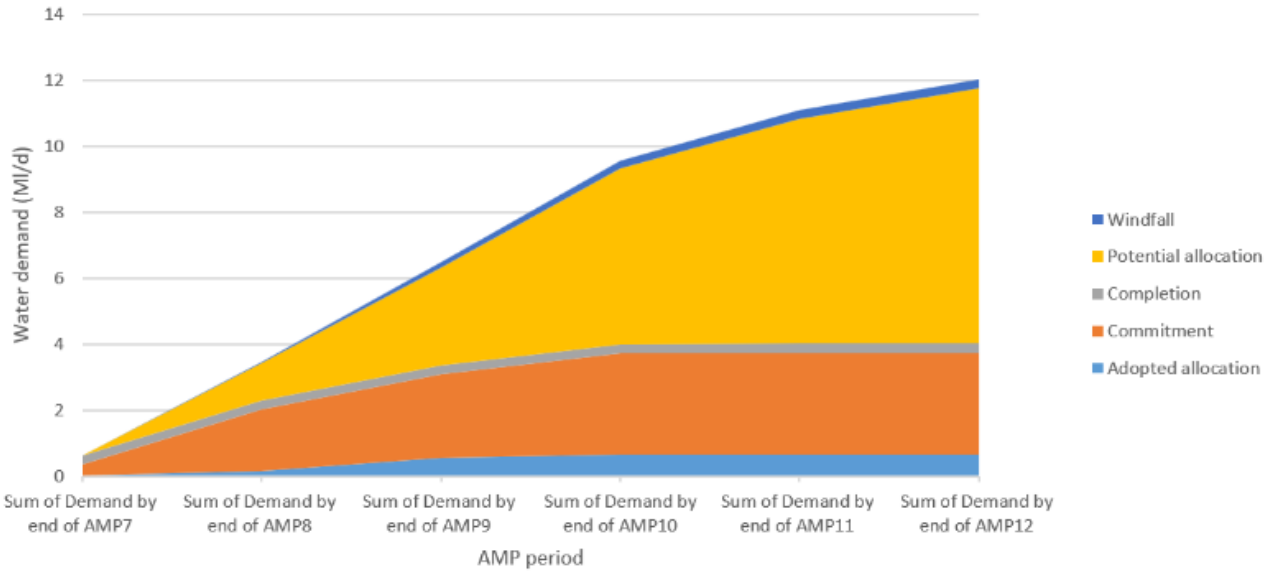

Figure 3.3 Cumulative water demand (Ml/d) across the Local Plan review period

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4 Water resources

4.1 Introduction

4.1.1 Objectives

The aim of the water resources assessment is to determine whether the proposed level of growth has been adequately planned for by water suppliers, and that it can be abstracted without a detrimental impact on the environment, both during the plan period and into the future. The report characterises the study area, identifying the key surface water and groundwater bodies, and local geology. It highlights the pressures on water resources in the region, identifies existing constraints on abstraction and provides evidence for adopting tighter water efficiency targets.

4.1.2 Water Resources in the UK

It is important to set water resources in BDBC within the context of the overall national picture.

The Environment Agency (Environment Agency, 2024) have published a summary of the revised draft regional and Water Resources Management Plans which includes their view on the overall state of water resources in the UK and the challenges the country faces. They state that:

"In England, our climate is changing, our population is growing, and as a nation we want an improved environment along with a thriving economy, enabled by resilient water supplies. Action is required now to meet these objectives".

"The scale of the challenge we face increases with time and, by 2050, we are looking at a shortfall of nearly 5 billion litres of water per day between the sustainable water supplied available and the expected demand."

"Demand reductions are crucial, particularly in the short term. The Environment Act 2021 sets a target to reduce the use of public water supply in England, per head of population, by 20% by 2037-38 from the 2019-20 baseline."

"Government will be looking to water companies to act quickly and take significant steps forward on installing smart meters and delivering on their wider water efficiency commitments and reducing leakage. This will happen alongside the introduction of a mandatory water label which will enable water efficient decisions across the country. The government has also committed to review water efficiency requirements of building regulations which will be a key action to ensure new homes are water efficient."

There have been several important documents published in recent years, all highlighting the growing awareness and concern about this issue. The National Water Resources Framework led to the creation of the regional water resources planning groups and defined the objective to achieve an average household water efficiency of 110l/p/d by 2050 (including existing housing).

The Government's Environmental Improvement Plan published in January 2023 contains a roadmap for improving water efficiency in new developments and retrofits. This contains an action to review Building Regulations (2010) and consider a new standard for new homes in England of 105 l/p/d and 100 l/p/d where there is a clear local need, such as in areas of serious water stress. Whilst this is not current policy, it is likely that a tighter standard than the 110 l/p/d will be adopted in Building Regulations early in the Local Plan period.

4.2 Characterisation of the study area

4.2.1 Topography

The topography of the study area is shown in Figure 4.1. Ground elevations decrease sharply from 280 meters above ordnance datum (mAOD) in the higher areas, extending in a northwest-southeast orientation, to roughly 50mAOD in the northeastern and southwestern edges of the study area, which are characterised by river floodplains.

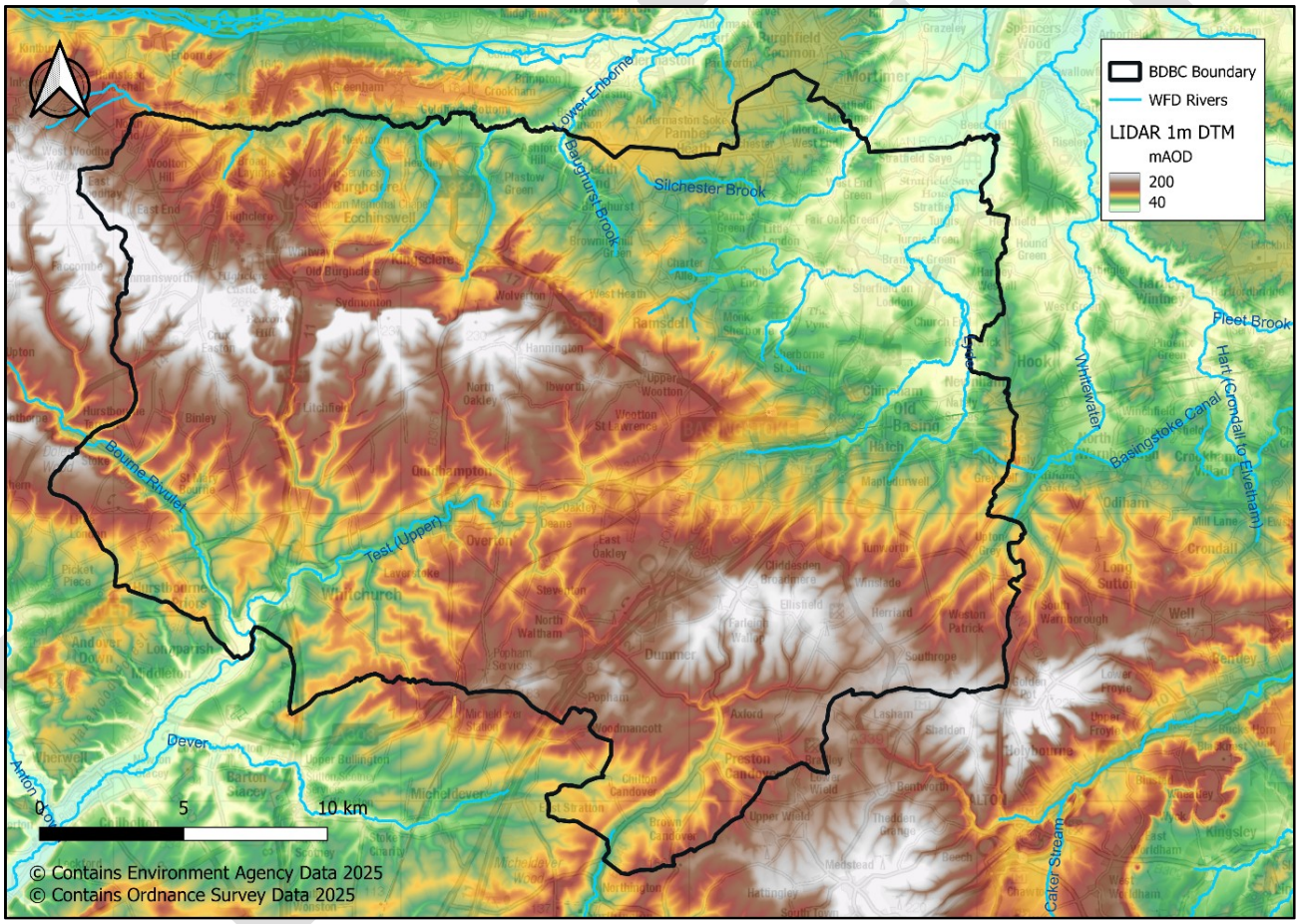

Figure 4.1 Topography of Basingstoke and Deane

4.2.2 Surface waters

The main surface watercourses within the BDBC study area, along with their respective WFD operational catchments and their status under the WFD's 2022 classification, are detailed in Figure 4.2.

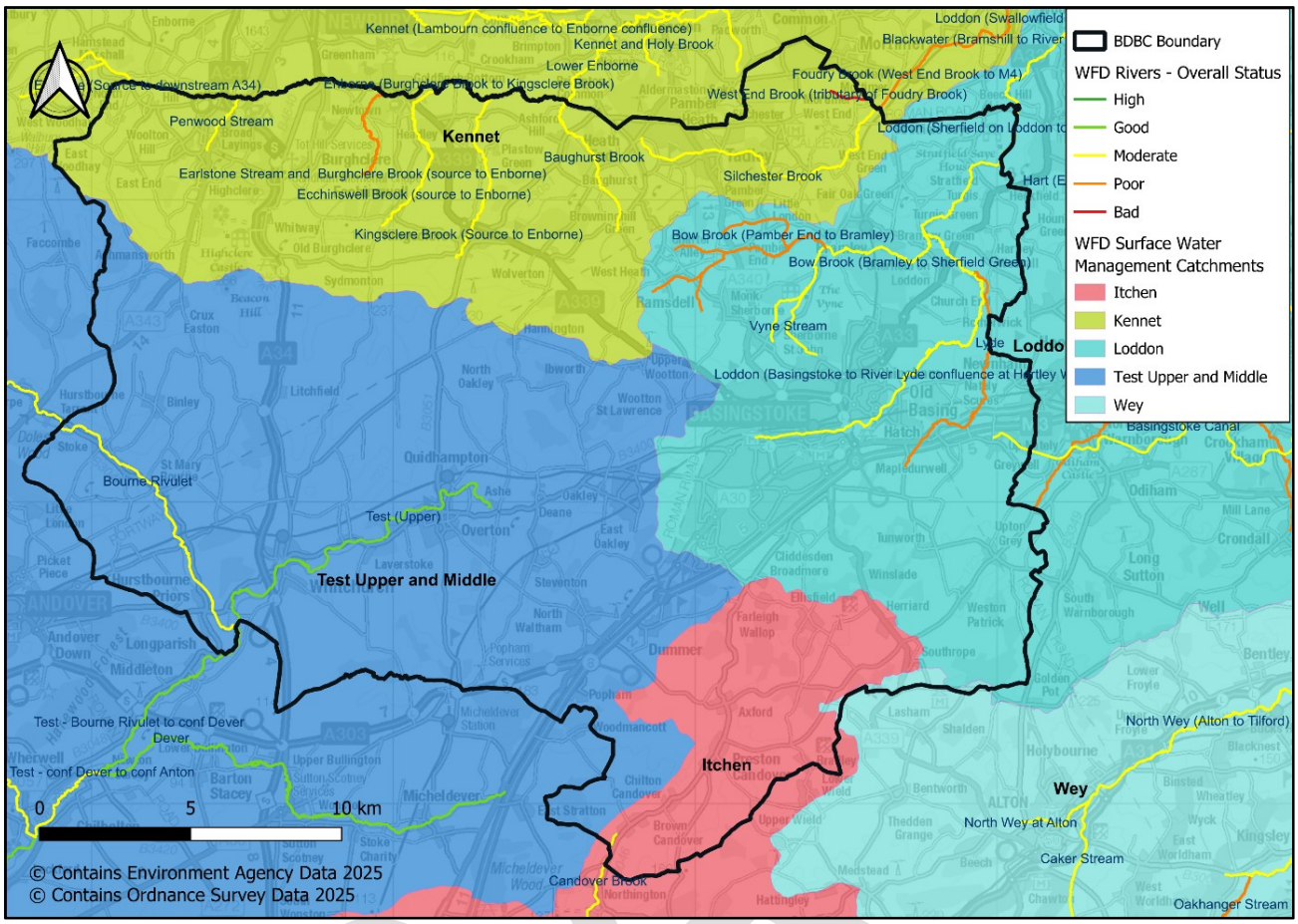

Figure 4.2 Surface waterbodies

4.2.3 Chalk streams

A chalk stream is broadly defined as a river that derives most of its flow from chalk-fed groundwater. Chalk streams flow from chalk aquifers, stores of underground water that are replenished by rainfall. England is home to 85 per cent of the world's chalk streams. These rivers, together with the chalk aquifer from which they spring, are crucial water resources providing millions of people with water as well as supporting unique ecosystems. Businesses and farms also rely on chalk streams as without a reliable water source they would not be able to operate.

During the summer months when temperatures are higher and plants are using water, rainfall is less effective at recharging the aquifer. In many cases, this can cause sections of chalk streams to be dry for much of the year. This natural hydrological variation – which can vary from year to year, is separate to the artificial impact of over-abstraction.

Balancing the needs of people and the environment is a challenge and it is getting harder. Population growth, particularly in the south and east of England, means that more and more water is required at a time when climate change is reducing the amount of water that is available.

England's chalk streams are therefore under considerable pressure. The Environment Agency's 'Reasons for Not Achieving Good' database indicates the reasons that the

watercourses in the district are not meeting 'Good' Water Framework directive (WFD) standards. These include pollution from wastewater discharges and agriculture, and encroachment by development.

Chalk streams are an important and rare habitat, and opportunities should be taken within the Local Plan to define policies to protect these river ecosystems. 12.4 contains recommendations for chalk stream protection.

Figure 4.3 shows the location of the chalk streams in BDBC. Chalk streams in the Basingstoke and Deane area have been identified using the Natural England (NE) Chalk Rivers (England) dataset (2023) and the Index of Chalk Streams (2014). Within the NE Chalk Rivers dataset each chalk stream has been identified as 'low' or 'high' certainty. The watercourses classed as 'high' certainty are chalk streams which are officially named, such as the River Loddon, Bourne Rivulet and River Test. The watercourses with 'low' certainty of being a chalk stream, are tributaries of the named chalk streams, some of which will be natural chalk streams, artificial drainage ditches, or watercourses fed by non-chalk water. The watercourses in the northern section of the Basingstoke and Deane area are not chalk streams.

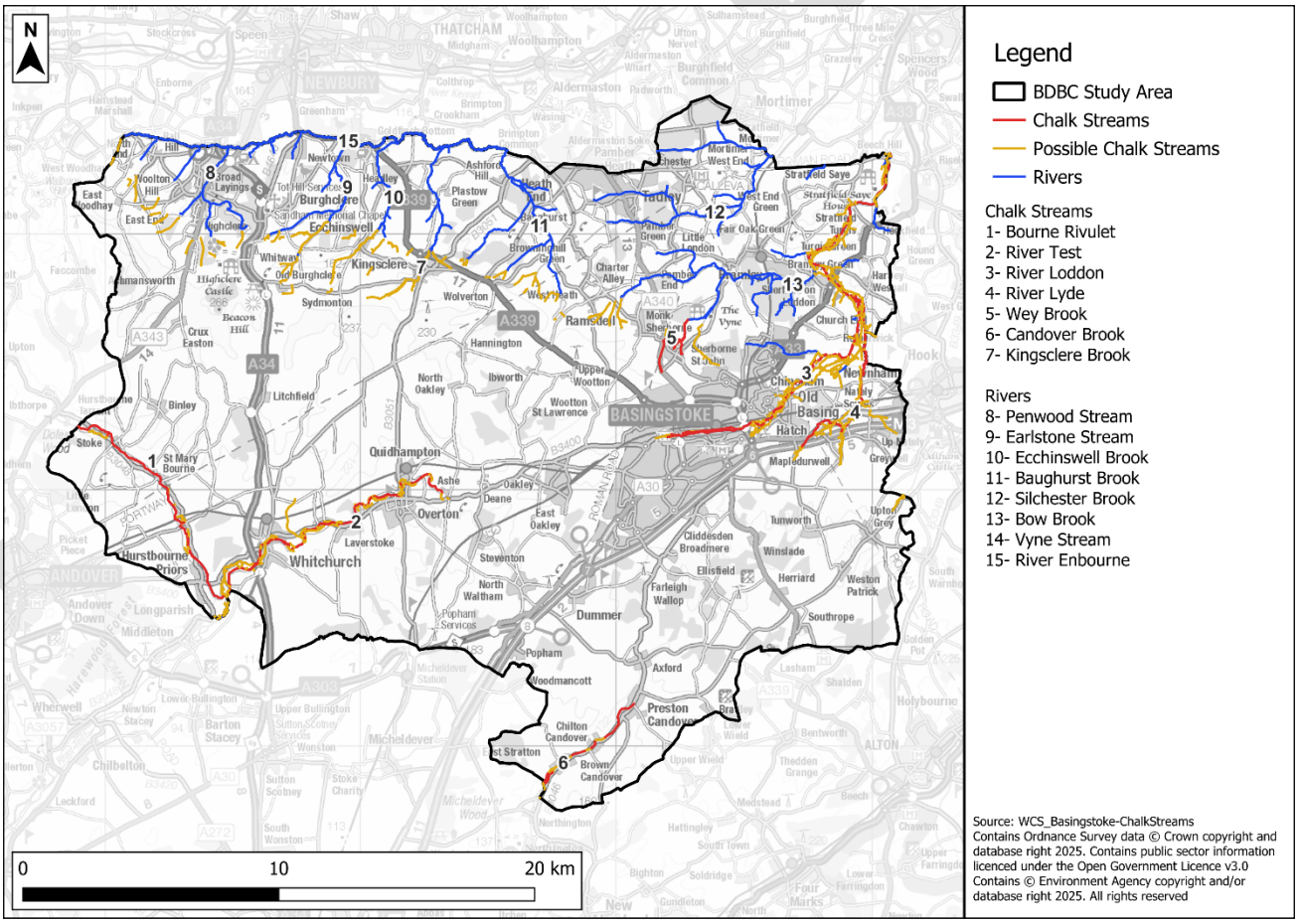

Figure 4.3 Chalk Streams in BDBC

4.3 Geology

4.3.1 Summary

Information on the geology of the study area has been derived from 1:625,000 British Geological Survey geology mapping (BGS online map viewer), BGS Solid & Drift Geology Map, 1:63,360/1:50,000 Series England & Wales, Basingstoke, Sheet 284, 1981, and BGS online borehole archive. The geology underlying the site is summarised in Table 4.1.

Table 4.1 Geology

Age	Group	Unit	Description	Thickness (m)
Quaternary	Superficial deposits	Alluvium	Clay, silt, sand and gravel **	0 - 20 *
Quaternary	Superficial deposits	Clay-with-Flint	Sandy clay with angular flints **	0 - 10 *
Quaternary	Superficial deposits	River Terrace	Sand and gravel, with lenses of silt, clay **	0 - 10 *
Quaternary	Superficial deposits	Sand & Gravel (of uncertain age & origin)	Sand and gravel **	0 - 6 *
Tertiary	Bedrock	Bracklesham Group and Barton Group	Sand, silt and clay **	Up to 30 ***
Tertiary	Bedrock	Thames Group (London Clay)	Clay, silt, sand and gravel **	30 - 100 ***
Tertiary	Bedrock	Lambeth Group	Clay, silt, sand and gravel **	18 - 24 ***
Cretaceous	Bedrock	White Chalk Subgroup	Chalk **	Up to 180 ***
Cretaceous	Bedrock	Grey Chalk Subgroup	Chalk **	50 - 70 ***
Cretaceous	Bedrock	Gault Fm & Upper Greensand Fm	Mudstone, sandstone and limestone **	100 - 130 ***

Notes
* BGS GeoIndex Borehole Data
** BGS Online Lexicon of Named Rock Units
*** BGS (British Geological Survey), 1981. Basingstoke. England & Wales Sheet 284. Solid & Drift Geology Map, 1:63,360/1:50,000 Series

4.3.2 Superficial deposits

The superficial deposits of the site and local area are shown in Figure 4.4. The BGS GeoIndex (1:625k) indicates that the main superficial deposits in the study area consist of

sparsely deposited Alluvium, River Terrace Deposits, Clay-with-Flints and Sand & Gravel deposits of uncertain age and origin.

- Where it is present the Alluvium is generally up to 20m thick and consists of sands, silts and clays with some bands of gravel. It is found in the buried valleys and forms sinuous tracts along the valley floors and tidal reaches of the River Test and its tributary in the area as well as in the valley of Loddon in the northeast of Basingstoke.
- The River Terrace Deposits are generally up to 10m thick and consist of gravels and loams of various ages bordering the Alluvium in the river valleys.
- The Clay-with-Flint Deposits are more extensive in the area and are generally up to 10m thick, comprising of poorly bedded silty loams, which sometimes includes seams of flint and chalk pebbles.
- The Sand & Gravel Deposits comprise of clayey silty sand and gravel, are of variable thickness and occur on the upper slopes of catchments.

The superficial deposits are not laterally present across the entire area, and therefore, they are absent underneath the majority of the study area.

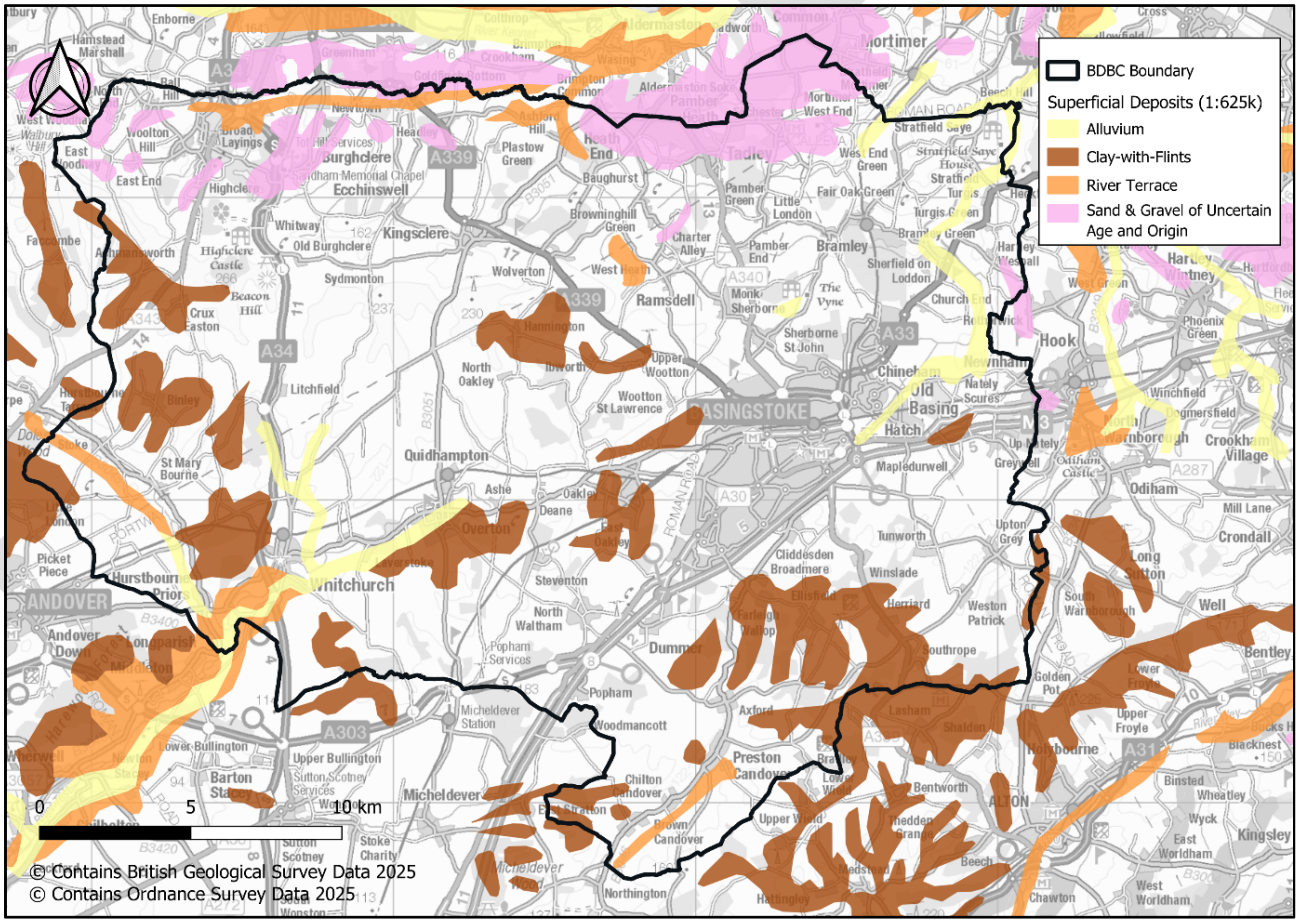

Figure 4.4 Superficial deposits

4.3.3 Bedrock Geology

The BGS 1:625k geology mapping shows that the bedrock geology of the study area comprises seven lithologies of Tertiary and Cretaceous Periods (See Figure 4.5) including:

- Tertiary
  - Thames Group (London Clay) mainly comprising up to 100m of silty clays and clays, some sandy or gravelly, with some silts, sands, gravels and calcareous mudstones underlying the northern region of the study area.
  - Lambeth Group comprising up to 24m vertically and laterally variable sequences mainly of clay, some silty or sandy, with some sands and gravels, minor limestones and lignites and occasional sandstone and conglomerate.
- Cretaceous
  - White Chalk Subgroup comprising over 50m soft white Chalk with flints, with discrete marl seams, nodular chalk, sponge-rich and flint seams, underlying the majority of the study area.
  - Grey Chalk Subgroup comprising over 45m clayey ('marly') Chalk without flint
  - Gault Formation & Upper Greensand Formation comprising over 100m mudstone, sandstone and limestone.

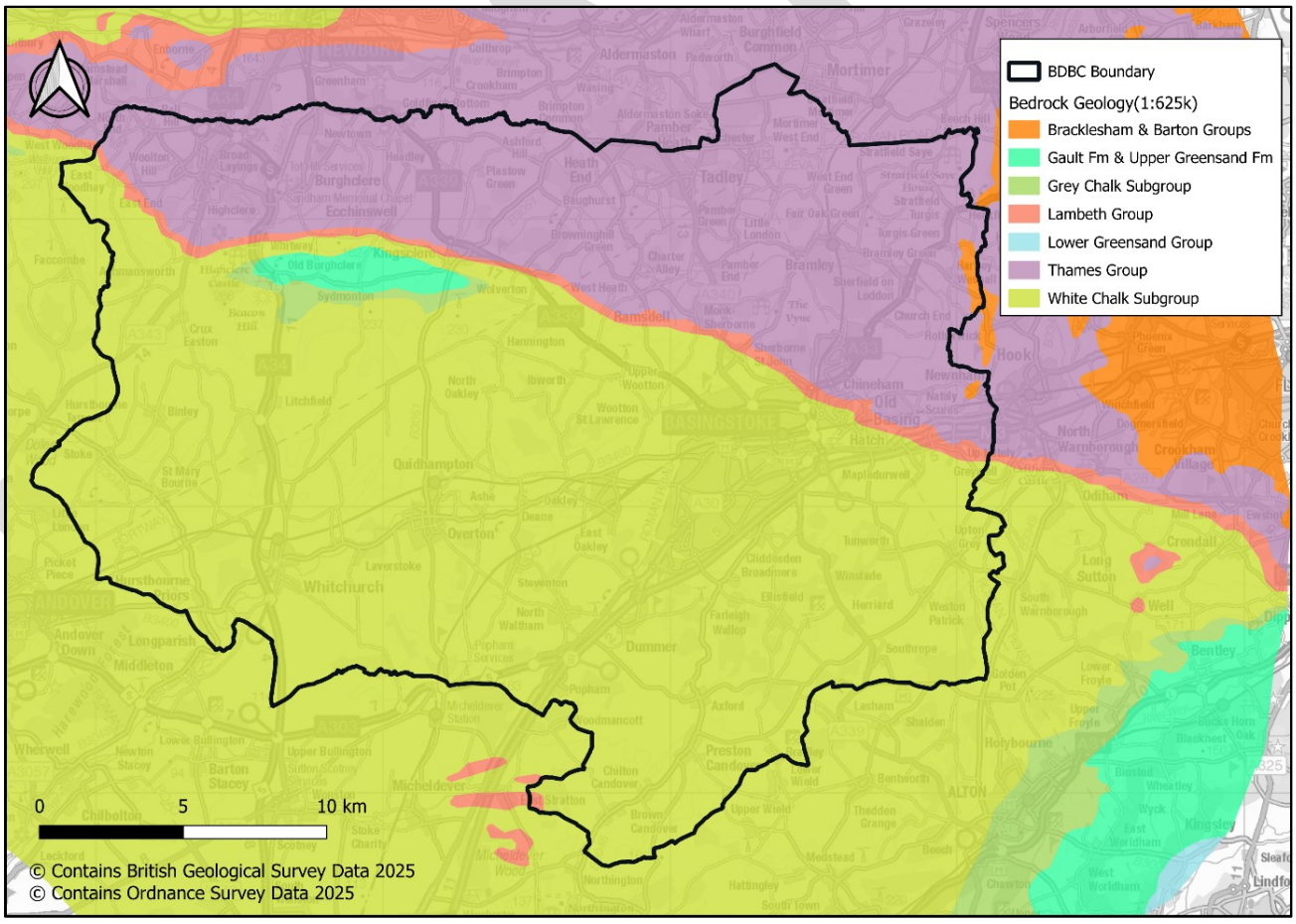

Figure 4.5 Bedrock geology

4.3.4 Aquifer classification

Table 4.2 summarises the Environment Agency's (EA) hydrogeological classification of the bedrock and superficial deposits.

The alluvium, river terrace and sand and gravel deposits are designated Secondary A Aquifers (EA, 2020). Secondary A Aquifers comprise permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

The clay-with-flints is classified as Secondary undifferentiated aquifer, which is used when it is not possible to attribute either category A or B to a strata type, and in most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the strata.

The underlying bedrock units are shown in Figure 4.6 and classified as:

- Thames Group: Unproductive strata - Rocks with essentially no groundwater comprising predominantly clayey sequence up to 140 m thick confining underlying aquifers.
- Lambeth Group: Secondary A, Low productivity aquifer - Variable sequence of clays, shell beds, fine sands, silts and pebble beds giving low yields. Sometimes in hydraulic continuity with the underlying Chalk aquifer.
- White Chalk Subgroup: Highly productive Principal aquifer in UK up to 450 m thick and yielding 50 to 100 L/s from large diameter boreholes and up to 300 L/s from adited systems. Hard to very hard, good quality water.
- Grey Chalk Subgroup: Highly productive Marly Chalk Principal aquifer that can yield up to 5 L/s from wells with headings.
- Upper Greensand Fm: Moderately productive Principal aquifer of glauconitic sands yielding up to 25 L/s and often in hydraulic continuity with overlying Chalk.

Table 4.2 Aquifer classification

Drift/Bedrock	Unit	Environment Agency Aquifer Classification
Superficial (drift) deposits	Alluvium	Secondary A aquifer
Superficial (drift) deposits	Clay-with-Flints	Secondary undifferentiated
Superficial (drift) deposits	River Terrace Deposits	Secondary A aquifer
Superficial (drift) deposits	Sand and Gravels	Secondary A aquifer
Bedrock	Thames Group	Unproductive
Bedrock	Lambeth Group	Secondary A aquifer
Bedrock	White Chalk Subgroup	Principal Aquifer
Bedrock	Grey Chalk Subgroup	Principal Aquifer
Bedrock	Upper Greensand Fm	Principal Aquifer

Explanation of aquifer classes (from Environment Agency website)

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Principal aquifers - "may support water supply and/or baseflow to rivers on a strategic scale."

Secondary A aquifers - "permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of baseflow to rivers."

Secondary B aquifers - "predominantly lower permeability layers which may store and yield limited amounts of groundwater."

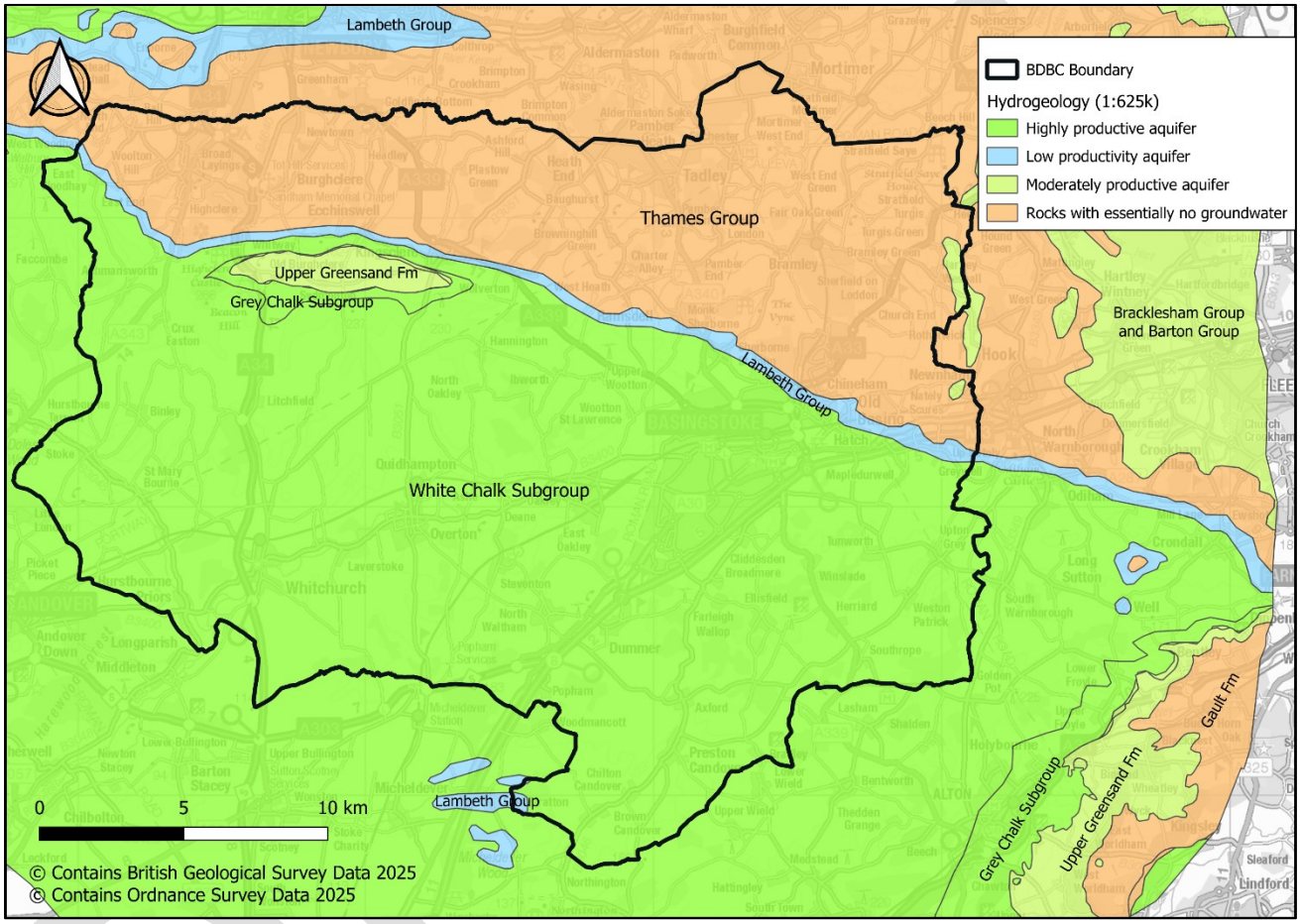

Figure 4.6 Hydrogeology (1:625k)

4.4 Availability of water resources

4.4.1 Abstraction Licensing Strategy

The Environment Agency (EA), working through their Resource Assessment Methodology (which replaces the former Catchment Abstraction Management Strategy (CAMS) process), prepare an Abstraction Licensing Strategy (ALS) for each sub-catchment within a river basin. BDBC is covered by four ALS areas: Kennet and Vale of Whitehorse to the north, Test and Itchen to the south west, and Loddon to the east. A very small area in the south east is covered by the Wey ALS. These are shown in Figure 4.7 below.

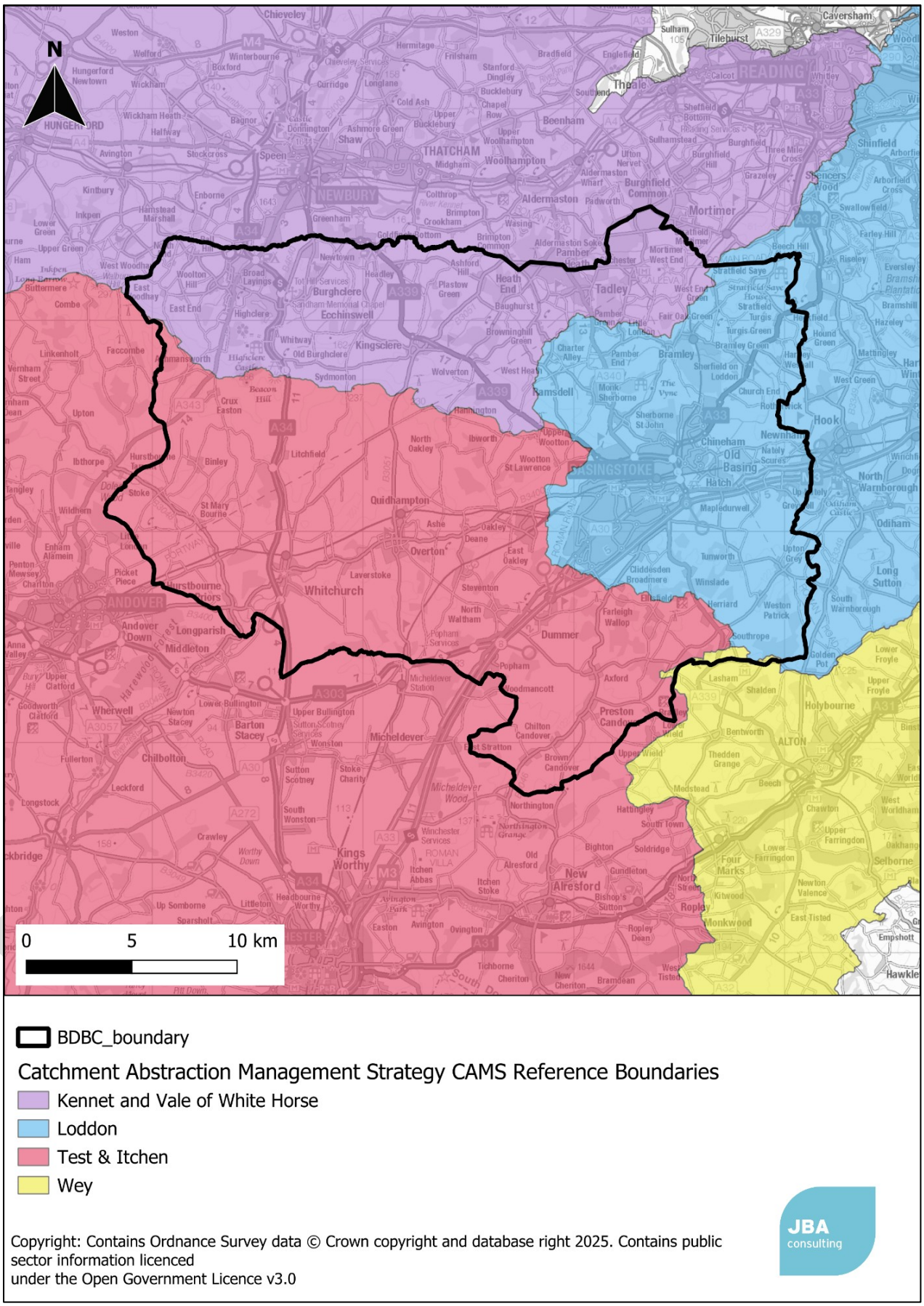

Figure 4.7 ALS (formally CAMS) boundaries covering BDBC

4.4.2 Resource Availability Assessment

In order to abstract surface water, it is important to understand what water resources are available within a catchment and where abstraction for consumptive purposes may pose a risk to resources or the environment. The Environment Agency has developed a classification system which shows:

The relative balance between the environmental requirements for water and how much has been licensed for abstraction;

- whether there is more water available for abstraction in the area; and
- areas where abstraction may need to be reduced.

The availability of water for abstraction is determined by the relationship between the fully licensed (all abstraction licences being used to full capacity) and recent actual flows (amount of water abstracted in the last six years) in relation to the Environmental Flow Indicator (EFI). Results are displayed using different water resource availability colours, further explained in Table 4.3.In some cases, water may be scarce at low flows, but available for abstraction at higher flows. Licences can be granted that protect low flows, this usually takes the form of a "Hands-off Flow" (HOF) or Hands-off Level (HOL) condition on a licence, which mean abstractions have to stop when the river flow or level falls below a particular value. This value is known as the HOF or HOL and ensures there is always a minimum flow in the river. Surface Water Flows can be assessed at Assessment Points (APs) which are significant points on the river, often where two main rivers join or at a gauging station.

Groundwater availability as a water resource is assessed similarly, unless better information on principle aquifers is available or if there are local issues that need to be considered.

Table 4.3 Implications of surface water resource availability colours

Water Resource Availability Colour	Implications for Licensing
BLUE- High hydrological regime	There is more water than required to meet the needs of the environment. Due to the need to maintain the near pristine nature of the water body, further abstraction is severely restricted.
GREEN-Water available for licensing	There is more water than required to meet the needs of the environment. Licences can be considered depending on local/downstream impacts.
YELLOW-Restricted water available for licensing	Fully Licensed flows fall below the Environmental Flow Indicator (EFI). If all licensed water is abstracted there will not be enough water left for the needs of the environment. No new consumptive licences would be granted. It may also be appropriate to

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Water Resource Availability Colour	Implications for Licensing
	investigate the possibilities for reducing fully licensed risks. Water may be available via licence trading.
RED- Water not available for licensing	Recent Actual flows are below the Environmental Flow Indicator (EFI). This scenario highlights water bodies where flows are below the indicative flow requirement to help support Good Ecological Status. No further licences will be granted. Water may be available via licence trading.
GREY-HMWBs (and /or discharge rich water bodies)	These water bodies have a modified flow that is influenced by reservoir compensation releases, or they have flows that are augmented. There may be water available for abstraction in discharge rich catchments.

Water resource availability is assessed under four different flow conditions:

- Q95 – very low flows which are exceeded 95% of the time
- Q70 – low flows which are exceeded 70% of the time
- Q50 – median flows which are exceeded 50% of the time
- Q30 – high flows which are exceeded 30% of the time

The resource availability for Test and Itchen, Loddon, and Kennet and Vale of White Horse ALSs are summarised below, and for completeness the Water resource ALSs within the study area are presented graphically in Figure 4.8.

4.4.3 Test and Itchen

The Test and Itchen ALS sets out how water is sustainably managed in the Test and Itchen catchment to both provide water for abstraction and protect the environment. This catchment area spans the central to southern regions of BDBC. The upstream sections of the River Test and Bourne Rivulet are located in the western part of the catchment, while the upstream portion of the Itchen catchment lies to the east. Under Q30, Q50, and Q70 flow conditions, water remains available in the western part of the catchment. However, under Q95 conditions, water availability becomes restricted. In the eastern part of the catchment, water remains available under Q30 conditions, becomes restricted under Q50 flow condition, and is unavailable under Q70 and Q95 flow conditions.

The map below is based on data from July 2025, whereas the EA report was published in 2019. This reveals a change under Q70 flow conditions in the eastern part of the catchment—from previously restricted availability to complete unavailable for licensing.

4.4.4 Loddon

The Loddon ALS sets out how water is sustainably managed in the Loddon catchment to both provide water for abstraction and protect the environment. The Loddon catchment covers the eastern part of Basingstoke and Deane BC, including the town of Basingstoke. AP3 (Upper Loddon) and AP4 (Bow Brook), which are located in the southwest of the Loddon catchment, lie within the eastern part of the BDBC area.

Based on the most recent data from July 2025, water is unavailable for licensing under Q30, Q50, Q70, and Q95 flow conditions. However, according to the EA report published in March 2019, water availability for licensing under Q30 flow condition was classified as available and under Q50 condition was classified restricted.

