Stantec

Greater Cambridge Integrated Water Management Study

Detailed Water Cycle Study

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Greater Cambridge Shared Planning

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Executive Summary

Overview

This Detailed Water Cycle Study (WCS) supports the preparation of the Draft Greater Cambridge Local Plan (2025). It provides evidence in relation to wastewater, water quality and flood risk. Opportunities, constraints and uncertainties for each of these aspects have been identified. Water resources and water supply are covered in a separate study, Cambridge Area Water Supply Evidence (2025). This WCS has been prepared with engagement with stakeholders, in particular Anglian Water (AW) and the Environment Agency (EA).

Study objectives

The key objectives of this study are:

- To update the baseline wastewater capacity and water quality information, in liaison with Anglian Water, especially as they commence planning for Cycle 2 of their Drainage and Wastewater Management Plan (DWMP);
- To consider the sites coming forward in the emerging Local Plan together with existing commitments, identifying where further investment will be required to the existing wastewater infrastructure, when these will be necessary, the costs of these and how they will be funded; and
- To understand environmental constraints at water recycling centre facilities, some of which will need to be recipients of new wastewater flows.

Data Limitations

This WCS supporting the draft Local Plan is based on development trajectories for housing and employment, and includes assumptions regarding the water consumption of different development types. There are inevitable uncertainties involved in modelling the water impacts of proposed development, particularly when planning across a wide area over the 21 year plan period 2024-45. In particular, there is significant uncertainty regarding the timing of potential employment development, and also of the potential water consumption from certain employment uses; this is a challenge acknowledged by Anglian Water.

This study seeks to apply reasonable assumptions, but the water consumption findings in this report derived from employment uses are subject to refinement and should be treated with a degree of caution.

Key findings

Baseline conditions: Wastewater Collection and Treatment, and Water Quality

The study shows that a number of Water Recycling Centres (WRCs) are currently exceeding the Dry Water Flow (DWF) condition of their permit (a permit that governs the average daily volume of wastewater (excluding rainwater) entering a treatment works), including those where growth is planned, indicating that investment is required to accommodate the growth.

A number of other current and proposed effluent quality permits are breached at a number of works, prior to and after proposed development, and particularly when climate change is considered. To maintain or improve the quality of surface water bodies receiving discharges, further works to separate surface water and foul water, increase SuDS, reuse effluent and increase treatment capacity is required.

Accounting for future development identified in the emerging Local Plan

Based on the assumptions listed in Chapter 4 of the study, growth including Draft Local Plan allocated sites will cause a number of WRCs to exceed their current DWF permit by 2045 for both the 'Full Build Out' and 'Most likely' development scenarios. Excluding the draft Local Plan new allocations does not alter this conclusion. Applying climate change predictions in eFLaG results in additional WRCs that do not have capacity to accept flows without the adoption of new technologies or management practices.

A load standstill exercise was undertaken in the study for Suspended Solids, Biochemical Oxygen Demand, Ammoniacal Nitrogen and Total Phosphorus permit values. The load standstill approach ensures that as effluent volumes increase due to new development, the total pollutant load discharged does not increase preventing deterioration of water quality in watercourses. The majority of the new revised permits are above the relevant Technical Achievable Limit (TAL), below which it is not usual practice to reduce concentrations using currently available technologies. There are some exceptions, where the permit is below the TAL. Exceeding the load standstill value does not automatically present a barrier to growth but suggests a need for more detailed assessment and the application of innovative technologies and practices.

Anglian Water's Drainage and Wastewater Management Plan

Proposals within AW's Drainage and Wastewater Management Plan (DWMP) (2023), Water Industry National Environment Programme (WINEP) and Price Review 2024 (PR24) Business Plan will result in capacity constraints being addressed at Uttons Drove (Bar Hill) and Melbourn WRCs. In April 2025 DEFRA's Secretary of State granted development consent for the Cambridge Wastewater Treatment Plant Relocation Project. Funding for the redevelopment of the new WRC was withdrawn in August 2025, and AW is now reconsidering options to address the challenges of wastewater treatment in Cambridge.

AW is working on the emerging Drainage and Wastewater Management Plan (DWMP2) where the abovementioned investment requirements will be identified as part of its long-term strategy. AW and Greater Cambridge Shared Planning (GCSP) are collaborating to ensure they make common assumptions about growth and population. Depending on specific site location, timing of development may need to consider any necessary WRC or sewage upgrade works.

AW is committed to enabling sustainable growth and is collaborating with external stakeholders to find solutions to capacity challenges. AW is working to secure policy and regulatory change that allows water companies to better support growth, for example, by allowing water companies to invest strategically to create new capacity ahead of growth materialising, and by changing charging rules to allow for developer contributions to new infrastructure.

AW is also working closely with Defra's Ministerial Water Delivery Taskforce, regulators and other stakeholders such as the Cambridge Water Scarcity Group to resolve ongoing challenges around growth in the region. This includes ensuring that Cambridge WRC has sufficient capacity to enable current and future growth (including growth identified in this emerging Greater Cambridge Local Plan and the wider government growth ambitions for Cambridge).

Flooding summary

The Level 1 and Level 2 Strategic Flood Risk Assessments (SFRAs) (bound separately) should be used when applying the Sequential and Exception Tests to direct development to areas of lowest flood risk where possible. The Level 1 SFRA provides information and mapping on all types of flood risk including the impacts of climate change in Greater Cambridge. The Level 2 SFRA provides further detail on flood risk on sites identified for allocation for development and includes recommendations on mitigation measures and the content of site-specific Flood Risk Assessments to accompany planning applications. The design of development sites and standalone flood management schemes provide many varied opportunities to reduce flood risk and provide multi-functional benefits, including biodiversity enhancements and net gain, green infrastructure, landscape enhancements, and climate change adaption.

Local Plan recommendations

At minimum, development will need to mitigate any further detrimental impacts on wastewater treatment, water quality and flood risk, to have a neutral impact. There are also opportunities for major development to offer betterment to existing conditions, for example, by reducing flood risk downstream, reducing point and diffuse pollution, and supporting larger integrated water management schemes including more natural wastewater treatment options.

1 Introduction

1.1 Overview

1.1.1 Stantec UK Ltd has been commissioned by Greater Cambridge Shared Planning (GCSP) to prepare an Integrated Water Management Study (IWMS) to support the development of the emerging Greater Cambridge Local Plan which covers the area of Cambridge City Council (CCC) and South Cambridgeshire District Council (SCDC).

1.1.2 Stantec has been commissioned to produce:

- A Detailed Water Cycle Study (WCS); and
- An update of the Level 1 Strategic Flood Risk Assessment (SFRA), and a Level 2 SFRA where necessary.

1.1.3 This report is the Detailed Water Cycle Study and has been prepared following the revised National Planning Policy Framework[1] (2024, updated February 2025), and Planning Practice Guidance (PPG) on water supply, wastewater and water quality management (2019).

1.1.4 This Study has been compiled using the information and data available at the time of preparation.

1.2 Previous Studies

1.2.1 This report updates the previous assessments prepared for GCSP by Stantec (Outline Water Cycle Study, August 2021, and Detailed Water Cycle Study update, August 2021) using the latest population, wastewater management and water quality information

1.3 Aims and Objectives

1.3.1 The aim of the WCS is to support the preparation of the new Local Plan for Regulation 18 stage of the Town and Country Planning (Local Planning) Regulations of 2012.

1.3.2 Due to the work being undertaken under the Government's Cambridge Water Scarcity Group on planned growth trajectories and water supply availability, water supply and water resources elements of this WCS are excluded, pending the receipt of those recommendations[2].

1.3.3 The key objectives of this study are:

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[1] National Planning Policy Framework - GOV.UK

[2] https://wre.org.uk/cambridge-water-scarcity-group/

- To update the baseline wastewater capacity and water quality information, in liaison with Anglian Water, especially as they commence planning for Cycle 2 of their Drainage and Wastewater Management Plan (DWMP);
- To consider the sites coming forward in the emerging Local Plan together with existing commitments, identify where further investment will be required to the existing wastewater infrastructure, when these will be necessary, the costs of these and how they will be funded; and
- To understand environmental constraints at water recycling centre facilities, some of which will need to be recipients of new wastewater flows.

1.3.4 The Plan period that the WCS is focusing on is **from 2024 to 2045**.

1.4 Water Cycle Study Structure

1.4.1 The remainder of this report is structured as follows:

- **Chapter 2** summarises the existing national and local legislation, policies and guidance;
- **Chapter 3** sets out the existing geographical context of the study area;
- **Chapter 4** presents the wastewater collection and treatment baseline conditions, opportunities and constrains for development;
- **Chapter 5** outlines the water quality baseline conditions, opportunities and constraints for development;
- **Chapter 6** provides an overview of the flood risk baseline conditions, opportunities and constraints for development (summary of Level 1 and Level 2 SFRAs); and
- **Chapter 7** provides recommendations for the Local Plan.

1.5 Stakeholder Engagement

1.5.1 A stakeholder engagement process was followed to seek information for this study. This engagement process did not constitute a formal consultation process, which will be undertaken as part of the new Local Plan programme. A full list of stakeholders contacted are shown below:

- Anglian Water, the wastewater undertaker for the area
- Cambridge Water, the potable water supplier for the area
- The Environment Agency (EA)
- The Internal Drainage Board (Middle Level Commissioners and Ely Group).

2 Legislation, Policy and Guidance

2.1 Overview

2.1.1 This Detailed WCS has been prepared in accordance with the relevant, current national, regional and local planning policy, guidance and legislation relevant to water resources, wastewater and water quality as detailed below. Policy, guidance and legislation relevant to flood risk are reviewed in the accompanying Level 1 Strategic Flood Risk Assessment (SFRA).

2.1.2 The review is not exhaustive but focusses on information of particular relevance to this study.

2.2 National and European Legislation

2.2.1 Water resource management is regulated by national and European legislation, with Acts of Parliament of particular relevance summarised in **Table 2.1**. Key information is discussed below.

2.3 Water Framework Directive (2000)

2.3.1 The most significant legislation for this study is the Water Framework Directive (2000, 2000/60/EC)[3]. Under this EU directive, management plans must be produced for River Basin districts, that seek to prevent deterioration, enhance and restore bodies of surface water and groundwater, reduce and prevent pollution and deterioration, and aim to achieve good chemical and ecological status. The Water Framework Directive (WFD) classifications and objectives for water bodies in the Greater Cambridge region are reviewed in **Chapter 5**.

2.3.2 The Water Framework Directive has been supplemented by subsequent EU legislation concerning the protection of groundwater against pollution and deterioration (The Groundwater Directive, 2006/118/EC), the specification of environmental quality standards (The Environmental Quality Standards (EQS) Directive, 2008/15/EC and amended in 2013/39/EU), and technical specifications to support the chemical analysis and monitoring of water status (2009/90 and updated 2020/2184).

2.3.3 The consolidated EU legislation has been transposed into UK law by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017[4] which persist after the United Kingdom left the European Union until and if they are amended or replaced. These regulations require Local Authorities to have, in exercising their functions, regards to River Basin Management Plans (paragraph 2.3.4) in a catchment based approach (**Section 2.12**).

2.3.4 The key objectives of the WFD are set out in Article 4 of the Directive. It requires Member States to use their River Basin Management Plans (RBMPs) and

[3] Water Framework Directive (europa.eu)

[4] The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017

Programmes of Measures (PoMs) to protect and, where necessary, restore water bodies (surface and ground water) to good ecological and chemical status, and to prevent deterioration. The Greater Cambridge area lies within the Anglian RBMP. The status of water bodies within this RBMP was last updated in Cycle 3 in 2022. The status of water bodies is based on ecological and chemical quality, and volumetric tests of flow for surface water and quantity for groundwater, and is discussed in **Chapter 5**.

2.3.5 Water quality data for watercourses is available on the EA Catchment Data Explorer website[5], and is summarised in **Table 5.2** and **Table 5.3**. This website presents catchment background data, existing water quality standards, and expected water quality requirements that the watercourse is projected to reach by set dates that are reviewed on the seven-year RBMP cycle. Any national or local protected areas are also included.

2.4 Environment Act (2021)

2.4.1 The Environment Act[6] was established in 2021 to build on the vision of the 25 Year Environment Plan. Proposals for improving long term planning and regulation of the water industry were consulted on in 2019.

2.4.2 The Nature Recovery Network[7] (NRN) was established as a commitment to the government's 25 Year Environment Plan and enacted by the Environment Act 2021. This is an integrated approach to nature recovery, bringing together partners, policies and investment to actively restore and enhance the natural world.

2.4.3 Progress towards goals relating to the Water Environment were reported in the Environmental Improvement Plan 2023 and the Plan for Water 2023, where reducing water use and water neutrality were identified as key mechanisms for meeting the Environment Act goals.

2.4.4 The Act and the Environmental Improvement Plan (2023) 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.

[5] England | Catchment Data Explorer and Anglian river basin district river basin management plan: updated 2022 - GOV.UK

[6] Environment Act 2021 - Parliamentary Bills - UK Parliament

[7] Nature Recovery Network - GOV.UK (www.gov.uk)

Table 2.1: Summary of legislation relating to water resource management

Legislation
The Water Act (1989), the Water Industry Act (1991) and the Water Resources Act (1991)
Summary
These acts provided for the privatisation of the former water authorities, and set out the main powers and duties of the water companies, Ofwat, and the National Rivers Authority (now the EA). Water quality classifications and objectives were introduced.

Legislation
The Urban Wastewater Treatment Directive (1991)
Summary
This EU directive aimed to protect the water environment from being damaged by urban waste water and certain industrial discharges.

Legislation
The Environment Act (1995)
Summary
This act restructured environmental regulation and led to the creation of the EA. Duties were imposed on water companies to promote the efficient use of water by customers.

Legislation
The Drinking Water Directive (1998)
Summary
This EU directive set quality standards for drinking water, and requires drinking water quality to be monitored and reported. It was brought into UK law as The Water Supply (Water Quality) Regulations 2016 (amended 2018).

Legislation
The Water Industry Act (1999)
Summary
This act limited the circumstances in which companies can start charging on a metered basis rather than a rateable value.

Legislation
The Bathing Water Directive (2006)
Summary
This EU directive set standards for classifying water quality at designated bathing waters.

Legislation
The Floods and Water Management Act (2010)
Summary
This act modernised the list of activities that can be restricted in a drought and made it easier for companies to offer lower tariffs to certain groups.

Legislation
The Water Act (2014)
Summary
This act enabled greater competition for non-household customers and gave Ofwat new

powers to make rules about charges and charge schemes.

Legislation
The Environmental Permitting (England and Wales) Regulations (2016)
Summary
These regulations consolidate and replace the Environmental Permitting (England and Wales) Regulations 2010 (S.I. 2010/675), which have been amended 15 times to date. The 2016 Regulations set out an environmental permitting framework.

Legislation
The WFD Regulations (2017)
Summary
These regulations set out requirements to prevent the deterioration of aquatic systems; protect, enhance and restore water bodies to ‘good’ status; and achieve compliance with standards and objectives for protected areas. The regulations consolidate and set out the provisions of the Water Framework Directive in more detail.

2.5 The 25 Year Environment Plan (2018)

2.5.1 The 25 Year Environmental Plan[8], originally published in 2018 and updated in 2023 as the Environmental Improvement Plan[9], sets out the Government's goals for improving the environment over the next 25 years. It aims to deliver cleaner air and water in cities and rural landscapes, protect threatened species and provide richer wildlife habitats.

2.5.2 The relevant goal for this study is 'Clean and Plentiful Water' – see below.'

We will achieve clean and plentiful water by: Improving at least three quarters of our waters to be close to their natural state as soon as is practicable by:

- Reducing the damaging abstraction of water from rivers and groundwater, ensuring that by 2021 the proportion of water bodies with enough water to support environmental standards increases from 82% to 90% for surface water bodies and from 72% to 77% for groundwater bodies.
- Reaching or exceeding objectives for rivers, lakes, coastal and ground waters that are specially protected, whether for biodiversity or drinking water as per our River Basin Management Plans.
- Supporting OFWAT's ambitions on leakage, minimising the amount of water lost through leakage year on year, with water companies expected to reduce leakage by at least an average of 15% by 2025.
- Minimising by 2030 the harmful bacteria in our designated bathing waters and continuing to improve the cleanliness of our waters. We will make sure that potential bathers are warned of any short-term pollution risks.

2.5.3 The plan also aims to reduce the risks of harm to people, the environment and the economy from natural hazards including flooding, drought and coastal erosion. This will include making sure that decisions on land use reflect flood

[8] 25 Year Environment Plan - GOV.UK (www.gov.uk)

[9] Environmental Improvement Plan 2023 - GOV.UK

risk, ensuring interruptions to water supplies are minimised during dry weather and drought, and boosting the long-term resilience of homes and infrastructure.

2.6 The National Framework for Water Resources (2025)

2.6.1 The National Framework for Water Resources[10] updated in July 2025, identifies the strategic long-term water needs of England both nationally and within regional water resource zones. The report identified that Water Resource Management Plans (the statutory plans which address future water resources developed by individual water companies for their customers' needs alone) are unlikely to deliver the right strategic solutions for the nation as a whole.

2.6.2 Therefore, the framework establishes five regional groups to oversee strategic regional planning of water resources by 2055. Each regional group must produce a single plan that sets out the preferred options to provide best value to customers, society and the environment.

2.6.3 The regional group for the Greater Cambridge is Water Resources East (WRE).

2.6.4 For public water supply, the estimated additional water need between 2030 and 2055 includes the key drivers:

- Increasing resilience to a 1 in 500 year drought;
- High population growth;
- High environmental improvement through the delivery of the most ambitious reductions identified in current water company plans and
- Analysis of climate change impacts.

2.6.5 A range of actions to address the deficit is now included in the latest round of water company water resources management plan.

2.6.6 Funding to explore strategic options has been made available with the support of the Regulators' Alliance for Progressing Infrastructure Development[11] (RAPID).

2.7 The Water Abstraction Plan (2021)

2.7.1 The Water Abstraction Plan policy paper[12], updated in July 2021, sets out how the Government plans to reform water abstraction management, to protect the environment and improve access to water.

[10] National Framework for Water Resources 2025: water for growth, nature and a resilient future - GOV.UK

[11] RAPID - Ofwat

[12] Water abstraction plan: Environment - GOV.UK (www.gov.uk)

2.7.2 Progress and changes to the plan are detailed in the EA's Abstraction Licencing Strategy annual updates. Licencing is in the process of moving to be under the Environmental Permitting (England and Wales) Regulations 2016.

2.7.3 The actions below set out how the EA will use its current regulatory tools to address unsustainable abstraction and guard against future pressures. In order to achieve the goals, set out above, the EA will focus on licences having the greatest impact and act now to reduce future risks. The EA will:

- use the Water Industry National Environment Programme (WINEP), to make sure that water companies take a leading role in addressing unsustainable abstraction. This will bring about investment to resolve historical issues and investigations to prevent future environmental impacts from abstraction;
- review more than half of time limited licenses by 2021 (2,300 in total), adjusting them as necessary to make sure they do not allow environmental damage now or in the future;
- adjust all permanent licenses shown to be seriously damaging. This includes completing the Restoring Sustainable Abstraction program, a list of 150 potentially damaging licenses, by March 2020;
- revoke an estimated 600 unused licenses by December 2018 that are no longer needed, and work with abstractors to reduce under-used licenses. This will prevent increased abstraction from these licenses creating new environmental pressures;
- regulate all significant abstractions that have been exempt historically (approximately 5,000) to make sure that they also play a part in protecting the water environment;
- update ten abstraction licensing strategies by 2021, and all remaining strategies by 2027, to capture agreed solutions to environmental pressures. These solutions will be developed through engagement in catchments facing particular environmental pressures from abstraction.

2.8 The National Policy Statement for Wastewater (2012)

2.8.1 This National Policy Statement for Wastewater[13] sets out the Government policy for the provision of major wastewater infrastructure. The policy statement is the primary basis for deciding development consent applications for wastewater developments that fall within the definition of Nationally Significant Infrastructure Projects as defined in the Planning Act (2008).

2.9 National Planning Policy Framework (2024)

2.9.1 National policy in relation to water resource management is contained within the **National Planning Policy Framework (NPPF)[14]** revised in 2024 and updated

[14] National Planning Policy Framework - GOV.UK

in February 2025, issued by the Ministry of Housing, Communities and Local Government. The following sections have particular relevance to the WCS: Section 3 ‘Plan-making’, Section 14 ‘Meeting the challenge of climate change, flooding and coastal change’, and Section 15 ‘conserving and enhancing the natural environment’.

2.9.2 Paragraphs of particular relevance for this study are paragraph 20, paragraph 162 and paragraph 187.

2.9.3 The NPPF sets of the requirements for Strategic Policies in paragraph 20 as shown below.

‘20. Strategic policies should set out an overall strategy for the pattern, scale and design quality of places, and make sufficient provision for:

a) homes (including affordable housing), employment, retail, leisure and other commercial development;

b) infrastructure for transport, telecommunications, security, waste management, water supply, wastewater, flood risk and coastal change management, and the provision of minerals and energy (including heat);

c) community facilities (such as health, education and cultural infrastructure); and

d) conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure, and planning measures to address climate change mitigation and adaptation.’’

2.9.4 The NPPF sets out the requirement for planning for climate change in paragraph 162 – see below.

‘162. 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, biodiversity and landscapes, and the risk of overheating and drought from rising temperatures61. Policies should support appropriate measures to ensure the future health and resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.’

2.9.5 The NPPF sets out the requirement for conserving and enhancing the natural and local environment in paragraph 187 – see below.

‘**187.** Planning policies and decisions should contribute to and enhance the natural and local environment by:

a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;

c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;

d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures and incorporating features which support priority or threatened species such as swifts, bats and hedgehogs;

e) 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; and

f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.'

2.10 Planning Guidance for Water Supply, Wastewater and Water Quality (2019)

2.10.1 This guidance, from the Ministry of Housing, Communities & Local Government, was last updated in 2019[15]. The guidance provides an overview of the water supply, wastewater and water quality concerns that Local Plans may need to address.

2.10.2 The planning for water infrastructure considerations is detailed in paragraph 005 of the guidance – see below.

'**Planning for water infrastructure** - Plan-making may need to consider:

- identifying suitable sites for new or enhanced waste water and water supply infrastructure. When identifying sites, it is important to recognise that water and wastewater infrastructure can have specific locational needs (and often consists of engineering works rather than new buildings). This means exceptionally otherwise protected areas may have to be considered, where this is consistent with their designation.

- existing and proposed development in the vicinity of a location under consideration for water and wastewater infrastructure. In two-tier areas there will need to be close working between the district and county councils.

[15] Water supply, wastewater and water quality - GOV.UK (www.gov.uk)

- whether new development is appropriate near to sites used (or proposed) for water and wastewater infrastructure (for example, odour may be a concern).

- phasing new development so that water and wastewater infrastructure will be in place when and where needed. The impact on designated sites of importance for biodiversity should be considered to ensure the required infrastructure is in place before any environmental effects occur'.

2.10.3 Water quality considerations are detailed in paragraph 006 of the guidance – see below.

'**Water quality** - Plan-making may need to consider:

- 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. For example, can the plan steer potentially polluting development away from the most sensitive areas, particularly those in the vicinity of drinking water supplies (designated source protection zones or near surface water drinking water abstractions);

- where an assessment of the potential impacts on water bodies and protected areas under the Water Environment Regulations 2017 may be required, consider the type or location of new development

- whether measures to improve water quality, for example sustainable drainage schemes, can be used to address impacts on water quality in addition to mitigating flood risk.'

2.10.4 Wastewater considerations are detailed in paragraph 007 of the guidance – see below.

'**Wastewater** - Plan-making may need to consider:

- the sufficiency and capacity of wastewater infrastructure

- the circumstances where wastewater from new development would not be expected to drain to a public sewer

- the capacity of the environment to receive effluent from development in different parts of a strategic policy-making authority's area without preventing relevant statutory objectives being met.'

2.10.5 Cross-boundary considerations are detailed in paragraph 008.

'**Cross-boundary issues**: Water supply and water quality issues often cross local authority boundaries and can be best considered on a catchment basis. Liaison between strategic policy-making authorities, the Environment Agency, catchment partnerships and water and sewerage companies from the outset (at the plan scoping and evidence gathering stages of plan-making) will help to identify water supply and quality issues, the need for new water and wastewater infrastructure to fully account for proposed growth and other relevant issues such as flood risk. The duty to cooperate across boundaries applies to water supply and quality issues, and should be evidenced through a Statement of Common Ground.

The Department for Environment, Food and Rural Affairs has published a policy framework to encourage the wider adoption of an integrated catchment-based approach to improving the quality of the water environment:

The Department for Environment, Food and Rural Affairs has published a policy framework to encourage the wider adoption of an integrated catchment-based approach to improving the quality of the water environment:

- to deliver positive and sustained outcomes for the water environment by promoting a better understanding of the environment at a local level; and
- to encourage local collaboration and more transparent decision-making when both planning and delivering activities to improve the water environment.'

2.10.6 Water supply and quality are considerations in the Strategic Environmental Assessment and Sustainability Appraisal. Strategic Environmental Assessment and Sustainability Appraisal considerations are detailed in paragraph 009.

'Strategic Environmental Assessment and Sustainability Appraisal. Strategic Environmental Assessment and Sustainability Appraisal

Water supply and quality are considerations in the Strategic Environmental Assessment and Sustainability Appraisal. Sustainability appraisal objectives could include preventing deterioration of current water body status, taking climate change into account and seeking opportunities to improve water bodies.'

2.11 Planning Policy Guidance for Housing: Optional Technical Standards (2015)

2.11.1 The Optional Technical Standards[16] (published in 2015) details how planning authorities can gather evidence to set optional technical standards for new housing. This includes the option for tighter water efficiency requirements for new homes to manage demand.

2.11.2 All new homes already have to meet the mandatory national standard set out in the Building Regulations (of 125 litres/person/day (l/p/day)), described in **Section 2.12** below. Where there is a clear local need, Local Plan policies can require new dwellings to meet the tighter Building Regulations optional requirement of 110 l/p/day.

[16] Housing: optional technical standards - GOV.UK (www.gov.uk)

2.12 DEFRA Policy Framework for a Catchment Based Approach: Improving the Quality of our Water Environment (2013)

2.12.1 The Catchment Based Approach[17] established in 2013 sets out a framework to facilitate local approaches to managing the water environment and supporting river basin management planning as part of Water Framework Directive activities. The objectives of the Catchment Based Approach are:

- To deliver a better-quality water environment.
- To encourage collaborative working to support transparent decision making.
- To recognize the role of new and existing partnerships involved in collaborative catchment working.
- To encourage long term self-sustaining funding arrangements.

2.12.2 The majority of the Greater Cambridge area lies within the Cam and Ely Ouse Catchment Partnership[18] and a smaller part to the west of the region lies within Upper and Bedford Ouse Catchment Partnership[19].

2.13 Building Regulations Approved Document G: Sanitation, Hot Water Safety and Water Efficiency[20] (2015 edition incorporating 2016 and 2024 amendments)

2.13.1 The Building Regulations Approved Document G cover the standards required for cold water supply, water efficiency, hot water supply and systems, sanitary conveniences and washing facilities, bathrooms and kitchens and food preparatory areas in new buildings. Approved Document G provides practical guidance on compliance with Requirements G1 to G6 and regulations 7 and 36 of the Building Regulations (2010).

2.13.2 Of particular relevance to this study are requirements relating to water efficiency which state that the estimated consumption of water must not exceed the standard of 125 l/p/day, or 110 l/p/day where the optional standard is applied.

2.14 Code for Sustainable Homes (2006 – 2015)

2.14.1 The Code for Sustainable Homes[21] (CfSH) was an environmental assessment method for rating and certifying the performance of new homes. Launched in 2006, it was withdrawn in 2015 following the Housing Standards Review which aimed to simplify regulations into one set driven by Building Regulations. Local

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17 Catchment Based Approach: Improving the quality of our water environment - GOV.UK (www.gov.uk)

18 cameopartnership.org

19 Upper & Bedford Ouse Catchment Partnership – The home of the Upper & Bedford Ouse Catchment Plan

20 BR_PDF_AD_G_2015_with_2016_amendments.pdf (publishing.service.gov.uk)

21 code_for_sustainable_homes_techguide.pdf (publishing.service.gov.uk)

Plans are no longer able to require levels of the CfSH but instead can vary some Building Regulations requirements to implement a fittings based approach.

2.14.2 The Code rated water sustainability in the following ways:

- Indoor water use: aiming to reduce the consumption of potable water in the home from all sources through the use of water efficient fittings, appliances and water recycling systems.
- External water use: aiming to promote the recycling of rainwater and reduce the amount of mains potable water used for external water uses.

2.14.3 Up to 6 credits could be obtained (**Table 2.2**), representing 9% of the total score achievable across all categories.

2.14.4 Although the Code has been withdrawn, information on the water sustainability standards has been included in here for comparison with other schemes now available.

Table 2.2: Code for Sustainable Homes Water Sustainability Credits Criteria

Category	Criteria	Credits	Mandatory Levels
Indoor water use	Water consumption to:		
	<120 l/p/d	1	Levels 1 and 2
	<110 l/p/d	2	
	105 l/p/d	3	Levels 3 and 4
	<90 l/p/d	4	
	<80 l/p/d	5	Levels 5 and 6
External water use	Correctly specified and sized rainwater collection system provided (for example rainwater butts or central collection system)	1	N/A

2.15 Home Quality Mark (2015)

2.15.1 The Home Quality Mark[22] is a voluntary national standard for new housing, launched by BRE (Buildings Research Establishment) as part of the BREEAM family of schemes. The Home Quality Mark is intended to allow builders to demonstrate the high quality of their homes and to differentiate them in the marketplace, while giving buyers confidence in the standard of the homes they are choosing.

[22] HQM-ONE-Technical-Manual-SD239-.pdf (homequalitymark.com)

2.15.2 The scheme allocates up to 17 credits for water efficiency (**Table 2.3**). In addition, up to 19 credits can be achieved for flood risk management, and another 19 credits for managing surface water runoff including water quality. Together, these represent approximately 10% of the Home Quality Mark score.

Table 2.3: Home Quality Mark water sustainability credits criteria

	Criteria	Credits
Water Efficient fittings	6 water efficient fittings in the Optional fittings standard (<110 l/p/d)	5
	All water fitting categories in the Optional fittings standard (<110 l/p/d)	8
	All water fitting categories in the Advanced fittings standard (<100 l/p/d)	11
Water Recycling	.>50% of total demand for WCS flushing met by rainwater or greywater 100% of total demand for WCS flushing met by rainwater or greywater	3 6

2.16 Buildings Research Establishment Environmental Assessment Method (1990)

2.16.1 The Buildings Research Establishment Environmental Assessment Method[23] (BREEAM) is a sustainability assessment method which launched in 1990. In its Water Consumption calculator (Wat01) t sets standards for environmental performance of buildings to reduce potable water demand through the installation of efficient sanitary fittings, rainwater collection and water recycling systems, through the design, specification, construction, and operation phases.