4.4.5 Kennet and Vale of White Horse

The Kennet and Vale of White Horse ALS sets out how water is sustainably managed within the Kennet and Vale of White Horse catchment in the Thames river basin district to both provide water for abstraction and protect the environment. This part of the catchment, which lies in the southeastern portion of the Kennet and Vale of White Horse catchment, covers the northern area of Basingstoke and Deane BC.

Based on the most recent data from July 2025, water is unavailable under Q30, Q50, Q70, and Q95 flow conditions. However, according to the EA report published in March 2019, water availability for licensing under Q30 flow condition was classified as restricted.

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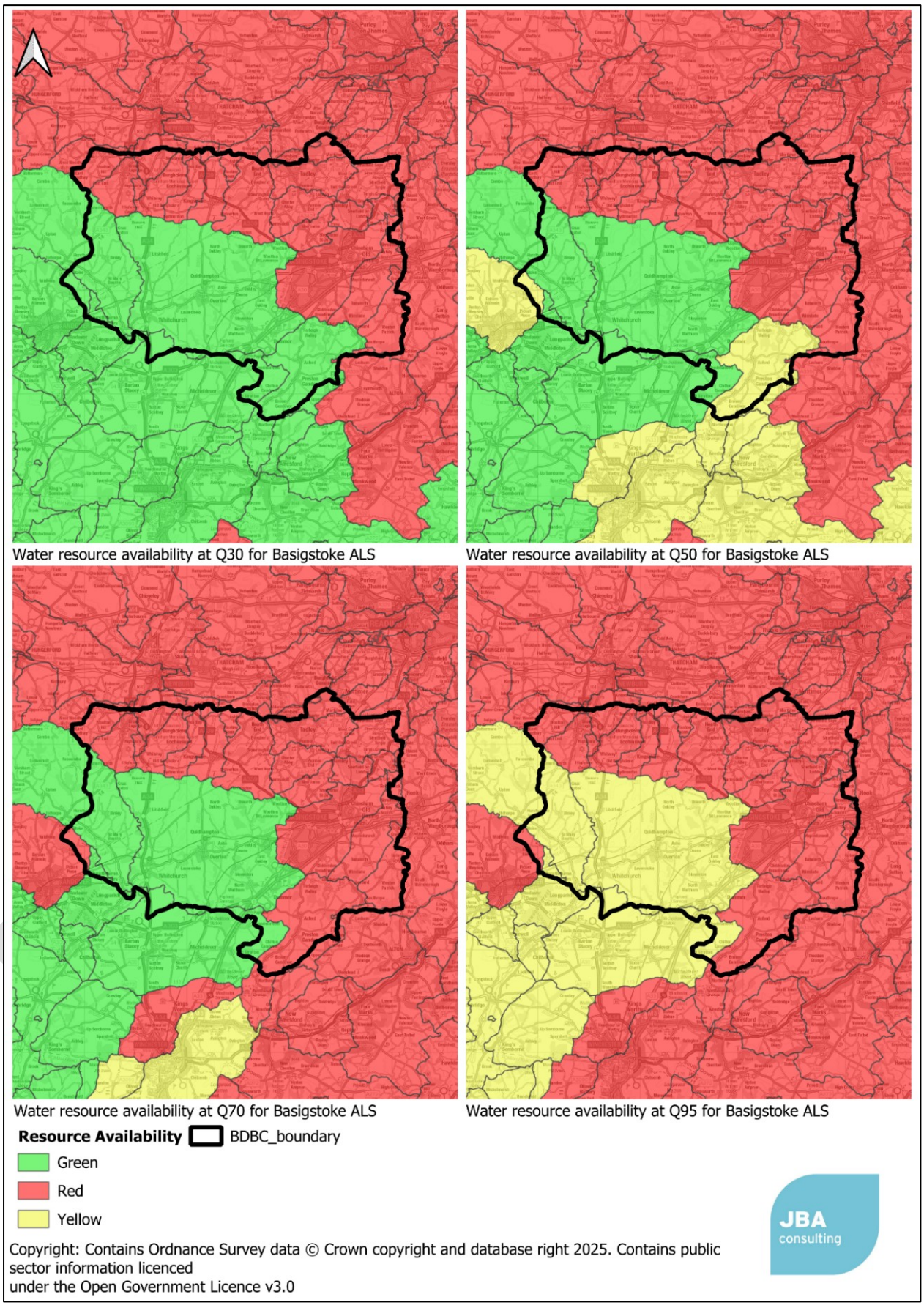

Figure 4.8 Water resource availability for BDBC

4.5 Water Industry National Environment Programme

The Water Industry National Environment Programme (WINEP) is a set of actions that the EA have requested all 20 water companies operating in England to complete in a particular Asset Management Period (AMP) as part of their environmental commitments. Actions may include investigations or actual measures, examples could be reductions in abstraction in a particular river to maintain flow to support WFD objectives, or a reduction in phosphate pollution in a catchment through upgrades to a WwTW.

Appendix A shows WINEP actions relating to water resources in surface and groundwater waterbodies in BDBC. The Actions relating to water quality are presented in Appendix B.

Development and population growth can increase abstraction, and so BDBC have an opportunity to contribute to these actions indirectly by pursuing policies that promote water efficiency in new development

4.6 Water resources planning

4.6.1 National Water Resources Framework

An updated National Water Resources Framework was published in 2025 replacing the previous 2020 framework. The first framework described the scale of the challenge facing water resources in the UK and led to the creation of the five regional planning groups. It also set an objective for per capita consumption to be reduced to 110l/p/d on average across the UK (including existing housing). The new National Framework:

- sets out the pressures and challenges for the water environment to 2055 and beyond;
- sets the ambition for a sustainable abstraction regime and a protected and improved water environment;
- explores potential new demands for water;
- sets greater ambition for integrated, joined-up planning between water using sectors and with drainage and wastewater planning;
- proposes actions and expectations for different sectors to rise to the challenge of planning for and improving the resilience of water supplies; and
- provides a steer for regional water resources groups to evolve and continue to innovate.

As well as the challenges of an increasing population, the 2025 Framework also outlines the challenge from non-household growth, and emerging sectors such as data centres which can require significant amounts of water for cooling servers, with large centres consuming millions of litres daily. Concrete production accounts for 9% of global industrial water withdrawals. Agriculture is significant with spray irrigation expected to increase due to the changing climate.

Of relevance to the IWMS is the strengthening of local water resources planning which includes supporting farmers to establish Water Abstractor Groups (WAGs) and to "identify,

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screen and prioritise collaborative 'local resource option' solutions to improve water supply resilience".

4.6.2 Water Resources South East Regional Plan

The Water Resources South East (WRSE) final Regional Plan for the South East of England was published in June 2025. WRSE is an alliance of the six water companies which cover the South East of England: Affinity Water, Portsmouth Water, SES Water, Southern Water, South East Water and Thames Water. WRSE is one of five regional groups across England, each of which has produced a strategic water resources plan. The primary objective of water resources planning is to ensure that there are always enough supplies available to meet anticipated demands, under various weather conditions, but in particular in dry and very dry conditions.

The challenges facing the region are set out in the report:

"The South East faces some of the most significant challenges to water resources in the future. Most of the region is already classified as water stressed and its population is set to grow, with major growth corridors planned in some areas. The impact of climate change will be felt acutely in the region, bringing changes to the amount and pattern of rainfall which are likely to, in turn, change the types of droughts we face in the future."

"Of all the regions, the National Framework identified that the South East faces the greatest pressures on public water supplies. If surplus water can be made available, we will still need to develop options to supply more water, equivalent to all new water resource options and transfers currently selected in company WRMPs, as well as achieving ambitious efficiency reductions. If surplus water cannot be accessed, demand will need to be reduced or further resources developed."

"The scale of the deficits we have forecast is very significant, and requires significant action and investment on the part of our member companies, the Government and customers to ensure that water supplies will be protected into the future, whilst at the same time ensuring greater protection for the environment. This is the outcome that our regional plan seeks to achieve."

The Water Resources South East (WRSE) plan covers a period out to 2075 and seeks to:

- Ensure there is enough water for a growing population and to support economic growth.
- Improve the environment by leaving more water in the region's rivers, streams and underground sources.
- Increase the region's resilience to severe drought and other extreme shocks and stresses.
- Addresses the impacts of climate change on demand for water and how much is available.

The plan forecasts that if no action were taken, by 2075 in a 1 in 500-year drought there would be a deficit of between 1.2 billion and 3 billion litres of water per day (based on the least and most challenging planning scenarios). The need for additional water is driven by:

- The need to improve the environment (47%)
- The challenges of climate change (6%)
- Population growth and non-household growth (32%)
- Increasing resilience to extreme drought events (15%)

The majority of the water used in the region goes into the public water supply, with only 3% going into non-public supply. The breakdown of the non-public supply is shown in Figure 4.9.

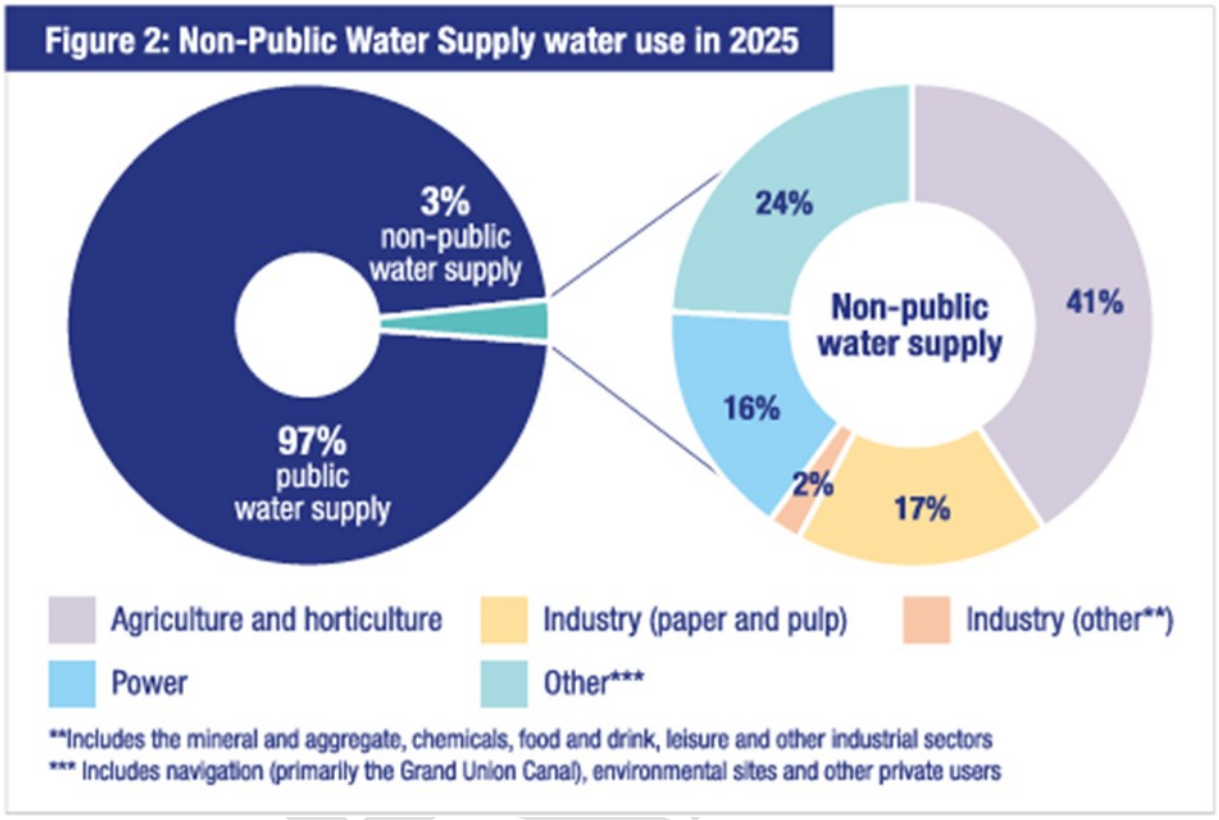

Figure 4.9 Non-public water supply water use in 2025

(WRSE, 2025)

The regional plan contains a mix of demand management and new supply options. The majority of the total water needed in the first 15 years of the regional plan period will come from reducing how much water is used (demand management), and how much is wasted through leakage. The plan also outlines longer term water resource options including transfers of water into the southeast and between water companies, new reservoirs, water recycling schemes and desalination plants and additional storage.

By 2035 the regional plan proposes to:

- Complete the construction of one new reservoir in Hampshire and start to build one new reservoir in Oxfordshire (SESRO) and one in Kent.
- Develop an inter-regional water transfer scheme using the Grand Union Canal to transfer water from the midlands to the southeast.

- Develop six water recycling schemes in London, Kent, West Sussex, Hampshire and the Isle of Wight.
- Develop six groundwater schemes across the region to store extra water in these sources.

Between 2035 and 2075 the plan proposes to:

- Complete the construction of the new reservoirs in Oxfordshire and Kent and construct new reservoirs in West Sussex and East Sussex.
- Build six desalination plants in Kent and West Sussex.
- Develop eleven groundwater schemes across the region.
- Develop three more water recycling schemes in Kent, West Sussex and East Sussex.
- Develop new transfers from new strategic sources of water (such as reservoirs) to move more water around the southeast.

4.6.3 Water Resources Management Plans

Water supply services are provided by South East Water (SEW) in the east of the study area (which includes the town of Basingstoke), and by Southern Water (SW) in the West. Thames Water supply a small area in the north east of Basingstoke and Deane from their Kennet Valley WRZ. There are also four areas served by Independent Water Networks as part of a New Appointments and Variations (NAV) arrangement. These are shown in Figure 4.10.

Water Resource Zones are the largest practical spatial area within which, managing supply and demand for water is largely self-contained (apart from defined bulk transfers of water); where the resource units, supply infrastructure and demand centres are linked so that customers within the zone experience the same risk of supply failure.

Within the zone, a customer may get their water from any of the water sources within that zone. It is therefore not possible to say that a development within a particular area will increase abstraction from a specific source.

WRMPs must plan for the next 25 years, and often much further ahead. When planning this far ahead, there is considerable uncertainty, for example demand management may not have the desired effect, the impact of climate change may be more or less than anticipated and new demands on water may emerge.

Adaptive planning allows a preferred option plan to be published, with key factors such as water demand and population growth tracked. If certain trigger conditions are met, such as population trending above forecast, the plan can adapt to a different “pathway” and the set of actions in the plan can change.

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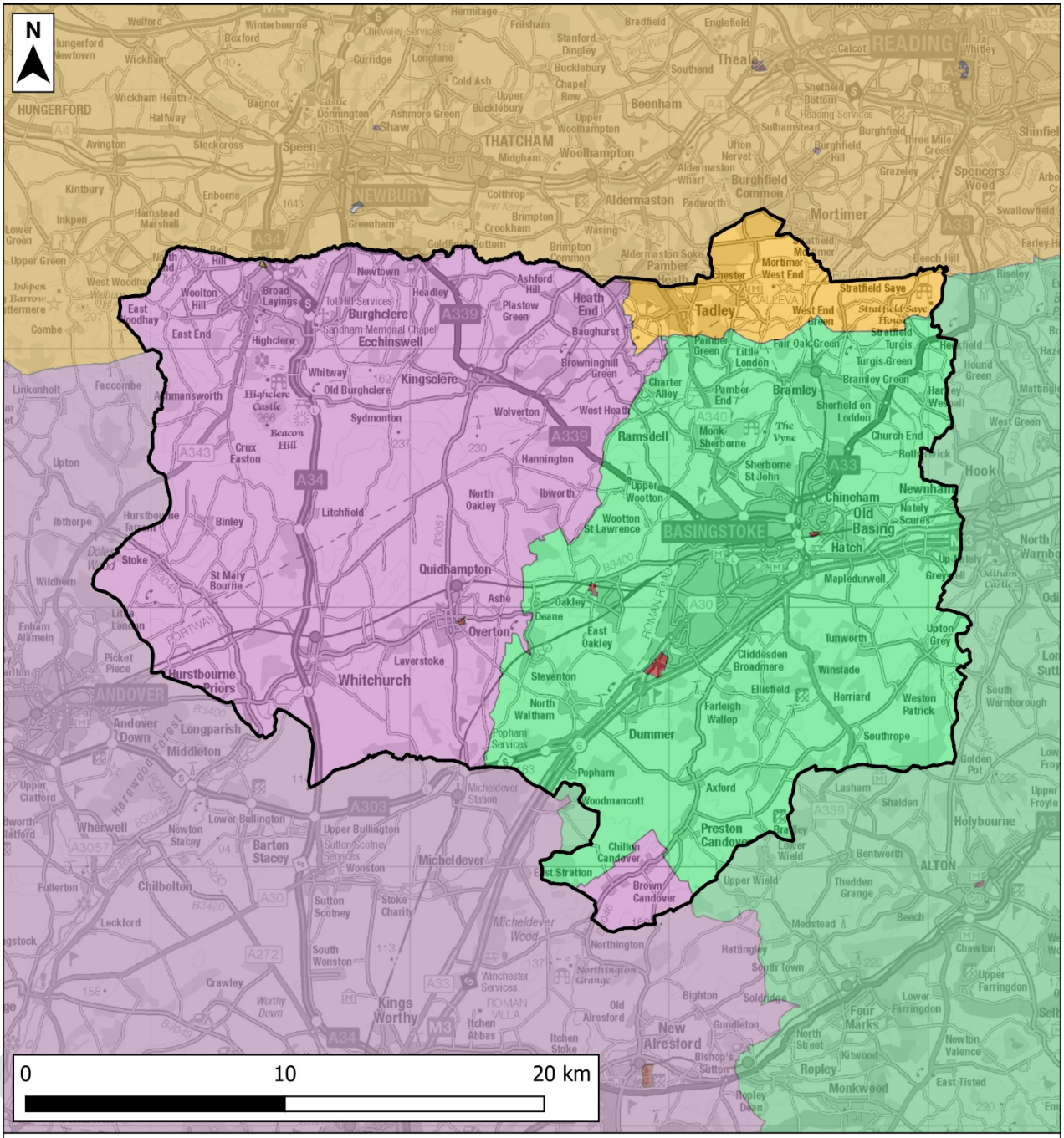

Figure 4.10 Water supply areas in Basingstoke and Deane

Southern Water

Southern Water supply the west of BDBC from their Kingsclere WRZ in the north west and their Andover WRZ in the south west. Within these two WRZs 100% of the supply comes from groundwater sources.

Figure 4.11 shows the challenges facing the SW supply area, and the volume of additional water required in in order to protect the environment, increase resilience to droughts, respond to climate change and serve a growing population.

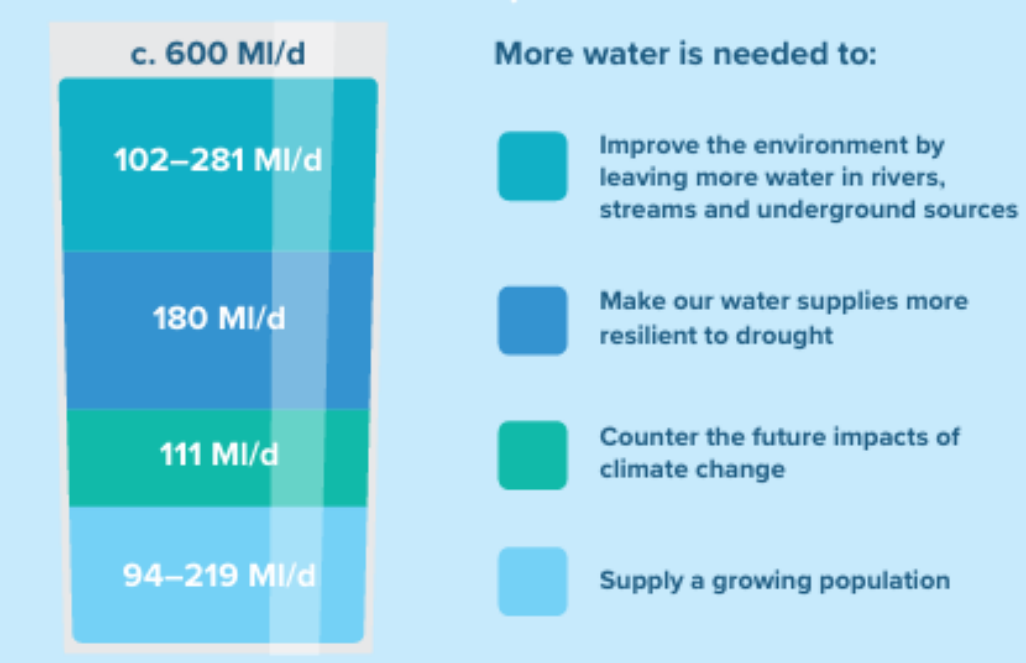

Figure 4.11 Volume of additional water required by 2075

(Thames Water, 2025)

SW state that the biggest challenge they face is supplying water in a sustainable way, leaving more water in the environment to improve the health of rivers and streams. Investigations are taking place on many of the groundwater sources in the SW supply area, with a focus on sources that may impact chalk streams.

Table 4.4 Options contained in WRMP24

Period	Options
2025 to 2035	• Demand management including reducing leakage, installing smart meters and helping people and businesses to use less water • Groundwater schemes in Sussex and Hampshire to release more water • Water recycling schemes in Kent, Sussex, Hampshire and on the Isle of Wight, as well as an industrial water recycling scheme in Kent

Period	Options
	• Imports of more water into Hampshire and Sussex from other water companies • Catchment management schemes to help improve the quality and resilience of our water sources • Applying for drought orders and permits to continue abstracting water during a drought while we develop new supplies. For droughts of up to 1-in-500 year severity, SW will stop taking water from:– the lower River Itchen (Hampshire) after 2030 – the River Test after 2034 – the Candover scheme (Hampshire) after 2034
2035 to 2075	• Demand management to further reduce leakage and water use in homes and businesses • A managed aquifer recharge scheme in Hampshire • Groundwater options to release more water on the Isle of Wight • A large import of water from Thames Water from 2040 following the development of the South East Strategic Reservoir Option (SESRO) and the construction of a new pipeline from Oxfordshire to Hampshire • A new reservoir in West Sussex • Desalination schemes in Sussex and Kent • A stop to the use of all drought permits and orders to increase supply in all but the most extreme droughts (more than a 1-in-500-year severity) after 2041.

South East Water

The east of BDBC is served by SEW from their Bracknell WRZ. The majority of the growth expected in Basingstoke and Deane is within the SEW supply area (25,611 dwellings) making it critical to the delivery of housing within BDBC.

By 2050 it is estimated that the population of the SEW supply area will increase by 23% to 2,79 million people.

As well as the increase in population there is also a need to reduce abstraction from existing sources in order to protect the environment, with an estimated loss in water available for use of 135Ml/d by 2050. This results in a supply demand deficit in the baseline forecast. This is addressed in the final plan by the following options:

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Table 4.5 SEW's WRMP24 measures

Period	Options
2025 to 2050	• Leakage reduction and water efficiency activities - 34ML/d by 2040 • Smart meter installation programme with trials in 2025, followed by full roll out from 2027 with the goal of providing smart meters across 90% of households by 2035 • Reduction in non-household consumption with measures such as business smart meters and water efficiency audits • New pipelines to increase the amount of water moving between water companies and within the SEW area • A new reservoir at Broad Oak (Kent) by 2033 to provide 22Ml/d while reducing abstractions that could impact the environment • Sub-zonal schemes to improve the network connectivity at a local level and allow a reduction in abstractions that could impact the environment • Further development work and early feasibility studies on schemes such as New Arlington Reservoir, Peacehaven recycling and Reculver desalination to ensure SEW are ready if needed to adapt to future uncertainty
2041 to 2075	• Additional pipelines to increase the amount of water that moves between water companies and also within our supply area • New reservoir at Arlington (Sussex) to provide an additional 18Ml/d and a new improvement scheme to the SEW pipe network to improve connectivity within the local area by 2057 • Desalination at Reculver in Kent to provide 30Ml/d and an improvement scheme to the pipe network to improve the connectivity within the local area by 2044. • Water treatment works improvements near Ashford (Kent) by 2058.

A range of other pressures were also identified in the WRMP including pesticides, nitrates, chemical (chlorinated solvents, chromium) and bacteria within the Western Operational area (which includes Basingstoke). Sources of nitrates include agriculture, urban drainage and development as well as leaks from the sewer network and private septic tanks. In the WINEP programme, there are groundwater catchment management activities and targeted

management around sources in a number of Drinking Water Protected Areas (DWPA) to prevent a deterioration in water quality from nitrates.

As part of the WCS Preliminary Assessment work Natural England (NE) noted that the Greywell abstraction was expected to cease in March 2025 as it had been assessed as being an environmentally damaging abstraction to Greywell Fen SSSI. However, due to resilience issues, SEW have recently submitted a licence variation to the EA to continue abstracting from this source. This is subject to ongoing discussions between SEW, the EA and NE. SEW provided the following comments:

"We have requested an extension to the Greywell licence until 2030. This is currently being determined by the EA so we are awaiting a decision. In addition, we have also recently prepared an options appraisal report to support the need for this extension, and to highlight how we plan to ensure security of supplies until the new strategic pipeline transfer is completed. The need for this extension is due to a number of challenges we have experienced, which were not forecast in our WRMP24 assumptions, i.e., 1) delays in delivering the increased interconnectivity into the Basingstoke area, 2) water quality issues at West Ham Water Treatment Works (WTW) that have emerged sooner that predicted, and 3) earlier delivery of licence reductions at Lasham WTW that were not forecast in our environmental destination forecast until 2030."

Thames Water

A small area in the north west of BDBC is served by Kennet Valley WRZ. As only a small area of BDBC is covered, and the amount of growth relative to the size of the WRZ is small, the WRMP24 has not been reviewed in detail. The main challenges identified within their supply area are a growing population, a changing climate, and an increased drought risk, set alongside their obligation to protect the environment. This results in a shortfall of 1,060 Ml/d by 2050 if no action were taken. The plan to address their supply demand balance includes demand reduction activities such as reducing leakage, smart metering, and household visits, and longer term supply solutions such as new reservoirs, water recycling and transfers of water between WRZs and water companies.

4.6.4 Population and household growth

The number of households in BDBC is expected to grow by approximately 27% during their plan period with an increase in the number of dwellings of over 29,000 houses. Table 4.6 shows how these figures compare to the growth estimates contained within each water company's WRMP tables.

SW confirmed that although LPA planned growth was higher than the figures included in the WRMP24, there was sufficient time to adapt (the WRMP29 will contain an updated forecast) and there is sufficient surplus in the WRZ at present.

SEW have advised that the housing numbers shared with them as part of this WCS are considerably higher than they have factored into their WRMP24. The increase is likely to cause stress in their water supply network that they would be unable to resolve until a new

major infrastructure scheme (a transfer pipeline from Surrey Hill service reservoir towards Basingstoke) is completed in 2033. They provided the following comment:

"Unfortunately we do not have a supply-demand surplus in this part of our supply area to accommodate additional growth above what has been assumed in our WRMP24. The situation is more challenging in the near short term due to some difficulties in delivery a new strategic pipeline transfer (to provide increased supplies into Basingstoke) which is now delayed until 2030. Therefore, in the Basingstoke area, we would not be able to accommodate any level of growth in excess of our current WRMP24 forecast assumptions. This is the case across the full planning period as our WRMP24 has solved the supply-demand balance problem only to address the level of growth forecasted and provided to us in 2022. To assess the impact of growth in excess of our current WRMP24 forecast, will require us to re-calculate our demand forecast to then re-run our decision making and to identify the additional interventions that will resolve and address these changes. This may be the need for new supplies, transfers or increases to our demand reduction programmes, but will not be known until we complete the work to develop our next WRMP29. For information the current EA timetable for publishing our Resource Position Statement is May 2027 and our draft WRMP29 in March 2028."

This effectively puts a cap on the amount of growth that is possible in the early part of the Local Plan process within SEW's WRZ.

SEW provided their housing forecast year by year in comparison to the growth scenario developed in the WCS, which is contained in Appendix H. This forecast is expected to be updated as part of SEW planning for WRMP29.

A meeting was held with the Council, SEW and EA on 14/10/2025, at which it was confirmed that water availability is likely to be a key issue impacting growth in Basingstoke between 2029 and 2034. The Environment Agency's response to the draft WCS noted their support for tighter water efficiency standards which are " particularly necessary in the case of SEW."

It is recommended that the Council maintains regular communications with South East Water regarding this matter, and may wish to develop a Statement of Common Ground with them for inclusion within the Local Plan evidence base.

Table 4.6 Comparison of household growth forecasts

Forecast	2024	2042	Difference (2024-2042)	% increase	Expected growth- (dwellings)
Expected growth in Local Plan period 2024-2042	75,148	95,704	20,556	27%	29,411
WRMP24 Forecast – South East Water, SEWBK4 WRZ (Updated October 2024)	305,370	358,750	8,380	17%	25,611

Forecast	2024	2042	Difference (2024-2042)	% increase	Expected growth- (dwellings)
WRMP24 Forecast – Southern Water, SWSHKC WRZ (Updated May 2025)	6,740	7,750	1,010	15%	1,459
WRMP24 Forecast – Southern Water, SWSHAD WRZ (Updated May 2025)	34,520	38,200	3,680	11%	1,216
WRMP24 Forecast – Thames Water, TWSKNV WRZ (Updated March 2025)	177,310	202,860	25,550	14%	1,125

4.7 Water efficiency

4.7.1 Introduction

Part G of Building regulations (UK Government, 2016) currently state that new build housing should achieve a minimum of 125 l/p/d. A tighter target of 110l/p/d is allowed if the local authority can establish a clear need based on available evidence. Water resources are under significant pressure in England and the direction of travel in water resources planning is to reduce per capita consumption in new build development below the optional building regulations standard of 110 l/p/d.

Many LPAs are going further than the optional standard of 110l/p/d and specifying 100l/p/d or lower in their Local Plans.

4.7.2 Environment Agency classification of water stress

Water stress is a measure of the level of demand for water (from domestic, business and agricultural users) compared to the available freshwater resources, whether surface or groundwater. Water stress causes deterioration of the water environment in both the quality and quantity of water, and consequently restricts the ability of a waterbody to achieve a "Good" status under the Water Framework Directive.

- The Environment Agency has undertaken an assessment of water stress across the UK. This defines a water stressed area as where:
- "The current household demand for water is a high proportion of the current effective rainfall which is available to meet that demand; or
- The future household demand for water is likely to be a high proportion of the effective rainfall available to meet that demand.

In the Environment Agency assessment (Environment Agency, 2021b) South East Water, Southern Water and Thames Water supply region were all classified as being areas of serious water stress.

It should be noted that this work was published in 2021 and used data from the WRMP19 - itself based on published growth data from several years prior to publication. Climate change is tending to increase the stress on the water environment as time progresses. The Environment Agency's assessment also precedes the current mandatory housing targets introduced nationally by the Government in December 2024 through the updated NPPF. As a result of these changes many local planning authorities must now plan for significantly increased levels of housing need.

4.7.3 Environmental Improvement Plan

Through their Plan for Water Defra has signalled its intention to review the water efficiency standards for new homes, including consideration of a new national 105l/p/d standard and 100l/p/d where there is a clear local need.

The Future Homes Hub was established to "facilitate the collaboration needed within and beyond the new homes sector to help meet the climate and environmental challenges ahead" (Future Homes Hub, 2024). It consists of representatives from the building industry, regulators, water companies, and environmental groups. Defra asked them to support the creation of the roadmap towards greater water efficiency. They have proposed a road map for water efficient homes in England and sets out a framework for the homebuilding sector to work in partnership with other stakeholders such as the water sector, local authorities and regulators to deliver it. The proposed roadmap is shown in Figure 4.12 below and outlines a staged approach to reducing per capita consumption. It also allows for a tighter figure of 90l/p/d by 2025 in seriously water stressed areas to enable sustainable growth.

Figure 4.12 Future Homes Hub proposed water efficiency roadmap

The Environment Act 2021 (and Environmental Improvement Plan 2023 (EIP)) introduces a National Water Target that requires 20% reduction in public water supply in England per head of population by 2038, against a 2019 to 2020 baseline — with interim targets of 9% by 2027 and 14% by 2032. These targets cannot be achieved by new development alone. This guidance is aimed to complement other demand management measures, including leakage reduction, to support delivery of these targets alongside sustainable growth and

nature recovery. The government has an ambition to tighten Building Regulations water efficiency standards.

4.7.4 Supply demand balance risks

In order to achieve a supply-demand balance, the WRMP relies on a combination of demand management techniques and restrictions on non-domestic supply until new large strategic supply options come online (which is not until the 2030s). Demand management measures that rely on customer behaviour such as raising awareness of water scarcity can be uncertain. If the forecast benefit from these is not realised, the water company may not be able to move to more sustainable licences and the water company may have to abstract more water to maintain their supply-demand balance. This may be above sustainable limits, risking damage to the environment.

The water companies have a statutory duty to supply water for domestic purposes to non-household development, but do not have to supply water for non-domestic purposes.

It is therefore important that new development, both household and non-household is as water efficient as possible to mitigate the risk that demand management is not successful, and to support non-household development.

4.7.5 Environmental obligations

Section 10 identified protected sites in the region that may be sensitive to changes in river flow or groundwater levels and therefore could be impacted by increases in abstraction (either from surface water or groundwater) to support growth in BDBC.

Natural England have a "plan-led" approach to water scarcity through which they are robustly responding to WRMPs and negotiating licence changes with the EA. The third element of their approach is to provide advice to LPAs on water efficiency, encouraging LPAs to adopt more stringent water efficiency targets.

4.7.6 Chalk stream recommendations

As part of efforts to protect and restore chalk streams, the CaBA Chalk Stream Restoration Strategy recommends that new developments within chalk catchments adopt a minimum water efficiency standard of 90l/p/d. This target supports the strategy’s focus on improving water quantity, alongside water quality and habitat condition, to reduce abstraction pressures and enhance ecological resilience. The recommendation aligns with broader regional planning goals, including those outlined in the WRSE Regional Plan, and is particularly relevant for areas within BDBC that fall within chalk stream catchments. The Government's EIP makes reference to the chalk Stream Strategy and states that it should be supported.

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4.7.7 Consideration of viability and feasibility

Any water efficiency target adopted has to be feasible: i.e., do the products exist that allow a particular standard to be met, and viable, i.e., can the standard be achieved without making the development financially unviable.

Annex C of the Shared Standard provides examples of products that are available on the market that can achieve an efficiency standard of 85l/p/d based on the capacity and flow rates they deliver.

The Future Homes Hub provides some indicative costs for achieving different water efficiency targets. It states that there is no additional cost to achieve 110l/p/d. The cost of achieving 100l/p/d is estimated to be £350 per unit (Future Homes Hub, 2024).

Research undertaken for the devolved Scottish and Welsh governments by the Energy Saving Trust indicated potential annual savings on water and energy bills for householders of approximately £31 per year as a result of water efficiency measures that would allow a target of 100l/p/d to be met (Energy Saving Trust, 2020). Water efficiency is therefore not only viable but of positive economic benefit to both private homeowners and tenants. In addition, financial incentives are available from the water companies to developers to encourage water-efficient design.

Research published by Building Research Establishment (BRE) on the delivery of sustainable buildings reports that the cost of achieving lower BREEAM ratings incurs little or no additional cost, and targeting higher BREEAM ratings incurs a typical cost of less than 2% above the baseline for that development. The same study reports that the cost of achieving 3 credits in WAT01 (a 40% reduction in water consumption for baseline) would be £13,361 and payback could be achieved between 1 and 2.5 years depending on the price of water (BRE, 2018).

4.7.8 Impact of water efficiency standards

Table 4.7 shows that a significant proportion of the expected growth during the plan period is from commitments, i.e., sites that already have planning permission in some form. It may not be possible for a new water efficiency policy to influence those sites if full planning permission has been granted. It is assumed in the analysis below that a tighter efficiency standard can only be applied to the preferred allocations and windfall sites. Opportunities may exist on sites with outline permission for a tighter standard to be required which may result in a higher demand saving.

Four scenarios are presented in Table 4.7 with their resulting water demand saving by the end of the plan period. The first is a "business as usual" scenario based on the Building Regulations Optional Standard of 110l/p/d and no target applied for employment sites. The second, third and fourth scenarios have residential water efficiency targets of 100l/p/d, 90l/p/d and 80l/p/d supported by employment sites achieving three credits in Wat01 of the BREEAM New Construction Standard (a 40% reduction from the baseline). If the tighter water efficiency target of 80l/p/d is adopted, a saving of nearly 2Ml/d could be achieved by the end of the plan period compared to a "business as usual" baseline. This provides

additional resilience in the water resources system and potentially reduces the volume of water that would need to be abstracted in neighbouring WRZs. The last column, titled "percentage reduction" in Table 4.7, shows how much total water demand is reduced compared to the "Business as usual - 110 l/p/d" scenario. This column helps quantify the impact of different water use targets on overall demand.

Once a house has been built to a water efficiency standard of 110l/p/d or even 125l/p/d, it is difficult and expensive to retrospectively reduce water demand and would rely on homeowners voluntarily making changes to their property. An approach which sets the 110l/p/d target in the Local Plan will lock in a large number of new homes which will not contribute to the national target. The most cost effective and simplest stage within the life cycle of a building to implement water efficiency is during construction.

Table 4.7 Water demand saving in different efficiency scenarios

Scenario	Residential demand (Ml/d)	Employment demand (Ml/d)	Total demand (Ml/d)	Demand saving by 2042	Percentage reduction from business as usual scenario
Business as usual - 110 l/p/d	8.41	1.28	9.69	-	-
100 l/p/d	7.90	0.95	8.84	0.84	9%
90 l/p/d	7.38	0.95	8.33	1.36	15%
80 l/p/d	6.86	0.87	7.73	1.96	20%

4.8 Summary and water efficiency recommendation

Water resources in England are under considerable pressure. The Environment Agency has stated that "the scale of the challenge we face increases with time and, by 2050, we are looking at a shortfall of nearly 5 billion litres of water per day between the sustainable water supplied available and the expected demand."

The majority of the predicted growth in BDBC is within SEW's Bracknell WRZ. SEW have advised that the housing numbers shared with them are considerably higher than they have factored into their WRMP24. The increase is likely to cause stress in their water supply network that they would be unable to resolve until a new major infrastructure scheme (a transfer pipeline from Surrey Hill service reservoir towards Basingstoke) is completed in 2033. They advise that they "would not be able to accommodate any level of growth in excess of our current WRMP24 forecast assumptions". This effectively puts a cap on the amount of development that is possible within the Bracknell WRZ, which also includes other LPAs. Careful coordination of development plans in the early part of the Local Plan period, in collaboration with neighbouring authorities, is required in order to ensure that growth does not exceed the WRMP24 forecast.

Approximately 2,500 dwellings are planned within the two SW WRZs. SW have confirmed that there is sufficient time to adapt to the additional planned growth beyond that accounted for in the WRMP24.

There are 1,125 dwellings planned in the TW WRZ. From a total planned growth of 25,550 during the plan period. As the growth from BDBC is a small proportion of the overall growth, there is likely to be sufficient time to adapt to any increase beyond that accounted for in the WRMP24.

Part G of Building regulations currently states that new build housing should achieve a minimum of 125 l/p/d. A tighter target of 110l/p/d is allowed if the local authority can establish a clear need based on available evidence. Many LPAs are now going further than this. The Written Ministerial Statement (WMS) by the former Secretary of State for Levelling Up, Housing and Communities (DLUHC) states that:

"…in areas of serious water stress, where water scarcity is inhibiting the adoption of Local Plans or the granting of planning permission for homes, I encourage local planning authorities to work with the Environment Agency and delivery partners to agree standards tighter than the 110 litres per day that is set out in current guidance."

Basingstoke and Deane is in an area classified by the Environment Agency as being under serious water stress. It is also home to several chalk streams - a globally rare ecosystem that is sensitive to abstraction.

The Catchment Based Approach (CaBA) Chalk Stream Strategy recommends that a water efficiency target of 90l/p/d is adopted in chalk stream areas. The Government's EIP23 states that the "Chalk Stream strategy should be supported".

In their responses to the draft Water Cycle Study, the Environment Agency, Natural England and Southern Water were supportive of a water efficiency target that goes beyond building regulations.

In view of the sensitive environmental sites in the area, and the long-term national target of 110l/p/d across all housing (including existing), it is recommended that a water efficiency target of 90l/p/d is adopted across the BDBC area. This should be achieved using a fittings-based approach and supported by an equivalent non-household target where development will aim to achieve full credits in the BREEAM water calculator with a minimum of 3 credits in WAT01.

Table 4.8 Recommendations for water resources

Recommendation	Responsibility	Timescale
Continue to regularly review forecast and actual household growth across the supply region through WRMP Annual Update reports, and where significant change is predicted, engage with Local Planning Authorities.	Thames Water, South East Water and Southern Water	Ongoing

Recommendation	Responsibility	Timescale
Provide yearly updates of projected housing growth to water companies to inform WRMP updates.	BDBC	Ongoing
A Statement of Common Ground is required between BDBC and SEW to agree a housing number during the early part of the Local Plan.	BDBC and SEW	Part of Local Plan process
Use planning policy to require a water efficiency standard of 90l/p/d to be achieved using the fittings-based approach. The policy should allow for a future reduction in the water efficiency target if required.	BDBC	In Local Plan
This should be supported by the requirement for non-household development to achieve three credits in the assessment category WAT01 of the BREEAM UK New Construction Standard.	BDBC	In Local Plan
Larger residential developments and commercial developments should consider incorporating greywater recycling and/or rainwater harvesting into development at the master planning stage in order to reduce water demand.	BDBC	Ongoing

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5 Water Supply Infrastructure

5.1 Introduction

An increase in water demand due to growth can exceed the hydraulic capacity of the existing supply infrastructure. This is likely to manifest itself as low pressure at times of high demand. An assessment is required to identify whether the existing infrastructure is adequate or whether upgrades will be required. The time required to plan, obtain funding, and construct major pipeline works can be considerable and therefore water companies and planners need to work closely together to ensure that the infrastructure is able to meet growing demand.

Water supply companies make a distinction between supply infrastructure, the major pipelines, reservoirs, and pumps that transfer water around a WRZ, and distribution systems, smaller scale assets which convey water around settlements to customers. This outline study is focused on the supply infrastructure. It is expected that developers should fund water company impact assessments and modelling of the distribution systems to determine requirements for local capacity upgrades to the distribution systems.

In addition to the work undertaken by water companies, there are opportunities for the local authority and other stakeholders to relieve pressure on the existing water supply system by increasing water efficiency in existing properties. This can contribute to reducing water consumption targets and help to deliver wider aims of achieving water neutrality.

A cost-effective solution can be for local authorities to co-ordinate with water supply companies and “piggyback” on planned leakage or metering schemes, to survey and retrofit water efficient fittings into homes (Waterwise, 2009). This is particularly feasible within property owned or managed by the local authorities, such as social housing.

5.2 Methodology

Thames Water and Southern Water were provided with all of the allocations and potential allocations in a GIS format, alongside a spreadsheet containing all of the relevant site details (number of dwellings, employment floorspace etc). They were asked to provide a Red/Amber/Green (RAG) assessment alongside site specific comments for each site. All potential sites which were assessed by Southern Water were classified as green. South East Water were not able to provide a site-by-site assessment within the timescales of the WCS.

The relative ranking - red to green was provided based on a consideration of water treatment capacity, storage and bulk transfer capacity, and water main capacity. A red score does not mean that development could or should not take place in that location.

The following red/amber/green definition was used by the water companies to score each site:

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GREEN	AMBER	RED
On the information provided we do not envisage infrastructure concerns in relation to this development/s	On the information provided modelling may be required to understand the impact of development	On the information provided, modelling will be required, and it is anticipated that upgrades to network will be necessary

5.3 Results

Figure 5.1 shows the RAG assessment of water supply network from the water supply companies. Only Three sites fall within the Thames Water area. Of these, two were assessed as red and one as green. All sites within Southern Water were assessed and categorised as green. Table 5.1 provides the details of these sites. South East Water had not provided their assessment at the time of reporting, so all sites under their coverage are marked as 'Not Assessed' in Figure 5.1.

Thames Water scored two sites at "red" and made the following comment: "On the information provided, modelling will be required, and it is anticipated that upgrades to network will be necessary". No further information on constraints at these sites was provided.

Table 5.1 Summary of water supply RAG assessment (TW and SW)

Site/Address	Water Supply Company
Silchester	Green - Thames water
Tadley	Red - Thames Water
West End Farm, Mortimer Common	Red - Thames Water
Oakley Farm, Wash Water	Green - Southern Water
Burghclere	Green - Southern Water
Ecchinswell	Green - Southern Water
Headley	Green - Southern Water
Highclere	Green - Southern Water
Kingsclere	Green - Southern Water
Overton	Green - Southern Water
St Mary Bourne	Green - Southern Water
Whitchurch	Green - Southern Water
Woolton Hill	Green - Southern Water

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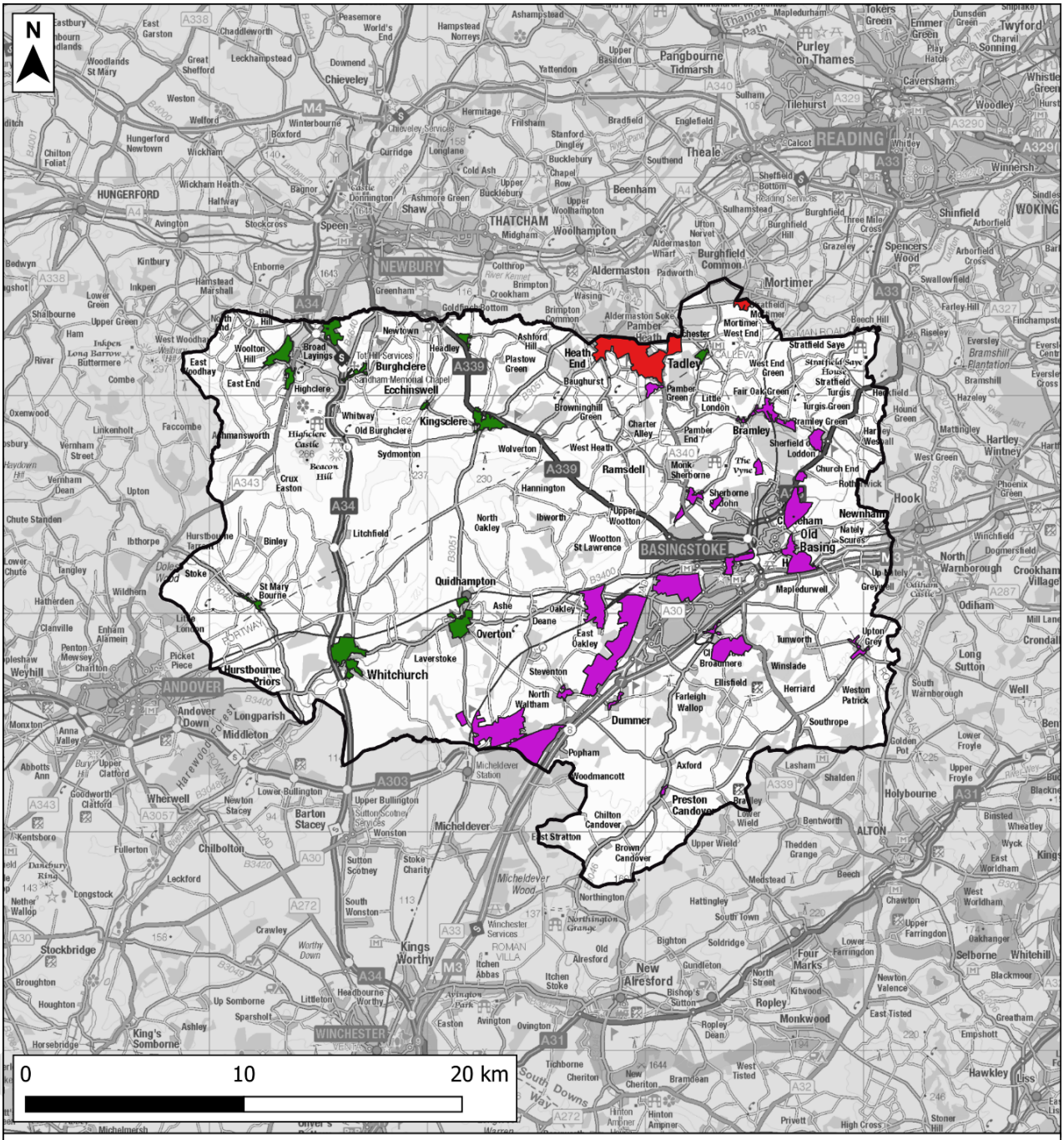

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Figure 5.1 Water supply network assessment

5.4 Conclusions and recommendations

5.4.1 Conclusions

SW and TW provided a site-by-site assessment of potential allocations in their supply areas. This identified two sites where further modelling by TW would be required, and upgrades to the network were likely to be required. SEW were not able to provide a site-by-site assessment, at this stage.

Upgrades to the local supply network would be funded as part of the water company infrastructure charges. Early engagement between developers, BDBC and the water companies is recommended to ensure upgrades are in place prior to occupation.

5.4.2 Recommendations

Table 5.2 Recommendations for water supply

Recommendation	Responsibility	Timescale
Undertake network modelling where appropriate to ensure adequate provision of water supply to new sites without detriment to existing customers and feedback to BDBC on implications for phasing of sites.	SEW, SW, TW	Early in Local Plan period
Early engagement is required with SEW, SW and TW to ensure infrastructure is in place prior to occupation.	Developers and BDBC	Early in Local Plan period
BDBC should obtain infrastructure maps from SEW, SW and TW to ensure existing water supply infrastructure is taken into account in site layout.	BDBC and Developers	At master planning stage

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6 Wastewater Collection

6.1 Sewerage Undertakers for Basingstoke and Deane BC

Thames Water (SW) and Southern Water (SW) are the Sewerage Undertakers (SU) for Basingstoke and Deane Borough Council. The role of sewerage undertaker includes the collection and treatment of wastewater from domestic and commercial premises, and in some areas, it also includes the drainage of surface water from building curtilages to combined or surface water sewers. It excludes, unless adopted by the SU, systems that do not connect directly to the wastewater network, e.g., Sustainable Drainage Systems (SuDS) or highway drainage.

6.2 Sewerage System Capacity Assessment

Increased wastewater flows into collection systems due to growth in population or per-capita consumption can lead to an overloading of the infrastructure, increasing the risk of sewer flooding and, where present, increasing the frequency of discharges from storm overflows (also known as Combined Sewer Overflows or CSOs).

In combined sewerage systems, or foul systems with surface water misconnections, there is potential to create headroom in the system, thus enabling additional growth, by the removal of surface water connections. This can most readily be achieved during the redevelopment of brownfield sites which have combined sewerage systems, where there is potential to discharge surface waters via sustainable drainage systems (SuDS) to groundwater, watercourses, or surface water sewers. In some areas of Basingstoke and Deane, there are known issues of surface water causing localised flooding. Strategic schemes to provide improved local surface water drainage may be required in such areas, rather than solely relying upon on-site soakaways on brownfield or infill plots.

New developments add pressure to the existing sewerage systems. An assessment is required to identify the available capacity within the existing wastewater network, and the potential to upgrade overloaded systems to accommodate future growth.

It may be the case that an existing sewerage system is already working at its full capacity, and further investigations must be carried out to define which solution is necessary to implement an increase in its capacity. New infrastructure may be required if, for example, a site is not served by an existing system. Such new infrastructure will normally be secured through private third-party agreements between the developer and utility provider.

Sewerage Undertakers must consider the growth in demand for wastewater services when preparing their five-yearly Strategic Business Plans (SBPs) which set out investment for the next Asset Management Plan (AMP) period. Typically, investment is committed to provide new or upgraded sewerage capacity to support allocated growth with a high certainty of being delivered. Additional sewerage capacity to service windfall sites, smaller infill development or to connect a site to the sewerage network across third party land is

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normally funded via developer contributions, as third-party arrangements between the developer and utility provider.

6.2.1 Methodology

TW and SW were provided details of the preferred allocations and asked to assess the impact of these sites on the wastewater network. The following red/amber/green definition was used by the water companies to score each site:

GREEN	AMBER	RED
On the information provided we do not envisage infrastructure concerns in relation to this development/s	On the information provided modelling may be required to understand the impact of development	On the information provided, modelling will be required, and it is anticipated that upgrades to network will be necessary

A red assessment does not mean that a site cannot or should not be developed (unless stated in the comments) and instead reflects the requirement for extensive new infrastructure to order to accommodate the site. It should be remembered that the water companies have a statutory duty to serve new development under the Water Industry Act 1991.

6.2.2 Results

TW provided an assessment of the sites within their wastewater catchments. This is summarised in Table 6.1. Nine sites were given a "red" rating highlighting the need for modelling of these sites by TW, and the likelihood that upgrades may be required.

Table 6.1 TW RAG assessment of potential allocations

Red/Amber/Green Assessment	Site names
RED On the information provided, modelling will be required, and it is anticipated that upgrades to network will be necessary	Buckskin and South Ham Land west of Marnel Park Sherfield Hill Farm Skates Lane Southern Manydown growth option - Old Basing growth option - Tadley Upper Swallick West End Farm, Mortimer Common

Red/Amber/Green Assessment	Site names
AMBER On the information provided modelling may be required to understand the impact of development	Basingstoke Town Centre Growth option - Kingsclere Weybrook Park Golf Course
GREEN On the information provided we do not envisage infrastructure concerns in relation to this development/s	16 Southern Road 65 New Road Basing View Eastern Basingstoke Land west of upper Cufaude Farm Oakley Farm, Wash Water Redlands (phase 4) Redlands Lodge Growth option - Bramley Growth option - Burghclere Growth option - Cliddesden Growth option - Ecchinswell Growth option - Headley Growth option - Highclere Growth option - Sherborne St John Growth option - Sherfield on Loddon Growth option - Silchester Growth option - Upton Grey Growth option - Woolton Hill YMCA Basingstoke

SW were unable to provide a site-by-site assessments within the timeframe of the WCS due to resource constraints. However they provided the following comments for guidance:

"You may be aware that Southern Water will assess network capacity in relation to the flows proposed for a development site during the planning process (when consulted), any capacity constraints will be managed through the regulatory funding mechanism for the reinforcement of our network; currently that mechanism is the Infrastructure Charge paid by developers.

Whilst assessing capacity during a planning application consultation, should it be determined that the flows from the development will cause detriment to the operation of the sewer, we will progress the reinforcement work through our capital delivery programme.

Note that the catalyst for progression is that the site receives outline planning approval. This is to ensure that there is an element of certainty that the development will progress and therefore funding is being utilised to provide reinforcement of the network in the right locations at the right time. It also ensures that there is not a misuse of funds through us delivering reinforcement work and then the development does not move forward.

The above process will ensure that any development does not contribute to any existing flooding issues on a sewer catchment through the discharge of foul flows from the new dwellings. However, it is also vital that surface water is managed on site through sustainable drainage systems to ensure that there is no surface water run-off into the sewer network and that the discharging of surface water to a foul or combined sewer is not permitted.

For development sites where capacity constraints have been identified, we will ask for planning policy and conditions that stipulate the phasing of the occupation of the development whilst we deliver the required network reinforcement. This is required as we have limited powers to prevent connections to our network, even when capacity is limited; for example, under Section 106 of the Water Industry Act, developers have a right to connect foul drainage on 21 days' notice.

An example of the policy wording that is used where there are capacity constraints is set out below, this supersedes previous wording which stipulated a connection at the nearest point of capacity.

Occupation of development will be phased to align with the delivery of public sewerage infrastructure, in consultation with the service provider.

Using the planning process in this way is supported by the National Planning Policy Guidance (NPPG) section dealing with water supply, wastewater and water quality (Para 20) "If there are concerns arising from a planning application about the capacity of wastewater infrastructure, applicants will be asked to provide information about how the proposed development will be drained and wastewater dealt with…The timescales for works to be carried out by the sewerage company do not always fit with development needs. In such cases, local planning authorities will want to consider how new development can be phased, for example so it is not occupied until any necessary improvements to public sewage system have been carried out.

Note that this is applicable to site specific upgrades of our sewer network and any capacity constraints at a wastewater treatment works is addressed through a different funding mechanism, that being the delivery of investment though our business plan."

6.3 Conclusions and recommendations

6.3.1 Conclusions

Development in areas where there is limited wastewater network capacity will increase pressure on the network, increasing the risk of a detrimental impact on customers, and increasing the likelihood of storm overflow operation. Early engagement with developers, Southern Water and Thames Water is required, and modelling of the network may be required at the planning application stage.

Where network capacity constraints are identified, network reinforcement may be required which would be funded as part of the developer infrastructure charge. It may be necessary for development sites to be phased in line with the provision of any network upgrades.

6.3.2 Recommendations

Recommendation	Responsibility	Timeframe
Early engagement between BDBC, SW and TW is required to ensure that where strategic infrastructure is required, it can be planned in by SW and TW and will not lead to any increase in discharges from sewer overflows.	BDBC, Developers, SW, TW	Early in the LP process
Take into account wastewater infrastructure constraints in phasing development in partnership with the sewerage undertaker	BDBC, SW, TW	Ongoing
Developers will be expected to work with the sewerage undertaker closely and early in the planning promotion process to develop an Outline Drainage Strategy for sites. The Outline Drainage strategy should demonstrate the wastewater assets required, their locations including points of connection to the public foul sewerage, whether the site drainage will be adopted by the water company and if any sewer requisitions will be required.	BDBC, SW, TW and developers	Ongoing

7 Storm overflows

7.1 Background

Storm overflows are an essential component in the sewer network – however when they operate frequently, they can cause environmental damage. They occur on combined sewer systems where the sewer takes both foul flow (sewage from homes and offices) and rainwater runoff. In normal conditions all of this flow passes through the sewer network and is treated at a wastewater treatment works.

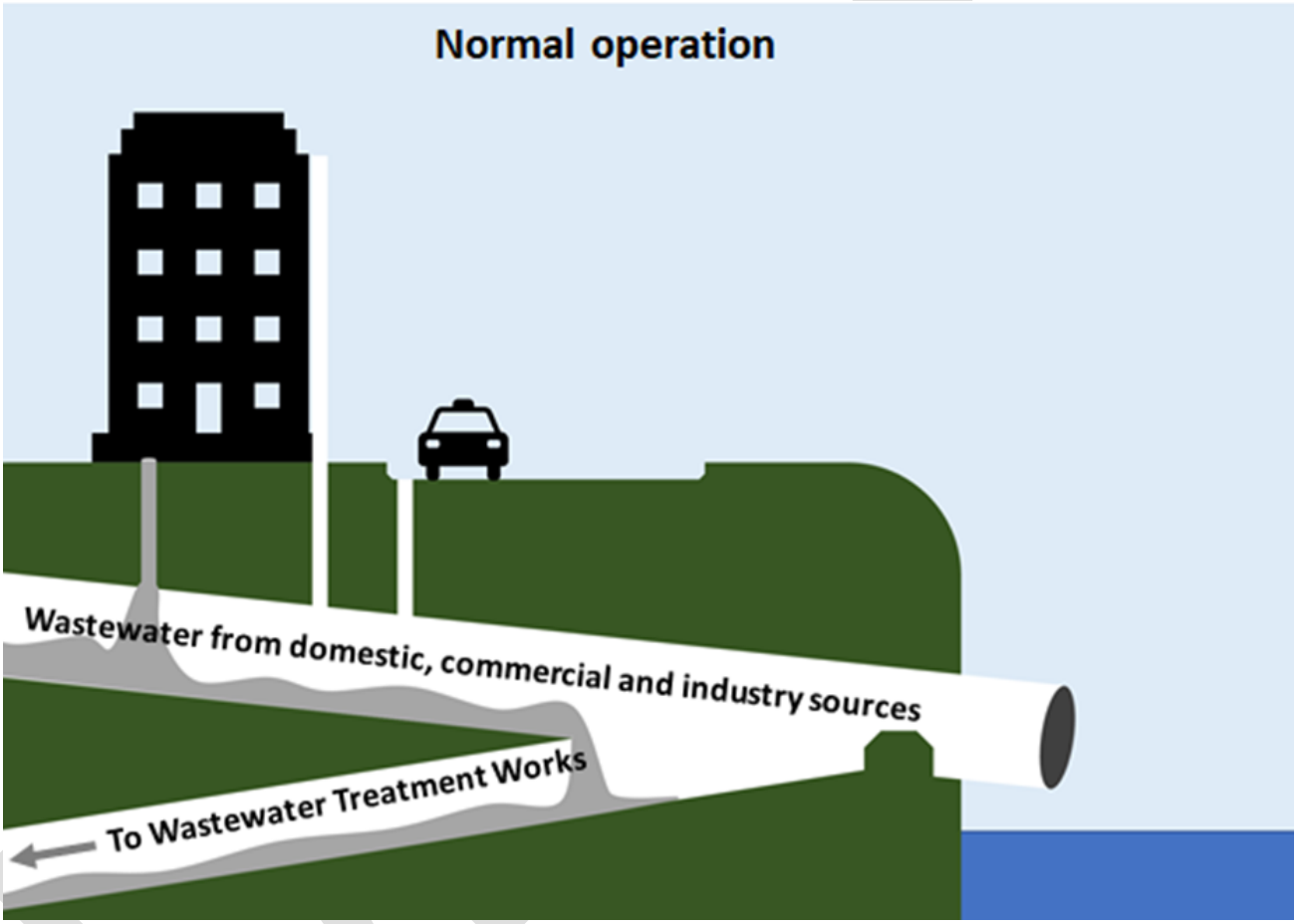

Figure 7.1 Storm overflow operation in normal conditions

In periods of exceptional rainfall, the capacity in a combined sewer may be used up by the additional flow from rooftops and storm drains. Once the capacity is exceeded, wastewater would back up into homes, businesses and on to roads. A storm overflow acts as a relief valve, preventing this from happening.

Storm overflows become problematic when they operate frequently in moderate or light rainfall, or for long periods as a result of groundwater infiltration in the sewerage system – possibly in breach of their permit.

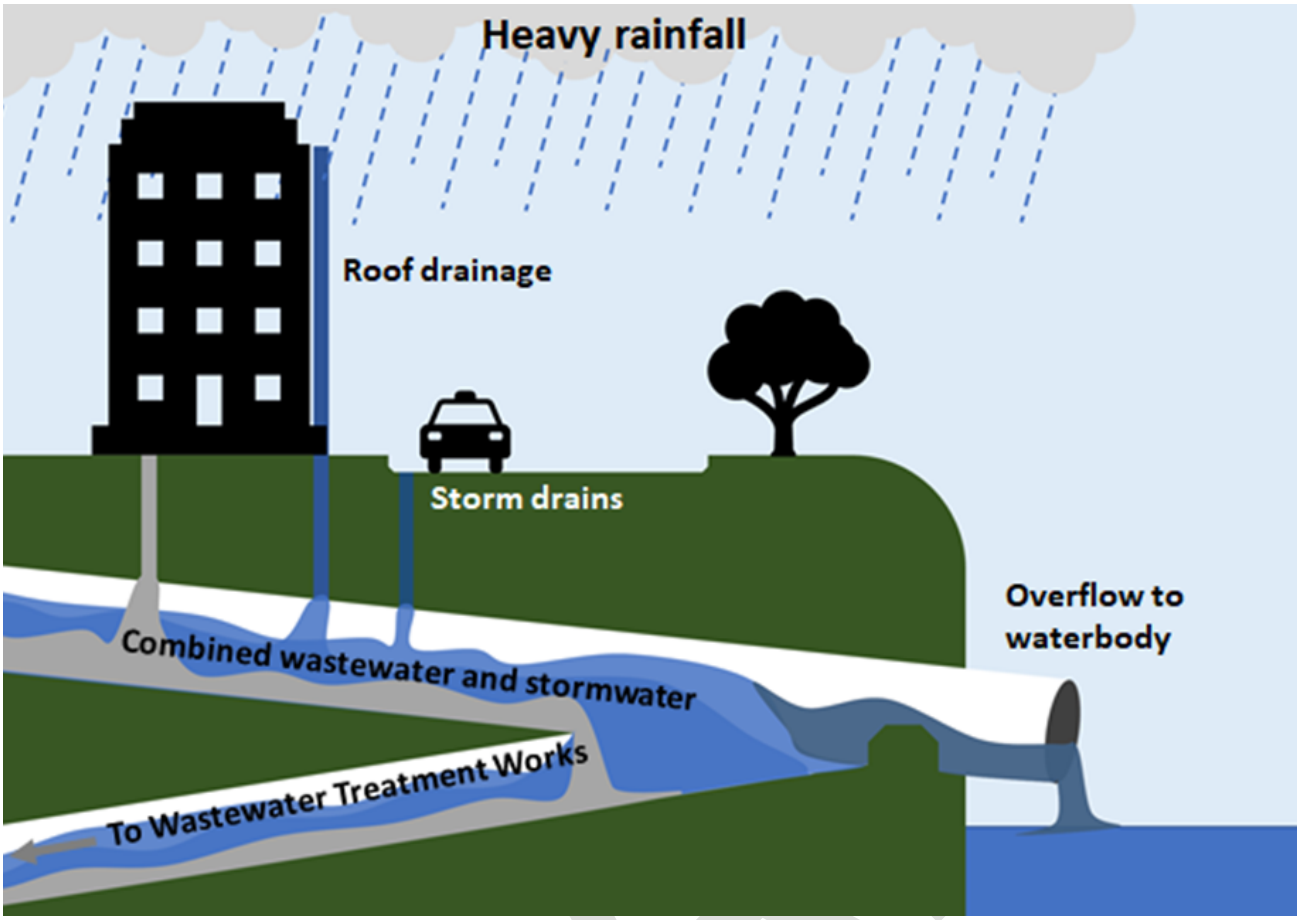

Figure 7.2 Storm overflow operations in exceptional rainfall event

7.2 Storm overflow assessment

The Environment Act (2021) Storm Overflow Discharge Reduction Plan (SODRP) requires all storm overflows to achieve the objectives of 'no adverse ecological harm', no more than 10 spills per year, and other targets relating to bathing waters by 2050. This will require substantial investment over the next several Asset Management Plan (AMP) periods. Future growth will also need to be considered with long term planning for reducing storm overflows to ensure the improvements are not eroded by population growth.

The Environment Act requires water companies to report and monitor storm overflows as well as reduce the harm caused to the rivers they discharge to. There are six network storm overflows and six WwTW storm tank overflows present in BDBC, the location of these are shown in

Figure 7.3 and Figure 7.4.

The Storm Overflow Taskforce, made up of Defra, the EA, Ofwat, Consumer Council for Water, Blueprint for Water and Water UK, has agreed a long-term goal to end the damaging pollution caused by the operation of storm overflows. An important component of this is the monitoring of overflows, and a target has been set to monitor the frequency and duration of operation at all storm overflows by 2023 (Environment Agency i, 2023). This is called Event Duration Monitoring (EDM). The EDM dataset (which contains performance data on the

16,626 storm overflows monitored in 2024) has been used to provide information on storm overflows in BDBC. Table 7.1 shows the RAG rating used for assessing EDM data from the Environment Agencies Storm Overflow Assessment Framework.

Table 7.1 Definition of RAG scoring applied

Sewer Overflows RAG Score	Number of operations per year (average of available data)	Commentary
Green	Less than 5 if based on 3 years' data Less than 10 if based on 2 years' data Less than 20 if based on 1 years' data	Overflow is currently operating within the long-term (2050) target. Need to ensure that this is maintained in the long-term considering upstream development, climate change and urban creep.
Amber	Greater than 5 and less than 10 if based on 3 years' data Greater than 10 and less than 20 if based on 2 years' data Greater than 10 and less than 30 if based on 1 years' data	An investigation is not required at present, but improvements may be needed in the network and/or catchment to meet the long-term target.
Red	Greater than 10 if based on 3 years' data Greater than 20 if based on 2 years' data Greater than 30 if based on 1 years' data	The overflow may already be operating beyond the threshold which would trigger an investigation. Upstream development could further increase the discharge frequency, so mitigation should be required prior to significant development.

7.3 Results

7.3.1 Storm overflows on the sewer network

Four network storm overflows are currently operating at a level exceeding the threshold for further investigation:

- West Heath (Charter Alley) SPS
- St Stephens Hall (Little London) SPS
- Blind Mans Gate (Highclere) SPS
- Knights Lane (Ball Hill) SPS
- The remaining 2 storm overflows are currently operating below the threshold for further investigation.

These are shown in

Figure 7.3, and the data is summarised in Table 7.2.

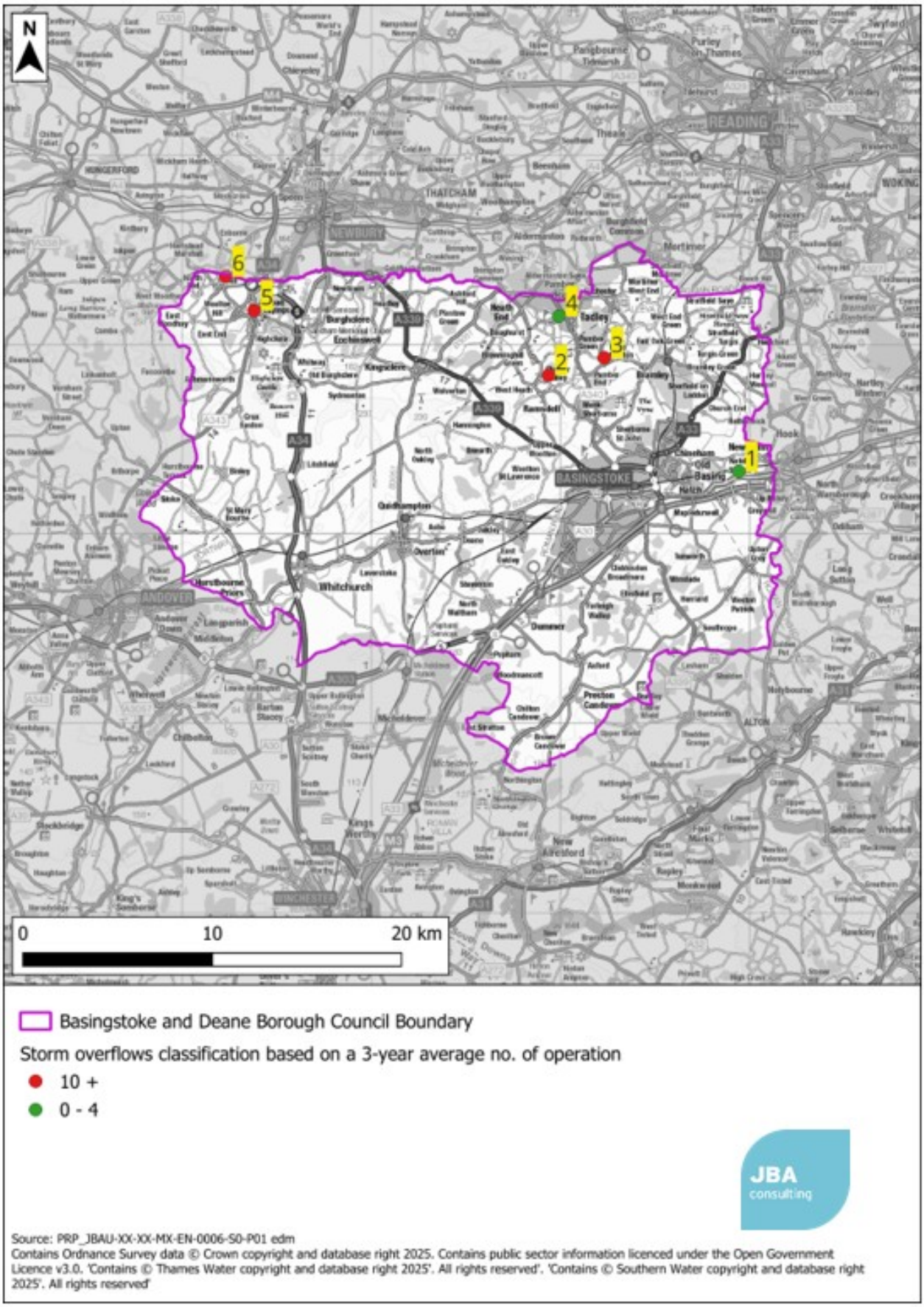

Figure 7.3 Network storm overflow classification based on number of operations

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Table 7.2 Network storm overflow frequency of operation and duration

Overflow (WC site name)	Map Ref.	Number of operations in 2022	Duration of operation in 2022 (hours)	Number of operations in 2023	Duration of operation in 2023 (hours)	Number of operations in 2024	Duration of operation in 2024(hours)	Average number of Operations 2022-2024	Above investigation threshold? (Y/N)
Water End (Newnham) SPS	1	3	2.97	1	9.25	2	11.67	2	N
West Heath (Charter Alley) SPS	2	27	295.53	56	913	99	1801.5	60.7	Y
St Stephens Hall (Little London) SPS	3	23	77.36	60	62.77	72	180.5	51.7	Y
Swains Road (Tadley) SPS	4	1	0.87	2	3.5	2	5.5	1.7	N
Blind Mans Gate (Highclere) SPS	5	18	122.81	46	521	45	472.75	36.3	Y
Knights Lane (Ball Hill) SPS	6	26	298.16	50	743.75	59	989.25	45	Y

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7.3.2 Storm tank overflows

All six of the storm tank overflows present at WwTWs are currently operating at a level exceeding the threshold for further investigation:

- Basingstoke WwTW
- Kingsclere WwTW
- Overton WwTW
- Sherfield-on-Loddon WwTW
- Silchester WwTW
- Wash Water WwTW

These are shown in Figure 7.4, and the data is summarised in Table 7.3.

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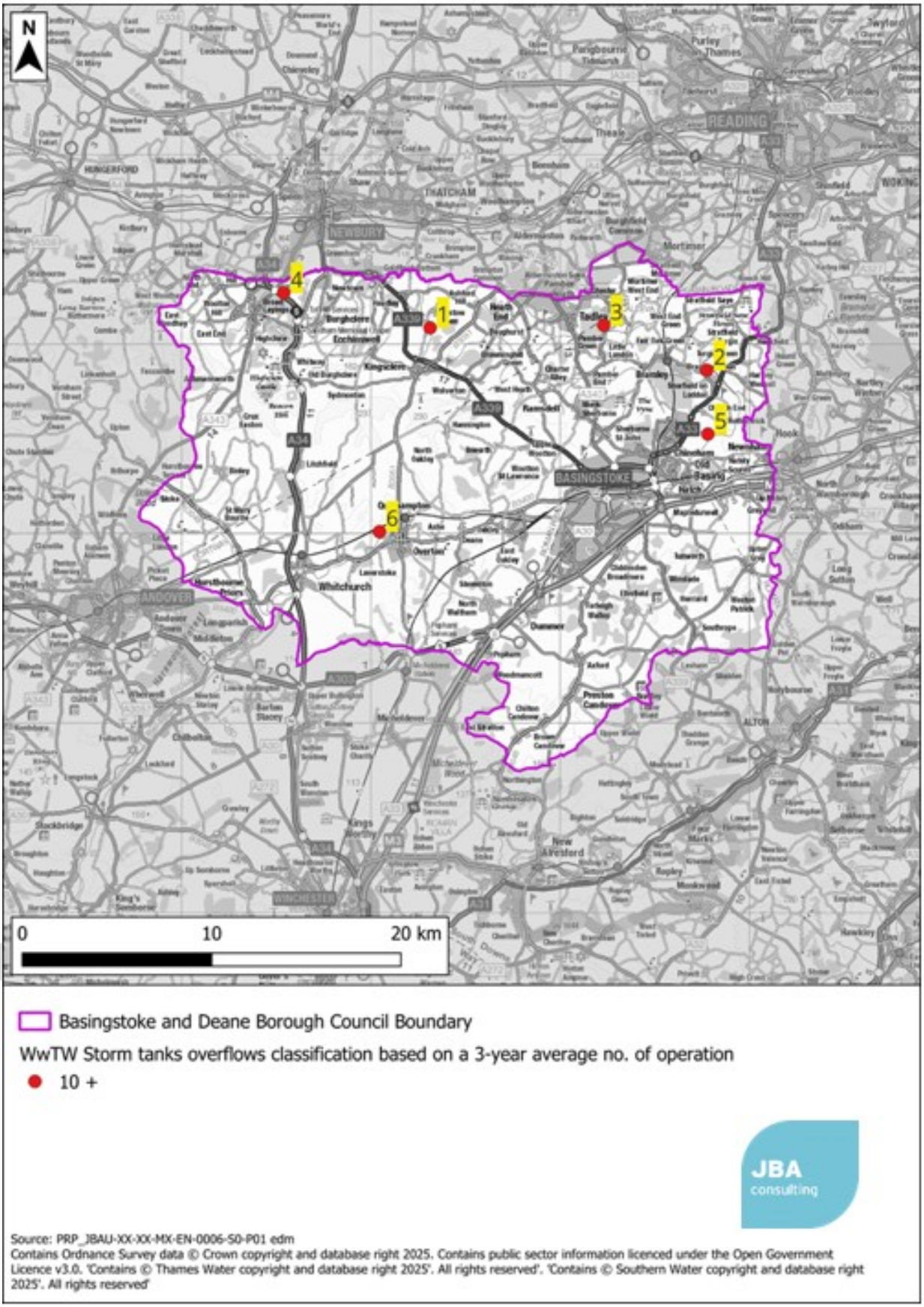

Figure 7.4 Storm tank overflows classification based on number of operations

Table 7.3 Storm tank overflow frequency of operation and duration

Overflow (WC site name)	Map Ref.	Number of operations in 2022	Duration of operation in 2022 (hours)	Number of operations in 2023	Duration of operation in 2023 (hours)	Number of operations in 2024	Duration of operation in 2024(hours)	Average number of Operations 2022-2024	Above investigation threshold? (Y/N)
Basingtoke WwTW		0	0	6	46	82	938	29.3	Y
Kingsclere WwTW		68	1111.49	134	2562.25	119	2271	107	Y
Overton WwTW		5	6.9	23	109.96	144	2955	57.3	Y
Sherfield-on-Loddon WwTW		25	258.1	67	1000.5	72	770	50.7	Y
Silchester WwTW		74	1239.36	112	2067	1685	1685	94.3	Y
Wash Water WwTW		44	593.68	111	1731.25	45	1050	74	Y

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7.4 Conclusions and recommendations

7.4.1 Conclusions

Storm overflow performance in the BDBC area is generally poor, with ten out of twelve storm overflows present in the study area currently operating above the threshold for investigation. 2024 was a particularly bad year, in part because it was a wetter than average year, for example the Basingstoke WwTW catchment has issues with groundwater infiltration and so a wet year makes a significant different to storm overflow performance. This was not the case in 2022 and 2023 when many of the storm overflows also operated well above the threshold.

Further development in catchments where there are poorly performing overflows increase the risk of storm overflow operation due to increased sewage flows and surface runoff.

There are opportunities through the planning system to ease pressure on the wastewater network by separating foul and storm flow in existing combined systems and not allowing new surface water connections. Surface water can also be better managed by retrofitting SuDS in existing residential areas, and in new development, ensuring SuDS are incorporated into designs at the master planning stage to maximise the potential benefits.

7.4.2 Recommendations

Table 7.4 Recommendations for storm overflows

Recommendation	Responsibility	Timeframe
Developers will be expected to demonstrate to the Lead Local Flood Authority (LLFA) that surface water from a site will be disposed using a sustainable drainage system (SuDS) with connection to surface water sewers seen as the last option. New connections for surface water to foul sewers will be resisted by the LLFA.	LLFA and developers	Ongoing
WaSCs should ensure that appropriate investment is available in AMP8 and AMP9 to meet SOAF commitments to be delivered by 2035 in the area.	TW and SW	As part of PR29 planning process

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8 Wastewater treatment

8.1 Introduction

BDBC has 22 Wastewater Treatment Works (WwTW) within or serving population within Basingstoke and Deane BC which are shown in Figure 8.1 below. Of these 16 are expected to serve growth within the Local Plan period. Thames Water refer to their wastewater processing plants as Wastewater Treatment Works (WwTW) or as Sewage Treatment Works (STW) in some documents and data sources. For the purposes of this report, both Thames Water and Southern Water's wastewater processing plants will be referred to as WwTWs.

There are also 465 dwellings and 11,679m^2 of employment land planned that is not served by a public sewerage system. These are mostly small sites and widely distributed throughout the study area. Very small developments in rural areas may be suitable for on-site treatment and discharge, however the Environment Agency will not usually permit this where there is a public sewerage system within a distance calculated as 30m per dwelling. There is therefore a localised risk to water quality if all of these small developments were to be served by septic tanks, especially where there are clusters of small-scale new development.

Headroom at Wastewater Treatment Works (WwTW) can be eroded by growth in population or per-capita consumption, requiring investment in additional treatment capacity. As the volumes of treated effluent rises, even if the effluent quality is maintained, the pollutant load discharged to the receiving watercourse will increase. In such circumstances the Environment Agency as the environmental regulator, may tighten consented effluent consents to achieve a "load standstill", i.e., ensuring that as effluent volume increases, the pollutant discharged does not increase. This would require investment by the water company to improve the quality of the treated effluent.

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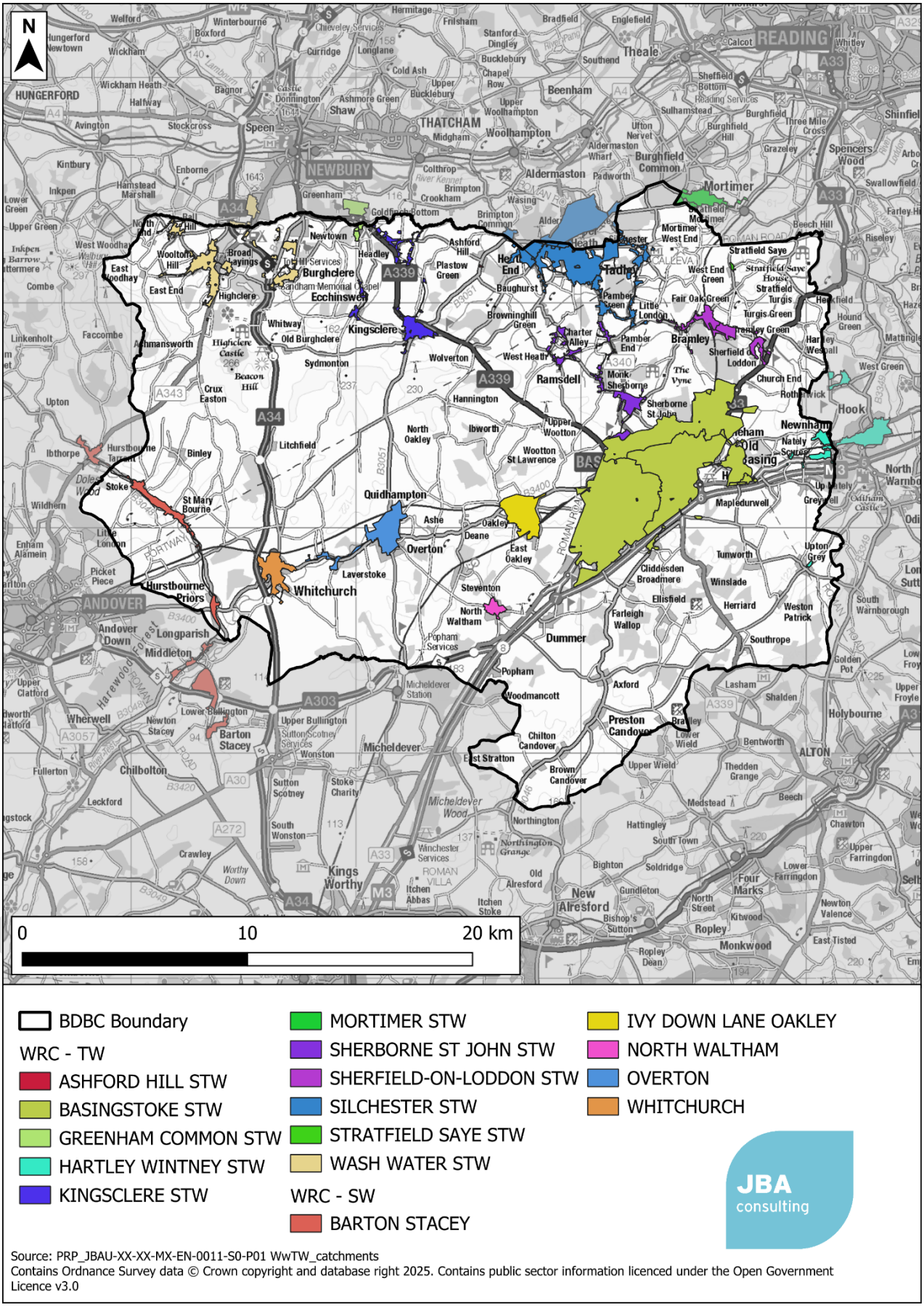

Figure 8.1 WwTW catchments serving BDBC

An assessment is required to identify the available capacity within the existing WwTWs, and the potential to upgrade overloaded systems to accommodate future growth. The scale and cost of upgrading works may vary significantly depending upon the location of the development in relation to the network itself and the receiving WwTW.

The Environment Agency is responsible for regulating sewage discharge releases via a system of Environmental Permits (EPs). Monitoring for compliance with these permits is the responsibility of both the EA and the plant operators.

Figure 8.2 summarises the different types of wastewater releases that might take place, although precise details vary from works to works depending on the design.

During dry weather, the final effluent from the WwTW should be the only discharge (1). With rainfall, the storm tanks fill and eventually start discharging to the watercourse (2) and Combined Sewer Overflows (CSOs) upstream of the storm tanks start to operate (3). The discharge of storm sewage from treatment works is allowed only under conditions of heavy rain or snow melt, and therefore the flow capacity of treatment systems is required to be sufficient to treat all flows arising in dry weather and the increased flow from smaller rainfall events. After rainfall, storm tanks should be emptied back to full treatment as soon as reasonably possible, freeing their capacity for the next rainfall event.

Environmental permits are used alongside water quality limits as a means of controlling the pollutant load discharged from a WwTW to a receiving watercourse. Sewage flow rates must be monitored for all WwTWs where the permitted discharge rate is greater than 50 m^3/day in dry weather.

Permitted discharges are usually based on a statistic known as the Dry Weather Flow (DWF). As well as being used in the setting and enforcement of effluent discharge permits, the DWF is used for WwTW design, as a means of estimating the ‘base flow’ in sewerage modelling and for determining the Flow to Full Treatment, (FFT), the minimum flow which must undergo full treatment, and above which additional flow is permitted to pass to the storm tanks (Figure 8.2). WwTWs may also have a "maximum permitted flow" permit, which specifies a maximum discharge. These are often used where a large proportion of the inflow to the WwTW comes from groundwater infiltration.

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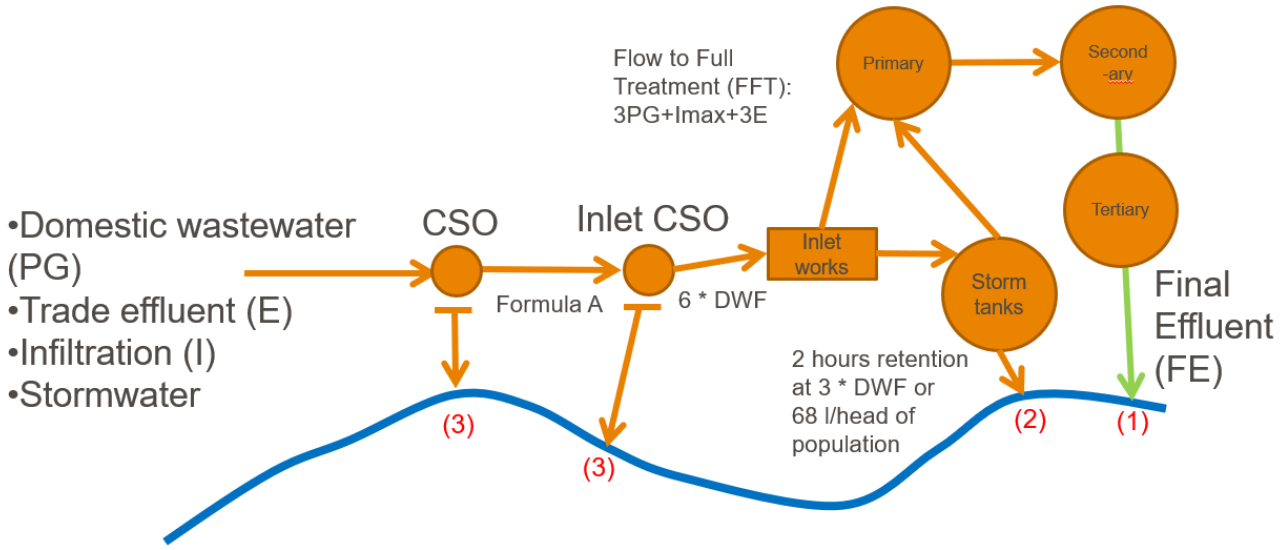

Figure 8.2 Overview of typical combined sewerage system and WwTW discharges

8.2 Methodology

An assessment of WwTW capacity was carried out by JBA using measured flow data supplied by the water companies. The process was as follows:

- SW provided their Dry Weather Flow (DWF) statistics, and from this the 20th percentile (80% exceedance flow) for 2022-2024 was calculated. The flow data was processed to remove zero values and low outlier values which would artificially reduce the measured DWF.
- TW provided summary statistics for their WwTW, and the raw data was not provided for use in this study.
- Potential allocations, additional growth option allowances, windfall and existing commitments were assigned to a WwTW using the sewerage drainage area boundaries provided by SW and TW.
- For each residential site, the future DWF was calculated using the occupancy rates and per-capita consumption values obtained from the Water Resource Management Plans, and the assumption that 95% of water used is returned to sewer. Permitted headroom was used as a substitute for actual designed hydraulic capacity for each WwTW being assessed.
- For employment sites, the net floorspace provided by BDBC was used to estimate the number of employees using the employment use class, and standard densities from the Employment Density Guide 3rd Edition (Homes & Communities Agency, 2015). A standard figure of 0.1m^3/employee/day was then used to estimate water demand on each site.
- The current and estimated future flow was then compared to the permitted flow obtained from the Environment Agency “Consented Discharges to Controlled Waters with Conditions” database.