2.16.2 Local Authorities may require BREEAM certification as part of the Local Plan or as a specific planning condition imposed on developments. The Government's Construction Strategy requires public projects to aim to achieve an Excellent rating or equivalent.

2.16.3 Up to 9 credits can be achieved for sustainable water use (**Table 2.4**), with further credits available for flood resilience, surface water run-off management, and minimising watercourse pollution.

[23] BREEAM Water consumption - Designing Buildings

Table 2.4: BREEAM water sustainability credits criteria

Category	Criteria	No. of BREEAM Credits
Water Consumption (Wat01)	Improvement over baseline building water consumption	
	12.5%	1
	25%	2
	40%	3
	50%	4
	55%	5
	60%	Exemplary
Water Monitoring (Wat02)	Water metering installed to meet standard specified.	1
Water Leak Detection (Wat03)	Leak detection system to standard specified.	1
	Flow control devices to regulate water supply.	1
Water Efficient Equipment (Wat04)	Demonstrable reduction in other water demands	1

2.16.4 Based upon the number of credits achieved, the development can be classified by a BREEAM rating as shown in **Table 2.5** below.

Table 2.5: BREEAM Ratings

BREEAM Rating	Score
Unclassified	< 30%
Pass	≥ 30%
Good	≥ 45%
Very Good	≥ 55%
Excellent	≥ 70%
Outstanding	≥ 85%

2.17 Greater Cambridge Local Plans

Cambridge City Local Plan 2018 and South Cambridgeshire Local Plan 2018

2.17.1 The Cambridge City Local Plan (2018)[24] and South Cambridgeshire Local plan (2018)[25] are the principal planning policy documents providing the development strategy to deliver sustainable growth to 2031. The Local Plans were formally adopted in Autumn 2018.

2.17.2 The currently adopted Cambridge City Local Plan includes Policy 28 to establish that all development should take the available opportunities to integrate the principles of sustainable design and construction into the design of proposals. The Policy has also set the minimum standards of sustainable construction, carbon reduction and water efficiency.

Cambridge City Local Plan (2018)

'Policy 28: Carbon reduction, community energy networks, sustainable design and construction, and water use.

All development should take the available opportunities to integrate the principles of sustainable design and construction into the design of proposals. Promoters of major development, including redevelopment of existing floor space, should prepare a Sustainability Statement as part of the Design and Access Statement submitted with their planning application, outlining their approach to the following issues:

a) adaptation to climate change

b) carbon reduction

c) water management

d) site waste management

e) use of materials'

2.17.3 Policy 28 also states that 'in order to ensure that the growth of Cambridge does not exacerbate Cambridge's severe water stress, all new development will be required to meet a water use rate of 110 l/p/day, unless it can be demonstrated that such provision is not technically or economically viable.

2.17.4 The same Policy notes that all new non-residential developments, must achieve full credits for category Wat01 of Buildings Research Establishment Environmental Assessment Method (BREEAM).

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[24] Cambridge Local Plan

[25] South Cambridgeshire Local Plan 2018 - South Cambs District Council

2.17.5 The Cambridge City Local Plan includes Policy 31 in order to aim towards a water sensitive urban approach to surface water.

Cambridge City Local Plan (2018)

‘**Policy 31: Integrated water management and the water cycle**

Development will be permitted provided that:

a) surface water is managed close to its source and on the surface where reasonably practicable to do so;

b) priority is given to the use of nature services

c) water is seen as a resource and is re-used where practicable, offsetting potable water demand, and that a water sensitive approach is taken to the design of the development

d) the features that manage surface water are commensurate with the design of the development in terms of size, form and materials and make an active contribution to making places for people

e) surface water management features are multi-functional wherever possible in their land use

f) any flat roof is a green or brown roof, providing that it is acceptable in terms of its context in the historic environment of Cambridge (see Policy 61: Conservation and Enhancement of Cambridge’s Historic Environment) and the structural capacity of the roof if it is a refurbishment. Green or brown roofs should be widely used in large scale new communities

g) there is no discharge from the developed site for rainfall depths up to 5 mm of any rainfall event

h) the run-off from all hard surfaces shall receive an appropriate level of treatment in accordance with Sustainable Drainage Systems guidelines, SUDS Manual (CIRIA C753), to minimise the risk of pollution

i) development adjacent to a water body actively seeks to enhance the water body in terms of its hydromorphology, biodiversity potential and setting

j) watercourses are not culverted and any opportunity to remove culverts is taken; and

k) all hard surfaces are permeable surfaces where reasonably practicable, and having regard to groundwater protection. ‘

2.17.6 The currently adopted South Cambridgeshire Local Plan has minimum standards for water efficiency in Policy CC/4.

South Cambridgeshire Local Plan (2018)

‘**Policy CC/4: Water Efficiency**

1. All new residential developments must achieve as a minimum water efficiency equivalent to 110 litres per person per day.

2. Proposals for non-residential development must be accompanied by a water conservation strategy, which demonstrates a minimum water efficiency standard equivalent to the BREEAM standard for 2 credits for water use levels unless demonstrated not practicable.’

2.17.7 The Local Plan needs to ensure that development does not result in a deterioration of water quality, and that opportunities are taken for enhancement to support the achievement of the Water Framework Directive standards. The adopted South Cambridgeshire Local Plan has set Policy CC/7A to protect and enhance water quality within the area.

South Cambridgeshire Local Plan (2018)

Policy CC/7: Water Quality

1. In order to protect and enhance water quality, all development proposals must demonstrate that:

a. There are adequate water supply, sewerage and land drainage systems (including water sources, water and waste water infrastructure) to serve the whole development, or an agreement with the relevant service provider to ensure the provision of the necessary infrastructure prior to the occupation of the development. Where development is being phased, each phase must demonstrate sufficient water supply and waste water conveyance, treatment and discharge capacity;

b. The quality of ground, surface or water bodies will not be harmed, and opportunities have been explored and taken for improvements to water quality, including re-naturalisation of river morphology, and ecology;

c. Appropriate consideration is given to sources of pollution, and appropriate Sustainable Drainage Systems (SuDS) measures incorporated to protect water quality from polluted surface water runoff

2. Foul drainage to a public sewer should be provided wherever possible, but where it is demonstrated that it is not feasible, alternative facilities must not pose unacceptable risk to water quality or quantity.’

New Greater Cambridge Local Plan

2.17.8 Cambridge City Council and South Cambridgeshire Council are currently in the process of developing a new joint Greater Cambridge Local Plan[26]. This will ensure that there is a consistent approach to planning, and the same planning

[26] About the plan | Greater Cambridge Shared Planning

policies, where appropriate, across both areas in the period to 2045 and beyond.

2.17.9 This WCS report will be part of the evidence base documents for the new Local Plan.

Greater Cambridge Integrated Water Management Study –Water Cycle Study (2021)

2.17.10 The previous Greater Cambridge Water Cycle Study published in 2021[27], provided evidence on the baseline infrastructure and environmental conditions for water aspects relevant to the new Local Plan, including flood risk, water supply, wastewater and water quality.

2.17.11 The 2021 study identified that for flood risk, wastewater treatment, and water quality there were constraints to development due to existing areas of high flood risk, wastewater treatment capacity, and existing diffuse and point source pollution. The 2021 study noted that, as a minimum, development will need to mitigate any further detrimental impacts on flood risk, wastewater treatment and water quality, to have a neutral impact. However, the study pointed out that there were also opportunities for major development to offer betterment to existing conditions, for example by reducing flood risk downstream, reducing point and diffuse pollution, and supporting larger integrated water management schemes including more natural wastewater treatment options.

2.17.12 For water supply, the permitted abstraction of the Chalk aquifer at the time of writing the report, was having a detrimental impact on environmental conditions, particularly during dry years. Even without any further growth, significant environmental improvements would be unlikely to be achievable until planned major new water supply infrastructure is operational, which is unlikely to occur before the mid-2030s. To prevent any increase in abstraction and its associated detrimental environmental impact before the 2030s, the 2021 study pointed out that short term mitigation measures will be necessary. The study identified that all stakeholders agreed this should include ambitious targets for water efficiency in new development but there were also options to deliver new water locally which would be set out in the detailed study.

2.17.13 The 2021 WCS highlighted that if solutions cannot be identified and delivered to provide more water to Cambridge, then continued growth will cause detriment to the water environment. This could be avoided if new development trajectories were made contingent on sufficient water resources becoming available over time.

Policy CC/WE: Water efficiency in new developments

2.17.14 GCSP are proposing increased water efficiency for new developments that is lower than that within the Building Regulations, and the current Local

[27] 48444 Outline WCS Final - D1

Plan, of 80 to 100 litres/person/day for residential developments, depending on their size.

2.17.15 It is proposed that: ‘All development must demonstrate highly water efficient design in line with the following requirements:

a. for residential development of 100 or more dwellings, water usage of no more than 80 litres/person/day. To achieve this level, some form of water reuse or recycling will be necessary with dual pipe systems for potable and non-potable water, subject to amendments to relevant water legislation. Proposals that seek to deliver levels of water usage below this level are encouraged.
b. for residential development of less than 100 dwellings, water usage of between 90 to 100 litres/person/day. Proposals that seek to deliver levels of water usage below this level are encouraged.
c. for non-residential development, 5 credits for category Wat 01 of BREEAM, unless demonstrated not practicable. Also, full credits for category Wat 02 and category Wat 03 of BREEAM.
d. for non-residential developments that use water as part of a commercial process(es), full credits for category Wat 04 of BREEAM.
e. proposals involving the refurbishment or change of use of existing buildings should undertake retrofitting to increase water efficiency’.

2.17.16 The Integrated Water Cycle study (2021) showed that this is possible through full use of water efficient fixtures and fittings, and also water re-use measures on site including surface water and rainwater harvesting and grey water recycling. The Policy Review of the Adopted Local Plans for Greater Cambridge[28] (June 2023) concluded that this aspiration is consistent with national policy.

2.17.17 This aligns with the Waterwise UK Water Efficiency Strategy to 2030 – Strategic Objective Six – increasing water efficiency and water neutrality in developments[29].

2.17.18 The principles of the water efficiency and water use reduction agree with Shared Standards in Water Efficiency for Local Plans document[30] (June 2025). These Shared Standards represent a collaborative and collective approach by Anglian Water, Cambridge Water, Essex & Suffolk Water, Affinity Water, the

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[28] Appendix A - Greater Cambridge adopted plans policy review.pdf

[29] J37880-Waterwise_Water_Efficiency_Strategy_Inners_Landscape_WEB.pdf

[30] shared-standards-in-water-efficiency-for-local-plans.pdf

Environment Agency and Natural England to support LPAs towards achieving plentiful water for sustainable growth and optimal use of water resource. The following policy requirements have been recommended to be included in the new local plans:

- Water efficiency standards in new homes that aim to achieve a design standard of up to 85 litres/person/day (l/p/d) for residential developments. Where there is insufficient justification for 85 l/p/d, for example on viability grounds or local environmental risks, there could still be a case for a design standard that is more stringent than building regulations for example 90 or 95 l/p/d.

- The tightest standards of water efficiency in new, extended or redeveloped non-household development to aim to achieve full credits in the BREEAM water calculator, with a minimum of 3 credits in WAT01.

- All major non-household developments include water saving measures and water reuse in their designs.

2.18 Cambridge Water –Water Resources Management Plan (2024)

2.18.1 The Cambridge Water's Water Resources Management Plan 2024 (WRMP24)[31] was published in March 2025. The WRMP24 sets out how Cambridge Water will provide a high-quality secure and reliable water supply, in an affordable and sustainable way, now and over the next 25 years.

2.19 Anglian Water Drainage and Wastewater Management Plan (2025-2050)

2.19.1 A changing climate and growing population present increasing challenges to how water companies manage wastewater now and in the future. Anglian Water has developed a Drainage and Wastewater Management Plan (DWMP)[32], published in May 2023. The DWMP sets out how wastewater systems, and the drainage networks that impact them, are to be maintained, improved and extended over the next 25 years to ensure they are robust and resilient to future pressures.

2.19.2 The DWMP covers the period 2025-2050 and supports the development of Anglian Water's Long Term Delivery Strategy and the Price Review 2024 Business Plan. It is currently being updated.

2.19.3 AW is working towards the next DWMP2 covering the period 2030-2055, which is due to be published in 2028. A draft will be available in November 2027.

2.19.4 Further challenges and the related proposed solutions for the Water Recycling Centres (WRCs) in Greater Cambridge are outlined in **Section 4.4**.

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31 https://www.cambridge-water.co.uk/about-us/our-strategies-and-plans/our-water-resources-management-plan

32 Final plan

2.20 Cambridge Water Scarcity Group (formed in 2023)

2.20.1 The water availability of water resources in Cambridge has triggered a government working group to address the deficit between supply availability and growth aspirations for the area. The Group, hosted by Water Resources East (WRE), is anticipated to deliver its final report in Autumn 2025. An Update on Government Measures published March 6th 2024 detailed current infrastructure plans (Fens Reservoir and Grafham Transfer projects, nature-based solutions trials to improve recharge (Cam catchment trial), and also listed agricultural water resource planning (supply-demand balances), local resource options, water credit trading and retrofitting of water efficient devices as potential measures to support the deficit.

3 Geographical Context

3.1 Location

3.1.1 Greater Cambridge covers contains the Cambridge City and the South Cambridgeshire areas, covering of 942 km^2.

3.1.2 It is bordered by Uttlesford and North Hertfordshire District Councils to the south with Central Bedfordshire to the east, Huntingdonshire and East Cambridgeshire District Council to the north, and West Suffolk District Councils to the east.

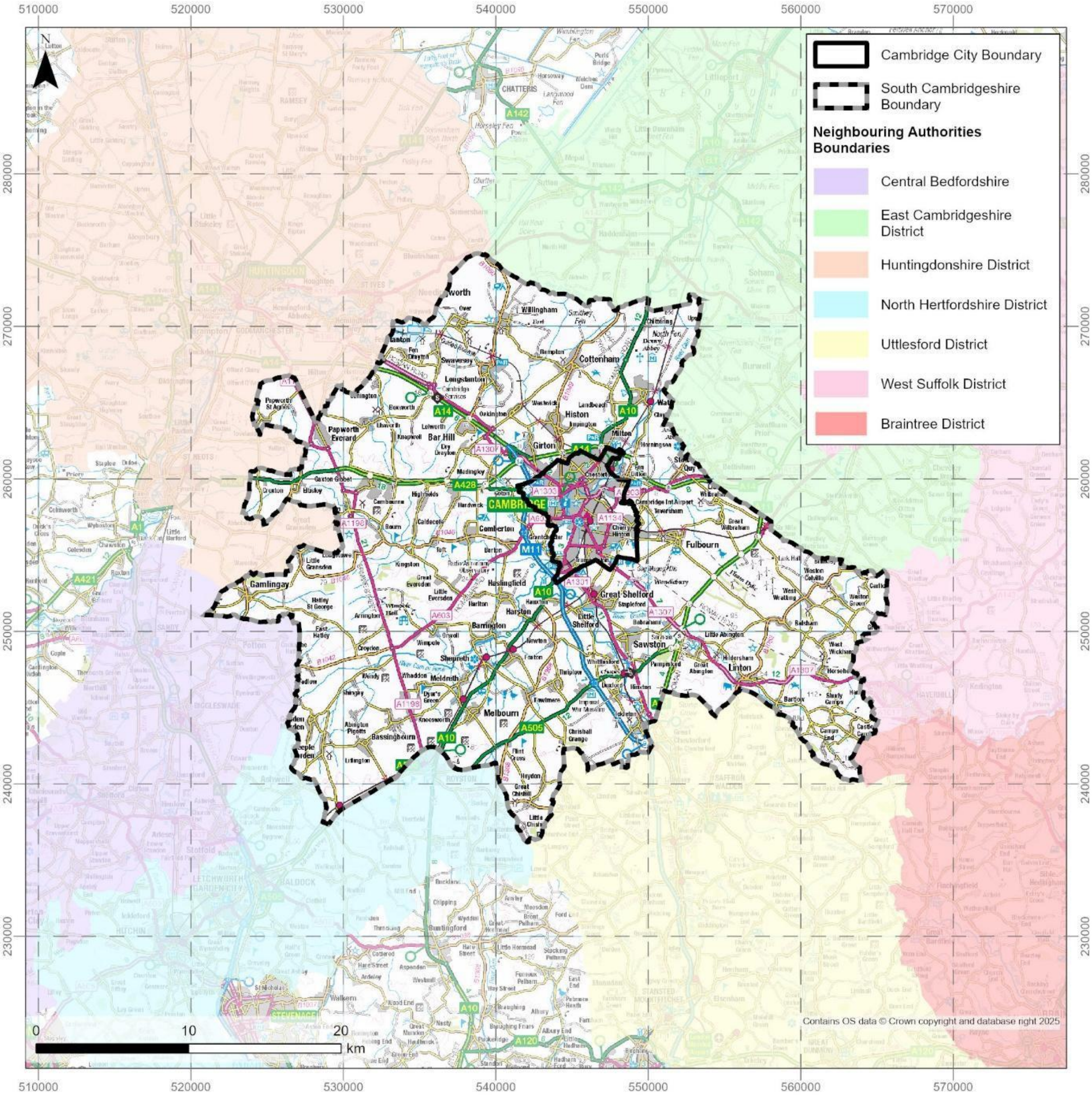

Figure 3.1: Greater Cambridge Administrative Boundaries

3.2 Geology, Land Use and Topography

Geology

3.2.1 The geology of Greater Cambridge, extracted from the British Geological Survey (BGS)[33], is shown in **Figure 3.2** and **Figure 3.3.** Bedrock geology comprises Grey and White Chalk Formations which lie in a band from the south-west of the area to the north-east. These give way to the Gault Formation (clay) and Upper Greensand in the north-west quadrant, interspersed with some smaller areas of sandstone (Lower Greensand). In total, approximately 53% of the area is underlain by the permeable Chalk.

3.2.2 Superficial deposits include glacial Till (Diamicton), sand and gravel river terrace deposits, alluvium and peat. Clay with Flints drapes much of the Chalk outcrop but can be of limited thickness. In total, approximately 44% of the Greater Cambridge area has superficial deposits, of which about half are Till.

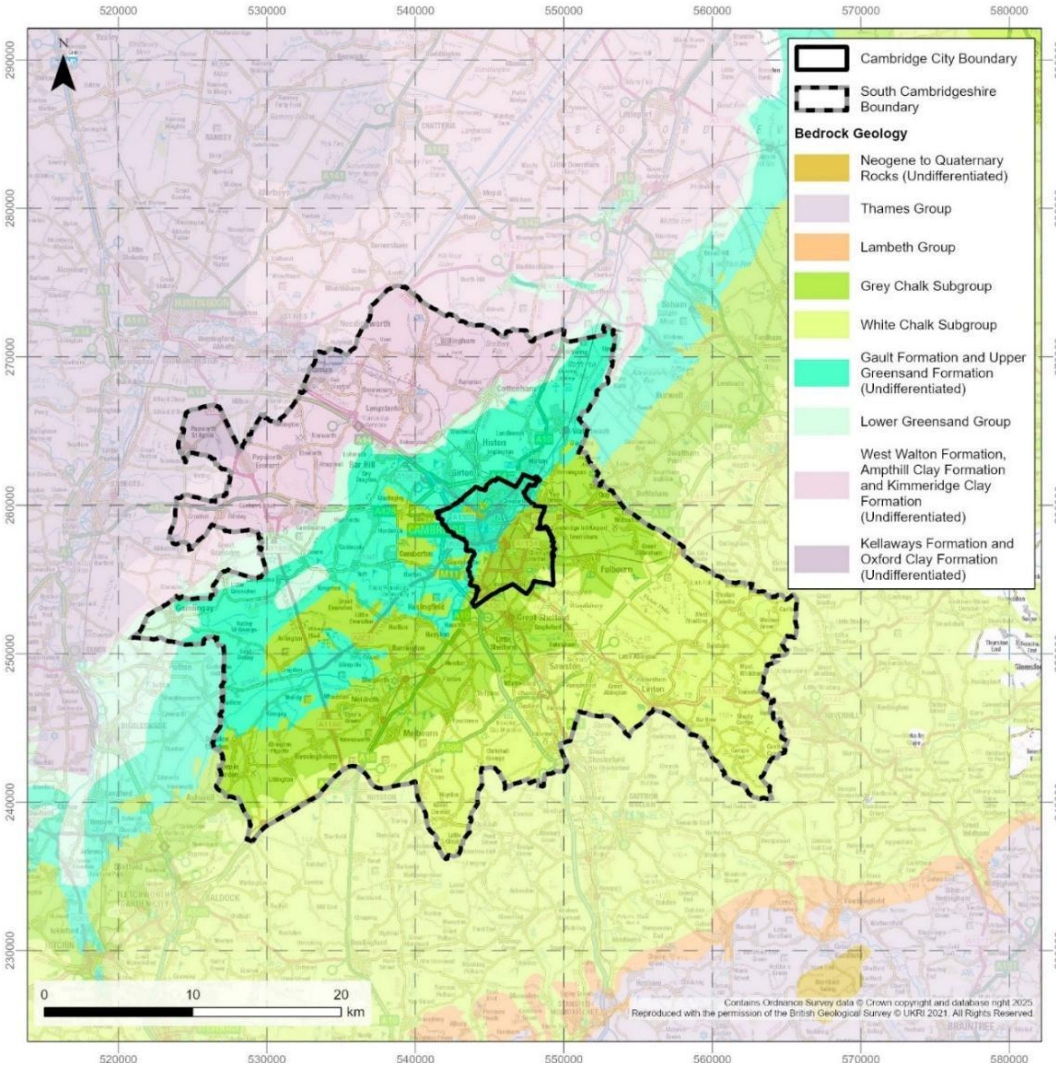

Figure 3.2: Bedrock Geology

33 [BGS Geology Viewer - British Geological Survey]

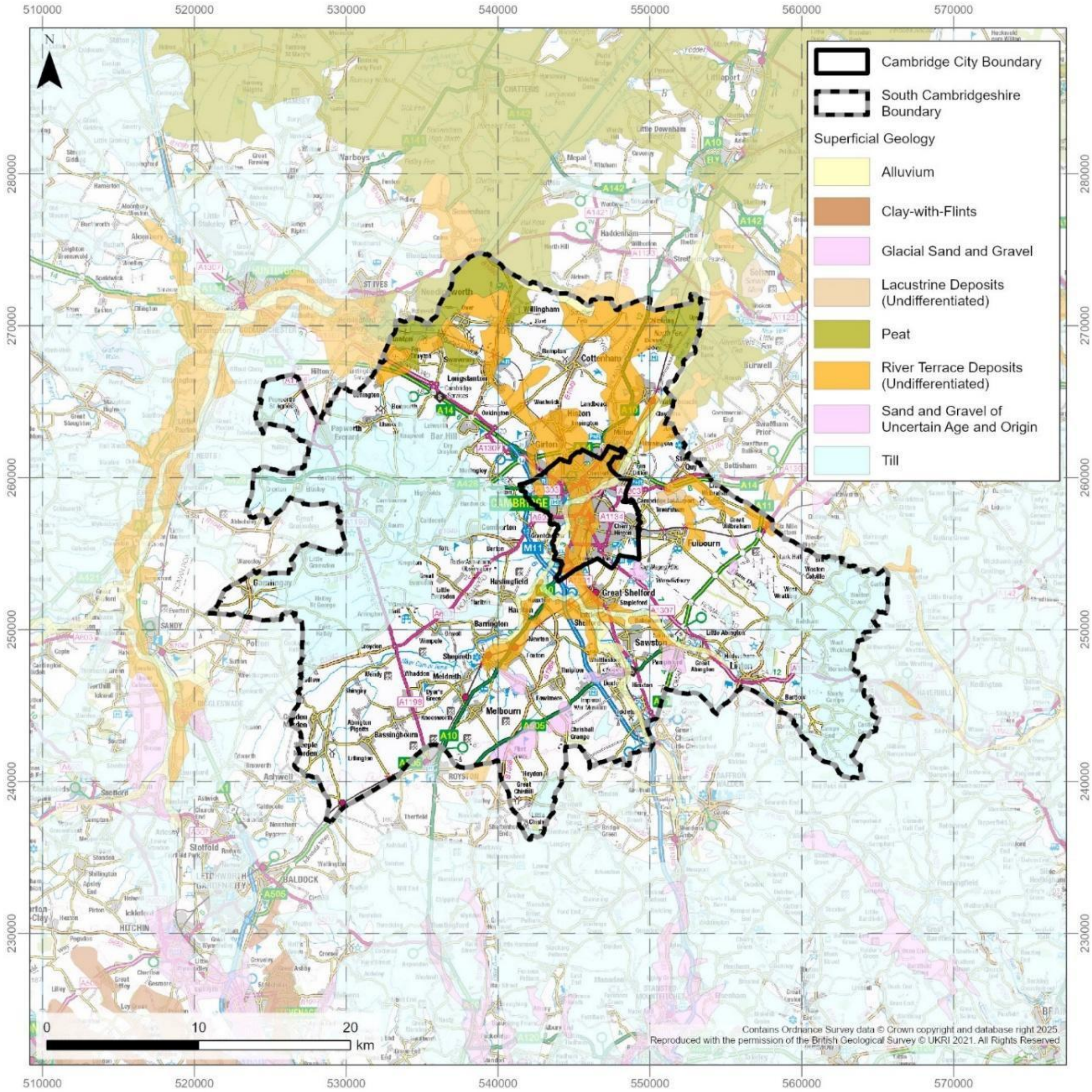

Figure 3.3: Superficial Geology

3.2.3 Greater Cambridge contains a number of aquifers (underground layers of water-bearing permeable bedrock or superficial drift deposits from which groundwater can be extracted).

3.2.4 In Greater Cambridge, both the Chalk (53% coverage) and Lower Greensand (5% coverage) are classified as Principal Aquifers. The Chalk principal aquifer, in particular, stores considerable quantities of groundwater that sustain river flows; groundwater is the principal source of water supply for Greater Cambridge. The superficial River Terrace Deposits (12% coverage) are classified Secondary A aquifers providing baseflow locally to rivers, while the superficial Till deposits (25% coverage) are considered a Secondary Undifferentiated aquifer due to the presence of sands and gravels within the deposits.

Topography

3.2.5 The topography of Greater Cambridge is strongly influenced by the bedrock geology. Elevations vary from highs of +150m AOD in southern and eastern parts where the area overlies the chalk ridge, to lows of less than 0 mAOD (below sea level) in northern parts where the area enters the Fens.

3.2.6 **Figure 3.4** provides an overview of the topography across Greater Cambridge, based on LiDAR remote sensed survey data.

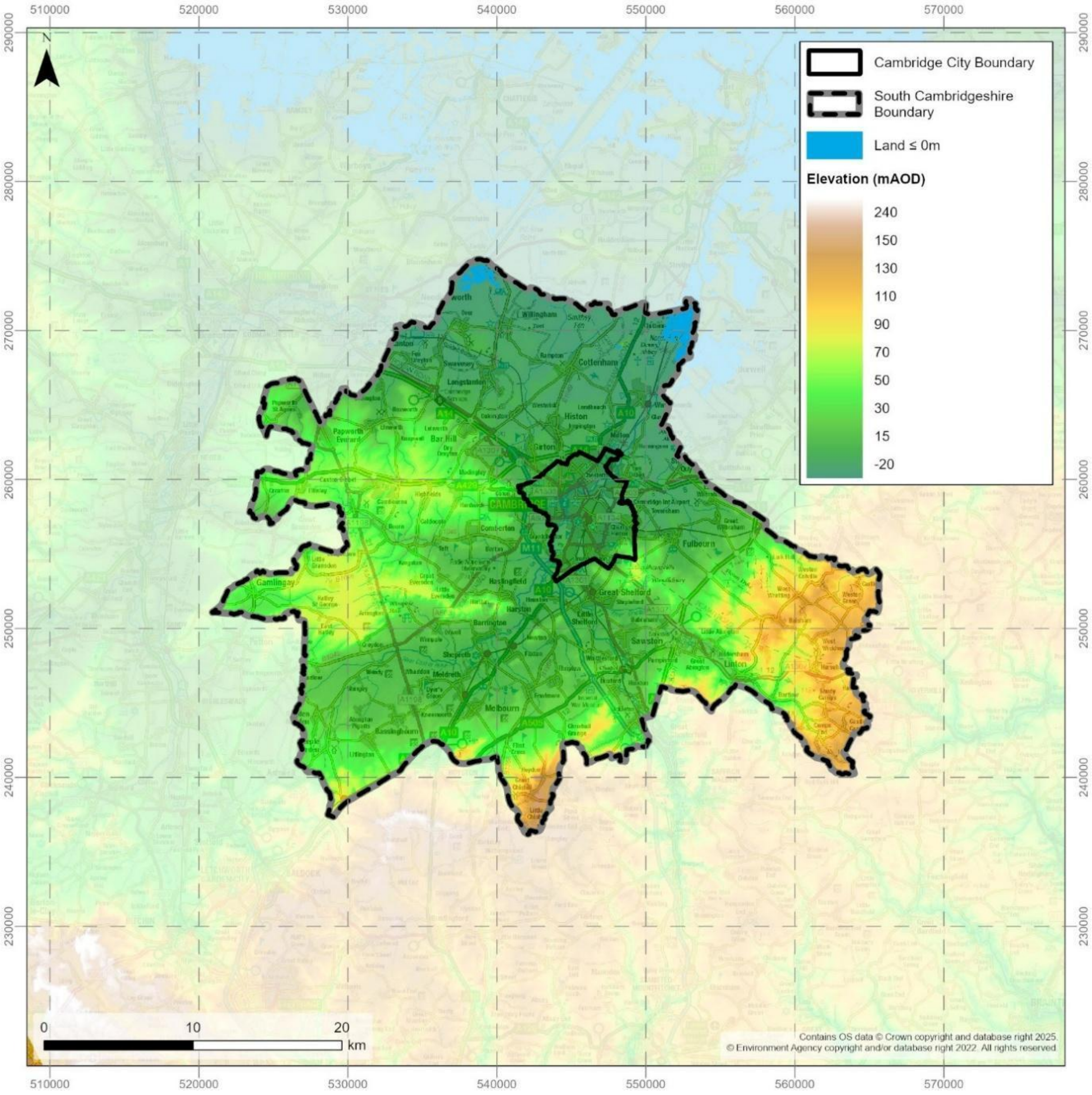

Figure 3.4: Topography

Land Use

3.2.7 The Agricultural Land Classification (ALC)[34] used in England and Wales to grade the quality of land for agricultural use, according to the extent by which physical or chemical characteristics impose long-term yield limitations. It is used to inform planning decisions affecting greenfield sites. The system classifies land into five grades:

- Grade 1 - excellent quality agricultural land with no or very minor limitations.
- Grade 2 - very good quality agricultural land with minor limitations which affect crop yield, cultivation or harvesting.
- Subgrade 3a – good quality agricultural land with moderate limitations that affect the choice of crop, timing, and type of cultivation/harvesting or level of yield. This land can produce moderate to high yields of a narrow range of crops or moderate yields of a wide range of crops.
- Subgrade 3b – moderate quality agricultural land with strong limitations that affect the choice of crop, timing, and type of cultivation/harvesting or level of yield. This land produces moderate yields of a narrow range of crops, low yields of a wide range of crops and high yields of grass.
- Grade 4 – poor quality agricultural land with severe limitations which significantly restrict the range and level of yield of crops.
- Grade 5 - very poor quality agricultural land with very severe limitations which restrict use to permanent pasture or rough grazing with the exception of occasional pioneer forage crops.