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- Headroom (expressed the number of homes that could be accommodated before the permit is exceeded) was estimated by calculating the difference between the current and permitted flow and using the occupancy and per capita consumption for the WRZ the sewer catchment is in to provide an estimate for the number of houses.
- A red/amber/green score was then assigned to each WwTW based on whether it was likely to exceed its permitted flow.
- The following red/amber/green traffic light definition was used to score each WwTW:

GREEN Sufficient capacity to accommodate growth	AMBER Likely to be close to or exceed permit during plan period. Upgrades and / or a change to permit limit may be required. No significant constraints have been identified. (Based on less than 10% headroom remaining)	RED WwTW Capacity may be a constraint to growth (defined by Water Company)

The preferred option sites were also provided to TW and SW for them to assess the impact on their WwTW using the RAG criteria with comments were appropriate.

8.3 Results

8.3.1 Overview

Table 8.1 shows the results of the WwTW capacity assessment. Eight WwTWs are expected to have capacity for the growth planned throughout the plan period. Three WwTWs likely to be close to or exceed their permit during the plan period. An increase in flow permit, and/or upgrades to treatment capacity will be required at these WwTW.

Where a WwTW is likely to exceed its permit, the permit would be reviewed by the EA and if a higher flow consent was agreed, a tighter permit limit for substance concentrations is very likely to be required. In some cases, this may not be technically feasibly possible if that means concentrations tighter than the Technically Accepted Limit (TAL) which is 0.25 mg/l for phosphate for example.

SW and TW provided an assessment of the potential allocations. The results of this assessment are shown in Table 8.1 and graphically in Figure 8.3.

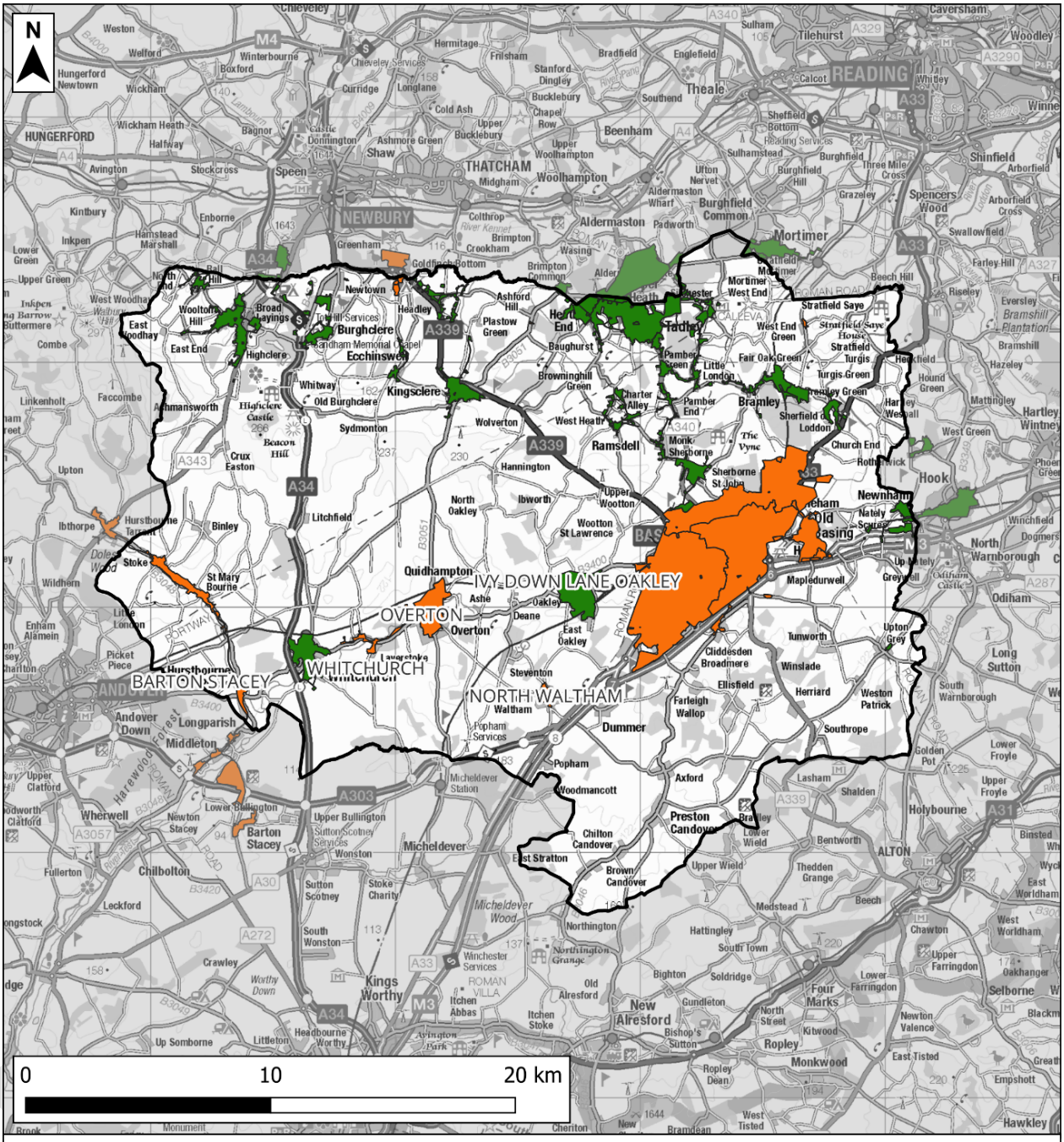

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Figure 8.3 WwTW capacity assessment

Table 8.1 WwTW capacity assessment

WwTW name	Predicted housing during LP period (no. dwellings)	Predicted employment during LP period (sqm)	Permitted Flow (Ml/d)	Actual Flow (Ml/d)	Additional Flow (Ml/d)	Total Flow (Ml/d)	JBA Capacity Assessment
ASHFORD HILL	1	0	N/A	N/A	0.0004	N/A	AMBER Likely to be close to or exceed permit during plan period. Upgrades and / or a change to permit limit may be required. No significant constraints have been identified. DESCRIPTIVE PERMIT
BARTON STACEY	102	550	1.75	2.08	0.050	2.133	AMBER Likely to be close to or exceed permit during plan period. Upgrades and / or a change to permit limit may be required. No significant constraints have been identified.
BASINGSTOKE STW	20,698	213,078	65 (see 8.3.2)	32.57	8.16	40.731	AMBER Likely to be close to or exceed permit during plan period. Upgrades and / or a change to permit limit may be required. No significant constraints have been identified assuming this upgraded can be provided in AMP9 (2030-2035). Note this WwTW has a max flow permit so the comparison of

WwTW name	Predicted housing during LP period (no. dwellings)	Predicted employment during LP period (sqm)	Permitted Flow (Ml/d)	Actual Flow (Ml/d)	Additional Flow (Ml/d)	Total Flow (Ml/d)	JBA Capacity Assessment
							permitted flow to total flow does not allow an assessment of capacity.
GREENHAM COMMON	63	0	N/A		0.027	N/A	AMBER Likely to be close to or exceed permit during plan period. Upgrades and / or a change to permit limit may be required. No significant constraints have been identified. DESCRIPTIVE PERMIT
HARTLEY WINTNEY	170	0	6.83		0.058	N/A	GREEN - Sufficient capacity to accommodate growth
IVY DOWN LANE OAKLEY	341	0	0.72	0.55	0.117	0.671	GREEN - Sufficient capacity to accommodate growth
KINGSCLERE STW	457	110	1.26	0.78	0.196	0.975	GREEN - Sufficient capacity to accommodate growth
MORTIMER	408	0	1.9		0.127	N/A	GREEN - Sufficient capacity to accommodate growth
NORTH WALTHAM	44	88,000	0.17	0	1.233	N/A	AMBER Likely to be close to or exceed permit during plan period. Upgrades and / or a change to permit limit may be required. No significant constraints have been identified.

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WwTW name	Predicted housing during LP period (no. dwellings)	Predicted employment during LP period (sqm)	Permitted Flow (Ml/d)	Actual Flow (Ml/d)	Additional Flow (Ml/d)	Total Flow (Ml/d)	JBA Capacity Assessment
OVERTON	539	0	1.16	1.04	0.230	1.275	AMBER Likely to be close to or exceed permit during plan period. Upgrades and / or a change to permit limit may be required. No significant constraints have been identified.
SHERBORNE ST JOHN STW	391	0	1	0.67	0.134	0.806	GREEN - Sufficient capacity to accommodate growth
SHERFIELD-ON-LODDON STW	369	275	2.03	1.13	0.128	1.255	GREEN - Sufficient capacity to accommodate growth
SILCHESTER STW	847	270	8	4.87	0.279	5.144	GREEN - Sufficient capacity to accommodate growth
STRATFIELD SAYE	1	0	N/A		0.0003	N/A	AMBER Likely to be close to or exceed permit during plan period. Upgrades and / or a change to permit limit may be required. No significant constraints have been identified. DESCRIPTIVE PERMIT
WASH WATER STW	926	0	2.32	1.66	0.365	2.028	GREEN - Sufficient capacity to accommodate growth

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WwTW name	Predicted housing during LP period (no. dwellings)	Predicted employment during LP period (sqm)	Permitted Flow (Ml/d)	Actual Flow (Ml/d)	Additional Flow (Ml/d)	Total Flow (Ml/d)	JBA Capacity Assessment
WHITCHURCH	3801	3,300	2.34	2.01	0.266	2.276	AMBER Likely to be close to or exceed permit during plan period. Upgrades and / or a change to permit limit may be required. No significant constraints have been identified.

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8.3.2 Basingstoke WwTW

Basingstoke WwTW is the largest treatment works in the study area serving a population equivalent of just over 137,000 (in 2021). It is expected to serve the majority of growth proposed in the Local Plan. Figure 8.4 show the cumulative wastewater demand (Ml/d) across the Local Plan period in Basingstoke STW.

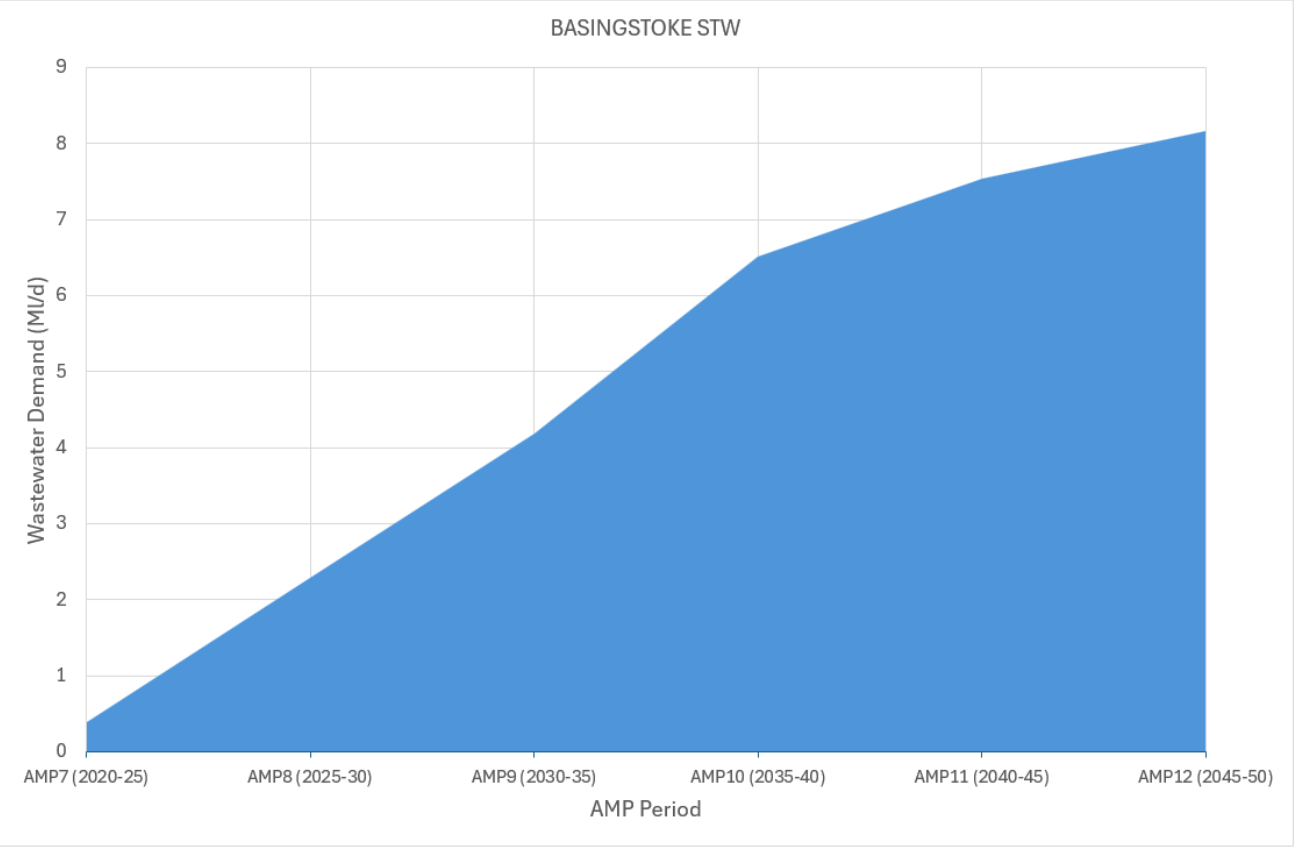

Figure 8.4 Cumulative wastewater demand (Ml/d) across the Local Plan review period in Basingstoke STW

The DWMP has three objectives for this wastewater catchment:

- Reduce the number of customers at risk of internal and external hydraulic sewer flooding up to a 1 in 50-year storm by 100%.
- Reduce storm discharges (where overflows are present) to <10 in an average year by 2050
- Achieve 100% WwTW permit compliance.

The DWMP states that in the short term (by 2030), TW will increase the confidence in their plans for long term investment to reduce the risk of internal and external hydraulic sewer flooding and enable catchment level planning of surface water management solutions. They also state that they will invest in their sewage treatment works to ensure compliance.

An upgrade scheme is contained in the plan to increase capacity to accommodate the impact of growth and climate change. The scheme is predicted to cost £20m and is due to complete in 2030 (although this is contradicted by TW's comments, see below).

Longer term options at this WwTW include schemes to reduce the volume of rainfall-runoff entering the foul sewer system and undertaking sewer lining works to reduce groundwater inflows. Basingstoke is in an area impacted by groundwater infiltration. This is where groundwater enters the sewerage system via defects in the pipes, or through joins that are not complete waterproof. Infiltration is increased when the water table is higher (for example following prolonged wet weather). A "Groundwater Impacted System Management Plan" is in place for Basingstoke originally published in 2021 and updated annually with the last update in October 2024. 22 Sewer depth monitors were installed in the sewer network to provide an early warning of groundwater infiltration impact. However, no mitigation measures have been taken since the plan was first published, and no investment is planned within AMP8.

Basingstoke WwTW has a maximum permitted flow permit but no DWF permit, which is unusual in a treatment works of this size. TW provided only summary statistics for recent flows for this works so capacity could not be independently assessed. Further communications with Thames Water and the Environment Agency, including a meeting with both parties on 14/10/2025 have confirmed that:

- The site does not have a DWF element within its permit as it's a Maximum Daily Volume (MDV) permitted site.
- In the exceptionally wet year of 2024, it failed its maximum permitted volume. It is expected to remain comfortably compliant with its permit limit in 2025. The Environment Agency do not anticipate taking regulatory enforcement action relating to the 2024 exceedance, although they noted that there has been a step change in discharge flows since 2020, which should be explained by TW.
- An AMP8 upgrade is planned for Basingstoke STW. This will improve its ability to treat the volumes of incoming sewage, reducing the need for untreated discharges in wet weather.[4] The scheme, which is still being designed, is due to complete in 2027. This AMP8 scheme does not include any permit changes and is not planned to accommodate growth.
- The Environment Agency are planning to define a new DWF permit during AMP8, with the expectation that Thames Water will undertake a capacity upgrade, to include allowance for planned growth, during AMP9.
- Thames Water do not expect growth to be an issue over the next few years, but there remains a risk that they would request the use of Grampian conditions towards the end of AMP8 or in early AMP9 in the event that the MDV was again exceeded in wet years. Grampian conditions seek to restrict the occupation of a development until a planned upgrade or new infrastructure is in place, in order to avoid growth causing the existing infrastructure to be overloaded or a permit failure.

In summary, it is anticipated that wastewater treatment capacity at Basingstoke WwTW is not likely to restrict growth, as long as an upgrade to re-permit the site including allowance

4 https://www.thameswater.co.uk/about-us/performance/river-health/frequently-asked-questions/information-about-specific-sites

form planned growth is implemented in AMP9. It is recommended that the Council maintains regular communications with Thames Water and the Environment Agency regarding this matter, and may wish to develop a Statement of Common Ground with TW and EA for inclusion within the Local Plan evidence base.

8.3.3 Barton Stacey WwTW

Barton Stacey is a medium sized WwTW serving a PE of 3,437 (in 2021). The DWMP predicts that the WwTW will be between 80% and 100% of the current permit by 2050. Flow data for the last three years provided by Southern Water indicates that the WwTW is already at or exceeding its permit. However, the amount of growth planned within Local Plan period is insignificant. The DWMP proposing £730k of investment at the WwTW in AMP9 aimed at increasing capacity for growth. Until this is complete is unlikely that this catchment could support any additional growth.

8.3.4 North Waltham WwTW

North Waltham WwTW is a small treatment works to the south west of Basingstoke serving a PE of 816. The data provided by SW showed long periods of time with very low or zero flow which prevented an assessment of remaining headroom. However, it is likely that this WwTW is operating close to its permit limit.

North Waltham is the closest WwTW to the proposed development at Popham, a site consisting of 3,200 houses and employment land. Should a connection here be required, an upgrade would be required in order to serve this level of growth. Table 8.1 assumes that a connection is made to Whitchurch WwTW and not North Waltham WwTW.

8.3.5 Whitchurch

Whitchurch WwTW is situated to the south of the town of Whitchurch and served a PE of 4,934 in 2021. Data from SW indicates that it is currently operating within its permit limit, and the relatively small predicted growth within the catchment is likely to be accommodated. However, should the development site at Popham require a connection to Whitchurch, there would be insufficient capacity at the WwTW and an upgrade would be required. Table 8.1 assumes a connection is made to Whitchurch WwTW for the Popham site.

8.3.6 Overton WwTW

Overton WwTW serves a PE of 4,477. Data from SW indicates that the WwTW is currently operating close to its permit limit, and planned growth within the catchment, whilst relatively minor (539 houses), could cause the DWF permit to be exceeded. The DWMP categorises Overton WwTW as being of low concern, and there is no investment currently planned. Investment is likely to be required in AMP 9 in order accommodate planned growth.

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8.3.7 Descriptive permits

Many of the WwTW in the study area have "descriptive" permits. This means that they do not have a numeric permit i.e., a volume of treated effluent they are allowed to discharge. Instead, a visual check of the effluent is carried out. These are very small treatment works serving a PE of less than 250. Once this is exceeded, a numeric permit would typically be applied, and some upgrade work may be required.

All of the WwTWs in the study area have been given an "amber" rating reflecting the limited capacity for further growth without requiring upgrades.

8.3.8 Popham development site

One large potential allocation (Popham) consisting of 3,200 dwellings and employment land is in an area without an obvious wastewater connection point.

SW responded to a previous Reg. 18 consultation with the following comment:

"Paragraph 6.83 of the supporting text to this policy names Whitchurch Wastewater Treatment Works (WTW) as the nearest viable WTW to Popham. In a straight line, it is approximately 6.5km to Whitchurch WTW so site promoters would need to consider, in liaison with Southern Water and relevant environmental regulators, whether it would be feasible to make a connection to the WTW via a dedicated pipeline, or whether Popham requires its own newly constructed WTW (subject to permits) on site. This consideration should form part of the Infrastructure Delivery Strategy– if the latter option proves most feasible then a suitable location should be determined and safeguarded for that purpose through the site's master plan."

8.4 Conclusions and recommendations

8.4.1 Conclusions

There are 22 WwTWs within or serving BDBC. Of these 16 are expected to serve growth during the Local Plan period.

The majority of the planned growth is served by Basingstoke WwTW. In the exceptionally wet year of 2024, it failed its maximum permitted volume. It is expected to remain comfortably compliant with its permit limit in 2025. Despite this, it is anticipated that wastewater treatment capacity at Basingstoke WwTW is not likely to restrict growth, as long as an upgrade to re-permit the site including allowance form planned growth is implemented in AMP9. It is recommended that the Council maintains regular communications with Thames Water and the Environment Agency regarding this matter, and may wish to develop a Statement of Common Ground with TW and EA for inclusion within the Local Plan evidence base.

Upgrades may also be required at Barton Stacey, Overton, North Waltham and Whitchurch WwTWs in order to serve growth during the plan period.

8.4.2 Recommendations

Table 8.2 Wastewater treatment recommendations

Recommendation	Responsibility	Timeframe
Early engagement with SW and TW is required to ensure that provision of WwTW capacity is aligned with delivery of development.	BDBC	Ongoing
Continue to provide Annual Monitoring Reports to SW and TW detailing projected housing growth.	BDBC	Ongoing
Consider developing a Statement of Common Ground covering the growth in Basingstoke until a growth scheme at Basingstoke WwTW can be implemented in AMP9.	BDBC, TW and EA	Ongoing
SW and TW to assess growth demands as part of their wastewater asset planning activities and feedback to the Council if concerns arise.	SW and TW	Ongoing
A wastewater solution is required for the site at Popham. Early engagement is required between the developer, BDBC and SW to define the appropriate connection point and / or new infrastructure required. The EA may also be required if a new WwTW is required.	Developer, SW. BDBC	If site is taken forward.

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9 Odour Assessment

9.1 Introduction

Where new developments encroach upon an existing Wastewater Treatment Works (WwTW), odour from that site may become a cause for nuisance and complaints from residents. Managing odour at WwTWs can add considerable capital and operational costs, particularly when retro fitted to existing WwTWs. National Planning Policy Guidance recommends that plan-makers consider whether new development is appropriate near to sites used (or proposed) for water and wastewater infrastructure, due to the risk of odour nuisance. Sewerage undertakers recommend that an odour assessment may be required if the site of a proposed development is close to a WwTW and is encroaching closer to the WwTW than existing urban areas. The general principle is that allocated sites should not be located where a suitable standard of amenity cannot be achieved, or the continuous operation of an existing WwTW would be prejudiced.

9.2 Methodology

Sewerage undertakers recommend that an odour assessment may be required if the site of a proposed development is close to a WwTW and is encroaching closer to the WwTW than existing urban areas. The actual odour experienced is dependent on the size of the works, the type of treatment processes present, and the age and condition of the site. There is also significant variation due to current weather conditions.

A GIS assessment was carried out to identify areas that the sewerage undertaker considers may be at risk from odour nuisance due to encroachment on an existing WwTW. For Thames Water and Southern Water, this is defined as development sites less than 800m from the WwTW and encroaching closer to the WwTW than existing urbanised areas. If there are no existing houses close to a WwTW it is more likely than an odour impact assessment is needed.

9.3 Results

There are 11 allocations within 800m of a WwTW. This is presented in Figure 9.1 below. The location of these sites is also shown in Figure 8.1. An odour assessment is recommended at these sites as part of the planning process (to be funded by the developer). Consideration should also be given to the layout of this site where only part of the site boundary lies within the 800m buffer zone. In some cases, only part of a larger site may be at risk, in which case zoning of lower impact land uses (e.g., landscaping, amenity, parking) closer to sources of odour may be sufficient to address this risk.

Table 9.1 Sites at risk of nuisance odour from WwTWs

Site Name	Nearest WwTW	Distance to WwTW
Eastern Basingstoke	Basingstoke WwTW	150m S of WwTW / 500m W of WwTW

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Site Name	Nearest WwTW	Distance to WwTW
Oakley Farm, Wash Water	Wash Water	0m, site bounds NE border of WwTW
Redlands (phase 4)	Basingstoke WwTW	450m NW of WwTW
Redlands Lodge	Basingstoke WwTW	620m NW of WwTW
Growth option - Whitchurch	Whitchurch WwTW	400m N of WwTW
Growth option - Overton	Overton WwTW	475m E of WwTW
Growth option - Sherfield on Loddon	Sherfield on Loddon WwTW	250m S of WwTW
Growth option - North Waltham	North Waltham	250m SE of WwTW
Growth option - Sherborne St John	Sherbourne St John WwTW	525m SW of WwTW
Growth option - Oakley	Ivy Down Lane WwTW	400m E of WwTW
Growth option - Silchester	Silchester WwTW	550m NE of WwTW

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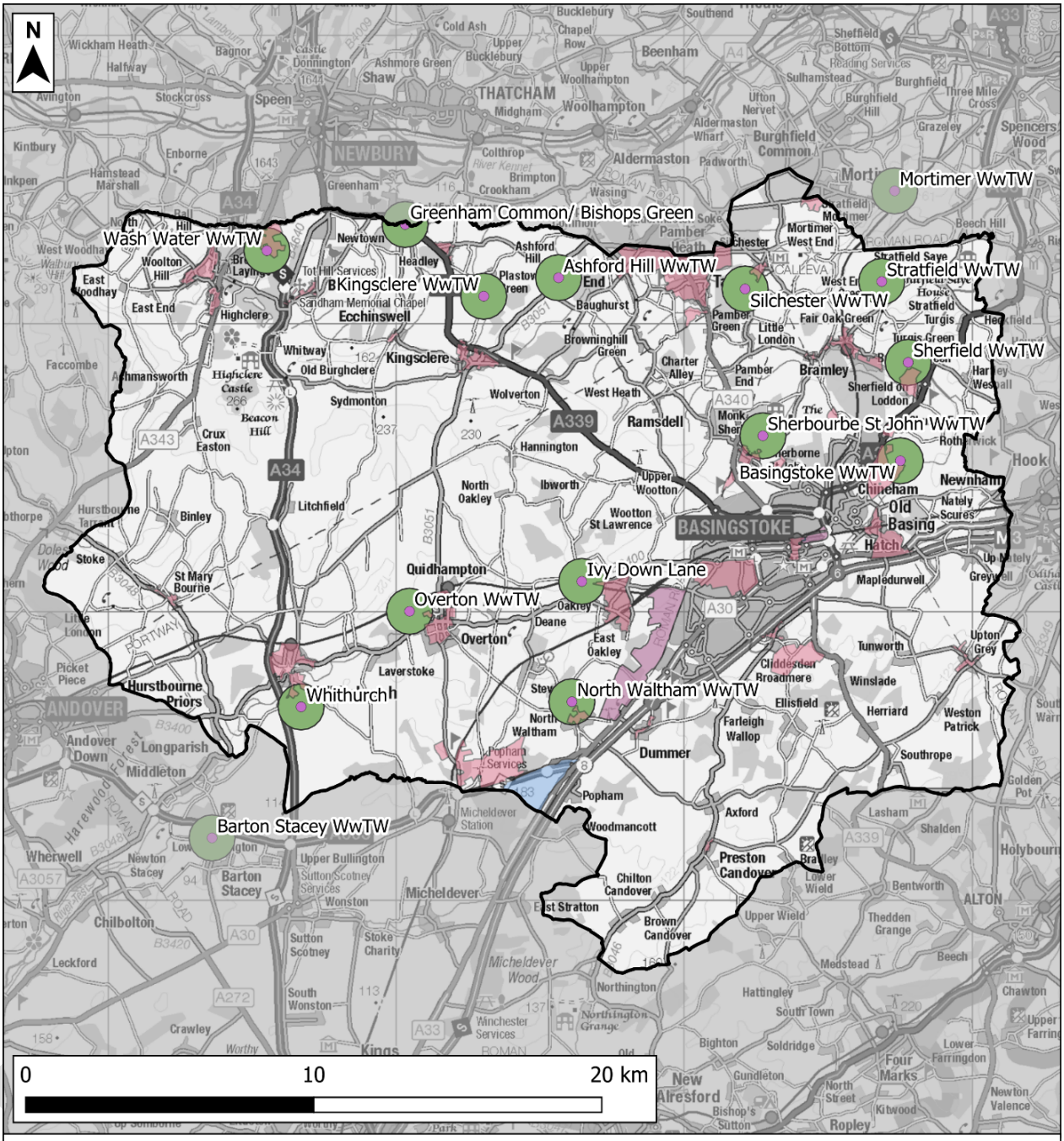

WwTW Location
BDBC Study Area
WwTW 800m Buffer
LPU Employment Allocations
LPU Housing Allocations

Source: PRP_JBAU-XX-XX-MX-EN-0007-S0-P01 Odour_Assessment
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Figure 9.1 Odour assessment buffer zones

9.4 Conclusion

The odour screening assessment has identified 11 sites, within 800m of a WwTW where an odour impact assessment would be recommended. This should be funded by the developer.

9.5 Recommendations

Table 9.2 Recommendations from the odour assessment

Actions	Responsibility	Timescale
Consider odour risk in the sites identified to be potentially at risk from nuisance odour.	BDBC, Developers	Ongoing
Carry out an odour assessment for site identified as being at risk of nuisance odour.	Developers	Ongoing

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10 Flood Risk

10.1 Assessment of additional flood risk from increased WwTW discharges

In catchments with a large, planned growth in population and which discharge effluent to a small watercourse, the increase in the discharged effluent might have a negative effect on the risk of flooding. An assessment has been carried out to quantify such an effect.

10.2 Methodology

The following process has been used to assess the potential increased risk of flooding due to the extra flow reaching a specific WwTW:

- Calculate the increase in DWF attributable to planned growth;
- identify the point of discharge of these WwTWs;
- at each outfall point, identify the FEH v1.0 catchment descriptors associated with the WwTW;
- use FEH Statistical method to calculate peak 1 in 30 (Q30) and 1 in 100 (Q100) year fluvial flows; and
- calculate the additional foul flow as a percentage of the Q30 and Q100 flow.

A red/amber/green rating was applied to score the associated risk as follows:

LOW - GREEN	MEDIUM - AMBER	HIGH - RED
Additional flow ≤5% of Q30. Low risk that increased discharges will increase fluvial flood risk	Additional flow ≥5% of Q30. Moderate risk that increased discharges will increase fluvial flood risk	Additional flow ≥5% of Q100. High risk that increased discharges will increase fluvial flood risk

The following datasets were used to assess the risk of flooding:

- Current and predicted future DWF for each WwTW
- Location of WwTW outfalls
- Catchment descriptors from FEH Webservice

The hydrological assessment of river flows was applied using a simplified approach, appropriate to this type of screening assessment. The Q30 and Q100 flows quoted should not be used for other purposes, e.g., flood modelling or flood risk assessments.

10.3 Results

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Table 10.1 reports the additional flow from WwTWs as a percentage of the Q30 and Q100 peak flow. The FEH method cannot report flows of less than 0.01m3/s, so only Basingstoke WwTW is sufficiently large to be assessed. This shows that additional flows from the WwTW post development would have a negligible effect on the predicted peak flow events with return periods of 30 and 100 years. At smaller works the additional flow is below that which can be modelled so it is considered that the risk at these WwTWs is low.

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Table 10.1 Flood risk assessment results

WwTW	FEH Stat Q30 (m3/s)	FEH Stat Q100 (m3/s)	Additional Flow (m3/s)	Flow increase as % of Q30	Flow increase as % of Q100
Basingstoke STW	6.30	8.42	0.09	3 % (GREEN)	1 % (GREEN)

10.4 Conclusions

At the point of discharge for Basingstoke WwTW, the additional flow from growth makes up less than 5% of the Q30 flow and less than 5% of the Q100 flow. At smaller works the additional flow is below that which can be modelled. The impact of increased effluent flows is not predicted to have a significant impact upon flood risk in any of the receiving watercourses.

10.5 Recommendations

Table 10.2 Flood risk recommendations

Actions	Responsibility	Timescale
Proposals to increase discharges to a watercourse may also require a flood risk activities environmental permit from the EA (in the case of discharges to Main River), or a land drainage consent from the Lead Local Flood Authority (in the case of discharges to an Ordinary Watercourse).	TW SW	During design of WwTW upgrades

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11 Water Quality

11.1 Introduction

An increase in the discharge of effluent from Wastewater Treatment Works (WwTW) because of development and growth in the area in which they serve can lead to a negative impact on the quality of the receiving watercourse. Under the Water Framework Directive (WFD), a watercourse is not allowed to deteriorate from its current WFD classification (either as an overall watercourse or for individual elements assessed).

It is Environment Agency (EA) policy to model the impact of increasing effluent volumes on the receiving watercourses. Where the scale of development is such that a deterioration is predicted, a variation to the Environmental Permit (EP) may be required for the WwTW to improve the quality of the final effluent, so that the increased pollution load will not result in a deterioration in the water quality of the watercourse. This is known as "no deterioration" or "load standstill". The need to meet river quality targets is also taken into consideration when setting or varying a permit.

The Environment Agency operational instructions on water quality planning and no-deterioration are currently being reviewed. Previous operational instructions (Environment Agency, 2012) (now withdrawn) set out a hierarchy for how the no-deterioration requirements of the WFD should be implemented on inland waters. The potential impact of development should be assessed in relation to the following objectives:

- Could the development cause a greater than 10% deterioration in water quality? This objective ensures that all the environmental capacity is not taken up by one stage of development and there is sufficient capacity for future growth.
- Could the development cause a deterioration in WFD class of any element assessed? This is a requirement of the Water Framework Directive to prevent a deterioration in class of individual contaminants. The "Weser Ruling" (European Union, 2015) by the European Court of Justice in 2015 specified that individual projects should not be permitted where they may cause a deterioration of the status of a water body. If a water body is already at the lowest status ("bad"), any impairment of a quality element was considered to be a deterioration. Emerging practice is that a 3% limit of deterioration is applied.
- Could the development alone prevent the receiving watercourse from reaching Good Ecological Status (GES) or Potential? Is GES possible with current technology or is GES technically possible after development with any potential WwTW upgrades.

The overall WFD classification of a water body is based on a wide range of ecological and chemical classifications. This assessment focuses on three physico-chemical quality elements; Biochemical Oxygen Demand (BOD), Ammonia, and Phosphate as set out in the EA guidance (Environment Agency, 2014).

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BOD – Biochemical Oxygen Demand

BOD is a measure of how much organic material – sewage, sewage effluent or industrial effluent – is present in a river. It is defined as the amount of oxygen taken up by micro-organisms (principally bacteria) in decomposing the organic material in a water sample stored in darkness for 5 days at 20°C. Water with a high BOD has a low level of dissolved oxygen. A low oxygen content can have an adverse impact on aquatic life.

Ammonia

Nitrogen is an essential nutrient required by all plants and animals for the formation of amino acids. In its molecular form nitrogen cannot be used by most aquatic plants, and so it is converted into other forms. One such form is ammonia (NH_3). This may then be oxidized by bacteria into nitrate (NO_3) or nitrite (NO2). Ammonia may be present in water in either the unionized form NH_3 or the ionized form NH_4. Taken together these forms are called Total Ammonia Nitrogen.

Although ammonia is a nutrient, in high concentrations it can be toxic to aquatic life, in particular fish, affecting hatching and growth rates.

The main sources in rivers include agricultural sources, (fertilizer and livestock waste), residential sources (ammonia containing cleaning products and septic tank leakages), industrial processes and WwTWs.

Phosphate

Phosphorus is a plant nutrient and elevated concentrations in rivers can lead to accelerated plant growth of algae and other plants. Its impact on the composition and abundance of plant species can have adverse implications for other aspects of water quality, such as oxygen levels. These changes can cause undesirable disturbances to other aquatic life such as invertebrates and fish.

Phosphorus (P) occurs in rivers mainly as Phosphate (PO_4), which are divided into Orthophosphates (reactive phosphates), and organic Phosphates.

Orthophosphates are the main constituent in fertilizers used in agriculture and domestic gardens and provide a good estimation of the amount of phosphorus available for algae and plant growth and is the form of phosphorus that is most readily utilized by plants.

Organic phosphates are formed primarily by biological processes and enter sewage via human waste and food residues. Organic phosphates can be formed from orthophosphates in biological treatment processes or by receiving water biota.

Although it is phosphorus in the form of phosphates that is measured as a pollutant, the term phosphorus is often used in water quality work to represent the total phosphorus containing pollutants.

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11.2 Environmental baseline

11.2.1 Surface water

The main surface watercourses within the BDBC study area, along with their respective WFD operational catchments and their status under the WFD's 2022 classification, are detailed in Figure 11.1 and Table 11.1.

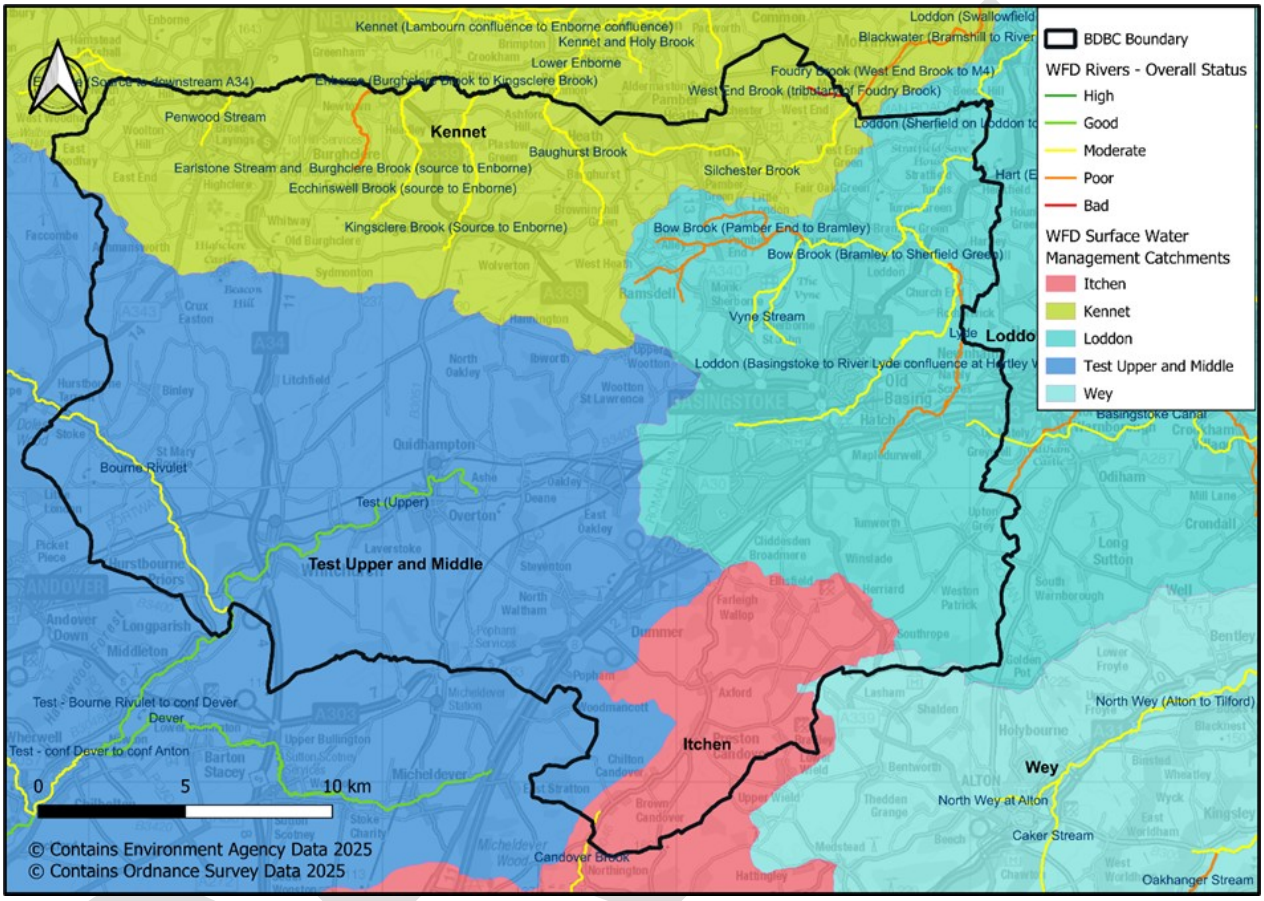

Figure 11.1 Classification of surface waterbodies in BDBC

Table 11.1 WFD classification of surface waterbodies

Name	WFD Management Catchment	WFD Ecological Status	WFD Chemical Status	Reasons for Not Achieving Good Status (RNAG)
Test (Upper)	Test Upper and Middle	Good	Does not require assessment	-
Bourne Rivulet	Test Upper and Middle	Moderate	Does not require assessment	-
Penwood Stream	Kennet	Moderate	Does not require assessment	Dissolved Organic Carbon (DOC): moderate (Drought)
Earlstone Stream and Burghclere Brook (source to Enborne)	Kennet	Poor	Does not require assessment	Biological elements: Poor Dissolved Organic Carbon (DOC): moderate (Drought)
Ecchinswell Brook (source to Enborne)	Kennet	Moderate	Does not require assessment	Biological elements: Moderate Phosphate: moderate (Poor nutrient/livestock management)

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Name	WFD Management Catchment	WFD Ecological Status	WFD Chemical Status	Reasons for Not Achieving Good Status (RNAG)
Enborne (Burghclere Brook to Kingsclere Brook)	Kennet	Moderate	Does not require assessment	Phosphate (poor livestock management and sewage discharge)
Enborne (downstream A34 to Burghclere Brook)	Kennet	Moderate	Does not require assessment	Phosphate (poor livestock management and sewage discharge)
Enborne (Source to downstream A34)	Kennet	Good	Does not require assessment	-
Foudry Brook (West End Brook to M4)	Kennet	Poor	Does not require assessment	Phosphate (Sewage discharge)
Kingsclere Brook (Source to Enborne)	Kennet	Moderate	Does not require assessment	Phosphate: moderate (Sewage discharge)
Baughurst Brook	Kennet	Moderate	Does not require assessment	Biological elements: Moderate
Silchester Brook	Kennet	Moderate	Does not require assessment	Biological elements: Moderate Phosphate: Poor (Sewage Discharge)
Bow Brook (Pamber End to Bramley)	Loddon	Poor	Does not require assessment	Biological elements: Poor
Loddon (Sherfield on Loddon to Swallowfield)	Loddon	Moderate	Does not require assessment	Phosphate: moderate (Urbanisation, Sewage discharge, Poor nutrient management)
Bow Brook (Bramley to Sherfield Green)	Loddon	Moderate	Does not require assessment	Phosphate: moderate (Sewage discharge, Poor nutrient management)

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Name	WFD Management Catchment	WFD Ecological Status	WFD Chemical Status	Reasons for Not Achieving Good Status (RNAG)
Vyne Stream	Loddon	Moderate	Does not require assessment	Biological elements: Moderate Phosphate: Poor (Sewage Discharge, Poor nutrient management)
Loddon (Basingstoke to River Lyde confluence at Hartley Wespall)	Loddon	Moderate	Does not require assessment	Biological elements: Moderate Phosphate: moderate (Sewage Discharge, Poor livestock management)
Lyde	Loddon	Moderate	Does not require assessment	Biological elements: Moderate
Candover Brook	Itchen	Moderate	Does not require assessment	Biological elements: Moderate
Lower Enborne	Loddon	Moderate	Does not require assessment	Phosphate (poor livestock management and sewage discharge)
West End Brook (tributary of Foudry Brook)	Kennet	Moderate	Does not require assessment	-

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11.2.2 Groundwater quality

Figure 11.1 shows the groundwater bodies within the study area. Details of WFD groundwater bodies and their water quality are given in Table 11.2.