3.2.8 Greater Cambridge is currently mostly Grade 2 agricultural land, with some areas categorised Grade 3 (**Figure 3.5**). Where peat deposits are found, the land is classified as agricultural Grade 1. A smaller part of Greater Cambridge, focused within Cambridge City and smaller patches along South Cambridgeshire, is currently classified as urban land use.

[34] Guide to assessing development proposals on agricultural land - GOV.UK

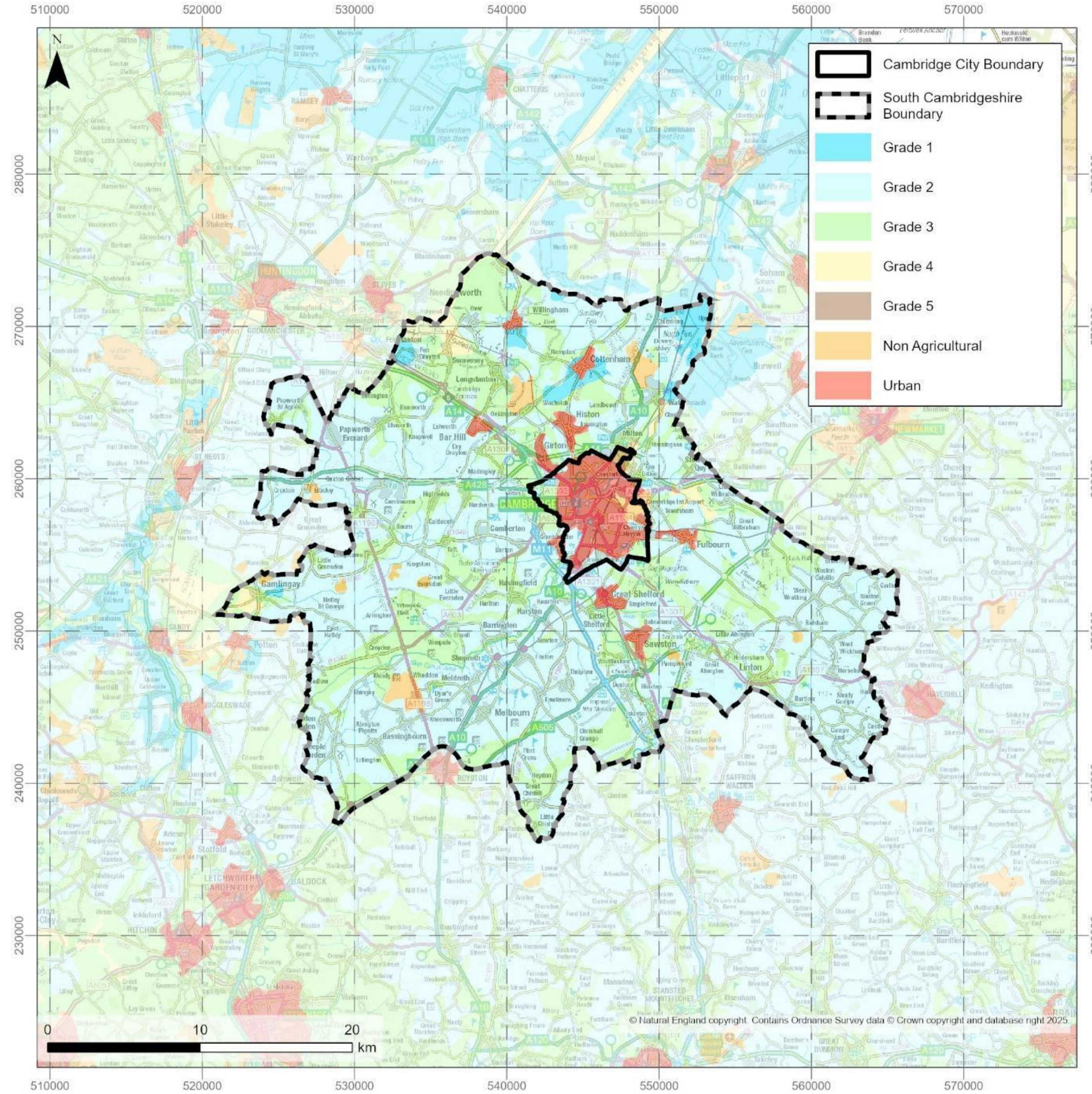

Figure 3.5: Agricultural Land Classification

3.3 Surface Water and River Catchments

3.3.1 The surface water and river flows in Greater Cambridge are determined by the topography and geology of the region. Most of the region is drained by the River Cam catchment, flowing north-eastwards into the River Great Ouse and thence out to sea at the Wash at King's Lynn. Areas in the north-west corner of the region drain northwards directly to the River Great Ouse via a number of smaller watercourses. Some very small areas along the Greater Cambridge boundary drain eastwards or westwards.

3.3.2 Other smaller watercourses, drains and ditches across Greater Cambridge flowing along Greater Cambridge, are designated as 'Ordinary Watercourses', and the regulatory control of these features primarily lies with Cambridgeshire County Council Lead Local Flood Authority.

3.3.3 **Figure 3.6** shows the main rivers and ordinary watercourses within the Greater Cambridge region.

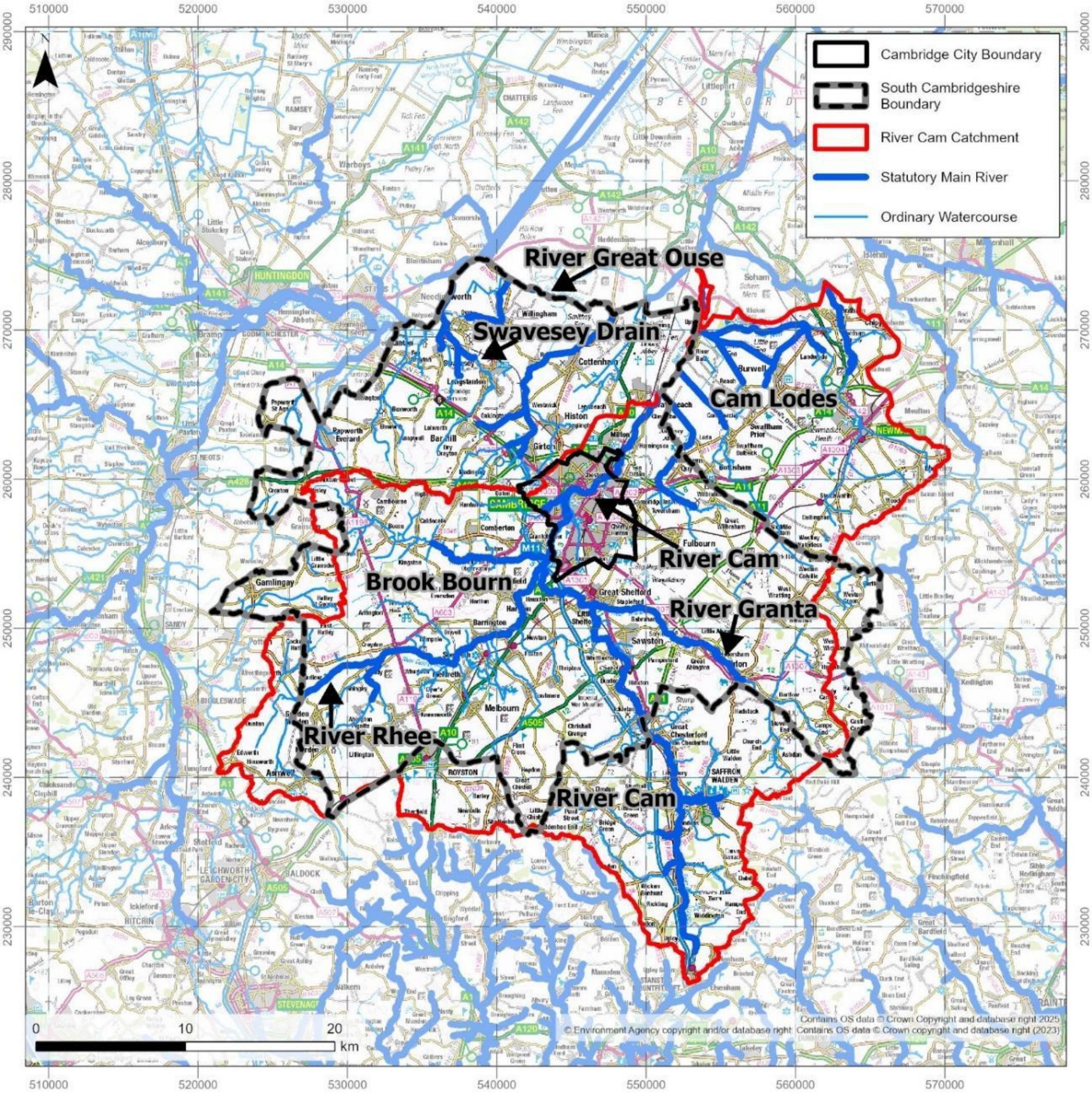

Figure 3.6: Main Rivers and Ordinary Watercourses

3.4 Future Climate

3.4.1 It is now accepted that human activities are leading to climate change of a scale and pace that could significantly impact our lives and those of future generations. Burning of fossil fuels since the 1800s has led to a 40% increase in the level of carbon dioxide in the atmosphere. Evidence has shown that the high levels of carbon dioxide and other greenhouse gases in the atmosphere is a leading cause of increasing global temperatures. The average global temperature is now approximately 1°C higher than the 1850 – 1900 average.

3.4.2 The UK Climate Projections (UKCP) provides an up-to-date assessment of how the climate of the UK may change in the future. UKCP is a climate analysis tool within the government funded Met Office Hadley Centre Climate Programme. The most recent climate projections were released in 2018 (UKCP18)[35], replacing the previous 2009 release (UKCP09).

3.4.3 The UKCP18 observations of current climate show evidence consistent with the expected effects of a warming climate, alongside considerable natural annual to multi-decadal variability. All of the top ten warmest years for the UK, in a series from 1884, have occurred since 2002. The 21st century so far has been warmer than the previous three centuries. Alongside warmer temperatures, winters and summers have also been wetter, although these patterns are potentially within long-term historic natural variability bounds.

3.4.4 The UKCP18 future climate projections indicate warming across all areas of the UK, especially during summer. The temperature and duration of hot spells during summer months will increase. Rainfall patterns will remain variable, but there will be future increases in the intensity of heavy summer rainfall events despite drier summers overall. All future projections also indicate an increase in winter rainfall, although this varies between simulations.

3.4.5 Therefore, it is anticipated that climate change will lead to an increase in the intensity and frequency of extreme weather events, including both summer and winter floods and droughts. The impact of climate change on flood risk is discussed further in the accompanying SFRA.

3.4.6 The relationship between climate change and groundwater levels is complicated and poorly understood. The Enhance Future Flows and Groundwater (eFLaG) Portal[36] was recently developed by the Centre of Ecology and Hydrology (CEH). The core deliverable of the project was an 'enhanced Future Flows and Groundwater' (eFLaG) dataset'[37] of nationally consistent climatological and hydrological projections based on UKCP18, that can be used by the water industry for water resources and drought planning – alongside a whole host of other potential uses by other sectors.

[35] UK Climate Projections (UKCP) - Met Office

[36] Enhanced Future Flows and Groundwater (eFLaG) Portal (ceh.ac.uk)

[37] Hydrological projections for the UK, based on UK Climate Projections 2018 (UKCP18) data, from the Enhanced Future Flows and Groundwater (eFLaG) project - EIDC (ceh.ac.uk)

3.4.7 The eFLAG portal suggests that the Greater Cambridge area (Cam and Ouse Chalk) may see an increase in spring recharge in both the 2020-2049 and 2050-2079 periods, and a slight decrease in autumn recharge in 2020-2049, but that summer and autumn recharge in the 2050-2079 could decrease by as much as 50%.

3.4.8 In terms of river flow, Q90[38] surface water flow decreases of between 10% and 40% are predicted for the summer and autumn for the 2020-2049 period, based on flows in the Great Ouse at Offord D'Arcy. Q50[39] flows are forecasted to decline between 10% and 30%. This lower baseflow and flow have the potential to adversely affect the ability of water courses to receive current (or load standstill) wastewater flows without an environmental impact.

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[38] Q90 represents the flow (Q) that is equalled or exceeded by the annual daily mean flow 90% of the time.

[39] Q50 represents the flow (Q) that is equalled or exceeded by the annual daily mean flow 50% of the time.

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4 Wastewater Collection and Treatment

4.1 Overview

4.1.1 The purpose of this Chapter is to:

- Review current wastewater collection and treatment infrastructure, using available information.
- Consider how climate change could impact wastewater treatment requirements in the future.
- Identify existing plans for improvement, including planned allowances for population growth, provision of additional Water Recycling Centre capacities, network and combined sewer overflow upgrades.

4.1.2 There are many links between wastewater treatment and water quality. These are introduced here and explored further in **Chapter 5**.

4.2 Data Limitations

4.2.1 This WCS supporting the draft Local Plan is based on development trajectories for housing and employment, and includes assumptions regarding the water consumption of different development types. There are inevitable uncertainties involved in modelling the water impacts of proposed development, particularly when planning across a wide area over the 21 year plan period 2024-45. In particular, there is significant uncertainty regarding the timing of potential employment development, and also of the potential water consumption from certain employment uses; this is a challenge acknowledged by Anglian Water.

4.2.2 This study seeks to apply reasonable assumptions, but the water consumption findings in this report derived from employment uses should be treated with a degree of caution.

4.3 Headline chapter findings

Headline findings of baseline conditions

4.3.1 A number of Water Recycling Centres (WRCs) are currently exceeding the Dry Water Flow (DWF) condition of their permit, including those where growth is planned, indicating that investment is required to accommodate the growth. Based on the assumptions listed in Chapter 4, growth including Draft Local Plan allocated sites will cause a number of WRC to exceed their current DWF permit by 2045 for both the 'Full Build Out' and 'Most likely' development scenarios. Excluding the draft Local Plan new allocations does not alter this conclusion.

4.3.2 Applying climate change predictions in eFLaG results in additional WRCs that do not have capacity to accept flows without the adoption of new technologies or management practices. A number of other WRCs are close to breaching their 'load standstill' permitted values.

4.3.3 Anglian Water (AW) confirmed that growth schemes had been identified for Melbourn WRC, Utton's Drove WRC and Cambridge WRC relocation.

4.3.4 AW is working on the emerging Drainage and Wastewater Management Plan (DWMP2) where the abovementioned investment requirements will be identified as part of its long-term strategy. AW and GCSP are collaborating to ensure they will be both making common assumptions about growth and population.

4.3.5 Depending on specific site location, timing of development may need to consider any necessary WRC or sewage upgrade works.

Opportunities for development

4.3.6 In April 2025 DEFRA's Secretary of State granted development consent for the Cambridge Wastewater Treatment Plant Relocation Project. Funding for the redevelopment of the new WRC was withdrawn in August 2025, and AW is now reconsidering options to address the challenges of wastewater treatment in Cambridge.

4.3.7 As illustrated in Section 4.7, there are WRCs within Greater Cambridge identified as having capacity constraints for future growth. For the WRCs that do not have growth schemes in this AMP period, funding will need to be included in the next Price Review process (PR29) covering the period 2030-2035.

4.3.8 AW is committed to enabling sustainable growth and is collaborating with external stakeholders to find solutions to capacity challenges. AW is working to secure policy and regulatory change that allows water companies to better support growth, for example, by allowing water companies to invest strategically to create new capacity ahead of growth materialising, and by changing charging rules to allow for developer contributions to new infrastructure.

4.3.9 AW is also working closely with Defra's Ministerial Water Delivery Taskforce, regulators and other stakeholders such as the Cambridge Water Scarcity Group to resolve ongoing challenges around growth in the region. This includes ensuring that Cambridge WRC has sufficient capacity to enable current and future growth (including growth identified in this emerging Greater Cambridge Local Plan and the wider government growth ambitions for Cambridge).

4.3.10 AW's DWMP, published in 2023, outlines how their water recycling service will cope with growth and climate change over the next 25 years, from 2025 to 2050. The DWMP has highlighted the upgrades planned in the medium term (by 2035) and long-term (by 2050) for the WRCs within Greater Cambridge. The majority of the WRC upgrades include a combination of measures such as surface water removal, increase of capacity, revision of permit and catchment transfers.

4.3.11 The reviewed DWMP2 plan, which will be published in 2028, (and its draft will be available in November 2027), will set AW's detailed plan on how these demands will be met and will inform AW's AMP plan for Price Review 2029 to secure funding for investment in AMP9.

4.4 Managing Wastewater Collection and Treatment

4.4.1 The UK's sewerage undertakers are responsible for building, maintaining and improving main sewers, pumping stations and wastewater treatment facilities that service around 96% of the UK's population[40]. This chapter focuses on these strategic facilities, which in the Greater Cambridge area are owned and operated by Anglian Water.

4.4.2 The remaining 4% of the UK's population, represented by the smallest of communities and individual properties in rural areas remote from main sewers, are generally served by privately owned, small-package treatment plants catering for small groups of houses, or septic tanks, cesspits and other in-situ treatment systems generally serving individual properties. These systems have not been considered further in this chapter. Planning Policy Guidance states that the assumption for new development is that its wastewater is connected directly to the public sewer.

4.4.3 Anglian Water is responsible for the public sewer system in Greater Cambridge, with the exception of some highways drains which may be the responsibility of Local Authorities or the Highways Agency. Property owners are responsible for pipework that is situated within in their property's boundary, which carries wastewater away from the toilets, showers and sinks, as well as for any surface rainwater.[41] Homeowners are also responsible for sections of pipes shared between themselves and their neighbours, if the home was built after 2011, unless it's been transferred to Anglian Water. In fact, if a home was built before 2011, generally, Anglian Water is responsible for looking after any pipes shared with the homeowner and the neighbour within the property boundary. If a home was built after 2011, Anglian Water is responsible for looking after shared pipes if they have been transferred to Anglian Water by the housing developer, through an adoption agreement.

4.4.4 Anglian Water is also responsible for building, operating and maintaining wastewater treatment facilities (referred to by Anglian Water as Water Recycling Centres (WRCs)). The existing WRCs in and near Greater Cambridge, and the areas they serve, are shown in **Figure 4.1.**

[40] Waste water treatment in the United Kingdom - 2012 (publishing.service.gov.uk)

[41] Sewer pipe responsibility

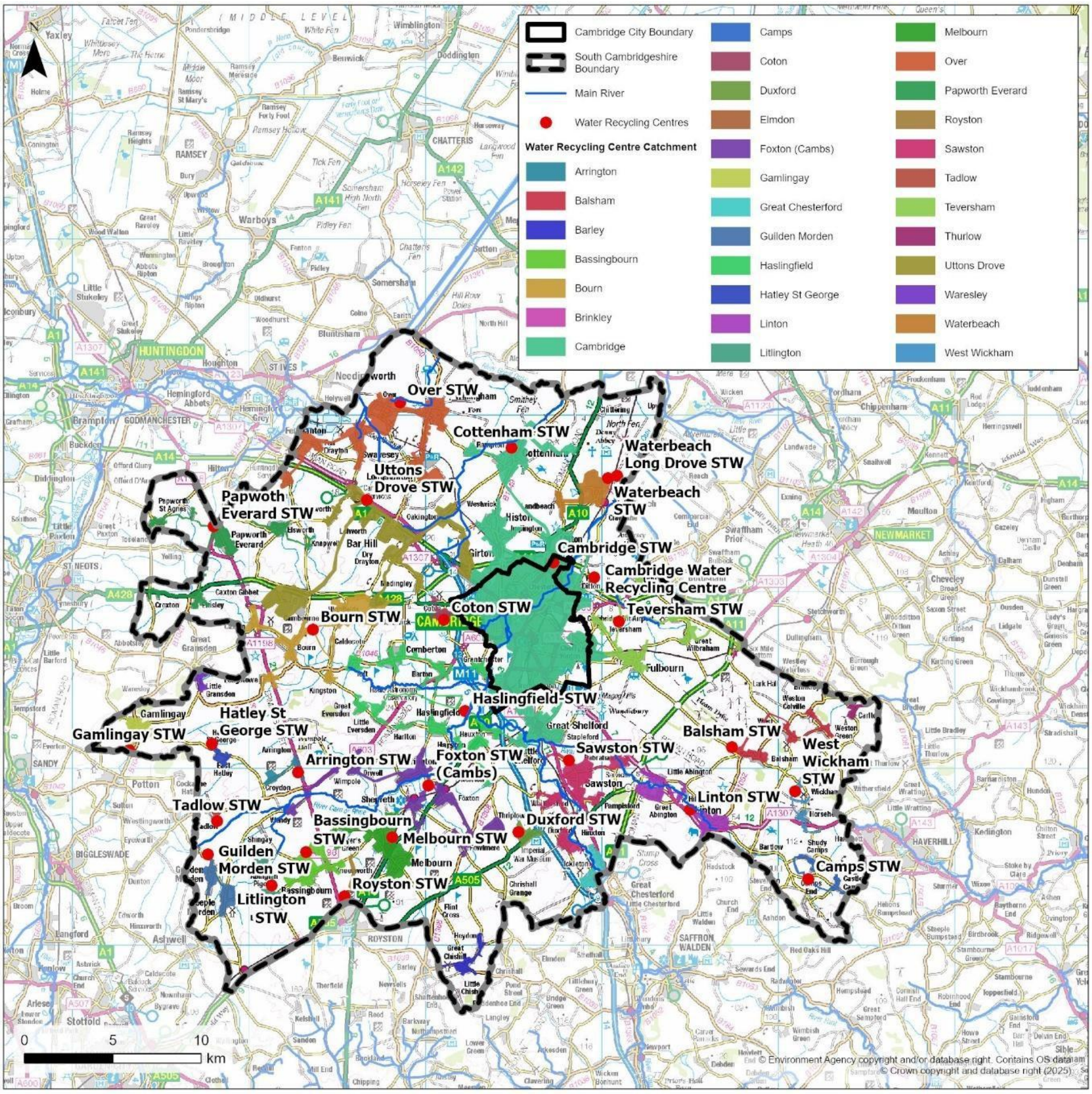

Figure 4.1: Existing WRCs and WRC catchments in Greater Cambridge

4.4.5 Wastewater treatment is currently undertaken at 33 Recycling Centres located within the Greater Cambridge region, as shown in **Figure 4.1**. There are four cross-boundary treatment works included in this review for completeness, and were also identified in the 2021 WCS report. These are:

- The Royston treatment works lies within the Greater Cambridge area, but treats wastewater generated in the Royston area of North Hertfordshire.
- The Waresley treatment works lies outside the Greater Cambridge area (in Huntingdonshire), but treats wastewater generated in the Little Gransden area of Greater Cambridge.

- The Barley and Great Chesterford treatment works are in North Hertfordshire but treat wastewater generated in the Chishill and Ickleton areas of Greater Cambridge respectively.

4.4.6 The Environment Agency is responsible for regulating wastewater treatment works, by issuing permits (through the Environmental Permitting Regulations) and assessing the quality of treated effluent against compliance limits. In particular, the EU Urban Waste Water Treatment Directive (transposed into UK legislation as The Urban Waste Water Treatment (England and Wales) Regulations 1994) prescribes minimum standards for wastewater collection and treatment in urban areas with a Population Equivalent (PE)[42] of over 2000, with more advanced treatment required in places with a population equivalent over 10,000 in sensitive areas. The recommendations are:

- In “less sensitive areas”, a minimum of primary treatment must be provided to settle out larger suspended matter. The UK currently has no “less sensitive area” designations.

- In “normal areas”, secondary treatment is required to breakdown organic matter under controlled conditions in treatment plants.

- In “sensitive areas”, tertiary treatment is required to address specific pollutants using different treatment processes. Sensitive areas include water bodies that are currently or at risk of becoming eutrophic[43], abstraction sources that currently or at risk of having high nitrate levels, and other directives requirements (for example. the Bathing Water Directive). These areas are mapped in Chapter 5 and show the River Great Ouse, River Cam and River Rhee are designated “sensitive areas” for eutrophication (**Figure 5.6**:)

4.4.7 Anglian Water use long term plans to manage their water recycling infrastructure. The Environment Act (2021) made the preparation of DWMPs by water and sewerage companies a statutory requirement. Anglian Water’s most

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[42] Population Equivalent: The unit of measure used in the Urban Waste Water Treatment Directive for assessing the polluting potential of wastewater discharges. 1 population equivalent (PE) means the organic biodegradable load with a 5-day biochemical oxygen demand (BOD5) of 60g of oxygen per day. This means the oxygen used, largely by bacterial organisms, in breaking down the organic matter in wastewater

[43] **Eutrophication** is characterized by excessive plant and algal growth due to the increased availability of one or more limiting growth factors needed for **photosynthesis**, such as sunlight, carbon dioxide, and nutrient fertilizers. Eutrophication occurs naturally over centuries as lakes age and are filled in with sediments. However, human activities have accelerated the rate and extent of eutrophication through both point-source discharges and non-point loadings of limiting nutrients, such as nitrogen and phosphorus, into aquatic ecosystems (for example cultural eutrophication), with dramatic consequences for drinking water sources, fisheries, and recreational water bodies. [Eutrophication: Causes, Consequences, and Controls in Aquatic Ecosystems | Learn Science at Scitable]

recent DWMP[32] was published in 2023. The next DWMP2 will be prepared under the updated guidance published in May 2025, based on lessons learnt from the first cycle of plans and the legal requirements now in place. The DWMP2 is due to be published in 2028 and an intermediate draft will be available in November 2027. The reviewed plan will inform their Asset Management Period (AMP) plan for Price Review (PR) 2029 to secure funding for investment in AMP9.

4.4.8 As noted in **Section 2.18**, the DWMP covers the period 2025-2050 and supported the development of Anglian Water's Long Term Delivery Strategy and the Price Review 2024 Business Plan.

4.5 Impacts of Climate Change

4.5.1 The potential impacts of climate change on wastewater collection and treatment include:

- Increased risk of sewer flooding due to changes in rainfall frequency and intensity.
- Increased risk of pollution to rivers due to changes in rainfall frequency and intensity affecting the operation of combined sewer overflows.
- Increased risk of pollution during more severe drought episodes, due to reduced dilution of treated wastewater effluent discharges.

4.5.2 Anglian Water's plans in relation to climate change adaptation, illustrated in the latest DWMP, include addressing the impact of a 2 degree increase due to climate change in most solutions and the ability to be, prepared for a 4 degree increase in some catchments.

4.5.3 AW's Net Zero Carbon Routemap[44] states that AW aims to achieve net zero operational carbon by 2030 and 70% decrease in capital carbon (against 2010 baseline).

4.5.4 AW has also recently published their Climate Transition Plan[45] (2025), which sets out their decarbonisation journey.

4.6 Sewers

4.6.1 There are three main types of wastewater collection sewers:

- Surface water drainage that collects rainwater run-off from roads and urban areas, and discharges to local waterbodies. Surface water flood risk and drainage is discussed in the accompanying SFRA and is not considered further in this Chapter.

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44 net-zero-routemap-summary-2021.pdf

45 climate-transition-plan-2025.pdf

- Foul drainage that collects contaminated wastewater from premises (for example bathrooms, kitchens and laundry wastewater, excluding rainwater), conveying it to a treatment plant for cleaning before discharging to local waterbodies.

- Combined sewers that collect both rainwater and contaminated wastewater, conveying it to a treatment plant for cleaning before discharging to local waterbodies. These include combined sewer overflows (CSOs, also referred to as 'storm overflows') to prevent sewage backing up and flooding of properties and roads during heavy rainfall. CSOs reduce the need for sewer diameter to increase to unmanageable levels as flows aggregate towards treatment facilities. Combined sewer overflows discharge excess untreated (though diluted) wastewater directly to local waterbodies. The circumstances under which discharges are allowed are described in permits issued by the Environment Agency. The impacts of these on water quality is considered further in Chapter 6.

4.6.2 Although, new developments have separate foul and surface water drainage systems, some older towns have combined systems. These place an additional burden on the wastewater treatment process as the increased volume of both rainfall and effluent can overwhelm the WRC treatment capacity increasing the risk of flooding and pollution. In particular, during periods of heavy rainfall CSOs discharge untreated wastewater directly into waterbodies to prevent sewage backing up and flooding streets and homes. These can cause significant pollution problems and can be an obstacle to achieving good river health and safe recreational use of the waterways. Spills can also occur due to groundwater infiltration into the sewer network.

4.6.3 AW monitor the operation of most of their Storm Overflows using Event Duration Monitors[46] (EDM), which record the frequency and duration of spills to rivers. Records are published by the EA each year. There are published datasets that date from 2020 to 2024. **Table 4.1** shows the number of spills during 2023 and 2024 for the WRCs in Greater Cambridge (Hardwick Pumping Station has been added to the table as it has a high number of spills) and graphically represented in **Figure 4.2** (for 2023) and **Figure 4.3** (for 2024). The majority of pumping stations have less than 10 spills per year.

Table 4.1: Monitored Storm Overflows in Greater Cambridge in 2023 and 2024

Site Name	Counted spills in 2023	Counted spills in 2024
Arrington WRC	17	20
Balsham WRC	53	27
Barley WRC	34	30
Bourn (Storm tank at WRC)	18	64

[46] Event Duration Monitoring - Storm Overflows - Annual Returns

Site Name	Counted spills in 2023	Counted spills in 2024
Bourn (Inlet SO at WRC)	1	21
Cambridge WRC	74	23
Foxton (Cambs) WRC	14	188
Great Chesterford WRC	1	0
Guilden Morden WRC	5	33
Hardwick Pumping Station	125	104
Haslingfield WRC*	172	128
Hatley St George WRC	21	20
Huntingdon WRC	16	66
Linton WRC	8	13
Melbourn WRC	52	119
Needingworth WRC	18	72
Over WRC	101	101
Papworth Everard WRC	41	50
Royston WRC	5	2
Sawston WRC	0	24
Teversham WRC	33	167
Uttons Drove (Bar Hill)	24	31
Waresley WRC	67	50
Waterbeach old WRC	6	23

*AW AMP8 WINEP obligations include investment at Haslingfield WRC to address a high spilling Storm Overflow, so that it does not discharge more than 10 rainfall events per year.

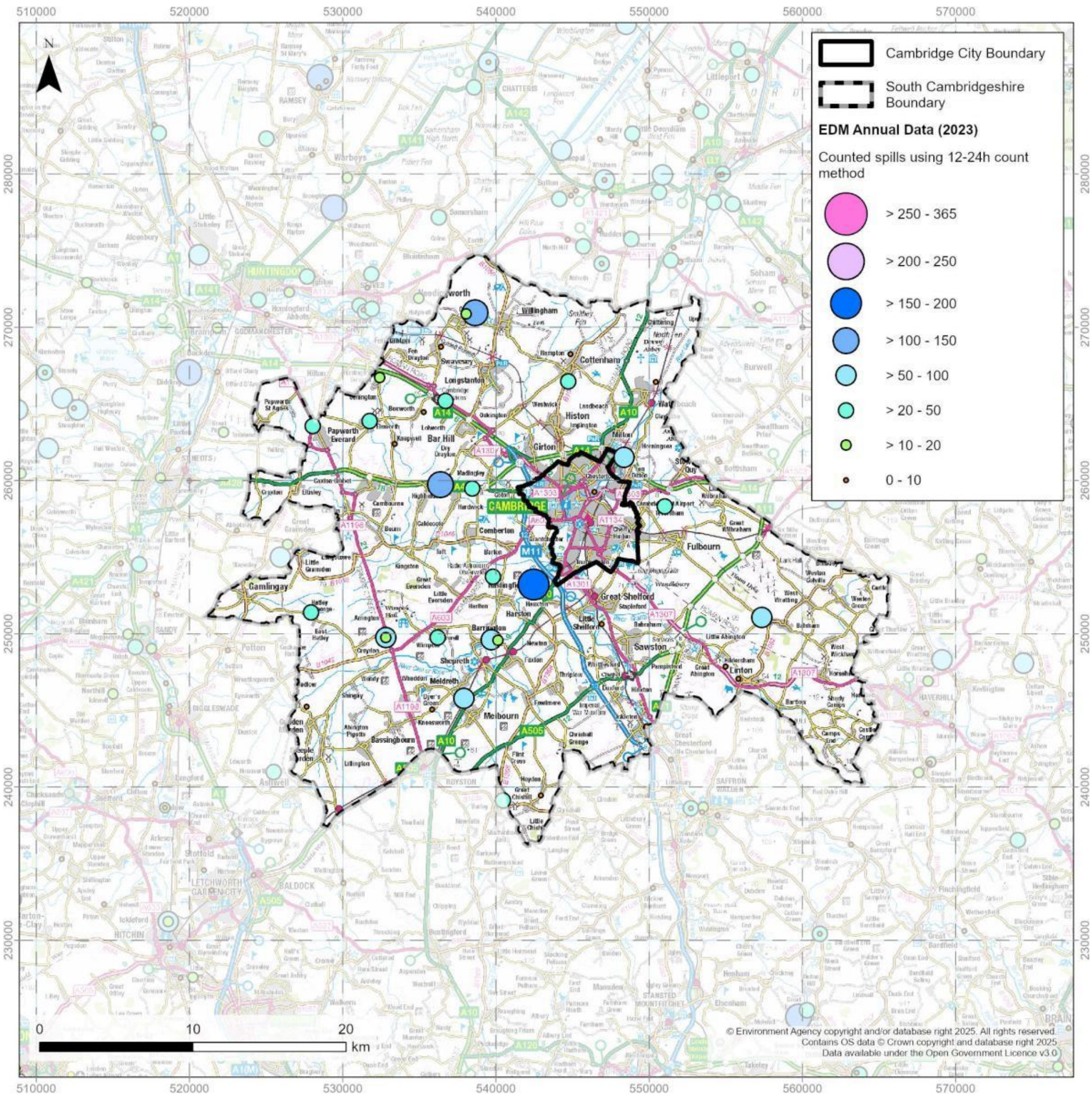

Figure 4.2: Monitored Storm Overflow spills in Greater Cambridge in 2023

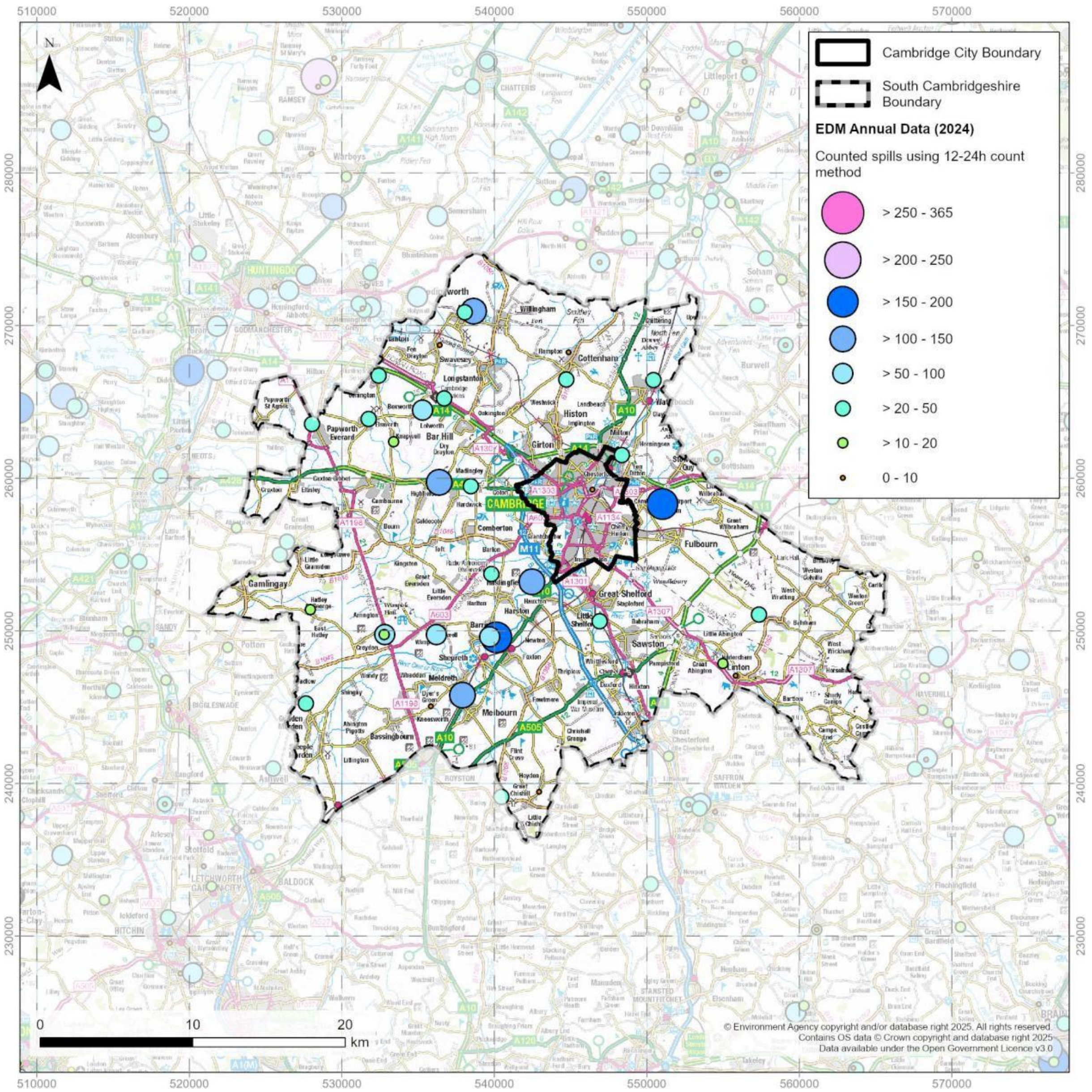

Figure 4.3: Monitored Storm Overflow spills in Greater Cambridge in 2024

4.6.4 Government and regulators have been clear to water and sewerage companies that the current level of activation of Storm Overflows is unacceptable. In the Environment Act 2021, the government placed a legally binding duty on water companies to progressively reduce the adverse impacts of discharges from storm overflows.

4.6.5 The Storm Overflows Discharge Reduction Plan (SODRP)[47], published in 2023, set several targets, which aimed to generate the most significant investment and delivery programme ever undertaken by water companies to protect people and the environment:

[47] Storm Overflows Discharge Reduction Plan

- By 2035, water companies will have: improved all storm overflows discharging near every designated bathing water; and improved 75% of storm overflows discharging into or near 'high priority sites'.

- By 2045, water companies will have improved all remaining storm overflows discharging into or near 'high priority sites'.

- By 2050, no storm overflows will be permitted to operate outside of unusually heavy rainfall or to cause any adverse ecological harm.

4.7 Current Wastewater Treatment Capacity Assessment

4.7.1 The EA has provided environmental permit discharge information for the WRCs in the Greater Cambridge region, (refer to column no 3 in **Table 4.9**). Permitted discharge volumes are based on the Dry Weather Flow[48] (DWF). Compliance against the permitted DWF is assessed by comparing it to the measured non-parametric 20th percentile flow for the works. Non-parametric methods are statistical techniques that do not rely on specific assumptions about the underlying distribution of the population being studied. The 20th percentile figure is that value exceeded by 80% of the recorded daily values. It's also known as the Q80. According to the EA guidance[49], the non-parametric 20th percentile value of a time series of measured total daily volume (TDV) data provides a good estimate of DWF.

4.7.2 Tadlow WRC has a descriptive permit, so is not subject to flow measurement and DWF compliance monitoring. This is typical for works that treat domestic sewage from a population of 250 or less. AW has provided this study with a Position Statement on Descriptive works[50], dated March 2025.

4.7.3 AW provided measured Q80 and Q90[51] flows for all other WRCs covering the period 2015 to 2024. Based on AW's suggestions, the average measured DWF Q80 data for all the WRCs for the past five years (2020 to 2024) has been used to calculate the 'Current' flows, as shown in **Table 4.9.** AW use the Q80 flows to be consistent with the EA's assessment of DWF headroom, when considering future growth in local plans, and an average over a 5-year period to account for variations due to weather patterns.

4.7.4 **Table 4.9** (as well as **Table 4.10, Table 4.11** and **Table 4.12**) show that the following WRCs are currently exceeding their DWF permit at Q80:

- Barley WRC

- Bassingbourn WRC

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48 Dry Weather Flow is the average daily flow to a Sewage Treatment Works during a period without rain.

49 [Calculating dry weather flow (DWF) at waste water treatment works - GOV.UK (www.gov.uk)]

50 [descriptive-works-position-statement-march-2025.pdf]

51 Q90 is the flow (Q) exceeded by 90% of the recorded daily values.

- Bourn WRC
- Cambridge WRC
- Foxton (Cambs) WRC
- Guilden Morden WRC
- Haslingfield WRC
- Melbourn WRC
- Over WRC
- Teversham WRC
- Uttons Drove (Bar Hill) WRC .

4.7.5 **Table 4.9** (as well as **Table 4.10**, **Table 4.11** and **Table 4.12**) also show that the following WRCs are currently using approximately 76%-100% of their DWF permit:

- Coton WRC
- Great Chesterford WRC
- Royston WRC
- Sawston WRC
- Thurlow WRC
- Waresley WRC
- West Wickham WRC.

4.7.6 If the Q80 figure is above the DWF permit discharge limit, AW is still compliant with its permit (unless the Q90 is also above the DWF permit discharge limit). Q80 is used to help plan for future capacity needs. Q90 DWF is used to assess compliance with DWF permit conditions and may identify an exceedance. A site will breach its permit where it exceeds its Q90 three or more times in a five-year period. It should be noted that this metric will change from January 2026; to where Q90 flows exceed the DWF three times during the last five years (including the most recent calendar year).

4.7.7 Q90 flows exceed the DWF more than three times in five years at:

- Barley WRC
- Cambridge WRC
- Foxton WRC

- Haslingfield WRC
- Melbourn WRC
- Over WRC
- Uttons Drove (Bar Hill) WRC

Anglian Water Investment Plans

4.7.8 Water Companies work in five-year regulated AMP cycles. Ofwat, the economic regulator, set investment needs and a 5-year funding settlement covering 2025-2030 at Price Review 2024 (PR24).

4.7.9 In the case of growth at AW's WRCs, AW's settlement includes funding for some named schemes identified in their Business Plan, and for which Ofwat has determined the expected level of population growth requires investment. If actual growth deviates from this, the funding settlement will be amended retrospectively at the next Price Review, currently scheduled for 2029.

4.7.10 Growth schemes had been identified for Melbourn WRC, Utton's Drove WRC and Cambridge WRC relocation. Specific updates include:

- Uttons Drove WRC serves significant growth areas including Cambourne and Northstowe. The growth in the emerging Greater Cambridge Local Plan significantly increases the proposed growth in the WRC catchment meaning that further funding will need to be sought in PR29 (covering the period 2030-2035).
- The relocation of Cambridge WRC from the current site on Cowley Road in northeast Cambridge was due to be funded through Homes England's Housing Infrastructure Fund (HIF). The Ministry of Housing, Communities, and Local Government (MHCLG) has confirmed that HIF funding will no longer be made available for the relocation. The decision follows costs of the relocation increasing significantly as a result of rising costs of materials and labour and disruption to global supply chains.
- AW has previously also confirmed that Barley WRC and Melbourn WRC are identified in the PR24 Business Plan for AMP8 growth schemes.

4.7.11 As detailed in **Section 4.7**, there are WRCs within Greater Cambridgeshire identified in this report as having capacity constraints for future growth. For the WRCs that do not have growth schemes in this AMP period, funding will need to be included in the next Price Review process (PR29) covering the period 2030-2035.

4.7.12 AW is committed to enabling sustainable growth and is collaborating with external stakeholders to find solutions to capacity challenges. AW is working to secure policy and regulatory change that allows water companies to better support growth, for example by allowing to invest strategically to create new capacity ahead of growth materialising, and by changing charging rules to allow for developer contributions to new infrastructure.

4.7.13 AW is also working closely with Defra's Ministerial Water Delivery Taskforce, regulators and other stakeholders such as the Cambridge Water Scarcity Group to resolve ongoing challenges around growth in the region. This includes ensuring that Cambridge WRC has sufficient capacity to enable current and future growth (including growth identified in this emerging Greater Cambridge Local Plan and the wider government growth ambitions for Cambridge).

4.7.14 Further details on the WRC upgrades, presented in the most recent DWMP, are provided in **Section 4.10**.

4.8 Proposed Growth

Residential development

4.8.1 GCSP provided the following housing projections for the period 2024 to 2045. The total number of dwellings during this period is provided in **Table 4.2.** The table shows sites that are committed via allocation or permissions separately, then groups all new allocations into a single row.

4.8.2 There are two key scenarios that GCSP has provided us with and that have been assessed:

- Most Likely scenario 2024-2045 and
- Full Build Out scenario.

4.8.3 For both of these key scenarios we have further assessed a scenario with the new Draft Plan residential allocations, as well as a scenario without the new Draft Plan residential allocations, in other words. four scenarios in total have been assessed. These are:

- Most likely development scenario 2024-2045 – Committed development only
- Most likely development scenario 2024-2045 – Committed development and emerging Local Plan allocations
- Full Build Out development scenario – Committed development only
- Full Build Out development scenario – Committed development and emerging Local Plan allocations

Table 4.2: Residential development trajectory (Full Build and Most likely development scenarios)

Development Name or Development Type	Full Build Out scenario (Total number of dwellings 2024 - full build out)	Most Likely scenario (Total number of dwellings in plan period 2024 - 2045)
Bell School	42	42
Bourn Airfield New Village	3,500	3,500
Cambourne West	2,050	2,050
Cambridge windfalls This category includes Sites of 10 dwellings or more in Cambridge 'Small Sites' of 9 dwellings or less in Cambridge Windfall allowance in Cambridge.	6,548	3,773
Cambridge East	2,169	2,169
Cambridge Urban area - allocations	1,353	1,353
Darwin Green	2,242	2,242
North of Worts Causeway	200	200
North-West Cambridge (Eddington)	2,616	2,616
Northstowe	8,706	6,229
Rural area - allocations	550	550
South Cambridgeshire windfalls (excluding Wellcome Genome Campus) This category includes Sites of 10 dwellings or more in South Cambridgeshire 'Small Sites' of 9 dwellings or less in South Cambridgeshire. Windfall allowance in South Cambridgeshire. The detailed breakdown is provided in Section 4.7 below.	9,265	5,665
South of Worts Causeway	230	230
Waterbeach New Town	10,975	5,727
Welcome Genome Campus	1,500	1,500
New Local Plan draft allocations (Cambridge City and South Cambridgeshire)	40,526	16,601
Total	**92,472**	**54,447**

4.8.4 It should be noted that the full build out scenario includes an assumption based on current windfall rates continuing to 2060, in addition to allocations in the draft plan continuing beyond 2045.

4.8.5 The average household sizes for new developments in Cambridge and South Cambridgeshire have been derived from the Topic Paper 'Average Household Sizes for Greater Cambridge Shared Planning', dated May 2025. The Paper showed that data for a range of different individual housing developments in Cambridge and South Cambridgeshire have been grouped together into broad typologies based on the GCSP requirements to establish a set of average household sizes for these Local Plan sites.

4.8.6 Average household sizes have been produced for:

- Cambridge fringe sites,
- Cambridge urban area sites,
- Cambridge key worker developments with a high proportion of 1 and 2 bed dwellings,
- South Cambridgeshire new settlements and
- South Cambridgeshire rural sites.

4.8.7 The average household sizes for each Typology are illustrated in **Table 4.3**.

Table 4.3: Average household sizes for each Typology

Typology	Number of people per Dwelling
Cambridge urban	2.4
Cambridge fringe	2.7
Cambridge key worker	1.8
South Cambridgeshire new settlements	2.85
South Cambridgeshire rural	2.6

4.8.8 **Figure 4.4** presents the residential population for the 'Most Likely' development scenario, including the Draft Plan new allocations, based on the number of dwellings proposed by GCSP, shown in **Table 4.2**,and the average household sizes shown in **Table 4.3.** The projected residential populations are split for each asset management plan (AMP) period that water companies will use to develop their investment plan. These are 5-year periods of investment approved by the water regulator, Ofwat.

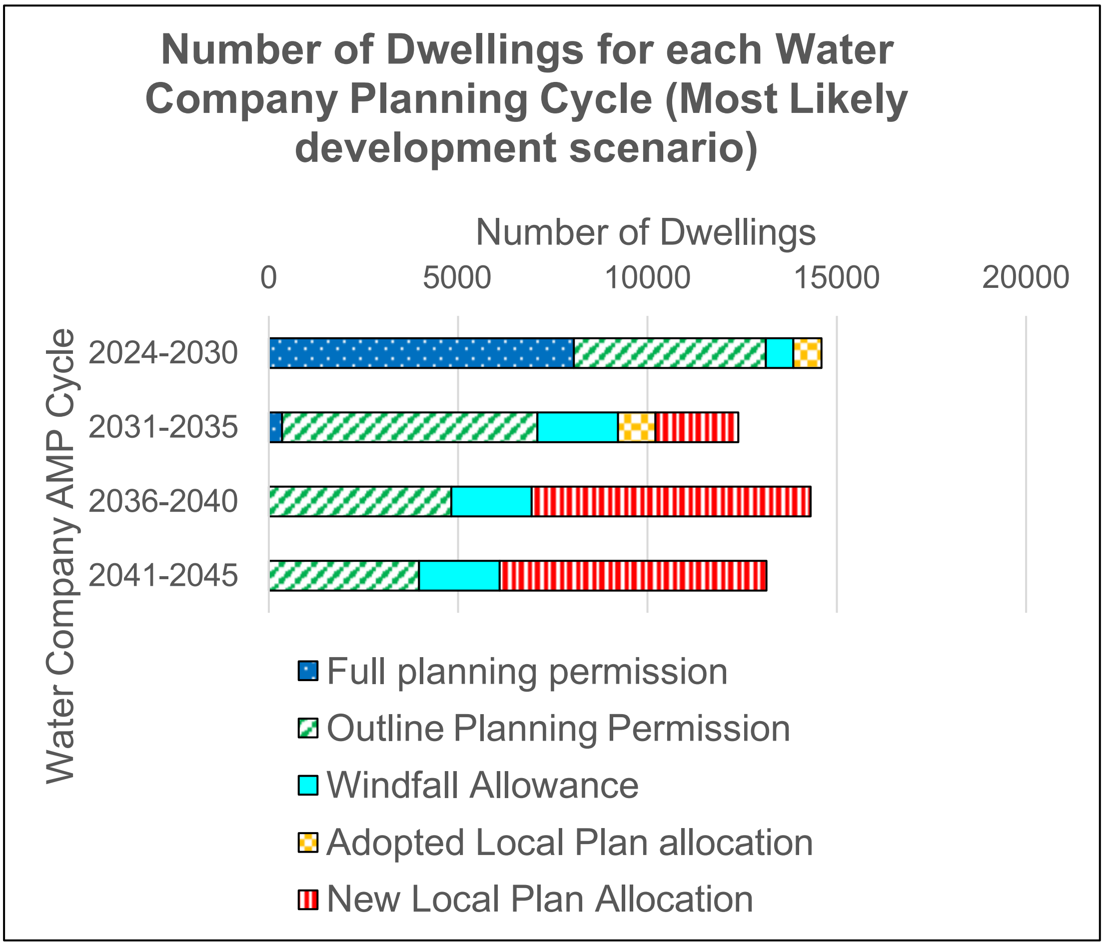

Figure 4.4: Number of Dwellings for each Water Company Planning Cycle

Non-residential development

4.8.9 In addition to the residential housing projections, GCSP provided the following employment forecasts that are consistent with the Councils' employment evidence from Iceni Projects. This evidence identifies that the 'Most Likely' scenario for total employment change within Greater Cambridge for the period 2024 to 2045 is around 73,300.

4.8.10 As for residential growth, the Councils shared employment data to inform the identification of four scenarios:

- Most likely development scenario 2024-2045 – Committed development only
- Most likely development scenario 2024-2045 – Committed development and emerging Local Plan allocations
- Full Build Out development scenario – Committed development only
- Full Build Out development scenario – Committed development and emerging Local Plan allocations

4.8.11 The data the Councils shared included floorspace and jobs associated with the scenarios above, for five main employment categories. They also shared jobs forecasts for 'Non-B' and 'Working From Home (WFH)' jobs associated with the most likely total employment forecast referred to above. These categories of different jobs data are explained in turn below.

4.8.12 The five main employment categories are shown below; the description of each category has been defined by the Planning Portal[52]:

- **E(g)(i) – Office**: Uses which can be carried out in a residential area without detriment to its amenity - Offices to carry out any operational or administrative functions
- **E(g)(ii) – R&D**: Uses which can be carried out in a residential area without detriment to its amenity - Research and development of products or processes
- **E(g)(iii) – Light Industrial:** Uses which can be carried out in a residential area without detriment to its amenity -Industrial processes
- **B2 – General Industrial:** Use for industrial process other than one falling within class E(g) (previously class B1) (excluding incineration purposes, chemical treatment or landfill or hazardous waste)
- **B8 – Storage and Distribution:** This class includes open air storage

4.8.13 The floorspace of each employment use, as well as the potential number of jobs associated with those employment types using average employment densities that have been provided by GCSP are shown in **Table 4.4** below. This was to ensure the full potential of every site was tested cumulatively as a high scenario.

Table 4.4: Non-residential development trajectory for the E(g)(i), E(g)(ii), E(g)(iii), B2 and B8 Classes (Full Built and Most likely development scenarios))

Employment Use Class	Full Build Out scenario (Total numbers of floorspace and jobs, 2024 - full build out)		Most Likely scenario (Total number of floorspace and jobs in plan period 2024 – 2045)	
	Employment Floorspace (ha)	Number of jobs	Employment Floorspace (ha)	Number of jobs
E(g)(i) – Office	601,773	47,022	180,691	14,104
E(g)(ii) – R&D	1,421,215	54,371	488,547	18,621
E(g)Iiii) – Light Industrial	57,032	1,274	9,324	206
B2 – General Industrial	118,603	3,299	53,784	1,497

52 Use Classes - Change of use - Planning Portal

Employment Use Class	Full Build Out scenario (Total numbers of floorspace and jobs, 2024 - full build out)		Most Likely scenario (Total number of floorspace and jobs in plan period 2024 – 2045)	
	Employment Floorspace (ha)	Number of jobs	Employment Floorspace (ha)	Number of jobs
B8 – Storage and Distribution	240,885	3,805	93,250	1,473
Total	**2,439,508**	**109,771**	**825,595**	**35,901**

4.8.14 GCSP has also provided us with the 'Non-B', as well as 'WFH' number of jobs for the 'Most Likely' development scenario. The numbers of 'Non-B', as well as 'WFH' uses, are listed in **Table 4.5**.These are based on employment forecasts in Housing and Jobs Evidence Updates. Many of these jobs will not be in specific buildings generating a separate water use, but a proportion of these will includes jobs in schools, hospitals, shops, cafes, leisure and museums. However, a breakdown of the location of those uses is not available at this time.

4.8.15 To test a high scenario, we applied the number of 'Non-B' jobs in the Full Build out development scenario that is approximately triple the number of jobs in the Most likely development scenario. This is based on the ratios for the jobs presented in **Table 4.4**, between the 'Most Likely' and the 'Full Build Out' scenarios.

4.8.16 With regards to the 'WFH' uses, AW stated that in their DWMP work these have not been modelled separately. Therefore, it was agreed with AW that the 'WFH' uses will not be assessed as a separate employment category as part of this study.

Table 4.5: Non-residential development trajectory for the 'Non-B' and 'WFH' uses

Employment Use Class	Full Build Out scenario (Total numbers of jobs, 2024 - full build out)	Most Likely scenario (Total number of jobs in plan period 2024 – 2045)
	Number of jobs	
Non-B	No data available. (to test a high long term scenario, we applied three times more compared to the Most Likely scenario, that is. 99,384)	33,128
WFH	Not assessed	5,013 (Not assessed)

4.9 Wastewater Treatment Capacity by the end of the Local Plan period (2045)

4.9.1 An increase in residential and employment growth will have a corresponding increase in the flow of wastewater generated within the region.

4.9.2 For all WRCs, except for Tadlow WRC (see below), DWF by 2045 has been calculated to determine whether the proposed residential and employment sites can be accommodated without any upgrades to the WRCs or any re-direction of flows. Growth locations have been provided by GCSP and allocated to each of the WRC catchments, and these housing and employment locations have been 'translated' into an additional flow using the following assumptions.

4.9.3 As mentioned in **Section 4.5**, Tadlow WRC has a descriptive permit, so is not subject to flow measurement and DWF compliance monitoring; the rest of the WRCs have numerical permits. As shown in **Table 4.9** to **Table 4.12**, growth in the Tadlow WRC catchment will be three dwellings, for both the 'Full Build Out' and the 'Most Likely' development scenarios, part of the 'Small Sites' allocation for Greater Cambridge area. The additional flow generated from these dwellings is assumed to be minimal. However, flows would need to be measured to allow this to be confirmed.

Housing Sites Assumptions

4.9.4 The following key assumptions have been considered to calculate the post-growth (in 2045) flows:

- An infiltration allowance of 25% into the sewer network has been applied following AW's recommendation.
- The average wastewater rate generated by the residential development is assumed to be 127.6 l/p/day, based on AW's recommendation.
- The occupancy rates for each Typology are based on rates shown in **Table 4.3**.
- For the majority of the proposed housing sites, it has been assumed that these would be served by the catchment WRC, as shown in **Table 4.6**. This also includes the individual sites that fall within the grouped development types of 'Rural area – allocations' and 'New Local Plan draft allocations'.
- For 'South Cambridgeshire windfalls' different assumptions have been applied to each of these development sub-types for the purposes of the wastewater capacity assessment as follows:
    - For the sites of 10 or more dwellings (1,034 dwellings for both the 'Full Build Out' and the 'Most likely' development scenarios), the sites have individually been allocated to their relevant WRC.
    - For the windfall allowance (7,579 dwellings for the 'Full Build Out' development scenario and 3,979 dwellings for the 'Most likely'

development scenario), the dwellings have been proportionally allocated to WRCs in South Cambridgeshire.

- For the small sites of 9 dwellings or less (652 dwellings for both the 'Full Build Out' and the 'Most likely' development scenarios), the number of dwellings anticipated between 2024 and 2045 is not the total number of dwellings on these sites with planning permission, as GCSP has applied a lapse rate of 10% for non-delivery to those sites that were not under construction in March 2024. To enable these small sites of 9 dwellings or less that are not started to be individually allocated to the relevant WRC, a manual reduction to the number of dwellings on sites with planning permission for 3 or more dwellings was undertaken to reflect this lapse rate, plus a few additional adjustments in order for the result to match the anticipated numbers of dwellings.

4.9.5 However, there were some exceptions where AW advised that proposed development sites would be served by an alternative WRC. These are:

- **Bourn Airfield New Village and Cambourne West / Cambourne North** will direct their flows to Uttons Drove WRC. Further details on the Uttons Drove WRC upgrades are presented in **Section 4.10**.
- **Waterbeach New Town** is a consideration for growth at Cambridge WRC. In the meantime, flows will be directed to Waterbeach WRC.
- **Northstowe** will be served by Uttons Drove WRC.
- **Wellcome Genome Campus** will be served by Sawston WRC.