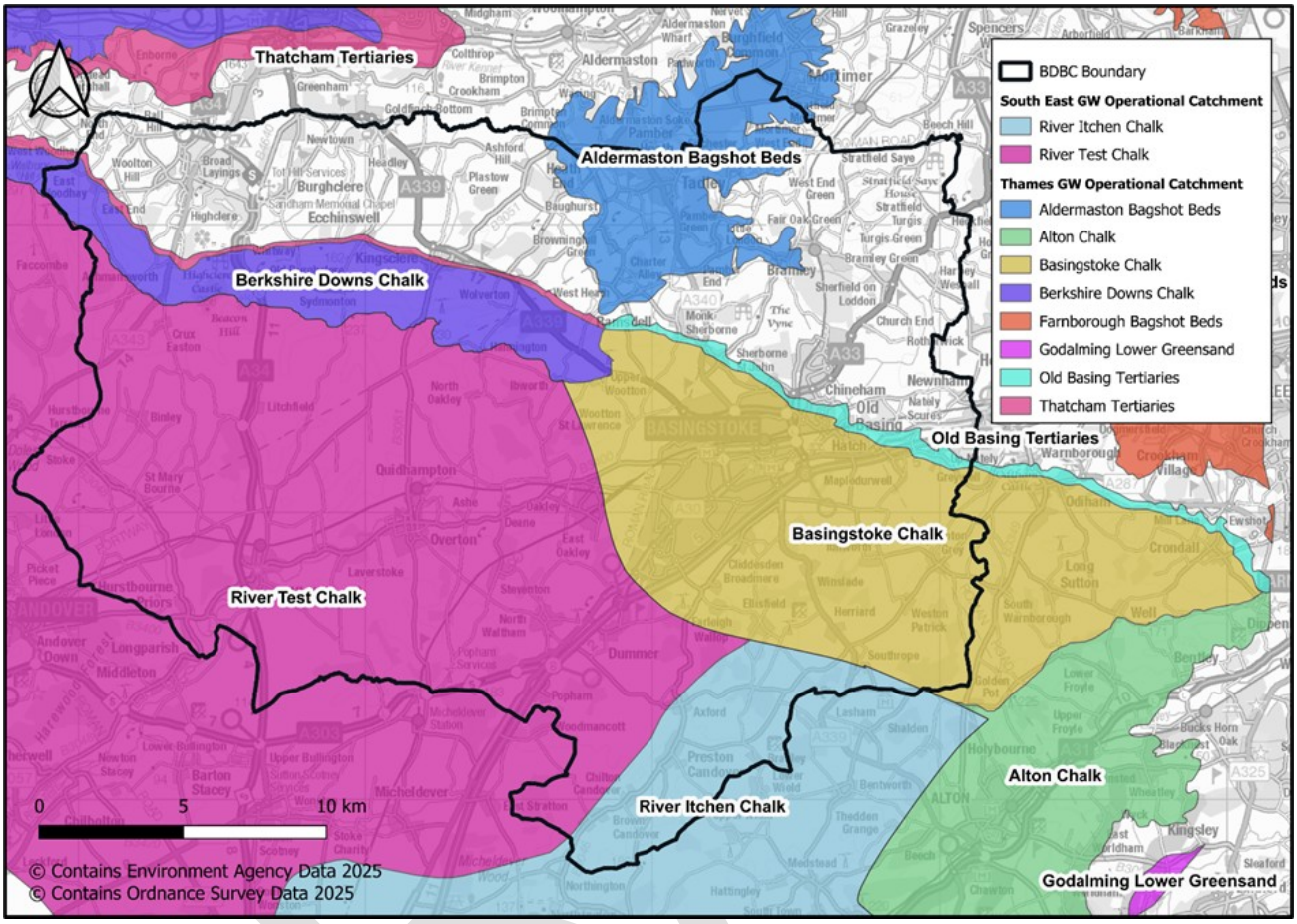

Figure 11.2 Groundwater bodies in BDBC

Table 11.2 Status of groundwater bodies in BDBC

Groundwater body	WFD Quantitative status	WFD Chemical status	WFD Overall status	Reasons for Not Achieving Good status (RNAG)
River Test Chalk	Good	Poor	Poor	Chemical status - Poor nutrient management - (pollution from agricultural rural areas)
River Itchen Chalk	Poor	Poor	Poor	Quantitative status - GW abstraction; Chemical status - Poor nutrient management - (pollution from agricultural rural areas)

Groundwater body	WFD Quantitative status	WFD Chemical status	WFD Overall status	Reasons for Not Achieving Good status (RNAG)
Basingstoke Chalk	Poor	Poor	Poor	Quantitative status - GW abstraction; Chemical status - Poor nutrient management - (pollution from agricultural rural areas)
Berkshire Downs Chalk	Poor	Poor	Poor	Quantitative status - GW abstraction; Chemical status - Poor nutrient management - (pollution from agricultural rural areas)
Thatcham Tertiaries	Good	Good	Good	n.a
Old Basing Tertiaries	Good	Good	Good	n.a
Aldermaston Bagshot Beds	Good	Good	Good	n.a

11.2.3 Groundwater study

A study of impact of wastewater discharges on groundwater was carried out. The full report can be found in Appendix I.

There are seven active permits within the study area for discharging secondary treated sewage effluent from WwTWs into the ground (to the underlying White Chalk subgroup). A comparison was made between the measured water quality at nearby monitoring locations, and the relevant permit for each WwTW.

- Regarding ammoniacal nitrogen (as N), there have been no exceedances beyond the limits set by the current permits, and no violations of the permit's conditions have been observed. However, historically emissions of ammoniacal nitrogen (as N) were routinely higher, and would have exceeded current thresholds on multiple occasions. It is likely that the water companies have effectively managed to control ammoniacal nitrogen (as N) emissions into the ground by treating wastewater effluent to a more stringent standard.
- Suspended solids within the discharges from the WwTWs do not exceed the emission limits.
- Total inorganic nitrogen concentrations (as N) within the discharges from the WwTWs do not exceed the annual average limit.

- During the monitoring period in North Waltham WwTW, the annual average of total inorganic nitrogen concentrations has been approximately 60% to 81% of the current permitted threshold.
- During the monitoring period in Oakly Ivy Down WwTW, the annual average of total inorganic nitrogen concentrations has been approximately 80% to 93% of the current permitted threshold.
- Total iron concentrations within the discharges from the WwTWs do not exceed the maximum limit.
- Total phosphorus concentrations (as P) within the discharges from the WwTWs do not exceed the rolling 12-month mean limit.

The large site at Popham is currently expected to be served either by a new WwTW on site, or by the existing WwTWs North Waltham or Whitchurch. The WwTW capacity assessment notes that both of these WwTW would need to be upgraded if they were to serve this site.

The groundwater assessment shows that as well as increasing the capacity of the WwTW, consideration needs to be given to the discharge quality to ensure that there is no deterioration of the chalk aquifer. It is recommended that a load standstill is achieved, whereby if effluent discharge increases, it is treated to a higher standard, so the overall pollutant load remains the same. There is also an opportunity for betterment within the chalk aquifer if treatment standards were improved such that the resulting pollutant load was reduced from present levels. This would assist in reducing the already high nitrate levels. This applies to all WwTWs discharging to ground where growth is planned, as well as any new WwTW serving the Popham site.

11.3 Nutrient neutrality

Within BDBC, there are two catchments where nutrient neutrality is required, the River Test (nitrogen) and River Itchen (nitrogen and phosphorus). These areas are displayed in Figure 11.3 below.

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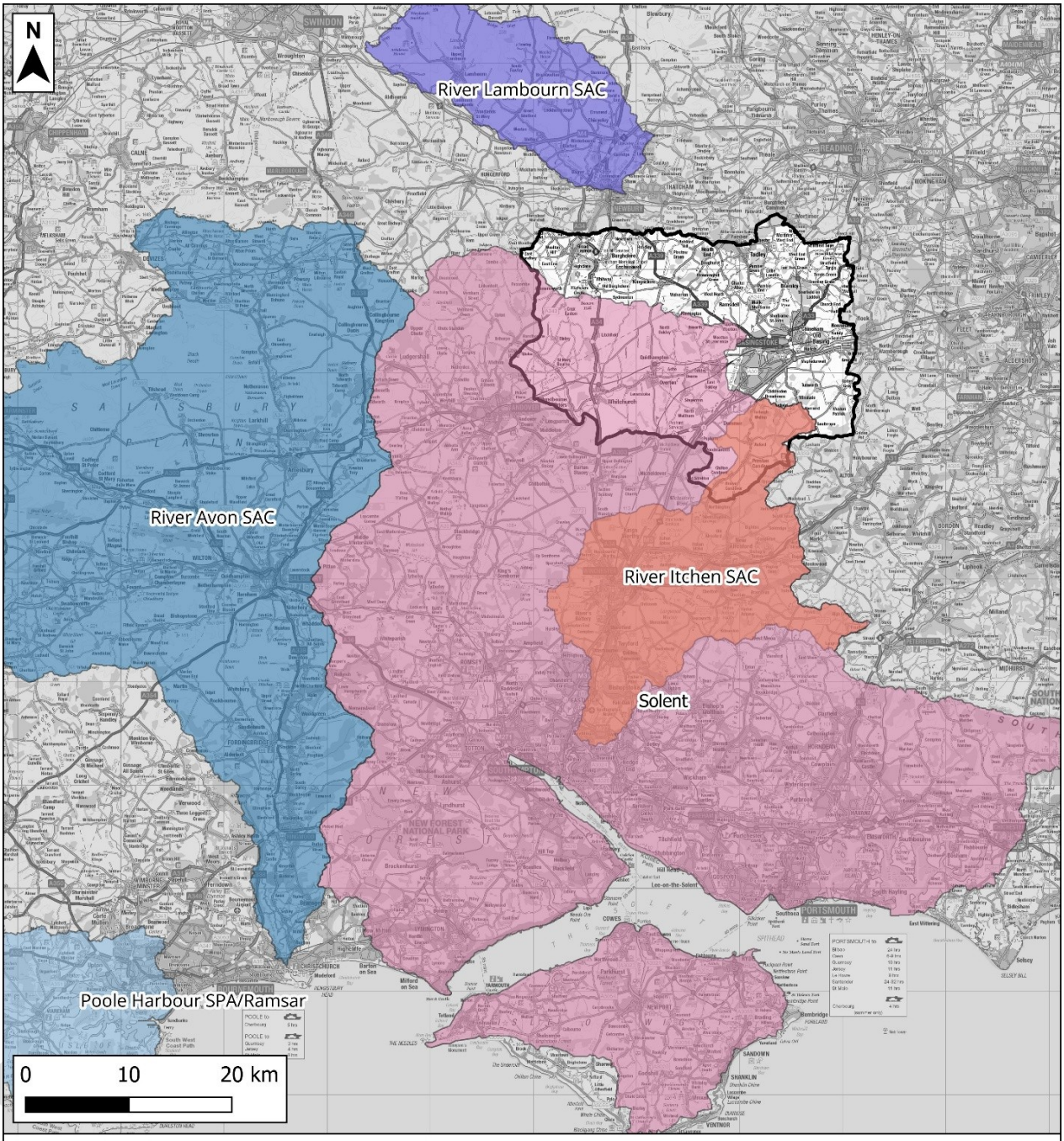

Figure 11.3 Nutrient neutrality catchments in and around Basingstoke and Dean Council

In 2022, Natural England wrote to Basingstoke and Deane Borough Council and other LPAs across the country, outlining their advice for development proposals with the potential to affect water quality resulting in adverse nutrient impacts on habitats sites. Nutrient neutrality is a means of ensuring that a plan or project does not add to existing nutrient burdens to designated sites so there is no overall increase in nutrients because of the plan or project (Natural England, 2022). Where nutrient neutrality is required to prevent increased nutrient loading of a designated waterbody, Local Plans and developers need to prove that the project or new plans will be nutrient neutral before they are implemented. This comes in the form of nutrient offsetting and the use of phosphate and nitrogen credits, SuDS, or onsite land use change.

River Itchen SAC

The catchment of the River Itchen SAC covers a large area of the district, see Figure 11.3. It is an example of a chalk river, which is a rare sensitive habitat type. The River Itchen requires nutrient neutrality for nitrogen and phosphorus. The SAC is designated for:

- Annex I Habitat: Water courses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. This habitat is characterized by extensive beds of aquatic *Ranunculus* species (water-crowfoot), which dominate the river channel and provide critical structure for invertebrates and fish.
- Annex II Species:
    - Atlantic salmon, *Salmo salar*
    - Brook lamprey, *Lampetra planeri*
    - Bullhead, *Cottus gobio*
    - Otter, *Lutra lutra*
    - Southern damselfly, *Coenagrion mercuriale*
    - White-clawed (or Atlantic stream) crayfish, *Austropotamobius pallipe*

Subsequently, any change in water quality could impact species composition within the River Itchen SAC.

Full SAC citation can be found here.

The catchment of the River Test SSSI covers a small area of the BDBC study area in the south east of the district. It is an example of a chalk river, which is a rare sensitive habitat type. The River Test requires nutrient neutrality for nitrogen and phosphorus. The SSSI is designated for:

- Annex I Habitat: Water courses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. This habitat is characterized by extensive beds of aquatic *Ranunculus* species (water-crowfoot), which dominate the river channel and provide critical structure for invertebrates and fish.
- Annex II Species:
    - Atlantic salmon, *Salmo salar*
    - Brook lamprey, *Lampetra planer*
    - Bullhead, *Cottus gobio*
    - Otter, *Lutra lutra*

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Full SSSI citation can be found here.

The Test River Compensation SAC is also within the study area. The River Test Compensation SAC is not a naturally designated SAC but a compensatory habitat area created under the Habitats Regulations to offset potential adverse effects on the River Itchen SAC from water abstraction and other infrastructure projects.

11.3.1 Nutrient significant catchments

In designated catchments, water companies have a duty to ensure wastewater treatment works serving a population equivalent over 2,000 meet specified nutrient removal standards by 1 April 2030. 140 nutrient significant plants were designated in 2024. Within the River Test catchment (part of the larger Solent catchment) this includes:

- Barton Stacey - 10mg/l Nitrogen
- Ivy Down - 10mg.l Nitrogen
- Overton - 10mg/l Nitrogen
- Whitchurch - 10mg/l Nitrogen

The River Itchen was designated as a Phosphorus sensitive catchment area. Within this four WwTWs were defined as nutrient significant plants, however none of these are within or serve BDBC.

Competent authorities (which in this case includes BDBC) considering planning proposals for development draining via a sewer to a wastewater treatment works subject to the upgrade duty are required to consider that the nutrient pollution standard will be met by the upgrade date for the purposes of the Habitats Regulations Assessments.

11.4 Water quality modelling

11.4.1 General approach

SIMCAT is used by the Environment Agency to model water bodies and identify where permit changes are needed to prevent deterioration or improve water quality as well as supporting decision making to guide development to locations where environmental deterioration will be reduced. SIMCAT is a 1D model which represents inputs from both point-source effluent discharges and diffuse sources, and the behaviour of solutes in the river.

SIMCAT can simulate inputs of discharge and water quality data and statistically distribute them from multiple effluent sources along the river reach. The simulation calculates the resultant water quality as the calculations cascade further downstream.

Once the distribution results have been produced, an assessment can be undertaken on the predicted mean and ninetieth percentile concentrations or loads compared to the Environmental Quality Standards.

Within SIMCAT, the determinands modelled were Biochemical Oxygen Demand (BOD), Ammonia (NH4) and Phosphorus (P). In fresh waterbodies, phosphate is usually the limiting

nutrient for algal growth. However, in marine environments, nitrogen is considered to be the limiting nutrient.

The methodology followed is summarised in Figure 11.4 below. In this flow chart, all of the questions in the top row must be answered.

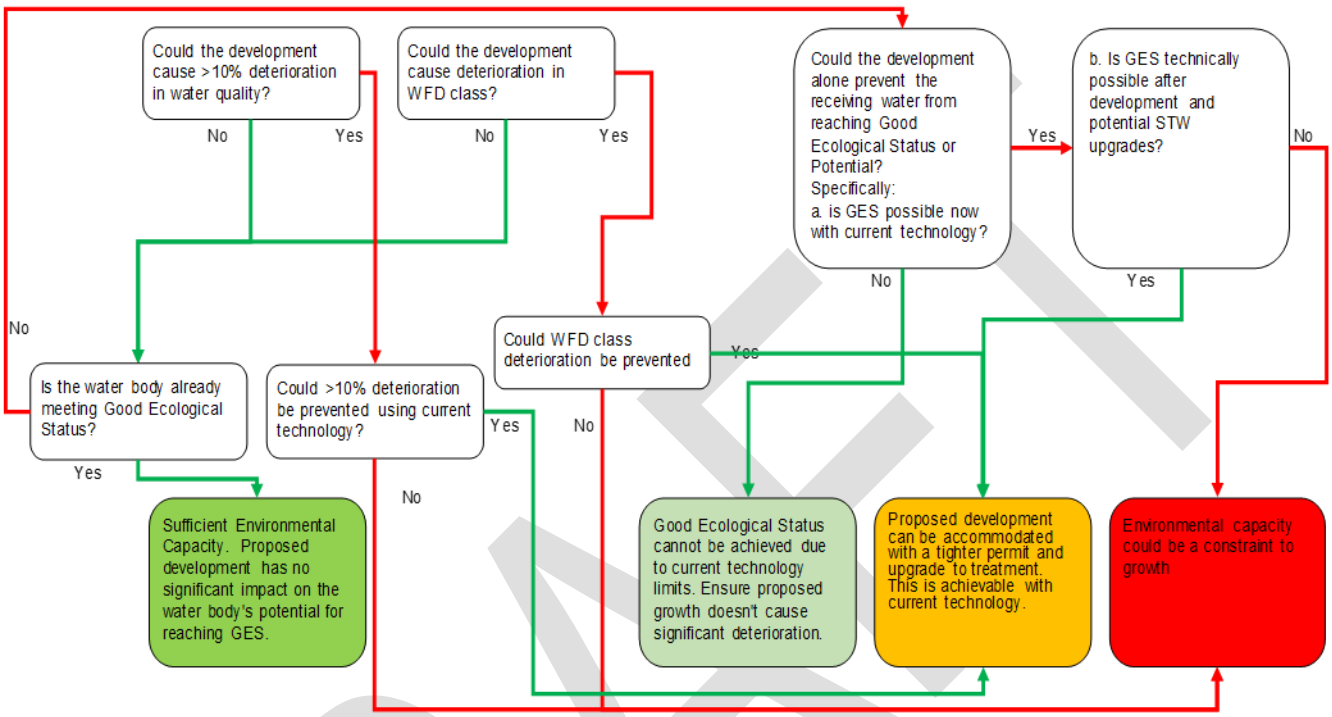

Figure 11.4 Water quality impact assessment following EA guidance

Where modelling indicated growth may lead to a deterioration in the watercourse, or where the watercourse is not currently meeting at least a 'Good' class for each determinant, the models were used to test whether this could be addressed by applying stricter discharge limits. In such cases, a Technically Achievable Limit (TAL) was considered.

The EA advised that the following permit values are achievable using treatment at TAL, and that these values should be used for modelling all WwTW potential capacity irrespective of the existing treatment technology and size of the works:

- Ammonia (90%ile): 1 mg/l
- BOD (90%ile): 5 mg/l
- Phosphorus (Annual Average): 0.25 mg/l
- Total Nitrogen (Annual Average) 10 mg/l

This assessment did not take into consideration whether it is feasible to upgrade each existing WwTW to TAL due to constraints of costs, timing, space, carbon costs etc.

11.4.2 Methodology

The study area is covered by the Thames and South East SIMCAT models developed by the Environment Agency. The models have been largely based on observed flow and

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quality data for the period 2014-2020. A widespread update of the models, and the resultant recalibration were not within scope of this project. It was therefore agreed with the EA to update just the effluent flow at WwTWs receiving growth in the study area. Consequently, the modelling work presented should be used to identify areas at risk of water quality deterioration, but not for permit setting.

Flow data from the last three years for each WwTW in the study area was supplied by Thames Water and Southern Water and used to update the model. Several of the WwTWs in the study area already had upgrades completed in AMP7 or planned in AMP8, which would be expected to improve water quality at those locations. These were therefore factored into the model by applying the updated permit limit where it was less than the current discharge in the model. The model was then run in its updated form to set a 2025 baseline. It is expected that further upgrades to WwTWs will be planned in AMP9 (2030-35) which will be defined in the AMP9 WINEP and the business plans for AW and TW. As these documents have not yet been published, AMP9 schemes have not been factored into the modelling.

Additional effluent flow from growth during the Local Plan Update period was added to current flow at WwTWs receiving growth and the model re-run as a future scenario.

Some smaller WwTWs within the model have descriptive permits which do not set specific numerical limits for DWF and effluent quality, and do not have flow monitoring in place. The models are calibrated to observed water quality measurements and represent the overall water quality in the catchment well, however at a local scale some of these smaller WwTWs are not well represented and do not have discharge data or have pollutant discharges modelled as a load in kilograms rather than an effluent flow and concentration. Ashford Hill and Stratfield Saye WwTWs have descriptive permits.

No deterioration test

The results from the baseline and future versions of the model were compared to assess the predicted percentage deterioration for each of the modelled determinands. WFD targets for each river reach were provided by the EA and used to determine if there was a risk of a class deterioration.

Where a deterioration of 10% or greater was predicted or a change in class (considered to be a significant deterioration under WFD) a further test was conducted to see if this deterioration could be prevented by upgrades to treatment processes. This used another version of the model with each WwTW set to operate at their Technically Achievable Limit (TAL).

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Good ecological status assessment

Where treatment at TAL and reductions in diffuse sources in the present day could improve water quality to achieve Good Ecological Status (GES), it is important to understand whether this could be compromised as a result of future growth within the catchment.

Guidance from the EA suggests breaking this down in to two questions:

a) Is GES possible now with current technology?

b) Is GES technically possible after development and any potential WwTW upgrades?

If the answer to questions a) and b) are both 'Yes' or both 'No' then the development can be assessed as having no significant impact on the water bodies potential for reaching GES, i.e., the development alone is not preventing GES from being achieved.

If the answer to a) is 'Yes' and the answer for b) is 'No' then development is having a significant impact, i.e., before development GES could be achieved with upstream improvements, and after growth the additional effluent from growth prevents GES being achieved.

The possible answers are summarised in Table 11.3.

Run type 9 within SIMCAT was used which assumes that upstream flow at each treatment works is at good ecological status. This simulates improvements being made in upstream water quality. This is modelled in order to test whether, with other sources of pollution in the catchment addressed, the growth in the catchment would prevent the water body from meeting good status. The water quality of the discharge from each WwTW in order to maintain GES is then calculated by the model.

Table 11.3 Possible GES assessment results

Predicted to achieve GES after growth	Could achieve GES today with improvements in upstream water quality? (a)	Could achieve GES in the future with improvements in upstream water quality? (b)	Assessment Result
YES	N/A	N/A	GREEN - Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.
NO	YES	YES	AMBER - Proposed development can be accommodated with a tighter permit and upgrade to treatment. This is achievable with current technology.

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Predicted to achieve GES after growth	Could achieve GES today with improvements in upstream water quality? (a)	Could achieve GES in the future with improvements in upstream water quality? (b)	Assessment Result
NO	NO	NO	YELLOW - Good ecological status cannot be achieved due to current technology limits. Ensure proposed growth doesn't cause significant deterioration.
NO	YES	NO	RED - Environmental capacity could be a constraint to growth.

11.4.3 Results

The first test applied compares the future scenario to the baseline and assesses whether a significant deterioration in water quality occurs – either a 10% deterioration in water quality or a deterioration in WFD class. Where, a significant deterioration is predicted, the TAL scenario then assesses whether this deterioration could be prevented by improvements in treatment processes.

Table 11.4 below summarises the results of the water quality assessments. Where a "green" score is given, deterioration was less than 10% for each determinand, and no change in WFD class is predicted. Where an "amber assessment is given, a 10% deterioration or change in WFD class is predicted, but this could be prevented by improvements in treatment technology. In these cases, upgrades may therefore be required at that WwTW or at WwTW upstream. This table only contains WwTWs that discharge to surface waterbodies. Discharges to groundwater are not included within the SIMCAT model.

A "red" assessment would be given where a significant deterioration in water quality is predicted, and it cannot be prevented by improvements in treatment processes.

None of the 13 WwTWs serving growth during the plan period are predicted to experience a significant deterioration. However, deterioration in ammonia at Kingsclere is 9.9%. No class changes are predicted.

As part of the "no deterioration" test, improvements in treatment processes at each WwTW are modelled to assess whether deterioration could be prevented. Improvements in treatment are modelled by setting each WwTW in the model to its technically achievable limit (TAL).

This assessment has not investigated the feasibility of upgrading individual WwTWs. This should be performed by TW and SW who have the detailed knowledge of their assets, and the Environment Agency who are responsible for setting permit limits at WwTW.

Appendix F maps the predicted deterioration in water quality visually for Ammonia, BOD and Phosphate in the future, and the predicted deterioration if WwTWs were performing at the technically achievable limit.

The first set of maps in Appendix E.1 shows the modelled results if wastewater discharges were increased by the volume predicted during the Local Plan period. They show the result at the point of mixing (i.e., where the WwTW discharges) and the results downstream in the river. These are colour coded based on whether deterioration is greater (red) or less than (amber) 10%. Areas where no deterioration is predicted are coloured green.

The second set of maps in Appendix F shows the modelled results in the TAL scenario, where each WwTW has been upgraded to the technically achievable limit. This shows areas where deterioration could not be prevented. In each case this is less than 10%.

The growth stated in Table 11.4 includes recent completions and neighbouring authority growth as well as growth from within BDBC.

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Table 11.4: Water quality modelling results

WwTW	Housing growth over plan period (dwellings)	Employment growth over plan period (m^2)	Could the development cause a greater than 10% deterioration in water quality for one or more of BOD, Ammonia or Phosphate?	Could the development cause a deterioration in WFD class of any element?	Can a deterioration of >10% or in class be prevented by treatment at TAL?
ASHFORD HILL	1	0	No	No	Yes
Kingsclere STW	457	110	No	No	Yes
Washwater	926	0	No	No	Yes
Greenham Common STW	63	0	No	No	Yes
Silchester STW	855	270	No	No	Yes
Stratfield Mortimer STW	408	0	No	No	Yes
Basingstoke STW	20,698	213,078	No	No	Yes
Sherborne St John STW	391	0	No	No	Yes
Sherfield On Loddon STW	369	275	No	No	Yes
WEST END GREEN (STRATFIELD SAYE)	1	0	No	No	No

WwTW	Housing growth over plan period (dwellings)	Employment growth over plan period (m^2)	Could the development cause a greater than 10% deterioration in water quality for one or more of BOD, Ammonia or Phosphate?	Could the development cause a deterioration in WFD class of any element?	Can a deterioration of >10% or in class be prevented by treatment at TAL?
Hartley Wintney STW	170	0	No	No	Yes
BARTON STACEY STW	102	550	No	No	Yes
OVERTON WTW*	539	0	No	No	Yes

*Overton WwTW discharges to ground, however it is included within the EA's SIMCAT model as discharging to a watercourse, and the results have been presented here.

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Table 11.5 summarises the results of the GES assessment outlined in section 11.4.2. Four different assessments are possible which are shown in Table 11.3 above.

- If good ecological status is predicted to be achieved within the receiving waterbody following growth during the plan period, a green assessment is given. In this case, it can be said that there is environmental capacity to accommodate growth.
- Where GES is not currently being achieved but could be achieved if upstream water quality were improved, then an amber score is given – growth could be accommodated without preventing a waterbody achieving GES in the future.
- Where GES cannot be achieved either today or in the future, despite upgrades in treatment processes, and improvements in upstream water quality, then a yellow assessment is given – and it can be said that GES cannot be achieved due to the limits of current technology. Growth alone is not predicted to prevent GES being achieved in the future.
- Should GES be achievable today, but not in the future due to growth, a red assessment would be given, and it can be said that environmental capacity could be a constraint to growth, i.e., growth alone could prevent good ecological status being achieved in the future.

11.5 Phosphate in the River Loddon

The WFD waterbody Loddon (Basingstoke to River Lyde confluence at Hartley Wespall) deteriorated from a High status for phosphate in 2019 to Moderate in 2022, a concerning drop of two classes. In their response to the draft WCS, the EA stated that “this is due to an error during the classification process with one sample point being omitted. The status should be High for Phosphate."

To check this, the orthophosphate concentrations recorded at the EA water quality monitoring station Loddon at Keepers Cottage, Wildmoor (Sampling point ID TH-PLDR0073) was analysed for the period January 2021 to October 2025 (Figure 11.5 and Figure 11.6). This is the first sampling station downstream of the Basingstoke WwTW discharge and is one of the stations used by the EA to assess WFD classification. Results show a weak downward trend in concentrations over this period, both with the full data set, and with one outlier greater than three standard deviations above the mean removed.

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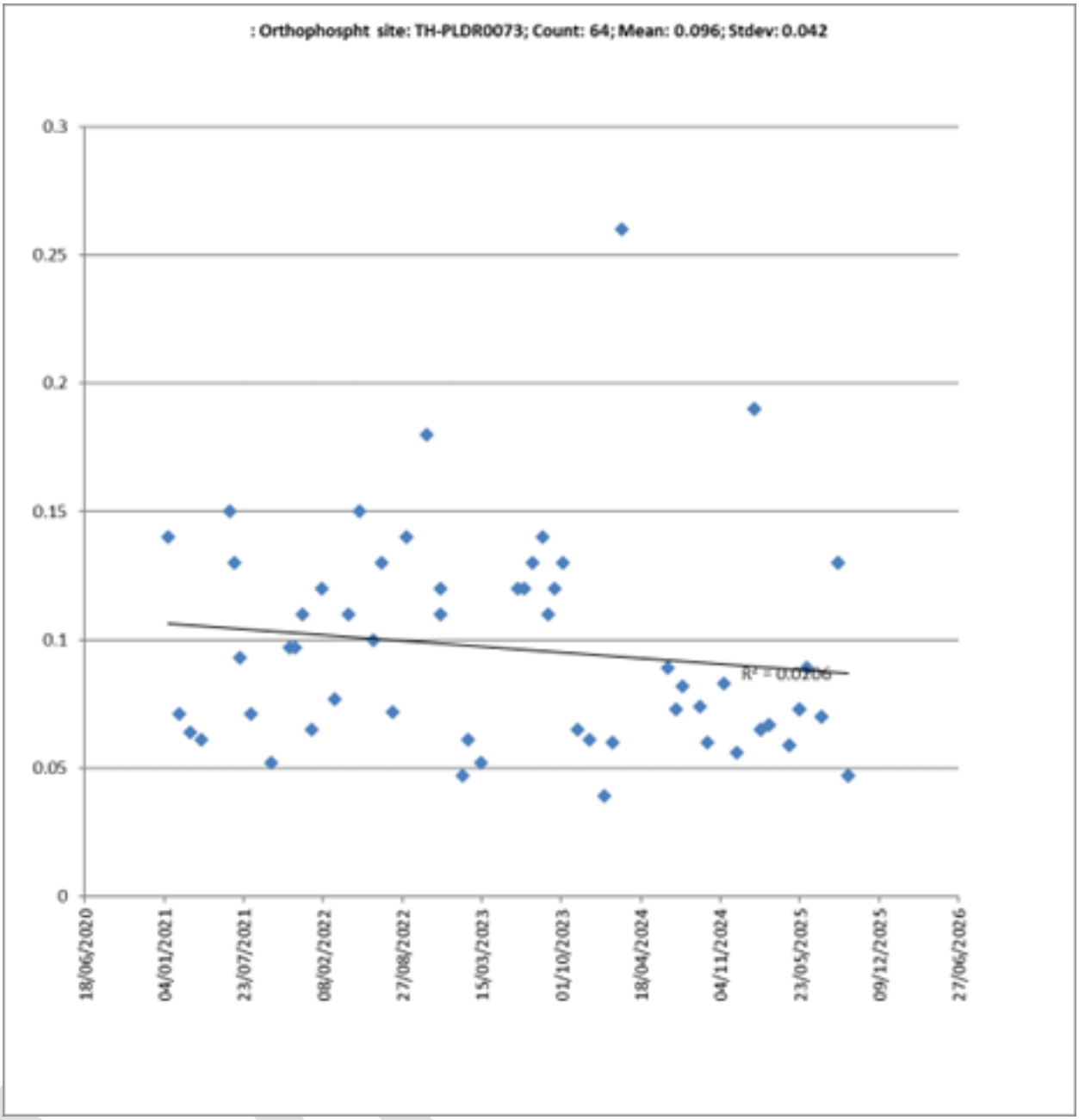

Figure 11.5 Orthophosphate concentrations in the Loddon at Keepers Cottage, Wildmoor, 2021-2025 (full data set)

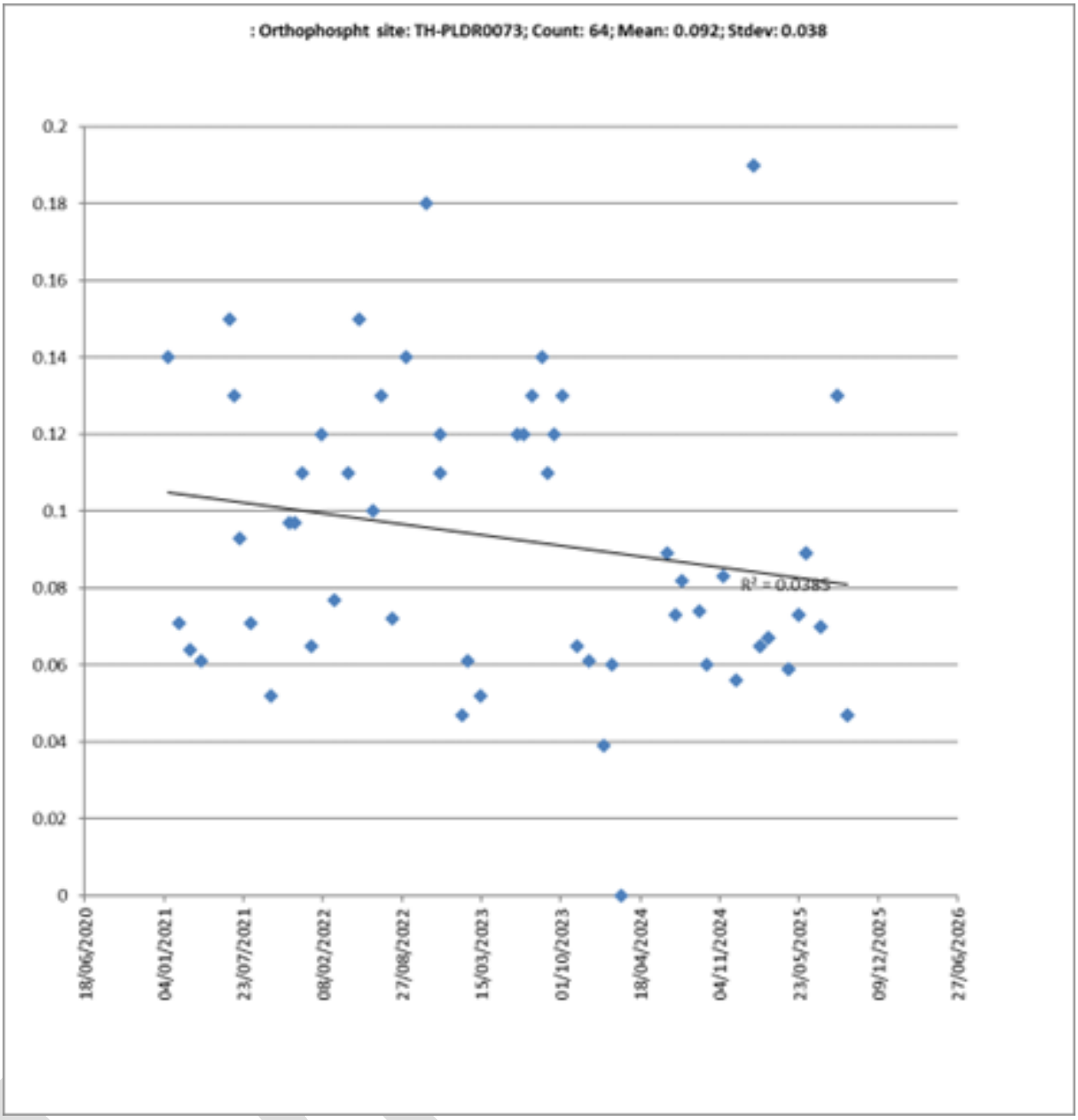

Figure 11.6 Orthophosphate concentrations in the Loddon at Keepers Cottage, Wildmoor, 2021-2025 (One outlier >3 standard deviations above mean removed)

The results indicate a weak downward trend in orthophosphate over this time period, tending to back up the EA's assessment. We have not assessed compliance for the reach, since this involves analysis of multiple stations and is a process undertake by the EA.

Table 11.5: GES assessment results

WwTW	Ammonia assessment	Biochemical Oxygen Demand (BOD) assessment	Phosphate assessment
ASHFORD HILL	GES Assessment cannot be undertaken as the effluent concentration is expressed as a load rather than a concentration	GES Assessment cannot be undertaken as the effluent concentration is expressed as a load rather than a concentration	GES Assessment cannot be undertaken as the effluent concentration is expressed as a load rather than a concentration
Kingsclere STW	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.	YELLOW-Good ecological status cannot be achieved due to current technology limits. Ensure proposed growth doesn't cause significant deterioration
Washwater	YELLOW-Good ecological status cannot be achieved due to current technology limits. Ensure proposed growth doesn't cause significant deterioration	AMBER-Proposed development can be accommodated with a tighter permit and upgrade to treatment. This is achievable with current technology	YELLOW-Good ecological status cannot be achieved due to current technology limits. Ensure proposed growth doesn't cause significant deterioration
Greenham Common STW	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.	AMBER-Proposed development can be accommodated with a tighter permit and upgrade to treatment. This is achievable with current technology
Silchester STW	AMBER-Proposed development can be accommodated with a tighter permit and upgrade to treatment. This is achievable with current technology	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.	YELLOW-Good ecological status cannot be achieved due to current technology limits. Ensure proposed growth doesn't cause significant deterioration

WwTW	Ammonia assessment	Biochemical Oxygen Demand (BOD) assessment	Phosphate assessment
Stratfield Mortimer STW	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.	AMBER-Proposed development can be accommodated with a tighter permit and upgrade to treatment. This is achievable with current technology
Basingstoke STW	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.	YELLOW-Good ecological status cannot be achieved due to current technology limits. Ensure proposed growth doesn't cause significant deterioration
Sherborne St John STW	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.	YELLOW-Good ecological status cannot be achieved due to current technology limits. Ensure proposed growth doesn't cause significant deterioration
Sherfield On Loddon STW	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.	YELLOW-Good ecological status cannot be achieved due to current technology limits. Ensure proposed growth doesn't cause significant deterioration
WEST END GREEN (STRATFIELD SAYE)	GES Assessment cannot be undertaken as the effluent concentration is expressed as a load rather than a concentration	GES Assessment cannot be undertaken as the effluent concentration is expressed as a load rather than a concentration	GES Assessment cannot be undertaken as the effluent concentration is expressed as a load rather than a concentration
Hartley Wintney STW	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for	YELLOW-Good ecological status cannot be achieved due to current technology limits. Ensure proposed growth doesn't cause

WwTW	Ammonia assessment	Biochemical Oxygen Demand (BOD) assessment	Phosphate assessment
	meeting GES.	meeting GES.	significant deterioration
BARTON STACEY STW	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.
OVERTON WTW	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.	GREEN-Sufficient environmental capacity. Proposed development has no significant impact on the water body's potential for meeting GES.	YELLOW-Good ecological status cannot be achieved due to current technology limits. Ensure proposed growth doesn't cause significant deterioration

Results of the GES assessment show that proposed development will not prevent good ecological status being achieved. For the majority of treatment works, there is sufficient environmental capacity for ammonia and BOD. However, for phosphate, a tighter permit or upgrade would be required at some WwTWs. At Kingsclere, Washwater, Silchester, Basingstoke, Sherborne St John, Sherfield on Loddon, Hartley Wintney, and Overton WwTWs GES cannot be achieved for phosphate due to technological limits. At Washwater WwTW, GES also cannot be achieved for ammonia due to technological limits.

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11.6 Priority substances

As well as the physico-chemical water quality elements (BOD, Ammonia, Phosphate etc.) addressed above, a watercourse can fail to achieve Good Ecological Status due to exceeding permissible concentrations of hazardous substances. Currently 33 substances are defined as hazardous or priority hazardous substances, with others under review. Such substances may pose risks both to humans (when contained in drinking water) and to aquatic life and animals feeding in aquatic life. These substances are managed by a range of different approaches, including EU and international bans on manufacturing and use, targeted bans, selection of safer alternatives and end-of-pipe treatment solutions. There is considerable concern within the UK water industry that regulation of these substances by setting permit values which require their removal at wastewater treatment works will place a huge cost burden upon the industry and its customers, and that this approach would be out of keeping with the "polluter pays" principle.

We also consider how the planning system might be used to manage priority substances:

- Industrial sources – whilst this report covers potential employment sites, it doesn't consider the type of industry and therefore likely sources of priority substances are unknown. It is recommended that developers should discuss potential uses which may be sources of priority substances from planned industrial facilities at an early stage with the EA and, where they are seeking a trade effluent consent, with the sewerage undertaker.
- Agricultural sources - There is limited scope for the planning system to change or regulate agricultural practices. UK water companies are involved in a range of “Catchment-based Approach” schemes aimed at reducing diffuse sources of pollutants, including agricultural pesticides.
- Surface water runoff sources - some priority substances e.g., heavy metals, are present in urban surface water runoff. It is recommended that future developments would manage these sources by using SuDS that provide water quality treatment, designed following the CIRIA SuDS Manual. This is covered in more detail in the Stage 1 report (Section 9).
- Domestic wastewater sources - some priority substances are found in domestic wastewater as a result of domestic cleaning chemicals, detergents, pharmaceuticals, pesticides or materials used within the home. Whilst an increase in the population due to housing growth could increase the total volumes of such substances being discharged to the environment, it would be more appropriate to manage these substances through regulation at source, rather than through restricting housing growth through the planning system.

No further analysis of priority substances will be undertaken as part of this study.

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11.7 Conclusions and recommendations

11.7.1 Conclusions

The EA reasons for not achieving good (RNAG) dataset indicates that the water industry (sewage discharges) and urbanisation are among the main reasons for watercourses not achieving good status in this area. Growth during the local plan period will increase the discharge of treated wastewater from WwTWs in BDBC. There is a potential for this to cause a deterioration in water quality in the receiving watercourses and this must be carefully considered.

The modelling indicates the growth during the Local Plan period would not result in a significant deterioration (10% or over or deterioration in class) in water quality at any of the modelled WwTWs and growth alone will not prevent good ecological status being prevented in the future should improvements in upstream water quality be made.

11.7.2 Recommendations

Table 11.6 Recommendations for water quality

Recommendation	Responsibility	Timescale
Continue to provide annual monitoring reports to SW and TW detailing projected housing growth in the Local Authority	BDBC	Ongoing
Take into account the full volume of growth (from BDBC and neighbouring authorities) within the catchment.	SW, TW	Ongoing

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12 Environmental Impacts

12.1 Introduction

Development has the potential to cause an adverse impact on the environment through several routes such as worsening of air quality, pollution to the aquatic environment, or disturbance to wildlife. Of relevance in the context of a Water Cycle Study is the impact of development on the aquatic environment.

A source-pathway-receptor approach can be taken to investigate the risk and identify where further assessment or action is required.

12.2 Sources of pollution

Water pollution is usually categorised as either diffuse or point source. Point source sources come from a single well-defined point, an example being the discharge from a WwTW. Section 11 models the WwTWs serving growth within BDBC as point sources of pollution and predicts the likely concentration of pollutants downstream.

Diffuse pollution is defined as “unplanned and unlicensed pollution from farming, old mine workings, homes and roads. It includes urban and rural activity and arises from industry, commerce, agriculture and civil functions and the way we live our lives.”

Examples of diffuse sources of water pollution include:

- Contaminated runoff from roads – this can include metals and chemicals.
- Drainage from housing estates
- Misconnected sewers (foul drains to surface water drains)
- Accidental chemical/oil spills from commercial sites
- Surplus nutrients, pesticides, and eroded soils from farmland
- Septic tanks and non-mains sewer systems

The most likely sources of diffuse pollution from new developments include drainage from housing estates, runoff from roads and discharges from commercial and industrial premises. The pollution risk posed by a site will depend on the sensitivity of the receiving environment, the pathway between the source of the runoff and the receiving waters, and the level of dilution available. After or during heavy rainfall, the first flush of water carrying accumulated dust and dirt is often highly polluting.

Whilst the threat posed by an individual site may be low, several sites together may pose a cumulative impact within the catchment.

Runoff from development sites should be managed by a suitably designed SuDS scheme, more information on SuDS can be found in section 12.7.

Potential impacts on receiving surface waters include the blanketing of riverbeds with sediment, a reduction in light penetration from suspended solids, and a reduction in natural oxygen levels, all of which can lead to a loss in biodiversity.

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12.3 Impact of abstraction

Abstraction of water within a catchment, either from groundwater or surface water sources, is necessary to provide a public water supply, for industrial processes and for agriculture. When the volume of water being abstracted becomes too high, it can cause environmental damage by reducing river flow or lowering the water table.

Changes in river flow can impact sensitive ecosystems, for example trout require a clean gravel bed to lay their eggs. A reduction in river flow can cause sediment to build up, blocking the spaces the fish require to lay their eggs impacting their reproductive cycle. Changes in groundwater levels can also affect the flow regime in rivers and can cause drying of wetland sites.