Table 4.6: WRCs assumed to serve the proposed residential development sites

Development Name
Bell School
WRC assumed that will serve the Residential Development Type
Cambridge

Development Name
Bourn Airfield New Village
WRC assumed that will serve the Residential Development Type
Uttons Drove (Bar Hill)

Development Name
Cambourne West
WRC assumed that will serve the Residential Development Type
Uttons Drove (Bar Hill)

Development Name
Cambridge windfalls
WRC assumed that will serve the Residential Development Type
Cambridge

Development Name

Cambridge East
WRC assumed that will serve the Residential Development Type
Cambridge

Development Name
Cambridge Urban area - allocations
WRC assumed that will serve the Residential Development Type
Cambridge

Development Name
Darwin Green
WRC assumed that will serve the Residential Development Type
Cambridge

Development Name
North of Worts Causeway
WRC assumed that will serve the Residential Development Type
Cambridge

Development Name
North-West Cambridge (Eddington)
WRC assumed that will serve the Residential Development Type
Cambridge

Development Name
Rural area - allocations
WRC assumed that will serve the Residential Development Type
Multiple WRCs

Development Name
South Cambridgeshire windfalls (excluding Wellcome Genome Campus)*
WRC assumed that will serve the Residential Development Type
Multiple WRCs

Development Name

South of Worts Causeway
WRC assumed that will serve the Residential Development Type
Cambridge

Development Name
Waterbeach New Town
WRC assumed that will serve the Residential Development Type
Waterbeach/Cambridge

Development Name
Welcome Genome Campus
WRC assumed that will serve the Residential Development Type
Sawston

Development Name
Draft Local Plan new allocations (Cambridge City and South Cambridgeshire)
WRC assumed that will serve the Residential Development Type
Multiple WRCs

Development Name

Northstowe

WRC assumed that will serve the Residential Development Type

Uttons Drove

Non-residential Sites Assumptions

4.9.6 The main assumption used when calculating flows generated by non-residential/employment development sites by 2045 is that this additional wastewater flows will be an average of wastewater rates for the different Employment Use Classes and Sub-Categories in the British Water Code of Practice, Flows and Load Guidelines[53] (refer to **Table 4.7** below). It should be noted that these do not consider reduced water use in the form of measures being explored though water efficiency policies in the new local plan.

4.9.7 A breakdown of 'Non-B' use classes was not available at the time of writing the report of jobs floorspace implications. Typical rates between the shops / cafes / restaurant average generated wastewater (30-50 l/person/day), schools (90 l/person/day) and hospitals (350-450 l/person/day). We applied an average of 50 l/person/day for Non-B use jobs, but note this figure and overall expectations of non-business floorspace wastewater generation needs refinement.

4.9.8 The 'Non-B' jobs are assumed to follow the same distribution within Greater Cambridge as the residential development.

Table 4.7: Average generated wastewater rates for the different Employment Use Classes and Sub-Categories53

Employment Use Class	Average generated wastewater rate (l/p/day)
E(g)(i) – Office	50
E(g)(ii) – R&D	50
E(g)Iiii) – Light Industrial	60
B2 – General Industrial	60

53 https://www.thesepticktankstore.co.uk/wp-content/uploads/British_Water_flows_and_loads.pdf

Employment Use Class	Average generated wastewater rate (l/p/day)
B8 – Storage and Distribution	60
Non-B (includes schools, hospitals, restaurants, museums)	50 (assumed for current testing purposes)

4.9.9 The strategic site locations and the relevant WRC catchments that these Sites fall into is shown in **Table 4.8** below.

4.9.10 The assumptions in relation to the WRCs serving specific residential sites (Bourn Airfield, Cambourne West / Cambourne North, Waterbeach New Town and Wellcome Genome Campus) have been assumed to be applicable for the proposed employment growth.

4.9.11 It has been also assumed that the Grange Farm New Settlement will be served by Sawston WRC. AW has also suggested that potentially a separate on-site WRC could serve the flows from the Grange Farm New Settlement (subject to delivery models and identification of a suitable discharge point).

Table 4.8: WRCs assumed to serve the proposed employment development sites

Strategic Site locations
Babraham Research Campus (South of Coldham's Lane)
WRC assumed that will serve the Employment Development Type
Cambridge

Strategic Site locations
Babraham Research Campus (Babraham)
WRC assumed that will serve the Employment Development Type
Cambridge

Strategic Site locations
Bourn Airfield
WRC assumed that will serve the Employment Development Type
Uttons Drove (Bar Hill)

Strategic Site locations
Cambourne / Cambourne North
WRC assumed that will serve the Employment Development Type
Uttons Drove (Bar Hill)

Strategic Site locations
Cambridge Biomedical Campus
WRC assumed that will serve the Employment Development Type
Cambridge

Strategic Site locations

Cambridge East
WRC assumed that will serve the Employment Development Type
Cambridge

Strategic Site locations
CB1
WRC assumed that will serve the Employment Development Type
Cambridge

Strategic Site locations
Eddington
WRC assumed that will serve the Employment Development Type
Cambridge

Strategic Site locations
Fulbourn Road East
WRC assumed that will serve the Employment Development Type
Cambridge

Strategic Site locations
Fulbourn Road West 1&2
WRC assumed that will serve the Employment Development Type
Cambridge

Strategic Site locations
Grange Farm
WRC assumed that will serve the Employment Development Type
Sawston

Strategic Site locations
Granta Park
WRC assumed that will serve the Employment Development Type
Linton

Strategic Site locations
North-East Cambridge
WRC assumed that will serve the Employment Development Type
Cambridge

Strategic Site locations
Northstowe
WRC assumed that will serve the Employment Development Type
Uttons Drove (Bar Hill)

Strategic Site locations
Slate Hall Farm
WRC assumed that will serve the Employment Development Type
Uttons Drove (Bar Hill)

Strategic Site locations
Unity Campus
WRC assumed that will serve the Employment Development Type

Sawston

Strategic Site locations
Waterbeach New Town
WRC assumed that will serve the Employment Development Type
Waterbeach/Cambridge

Strategic Site locations
Welcome Genome Campus
WRC assumed that will serve the Employment Development Type
Sawston

Strategic Site locations
West Cambridge
WRC assumed that will serve the Employment Development Type
Cambridge

Strategic Site locations
Unclassified sites
WRC assumed that will serve the Employment Development Type
Various WRCs

4.9.12 Using the assumptions above, for both the residential and employment growth, the following have been calculated:

- Additional flows resulting from the residential development, employment use and infiltration allowance during the plan period (2024-2045);
- Total flow by the end of the plan period;
- Estimated headroom in 2045 against the DWF permit; and
- The percentage of DWF permit rioriti by 2045, calculated as a percentage of the total flow by 2045.

4.9.13 **Table 4.9** to **Table 4.12** below illustrate the flows above for the following scenarios:

- **Table 4.9**: Most likely development scenario 2024-2045 – Committed development only
- **Table 4.10**: Most likely development scenario 2024-2045 – Committed development and emerging Local Plan allocations
- **Table 4.11**: Full Build Out development scenario – Committed development only
- **Table 4.12**: Full Build Out development scenario – Committed development and emerging Local Plan allocation.

Table 4.9: WRCs Current capacity and capacity by 2045 (Most likely development scenario 2024-2045 – Committed development only)

WRC name	Average annual Q80 (m^3/day) (based on Anglian Water WRC 2020-2024 data)	DWF permit limit (m^3/day) (provided by the EA)	Current estimated Headroom against DWF permit only (based on DWF permit - average Q80 flow (2020 - 2024) (m^3/day)*	% DWF Permit currently utilised (calculated as a percentage of the average annual Q80 over DWF permit limit)	Current DWF permit capacity using colour coding (calculated as a percentage of the average annual Q80 over the DWF permit limit)	MOST LIKELY SCENARIO: Number of dwellings projected during Plan Period (2024-2045) - excluding 'Small Sites' in South Cambridgeshire (Dwellings exclude draft Local Plan allocations)	MOST LIKELY SCENARIO: Number of dwellings projected during Plan Period (2024-2045) - only 'Small Sites' in South Cambridgeshire	MOST LIKELY SCENARIO: Total number of dwellings projected during Plan Period (2024-2045) (Dwellings exclude draft Local Plan allocations)	MOST LIKELY SCENARIO: Additional flow from residential developments during Local Plan Period (2024-2045) (m^3/day)	MOST LIKELY SCENARIO: Total additional flow from E(g)(i), E(g)(ii), E(g)(iii), B2 and B8 employment during Local Plan Period (m^3/day) (Flows exclude employment within draft Local Plan allocations)	MOST LIKELY SCENARIO: Additional flows from non-B employment (m^3/day) (Flows exclude employment within draft Local Plan allocations)	MOST LIKELY SCENARIO: Total additional flow from employment uses (m^3/day) (Flows exclude employment within draft Local Plan allocations)	Infiltration allowance during Local Plan Period based on AW recommendations (m^3/day)	Additional flow from residential development, employment use and infiltration allowance during Local Plan Period (2024-2045) (m^3/day) (Dwellings and employment numbers exclude draft Local Plan allocations)	Total flow by the end of the Local Plan Period (2045) (m^3/day) (Dwellings and employment numbers exclude draft Local Plan allocations)	Estimated Headroom in 2045 against DWF permit only (based on DWF permit - average Q80 flow (2020 - 2024) (m3/day) (Dwellings and employment numbers exclude draft Local Plan allocations)	% DWF Permit utilised by 2045 (calculated as a percentage of the total flow by 2045 over DWF permit limit) (Dwellings and employment numbers exclude draft Local Plan allocations)	DWF permit capacity in 2045 using colour coding (calculated as a percentage of the total flow by 2045 over the DWF permit limit) (Dwellings and employment numbers exclude draft Local Plan allocations)
Arrington	94.8	145	50.24	65%	Yellow		3	3	1.0		0.1	0.1	0.2	1.4	96.1	48.9	66%	Yellow
Balsham	313.7	500	186.32	63%	Yellow		18	18	6.0		0.8	0.8	1.5	8.2	321.9	178.1	64%	Yellow
Barley	238.8	200	-38.76	119%	Red-Currently exceeding Capacity		8	8	2.7		0.2	0.2	0.7	3.5	242.3	-42.3	121%	Red-Exceeding Capacity in 2045
Bassingbourn	1,231.0	1,230	-1.04	100%	Red-Currently exceeding Capacity	43	21	64	21.1		1.4	1.4	5.3	27.8	1,258.8	-28.8	102%	Red-Exceeding Capacity in 2045
Bourn	920.8	868	-52.76	106%	Red-Currently exceeding Capacity	9	67	76	25.3	0.4	1.7	2.1	6.3	33.7	954.4	-86.4	110%	Red-Exceeding Capacity in 2045
Brinkley	34.0	70	35.96	49%	Green		3	3	1.0		0.1	0.1	0.2	1.3	35.3	34.7	50%	Green
Cambridge	44,961.6	37,330	- 7,632	120%	Red-Currently exceeding Capacity	15,329	84	15,413	4,838.5	692.7	317.7	1010.4	1,209.6	7,058.5	52,020.1	-14,690.1	139%	Red-Exceeding Capacity in 2045
Shudy Camps (Camps)	122.0	238	115.96	51%	Yellow		8	8	2.7		0.2	0.2	0.7	3.5	125.6	112.4	53%	Yellow
Coton	178.6	189	10.4	94%	Amber		5	5	1.7		0.1	0.1	0.4	2.2	180.8	8.2	96%	Amber
Duxford	157.2	600	442.84	26%	Green		-1	- 1	- 0.3		0.0	0.0	- 0.1	- 0.4	156.7	443.3	26%	Green
Elmdon	178.9	268	89.08	67%	Yellow		0	-	-		0.0	0.0	-	-	178.9	89.1	67%	Yellow
Foxton (Cambs)	1,542.4	1,211	-331.36	127%	Red-Currently exceeding Capacity	174	51	225	74.7	10.7	6.1	16.8	18.7	110.1	1,652.5	-441.5	136%	Red-Exceeding Capacity in 2045
Gamlingay	475.8	690	214.2	69%	Yellow	33	35	68	22.7	1.4	1.9	3.2	5.7	31.6	507.4	182.6	74%	Yellow
Great Chesterford	1,104.3	1,284	179.72	86%	Amber		2	2	0.7		0.1	0.1	0.2	0.9	1,105.2	178.8	86%	Amber
Guilden Morden	452.5	420	-32.52	108%	Red-Currently exceeding Capacity		19	19	6.3		0.5	0.5	1.6	8.4	460.9	-40.9	110%	Red-Exceeding Capacity in 2045
Haslingfield	2,566.4	2,250	-316.36	114%	Red-Currently exceeding Capacity	47	63	110	36.6	34.4	3.0	37.3	9.1	83.1	2,649.4	-399.4	118%	Red-Exceeding Capacity in 2045
Hatley St George	28.8	58	29.24	50%	Green		0	-	-		0.0	0.0	-	-	28.8	29.2	50%	Green
Linton	1,312.4	1,800	487.6	73%	Yellow	14	20	34	11.2	47.5	0.9	48.4	2.8	62.4	1,374.8	425.2	76%	Amber
Litlington	141.0	440	299.04	32%	Green	1	2	3	1.0		0.1	0.1	0.3	1.4	142.4	297.6	32%	Green
Melbourn	2,228.6	1,800	-428.64	124%	Red-Currently exceeding Capacity		24	24	8.0	25.5	0.7	26.1	2.0	36.1	2,264.7	-464.7	126%	Red-Exceeding Capacity in 2045
Over	4,021.1	3,210	-811.08	125%	Red-Currently exceeding Capacity	173	87	260	86.2	4.3	7.1	11.3	21.6	119.1	4,140.2	-930.2	129%	Red-Exceeding Capacity in 2045
Papworth Everard	1,161.0	1,607	446	72%	Yellow	25	25	50	16.7		1.4	1.4	4.2	22.3	1,183.3	423.7	74%	Yellow
Royston	2,252.5	2,600	347.48	87%	Amber		6	6	2.0		0.2	0.2	0.5	2.7	2,255.2	344.8	87%	Amber
Sawston	2,193.2	2,800	606.84	78%	Amber	2,098	5	2,103	752.7	157.8	62.0	219.7	188.2	1,160.7	3,353.8	-553.8	120%	Red-Exceeding Capacity in 2045
Tadlow	According to AW, flows at Tadlow WRC are not required to be monitored and there is no flowmeter at the works	Tadlow WRC has a descriptive permit, which which only allows domestic sewage from a population of 250 or less	Not calculated	Not calculated	Not calculated		3	3	1.0		0.1	0.1	0.2	1.3	Not calculated			
Teversham	1,554.6	1,400	-154.56	111%	Red-Currently exceeding Capacity	135	24	159	52.7	-2.1	4.5	2.5	13.2	68.3	1,622.9	-222.9	116%	Red-Exceeding Capacity in 2045
Thurlow	136.3	140	3.72	97%	Amber		1	1	0.3		0.0	0.0	0.1	0.4	136.7	3.3	98%	Amber
Uttons Drove (Bar Hill)	4,926.6	4,288	-638.56	115%	Red-Currently exceeding Capacity	13,576	40	13,616	4,950.4	68.6	424.6	493.2	1,237.6	6,681.2	11,607.8	-7,319.8	271%	Red-Exceeding Capacity in 2045
Waresley	360.3	426	65.72	85%	Amber		1	1	0.3		0.0	0.0	0.1	0.5	360.7	65.3	85%	Amber
Waterbeach	1,019.7	1,350	330.32	76%	Yellow	4,699	21	4,720	1,715.8	11.0	197.9	208.9	429.0	2,353.7	3,373.3	-2,023.3	250%	Red-Exceeding Capacity in 2045
West Wickham	174.6	212	37.36	82%	Amber		7	7	2.3		0.0	0.0	0.6	2.9	177.5	34.5	84%	Amber

Key
0-25% (Blue)
26%-50% (Green)
51%-75% (Yellow)
76%-100% (Amber)
>100% (Red, currently exceeding capacity)

Table 4.10: WRCs Current capacity and capacity by 2045 (Most likely development scenario 2024-2045 – Committed development and emerging Local Plan allocations)

WRC name	Average annual Q80 (m^3/day) (based on Anglian Water WRC 2020-2024 data)	DWF permit limit (m^3/day) (provided by the EA)	Current estimated Headroom against DWF permit only (based on DWF permit - average Q80 flow (2020 - 2024) (m^3/day)*	% DWF Permit currently utilised (calculated as a percentage of the average annual Q80 over DWF permit limit)	Current DWF permit capacity using colour coding (calculated as a percentage of the average annual Q80 over the DWF permit limit)	MOST LIKELY SCENARIO: Number of dwellings projected during Plan Period (2024-2045) - excluding 'Small Sites' in South Cambridgeshire (Dwellings include draft Local Plan allocations)	MOST LIKELY SCENARIO: Number of dwellings projected during Plan Period (2024-2045) - only 'Small Sites' in South Cambridgeshire	MOST LIKELY SCENARIO: Total number of dwellings projected during Plan Period (2024-2045) (Dwellings include draft Local Plan allocations)	MOST LIKELY SCENARIO: Additional flow from residential developments during Local Plan Period (2024-2045) (m^3/day)	MOST LIKELY SCENARIO: Total additional flow from E(g)(i), E(g)(ii), E(g)(iii), B2 and B8 employment during Local Plan Period (m^3/day) (Flows include employment within draft Local Plan allocations)	MOST LIKELY SCENARIO: Additional flows from non-B employment (m^3/day) (Flows include employment within draft Local Plan allocations)	MOST LIKELY SCENARIO: Total additional flow from employment uses (m^3/day) (Flows include employment within draft Local Plan allocations)	Infiltration allowance during Local Plan Period based on AW recommendations (m^3/day)	Additional flow from residential development, employment use and infiltration allowance during Local Plan Period (2024-2045) (m^3/day) (Dwellings and employment numbers include draft Local Plan allocations)	Total flow by the end of the Local Plan Period (2045) (m^3/day) (Dwellings and employment numbers include draft Local Plan allocations)	Estimated Headroom in 2045 against DWF permit only (based on DWF permit - average Q80 flow (2020 - 2024) (m3/day) (Dwellings and employment numbers include draft Local Plan allocations)	% DWF Permit utilised by 2045 (calculated as a percentage of the total flow by 2045 over DWF permit limit) (Dwellings and employment numbers include draft Local Plan allocations)	DWF permit capacity in 2045 using colour coding (calculated as a percentage of the total flow by 2045 over the DWF permit limit) (Dwellings and employment numbers include draft Local Plan allocations)
Arrington	94.8	145	50.24	65%	Yellow		3	3	1.0		0.1	0.1	0.2	1.3	96.1	48.9	66%	Yellow
Balsham	313.7	500	186.32	63%	Yellow		18	18	6.0		0.5	0.5	1.5	8.0	321.7	178.3	64%	Yellow
Barley	238.8	200	-38.76	119%	Red-Currently exceeding Capacity		8	8	2.7		0.1	0.1	0.7	3.4	242.2	-42.2	121%	Red-Exceeding Capacity in 2045
Bassingbourn	1,231.0	1,230	-1.04	100%	Red-Currently exceeding Capacity	43	21	64	21.1		1.0	1.0	5.3	27.4	1,258.4	-28.4	102%	Red-Exceeding Capacity in 2045
Bourn	920.8	868	-52.76	106%	Red-Currently exceeding Capacity	83	67	150	49.8	6.1	2.3	8.4	12.4	70.6	991.4	-123.4	114%	Red-Exceeding Capacity in 2045
Brinkley	34.0	70	35.96	49%	Green		3	3	1.0		0.0	0.0	0.2	1.3	35.3	34.7	50%	Green
Cambridge	44,961.6	37,330	- 7,632	120%	Red-Currently exceeding Capacity	26,585	84	26,669	8,019.1	1,245.9	368.6	1614.5	2,004.8	11,638.3	56,599.9	-19,269.9	152%	Red-Exceeding Capacity in 2045
Shudy Camps (Camps)	122.0	238	115.96	51%	Yellow		8	8	2.7		0.2	0.2	0.7	3.5	125.5	112.5	53%	Yellow
Coton	178.6	189	10.4	94%	Amber		5	5	1.7		0.1	0.1	0.4	2.2	180.8	8.2	96%	Amber
Duxford	157.2	600	442.84	26%	Green		-1	- 1	- 0.3		0.0	0.0	- 0.1	- 0.4	156.7	443.3	26%	Green
Elmdon	178.9	268	89.08	67%	Yellow		0	-	-		0.0	0.0	-	-	178.9	89.1	67%	Yellow
Foxton (Cambs)	1,542.4	1,211	-331.36	127%	Red-Currently exceeding Capacity	174	51	225	74.7	10.7	4.4	15.1	18.7	108.5	1,650.8	-439.8	136%	Red-Exceeding Capacity in 2045
Gamlingay	475.8	690	214.2	69%	Yellow	33	35	68	22.7	1.4	1.3	2.7	5.7	31.1	506.9	183.1	73%	Yellow
Great Chesterford	1,104.3	1,284	179.72	86%	Amber		2	2	0.7		0.0	0.0	0.2	0.9	1,105.1	178.9	86%	Amber
Guilden Morden	452.5	420	-32.52	108%	Red-Currently exceeding Capacity		19	19	6.3		0.4	0.4	1.6	8.3	460.8	-40.8	110%	Red-Exceeding Capacity in 2045
Haslingfield	2,566.4	2,250	-316.36	114%	Red-Currently exceeding Capacity	47	63	110	36.6	34.4	2.2	36.5	9.1	82.2	2,648.6	-398.6	118%	Red-Exceeding Capacity in 2045
Hatley St George	28.8	58	29.24	50%	Green		0	-	-		0.0	0.0	-	-	28.8	29.2	50%	Green
Linton	1,312.4	1,800	487.6	73%	Yellow	14	20	34	11.2	55.5	0.7	56.1	2.8	70.1	1,382.5	417.5	77%	Amber
Litlington	141.0	440	299.04	32%	Green	1	2	3	1.0		0.1	0.1	0.3	1.4	142.3	297.7	32%	Green
Melbourn	2,228.6	1,800	-428.64	124%	Red-Currently exceeding Capacity	161	24	185	61.5	32.7	3.7	36.4	15.4	113.2	2,341.9	-541.9	130%	Red-Exceeding Capacity in 2045
Over	4,021.1	3,210	-811.08	125%	Red-Currently exceeding Capacity	173	87	260	86.2	4.3	5.1	9.4	21.6	117.2	4,138.3	-928.3	129%	Red-Exceeding Capacity in 2045
Papworth Everard	1,161.0	1,607	446	72%	Yellow	25	25	50	16.7		1.0	1.0	4.2	21.9	1,182.9	424.1	74%	Yellow
Royston	2,252.5	2,600	347.48	87%	Amber		6	6	2.0		0.1	0.1	0.5	2.6	2,255.1	344.9	87%	Amber
Sawston	2,193.2	2,800	606.84	78%	Amber	5,106	5	5,111	1,844.5	163.2	110.3	273.5	461.1	2,579.1	4,772.3	-1,972.3	170%	Red-Exceeding Capacity in 2045
Tadlow	According to AW, flows at Tadlow WRC are not required to be monitored and there is no flowmeter at the works	Tadlow WRC has a descriptive permit, which which only allows domestic sewage from a population of 250 or less	Not calculated	Not calculated	Not calculated		3	3	1.0		0.1	0.1	0.2	1.3		Not calculated		
Teversham	1,554.6	1,400	-154.56	111%	Red-Currently exceeding Capacity	135	24	159	52.7	-2.1	3.4	1.3	13.2	67.2	1,621.8	-221.8	116%	Red-Exceeding Capacity in 2045
Thurlow	136.3	140	3.72	97%	Amber		1	1	0.3		0.0	0.0	0.1	0.4	136.7	3.3	98%	Amber
Uttons Drove (Bar Hill)	4,926.6	4,288	-638.56	115%	Red-Currently exceeding Capacity	16,515	40	16,555	6,019.2	263.8	386.5	650.3	1,504.8	8,174.3	13,100.8	-8,812.8	306%	Red-Exceeding Capacity in 2045
Waresley	360.3	426	65.72	85%	Amber		1	1	0.3		0.0	0.0	0.1	0.4	360.7	65.3	85%	Amber
Waterbeach	1,019.7	1,350	330.32	76%	Yellow	4,699	21	4,720	1,715.8	11.0	143.7	154.6	429.0	2,299.4	3,319.1	-1,969.1	246%	Red-Exceeding Capacity in 2045
West Wickham	174.6	212	37.36	82%	Amber		7	7	2.3		0.0	0.0	0.6	2.9	177.5	34.5	84%	Amber

Key
0-25% (Blue)
26%-50% (Green)
51%-75% (Yellow)
76%-100% (Amber)
>100% (Red, currently exceeding capacity)

Table 4.11: WRCs Current capacity and capacity by 2045 (Full Build Out development scenario – Committed development only)

WRC name	Average annual Q80 (m^3/day) (based on Anglian Water WRC 2020-2024 data)	DWF permit limit (m^3/day) (provided by the EA)	Current estimated Headroom against DWF permit only (based on DWF permit - average Q80 flow (2020 - 2024) (m^3/day)*	% DWF Permit currently utilised (calculated as a percentage of the average annual Q80 over DWF permit limit)	Current DWF permit capacity using colour coding (calculated as a percentage of the average annual Q80 over the DWF permit limit)	FULL BUILD OUT SCENARIO: Number of dwellings projected during Plan Period (2024-2045) - excluding 'Small Sites' in South Cambridgeshire (Dwellings exclude draft Local Plan allocations)	FULL BUILD OUT SCENARIO: Number of dwellings projected during Plan Period (2024-2045) - only 'Small Sites' in South Cambridgeshire	FULL BUILD OUT SCENARIO: Total number of dwellings projected during Plan Period (2024-2045) (Dwellings exclude draft Local Plan allocations)	FULL BUILD OUT SCENARIO: Additional flow from residential developments during Local Plan Period (2024-2045) (m^3/day)	FULL BUILD OUT SCENARIO: Total additional flow from E(g)(i), E(g)(ii), E(g)(iii), B2 and B8 employment during Local Plan Period (m^3/day) (Flows exclude employment within draft Local Plan allocations)	FULL BUILD OUT SCENARIO: Additional flows from non-B employment (m^3/day) (Flows exclude employment within draft Local Plan allocations)	FULL BUILD OUT SCENARIO: Total additional flow from employment uses (m^3/day) (Flows exclude employment within draft Local Plan allocations)	Infiltration allowance during Local Plan Period based on AW recommendations (m^3/day)	FULL BUILD OUT SCENARIO: Additional flow from residential development, employment use and infiltration allowance during Local Plan Period (2024-2045) (m^3/day) (Dwellings and employment numbers exclude draft Local Plan allocations)	FULL BUILD OUT SCENARIO: Total flow by the end of the Local Plan Period (2045) (m^3/day) (Dwellings and employment numbers exclude draft Local Plan allocations)	FULL BUILD OUT SCENARIO: Estimated Headroom in 2045 against DWF permit only (based on DWF permit - average Q80 flow (2020 - 2024) (m3/day) (Dwellings and employment numbers exclude draft Local Plan allocations)	FULL BUILD OUT SCENARIO: % DWF Permit utilised by 2045 (calculated as a percentage of the total flow by 2045 over DWF permit limit) (Dwellings and employment numbers exclude draft Local Plan allocations)	FULL BUILD OUT SCENARIO: DWF permit capacity in 2045 using colour coding (calculated as a percentage of the total flow by 2045 over the DWF permit limit) (Dwellings and employment numbers exclude draft Local Plan allocations)
Arrington	94.8	145	50.24	65%	Yellow		3	3	1.0		0.3	0.3	0.2	1.5	96.3	48.7	66%	Yellow
Balsham	313.7	500	186.32	63%	Yellow		18	18	6.0		1.8	1.8	1.5	9.2	322.9	177.1	65%	Yellow
Barley	238.8	200	-38.76	119%	Red-Currently exceeding Capacity		8	8	2.7		0.4	0.4	0.7	3.7	242.5	-42.5	121%	Red-Exceeding Capacity in 2045
Bassingbourn	1,231.0	1,230	-1.04	100%	Red-Currently exceeding Capacity	43	21	64	21.1		3.1	3.1	5.3	29.5	1,260.6	-30.6	102%	Red-Exceeding Capacity in 2045
Bourn	920.8	868	-52.76	106%	Red-Currently exceeding Capacity	9	67	76	25.3	1.3	3.8	5.1	6.3	36.7	957.5	-89.5	110%	Red-Exceeding Capacity in 2045
Brinkley	34.0	70	35.96	49%	Green		3	3	1.0		0.1	0.1	0.2	1.4	35.4	34.6	51%	Green
Cambridge	44,961.6	37,330	- 7,632	120%	Red-Currently exceeding Capacity	21,388	84	21,472	6,882.7	2,098.6	1024.0	3122.6	1,720.7	11,726.0	56,687.6	-19,357.6	152%	Red-Exceeding Capacity in 2045
Shudy Camps (Camps	122.0	238	115.96	51%	Yellow		8	8	2.7		0.5	0.5	0.7	3.8	125.9	112.1	53%	Yellow
Coton	178.6	189	10.4	94%	Amber		5	5	1.7		0.3	0.3	0.4	2.4	181.0	8.0	96%	Amber
Duxford	157.2	600	442.84	26%	Green		-1	- 1	- 0.3		-0.1	-0.1	- 0.1	- 0.5	156.7	443.3	26%	Green
Elmdon	178.9	268	89.08	67%	Yellow		0	-	-		0.0	0.0	-	-	178.9	89.1	67%	Yellow
Foxton (Cambs)	1,542.4	1,211	-331.36	127%	Red-Currently exceeding Capacity	174	51	225	74.7	32.3	14.0	46.3	18.7	139.6	1,682.0	-471.0	139%	Red-Exceeding Capacity in 2045
Gamlingay	475.8	690	214.2	69%	Yellow	33	35	68	22.7	4.2	4.3	8.4	5.7	36.8	512.6	177.4	74%	Yellow
Great Chesterford	1,104.3	1,284	179.72	86%	Amber		2	2	0.7		0.1	0.1	0.2	1.0	1,105.2	178.8	86%	Amber
Guilden Morden	452.5	420	-32.52	108%	Red-Currently exceeding Capacity		19	19	6.3		1.2	1.2	1.6	9.1	461.6	-41.6	110%	Red-Exceeding Capacity in 2045
Haslingfield	2,566.4	2,250	-316.36	114%	Red-Currently exceeding Capacity	47	63	110	36.6	104.1	6.9	111.0	9.1	156.7	2,723.0	-473.0	121%	Red-Exceeding Capacity in 2045
Hatley St George	28.8	58	29.24	50%	Green		0	-	-		0.0	0.0	-	-	28.8	29.2	50%	Green
Linton	1,312.4	1,800	487.6	73%	Yellow	14	20	34	11.2	144.0	2.1	146.2	2.8	160.2	1,472.6	327.4	82%	Amber
Litlington	141.0	440	299.04	32%	Green	1	2	3	1.0		0.2	0.2	0.3	1.5	142.5	297.5	32%	Green
Melbourn	2,228.6	1,800	-428.64	124%	Red-Currently exceeding Capacity		24	24	8.0	77.1	1.5	78.6	2.0	88.6	2,317.2	-517.2	129%	Red-Exceeding Capacity in 2045
Over	4,021.1	3,210	-811.08	125%	Red-Currently exceeding Capacity	173	87	260	86.2	12.9	16.3	29.1	21.6	136.9	4,158.0	-948.0	130%	Red-Exceeding Capacity in 2045
Papworth Everard	1,161.0	1,607	446	72%	Yellow	25	25	50	16.7		3.2	3.2	4.2	24.0	1,185.0	422.0	74%	Yellow
Royston	2,252.5	2,600	347.48	87%	Amber		6	6	2.0		0.4	0.4	0.5	2.9	2,255.4	344.6	87%	Amber
Sawston	2,193.2	2,800	606.84	78%	Amber	2,098	5	2,103	752.7	477.6	142.5	620.1	188.2	1,561.0	3,754.2	-954.2	134%	Red-Exceeding Capacity in 2045
Tadlow	According to AW, flows at Tadlow WRC are not required to be monitored and there is no flowmeter at the works	Tadlow WRC has a descriptive permit, which which only allows domestic sewage from a population of 250 or less	Not calculated	Not calculated	Not calculated		3	3	1.0		0.2	0.2	0.2	1.4		Not calculated		
Teversham	1,554.6	1,400	-154.56	111%	Red-Currently exceeding Capacity	135	24	159	52.7	-6.3	10.3	4.0	13.2	69.9	1,624.4	-224.4	116%	Red-Exceeding Capacity in 2045
Thurlow	136.3	140	3.72	97%	Amber		1	1	0.3		0.1	0.1	0.1	0.5	136.8	3.2	98%	Amber
Uttons Drove (Bar Hill)	4,926.6	4,288	-638.56	115%	Red-Currently exceeding Capacity	16,430	40	16,470	5,988.1	207.7	1169.7	1377.3	1,497.0	8,862.5	13,789.1	-9,501.1	322%	Red-Exceeding Capacity in 2045
Waresley	360.3	426	65.72	85%	Amber		1	1	0.3		0.1	0.1	0.1	0.5	360.8	65.2	85%	Amber
Waterbeach	1,019.7	1,350	330.32	76%	Yellow	7462	21	7,483	2,720.7	33.1	695.1	728.2	680.2	4,129.1	5,148.8	-3,798.8	381%	Red-Exceeding Capacity in 2045
West Wickham	174.6	212	37.36	82%	Amber		7	7	2.3		0.0	0.0	0.6	2.9	177.5	34.5	84%	Amber

Key
0-25% (Blue)
26%-50% (Green)
51%-75% (Yellow)
76%-100% (Amber)
>100% (Red, currently exceeding capacity)

Table 4.12: WRCs Current capacity and capacity by 2045 (Full Build Out development scenario – Committed development and emerging Local Plan allocation)

WRC name	Average annual Q80 (m^3/day) (based on Anglian Water WRC 2020-2024 data)	DWF permit limit (m^3/day) (provided by the EA)	Current estimated Headroom against DWF permit only (based on DWF permit - average Q80 flow (2020 - 2024) (m^3/day)*	% DWF Permit currently utilised (calculated as a percentage of the average annual Q80 over DWF permit limit)	Current DWF permit capacity using colour coding (calculated as a percentage of the average annual Q80 over the DWF permit limit)	FULL BUILD OUT SCENARIO: Number of dwellings projected during Plan Period (2024-2045) - excluding 'Small Sites' in South Cambridgeshire (Dwellings include draft Local Plan allocations)	FULL BUILD OUT SCENARIO: Number of dwellings projected during Plan Period (2024-2045) - only 'Small Sites' in South Cambridgeshire	FULL BUILD OUT SCENARIO: Total number of dwellings projected during Plan Period (2024-2045) (Dwellings include draft Local Plan allocations)	FULL BUILD OUT SCENARIO: Additional flow from residential developments during Local Plan Period (2024-2045) (m^3/day)	FULL BUILD OUT SCENARIO: Total additional flow from E(g)(i), E(g)(ii), E(g)(iii), B2 and B8 employment during Local Plan Period (m^3/day) (Flows include employment within draft Local Plan allocations)	FULL BUILD OUT SCENARIO: Additional flows from non-B employment (m^3/day) (Flows include employment within draft Local Plan allocations)	FULL BUILD OUT SCENARIO: Total additional flow from employment uses (m^3/day) (Flows include employment within draft Local Plan allocations)	Infiltration allowance during Local Plan Period based on AW recommendations (m^3/day)	FULL BUILD OUT SCENARIO: Additional flow from residential development, employment use and infiltration allowance during Local Plan Period (2024-2045) (m^3/day) (Dwellings and employment numbers include draft Local Plan allocations)	FULL BUILD OUT SCENARIO: Total flow by the end of the Local Plan Period (2045) (m^3/day) (Dwellings and employment numbers include draft Local Plan allocations)	FULL BUILD OUT SCENARIO: Estimated Headroom in 2045 against DWF permit only (based on DWF permit - average Q80 flow (2020 - 2024) (m3/day) (Dwellings and employment numbers include draft Local Plan allocations)	FULL BUILD OUT SCENARIO: % DWF Permit utilised by 2045 (calculated as a percentage of the total flow by 2045 over DWF permit limit) (Dwellings and employment numbers include draft Local Plan allocations)	FULL BUILD OUT SCENARIO: DWF permit capacity in 2045 using colour coding (calculated as a percentage of the total flow by 2045 over the DWF permit limit) (Dwellings and employment numbers include draft Local Plan allocations)
Arrington	94.8	145	50.24	65%	Yellow		3	3	1.0		0.2	0.2	0.2	1.4	96.2	48.8	66%	Yellow
Balsham	313.7	500	186.32	63%	Yellow		18	18	6.0		0.9	0.9	1.5	8.4	322.1	177.9	64%	Yellow
Barley	238.8	200	-38.76	119%	Red-Currently exceeding Capacity		8	8	2.7		0.2	0.2	0.7	3.5	242.3	-42.3	121%	Red-Exceeding Capacity in 2045
Bassingbourn	1,231.0	1,230	-1.04	100%	Red-Currently exceeding Capacity	43	21	64	21.1		1.7	1.7	5.3	28.1	1,259.1	-29.1	102%	Red-Exceeding Capacity in 2045
Bourn	920.8	868	-52.76	106%	Red-Currently exceeding Capacity	83	67	150	49.8	20.2	4.0	24.2	12.4	86.4	1,007.1	-139.1	116%	Red-Exceeding Capacity in 2045
Brinkley	34.0	70	35.96	49%	Green		3	3	1.0		0.1	0.1	0.2	1.3	35.4	34.6	51%	Green
Cambridge	44,961.6	37,330	- 7,632	120%	Red-Currently exceeding Capacity	40,669	84	40,753	12,498.3	3,743.1	995.1	4738.2	3,124.6	20,361.1	65,322.7	-27,992.7	175%	Red-Exceeding Capacity in 2045
Shudy Camps (Camps)	122.0	238	115.96	51%	Yellow		8	8	2.7		0.3	0.3	0.7	3.6	125.6	112.4	53%	Yellow
Coton	178.6	189	10.4	94%	Amber		5	5	1.7		0.2	0.2	0.4	2.2	180.8	8.2	96%	Amber
Duxford	157.2	600	442.84	26%	Green		-1	- 1	- 0.3		0.0	0.0	- 0.1	- 0.4	156.7	443.3	26%	Green
Elmdon	178.9	268	89.08	67%	Yellow		0	-	-		0.0	0.0	-	-	178.9	89.1	67%	Yellow
Foxton (Cambs)	1,542.4	1,211	-331.36	127%	Red-Currently exceeding Capacity	174	51	225	74.7	32.3	7.4	39.7	18.7	133.1	1,675.4	-464.4	138%	Red-Exceeding Capacity in 2045
Gamlingay	475.8	690	214.2	69%	Yellow	33	35	68	22.7	4.2	2.3	6.4	5.7	34.8	510.6	179.4	74%	Yellow
Great Chesterford	1,104.3	1,284	179.72	86%	Amber		2	2	0.7		0.1	0.1	0.2	0.9	1,105.2	178.8	86%	Amber
Guilden Morden	452.5	420	-32.52	108%	Red-Currently exceeding Capacity		19	19	6.3		0.6	0.6	1.6	8.5	461.0	-41.0	110%	Red-Exceeding Capacity in 2045
Haslingfield	2,566.4	2,250	-316.36	114%	Red-Currently exceeding Capacity	47	63	110	36.6	104.1	3.6	107.7	9.1	153.5	2,719.8	-469.8	121%	Red-Exceeding Capacity in 2045
Hatley St George	28.8	58	29.24	50%	Green		0	-	-		0.0	0.0	-	-	28.8	29.2	50%	Green
Linton	1,312.4	1,800	487.6	73%	Yellow	14	20	34	11.2	170.5	1.1	171.6	2.8	185.7	1,498.1	301.9	83%	Amber
Litlington	141.0	440	299.04	32%	Green	1	2	3	1.0		0.1	0.1	0.3	1.4	142.4	297.6	32%	Green
Melbourn	2,228.6	1,800	-428.64	124%	Red-Currently exceeding Capacity	161	24	185	61.5	101.4	6.1	107.6	15.4	184.4	2,413.1	-613.1	134%	Red-Exceeding Capacity in 2045
Over	4,021.1	3,210	-811.08	125%	Red-Currently exceeding Capacity	173	87	260	86.2	12.9	8.6	21.5	21.6	129.3	4,150.4	-940.4	129%	Red-Exceeding Capacity in 2045
Papworth Everard	1,161.0	1,607	446	72%	Yellow	25	25	50	16.7		1.7	1.7	4.2	22.6	1,183.6	423.4	74%	Yellow
Royston	2,252.5	2,600	347.48	87%	Amber		6	6	2.0		0.2	0.2	0.5	2.7	2,255.2	344.8	87%	Amber
Sawston	2,193.2	2,800	606.84	78%	Amber	9,082	5	9,087	3,290.3	531.6	329.7	861.3	822.6	4,974.1	7,167.3	-4,367.3	256%	Red-Exceeding Capacity in 2045
Tadlow	According to AW, flows at Tadlow WRC are not required to be monitored and there is no flowmeter at the works	Tadlow WRC has a descriptive permit, which which only allows domestic sewage from a population of 250 or less	Not calculated	Not calculated	Not calculated		3	3	1.0		0.1	0.1	0.2	1.4		Not calculated		
Teversham	1,554.6	1,400	-154.56	111%	Red-Currently exceeding Capacity	135	24	159	52.7	-6.3	5.7	-0.6	13.2	65.3	1,619.8	-219.8	116%	Red-Exceeding Capacity in 2045
Thurlow	136.3	140	3.72	97%	Amber		1	1	0.3		0.0	0.0	0.1	0.5	136.7	3.3	98%	Amber
Uttons Drove (Bar Hill)	4,926.6	4,288	-638.56	115%	Red-Currently exceeding Capacity	33,717	40	33,757	12,274.8	825.2	1319.0	2144.2	3,068.7	17,487.7	22,414.3	-18,126.3	523%	Red-Exceeding Capacity in 2045
Waresley	360.3	426	65.72	85%	Amber		1	1	0.3		0.0	0.0	0.1	0.5	360.7	65.3	85%	Amber
Waterbeach	1,019.7	1,350	330.32	76%	Yellow	7,462	21	7,483	2,720.7	33.1	398.0	431.1	680.2	3,832.0	4,851.7	-3,501.7	359%	Red-Exceeding Capacity in 2045
West Wickham	174.6	212	37.36	82%	Amber		7	7	2.3		0.0	0.0	0.6	2.9	177.5	34.5	84%	Amber

Key
0-25% (Blue)
26%-50% (Green)
51%-75% (Yellow)
76%-100% (Amber)
>100% (Red, currently exceeding capacity)

4.9.14 **Table 4.13** below summarises the WRCs which exceed their DWF permit in 2045.

Table 4.13: Summary of the DWF permit capacity in 2045 using colour coding (calculated as a percentage of the total flow by 2045 over the DWF permit limit) for all the scenarios

WRC name	Full Built Out scenario (incl.Draft Plan new allocations)	Full Built Out scenario (excl.Draft Plan new allocations)	Most Likely scenario (incl.Draft Plan new allocations)	Most Likely scenario (excl.Draft Plan new allocations)
	DWF permit capacity in 2045 using colour coding (calculated as a percentage of the total flow by 2045 over the DWF permit limit)			
Arrington	Yellow	Yellow	Yellow	Yellow
Balsham	Yellow	Yellow	Yellow	Yellow
Barley	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045
Bassingbourn	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045
Bourn	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045
Brinkley	Green	Green	Green	Green
Cambridge	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045
Shudy Camps (Camps)	Yellow	Yellow	Yellow	Yellow
Coton	Amber	Amber	Amber	Amber
Duxford	Green	Green	Green	Green
Elmdon	Yellow	Yellow	Yellow	Yellow
Foxton (Cambs)	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045
Gamlingay	Yellow	Yellow	Yellow	Yellow
Great Chesterford	Amber	Amber	Amber	Amber
Guilden Morden	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045
Haslingfield	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045
Hatley St George	Green	Green	Green	Green
Linton	Amber	Amber	Amber	Amber
Litlington	Green	Green	Green	Green
Melbourn	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045
Over	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045
Papworth Everard	Yellow	Yellow	Yellow	Yellow
Royston	Amber	Amber	Amber	Amber
Sawston	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045
Tadlow				
Teversham	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045
Thurlow	Amber	Amber	Amber	Amber
Uttons Drove (Bar Hill)	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045
Waresley	Amber	Amber	Amber	Amber
Waterbeach	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045	Red-Exceeding Capacity in 2045
West Wickham	Amber	Amber	Amber	Amber

Key
0-25% (Blue)
26%-50% (Green)
51%-75% (Yellow)
76%-100% (Amber)
>100% (Red, currently exceeding capacity)

4.9.15 In total**, Table 4.13** shows that, in all the scenarios, the following WRCs are exceeding their DWF permit in 2045, indicating that investment is required to accommodate the growth:

- Barley WRC
- Bassingbourn WRC
- Bourn WRC
- Cambridge WRC
- Foxton (Cambs) WRC
- Guilden Morden WRC
- Haslingfield WRC
- Melbourn WRC
- Over WRC
- Sawston WRC
- Teversham WRC
- Uttons Drove (Bar Hill) WRC and
- Waterbeach WRC.

4.9.16 The WRCs that exceed their DWF permit in 2045 will not be able to serve the proposed development before any upgrade takes place. For these WRCs, additional treatment capacity could be made available through an application by AW for a new or revised discharge permit from the EA as part of their five-year Price Review planning process. Therefore, and as noted in **Section 4.5**, if the actual growth deviates from the projected Ofwat growth, AW must address funding for this in the next Price Review process.

4.9.17 Table 4.13 shows that as the development scenarios progress from 'Most Likely development' to 'Full Build Out', there is no change in the 'DWF capacity in 2045' colour band. This is due to the fact that when a WRC exceeds its capacity under the 'Most Likely' scenario, then it also exceeds it under the 'Full Build Out' scenario and the difference is masked. However, as shown in **Table 4.9** to **Table 4.12**, there is a clear difference between the percentage of DWF permit rioriti by 2045, for all the assessed scenarios. The WRCs for which the 'DWF permit capacity in 2045' colour band is either 'Amber', 'Yellow' or 'Green' are receiving much lower flows (as the proposed development is much smaller) for all the assessed scenarios, compared to the WRCs where the colour band is 'Red'.

4.9.18 It should also be noted that the Royston WRC, where capacity is not exceeded by 2045, treats wastewater generated in the Royston area of North

Hertfordshire. It is recommended that Royston WRC should be assessed as part of the North Hertfordshire Water Cycle Study. The investment needs for Royston WRC will be established in AW's emerging DWMP2.

4.9.19 It is also recommended that GCSP should continue to update AW on future development and changes to growth allocations to ensure that plans for WRC upgrades in response to permit change requirement or flow capacity constraints consider the most up to date planning position, to ensure that capacity has not been used up by other developments within the WRC catchment.

4.10 Discharge Quality Compliance

4.10.1 The EA has provided analytical results for Suspended Solids (SS), Biochemical oxygen Demand (BOD), Ammoniacal Nitrogen and Total Phosphorus in the waterbodies receiving WRCs discharges from 2015 to 2025.

4.10.2 The EA also provided the relevant permit limits for SS, BOS and Ammoniacal Nitrogen which are assessed using the 95% percentile of the data in a monitoring period, and Total Phosphorus which is assessed using an annual average value. Not all WRC are permitted on all potential pollutants.

4.10.3 The number of samples for each WRC and each determinand, as well as the number of times that the permit has been exceed are illustrated in **Table 4.14**. Only a limited numbers of Total Phosphorus samples have been provided.

4.10.4 In order to obtain a single value from those datasets for comparison purposes:

- The 95% percentile value was calculated for SS, BOD and Ammoniacal Nitrogen for each WRC, and
- Average values were calculated for Total Phosphorus for each WRC.

4.10.5 A comparison of the single values from the sampled determinands against their permits is shown in **Table 4.14**. In this table:

- The 95% percentile value of the SS samples exceeds the SS permit for Teversham WRC.
- The 95% percentile value of the Ammoniacal Nitrogen samples exceeds the Ammoniacal Nitrogen permit for Over WRC.
- The average value of the Total Phosphorus samples exceeds the current Total Phosphorus permit for Coton WRC, Papworth Everard WRC and Uttons Drove WRC.

4.10.6 The above results do not mean that the rest of the relevant permits have never been exceeded, only that the results show that the 95% values of the datasets (for SS, BOD and Ammoniacal Nitrogen) and the average value of the datasets (for Total Phosphorus) are not exceeding the relevant permit values.

Table 4.14: Comparison of Suspended Solids, Biochemical Oxygen Demand, Ammoniacal Nitrogen and Total Phosphorus against their current permits

WRC name	Suspended Solids, EA sampled data 2015-2025 (mg/l). (These are the 95% percentile values of the provided timeseries provided for each WRC)	Suspended Solids Permit (mg/l). (Values are the 95% percentile permit limits for each WRC)	Does the 95% percentile of the Suspended Solids timeseries exceed the Suspended Soilds Permit ?	Number of Suspended Solids samples / Number of exceedances of Suspended Solids Permit	BOD: 5 day ATU, EA sampled data 2015-2025 (These are the 95% percentile values of the provided timeseries provided for each WRC)	BOD Permit (mg/l). (Values are the 95% percentile permit limits for each WRC)	Does the 95% percentile of the BOD timeseries exceed the BOD Permit ?	Number of BOD samples / Number of exceedances of BOD Permit	Ammoniacal Nitrogen as N, EA sampled data 2015-2025 (mg/l) (These are the 95% percentile values of the provided timeseries provided for each WRC)	Ammoniacal Nitrogen as N Permit (mg/l). (Values are the 95% percentile permit limits for each WRC)	Does the 95% percentile of the Ammoniacal Nitrogen timeseries exceed the Ammoniacal Nitrogen Permit ?	Number of Ammonia samples / Number of exceedances of Ammonia Permit	Phosphorus , Total as P, EA sampled data 2015-2025 (mg/l) (These are the average values of the provided timeseries provided for each WRC)	Phosphorus, Total as P Permit (mg/l)	Does the average of the Phosphorus timeseries exceeding Phosphorus Permit ?	Number of Phosphorus samples / Number of exceedances of Phosphorus Permit
Arrington	17.30	**40**	No	118 / 0	5.92	**20**	No	118 / 1	5.21	**15**	No	118 / 0	Not Measured	**No Permit**	N/A	
Balsham	16.00	**30**	No	118 / 0	8.79	**17**	No	159 / 3	6.76	**10**	No	118 / 1	Not Measured	**No Permit**	N/A	
Barley	16.15	**30**	No	118 / 0	7.01	**20**	No	118 / 0	Not Measured	**No Permit**	N/A	n/a	Not Measured	**No Permit**	N/A	
Bassingbourn	18.95	**30**	No	122 / 0	7.32	**20**	No	163 / 0	0.53	**10**	No	122 / 0	0.30	**0.5**	No	3 / 0
Bourn	13.00	**20**	No	92 / 2	6.46	**10**	No	133 / 3	0.32	**3**	No	91 / 0	0.38	**0.5**	No	3 / 0
Brinkley	37.90	**60**	No	102 / 0	15.48	**40**	No	102 / 1	4.43	**20**	No	102 / 0	Not Measured	**No Permit**	N/A	
Cambridge	17.00	**20**	No	124 / 2	8.50	**15**	No	370 / 2	0.59	**5**	No	123 /1	0.66	**1**	No	247 / 14
Shudy Camps (Camps	19.15	**30**	No	118 / 1	8.60	**15**	No	118 / 0	1.30	**3**	No	118 / 0	Not Measured	**No Permit**	N/A	
Coton	29.35	**30**	No	114 / 4	12.88	**15**	No	114 / 5	6.08	**15**	No	113 / 0	1.27	**0.8**	Yes	3 / 2
Duxford	32.00	**40**	No	121 / 3	8.23	**25**	No	121 / 1	4.53	**15**	No	121 / 0	Not Measured	**No Permit**	N/A	
Elmdon	16.90	**30**	No	123 / 0	6.16	**15**	No	123 / 1	1.41	**12**	No	123 / 1	Not Measured	**No Permit**	N/A	
Foxton (Cambs)	28.05	**50**	No	120 / 0	13.11	**25**	No	170 / 0	3.28	**10**	No	120 / 0	0.776	**1**	No	41 / 10
Gamlingay	19.90	**35**	No	123 / 0	9.21	**20**	No	164 / 0	8.00	**15**	No	123 / 0	0.553	**1**	No	123 / 8
Great Chesterford	10.90	**19**	No	123 / 0	4.31	**9**	No	166 / 2	0.35	**5**	No	123 / 0	Not Measured	**No Permit**	N/A	
Guilden Morden	23.00	**50**	No	121 / 0	10.80	**25**	No	121 / 0	5.47	**8**	No	121 / 2	0.490	**1**	No	60 / 4
Haslingfield	24.00	**60**	No	122 / 0	13.43	**30**	No	246 / 0	5.42	**10**	No	121 / 0	0.963	**2**	No	64 /3
Hatley St George	Not Measured	**No Permit**	N/A	n/a	Not Measured	**No Permit**	N/A	n/a	Not Measured	**No Permit**	N/A	n/a	Not Measured	**No Permit**	N/A	
Huntingdon	18.00	**30**	No	123 / 0	8.54	**20**	No	246 / 0	1.55	**7**	No	123 / 0	0.653	**1**	No	246 / 18
Linton	10.00	**20**	No	123 / 0	7.11	**10**	No	164 / 2	0.57	**4**	No	123 / 0	0.096	**0.5**	No	3 / 0
Litlington	25.20	**35**	No	117 / 2	8.08	**20**	No	117 / 0	3.70	**8**	No	117 / 1	0.191	**0.5**	No	3 / 0
Melbourn	16.95	**25**	No	102 / 0	6.08	**13**	No	144 / 0	0.36	**4**	No	102 / 0	Not Measured	**No Permit**	N/A	
Needingworth	19.90	**25**	No	123 / 4	9.87	**15**	No	165 / 3	5.11	**10**	No	123 / 1	0.478	**1**	No	113 / 5
Over	21.10	**25**	No	59 / 0	9.65	**10**	No	180 / 8	3.10	**3**	Yes	59 / 4	1.105	**2**	No	122 /10
Papworth Everard	9.00	**24**	No	121 / 0	5.57	**12**	No	161 / 0	3.42	**5**	No	121 / 2	1.277	**0.5**	Yes	121 / 96
Royston	19.00	**30**	No	121 / 0	13.18	**15**	No	243 / 6	4.57	**10**	No	121 / 0	1.603	**2**	No	122 / 31
Sawston	22.00	**40**	No	123 / 0	10.03	**20**	No	246 / 0	5.46	**10**	No	123 / 0	1.287	**2**	No	123 / 6
Tadlow	Not Measured	**No Permit**	N/A	n/a	Not Measured	**No Permit**	N/A	n/a	Not Measured	**No Permit**	N/A	n/a	Not Measured	**No Permit**	N/A	
Teversham	21.00	**20**	Yes	127 / 8	6.97	**15**	No	168 / 1	0.62	**5**	No	126 / 0	Not Measured	**No Permit**	N/A	
Thurlow	21.00	**50**	No	121 / 0	6.62	**22**	No	121 / 0	Not Measured	**No Permit**	N/A	n/a	0.886	**1**	No	3 / 1
Uttons Drove (Bar Hill)	16.00	**20**	No	123 / 2	6.89	**14**	No	245 / 2	3.76	**7**	No	123 / 1	0.951	**0.4**	Yes	245 / 173
Waresley	36.00	**40**	No	118 / 3	19.98	**35**	No	118 / 1	10.87	**20**	No	118 / 0	0.465	**1.5**	No	3 / 0
Waterbeach	13.90	**40**	No	123 / 0	6.70	**20**	No	180 / 0	6.73	**15**	No	123 / 1	1.848	**No Permit**	N/A	24 / n/a
West Wickham	24.75	**30**	No	106 / 2	9.06	**20**	No	106 / 0	2.02	**4**	No	106 / 0	Not Measured	**No Permit**	N/A	

4.11 Load Standstill approach

4.11.1 It is inevitable that new development will result in an increase in wastewater created and a resulting increase in treated effluent discharges. Where the DWF is anticipated to increase above the permitted value, the EA will reassess the site and its DWF permit, along with the other permit conditions relating to pollutant concentrations in the treated effluent. The EA reviews and amends water company permit conditions on a five-year cycle to identify environmental improvements to be delivered in the next company Asset Management Plan (AMP) Cycle. It is also the responsibility of Anglian Water to inform the EA whether and when permit conditions need updating because of catchment changes (e.g. growth).

4.11.2 Load standstill is a useful concept to be considered when reviewing wastewater discharge permits for planning purposes. A load standstill approach ensures that as effluent volumes increase, the total pollutant load discharged does not increase. This is achieved by decreasing the concentration of pollutants in the effluent discharge in proportion to the increase in flow.

4.11.3 In simple terms, the load standstill assessment is a simple mass balance assessment of water quality. The permitted and future loads for each determinand are calculated using the permitted and future flows multiplied by the permit level for each determinand. The future load is then compared with the consented load to check if it is likely to exceed its permit. The load standstill approach is a simplified substitute for more sophisticated water quality modelling techniques that are used to plan and set permit conditions. It is an appropriate methodology for the purposes of this Water Cycle Study.

4.11.4 There are technically achievable limits (TAL) below which it is not possible to reduce concentrations using typically deployed technologies. These are:

- 10 mg/l for Suspended Solids (SS) (95^{th} percentile),
- 1 mg/l for Ammonia (95^{th} percentile),
- 5 mg/l for Biochemical Oxygen Demand (BOD) (95^{th} percentile), and
- 0.25 mg/l for Total Phosphorous (annual average).

4.11.5 The Load Standstill calculation results for the ‘Full Built out’ and ‘Most Likely’ scenarios, including the Draft Plan new allocations, are presented in **Table 4.15** and **Table 4.16** respectively**.** Both tables show the percentage of DWF permit rioriti by 2045, which is calculated as a percentage of the total flow by 2045. This is also depicted in **Table 4.9** to **Table 4.13.** For the WRCs where the 2045 DWF flow exceeded the relevant DWF permit, “load standstill” values for SS, BOD, Ammoniacal Nitrogen and Total Phosphorus were calculated.

4.11.6 For those WRCs that the 2045 flow did not exceed the relevant DWF permit, no change in the determinands’ permits would be required.

4.11.7 The WRCs that exceed their 'load standstill' calculated values for either SS, BOD, Ammoniacal Nitrogen and Total Phosphorus are:

- Bassingbourn WRC
- Cambridge WRC
- Coton WRC
- Foxton (Cambs) WRC
- Over WRC
- Papworth Everard WRC
- Sawston WRC
- Teversham WRC
- Uttons Drove (Bar Hill) WRC
- Waterbeach WRC

4.11.8 The majority of the 'load standstill' values shown in **Table 4.15** and **Table 4.16** are above or equal to the relevant TALs and therefore likely feasible through conventional wastewater treatment enhancements.

4.11.9 However, for the 'Full Build out' development scenario, there are several exceptions, where the revised determinand numeric permits, calculated following the Load Standstill approach, are below the TAL.

- The revised SS permit for Uttons Drove WRC, calculated as 3.83 mg/l
- The revised BOD permit for Uttons Drove WRC, calculated as 2.68 mg/l
- The revised Total Phosphorus permit for Bassingbourn WRC, calculated as 0.24 mg/l
- The revised Total Phosphorus permit for Uttons Drove WRC, calculated as 0.08 mg/l

4.11.10 It should be noted that more sophisticated water quality modelling might potentially identify a limit above TAL. Also, the calculated permits that are below TAL could be set, but this would require AW to introduce new technologies or management practices in order to meet them.

4.11.11 Furthermore, for the 'Most Likely' development scenario, there are also a few exceptions, where the revised determinands' permits are below the TAL:

- The revised SS permit for Uttons Drove WRC, calculated as 6.55 mg/l
- The revised BOD permit for Uttons Drove WRC, calculated as 4.58 mg/l

- The revised Total Phosphorus permit for Bassingbourn WRC, calculated as

  0.24 mg/l

- The revised Total Phosphorus permit for Uttons Drove WRC, calculated as 0.13 mg/l

4.11.12 As part of WINEP, AW and the EA have agreed new limits for Total Phosphorus for a number of the WRC in the Greater Cambridge area (as shown below). The majority will have a phosphate TAL limit (0.25mg/l) applied in AMP8. These new conditions have been presented together with the “load standstill” calculations in **Table 4.15** and **Table 4.16**.

- Barley (0.25 mg/l)
- Bassingbourn (0.25 mg/l)
- Cambridge (0.40 mg/l with stretch target to 0.25mg/l)
- Duxford (0.25 mg/l)
- Foxton (Cambs) (0.25 mg/l)
- Gamlingay (0.30 mg/l)
- Great Chesterford (0.25 mg/l)
- Guilden Morden (0.25 mg/l)
- Haslingfield (0.60 mg/l)
- Linton (0.25 mg/l)
- Melbourn (0.25 mg/l)
- Over (0.25 mg/l)
- Papworth Everard (0.25 mg/l)
- Royston (0.25 mg/l)
- Teversham (0.25 mg/l)
- Sawston (0.40 mg/l)
- Uttons Drove (Bar Hill) (0.30 mg/l)
- Waterbeach (0.25 mg/l)
- West Wickham (0.25 mg/l)

4.11.13 The EA also stated that for the Cambridge WRC, the stretch target will be a trial to see if the site can reach that limit by rioritize existing site processes, but this will be reviewed given the withdrawal of funding for the redevelopment of the works.