The precise location of abstraction points for public water supply in England is not available for reasons of national security. Furthermore, water demand within a WRZ can be met by sources located anywhere within that WRZ, or from a neighbouring WRZ if the transfer between WRZs is used to provide some of the water available for use. It is therefore not possible, in all but the simplest of WRZs, to trace an impact of an individual development site back to a particular water abstraction and therefore to an environmental impact. The assessments in this report therefore rely on information in the public domain.

Groundwater Dependent Terrestrial Ecosystems

Figure 12.1 shows a schematic of how Groundwater Dependent Terrestrial Ecosystems (GWDTEs) were identified. The LPA boundary is within a WRZ. Water abstracted anywhere within that WRZ could be used to serve growth within the LPA. In the diagram below, there are two abstraction points. Abstraction 1 could impact an area outside of both the LPA boundary and the WRZ. However, there are no protected sites within that groundwater body. Abstraction 2 also impacts an area both within and outside of the LPA boundary. Protected site A is within the WRZ but may not be impacted directly by an abstraction. Protected site B is outside of the WRZ and outside of the groundwater body containing an abstraction and is therefore unlikely to be impacted by growth. Protected site C is within a groundwater body containing an abstraction, hence there is a risk that an increase in abstraction could impact this site.

The location of abstraction points within the study area is not known, and so the approach must be taken that GWDTE anywhere within the combined extent of the WRZ and groundwater bodies overlapping the WRZ could be impacted by an increase in abstraction.

A further check was done on whether abstraction may already be an issue in those GWDTEs. The Water Framework Directive (WFD) records "Significant Water Management Issues" (SWMIs) in each water body. These are the pressures on the water environment that put our ability to achieve the environmental objectives of the WFD most at risk.

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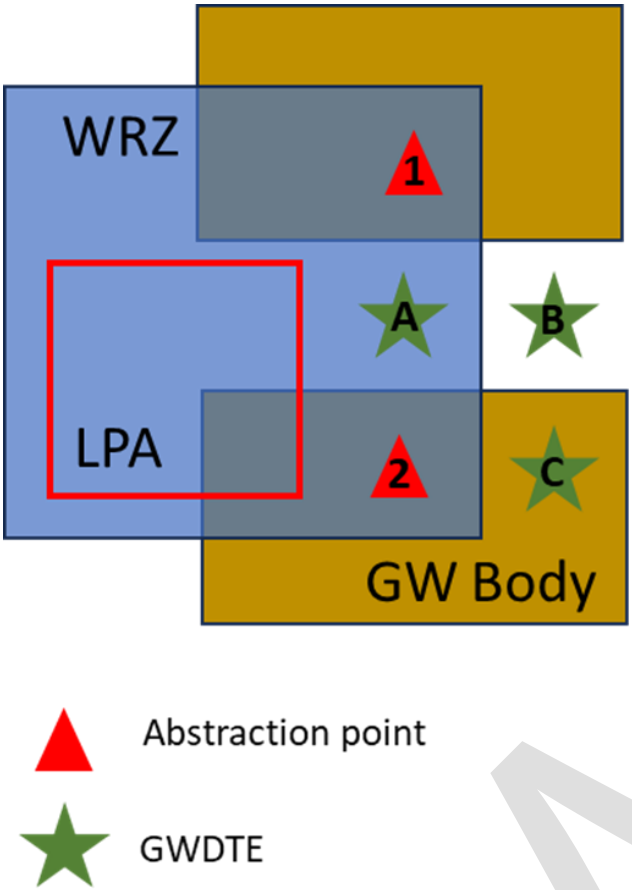

Figure 12.1 : Definition of groundwater study area

The steps taken to identify GWDTEs that may be impacted by abstraction to serve Basingstoke and Deane were as follows:

- Define study area for Basingstoke and Deane - based on extent of WRZ and WFD Groundwater bodies that overlap with the WRZs.
- Identify Groundwater Dependent Terrestrial Ecosystems (GWDTE) within the study area using the EA's GWDTE dataset.
- Identify GWDTEs that are within groundwater bodies with flow identified as a Significant Water Management Issue (SWMI).

Surface water based ecosystems

Figure 12.2 shows a schematic of how protected sites on surface waterbodies were identified. As in the groundwater example, water could be abstracted from anywhere within the WRZ. Protected site A is downstream of an abstraction and so could be impacted by changes in river flow resulting from the abstraction. Protected site B whilst further downstream in the river basin, it is on a tributary not connected with the WRZ, so abstraction is unlikely to have an impact. Protected site C is upstream of the abstraction so would not be impacted.

As with the groundwater abstractions, the location of surface water abstractions was not available to inform this study. The approach was therefore taken that any protected site directly on a waterbody that flows through or is downstream of the WRZ could be impacted

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by abstraction. Protected sites upstream or on tributaries that have not flowed through the WRZ are ignored.

In order to identify protected sites that may be at risk, Flood Zone 2 from the Risk of Flooding from Rivers and the Sea mapping was used to define an area that was either adjacent to a river or could be reasonably expected to receive surface water from a river.

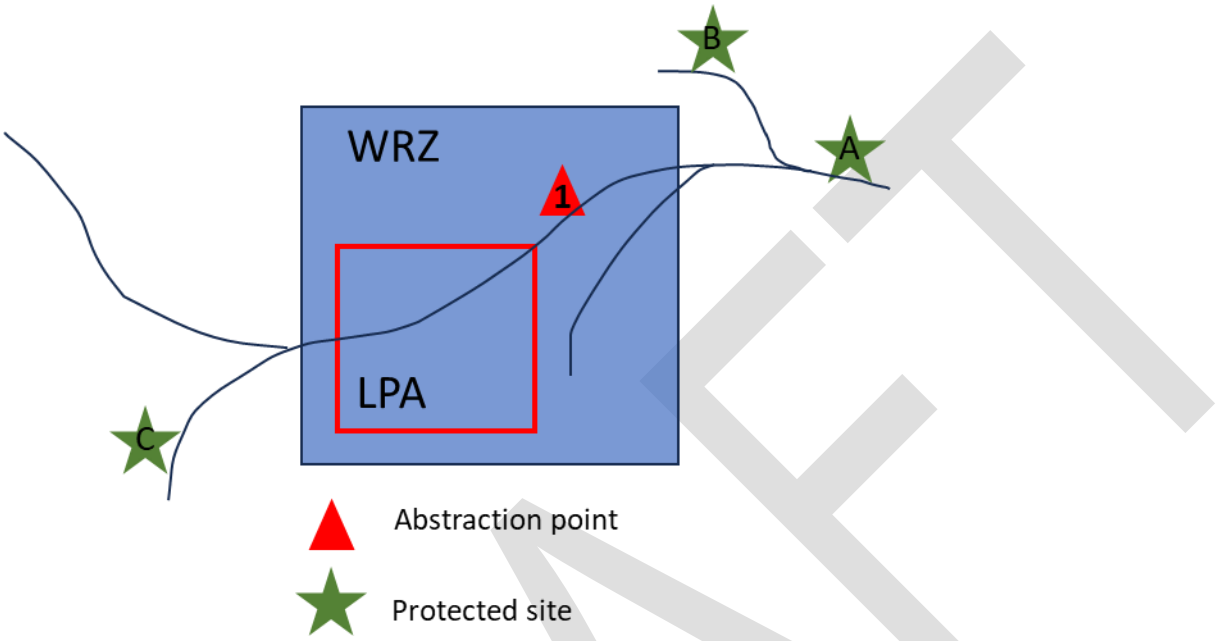

Figure 12.2 Definition of surface water study area

12.4 Assessment of point source risk

12.4.1 Methodology

A screening exercise was carried out to identify protected sites that may be at risk following a source-pathway-receptor approach. Sites within BDBC and downstream of each WwTW serving growth to the tidal limit were noted. This is reported in Appendix G.

In order to identify which of the protected sites may be at risk, Flood Zone 2 from the Risk of Flooding from Rivers and the Sea mapping was used to define an area that was either beside a river or could be reasonable expected to receive surface water from a river during times of flood. Where a WwTW serving growth in the plan period was present in the catchment upstream of the protected site, this site was taken forward for further assessment.

Where there were no WwTW serving growth upstream, these protected sites were discounted as no deterioration would be predicted in a water quality model, and the impact would be expected to be minimal. However, in these cases the overall catchment water quality should be considered where for example they are designated for migratory fish species that may spend part of their lifecycle elsewhere in the catchment.

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Whilst deterioration in water quality may not always lead to a significant impact at a protected site such as a SSSI, modelled deterioration can be used to highlight areas of risk for further analysis in the Habitats Regulations Assessment.

The water quality modelling results presented in 11.4.3 allow the predicted deterioration anywhere in the catchment to be analysed. Results from the closest modelled point to each identified protected site from the screening exercise were reported.

12.4.2 Results

There are no significant deteriorations in water quality (either a 10% deterioration, or a deterioration in WFD class) predicted at environmental sites downstream of WwTWs serving growth from BDBC.

A summary of the percentage deterioration in watercourses adjacent to environmental sites is presented in Appendix G.

12.5 Chalk streams

12.5.1 Importance of chalk streams

A chalk stream is broadly defined as a river that derives most of its flow from chalk-fed groundwater. Chalk streams flow from chalk aquifers, stores of underground water that are replenished when it rains. England is home to 85 per cent of the world's chalk streams. These rivers, together with the chalk aquifer from which they spring, are crucial water resources providing millions of people with water as well as supporting unique ecosystems. Businesses and farms also rely on chalk streams as without a reliable water source they would not be able to operate.

In their healthy state, chalk streams provide a clean, well oxygenated and high in calcium environment which supports many aquatic creatures such as trout, salmon, invertebrates. The aquatic plants unique to chalk streams provide an in-stream habitat on which everything else depends. The chalk also acts as a buffer against floods and droughts, which means that they provide good refuge for flow vulnerable species such as water vole.

12.5.2 Chalk stream pressures

During the summer months when temperatures are higher and plants are using water, rainfall is less effective at recharging the aquifer. This as well as the impacts of climate change results in many of the rivers and streams being dry for much of the year along long sections of their course.

Balancing the needs of people and the environment is a challenge and it is getting harder. Population growth, particularly in the southeast, means that more and more water is required at a time when climate change is reducing the amount of water that is available.

England's chalk streams are therefore under considerable pressure. The Environment Agency's 'Reasons for Not Achieving Good' database indicates that one of the reasons for some of the watercourses in the district not meeting 'Good' WFD standards can be related

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to groundwater and surface water abstractions. Other pressures on chalk streams include pollution from wastewater discharges and agriculture, encroachment by development. The health of a chalk stream depends on three things - water quantity, water quality and physical habitat quality (has the stream been modified / constrained and are invasive species present).

The majority of chalk streams have been modified to a degree, often many times. Chalk streams are very low-energy systems and are mostly incapable of erasing a modification once it has occurred. A chalk stream's geomorphology is essential to its biodiversity. A physically intact, natural and stable river is far more able to tolerate pollution and abstraction than a heavily modified one. The confined, straightened, impounded chalk stream cannot cope with floods and droughts in the same way a natural river can. Pollutants can get trapped more easily into a modified system and tend to become trapped in a river that lacks its natural physical function (meandering and flooding). In-stream structures, such as weirs and sluices, also do damage as they prevent re-colonisation of wildlife after extreme events, and prevent inappropriate sediment being removed from the river. Connections with man-made waterways can also bring a problematic influx of warm, silty, nutrient-rich water.

Within developed sites, pollutants from gardens and vehicles can be carried by rainwater either directly overland into watercourses, or via surface water drains. The speed and volume of runoff is higher than those on undeveloped sites due to the higher proportion of impermeable surfaces.

Pollutants present in runoff from roads could include metals such as Cadmium, Zinc and Copper (from vehicles), particulates from tyres and exhausts, oil, washer fluids etc. Other pollutants present in runoff from developed sites could include fertilizers / pesticides from gardens.

Sediment and other pollutants can disrupt the natural ecology of chalk streams making developed sites drainage systems and wastewater management a prominent factor in BDBC's chalk streams health.

Natural rivers are rarely fixed in the landscape and natural hydromorphological processes cause them to move and meander over time. These natural processes are interrupted when rivers are straightened or diverted to accommodate agriculture or development, or left perched when drainage ditches are used to drain adjacent land. This can be particularly significant in chalk streams, where the floodplain is a zone of high groundwater level which regulates the interaction of water between the chalk aquifer and the stream.

Development right up to the river bank can also pin the banks in place preventing future movement, often leaving a canalised stream with an artificial flow and a degraded habitat.

12.5.3 Environment Agency actions

The Environment Agency has been working to limit the damage dry weather can cause and to ensure that water supplies are sustainable for the future. This includes taking immediate action to restrict the amount of water taken, developing long-term plans to reduce reliance

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on chalk streams, working with partners on projects to improve water quality and stepping in to limit damage to wildlife and the environment when river levels are too low.

They have also been working to make sure that water abstractions are sustainable. The Environment Agency regulate water abstraction through their licensing system. By reviewing licences and reducing the amount of water people can take the Environment Agency have returned 16 billion litres of water back to chalk aquifers and streams since 2008 and removed the risk of another 14.9 billion litres being taken (Environment Agency, 2019).

The Environment Agency have also been working with water companies to find long term solutions for water supply by finding alternative water supply sources and reducing demand such as new reservoirs and pipes to transfer water from other parts of the country.

12.5.4 Chalk stream protection

Chalk streams are an important and rare habitat and opportunities should be taken within the Local Plan to define policies to protect these river ecosystems. Some potential measures are summarised below:

Water efficiency

A business as usual approach to water efficiency in the new Local Plan would result in a large increase in water demand during the plan period. The CaBA strategy recommends a minimum of 90l/p/d in chalk stream areas in order to minimize the additional abstraction in order to serve new development sites.

Within the BDBC area, chalk streams are present within SEW's Bracknell WRZ, SW's Andover WRZ, and may be present in SW's Kingsclere WRZ. There are no chalk streams present within TW's Kennet Valley WRZ. As the water source for a particular development site cannot be linked to an individual abstraction, and water could come from any of the sources within the WRZ, any water efficiency policy relating to chalk streams should be applied across the whole WRZ. It is recommended that 90l/p/d is applied across the whole of the BDBC area in order not to create unevenness in the planning system.

Buffer zone

Development or agricultural encroachment close to a chalk stream, or on the natural flood plain has the potential to cause the following problems:

- Water quality impact through surface-water runoff
- Reduction in groundwater flow by diverting runoff straight to surface water drainage
- Loss of habitat / biodiversity
- Disconnection of the river from its natural flood plain, the chalk aquifer and superficial deposits e.g. gravels.
- Prevention or restriction of future river restoration work.

These issues could be managed in part by designating a buffer zone around chalk streams to prevent further development or encroachment by agriculture. A buffer zone should be of

sufficient size to prevent or reduce the problems listed above, and this may be different distances in different parts of the catchment based on local conditions and the size of the natural floodplain, a zone which is critical to the interaction of water between the aquifer, alluvial deposits and the river channel.

In some areas Flood Zone 2 does not extend far beyond the bank, in these areas the buffer zone should be extended in order to provide the required benefit. Under the Water Resources Act 1991 and the Land Drainage Byelaws 1981 current Environment Agency guidance already defines an area of 8m from the bank of a main river, within which development is not allowed unless exempt by the local council. For chalk streams this should be extended to 15m, and would contain the principle of “no development” except for some exemptions such as essential infrastructure, soft landscaping and recreational uses (following an impact assessment).

For agriculture, the EA provides guidance for buffer strip design that suggests a width of 5-15m dependent on field conditions, with steeper slopes (potentially faster flow) requiring wider strips. Due to the sensitive nature of chalk stream ecosystems a 15m buffer strip on all agricultural land would provide a precautionary approach. Considering this guidance alongside CaBA’s agricultural buffer zone suggestions, see section 4.5, 15m has been adopted as a suitable distance for the protection of the chalk streams and incorporated into the natural flood plain layer to create a provisional riparian buffer zone.

Although agricultural practices are not, on the whole, regulated by the planning system, local authorities are considered as partners in the delivery of the national Nature Recovery Network and are required, through the NPPF, to conserve and enhance the natural environment. It is therefore recommended that a minimum 15m buffer zone is adopted on both agricultural land and new development sites with buffer strips used on field margins adjacent to chalk streams, in addition to the principle of no development within the buffer zone. This zone should extend further than 15m where necessary in line with the natural flood plain.

This approach is also recommended by CaBA chalk stream strategy (P128).

Table 12.1 Chalk stream protection recommendations

Measure type	Recommendation
Water efficiency	Recommendation 1 – Adopt CaBA strategy recommendation of 90l/p/d throughout BDBC. Recommendation 2 – Require all new non-residential buildings achieve BREEAM “Outstanding” for water throughout BDBC.

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Measure type	Recommendation
Riparian Buffer Zone	Recommendation 3 – Apply a riparian buffer zone in chalk stream areas to exclude all development within the natural flood plain or 15m of the bank, whichever is larger. A buffer of 10m should be applied to ditches that feed chalk streams. Recommendation 4 – Apply a vegetated buffer strip on agricultural land within 15m of a chalk stream and 10m from a ditch feeding a chalk stream.
Cattle fencing	Recommendation 5 – Encourage responsible land management such as cattle fencing through the Nature Recovery Strategy.
Education	Recommendation 6 – Undertake a public engagement exercise to raise awareness of chalk streams and encourage responsible riparian ownership.
Sustainable Drainage Systems (SuDS)	Recommendation 7 – Enforce the SuDS hierarchy with a focus on encouraging infiltration SuDS and deep borehole SuDS where appropriate.
Neighbouring authority engagement	Recommendation 8 – Continue and strengthen existing partnerships with neighbouring authorities and other stakeholders to define coordinated policies for chalk stream protection

12.6 Groundwater protection

12.6.1 Overview

Groundwater is an important source of water in England and Wales, particularly in the southeast. The Environment Agency is responsible for the protection of “controlled waters” from pollution under the Water Resources Act 1991. These controlled waters include all watercourses and groundwater contained in underground strata.

The zones are based on an estimate of the time it would take for a pollutant which enters the saturated zone of an aquifer to reach the source of abstraction or discharge point (Zone 1 = 50 days, Zone 2 = 400 days, Zone 3 is the total catchment area). The Environment Agency will use SPZs (alongside other datasets such as the Drinking Water Protected Areas (DrWPAs) and aquifer designations as a screening tool to show:

- Areas where the EA would object in principle to certain potentially polluting activities, or other activities that could damage groundwater,
- Areas where additional controls or restrictions on activities may be needed to protect water intended for human consumption,
- How it prioritises responses to incidents.

The EA have published a position paper outlining its approach to groundwater protection which includes direct discharges to groundwater, discharges of effluents to ground and

surface water runoff. This is of relevance to this water cycle study where a development may manage surface water through SuDS. This paper can be found here.

12.6.2 Sewage and trade effluent

Discharge of treated sewage of 2m^3 per day or less to ground are called small sewage discharges (SSDs). The majority of SSDs do not require an environmental permit if they comply with certain qualifying conditions. A permit will be required for all SSDs in source protection zone 1 (SPZ1).

For treated sewage effluent discharges, the EA requires the use of shallow infiltration systems, which maximise the attenuation within the drainage blanket and the underlying unsaturated zone. Whilst some sewage effluent discharges may not pose a risk to groundwater quality individually, the cumulative risk of pollution from aggregations of discharges can be significant. Improvement or pre-operational conditions may be imposed before granting an environmental permit. The EA will only agree to developments where the addition of new sewage effluent discharges to ground in an area of existing discharges is unlikely to lead to an unacceptable cumulative impact.

Generally, the Environment Agency will only agree to developments involving release of sewage effluent, trade effluent or other contaminated discharges to ground if it is satisfied that it is not reasonable to make a connection to the public foul sewer. The EA would normally expect to only permit new private discharges where the distance to connect to the nearest public sewer exceeds the number of dwellings multiplied by 30m. So, for example, a development of 100 dwellings would need to be more than 3km from a public sewer. The developer would have to provide evidence of why the proposed development cannot connect to the foul sewer in the planning application. This position will not normally apply to surface water run-off via sustainable drainage systems and discharges from sewage treatment works operated by sewerage undertakers with appropriate treatment and discharge controls.

Deep infiltration systems (such as boreholes and shafts) are not generally accepted by the EA for discharge of sewage effluent as they bypass soil layers and reduce the opportunity for attenuation of pollutants.

Discharges of surface water run-off to ground at sites affected by land contamination, or from sites for the storage of potential pollutants are likely to require an environmental permit. This could include sites such as garage forecourts and coach and lorry parks. These sites would be subject to a risk assessment with acceptable effluent treatment provided.

12.6.3 Discharge of clean water

“Clean water” discharges such as runoff from roofs or from roads, may not require a permit. However, they are still a potential source of groundwater pollution if they are not appropriately designed and maintained.

Where infiltration SuDS schemes are proposed to manage surface runoff they should:

- Be suitably designed;
- meet Government non-statutory technical standards for sustainable drainage systems – these should be used in conjunction with the NPPF and PPG; and
- use a SuDS management treatment train

A hydrogeological risk assessment is required where infiltration SuDS is proposed for anything other than clean roof drainage in a SPZ1.

12.6.4 Source Protection Zones

Source Protection Zones (SPZs) are used to protect areas of vulnerable groundwater that is used for abstraction and where water quality is of high importance (such as drinking water abstractions). SPZs are categorised into three zones, 1-3, with 1 being most sensitive to pollution, and 3 representing the lowest risk but still within the groundwater catchment of the abstraction. Figure 12.3 shows the Source Protection Zones 1 to 3 within the study area.

They form a key part of the Environment Agency's approach to controlling the risk to groundwater supplies from potentially polluting activities and accidental releases of pollutants.

The Environment Agency's Manual for the Production of Groundwater Source Protection Zones, details position statements which provide information about the Environment Agency's approach to managing and protecting groundwater.

Proposed development locations within or close to Source Protection Zones, should be assessed in relation to the relevant Environment Agency position statements. The assessment in Table 12.2 shows the potential allocations within each SPZ and the default management advice. The EA may require additional assessment in some cases based on local conditions.

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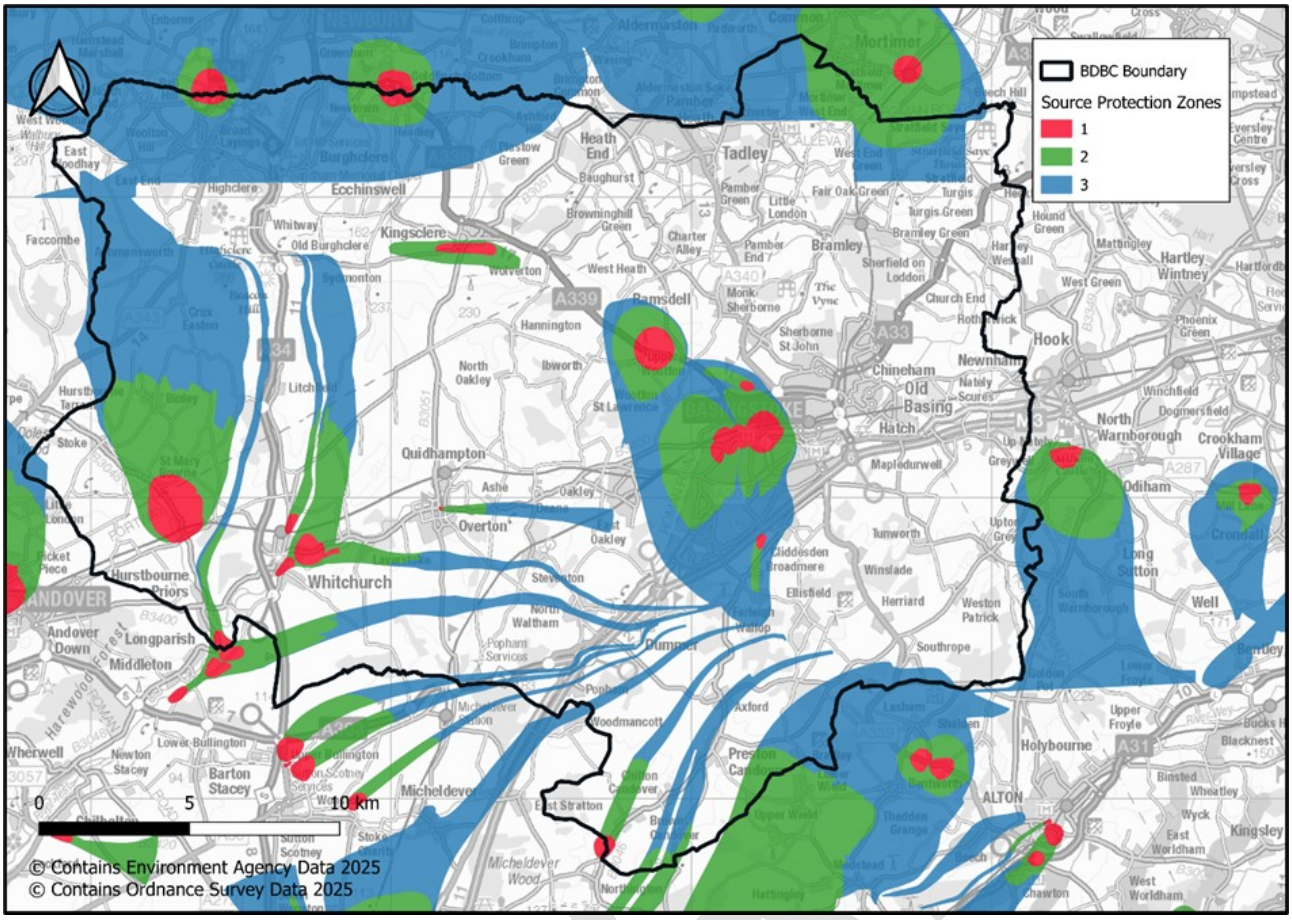

Figure 12.3 Source Protection Zones covering BDBC

Table 12.2 Potential allocation within SPZs

Source Protection Zone	Sites	Management advice / EA position statement
Zone 1 – Inner Protection Zone	Growth option - Kingsclere Growth option - St Mary Bourne Growth option - Whitchurch Growth option - Overton Buckskin and South Ham	G2 – Inside SPZ1 all sewage effluent discharges to ground must have an environmental permit. G4 – Inside SPZ1 the EA will object to any new trade effluent, storm overflow from sewage system or other significantly contaminated discharges to ground where the risk of groundwater pollution is high and cannot be adequately mitigated. G12 – Discharge of clean roof water to ground is

Source Protection Zone	Sites	Management advice / EA position statement
		acceptable both within and outside SPZ1, provided all roof water down-pipes are sealed against pollutants entering the system from surface runoff, effluent disposal or other forms of discharge. The method of discharge must not create new pathways for pollutants to groundwater or mobilise contaminant already in the ground. No permit is required if these criteria are met. G13 – Where infiltration SuDS are proposed for anything other than clean roof drainage in a SPZ1, a hydrogeological risk assessment should be undertaken, to ensure that the system does not pose an unacceptable risk to the source of supply. SuDS schemes must be suitably designed.
Zone 2 – Outer Protection Zone	West End Farm, Mortimer Common Southern Manydown	A hydrogeological risk assessment is not a requirement for SuDS schemes, however they should still be “suitably designed”, for instance following best practice guidance in the CIRIA SuDS Design Manual.
Zone 3 – Total Catchment	Growth option - Tadley Growth option - Headley Growth option - Burghclere Oakley Farm, Wash Water Growth option - Woolton Hill Growth option - Highclere Popham Land north of M3, Popham	A hydrogeological risk assessment is not a requirement for SuDS schemes, however they should still be “suitably designed”, for instance following best practice guidance in the CIRIA SuDS Design Manual.

Source Protection Zone	Sites	Management advice / EA position statement
	Growth option - North Waltham Growth option - Dummer Growth option - Oakley Growth option - Cliddesden Weybrook Park Golf Course	

12.7 Surface Water Drainage and SuDS

Since 2015[5], management of the rate and volume of surface water has been a requirement for all major development sites, through the use of Sustainable Drainage Systems (SuDS).

Lead Local Flood Authorities (LLFAs) are the statutory consultees to the planning system for surface water management within major development, which covers the following development scenarios:

- 10 or more dwellings
- a site larger than 0.5 hectares, where the number of dwellings is unknown
- a building greater than 1,000 square metres
- a site larger than 1 hectare

SuDS are drainage features which attempt to replicate natural drainage patterns, through capturing rainwater at source, and releasing it slowly into the ground or a water body. They can help to manage flooding through controlling the quantity of surface water generated by a development and improve water quality by treating urban runoff. SuDS can also deliver multiple benefits, through creating habitats for wildlife and green spaces for the community. SuDS also have the advantage of providing effective Blue and Green infrastructure and ecological and public amenity benefits when designed and maintained properly.

National standards on the management of surface water are outlined within the Defra Non-statutory Standards for Sustainable Drainage Systems[6]. The CIRIA C753 SuDS Manual[7]

5 House of Commons: Written Statement (HCWS161) Written Statement made by: The Secretary of State for Communities and Local Government (Mr Eric Pickles) on 18 Dec 2014. Accessed online at:
https://www.parliament.uk/documents/commons-vote-office/December%202014/18%20December/6.%20DCLG-sustainable-drainage-systems.pdf on: 10/02/2023.

6 Sustainable Drainage Systems, Non-statutory technical standards for sustainable drainage systems, DEFRA (2015). Accessed online at:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/415773/sustainable-drainage-technical-standards.pdf on: 10/02/2023.

7 CIRIA Report C753 The SuDS Manual, CIRIA (2015). Accessed online at:
https://www.ciria.org/Memberships/The_SuDs_Manual_C753_Chapters.aspx on: 10/02/2023.

and Guidance for the Construction of SuDS[8] provide the industry best practice guidance for design and management of SuDS.

Hampshire Country Council is the LLFA and plays a key role in ensuring that the proposed drainage schemes for all new developments comply with technical standards and policies in relation to SuDS.

Schedule 3 of the Flood and Water Management Act has not yet been enacted in England. In January 2023, the UK Government released their report setting out the findings of a review into the implementation of Schedule 3 of The Flood and Water Management Act 2010, which outlined the possibility of LLFAs becoming SuDS Approving Body (SAB). This would create a new process for the approval and adoption of SuDS, separate to the planning system.

Enactment of Schedule 3 would also remove the automatic right to connect surface water into the public sewer network. Instead, the right to connect would become conditional upon the drainage system being approved by the SAB, in consultation with the Water and Sewerage Companies, before construction can commence.

12.7.1 Use of SuDS in Water Quality Management

SuDS allow the management of diffuse pollution generated by urban areas through the sequential treatment of surface water reducing the pollutants entering lakes and rivers, resulting in lower levels of water supply and wastewater treatment being required. This treatment of diffuse pollution at source can contribute to meeting WFD water quality targets, as well as national objectives for sustainable development.

This is usually facilitated via a SuDS Management Train of a number of components in series that provide a range of treatment processes delivering gradual improvement in water quality and providing an environmental buffer for accidental spills or unexpected high pollutant loadings from the site. Considerations for SuDS design for water quality are summarised in Table 12.3 below.

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8 Guidance on the Construction of SuDS (C768), CIRIA (2017), Accessed online at: https://www.ciria.org/ItemDetail?iProductcode=C768&Category=BOOK on: 10/02/2023.

Table 12.3 Considerations for SuDS Design for Water Quality

Objective	Considerations
Manage surface water close to source	Where practicable, treatment systems should be designed to be close to source of runoff. It is easier to design effective treatment when the flow rate and pollutant loadings are relatively low. Treatment provided can be proportionate to pollutant loadings and sensitivity receptor. Accidental spills or other pollution events can be isolated more easily without affecting the downstream drainage system. Encourages ownership of pollution. Poor treatment performance or component damage/ failure can be dealt with more effectively without impacting on the whole site.
Treat surface water runoff on the surface	Where practicable, treatment systems should be designed to be on the surface Where sediments are exposed to UV light, photolysis and volatilisation processes can act to break down contaminants. If sediment is trapped in accessible parts of the SuDS, it can be removed more easily as part of maintenance. It enables use of evapotranspiration and some infiltration to the ground to reduce runoff volumes and associated total contamination loads (provided risk to groundwater is managed appropriately). It allows treatment to be delivered by vegetation. Sources of pollution can be easily identified. Accidental spills or misconnections are visible immediately and can be dealt with rapidly. Poor treatment performance can be easily identified during routine inspections, and remedial works can be planned efficiently.
Treat surface water runoff to remove a range of contaminants	SuDS design should consider the likely presence and significance of any contaminant that may pose a risk to the receiving environment. The SuDS component or combination of components selected should include treatment processes that, in combination, are likely to reduce this risk to acceptably low levels.
Minimise risk of sediment remobilisation	The SuDS design should consider and mitigate the risks of sediments (and other contaminants) being remobilised and washed into receiving surface waters during events greater than those which the component has been specifically designed for.

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Objective	Considerations
Minimise impacts from accidental spills	By using several components in series, SuDS can help ensure that accidental spills are trapped in/on upstream component surfaces, facilitating contamination management and removal. The selected SuDS components should deliver a robust treatment design that manages risks appropriately - considering the uncertainty and variability of pollution loadings, sensitivity of receptors and treatment processes.

Managing pollution close to its source can help keep pollutant levels and accumulation rates low, allowing natural processes to be more effective. Treatment can often be delivered within the same components that are delivering water quantity design criteria, requiring no additional cost or land-take.

SuDS designs should control the 'first flush' of pollutants (usually mobilised by the first 5mm of rainfall) at source, to ensure contaminants are not released from the site. Best practise is that no runoff should be discharged from the site to receiving watercourses or sewers for the majority of small (e.g., less than 5mm) rainfall events.

Infiltration techniques will need to consider Groundwater Source Protection Zones and are likely to require consultation with the Environment Agency. Early consideration of SuDS within master planning will typically allow a more effective scheme to be designed.

Further guidance on designing SuDS to reduce phosphorus[9] and nitrogen[10] in surface water runoff can be found in the relevant CIRIA guidance documents.

12.7.2 Benefits of SuDS

Flood Risk

SuDS are most effective at reducing flood risk for relatively high intensity, short and medium duration events, and are particularly important in mitigating potential increases in surface water flooding, sewer flooding and flooding from small and medium sized watercourses resulting from development.

Water Resources

A central principle of SuDS is the use of surface water as a resource. Traditionally, surface water drainage involved the rapid disposal of rainwater, by conveying it directly into a sewer or wastewater treatment works.

9 CIRIA (2022) Using SuDS to reduce phosphorus in surface water runoff (C808F). Accessed online at: Using SuDS to reduce phosphorus in surface water runoff (ciria.org) on: 05/12/2023.

10 CIRIA (2022) Using SuDS to reduce nitrogen in surface water runoff (C815F). Accessed online at: New guidance for Using SuDS to reduce nitrogen in surface water runoff (ciria.org) on: 05/12/2023.

SuDS techniques such as rainwater harvesting, allow rainwater to be collected and re-used as non-potable water supply within homes and gardens, reducing the demand on water resources and supply infrastructure.

Climate Resilience

Climate projections for the UK suggest that winters may become milder, and wetter and summers may become warmer, but with more frequent higher intensity rainfall events, particularly in the southeast. This would be expected to increase the volume of runoff, and therefore the risk of flooding from surface water, and diffuse pollution, and reduce water availability.

SuDS offer a more adaptable way of draining surfaces, controlling the rate and volume of runoff leaving urban areas during high intensity rainfall, and reducing flood risk to downstream communities through storage and controlled release of rainwater from development sites.

Through allowing rainwater to soak into the ground, SuDS are effective at retaining soil moisture and groundwater levels, which allows the recharge of the watercourses and underlying aquifers. This is particularly important where water resource availability is limited, and likely to become increasingly scarce under future drier climates.

Biodiversity

The water within a SuDS component is an essential resource for the growth and development of plants and animals, and biodiversity benefits can be delivered even by very small, isolated schemes. The greatest value can be achieved where SuDS are planned as part of a wider green landscape, providing important habitat, and wildlife connectivity. With careful design, SuDS can provide shelter, food, foraging and breeding opportunities for a variety of species including plants, amphibians, invertebrates, birds, bats and other animals.

Amenity

Designs using surface water management systems to help structure the urban landscape can enrich its aesthetic and recreational value, promoting health and well-being and supporting green infrastructure. Water managed on the surface rather than underground can help reduce summer temperatures, provide habitat for flora and fauna and act as a resource for local environmental education programmes and working groups and directly influence the sense of community in an area. Although there are few comparative studies, the sites compared in available studies indicate that SuDS are more cost-effective than traditional drainage systems[11].

Kingsbrook, Aylesbury - SuDS Case Study

As part of the Kingsbrook new village outside Aylesbury, Barratt Homes and David Wilson Homes worked with the RSPB and the former Aylesbury Vale District Council to deliver a SuDS scheme which created habitats for wildlife, while improving the quality of life for the

11 Susdrain (2023) Comparisons of costs and benefits. Available at: Comparison of costs and benefits (susdrain.org)

new community. The design included a network of swales to collect and convey surface water runoff along the ground surface, which then discharged into a series of storage ponds. It also included the creation of the wetland habitat of Oakfield Lake Nature reserve. Footpaths, benches and viewing platforms were designed to overlook the water features. The banks of the ponds were planted with native wildflowers, and less than one year after the first ponds were installed, the RSPB recorded egrets and several species of dragonfly[12].

Figure 12.4 Seating area and footpath overlooking water feature at Kingsbrook development site, Aylesbury (Credit: JBA)

Figure 12.5 Homes overlooking drainage feature in Kingsbrook, Aylesbury (Credit: JBA)

12 Ponds and streams: information for Kingsbrook residents. Available at: 4-suds-information-sheet-v4.pdf (kingsbrook-aylesbury.co.uk)

12.7.3 Suitable SuDS techniques

The hydraulic and geological characteristics of each property development site across BDBC should be assessed to identify the most appropriate forms of surface water management and any constraining factors to the utilisation of SuDS. These assessments are designed to inform the early-stage site planning process and should be followed up the site-specific detailed drainage assessments.

Appropriate SuDS techniques have been categorised into five main groups, as shown in Table 12.4, with further details provided on the Susdrain website. Further site-specific investigation should be conducted to determine what SuDS techniques could be used on a particular development, informed by detailed ground investigations.

Table 12.4 Summary of SuDS Categories

SuDS Type13	Technique
Source Control	Green Roof, Rainwater Harvesting, Pervious Pavements, Rain Gardens
Infiltration	Infiltration Trench, Infiltration Basin, Soakaway
Detention	Pond, Wetland, Subsurface Storage, Shallow Wetland, Extended Detention Wetland, Pocket Wetland, Submerged Gravel Wetland, Wetland Channel, Detention Basin
Filtration	Surface Sand filter, Sub-Surface Sand Filter, Perimeter Sand Filter, Bioretention, Filter Strip, Filter Trench
Conveyance14	Dry Swale, Under-drained Swale, Wet Swale

12.7.4 Natural Flood Management

Natural Flood Management (NFM) is used to protect, restore, and re-naturalise the function of catchments and rivers to reduce flood risk. A wide range of techniques can be used that aim to reduce flooding by working with natural features and processes in order to store or slow down flood waters before they can damage flood risk receptors (e.g., people, property, infrastructure, etc.).

Techniques and measures, which could be applied in BDBC include:

- Offline storage areas
- Re-meandering streams
- Targeted woodland planting
- Reconnection and restoration of functional floodplains
- Restoration of rivers and removal of redundant structures
- Installation or retainment of large woody material in river channels

13 SuDS components overview (susdrain.org)

14 Swales & conveyance channels overview (susdrain.org)

- Improvements in management of soil and land use
- Creation of rural and urban SuDS

In 2017, the Environment Agency published an online evidence base[15] to support the implementation of NFM and with JBA produced maps showing locations with the potential for NFM measures[16]. These maps are intended to be used alongside the evidence directory to help practitioners think about the types of measure that may work in a catchment and the best places in which to locate them. There are limitations with the maps; however, it is a useful tool to help start dialogue with key partners.

12.7.5 Multiple Benefits of NFM

In addition to flood risk benefits, there are also significant benefits in other areas such as habitat provision, air quality, climate regulation and water quality.

Many NFM measures have the ability to reduce nutrient and sediment sources by reducing surface runoff flows from higher ground, reducing soil erosion, trapping sediment at the edge of agricultural land, or encouraging deposition of sediments behind natural dams upstream in watercourses.

Suitable techniques may include:

- Leaky dams
- Woodland planting
- Buffer strips
- Runoff retention ponds
- Land management techniques (soil aeration, cover crops etc.)

Case Study - Black Brook Slow the Flow

Four engineered log dams were installed on Black Brook at an estimated cost of £2,000, funded by Natural England and the Environment Agency to restore Stanley Bank SSSI. The scheme aimed to improve habitat and reduce the risk of flooding. However, the scheme also resulted in reduced levels of phosphate and nitrate in Black Brook, with phosphate concentrations falling by 3.6mg/l. By 2035, it is predicted that 792m^3 of sediment will be stored in three ponds retained by the dams.

15 Working with natural processes to reduce flood risk, Environment Agency (2018). Accessed online at: https://www.gov.uk/government/publications/working-with-natural-processes-to-reduce-flood-risk on: 10/02/2023.

16 Mapping the potential for working with natural process, Environment Agency and JBA (2017). Accessed online at: https://www.arcgis.com/home/item.html?id=7315f943998847e2b3797a85665f5438 on: 10/02/2023.

Reproduced from Case Study 17. Black Brook Slow the Flow, St Helens, Norbury, Rogers and Brown, EA WwNP Evidence Base 2017. Photograph taken on 8 May 2015; courtesy of Matthew Catherall

12.7.6 Integrated Constructed Wetlands

An integrated constructed wetland (ICW) is an artificial wetland created for the purpose of treating polluted water, whether this is municipal wastewater, grey water from residential properties, or agricultural runoff.

They are usually unlined, free surface flow wetlands, designed to contain and treat influents within emergent vegetated areas.

Defra carried out a systematic review of the effectiveness of various wetland types, including ICWs for mitigating agricultural pollution such as phosphate and nitrate. The overall conclusion was that all wetland types are very effective at reducing major nutrients and suspended sediments, with the exception of nitrite in ICWs. Nitrate is only reduced when passing through overland buffer strips and through constructed wetlands with vegetation, where the systematic review showed a mean reduction of 29% across the evidence included in the study.

The mean reduction in Total Phosphorus across the evidence base was 78%.

It needs to be noted that in some cases where P is especially high the effectiveness of removal may be less certain. Although the reduction in total phosphorus is beneficial, stakeholders need to ensure the excess nutrients are dealt with at source, such as storm overflows and at a policy level.

Other techniques to manage nutrients are possible such as catchment nutrient balancing, where excess nutrients are managed at a catchment level, as well as catchment permitting.

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These techniques are recommended where environmental capacity is restrictive to growth. TW is not eligible for this due to a low Environmental Performance Assessment (EPA) rating. The situation for Southern Water and South East Water are unknown.

Case Study - Frogshall ICW

The Upper River Mun in Norfolk was experiencing chronic pollution, and a loss in biodiversity in the river. Investigation found that nutrients from a Sewage Treatment Works upstream were contributing to this issue.

A pilot ICW was created consisting of three shallow ponds, filled with 18,000 emergent aquatic plants, and the outfall from the treatment works was diverted to pass through the wetland.

Early monitoring has shown that 90% of the phosphate is being removed by the wetland, and a large increase in biodiversity downstream observed.

12.7.7 Agricultural Management

The Environment Agency's 'Reason for Not Achieving Good' database indicates that one of the reasons for some of the watercourses in the area not meeting 'Good' WFD standards can be related to agriculture and rural land use. The cause of this includes pollution from fertilisers, manures, pesticides and soils washing into streams when it rains or percolating into the groundwater. Other pressures from agriculture include deepening, widening or re-routing of streams for land drainage, gravel removal and bankside erosion.

There is a significant potential to improve water quality by interventions aimed at agricultural sources, especially considering the measures already taken by the water companies to reduce their contribution to phosphate load.

Potential schemes could include:

- Buffer strips
- Cross slope tree planting
- Runoff retention basins
- Contour ploughing
- Cover crops

There is considerable overlap with NFM measures, and the challenges are also very similar. Exact impacts are difficult to measure, although modelling tools such as Farmscoper[17] exist to help with this. Once a scheme is implemented it relies on the landowner to continue to maintain it in order to maintain the mitigation benefit.

Funding for agricultural interventions could come from Catchment Sensitive Farming or a Payment for Ecosystem Services approach.

17 Farmscoper webpage, ADAS (2020). https://www.adas.uk/Service/farmscoper Accessed on 10/02/2023.

12.7.8 Barriers

Whilst there are many benefits to implementing NFM and constructed wetlands, or modifying agricultural practises, the impact of these techniques is hard to quantify, and relies on ongoing maintenance to maintain that benefit. Where a potential scheme is not on a development site it will also require permission and support of the landowner. It may not be possible to influence this through planning policy.