4.11.14 Taking into account the agreed AMP8 WINEP limits for Phosphorous, which will be in place after 2030, the revised Phosphorus permits calculated using the Load Standstill approach (using 2030 as the baseline), are shown in **Table 4.15** and **Table 4.16**. For both the Full Build out’ development, as well as the 'Most Likely' development scenarios, there are several exceptions, where the revised Phosphorus permit, calculated following the Load Standstill approach, is below the TAL. These include:

- Barley WRC
- Bassingbourn WRC
- Cambridge WRC
- Foxton (Cambs) WRC
- Guilden Morden WRC
- Melbourn WRC
- Over WRC
- Sawston WRC
- Teversham WRC
- Uttons Drove WRC
- Waterbeach WRC

4.11.15 When climate change predictions in eFLaG are considered, the "load standstill" value numbers are further reduced. A median value of a 20% decline in Q50 river flows at 2045 has been used to illustrate this point, and results in additional WRC who do not have capacity to accept flows (Bourn, Duxford, Gamlingay, Guilden Morden, Haslingfield, Linton, Litlington, Melbourn, Royston, Thurlow, Waresley, and West Wickham) without the adoption of new technologies or management practices. A number of other WRCs are close to breaching their "load standstill" value.

4.11.16 These estimates only relate to the technical limits of pollutant discharge concentration, and do not consider the feasibility of upgrades, site constraints, or capacity constraints. Nevertheless, they provide an indication of potential technical challenges to development. Detailed water quality modelling would be necessary to confirm impacts and establish more accurate new permit conditions.

Table 4.15: Load Standstill results for Suspended Solids, Biochemical Oxygen Demand, Ammoniacal Nitrogen and Total Phosphorus (% DWF relates to the Full Build Out development scenario – Committed development and emerging Local Plan allocations)

WRC name	% change in DWF for Growth to 2045	Resulting Load Standstill Permit (Suspended Solids)	Resulting Load Standstill Permit (BOD)	Resulting Load Standstill Permit (Ammoniacal Nitrogen) *Blank cells note that no permit is available to undertake the assessment*	Resulting Load Standstill Permit (Phosphorous) *Blank cells note that no permit is available to undertake the assessment*	AMP8 WINEP drivers for Total Phosphorus Permits	Resulting Load Standstill Permit (Phosphorous) based on AMP8 WINEP limits *Blank cells note that no permit is available to undertake the assessment*	Does the 95% percentile of the SS timeseries exceed the Load Standstill SS permit?	Does the 95% percentile of the BOD timeseries exceed the Load Standstill BOD permit?	Does the 95% percentile of the Ammoniacal Nitrogen timeseries exceed the Load Standstill Ammoniacal Nitrogen permit? *(Blank cells note that no permit is available to undertake the assessment)*	Does the average of the Phosphorus timeseries exceed the Load Standstill Total Phosphorus permit? *(Blank cells note that no permit is available to undertake the assessment)*	IF APPLICABLE: Does the average of the Phosphorus timeseries exceed the AMP8 WINEP Total Phosphorus permit?
Arrington	66%	40	20	15				No	No	No		
Balsham	64%	30	17	10				No	No	No		
Barley	121%	24.76	16.51			0.25	0.21	No	No			Yes
Bassingbourn	102%	29.31	19.54	9.77	0.24	0.25	0.24	No	No	No	Yes	Yes
Bourn	116%	17.24	8.62	2.59	0.43			No	No	No	No	
Brinkley	51%	60	40	20				No	No	No		
Cambridge	175%	11.43	8.57	2.86	0.57	0.25	0.14	Yes	No	No	Yes	Yes
Shudy Camps (Camps)	53%	30	15	3				No	No	No		
Coton	96%	30	15	15	0.8			No	No	No	Yes	
Duxford	26%	40	25	15		0.25	0.25	No	No	No		Yes
Elmdon	67%	30	15	12				No	No	No		
Foxton (Cambs)	138%	36.14	18.07	7.23	0.72	0.25	0.18	No	No	No	Yes	Yes
Gamlingay	74%	35	20	15	1	0.30	0.30	No	No	No	No	No
Great Chesterford	86%	19	9.00	5.00		0.25	0.25	No	No	No		Yes
Guilden Morden	110%	45.55	22.78	7.29	0.91	0.25	0.23	No	No	No	No	Yes
Haslingfield	121%	49.64	24.82	8.27	1.65	0.60	0.50	No	No	No	No	Yes
Hatley St George	50%											
Linton	83%	20.00	10.00	4.00	0.5	0.25	0.25	No	No	No	No	Yes
Litlington	32%	35	20	8	0.5			No	No	No	No	
Melbourn	134%	18.65	9.70	2.98		0.25	0.19	No	No	No		Yes
Over	129%	19.34	7.73	2.32	1.55	0.25	0.19	Yes	Yes	Yes	No	Yes
Papworth Everard	74%	24.00	12.00	5.00	0.5	0.25	0.25	No	No	No	Yes	Yes
Royston	87%	30	15	10	2	0.25	0.25	No	No	No	No	Yes
Sawston	256%	15.63	7.81	3.91	0.78	0.40	0.16	Yes	Yes	Yes	Yes	Yes
Tadlow												
Teversham	116%	17.29	12.96	4.32		0.25	0.22	Yes	No	No		Yes
Thurlow	98%	50	22		1			No	No		No	
Uttons Drove (Bar Hill)	523%	3.83	2.68	1.34	0.08	0.30	0.06	Yes	Yes	Yes	Yes	Yes
Waresley	85%	40	35	20	1.5			No	No	No	No	
Waterbeach	359%	11.13	5.6	4.2		0.25	0.07	Yes	Yes	Yes		Yes
West Wickham	84%	30	20	4		0.25	0.25	No	No	No		Yes

Table 4.16: Load Standstill results for Suspended Solids, Biochemical Oxygen Demand, Ammoniacal Nitrogen and Total Phosphorus (% DWF relates to the Most Likely development scenario – Committed development and emerging Local Plan allocation)

WRC name	% change in DWF for Growth to 2045	Resulting Load Standstill Permit (Suspended Solids)	Resulting Load Standstill Permit (BOD)	Resulting Load Standstill Permit (Ammoniacal Nitrogen) *Blank cells note that no permit is available to undertake the assessment*	Resulting Load Standstill Permit (Phosphorous) *Blank cells note that no permit is available to undertake the assessment*	AMP8 WINEP drivers for Total Phosphorus Permits	Resulting Load Standstill Permit (Phosphorous) based on AMP8 WINEP limits *Blank cells note that no permit is available to undertake the assessment*	Does the 95% percentile of the SS timeseries exceed the Load Standstill SS permit?	Does the 95% percentile of the BOD timeseries exceed the Load Standstill BOD permit?	Does the 95% percentile of the Ammoniacal Nitrogen timeseries exceed the Load Standstill Ammoniacal Nitrogen permit? *(Blank cells note that no permit is available to undertake the assessment)*	Does the average of the Phosphorus timeseries exceed the Load Standstill Total Phosphorus permit? *(Blank cells note that no permit is available to undertake the assessment)*	IF APPLICABLE: Does the average of the Phosphorus timeseries exceed the AMP8 WINEP Total Phosphorus permit?
Arrington	66%	40	20	15				No	No	No		
Balsham	64%	30	17	10				No	No	No		
Barley	121%	24.77	16.52			0.25	0.21	No	No			Yes
Bassingbourn	102%	29.32	19.55	9.77	0.24	0.25	0.24	No	No	No	Yes	Yes
Bourn	114%	17.51	8.76	2.63	0.44			No	No	No	No	
Brinkley	50%	60	40	20				No	No	No		
Cambridge	152%	13.19	9.89	3.30	0.66	0.25	0.16	Yes	No	No	Yes	Yes
Shudy Camps (Camps)	53%	30	15	3				No	No	No		
Coton	96%	30	15	15	0.8			No	No	No	Yes	
Duxford	26%	40	25	15		0.25	0.25	No	No	No		Yes
Elmdon	67%	30	15	12				No	No	No		
Foxton (Cambs)	136%	36.68	18.34	7.34	0.73	0.25	0.18	No	No	No	Yes	Yes
Gamlingay	73%	35	20	15	1	0.30	0.30	No	No	No	No	Yes
Great Chesterford	86%	19	9.00	5.00		0.25	0.25	No	No	No		Yes
Guilden Morden	110%	45.58	22.79	7.29	0.91	0.25	0.23	No	No	No	No	Yes
Haslingfield	118%	50.97	25.49	8.50	1.70	0.60	0.51	No	No	No	No	Yes
Hatley St George	50%											
Huntingdon	0%	30	20	7	1			No	No	No	No	
Linton	77%	20.00	10.00	4.00	0.5	0.25	0.25	No	No	No	No	No
Litlington	32%	35	20	8	0.5			No	No	No	No	
Melbourn	130%	19.22	9.99	3.07		0.25	0.19	No	No	No		Yes
Over	129%	19.39	7.76	2.33	1.55	0.25	0.19	Yes	Yes	Yes	No	Yes
Papworth Everard	74%	24.00	12.00	5.00	0.5	0.25	0.25	No	No	No	Yes	
Royston	87%	30	15	10	2	0.25	0.25	No	No	No	No	Yes
Sawston	170%	23.47	11.73	5.87	1.17	0.40	0.23	No	No	No	Yes	Yes
Tadlow												
Teversham	116%	17.27	12.95	4.32		0.25	0.22	Yes	No	No		Yes
Thurlow	98%	50	22		1			No	No		No	
Uttons Drove (Bar Hill)	306%	6.55	4.58	2.29	0.13	0.30	0.10	Yes	Yes	Yes	Yes	Yes
Waresley	85%	40	35	20	1.5			No	No	No	No	
Waterbeach	246%	16.27	8.1	6.1		0.25	0.10	No	No	Yes		Yes
West Wickham	84%	30	20	4		0.25	0.25	No	No	No		Yes

4.12 Wastewater Infrastructure Upgrades

4.12.1 AW's DWMP, published in 2023, outlines how their water recycling service will cope with growth and climate change over the next 25 years, from 2025 to 2050. The DWMP noted that the next 25 years will bring significant population growth challenges, alongside more intense rainfall due to climate change, and 28% of the AW region being below sea level. The AW region is also home to 47 sites of Special Specific Scientific Interest, the UK's only wetland national park, the Norfolk Broads, 48 bathing waters, 3,300km of rivers and 1,200km of coastline. With increasing interest in transparency and on how AW impact these areas, AW published a Climate Change Adaption Report in 2020, outlining their historic performance and commitment to mitigate the impact of future challenges.

4.12.2 In order to address these risks, AW undertook Baseline Risk and Vulnerability Assessments, enabling them to review the impact of growth and climate change against 10 planning objectives, linked to three themes: escape from sewers, WRC capacity and environment & wellbeing.

4.12.3 One of the key stages for the production of the DWMP was the Risk Based Catchment Screening (RBCS). In 2020, AW carried out RBCS to identify the water catchment areas they needed to cover in their DWMP.

4.12.4 This was followed by a Baseline Risk and Vulnerability Assessment[54] (BRAVA). The objective of a 'BRAVA' assessment is to review all Level 3 WRCs which progressed through RBCS in order to understand the impact of growth and climate change until 2050. Ten planning objectives were agreed with stakeholders during the start of the DWMP process. These are:

- Risk of sewer flooding in a 1 in 50 year storm
- CSO performance
- External sewer flooding risk
- Internal sewer flooding risk
- Pollutions risk
- Sewer collapses
- DWF compliance
- WRC quality compliance
- Access to amenity areas
- Green infrastructure.
- The AW DWMP follows two timeframes:

[54] BRAVA

- 2035 (Medium-term)
- 2050 (Long-term).

4.12.5 This was purposely done so that AW could share the medium- and long-term risks they face and the strategies to address them, while rioritized the need for flexibility when meeting affordability challenges and adaptation to new information.

Arrington WRC

4.12.6 The Anglian Water DWMP states that, in the long-term, they plan to increase the Arrington WRC's capacity, which will include new process streams in the WRC catchment.

Balsham WRC

4.12.7 According to the DWMP, the long-term plan is to increase the conveyance in Balsham WRC.

Barley WRC

4.12.8 For Barley WRC, all BRAVA themes have been assessed as part of the DWMP and no specific concerns have been raised by the stakeholders.

4.12.9 Medium-term plans to have new process streams to increase capacity and have a mixed strategy with main solution being SuDS to reduce risk of surface water flooding have been identified in the DWMP. The long-term strategy includes plans for surface water removal by 50% in the network as a solution to address pollution risk.

Bourn WRC

4.12.10 The DWMP noted as part of the Bourn WRC BRAVA assessment, watercourse concerns have been identified by stakeholders. By 2035, the DWMP highlighted that there are plans to reduce infiltration in the WRCs and by 2050, there are plans to increase capacity by new process streams.

Cambridge WRC

4.12.11 The DWMP defined that for Cambridge WRC there are plans for a new Wastewater Treatment Works (WwTW), as well as creating attenuation in the network and increasing the network's capacity by 2035. In the long term, it was noted there are plans to remove 10% of surface water in the network.

4.12.12 As noted in **Section 4.5**, Cambridge WRC relocation funding was sought through the HIF; however this funding is no longer available. In light of this, AW is currently working closely with Defra's Ministerial Water Delivery Taskforce, regulators and other stakeholders such as the Cambridge Water Scarcity Group to resolve ongoing challenges around growth in the region. This includes ensuring that Cambridge WRC has sufficient capacity to enable current and future growth (including growth identified in the emerging Greater Cambridge Local Plan and the wider government growth ambitions for Cambridge).

Coton WRC

4.12.13 The DWMP identified that infiltration for the network will be reduced by 2035, and that capacity will be increased via new process streams by 2050.

Duxford WRC

4.12.14 Information on the Duxford WRC upgrades is not publicly available at the time of writing this report.

Foxton (Cambs) WRC

4.12.15 The DWMP identified that for the medium-term there are plans for mixed strategies, with the main solution being SuDS, so that surface water could be removed from the sewer system. The long-term strategy includes plans for the permit to be revised, as well as for the capacity to be increased via new process streams. In the long term there are also plans that with a new permit to increase the capacity and remove 25% of surface water in the network.

Great Chesterford WRC

4.12.16 According to the DWMP, there are no upgrade plans for Great Chesterford in the medium-term. The DWMP has not identified any risk in the long-term.

Haslingfield WRC

4.12.17 The medium-term strategy for Haslingfield WRC, according to the DWMP, would be to reduce infiltration for the WRC and to increase the network's capacity. The long-term strategy for the WRC includes removing 25% of surface water in the network.

Linton WRC

4.12.18 According to the DWMP, the medium-term plans for Linton WRC include a mixed strategy with main solution of SuDS. The long-term strategy includes increase of WRC capacity and 50% surface water removal within the network.

Melbourn WRC

4.12.19 The medium-term strategy for Melbourn WRC includes transfer between catchments (that is transferring flows from sub-catchments or the whole catchment to another sewerage catchment), as well as a mixed strategy with SuDS being the main solution. The long-term strategy includes reducing infiltration in the network and 25% surface water removal.

Over WRC

4.12.20 Over WRC was identified as a high-risk due to DWF compliance in the medium and long term in the DWMP. All BRAVA themes were assessed, and themes highlighted as key concerns were as follows: escape from sewers, WRC compliance and environment and wellbeing. Stakeholders were also concerned about the implications of flooding in the area. The medium-term plan at the WRC is to increase capacity and reduce infiltration in the catchment to address the DWF and quality compliance risk. We will also look at mixed strategies in the network with a main solution of SuDS to reduce risk of surface water flooding.

4.12.21 The long-term plan is to remove 50% of surface water in the network. These solutions aim to address the high risk of pollution, internal and external sewer flooding risks

Papworth Everard WRC

4.12.22 The DWMP noted that the medium-term strategy for Papworth Everard WRC would be a 'wait and see' approach. There are no long-term plans identified for this WRC.

Royston WRC

4.12.23 The DWMP noted that the medium-term strategy for Royston WRC would be also a 'wait and see' approach. Process rioritized has been identified as a long-term plan by 2050.

Sawston WRC

4.12.24 According to the DWMP, the medium-term plans for Sawston WRC include a mixed strategy with main solution of SuDS. The long-term strategy includes 50% surface water removal within the network.

Tadlow WRC

4.12.25 The DWMP did not identify any medium or long-term plans for Tadlow WRC.

Teversham WRC

4.12.26 According to the DWMP, rioritized processes, as well as plans to look at mixed strategies in the Teversham WRC network with a main solution of SuDS are planned by 2035. The long-term strategy includes 50% surface water removal within the network.

Thurlow WRC

4.12.27 The DWMP did not identify any medium or long-term plans for Thurlow WRC.

Uttons Drove (Bar Hill) WRC

4.12.28 For Uttons Drove WRC, the DWMP identified that the medium-term plans include rioriti process rioritized , as well as plans to look at mixed strategies in the network with a main solution of SuDS. The plans also include the revision of the WRC's permit as well as new process streams to address the additional DWF. The long term plan includes the 25% removal of surface water in the network.

4.12.29 Additionally, as noted in **Section 4.5**, Uttons Drove WRC serves significant growth areas including Cambourne and Northstowe. The growth in the emerging Greater Cambridge Local Plan significantly increases the proposed growth in the WRC catchment meaning that further funding will need to be sought in PR29 (covering the period 2030-2035).

Waresley WRC

4.12.30 According to the DWMP, mixed strategies with a main solution of SuDS are planned by 2035 for Waresley WRC. The long-term strategy includes 50% surface water removal within the network by 2050.

Waterbeach WRC

4.12.31 For Waterbeach WRC, the DWMP identified that the medium-term plans include mixed strategies in the network with a main solution of SuDS, as well as transfer between catchments. The long term strategy includes removal of 50% of surface water in the network.

4.12.32 Additionally, the AW has recently confirmed that the flows from Waterbeach New Town, will be directed to Waterbeach WRC until the pipeline to the Cambridge WRC is delivered. Then all flows will be directed to Cambridge WRC. Waterbeach WRC would effectively become a terminal pumping station to pump all flows to Cambridge WRC once the pipeline is delivered. This is part of the feasibility/scoping design that AW is progressing for delivering the infrastructure needed to support growth at the existing Cambridge WRC, in parallel with discussing any associated environmental drivers with the Environment Agency.

West Wickham WRC

4.12.33 The DWMP did not identify any medium or long-term plans for West Wickham WRC.

No information available

4.12.34 Information on the upgrades for the following WRCs was not publicly available at the time of writing the report:

- Bassingbourn WRC
- Brinkley WRC

- Shudy Camps (Camps) WRC

- Elmdon WRC
- Gamlingay WRC
- Guilden Morden WRC
- Hatley St George WRC
- Litlington WRC

4.13 New Wastewater Treatment Infrastructure

4.13.1 Where existing wastewater treatment works do not have sufficient capacity for additional development, or where connection to treatment works is not feasible, it may be possible to construct new treatment works to support new development. These could be constructed by the sewerage undertaker (AW) on the mains sewer system, or by private operators for properties not connected to the mains sewer (for example, septic tanks, cesspits and small sewage treatment plants). Additionally, for new large settlements (such as Grange Farm) there is a possibility that a new WRC could be constructed; in this case early engagement with AW and the EA would be necessary to assess the required standards and procedures to be followed.

4.13.2 Unlike other forms of community infrastructure (for example schools or open spaces) where developers have to make a S106 contribution or the Community Infrastructure Levy (CIL), wastewater infrastructure is funded through a different framework. Wastewater services are funded through statutory connection and infrastructure charges paid by developers to the relevant water company (in this case, AW) under the Water Industry Act 1991.

4.13.3 New treatment works must also be approved by the Environment Agency (depending on size, location and discharge point). The risk of flooding and odour impacts must also be considered when planning new treatment works. The Environment Agency would be responsible for setting environmental permits on discharge volume and quality to prevent any detrimental impacts on receiving watercourses.

4.13.4 New treatment works could riorit new green / natural treatment options such as constructed wetlands, with additional biodiversity, low energy and low carbon benefits. The feasibility of these will be dependent on location and site constraints. Treated effluent could be disposed to ground to recharge the aquifer rather than discharged to water courses.

4.13.5 There may also be opportunities for new or current treatment works to re-use treated effluent for other purposes, such as irrigation. Treated effluent could be used for potable supplies, subject to quality standards and infrastructure.

4.13.6 Wastewater infrastructure can also be linked to energy generation, through biogas, and the residual heat in the treated effluent can also be re-used. For example, in Norwich and Bury St Edmunds, heat from wastewater treatment plants run by Anglian Water has been used to heat innovative greenhouse developments for hydroponics vertical growing systems.

4.14 Wastewater Collection and Treatment Summary

Headline findings of baseline conditions

4.14.1 A number of Water Recycling Centres (WRCs) are currently exceeding their DWF condition of their permit, including those where growth is planned, indicating that investment is required to accommodate the growth. Based on the assumptions listed in Chapter 4, growth including Draft Local Plan allocated sites will cause the following WRC to exceed their current DWF permit by 2045 for both the 'Full Build Out' and 'Most likely' development scenarios:

- Barley WRC
- Bassingbourn WRC
- Bourn WRC
- Cambridge WRC
- Foxton (Cambs) WRC
- Guilden Morden WRC
- Haslingfield WRC
- Melbourn WRC
- Over WRC
- Sawston WRC
- Teversham WRC
- Uttons Drove (Bar Hill) WRC and
- Waterbeach WRC.

4.14.2 Excluding the draft Local Plan new allocations does not alter this conclusion.

4.14.3 AW confirmed that growth schemes had been identified for Melbourn WRC, Utton's Drove WRC and Cambridge WRC relocation. Specific updates include:

- Uttons Drove WRC serves significant growth areas including Cambourne and Northstowe. The growth in the emerging Greater Cambridge Local Plan significantly increases the proposed growth in the WRC catchment meaning that further funding will need to be sought in PR29 (covering the period 2030-2035).

- The relocation of Cambridge WRC from the current site on Cowley Road in northeast Cambridge was due to be funded through Homes England's Housing Infrastructure Fund (HIF). The Ministry of Housing, Communities, and Local Government (MHCLG) has confirmed that HIF funding will no longer be made available for the relocation. The decision follows costs of the relocation increasing significantly as a result of rising costs of materials and labour and disruption to global supply chains.

- AW has previously also confirmed that Barley WRC and Melbourn WRC are identified in the PR24 Business Plan for AMP8 growth schemes.

4.14.4 A load standstill exercise was undertaken for Suspended Solids (SS), Biochemical Oxygen Demand (BOD), Ammoniacal Nitrogen and Total Phosphorus permit values. The load standstill approach ensures that as effluent volumes increase, the total pollutant load discharged does not increase. This is achieved by decreasing the concentration of pollutants in the effluent discharge in proportion to the increase in flow. The majority of the new revised determinands' permits are above the relevant Technical Achievable Limit (TAL), below which it is not usual practice to reduce concentrations using currently available technologies. However, there are some exceptions, where the revised determinand permit is below the TAL. This does not automatically present a barrier to growth but may require more detailed assessment and the application of innovative technologies and practices.

4.14.5 As part of WINEP, AW and the EA have agreed new limits for Total Phosphorus for a number of the WRCs in the Greater Cambridge area. The majority will have a phosphate TAL limit (0.25mg/l) applied in AMP8.

4.14.6 When climate change predictions in eFLaG are considered, the 'load standstill' resulting permit limits are further reduced. A median value of a 20% decline in Q50 river flows at 2045 has been used to illustrate this point, and results in additional WRCs that do not have capacity to accept flows (Bourn, Duxford, Gamlingay, Guilden Morden, Haslingfield, Linton, Litlington, Melbourn, Royston, Thurlow, Waresley and West Wickham) without the adoption of new technologies or management practices. A number of other WRCs are close to breaching their 'load standstill' permitted values.

4.14.7 It should be noted however, that more sophisticated water quality modelling might potentially identify a limit above TAL. The calculated permits that are below TAL could be set, but this would require AW to invest and introduce new technologies or management practices in order to meet them.

4.14.8 AW is working on the emerging DWMP2 where the abovementioned investment requirements will be identified as part of its long-term strategy. AW and GCSP are collaborating to ensure they will be both making common assumptions about growth and population.

Opportunities for development

4.14.9 In April 2025 DEFRA's Secretary State granted development consent for the Cambridge Wastewater Treatment Plant Relocation Project. Funding for the redevelopment of the new WRC was withdrawn in August 2025, and AW is now reconsidering options to address the challenges of wastewater treatment in Cambridge.

4.14.10 As illustrated in Section 4.7, there are WRCs within Greater Cambridge identified as having capacity constraints for future growth. For the WRCs that do not have growth schemes in this AMP period, funding will need to be included in the next Price Review process (PR29) covering the period 2030-2035.

4.14.11 AW is committed to enabling sustainable growth and is collaborating with external stakeholders to find solutions to capacity challenges. AW is working to secure policy and regulatory change that allows water companies to better support growth, for example by allowing them to invest strategically to create new capacity ahead of growth rioritized g, and by changing charging rules to allow for developer contributions to new infrastructure.

4.14.12 AW is also working closely with Defra's Ministerial Water Delivery Taskforce, regulators and other stakeholders such as the Cambridge Water Scarcity Group to resolve ongoing challenges around growth in the region. This includes ensuring that Cambridge WRC has sufficient capacity to enable current and future growth (including growth identified in this emerging Greater Cambridge Local Plan and the wider government growth ambitions for Cambridge).

4.14.13 AW's Drainage and Wastewater Management Plan (DWMP), published in 2023, outlines how their water recycling service will cope with growth and climate change over the next 25 years, from 2025 to 2050. The DWMP has highlighted the upgrades planned in the medium term (by 2035) and long-term (by 2050) for the WRCs within Greater Cambridge. The majority of the WRC upgrades include a combination of measures such as surface water removal, increase of capacity, revision of permit and catchment transfers.

4.14.14 The reviewed DWMP2 plan, which will be published in 2028, (and its draft will be available in November 2027), will set AW's detailed plan on how these demands will be met and will inform AW's AMP plan for Price Review 2029 to secure funding for investment in AMP9 (2030 to 2035).

4.14.15 New development could be supported by new green / natural treatment options such as constructed wetlands, at existing or new WRCs, with additional low energy and low carbon benefits. The feasibility of these will be dependent on location and site constraints.

4.14.16 Treated effluent could be used for irrigation, allowing potable water to be rioritized in abstractions. Treated effluent could also be used for potable supplies subject to quality standards and infrastructure., or for aquifer recharge However, re-use of effluent would require assessment to ensure that watercourses currently receiving treated flow are not detrimentally impacted by reduced river flows below sustainable levels, and public health is not impacted.

Constraints and Uncertainties

4.14.17 Depending on specific site location, timing of development may need to consider any necessary WRC or sewage upgrade works.

4.14.18 Several proposed development areas have been assigned to alternative WRCs with known capacity constraints that will need to be addressed prior to total build:

- Bourn Airfield New Village and Cambourne West / Cambourne North are assumed to be treated at Uttons Drove WRC, once discharge capacity constraints have been addressed, although the load standstill calculations suggest treatment upgrades may also be needed.
- Waterbeach New Town is a consideration for growth at Cambridge WRC. In the meantime, flows will be directed to Waterbeach WRC.
- Wellcome Genome Campus will be served by Sawston WRC.
- Northstowe will be served by Uttons Drove WRC.
- Grange Farm New Settlement will be served by Sawston WRC. AW has also suggested that potentially an on-site separate WRC could serve the flows from the Grange Farm (subject to delivery models and identification of a suitable discharge point).

4.14.19 As noted above, the majority of the calculated "load standstill" values are above the relevant Technical Achievable Limits and, therefore likely feasible through conventional wastewater treatment enhancements, apart from a few exceptions outlined in Chapter 4. As noted in the 'Headline findings of baseline conditions' above, as part of WINEP, AW and the EA have agreed new limits for Total Phosphorus for a number of the WRCs in the Greater Cambridge area. The majority will have a Total Phosphorus TAL limit of 0.25mg/l applied in AMP8, which will require AW to invest and introduce new technologies or management practices at these sites to comply with the permit.

5 Water Quality

5.1 Overview

5.1.1 The purpose of this chapter is to:

- Update baseline information where necessary.
- Identify any measures that will be required to ensure that water quality doesn't deteriorate with the development being proposed and measures to enhance water quality where possible. This could potentially be linked to improvements to infrastructure such as enhanced treatment at WRCs.
- Identify measures to help improving of quality of surface water runoff.

5.1.2 The quality of potable (drinking) water is managed by the Drinking Water Inspectorate, under legislation including the Drinking Water Directive (1998). This chapter is concerned solely with environmental water quality, that of rivers, lakes, groundwater and other water bodies.

5.2 Managing Water Quality

5.2.1 The Environment Agency is responsible for monitoring and managing water quality in England. To prevent detrimental impacts and maintain environmental standards, The Environment Agency control point discharges to water bodies through its Environmental Permitting system.

5.2.2 The management of water quality is covered by a range of strategies and plans, which have been reviewed for this study:

5.2.3 Environment Agency River Basin Management Plans (updated in 2022): these set out actions needed to achieve good ecological status or potential, under the Water Framework Directive. The Greater Cambridge region lies in the Anglian River Basin Management Plan (RBMP) area[55].

5.2.4 Environment Agency Water Industry National Environment Programme (WINEP)[56], updated in July 2025: this is a water company programme of investigations and actions for environmental improvement schemes within an asset management plan that allow water companies to meet European Directives, national targets and statutory obligations.

5.2.5 Geographical designations are used to identify sensitive areas where certain activities are prohibited, in order to protect water quality. These include:

5.2.6 Drinking Water Protected Areas and Drinking Water Safeguard Zones. These areas are designated under the Water Framework Directive to prevent pollution that could lead to additional purification treatment needs. **Figure 5.1**Figure 5.1:

[55] Anglian river basin district river basin management plan: updated 2022 – GOV.UK

[56] Water Industry National Environment Programme – data.gov.uk

to **Figure 5.3**Figure 5.3: show the designated areas in Greater Cambridge. All groundwater bodies[57] have been designated as drinking water protected areas.