12.8 Conclusions and recommendations

12.8.1 Conclusions

- The potential impact of development on protected sites within and downstream of BDBC should be considered in future plan making. This applies to both the impact of abstraction and of additional wastewater discharge as well as the impact of surface water runoff.
- Water quality modelling has predicted no significant deteriorations in water quality at environmental sites.
- 20 allocations are located within groundwater Source Protection Zones. The EA has published management advice for development within these zones. This can be accessed here.
- Development sites within the study area could be sources of diffuse pollution from surface runoff.
- SuDS are required on all development sites. Their design should consider both water quantity and water quality and site-level investigations should be undertaken to define the most appropriate SuDs types for each specific development.
- BDBC should be consulted at an early stage of development to ensure that SuDS are implemented and designed in response to site characteristics and policy factors.
- In the wider area, opportunities exist to implement natural flood management techniques to achieve multiple benefits of flood risk, water quality and habitat creation.
- BDBC is home to a number of chalk streams - an important and globally rare habitat. The is an opportunity for Local Plan policy to contribute to their protection.

12.8.2 Recommendations

Recommendation	Responsibility	Timescale
Consider the environmental impact of development on protected sites downstream of receiving wastewater treatment works in the Habitats Regulations Assessment	BDBC	Local Plan development

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Recommendation	Responsibility	Timescale
The Local Plan should include policies that require all development proposals with the potential to impact on areas with environmental designations to be considered in line with the relevant legislation and where stated, in consultation with Natural England (for national and international designations and priority habitats).	BDBC	Local Plan development
The Local Plan should include policies that require development sites to adopt SuDS to manage water quality of surface runoff.	BDBC	Local Plan development
In partnership, identify opportunities for incorporating SuDS into open spaces and green infrastructure, to deliver strategic flood risk management and meet WFD water quality targets.	BDBC, Developers, SW, TW, EA	Ongoing
Developers should include the design of SuDS at an early stage to maximise the benefits of the scheme.	Developers	Ongoing
Opportunities for Natural Flood Management that include schemes aimed at reducing / managing runoff should be considered to reduce nutrient and sediment pollution within BDBC.	BDBC, EA, NE.	Ongoing

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13 Overall conclusions and recommendations

13.1 Conclusions

Table 13.1 Table of conclusions

Assessment	Conclusion
Water resources	• Water resources in England are under considerable pressure. The Environment Agency has stated that "the scale of the challenge we face increases with time and, by 2050, we are looking at a shortfall of nearly 5 billion litres of water per day between the sustainable water supplied available and the expected demand." • The majority of the predicted growth in BDBC is within SEW's Bracknell WRZ. SEW have advised that the housing numbers shared with them are considerably higher than they have factored into their WRMP24. The increase is likely to cause stress in their water supply network that they would be unable to resolve until a new major infrastructure scheme (a transfer pipeline from Surrey Hill service reservoir towards Basingstoke is completed in 2033. They advise that they "would not be able to accommodate any level of growth in excess of our current WRMP24 forecast assumptions". This effectively puts a cap on the amount of development that is possible within the Bracknell WRZ, which also includes other LPAs. • Careful coordination of development plans in the early part of the Local Plan period, in collaboration with neighbouring authorities, is required in order to ensure that growth does not exceed the WRMP24 forecast. • Approximately 2,500 dwellings are planned within the two SW WRZs. SW have confirmed that there is sufficient time to adapt to the additional planned growth beyond that accounted for in the WRMP24. • There are 1,125 dwellings planned in the TW WRZ. From a total planned growth of 25,550 during the plan period. As the growth from BDBC is a small proportional of the overall growth, there is likely to be sufficient time to adapt to any increase beyond that accounted for in the WRMP24. • Part G of Building regulations currently states that new build housing should achieve a minimum of 125 l/p/d. A tighter target of 110l/p/d is allowed if the local authority

Assessment	Conclusion
	can establish a clear need based on available evidence. Many LPAs are now going further than this. The Written Ministerial Statement (WMS) by the former Secretary of State for Levelling Up, Housing and Communities (DLUHC) provides for this. • Basingstoke and Deane is in an area classified by the Environment Agency as being under serious water stress. It is also home to several chalk streams - a globally rare ecosystem that is sensitive to abstraction. • The Catchment Based Approach (CaBA) Chalk Stream Strategy recommends that a water efficiency target of 90l/p/d is adopted in chalk stream areas. The Government's EIP23 states that the "Chalk Stream strategy should be supported". • Natural England and Southern Water are supportive of a water efficiency target that goes beyond building regulations. • In view of the sensitive environmental sites in the area, and the long-term national target of 110l/p/d across all housing (including existing), it is recommended that a water efficiency target of 90l/p/d is adopted across the BDBC area. This should be achieved using a fittings-based approach and supported by an equivalent non-household target where development will aim to achieve full credits in the BREEAM water calculator with a minimum of 3 credits in WAT01.
Water supply	• SW and TW provided a site-by-site assessment of potential allocations in their supply areas. This identified two sites where further modelling by TW would be required. And upgrades to the network were likely to be required. SEW were not able to provide a site-by-site assessment. • Upgrades to the local supply network would be funded as part of the developer Infrastructure Charge. Early engagement between developers, BDBC and the water companies is recommended to ensure upgrades are in place prior to occupation.
Wastewater network	• Development in areas where there is limited wastewater network capacity will increase pressure on the network, increasing the risk of a detrimental impact on customers, and increasing the likelihood of storm overflow operation.

Assessment	Conclusion
	Early engagement with developers, Southern Water and Thames Water is required, and modelling of the network may be required at the planning application stage. • Where network capacity constraints are identified, network reinforcement may be required which would be funded as part of the developer infrastructure charge. It may be necessary for development sites to be phased in line with the provision of any network upgrades.
Storm overflows	• Storm overflow performance in the BDBC area is generally poor, with ten out of twelve storm overflows present in the study area currently operating above the threshold for investigation. 2024 was a particularly bad year, in part because it was a wetter than average year, for example the Basingstoke WwTW catchment has issues with groundwater infiltration and so a wet year makes a significant different to storm overflow performance. This was not the case in 2022 and 2023 when many of the storm overflows also operated well above the threshold. • Further development in catchments where there are poorly performing overflows increase the risk of storm overflow operation due to increased sewage flows and surface runoff. • There are opportunities through the planning system to ease pressure on the wastewater network by separating foul and storm flow in existing combined systems and not allowing new surface water connections. Surface water can also be better managed by retrofitting SuDS in existing residential areas, and in new development, ensuring SuDS are incorporated into designs at the master planning stage to maximise the potential benefits.
Wastewater treatment	• There are 22 WwTWs within or serving BDBC. Of these 16 are expected to serve growth during the Local Plan period. • The majority of the planned growth is served by Basingstoke WwTW. In the exceptionally wet year of 2024, it failed its maximum permitted volume. It is expected to remain comfortably compliant with its permit limit in 2025. Despite this, it is anticipated that wastewater treatment capacity at Basingstoke WwTW is not likely to restrict growth, as long as an upgrade to re-permit the site

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Assessment	Conclusion
	including allowance form planned growth is implemented in AMP9. It is recommended that the Council maintains regular communications with Thames Water and the Environment Agency regarding this matter, and may wish to develop a Statement of Common Ground with TW and EA for inclusion within the Local Plan evidence base. • Upgrades may also be required at Barton Stacey, Overton, North Waltham and Whitchurch WwTWs in order to serve growth during the plan period.
Odour	• The odour screening assessment has identified 11 sites, within 800m of a WwTW where an odour impact assessment would be recommended. This should be funded by the developer.
Flood risk	• At the point of discharge for Basingstoke WwTW, the additional flow from growth makes up less than 5% of the Q30 flow and less than 5% of the Q100 flow. At smaller works the additional flow is below that which can be modelled. The impact of increased effluent flows is not predicted to have a significant impact upon flood risk in any of the receiving watercourses.
Water quality	• The EA reasons for not achieving good (RNAG) dataset indicates that the water industry (sewage discharges) and urbanisation are among the main reasons for watercourses not achieving good status in this area. Growth during the local plan period will increase the discharge of treated wastewater from WwTWs in BDBC. There is a potential for this to cause a deterioration in water quality in the receiving watercourses and this must be carefully considered. • The modelling indicates the growth during the Local Plan period would not result in a significant deterioration (10% or over or deterioration in class) in water quality at any of the modelled WwTWs and growth alone will not prevent good ecological status being prevented in the future should improvements in upstream water quality be made.
Environmental impact	• The potential impact of development on a protected sites within and downstream of BDBC should be considered in future plan making. This applies to both the impact of abstraction and of additional wastewater discharge as well as the impact of surface water runoff.

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Assessment	Conclusion
	• Water quality modelling has predicted no significant deteriorations in water quality at environmental sites • 20 allocations are located within groundwater Source Protection Zones. The EA has published management advice for development within these zones. This can be accessed here. • Development sites within the study area could be sources of diffuse pollution from surface runoff. • SuDS are required on all development sites. Their design should consider both water quantity and water quality and site-level investigations should be undertaken to define the most appropriate SuDs types for each specific development. • BDBC should be consulted at an early stage of development to ensure that SuDS are implemented and designed in response to site characteristics and policy factors. • In the wider area, opportunities exist to implement natural flood management techniques to achieve multiple benefits of flood risk, water quality and habitat creation. • BDBC is home to a number of chalk streams - an important and globally rare habitat. The is an opportunity for Local Plan policy to contribute to their protection.

13.2 Recommendations

Table 13.2 Table of recommendations

WCS aspect	Recommendation	Responsibility	Timeframe
Water resources	Continue to regularly review forecast and actual household growth across the supply region through WRMP Annual Update reports, and where significant change is predicted, engage with Local Planning Authorities.	Thames Water, South East Water and Southern Water	Ongoing
Water resources	Provide yearly updates of projected housing growth to water companies to inform WRMP updates.	BDBC	Ongoing
Water resources	A Statement of Common Ground is required between BDBC and SEW to agree a housing number during the early part of the Local Plan.	BDBC and SEW	Part of Local Plan process

WCS aspect	Recommendation	Responsibility	Timeframe
Water resources	Use planning policy to require a water efficiency standard of 90l/p/d to be achieved using the fittings-based approach. The policy should allow for a future reduction in the water efficiency target if required.	BDBC	In Local Plan
Water resources	This should be supported by the requirement for non-household development to achieve three credits in the assessment category WAT01 of the BREEAM UK New Construction Standard.	BDBC	In Local Plan
Water resources	Larger residential developments and commercial developments should consider incorporating greywater recycling and/or rainwater harvesting into development at the master planning stage in order to reduce water demand.	BDBC	Ongoing
Water supply	Undertake network modelling where appropriate to ensure adequate provision of water supply to new sites without detriment to existing customers and feedback to BDBC on implications for phasing of sites.	SEW, SW, TW	Early in Local Plan period
Water supply	Early engagement is required with SEW, SW and TW to ensure infrastructure is in place prior to occupation.	Developers and BDBC	Early in Local Plan period
Water supply	BDBC should obtain infrastructure maps from SEW, SW and TW to ensure existing water supply infrastructure is taken into account in site layout.	BDBC and Developers	At master planning stage
Wastewater network	Early engagement between BDBC, SW and TW is required to ensure that where strategic infrastructure is required, it can be planned in by SW and TW and will not lead to any increase in discharges from sewer overflows.	BDBC, Developers, SW, TW	Early in the LP process
Wastewater network	Take into account wastewater infrastructure constraints in phasing development in	BDBC, SW, TW	Ongoing

WCS aspect	Recommendation	Responsibility	Timeframe
	partnership with the sewerage undertaker		
Wastewater network	Developers will be expected to work with the sewerage undertaker closely and early in the planning promotion process to develop an Outline Drainage Strategy for sites. The Outline Drainage strategy should demonstrate the wastewater assets required, their locations including points of connection to the public foul sewerage, whether the site drainage will be adopted by the water company and if any sewer requisitions will be required.	BDBC, SW, TW and developers	Ongoing
Storm overflows	Developers will be expected to demonstrate to the Lead Local Flood Authority (LLFA) that surface water from a site will be disposed using a sustainable drainage system (SuDS) with connection to surface water sewers seen as the last option. New connections for surface water to foul sewers will be resisted by the LLFA.	LLFA and developers	Ongoing
Storm overflows	WaSCs should ensure that appropriate investment is available in AMP8 and AMP9 to meet SOAF commitments to be delivered by 2035 in the area.	TW and SW	As part of PR29 planning process
Wastewater treatment	Early engagement with SW and TW is required to ensure that provision of WwTW capacity is aligned with delivery of development.	BDBC	Ongoing
Wastewater treatment	Continue to provide Annual Monitoring Reports to SW and TW detailing projected housing growth.	BDBC	Ongoing
Wastewater treatment	SW and TW to assess growth demands as part of their wastewater asset planning activities and feedback to the Council if concerns arise.	SW and TW	Ongoing

WCS aspect	Recommendation	Responsibility	Timeframe
Wastewater treatment	Consider developing a Statement of Common Ground covering the growth in Basingstoke until a growth scheme at Basingstoke WwTW can be implemented in AMP9.	BDBC, TW and EA	Ongoing
Wastewater treatment	A wastewater solution is required for the site at Popham. Early engagement is required between the developer, BDBC and SW to define the appropriate connection point and / or new infrastructure required. The EA may also be required if a new WwTW is required.	Developer, SW. BDBC	If site is taken forward.
Odour	Consider odour risk in the sites identified to be potentially at risk from nuisance odour.	BDBC, Developers	Ongoing
Odour	Carry out an odour assessment for site identified as being at risk of nuisance odour.	Developers	Ongoing
Flood risk	Proposals to increase discharges to a watercourse may also require a flood risk activities environmental permit from the EA (in the case of discharges to Main River), or a land drainage consent from the Lead Local Flood Authority (in the case of discharges to an Ordinary Watercourse).	TW SW	During design of WwTW upgrades
Water quality	Continue to provide annual monitoring reports to SW and TW detailing projected housing growth in the Local Authority	BDBC	Ongoing
Water quality	Take into account the full volume of growth (From BDBC and neighbouring authorities) within the catchment	SW, TW	Ongoing
Environmental impact	Consider the environmental impact of development on protected sites downstream of receiving wastewater treatment works in the Habitats Regulations Assessment	BDBC	Local Plan development

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WCS aspect	Recommendation	Responsibility	Timeframe
Environmental impact	The Local Plan should include policies that require all development proposals with the potential to impact on areas with environmental designations to be considered in line with the relevant legislation and where stated, in consultation with Natural England (for national and international designations and priority habitats).	BDBC	Local Plan development
Environmental impact	The Local Plan should include policies that require development sites to adopt SuDS to manage water quality of surface runoff.	BDBC	Local Plan development
Environmental impact	In partnership, identify opportunities for incorporating SuDS into open spaces and green infrastructure, to deliver strategic flood risk management and meet WFD water quality targets.	BDBC, Developers, SW, TW, EA	Ongoing
Environmental impact	Developers should include the design of SuDS at an early stage to maximise the benefits of the scheme.	Developers	Ongoing

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14 References

BRE. (2018). *Delivering Sustainable Buildings: Savings and Payback.* Retrieved from https://files.bregroup.com/breeam/briefingpapers/Delivering-Sustainable-Buildings-Savings-and-Payback-Office-Case-Study-BREEAM-NC-2018_BREEAM_BRE_115359_BriefingPaper.pdf

BRE. (2018b). *BREEAM*. Retrieved from bregroup.com: https://files.bregroup.com/breeam/technicalmanuals/NC2018/

BRE. (2023a, January). *BRE*. Retrieved from homequalitymark.com: https://www.homequalitymark.com/professionals/standard/

British Gas. (2023, 09 27). *What's the average gas and electricity bill in Great Britain?* Retrieved from British Gas: https://www.britishgas.co.uk/energy/guides/average-bill.html

Committee on Climate Change. (2019). Retrieved from https://www.theccc.org.uk/wp-content/uploads/2019/02/UK-housing-Fit-for-the-future-CCC-2019.pdf

Department for Energy Security and Net Zero. (2022, September 29). *Energy Consumption in the UK 2022.* Retrieved from https://www.gov.uk/government/statistics/energy-consumption-in-the-uk-2022

Department for Environment Food & Rural Affairs. (2023, 06 30). *Policy paper: Local nature recovery strategies*. Retrieved from gov.uk: https://www.gov.uk/government/publications/local-nature-recovery-strategies/local-nature-recovery-strategies

Department for Environment, Food & Rural Affairs. (2023, April 04). *Policy paper: Plan for Water: our integrated plan for delivering clean and plentiful water*. Retrieved from gov.uk: https://www.gov.uk/government/publications/plan-for-water-our-integrated-plan-for-delivering-clean-and-plentiful-water/plan-for-water-our-integrated-plan-for-delivering-clean-and-plentiful-water#chapter-3-securing-a-plentiful-supply-of-water

Department for Levelling Up, Housing and Communities. (2019, 03 15). *Planning Practice Guidance: Climate change.* Retrieved from gov.uk: https://www.gov.uk/guidance/climate-change

Department for Levelling Up, Housing and Communities. (2019, July 22). *Water supply, wastewater and water quality guidance*. Retrieved from Gov UK: https://www.gov.uk/guidance/water-supply-wastewater-and-water-quality

Department for Levelling Up, Housing and Communities. (2023, 09 05). *National Planning Policy Framework.* Retrieved from gov.uk: https://www.gov.uk/government/publications/national-planning-policy-framework--2

Department for the Environment, Food and Rural Affairs. (2023, July 03). *Designate a bathing water: guidance on how to apply*. Retrieved from gov.uk:

DRAFT

https://www.gov.uk/government/publications/bathing-waters-apply-to-designate-or-de-designate/designate-a-bathing-water-guidance-on-how-to-apply

Department of Environment, Food & Rural Affairs. (2012). *National Policy Statement for Waste Water.* London: The Stational Office.

Department of Environment, Food & Rural Affairs. (2023). *National Policy Statement for Water Resources Infrastructure.* gov.uk.

EC Harris. (2014, September). *Housing Standards Review.* Retrieved from Gov.UK: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/353387/021c_Cost_Report_11th_Sept_2014_FINAL.pdf

Energy Saving Trust. (2020). *Waterwise Database.* Retrieved from Water Labelling Options: Cost Benefits Analysis for Wales: https://database.waterwise.org.uk/wp-content/uploads/2021/01/Welsh-Government-water-labelling-report-29-10-20.pdf

Environment Agency. (2012). *No deterioration and the WFD.* Retrieved from http://www.fwr.org/WQreg/Appendices/No_deterioration_and_the_WFD_50_12.pdf

Environment Agency. (2014). *H1 Annex D2 - Assessment of sanitary and other pollutants within Surface Water Discharges.* Retrieved from Environment Agency: https://assets.publishing.service.gov.uk/media/5a7f8586e5274a2e87db65a3/H1_annex_D2.pdf

Environment Agency. (2018). *The Environment Agency's approach to groundwater protection.* Retrieved from gov.uk: https://assets.publishing.service.gov.uk/media/5ab38864e5274a3dc898e29b/Envirnment-Agency-approach-to-groundwater-protection.pdf

Environment Agency. (2019). Retrieved from Protecting our precious chalk streams: https://environmentagency.blog.gov.uk/2019/10/02/protecting-our-precious-chalk-streams

Environment Agency. (2021, January 06). *Water cycle studies guidance*. Retrieved from Gov UK: https://www.gov.uk/guidance/water-cycle-studies

Environment Agency. (2021b). *Water Stressed Areas - 2021 Classification.* Retrieved from Gov.uk: https://www.gov.uk/government/publications/water-stressed-areas-2021-classification

Environment Agency. (2022, February 01). *Discharges to surface water and groundwater: environmental permits*. Retrieved from gov.uk: https://www.gov.uk/guidance/discharges-to-surface-water-and-groundwater-environmental-permits

Environment Agency. (2023a, September 29). *Catchment Data Explorer*. Retrieved from gov.uk: https://environment.data.gov.uk/catchment-planning/help/usage#chemical-status

Environment Agency. (2023b, September 09). *Draft river basin management plan: maps*. Retrieved from https://environment.maps.arcgis.com/: https://environment.maps.arcgis.com/apps/MapSeries/index.html?appid=14f7bcac038a4898866aa461b48e305d&entry=2

Environment Agency. (2024). *A summary of England's revised draft regional and water resources management plans*. Retrieved from Environment Agency: https://www.gov.uk/government/publications/a-review-of-englands-draft-regional-and-water-resources-management-plans/a-summary-of-englands-draft-regional-and-water-resources-management-plans

Environment Agency i, E. (2023). *Environment Agency.* Retrieved from Gov.uk blog, creating a better place: https://environmentagency.blog.gov.uk/2021/03/31/event-duration-monitoring-lifting-the-lid-on-storm-overflows/%20on:%2015/11/2022

European Union. (2015). *European Court of Justice Press Release.* Retrieved from https://curia.europa.eu/jcms/upload/docs/application/pdf/2015-07/cp150074en.pdf

Future Homes Hub. (2024). *About us.* Retrieved from Future Homes Hub: https://www.futurehomes.org.uk/about

Future Homes Hub. (2024). *Water ready - A report to inform HM government's roadmap for water efficient new homes.* Future Homes Hub.

HM Government. (1981). *Wildlife and Countryside Act*. Retrieved from legislation.gov: https://www.legislation.gov.uk/ukpga/1981/69/section/28G

HM Government. (2010). *Flood and Water Management Act.* Retrieved from legislation.gov.uk: https://www.legislation.gov.uk/ukpga/2010/29/contents

HM Government. (2011). *Localism Act 2011.* Retrieved from legislation.gov.uk: https://www.legislation.gov.uk/ukpga/2011/20/introduction/enacted

HM Government. (2015a, March). *Housing: optional technical standards.* Retrieved from Gov.UK: https://www.gov.uk/guidance/housing-optional-technical-standards

HM Government. (2015b, October). *Sanitation, hot water safety and water efficiency.* Retrieved from Gov.UK: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/504207/BR_PDF_AD_G_2015_with_2016_amendments.pdf

HM Government. (2016). *The Environmental Permitting (England and Wales) Regulations 2016.* Retrieved from legislation.gov.uk: https://www.legislation.gov.uk/uksi/2016/1154/contents/made

HM Government. (2017). *The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.* Retrieved from legislation.gov.uk: https://www.legislation.gov.uk/uksi/2017/407/contents/made

HM Government. (2019, July 22). *Water supply, wastewater and water quality.* Retrieved from Gov.uk: https://www.gov.uk/guidance/water-supply-wastewater-and-water-quality

HM Government. (2021). *Environment Act,*. Retrieved from legislation.gov: https://www.legislation.gov.uk/ukpga/2021/30/part/5/enacted

HM Government. (2023). *Levelling-up and Regeneration Act 202.* Retrieved from legislation.gov.uk: https://www.legislation.gov.uk/ukpga/2023/55/enacted

JBA Consulting. (2022, December). *Sussex North Water Neutrality Strategy: Part C - Mitigation.* Retrieved from Crawley Council: https://crawley.gov.uk/sites/default/files/2022-12/Part%20C%20-%20water%20neutrality%20assessment.pdf

OfWAT. (2020, April). *Charging Rules for New Connection Services.* Retrieved from OfWAT: https://www.ofwat.gov.uk/wp-content/uploads/2018/07/19-07-22-Charging-Rules-for-New-Connection-Services-English-Undertakers-from-April-2020.pdf

Pickles, E. (2014, December). *Sustainable drainage systems*. Retrieved from Parliament.uk: https://questions-statements.parliament.uk/written-statements/detail/2014-12-18/HCWS161

Ramsar Convention Secretariat. (2010). *Wise use of wetlands.* Retrieved from ramsar.org: https://www.ramsar.org/sites/default/files/documents/library/hbk4-01.pdf

Thames Water. (2025). *Water Resources Management Plan 2024.* Retrieved from Thames Water: https://www.thameswater.co.uk/about-us/regulation/water-resources

UK Government. (2016). *Building Regulations 2010 Part G Appendix A.* Retrieved from Sanitation, hot water safety and water efficiency: Approved Document G: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/504207/BR_PDF_AD_G_2015_with_2016_amendments.pdf

UK Government. (2025, July). *Press release: Ofwat to be abolished in biggest overhaul of water since privatisation.* Retrieved from gov.uk: https://www.gov.uk/government/news/ofwat-to-be-abolished-in-biggest-overhaul-of-water-since-privatisation#:~:text=Ofwat%20is%20to%20be%20replaced,today%20(Monday%2021%20July).

Water UK. (2018, September). *A framework for the production of Drainage and Wastewater Managment Plans.* Retrieved from Water UK: https://www.water.org.uk/wp-content/uploads/2018/12/Water-UK-DWMP-Framework-Report-Main-Document.pdf

Waterwise. (2009). *Water Efficiency Reterofitting: A Best Practice Guide.* Retrieved from Waterwise: http://www.waterwise.org.uk/wp-content/uploads/2018/01/Waterwise-2009_Water-efficiency-Retrofitting_Best-practice.pdf

WRSE. (2025). *Final Regional Plan 2025.* Retrieved from Water Resources South East: https://www.wrse.org.uk/media/m33fdxe3/wrse-final-regional-plan-june-2025.pdf

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15 Appendices

A Appendix A - WINEP actions relating to water resources

Surface Waterbody Name	WINEP ID	Unique ID	Scheme Name(s)	Type of scheme/notes	Completion date
Kingsclere Brook (Source to Enborne)	08SO100035	08SO100035a	Kingsclere Brook Ecological Resilience Scheme	The AMP7 investigation will inform the requirement for in-river enhancements to be implemented in AMP8 to provide improved ecological resilience to the brook.	31/03/2030

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B Appendix B - WINEP actions relating to water quality

The table below is reproduced from the published WINEP spreadsheet. It contains acronyms and abbreviations that are present in the original table that may be difficult to interpret for those not working in the water industry. These are explained beneath the table.

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Surface Waterbody Name	WINEP ID	Unique ID	Scheme Name(s)	Type of scheme/notes	Completion date
Loddon (Basingstoke to River Lyde confluence at Hartley Wespall)	09TW100022	09TW100022a	Reduce Phosphorus Loadings at Basingstoke STW	0.25 mg/l Phosphorus permit at Basingstoke STW	31/03/2030
	08TW100554	08TW100554a	BASINGSTOKE STW	MCERTS certification of an AMP7 U_MON3 driver output overflow operation monitor (U_MON3a)	31/12/2026
	08TW101571	08TW101571a	BASINGSTOKE STW	UMON4c	31/12/2026
	08TW100106	08TW100106a	Reduce Nonylphenol loading	Basingstoke STW, Nonylphenol, 0.72 ug	31/03/2027
Bow Brook (Pamber End to Sherfield Green)	08TW100659	08TW100659a	SHERFIELD ON LODDON STW	MCERTS certification of an AMP7 U_MON3 driver output overflow operation monitor (U_MON3a)	31/12/2025
	08TW101607	08TW101607a	SHERFIELD ON LODDON STW	UMON4c	31/12/2026
Silchester Brook	08TW100661	08TW100661a	SILCHESTER STW	MCERTS certification of an AMP7 U_MON3 driver output overflow operation monitor (U_MON3a)	31/12/2025
	08TW101609	08TW101609a	SILCHESTER STW	UMON4c	31/03/2026

Surface Waterbody Name	WINEP ID	Unique ID	Scheme Name(s)	Type of scheme/notes	Completion date
Kingsclere Brook (Source to Enborne)	08TW100632	08TW100632a	KINGSCLERE STW	MCERTS certification of an AMP7 U_MON3 driver output overflow operation monitor (U_MON3a)	31/12/2025
	08TW101595	08TW101595a	KINGSCLERE STW	UMON4c	31/12/2026
	08TW100486	08TW100486a	Reduce cypermethrin loading	Kingsclere STW cypermethrin load standstill limit	31/12/2027
Enborne (Source to downstream A34)	08TW101108	08TW101108a	Knights Lane-Storm Overflows investigation	Storm Overflows investigation	30/04/2027
	08TW100680	08TW100680a	WASHWATER SEWAGE TREATMENT WORKS	MCERTS certification of an AMP7 U_MON3 driver output overflow operation monitor (U_MON3a)	31/12/2025
	08TW100399	08TW100399a	WASHWATER SEWAGE TREATMENT WORKS	Move AMP7 U_MON4 driver output to 2-minute flow monitoring (U_MON4a)	31/03/2026
Enborne (downstream A34 to Burghclere Brook)	08TW100184	08TW100184a	WFD Investigation of in river Dissolved Oxygen to inform future action	Investigation	30/04/2027

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Surface Waterbody Name	WINEP ID	Unique ID	Scheme Name(s)	Type of scheme/notes	Completion date
	08TW101108	08TW101108a	WASHWATER WWTW- Storm Overflows investigation	Storm Overflows investigation	30/04/2027
Foudry Brook (West End Brook to M4)	09TW100180	09TW100180a	Reduce Phosphorus Loadings at Stratfield Mortimer STW	0.25 mg/l Phosphorus permit at Stratfield Mortimer STW	31/03/2030
	08TW100647	08TW100647a	MORTIMER (STRATFIELD MORTIMER) STW	MCERTS certification of an AMP7 U_MON3 driver output overflow operation monitor (U_MON3a)	31/12/2025
	08TW100654	08TW100654a	READING SEWAGE TREATMENT WORKS	MCERTS certification of an AMP7 U_MON3 driver output overflow operation monitor (U_MON3a)	31/12/2025
	08TW101602	08TW101602a	MORTIMER (STRATFIELD MORTIMER) STW	UMON4c	31/12/2026
	08TW101604	08TW101604a	READING SEWAGE TREATMENT WORKS	UMON4c	31/12/2026
	08TW100052	08TW100052b	4e Emerging substances investigation impact to the environment	Reading STW	31/03/2030

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Surface Waterbody Name	WINEP ID	Unique ID	Scheme Name(s)	Type of scheme/notes	Completion date
R. Test (Upper)	08SO104732	08SO104732a	Overton WWTW	U_MON4b - Move AMP7 U_INV2 driver output to 2-minute flow monitoring	31/12/2026
	08SO102833	08SO102833a	OVERTON WWTW	U_MON3a: MCERTS certification of an AMP7 U_MON3 driver output overflow operation monitor	31/12/2026

Key to WINEP terminology:

AMP	Asset Management Period
EDM	Event Duration Monitoring - the monitoring of storm overflow operation
MCERTS	Monitoring Certification Scheme - a framework set up by the Environment Agency to provide standards for monitoring environmental emissions to air, land, and water. It is a requirement for companies operating under an environmental permit in England and Wales.
U_INV2	An investigation under the Urban Waste Water Treatment Regulations.
U_MON3 and U_MON4	Monitoring action under the Urban Waste Water Treatment Regulations. This action is to monitor the "Flow Passed Forward" (the volume of wastewater entering a WwTW).

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C Appendix C - Groundwater Dependent Terrestrial Ecosystems

Table 15.1: Groundwater Dependent Terrestrial Ecosystems that are within a groundwater body that overlaps with WRZs

GWDTE name	Groundwater body name	SWMI (Yes/No)
Alpine Meadow (SSSI)	Colne GW	Yes
Alresford Pond (SSSI)	Itchen River Chalk	Yes
Ash to Brookwood Heaths (SSSI)	Chobham Bagshot Beds	No
Ash to Brookwood Heaths (SSSI)	Farnborough Bagshot Beds	No
Ashford Hill Woods & Meadows (SSSI)	Aldermaston Bagshot Beds	No
Avery's Pightle (SSSI)	Thatcham Tertiaries	No
Basingstoke Canal (SSSI)	Chobham Bagshot Beds	No
Basingstoke Canal (SSSI)	Farnborough Bagshot Beds	No
Basingstoke Canal (SSSI)	Old Basing Tertiaries	No
Bere Mill Meadows (SSSI)	Test River GW	No
Bix Bottom (SSSI)	Chilterns South-West Chalk	Yes
Blackwater Valley (SSSI)	Farnborough Bagshot Beds	No
Blow's Down (SSSI)	Colne GW	Yes
Blow's Down (SSSI)	Lee Upper GW	Yes
Blow's Down (SSSI)	Ouse Upper Bedford Chalk	Yes
Bourley & Long Valley (SSSI)	Farnborough Bagshot Beds	No
Bowdown & Chamberhouse Woods (SSSI)	Thatcham Tertiaries	No
Boxford Water Meadows (SSSI)	Berkshire Downs Chalk	Yes
Bramshill (SSSI)	Farnborough Bagshot Beds	No
Bransbury Common (SSSI)	Test River GW	No
Bray Meadows (SSSI)	Maidenhead Chalk	No

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GWDTE name	Groundwater body name	SWMI (Yes/No)
Bray Meadows (SSSI)	Twyford Tertiaries	No
Bray Pennyroyal Field (SSSI)	Colne GW	Yes
Briff Lane Meadows (SSSI)	Thatcham Tertiaries	No
Broadmoor to Bagshot Woods & Heaths (SSSI)	Chobham Bagshot Beds	No
Broadmoor to Bagshot Woods & Heaths (SSSI)	Farnborough Bagshot Beds	No
Burghclere Beacon (SSSI)	Berkshire Downs Chalk	Yes
Burghclere Beacon (SSSI)	Test River GW	No
Burnham Beeches (SSSI)	Colne GW	Yes
Burnham Beeches (SSSI)	Maidenhead Chalk	No
Burnham Beeches (SSSI)	Twyford Tertiaries	No
Castle Bottom to Yateley and Hawley Commons (SSSI)	Farnborough Bagshot Beds	No
Chilbolton Common (SSSI)	Test River GW	No
Chilton Foliat Meadows (SSSI)	Berkshire Downs Chalk	Yes
Chinnor Hill (SSSI)	Chiltern Chalk Scarp	No
Chobham Common (SSSI)	Chobham Bagshot Beds	No
Colony Bog & Bagshot Heath (SSSI)	Chobham Bagshot Beds	No
Colony Bog & Bagshot Heath (SSSI)	Farnborough Bagshot Beds	No
Colyers Hanger (SSSI)	Godalming Lower Greensand	Yes
Colyers Hanger (SSSI)	Guildford Chalk	Yes
Croxley Common Moor (SSSI)	Colne GW	Yes
Decoy Pit, Pools & Woods (SSSI)	Aldermaston Bagshot Beds	No

GWDTE name	Groundwater body name	SWMI (Yes/No)
Denham Lock Wood (SSSI)	Colne GW	Yes
Dumsey Meadow (SSSI)	Chobham Bagshot Beds	No
East Aston Common (SSSI)	Test River GW	No
Easton Farm Meadow (SSSI)	Berkshire Downs Chalk	Yes
Eelmoor Marsh (SSSI)	Farnborough Bagshot Beds	No
Englemere Pond (SSSI)	Chobham Bagshot Beds	No
Esher Commons (SSSI)	Chobham Bagshot Beds	No
Fleet Pond (SSSI)	Farnborough Bagshot Beds	No
Foxlease & Ancell's Meadows (SSSI)	Farnborough Bagshot Beds	No
Fray's Farm Meadows (SSSI)	Colne GW	Yes
Freeman's Marsh (SSSI)	Berkshire Downs Chalk	Yes
Frieth Meadows (SSSI)	Chilterns South-West Chalk	Yes
Frogmore Meadows (SSSI)	Colne GW	Yes
Great Thrift Wood (SSSI)	Maidenhead Chalk	No
Great Thrift Wood (SSSI)	Twyford Tertiaries	No
Greywell Fen (SSSI)	Basingstoke Chalk	Yes
Greywell Fen (SSSI)	Old Basing Tertiaries	No
Kennet & Lambourn Floodplain (SSSI)	Berkshire Downs Chalk	Yes
Kennet Valley Alderwoods (SSSI)	Berkshire Downs Chalk	Yes
Kingcup Meadows & Oldhouse Wood (SSSI)	Colne GW	Yes
King's Copse (SSSI)	Thatcham Tertiaries	No
Langham Pond (SSSI)	Chobham Bagshot Beds	No
Langham Pond (SSSI)	Colne GW	Yes
Littleworth Common (SSSI)	Twyford Tertiaries	No

GWDTE name	Groundwater body name	SWMI (Yes/No)
Lodge Wood & Sandford Mill (SSSI)	Twyford Tertiaries	No
Longmoor Bog (SSSI)	Farnborough Bagshot Beds	No
Mapledurwell Fen (SSSI)	Basingstoke Chalk	Yes
Mid Colne Valley (SSSI)	Colne GW	Yes
Moorend Common (SSSI)	Chilterns South-West Chalk	Yes
Naphill Common (SSSI)	Chilterns South-West Chalk	Yes
Noar Hill (SSSI)	Alton Chalk	No
Noar Hill (SSSI)	Chichester Chalk	Yes
Ockham & Wisley Commons (SSSI)	Chobham Bagshot Beds	No
Odiham Common with Bagwell Green & Shaw (SSSI)	Farnborough Bagshot Beds	No
Old Park Wood (SSSI)	Colne GW	Yes
Old Rectory Meadows (SSSI)	Colne GW	Yes
Pamber Forest & Silchester Common (SSSI)	Aldermaston Bagshot Beds	No
Porton Down (SSSI)	Avon Upper Hampshire	Yes
Porton Down (SSSI)	Test River GW	No
River Itchen (SSSI)	Hants Central Bracklesham Group	No
River Itchen (SSSI)	Hants Central Lambeth Group	No
River Itchen (SSSI)	Itchen River Chalk	Yes
River Test (SSSI)	Hants Central Bracklesham Group	No
River Test (SSSI)	Hants Central Lambeth Group	No
River Test (SSSI)	Test River GW	No
Rodbed Wood (SSSI)	Chilterns South-West Chalk	Yes
Ron Ward's Meadow with Tadley Pastures (SSSI)	Aldermaston Bagshot Beds	No
Ruislip Woods (SSSI)	Colne GW	Yes

GWDTE name	Groundwater body name	SWMI (Yes/No)
Rushmore & Conholt Downs (SSSI)	Test River GW	No
Sandhurst to Owlsmoor Bogs & Heaths (SSSI)	Farnborough Bagshot Beds	No
Sarratt Bottom (SSSI)	Colne GW	Yes
Savernake Forest (SSSI)	Berkshire Downs Chalk	Yes
Sheepleas (SSSI)	Effingham Tertiaries	No
Sheepleas (SSSI)	Guildford Chalk	Yes
Smarts & Prey Heaths (SSSI)	Chobham Bagshot Beds	No
Snelsmore Common (SSSI)	Berkshire Downs Chalk	Yes
Staines Moor (SSSI)	Colne GW	Yes
Stockbridge Common Marsh (SSSI)	Test River GW	No
Stockbridge Fen (SSSI)	Test River GW	No
Sulham & Tidmarsh Woods & Meadows (SSSI)	Berkshire Downs Chalk	Yes
Swinley Park & Brick Pits (SSSI)	Chobham Bagshot Beds	No
Syon Park (SSSI)	Colne GW	Yes
Temple Island Meadows (SSSI)	Chilterns South-West Chalk	Yes
Thatcham Reed Beds (SSSI)	Berkshire Downs Chalk	Yes
Thatcham Reed Beds (SSSI)	Thatcham Tertiaries	No
Thorpe Hay Meadow (SSSI)	Colne GW	Yes
Tring Reservoirs (SSSI)	Chiltern Chalk Scarp	No
Wellington College Bog (SSSI)	Farnborough Bagshot Beds	No
West Minley Meadow (SSSI)	Farnborough Bagshot Beds	No

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GWDTE name	Groundwater body name	SWMI (Yes/No)
Weston Turville Reservoir (SSSI)	Chiltern Chalk Scarp	No
West's Meadow, Aldermaston (SSSI)	Aldermaston Bagshot Beds	No
Whitmoor Common (SSSI)	Chobham Bagshot Beds	No
Wick Wood & Worldham Hangers (SSSI)	Alton Chalk	No
Widdenton Park Wood (SSSI)	Chilterns South-West Chalk	Yes
Windsor Forest & Great Park (SSSI)	Chobham Bagshot Beds	No
Wraysbury & Hythe End Gravel Pits (SSSI)	Colne GW	Yes

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D Appendix D - Protected sites adjacent to rivers within WRZs serving TW and SW

Table 15.2 Protected sites that are adjacent to waterbodies within the WRZs

Site name	Surface waterbody name	SWMI (No/Yes)
Aldermaston Gravel Pits SSSI	Kennet and Holy Brook	No
Ashford Hill Woods and Meadows SSSI	Baughurst Brook	Yes
Basingstoke Canal SSSI	Hart (Crondall to Elvetham)	Yes
Basingstoke Canal SSSI	Fleet Brook	No
Basingstoke Canal SSSI	Cove Brook	No
Basingstoke Canal SSSI	Blackwater (Aldershot to Cove Brook confluence at Hawley)	No
Basingstoke Canal SSSI	Whitewater	No
Bere Mill Meadows SSSI	R. Test (Upper)	No
Bisham Woods SSSI	Thames (Reading to Cookham)	No
Blackwater Valley SSSI	Blackwater (Hawley to Whitewater confluence at Bramshill)	No
Bourley and Long Valley SSSI	Fleet Brook	No
Bowdown and Chamberhouse Woods SSSI	Kennet (Lambourn confluence to Enborne confluence)	No
Boxford Water Meadows SSSI	Lambourn (Source to Newbury)	No
Bramshill SSSI	Blackwater (Hawley to Whitewater confluence at Bramshill)	No
Bransbury Common SSSI	R. Test (Middle)	No
Bransbury Common SSSI	R. Test	No
Bransbury Common SSSI	R. Dever	No
Bray Meadows SSSI	Maidenhead Ditch	No
Brimpton Pit SSSI	Lower Enborne	No
Broadmoor to Bagshot Woods and Heaths SSSI	Blackwater (Hawley to Whitewater confluence at Bramshill)	No
Bushy Park and Home	Thames (Egham to Teddington)	No

Site name	Surface waterbody name	SWMI (No/Yes)
Park SSSI		
Castle Bottom to Yateley and Hawley Commons SSSI	Fleet Brook	No
Castle Bottom to Yateley and Hawley Commons SSSI	Blackwater (Hawley to Whitewater confluence at Bramshill)	No
Charleshill SSSI	Wey (Tilford to Shalford)	No
Charterhouse to Eashing SSSI	Wey (Tilford to Shalford)	No
Chilbolton Common SSSI	R. Test	No
Cock Marsh SSSI	Maidenhead Ditch	No
Decoy Pit, Pools & Woods SSSI	West End Brook (tributary of Foudry Brook)	No
Dumsey Meadow SSSI	Thames (Egham to Teddington)	No
East Aston Common SSSI	R. Test (Middle)	No
Easton Farm Meadow SSSI	Lambourn (Source to Newbury)	No
Englemere Pond SSSI	Cut (Ascot to Bull Brook confluence at Warfield)	No
Fleet Pond SSSI	Fleet Brook	No
Foxlease and Ancells Meadows SSSI	Fleet Brook	No
Freeman's Marsh SSSI	Kennet and Avon Canal and Dun above Hungerford	No
Freeman's Marsh SSSI	Middle Kennet (Hungerford to Newbury)	No
Great Thrift Wood SSSI	Cut (Binfield to River Thames confluence) and Maidenhead Ditch	No
Greenham and Crookham Commons SSSI	Enborne (downstream A34 to Burghclere Brook)	No
Greywell Fen SSSI	Whitewater	No
Greywell Tunnel (Basingstoke Canal) SSSI	Whitewater	No
Hartslock SSSI	Thames Wallingford to Caversham	No
Hazeley Heath SSSI	Hart (Elvetham to Hartley Wintney)	No

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Site name	Surface waterbody name	SWMI (No/Yes)
Heath Lake SSSI	Emm Brook	No
Hook Common and Bartley Heath SSSI	Whitewater	No
Kennet and Lambourn Floodplain SSSI	Middle Kennet (Hungerford to Newbury)	No
Kennet and Lambourn Floodplain SSSI	Lambourn (Source to Newbury)	No
Kennet Valley Alderwoods SSSI	Middle Kennet (Hungerford to Newbury)	No
King's Copse SSSI	Pang	Yes
Knight & Bessborough Reservoirs SSSI	Thames (Egham to Teddington)	No
Langham Pond SSSI	Thames (Cookham to Egham)	No
Lodge Wood & Sandford Mill SSSI	Loddon (Swallowfield to River Thames confluence)	No
Lower Test Valley SSSI	Test (Lower)	No
Mapledurwell Fen SSSI	Lyde	No
Moor Park SSSI	North Wey (Alton to Tilford)	No
Mottisfont Bats SSSI	R. Test (Middle)	No
Ockham and Wisley Commons SSSI	Wey (Shalford to River Thames confluence at Weybridge)	No
Odiham Common with Bagwell Green and Shaw SSSI	Whitewater	No
Pamber Forest and Silchester Common SSSI	Silchester Brook	No
Papercourt SSSI	Wey (Shalford to River Thames confluence at Weybridge)	No
Puttenham & Crooksbury Commons SSSI	Wey (Tilford to Shalford)	No
River Itchen - 2000227 SSSI	River Itchen	No
River Itchen - 2000227 SSSI	Candover Brook	Yes
River Kennet SSSI	Kennet and Avon Canal and Dun above Hungerford	No
River Kennet SSSI	Kennet (Lambourn confluence to Enborne confluence)	No

Site name	Surface waterbody name	SWMI (No/Yes)
River Kennet SSSI	Middle Kennet (Hungerford to Newbury)	No
River Kennet SSSI	Lambourn (Source to Newbury)	No
River Lambourn SSSI	Kennet (Lambourn confluence to Enborne confluence)	No
River Lambourn SSSI	Lambourn (Source to Newbury)	No
River Test SSSI	R. Test	No
River Test SSSI	Test (Lower)	No
River Test SSSI	R. Test (Middle)	No
River Test SSSI	R. Test (Middle)	No
River Test SSSI	R. Test (Upper)	No
River Test SSSI	Bourne Rivulet	No
River Test SSSI	R. Test	No
River Test SSSI	R. Dever	No
River Test SSSI	R. Anton	Yes
Sandhurst to Owlsmoor Bogs and Heaths SSSI	Blackwater (Hawley to Whitewater confluence at Bramshill)	No
Staines Moor SSSI	Thames (Cookham to Egham)	No
Stanford End Mill and River Loddon SSSI	Loddon (Sherfield on Loddon to Swallowfield)	No
Stockbridge Common Marsh SSSI	R. Test (Middle)	No
Stockbridge Fen SSSI	R. Test (Middle)	No
Sulham and Tidmarsh Woods and Meadows SSSI	Sulham Brook	Yes
Sulham and Tidmarsh Woods and Meadows SSSI	Pang	Yes
Thatcham Reed Beds SSSI	Kennet (Lambourn confluence to Enborne confluence)	No
Thatcham Reed Beds SSSI	Lambourn (Source to Newbury)	No
Thursley, Hankley & Frensham Commons SSSI	Wey (Tilford to Shalford)	No
Warnborough Green SSSI	Whitewater	No
Wey Valley Meadows	Wey (Shalford to River Thames	No

Site name	Surface waterbody name	SWMI (No/Yes)
SSSI	confluence at Weybridge)	
Wey Valley Meadows SSSI	Wey (Tilford to Shalford)	No
Windsor Forest and Great Park SSSI	Thames (Cookham to Egham)	No
Woolhampton Reed Bed SSSI	Kennet (Lambourn confluence to Enborne confluence)	No
Wraysbury & Hythe End Gravel Pits SSSI	Thames (Cookham to Egham)	No
Wraysbury No. 1 Gravel Pit SSSI	Thames (Cookham to Egham)	No
Solent & Southampton Water Ramsar	Test (Lower)	No
South West London Waterbodies Ramsar	Thames (Cookham to Egham)	No
South West London Waterbodies Ramsar	Thames (Egham to Teddington)	No
River Itchen SAC	Candover Brook	Yes
Kennet & Lambourn Floodplain SAC	Kennet (Lambourn confluence to Enborne confluence)	No
River Lambourn SAC	Kennet (Lambourn confluence to Enborne confluence)	No
Kennet & Lambourn Floodplain SAC	Lambourn (Source to Newbury)	No
River Lambourn SAC	Lambourn (Source to Newbury)	No
Kennet & Lambourn Floodplain SAC	Middle Kennet (Hungerford to Newbury)	No
Kennet & Lambourn Floodplain SAC	Middle Kennet (Hungerford to Newbury)	No
Kennet Valley Alderwoods SAC	Middle Kennet (Hungerford to Newbury)	No
Mottisfont Bats SAC	R. Test (Middle)	No
River Itchen SAC	River Itchen	No
Windsor Forest & Great Park SAC	Thames (Cookham to Egham)	No
Chilterns Beechwoods SAC	Thames (Reading to Cookham)	No
Hartslock Wood SAC	Thames Wallingford to Caversham	No
Thursley, Ash, Pirbright & Chobham SAC	Wey (Tilford to Shalford)	No

Site name	Surface waterbody name	SWMI (No/Yes)
Solent & Southampton Water SPA	Test (Lower)	No
Solent and Dorset Coast SPA	River Itchen	No
South West London Waterbodies SPA	Thames (Cookham to Egham)	No
Thames Basin Heaths SPA	Fleet Brook	No
Thames Basin Heaths SPA	Hart (Elvetham to Hartley Wintney)	No
Thames Basin Heaths SPA	Blackwater (Hawley to Whitewater confluence at Bramshill)	No
Thames Basin Heaths SPA	Wey (Shalford to River Thames confluence at Weybridge)	No
Thursley, Hankley & Frensham Commons SPA	Wey (Tilford to Shalford)	No

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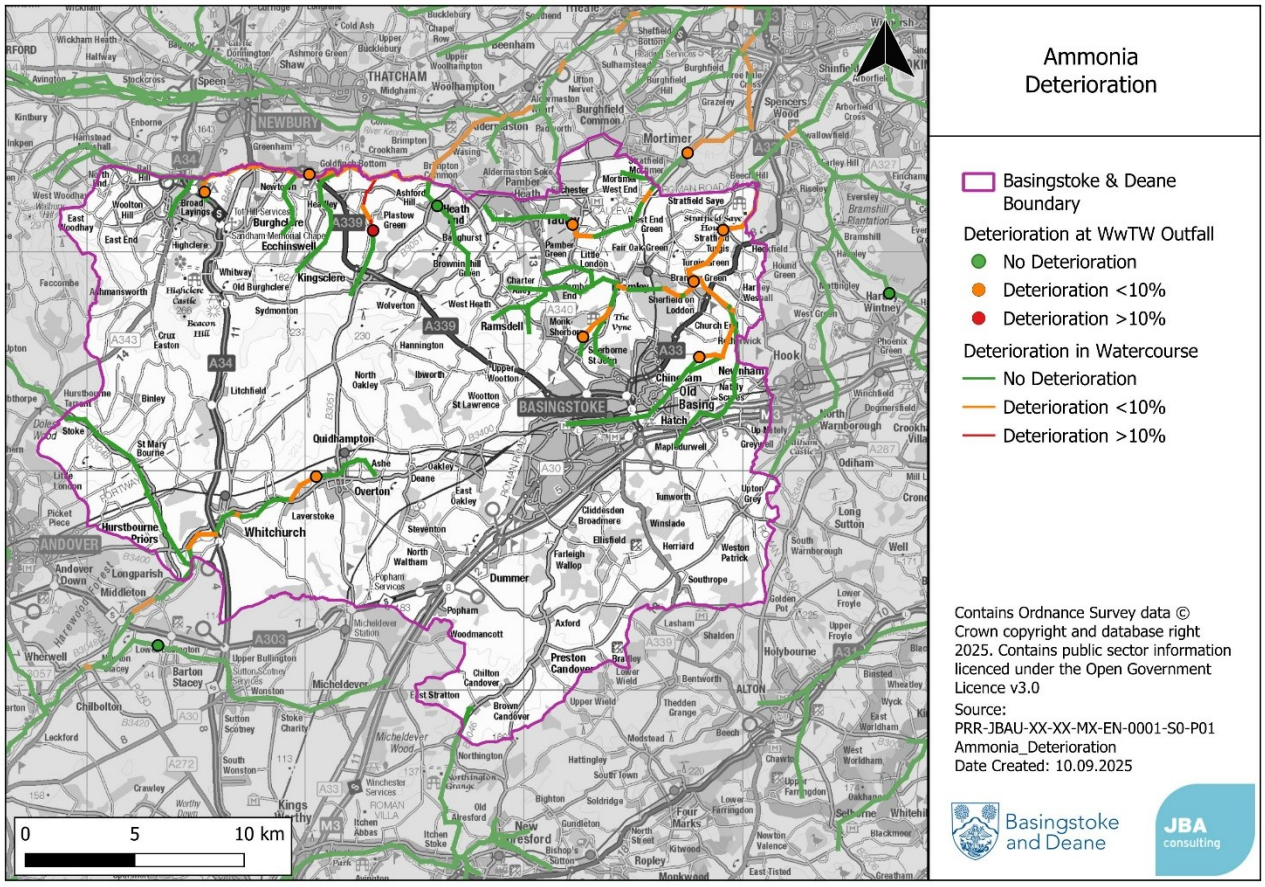
E Appendix E - Water quality mapping

E.1 Future scenario

The set of maps below show the modelled results if wastewater discharges increased by the volume predicted during the Local Plan period. They show a result at the point of mixing (i.e., where the WwTW discharges) and the results downstream in the river. These are colour coded based on whether deterioration is greater (red) or less than (amber) 10%. Areas where no deterioration is predicted are coloured green.

DRAFT


Ammonia
Deterioration
Basingstoke & Deane
Boundary
Deterioration at WwTW Outfall
No Deterioration
Deterioration <10%
Deterioration >10%
Deterioration in Watercourse
No Deterioration
Deterioration <10%
Deterioration >10%
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Source:
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Ammonia_Deterioration
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JBA consulting
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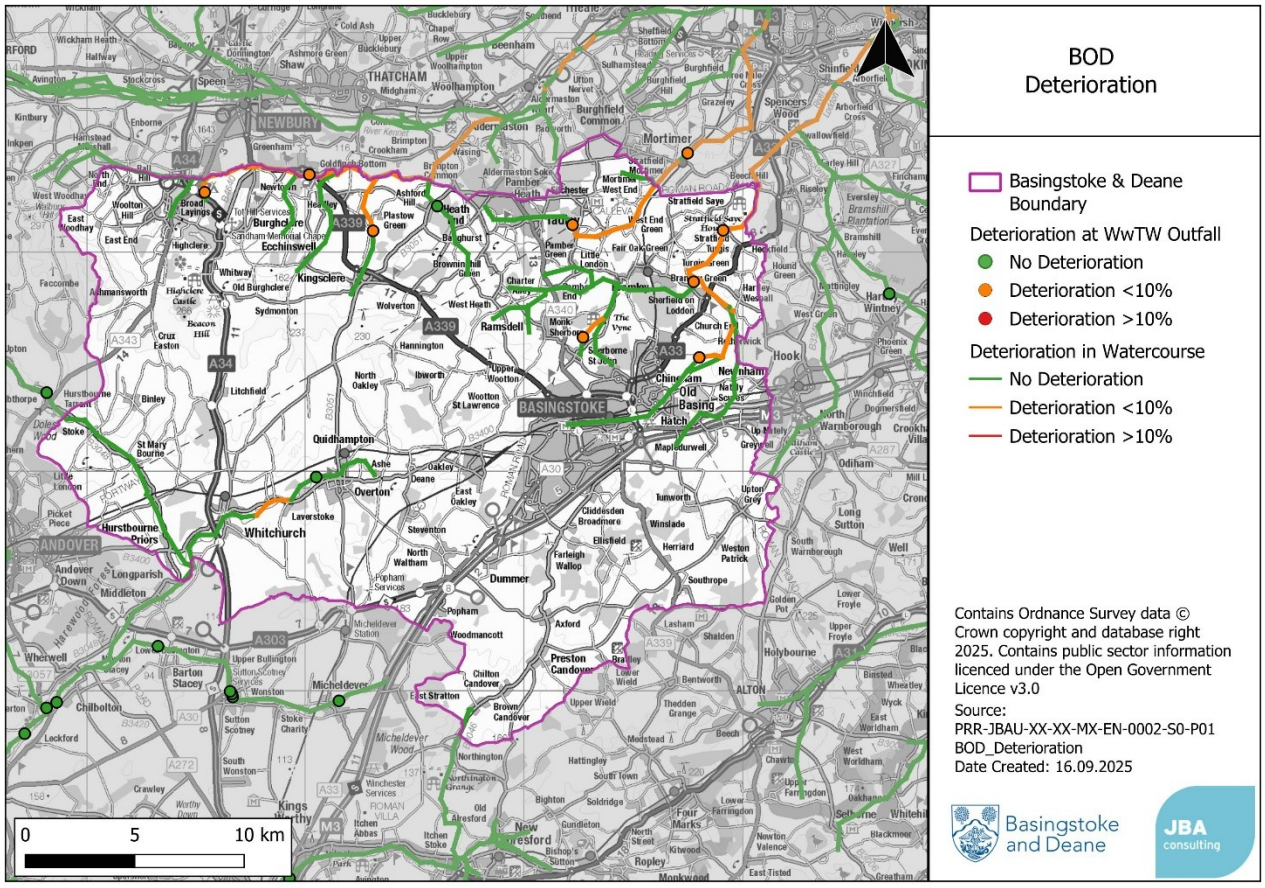
5
10 km


BOD
Deterioration
Basingstoke & Deane
Boundary
Deterioration at WwTW Outfall
No Deterioration
Deterioration <10%
Deterioration >10%
Deterioration in Watercourse
No Deterioration
Deterioration <10%
Deterioration >10%
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Source:
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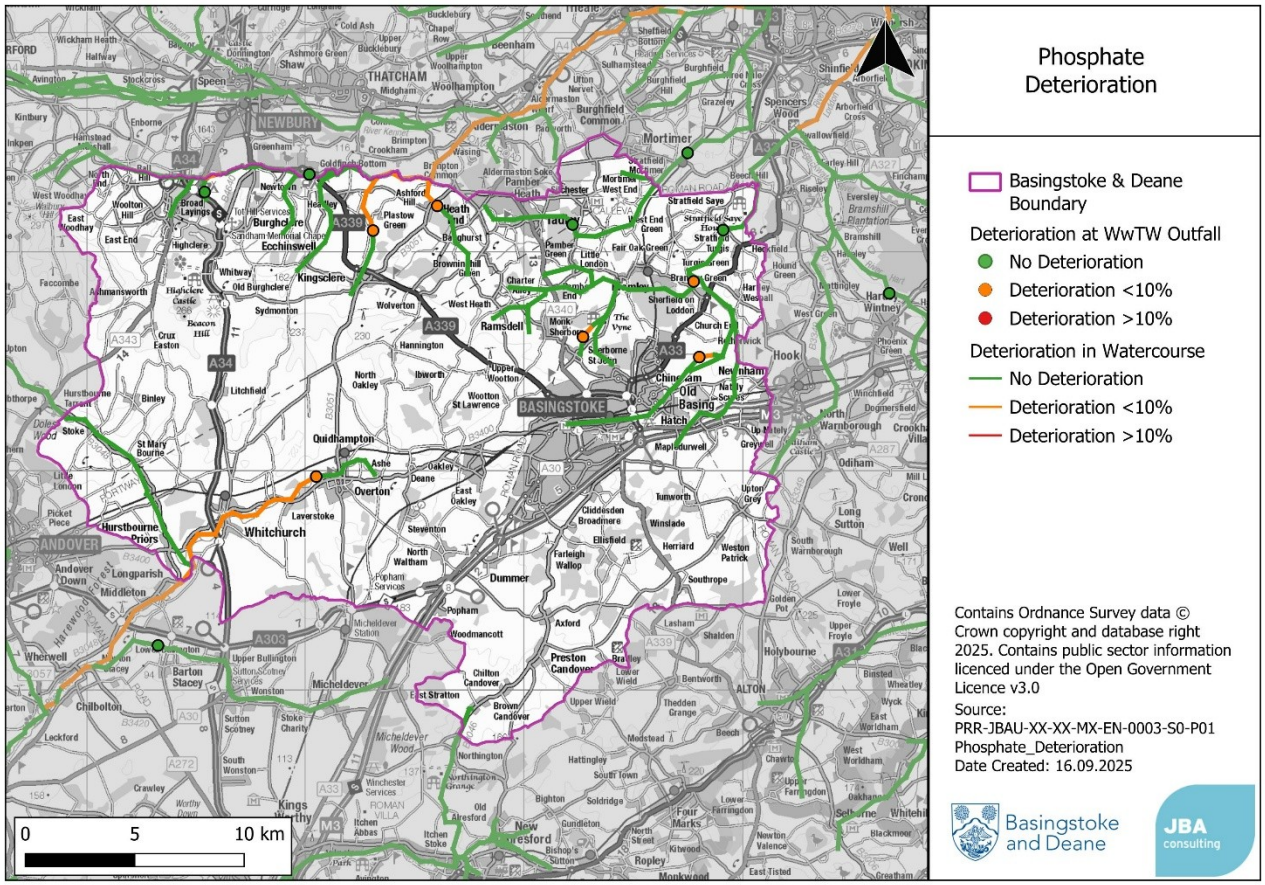

TAL scenario

This second set of maps show the modelled results in the TAL scenario, where each WwTW has been upgraded to the technically achievable limit (TAL). This shows areas where deterioration could not be prevented. In each case this is less than 10%.

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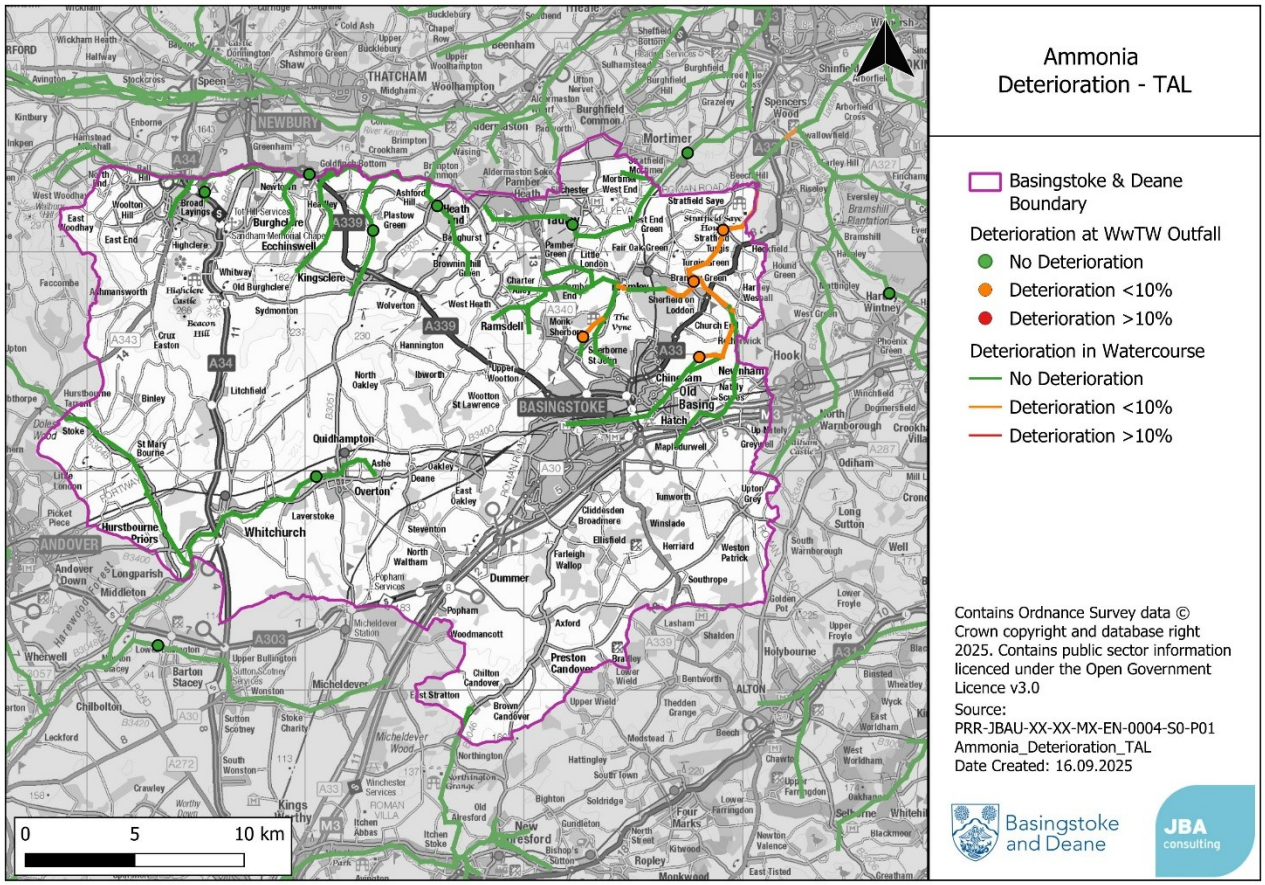
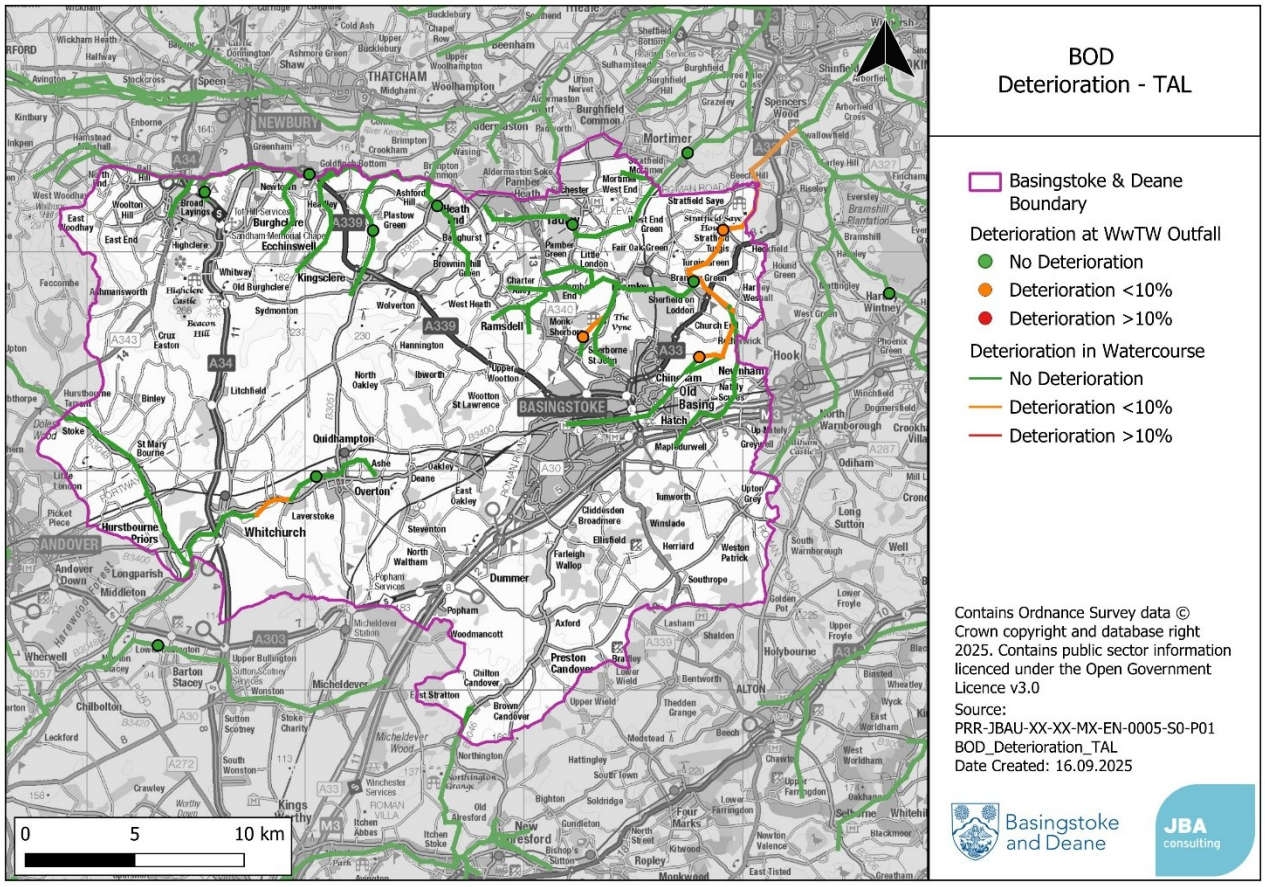


Water quality modelling results map- results outlined in Appendix F- Water quality modelling results.

DRAFT


BOD
Deterioration - TAL
Basingstoke & Deane Boundary
Deterioration at WwTW Outfall
No Deterioration
Deterioration <10%
Deterioration >10%
Deterioration in Watercourse
No Deterioration
Deterioration <10%
Deterioration >10%
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Source:
PRR-JBAU-XX-XX-MX-EN-0005-S0-P01
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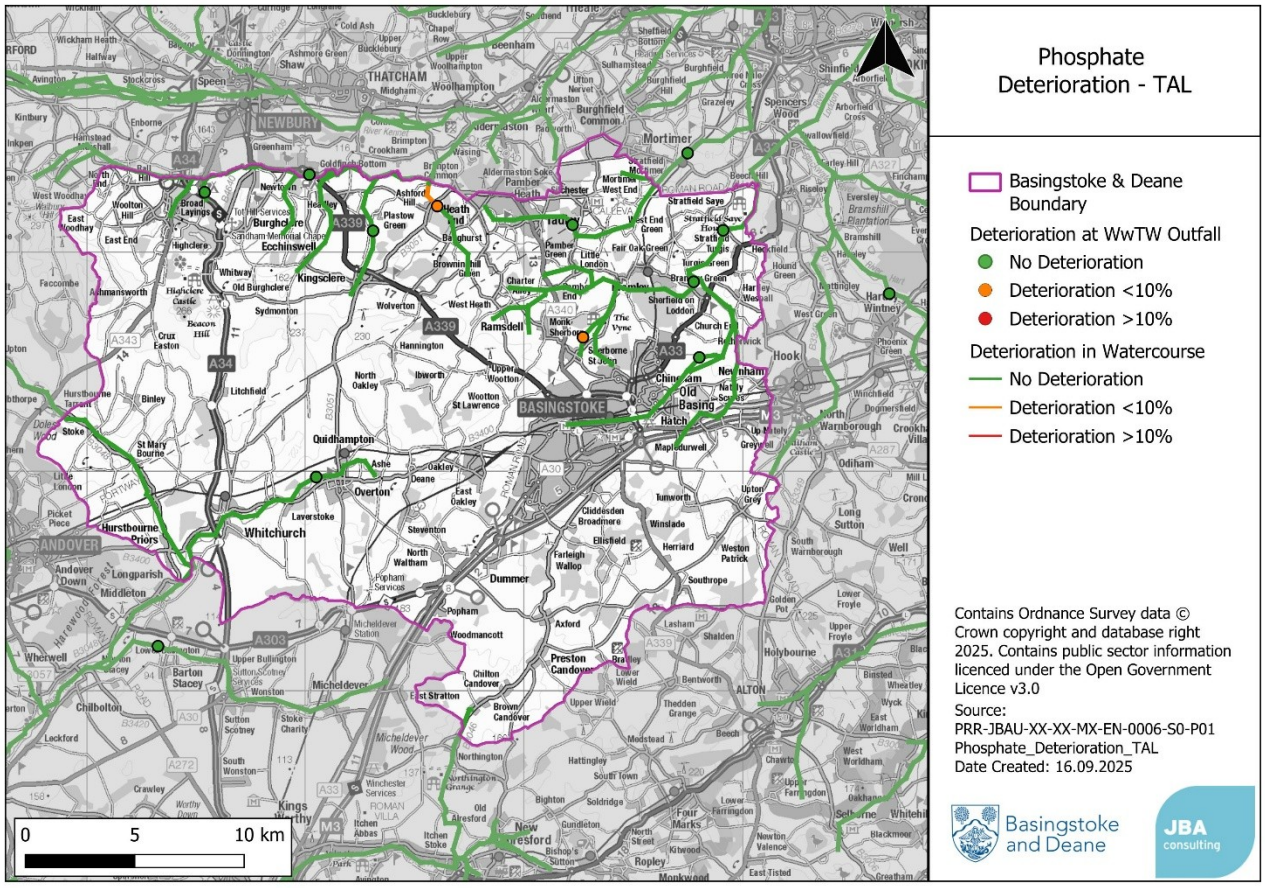
Basingstoke and Deane
JBA consulting
0
5
10 km


Phosphate
Deterioration - TAL
Basingstoke & Deane Boundary
Deterioration at WwTW Outfall
No Deterioration
Deterioration <10%
Deterioration >10%
Deterioration in Watercourse
No Deterioration
Deterioration <10%
Deterioration >10%
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Source:
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Phosphate_Deterioration_TAL
Date Created: 16.09.2025
Basingstoke and Deane
JBA consulting
0
5
10 km

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F Water quality modelling results

F.1 Ammonia

WwTW (SIMCAT name)	Baseline concentration (mg/l)	Future concentration (mg/l)	Percentage deterioration (%)	TAL concentration (mg/l)	TAL Percentage deterioration (%)	Baseline Class	Future Class	TAL Class
ASHFORD HILL	0.146	0.1463	0%	0.1463	0%	HIGH	HIGH	HIGH
Kingsclere STW	0.3536	0.3889	10%	0.2745	-22%	GOOD	GOOD	HIGH
Washwater	1.1873	1.2576	6%	0.5633	-53%	POOR	POOR	GOOD
Greenham Common STW	0.0944	0.1018	8%	0.0688	-27%	HIGH	HIGH	HIGH
Silchester STW	0.7248	0.7298	1%	0.7162	-1%	MODERATE	MODERATE	MODERATE
Stratfield Mortimer STW	0.3281	0.3306	1%	0.3225	-2%	GOOD	GOOD	GOOD
Basingstoke STW	0.1211	0.1313	8%	0.1295	7%	HIGH	HIGH	HIGH
Sherborne St John STW	0.2059	0.2115	3%	0.2115	3%	HIGH	HIGH	HIGH
Sherfield On	0.0946	0.0963	2%	0.0963	2%	HIGH	HIGH	HIGH

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WwTW (SIMCAT name)	Baseline concentration (mg/l)	Future concentration (mg/l)	Percentage deterioration (%)	TAL concentration (mg/l)	TAL Percentage deterioration (%)	Baseline Class	Future Class	TAL Class
Loddon STW								
WEST END GREEN (STRATFIELD SAYE)	0.0952	0.0963	1%	0.0963	1%	HIGH	HIGH	HIGH
Hartley Wintney STW	0.5655	0.5653	0%	0.5131	-9%	GOOD	GOOD	GOOD
BARTON STACEY STW	0.039	0.039	0%	0.0312	-20%	HIGH	HIGH	HIGH
OVERTON WTW	0.0938	0.0952	1%	0.0927	-1%	HIGH	HIGH	HIGH

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F.2 BOD

WwTW (SIMCAT name)	Baseline concentration (mg/l)	Future concentration (mg/l)	Percentage deterioration (%)	TAL concentration (mg/l)	TAL Percentage deterioration (%)	Baseline Class	Future Class	TAL Class
ASHFORD HILL	1.3529	1.353	0%	1.353	0%	HIGH	HIGH	HIGH
Kingsclere STW	3.2114	3.4497	7%	1.9311	-40%	HIGH	HIGH	HIGH
Washwater	6.1636	6.3445	3%	2.9254	-53%	MODERATE	MODERATE	HIGH
Greenham Common STW	1.4117	1.467	4%	1.2114	-14%	HIGH	HIGH	HIGH
Silchester STW	3.4251	3.4605	1%	2.5476	-26%	HIGH	HIGH	HIGH
Stratfield Mortimer STW	1.8576	1.8885	2%	1.5348	-17%	HIGH	HIGH	HIGH
Basingstoke STW	2.9257	3.1495	8%	3.1495	8%	HIGH	HIGH	HIGH
Sherborne St John STW	1.8534	1.8841	2%	1.8841	2%	HIGH	HIGH	HIGH
Sherfield On Loddon STW	1.4068	1.4142	1%	1.3829	-2%	HIGH	HIGH	HIGH

DRAFT

WwTW (SIMCAT name)	Baseline concentration (mg/l)	Future concentration (mg/l)	Percentage deterioration (%)	TAL concentration (mg/l)	TAL Percentage deterioration (%)	Baseline Class	Future Class	TAL Class
WEST END GREEN (STRATFIELD SAYE)	1.5223	1.6076	6%	1.6018	5%	HIGH	HIGH	HIGH
Hartley Wintney STW	2.8031	2.8057	0%	1.683	-40%	HIGH	HIGH	HIGH
BARTON STACEY STW	1.3207	1.3214	0%	1.3163	0%	HIGH	HIGH	HIGH
OVERTON WTW	1.6455	1.6532	0%	1.6532	0%	HIGH	HIGH	HIGH

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F.3 Phosphate

WwTW (SIMCAT name)	Baseline concentration (mg/l)	Future concentration (mg/l)	Percentage deterioration (%)	TAL concentration (mg/l)	TAL Percentage deterioration (%)	Baseline Class	Future Class	TAL Class
ASHFORD HILL	0.0744	0.0754	1%	0.075	1%	MODERATE	MODERATE	MODERATE
Kingsclere STW	0.3182	0.3427	8%	0.093	-71%	POOR	POOR	MODERATE
Washwater	0.222	0.2215	0%	0.2198	-1%	MODERATE	MODERATE	MODERATE
Greenham Common STW	0.2032	0.2037	0%	0.1843	-9%	POOR	POOR	POOR
Silchester STW	0.3617	0.3595	-1%	0.3509	-3%	POOR	POOR	POOR
Stratfield Mortimer STW	0.3735	0.3712	-1%	0.367	-2%	POOR	POOR	POOR
Basingstoke STW	0.145	0.1467	1%	0.1325	-9%	MODERATE	MODERATE	MODERATE
Sherborne St John STW	0.1386	0.1399	1%	0.1399	1%	MODERATE	MODERATE	MODERATE
Sherfield On Loddon	0.4415	0.4584	4%	0.1731	-61%	POOR	POOR	MODERATE

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WwTW (SIMCAT name)	Baseline concentration (mg/l)	Future concentration (mg/l)	Percentage deterioration (%)	TAL concentration (mg/l)	TAL Percentage deterioration (%)	Baseline Class	Future Class	TAL Class
STW								
WEST END GREEN (STRATFIELD SAYE)	0.2197	0.22	0%	0.165	-25%	POOR	POOR	MODERATE
Hartley Wintney STW	0.1751	0.1752	0%	0.1388	-21%	POOR	POOR	MODERATE
BARTON STACEY STW	0.0257	0.0257	0%	0.022	-14%	HIGH	HIGH	HIGH
OVERTON WTW	0.0592	0.0604	2%	0.0502	-15%	GOOD	GOOD	GOOD

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G Environmental sites water quality

G.1 SSSIs

The tables within this appendix detail the predicted deterioration in water quality in the river adjacent to each SSSI, SAC, SPA and Ramsar downstream of WwTWs serving growth in the Local Plan period. It includes the protected site name, reference and the point in the SIMCAT model used to obtain the result. The first three results show the predicted deterioration at the end of the plan period if all planned growth were delivered. The final three columns show the result of the TAL scenario where all WwTWs are upgraded to their technically achievable limit. A negative number indicates an improvement in water quality compared to the future scenario, i.e. deterioration can be prevented.

SSSI name	Reference ID	SIMCAT Model Point	Ammonia Deterioration (%)	BOD Deterioration (%)	Phosphate Deterioration (%)	Ammonia Deterioration TAL (%)	BOD Deterioration TAL (%)	Phosphate Deterioration TAL (%)
Ashford Hill Woods and Meadows SSSI	1000920	Extra Plot Point - Reach 632 No 2	0	0	0	0	0	0
Bere Mill Meadows SSSI	1000457	Extra Plot Point - Reach 124 No 4	0	0	2	-4	0	-15
Bisham Woods SSSI	1000469	CSO 481	0	0	0	-30	-8	-37

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SSSI name	Reference ID	SIMCAT Model Point	Ammonia Deterioration (%)	BOD Deterioration (%)	Phosphate Deterioration (%)	Ammonia Deterioration TAL (%)	BOD Deterioration TAL (%)	Phosphate Deterioration TAL (%)
Bransbury Common SSSI	1000609	Extra Plot Point - Reach 125 No 4	0	0	0	0	0	0
Brimpton Pit SSSI	1000471	FS Enborne Brimpton	4	2	1	-11	-7	-15
Bushy Park and Home Park SSSI	1477753	CSO 1548	0	0	0	-19	-16	-41
Chilbolton Common SSSI	1000517	Extra Plot Point - Reach 126 No 1	0	0	0	0	0	0
Cock Marsh SSSI	1000475	CSO 813	0	0	0	-29	-8	-37
Dibden Bay SSSI	1008711	FS LITTLE TEST CONAG	0	0	0	-76	-7	-40
Dumsey Meadow SSSI	1000115	Extra Plot Point - Reach 815 No 4	0	0	0	-17	-11	-40

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SSSI name	Reference ID	SIMCAT Model Point	Ammonia Deterioration (%)	BOD Deterioration (%)	Phosphate Deterioration (%)	Ammonia Deterioration TAL (%)	BOD Deterioration TAL (%)	Phosphate Deterioration TAL (%)
East Aston Common SSSI	1000589	Extra Plot Point - Reach 124 No 9	0	0	2	-2	0	-14
Eling and Bury Marshes SSSI	1000627	FS LITTLE TEST CONAG	0	0	0	-76	-7	-40
Greenham and Crookham Commons SSSI	1000482	CSO 1211	8	4	0	-39	-21	-1
Hazeley Heath SSSI	1000635	Hartley Wintney STW	0	0	0	-9	-40	-21
Hythe to Calshot Marshes SSSI	1000638	FS LITTLE TEST CONAG	0	0	0	-76	-7	-40

DRAFT

SSSI name	Reference ID	SIMCAT Model Point	Ammonia Deterioration (%)	BOD Deterioration (%)	Phosphate Deterioration (%)	Ammonia Deterioration TAL (%)	BOD Deterioration TAL (%)	Phosphate Deterioration TAL (%)
Lee-on-The Solent to Itchen Estuary SSSI	1000802	FS LITTLE TEST CONAG	0	0	0	-76	-7	-40
Lodge Wood & Sandford Mill SSSI	1000495	CSO 446	-1	1	1	-4	-9	-29
Lower Test Valley SSSI	1000645	FS LITTLE TEST CONAG	0	0	0	-76	-7	-40
North Solent SSSI	1000603	FS LITTLE TEST CONAG	0	0	0	-76	-7	-40
Pamber Forest and Silchester Common SSSI	1000454	Silchester STW	1	1	-1	-1	-26	-3
River	100663	OVERTON WTW	1	0	2	-1	0	-15

DRAFT

SSSI name	Reference ID	SIMCAT Model Point	Ammonia Deterioration (%)	BOD Deterioration (%)	Phosphate Deterioration (%)	Ammonia Deterioration TAL (%)	BOD Deterioration TAL (%)	Phosphate Deterioration TAL (%)
Test SSSI	8							
Rodbed Wood SSSI	1000560	Extra Plot Point - Reach 722 No 2	0	0	0	-31	-8	-37
South Lodge Pit SSSI	1000563	JUBILEE RIVER AT MILL LANE TAPLOW	0	0	0	-23	-9	-37
Stanford End Mill and River Loddon SSSI	1000474	Extra Plot Point - Reach 689 No 6	0	5	0	0	5	-24
Stockbridge Common Marsh SSSI	1000519	STORM_Stockbridge STW	0	0	0	-6	-1	-34
Stockbridge Fen SSSI	1000695	Extra Plot Point - Reach 130 No 2	0	0	0	-6	-3	-18
Temple Island Meadow	1000725	Extra Plot Point - Reach 718 No 1	0	0	0	-33	-8	-37

SSSI name	Reference ID	SIMCAT Model Point	Ammonia Deterioration (%)	BOD Deterioration (%)	Phosphate Deterioration (%)	Ammonia Deterioration TAL (%)	BOD Deterioration TAL (%)	Phosphate Deterioration TAL (%)
s SSSI								

G.2 SAC

SSSI name	Reference ID	SIMCAT Model Point	Ammonia Deterioration (%)	BOD Deterioration (%)	Phosphate Deterioration (%)	Ammonia Deterioration TAL (%)	BOD Deterioration TAL (%)	Phosphate Deterioration TAL (%)
Chilterns Beechwoods	UK0012724	CSO 849	0	0	0	-30	-8	-37
Solent Maritime	UK0030059	GB107042016840 Boundary	0	0	0	-56	-7	-46

DRAFT

G.3 SPA

SSSI name	Reference ID	SIMCAT Model Point	Ammonia Deterioration (%)	BOD Deterioration (%)	Phosphate Deterioration (%)	Ammonia Deterioration TAL (%)	BOD Deterioration TAL (%)	Phosphate Deterioration TAL (%)
Solent and Dorset Coast	UK9020330	FS LITTLE TEST CONAG	0	0	0	-76	-7	-40
Solent & Southampton Water	UK9011061	FS LITTLE TEST CONAG	0	0	0	-76	-7	-40
Thames Basin Heaths	UK9012141	Hartley Wintney STW	0	0	0	-9	-40	-21

G.4 Ramsar

SSSI name	Reference ID	SIMCAT Model Point	Ammonia Deterioration (%)	BOD Deterioration (%)	Phosphate Deterioration (%)	Ammonia Deterioration TAL (%)	BOD Deterioration TAL (%)	Phosphate Deterioration TAL (%)
Solent & Southampton Water	UK11063	FS LITTLE TEST CONAG	0	0	0	-76	-7	-40

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H SEW WRMP24 Housing forecast

Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Number of dwellings	949	861	625	670	1,080	1,166	1,040	1,015	989	964	938	913	887	862

Year	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Number of dwellings	862	836	811	785	760	734	709	683	658	632	607	581	556	530

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I Groundwater Study

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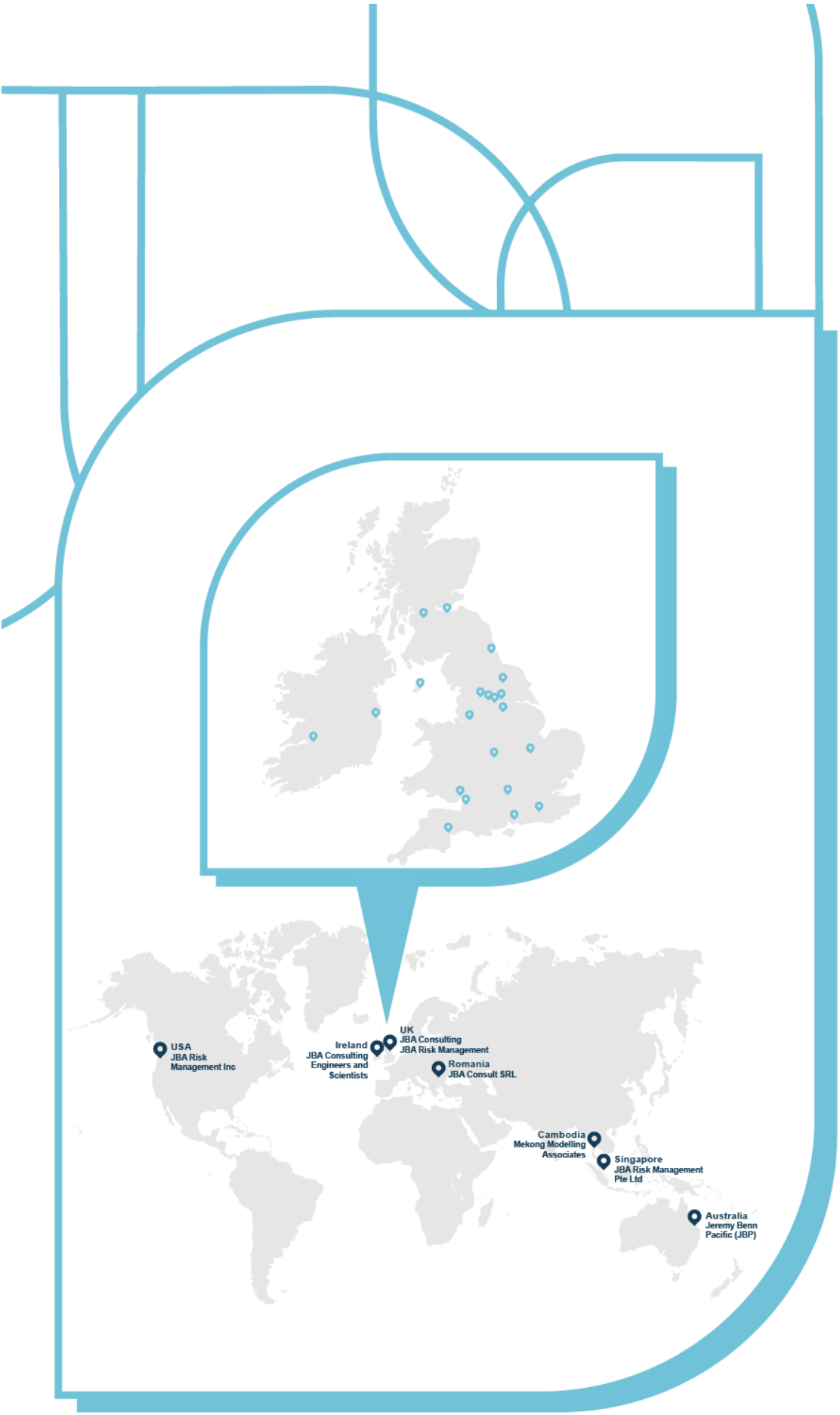

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