5.2.7 Source Protection Zones. These areas are defined around large and public potable groundwater abstraction sites, to provide additional protection to safeguard drinking water. Three zones are defined, based on the travel time of water to the abstraction site with reference to decay criteria for toxic chemicals, water-borne disease and pollutants. **Figure 5.4**: shows the designated areas in Greater Cambridge.

5.2.8 Nitrate Vulnerable Zones. These areas aim to limit nitrate pollution from agriculture to protect drinking water supplies and prevent eutrophication of surface waters. These areas cover 55% of England. There is a legal requirement to comply with standards in these zones. **Figure 5.5**: shows the designated areas in Greater Cambridge (all areas in the region are classified as surface water nitrate vulnerable zones).

5.2.9 Urban Waste Water Treatment Directive (UWWTD) sensitive areas. These areas aim to identify water bodies affected by eutrophication or elevated nitrate concentrations, due to the adverse effects of urban waste water discharges and waste water discharges from certain industrial sectors. **Figure 5.6**: shows the designated areas in Greater Cambridge.

[57] Water Framework Directive 2000 (Article 2) defines groundwater bodies as ‘all water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil’.

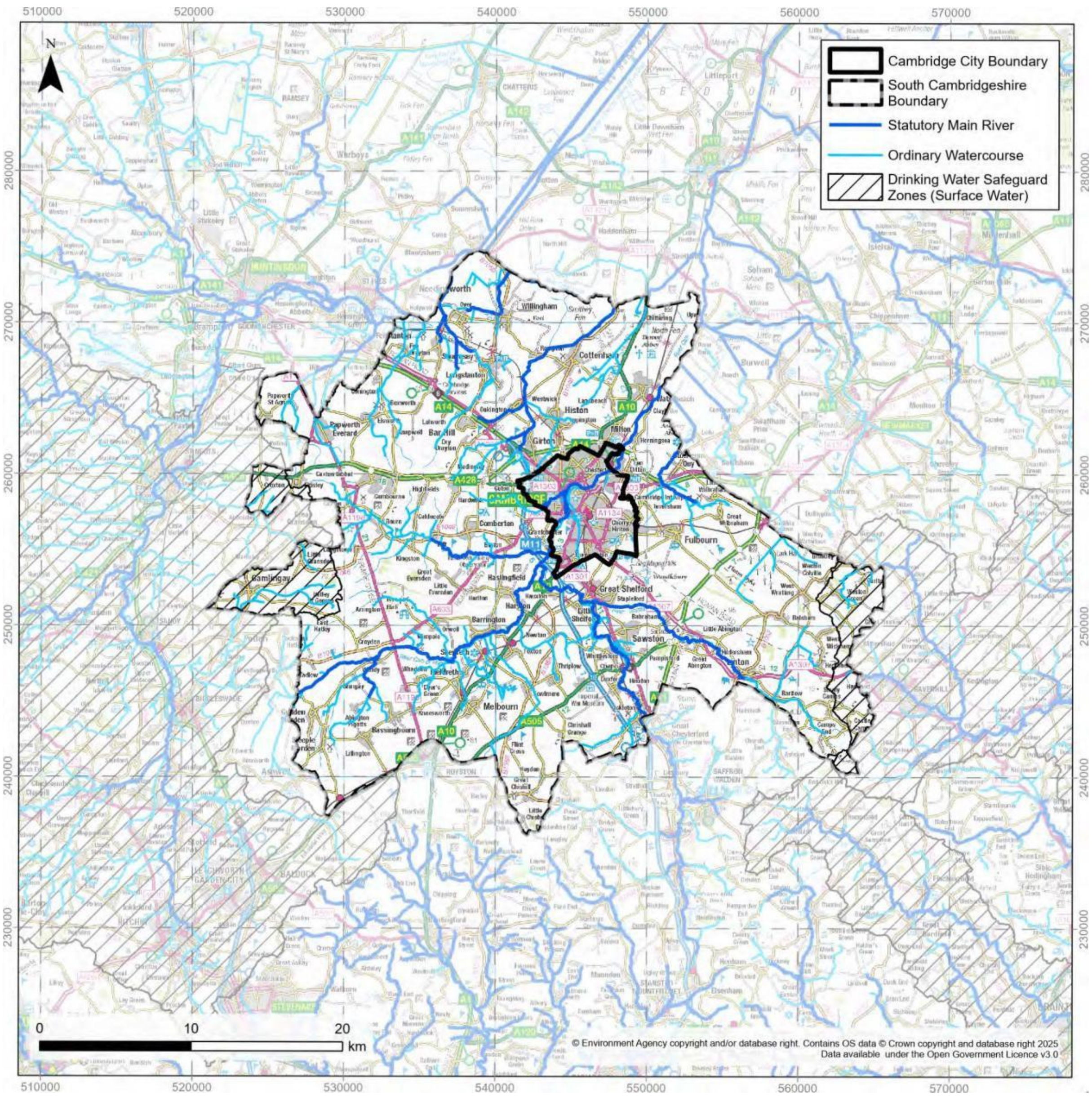

Figure 5.1: Drinking Water Safeguard Zones (Surface Water)

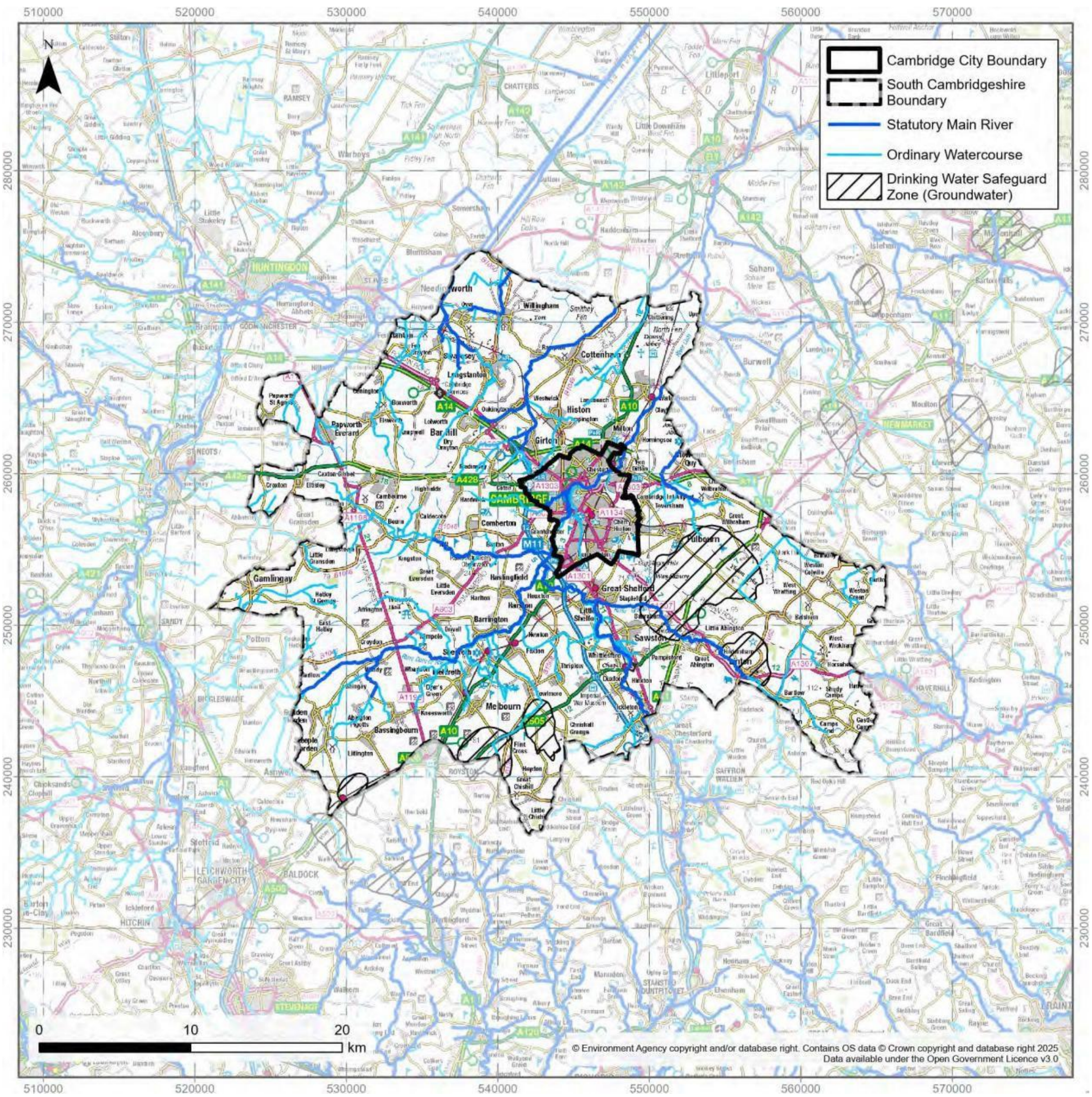

Figure 5.2: Drinking Water Safeguard Zones (Groundwater)

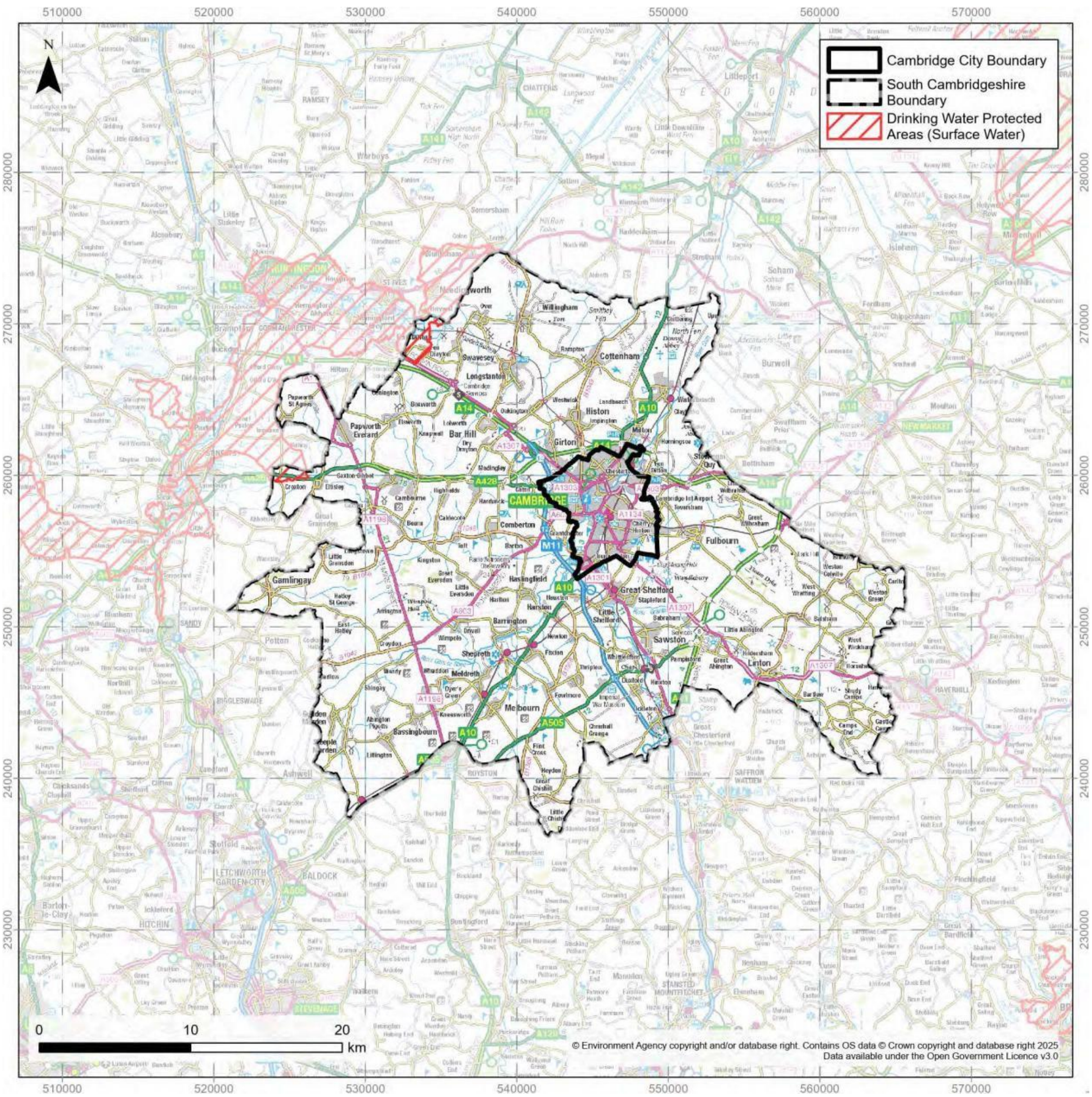

Figure 5.3: Drinking Water Protected Areas (Surface Water)

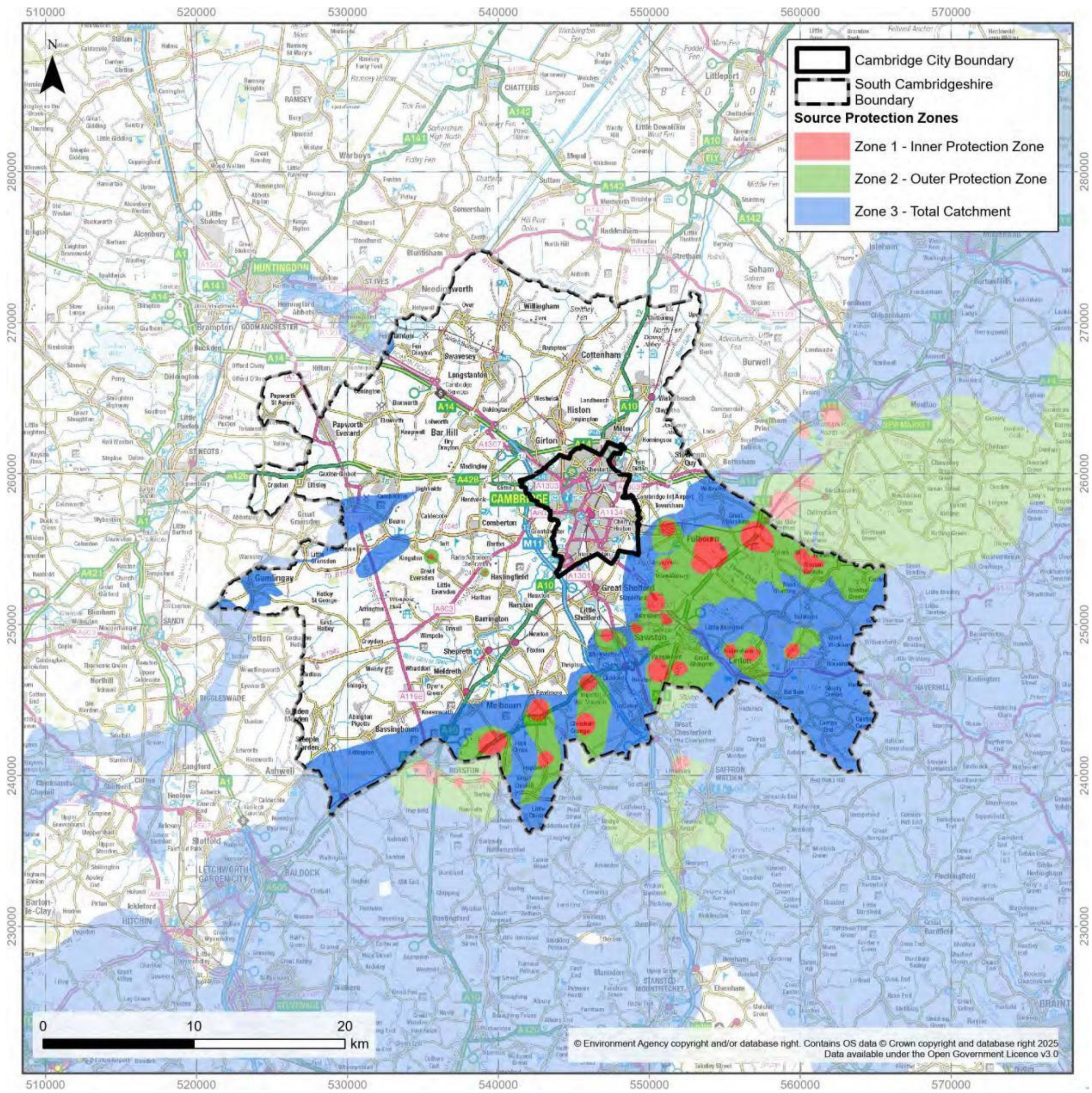

Figure 5.4: Source Protection Zones

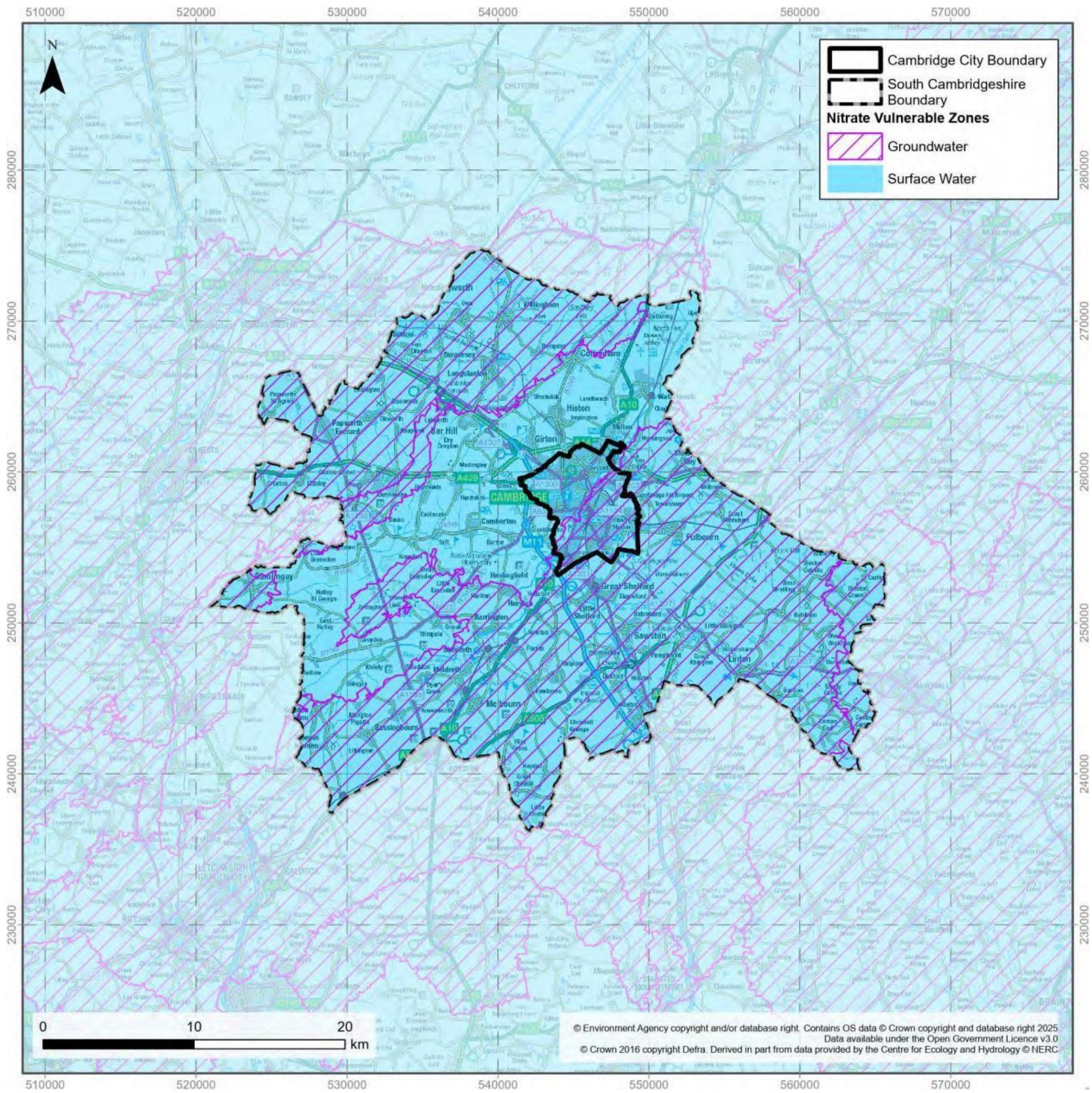

Figure 5.5: Nitrate Vulnerable Zones

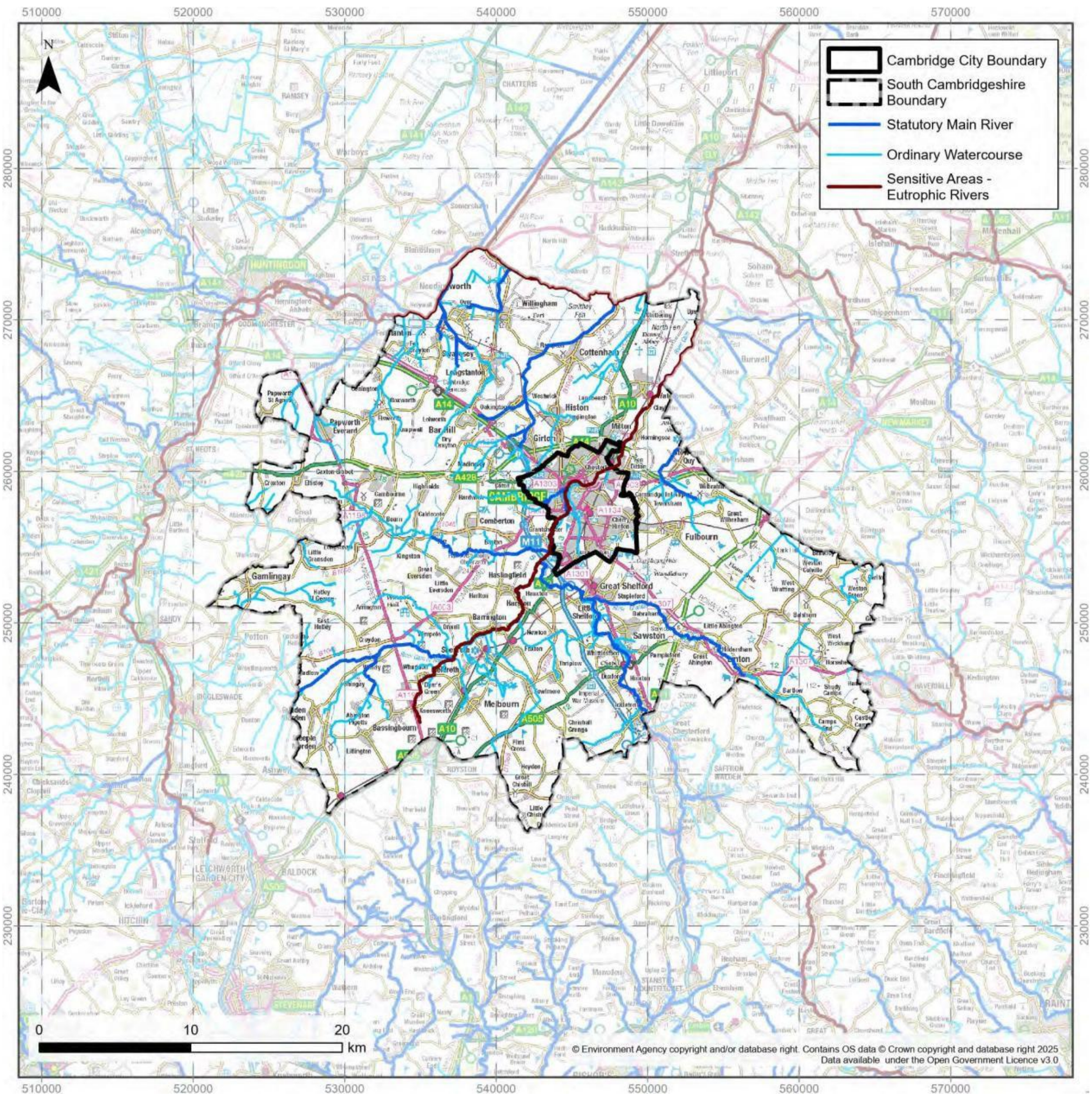

Figure 5.6: Urban Wastewater Treatment Directive Sensitive Areas – Eutrophic Rivers

5.3 Existing Water Quality

Water Framework Directive Status

5.3.1 The WFD status of a water body is determined from a range of quality elements:

- For groundwater bodies, quantitative (the amount of groundwater)[58],chemical elements and the status of surface water bodies or ecosystems dependent on groundwater are assessed. The WFD status is reported on the basis of quantity and quality.

[58] Groundwater levels have been used as one of the measures of quantitative status, using a weight of evidence approach.

- For surface water bodies, biological and chemical elements are assessed.

5.3.2 To achieve good status or potential, every element assessed must be at good status or better. **Table 5.1** lists the status classes for ecological elements for surface water bodies. Chemical elements are classified as “fail” or “good”. Groundwater status is classified as “poor” or “good”.

Table 5.1: Definition of status for surface water bodies in the Water Framework Directive

Status
High (Blue)
Definition
Near natural conditions. No restriction on the beneficial uses of the water body. No impacts on amenity, wildlife or fisheries.

Status
Good (Green)
Definition
Slight change from natural conditions as a result of human activity. No restriction on the beneficial uses of the water body. No impact on amenity or fisheries. Protects all but the most sensitive wildlife.

Status
Moderate (Yellow)
Definition
Moderate change from natural conditions as a result of human activity. Some restriction on the beneficial uses of the water body. No impact on amenity. Some impact on wildlife and fisheries.

Status
Poor (Amber)
Definition
Major change from natural conditions as a result of human activity. Some restrictions on the beneficial uses of the water body. Some impact on amenity. Moderate impact on wildlife and fisheries.

Status
Bad (Red)
Definition
Severe change from natural conditions as a result of human activity. Significant restrictions on the beneficial uses of the water body. Major impact on amenity. Major impact on wildlife and fisheries with many species not present.

Groundwater bodies

5.3.3 The status for groundwater bodies in the Greater Cambridge area is shown in **Table 5.2,** for 2019, with no assessments having been performed for the 2022 period or after. The majority of the groundwater bodies are classed as being of ‘Poor’ quantitative and chemical status.

5.3.4 The exceptions are:

- Upper Bedford Ouse Woburn Sands, which has a ‘Good’ chemical status and
- Cam and Ely Ouse Woburn Sands, which has both ‘Good’ quantitative and chemical status.

5.3.5 The reasons for not achieving good status (RNAG) include diffuse source pollution (highways drainage and poor rural land nutrient management), point source pollution (sewage discharge), and surface water flows (groundwater abstraction).

Table 5.2: Quantitative and chemical status for groundwaters in Greater Cambridge (Colour coding also shown in Table 5.1: H Good = Green, Poor = Amber).

Water Body	Year	Quantitative status		Chemical status	
		Poor	Good	Poor	Good
Cam & Ely Ouse Chalk	2019	✓	·	✓	·
North Essex Chalk	2019	✓	·	✓	·
Upper Bedford Ouse Chalk	2019	✓	·	✓	·
Upper Bedford Ouse Woburn Sands	2019	✓	·	·	✓
Cam & Ely Ouse Woburn Sands	2019	·	✓	·	✓
Total	**2019**	**4**	**1**	**3**	**2**

Surface water bodies

5.3.6 The status for surface water bodies in the Greater Cambridge area is shown in **Table 5.3**.

5.3.7 All water bodies surveyed in 2019 have achieved a chemical status of 'Fail'. This failure is because of the inclusion of new tests and standards for priority substances, in particular, for two persistent organic pollutants: polybrominated diphenyl ether (PBDE; used as flame retardants) and perfluoro-octane sulphonic acid (PFOS; used as a textile stain repellent and fire-fighting chemical). These chemicals are ubiquitous, difficult to control at source, and highly persistent in the environment. Although these substances are now banned or restricted in the UK, they break down very slowly and can remain in the environment for decades. The chemical status failure of water bodies does not reflect any increase in the presence of these chemicals, but the use of new tests with greater sensitivity to detect them.

5.3.8 However, following the release of updated River Basin Management Plans in 2022, the assessment of chemical quality within the waterbodies has been excluded as an assessment criterion within the 2022 waterbody assessments. This has resulted in Chemical Status of all the surface water bodies being classified as 'Does not require assessment', with priority substances not being assessed.

5.3.9 There are no specific local actions or opportunities that are currently known that could be promoted through the new Local Plan to improve the chemical status of the waterbodies in Greater Cambridge.

5.3.10 The majority of the surface waterbodies are classified as having a ‘Moderate’ ecological status.

5.3.11 One surface water body is classified with ‘Poor’ ecological status. This is the Cam (Audley End to Stapleford). This is also illustrated in **Table 5.4**. The Reasons for not achieving good status include:

- Groundwater abstraction (Hydrological regime)
- Trade industry discharge / Continuous sewage discharge (Phosphate, Macrophytes and Phytobenthos combined)
- Surface water abstraction (Hydrological regime)
- Flood protection (Mitigation measures assessment)
- Land drainage (Mitigation measures assessment)

5.3.12 Three surface water bodies are classified as having “Good” ecological status:

- Shep (moving from a ‘Moderate ecological status in the 2019 Cycle to a ‘Good’ status in the 2022 Cycle)
- Hoffer Brook (moving from a ‘Moderate ecological status in the 2019 Cycle to a ‘Good’ status in the 2022 Cycle) and
- Fen Drayton Drain (which was also classified as having a ‘Good’ ecological status in the 2019 Cycle).

Table 5.3: Ecological and chemical status for surface waters in Greater Cambridge in Cycle 3 RBMP (2022) (Colour coding also shown in Table 5.1: High = Blue, Good = Green, Moderate = Yellow, Poor = Amber, Bad = Red).

Water Body	Year	Ecological status or potential					Chemical status		
		Bad	Poor	Moderate	Good	High	Fail	Good	Does not require assessment
Abbotsley & Hen Brooks	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
Bin Brook	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
Bottisham Lode - Quy Water	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
Bourn Brook	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
Cam	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
Cam (Audley End to Stapleford)	2019	▪	✓	▪	▪	▪	✓	▪	▪
	2022	▪	✓	▪	▪	▪	▪	▪	✓
Cam (Stapleford to Hauxton Junction)	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
Cherry Hinton Brook	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
Fen Drayton Drain	2019	▪	▪	▪	✓	▪	✓	▪	▪
	2022	▪	▪	▪	✓	▪	▪	▪	✓
Granta	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
Hobson's Brook	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓

Water Body	Year	Ecological status or potential					Chemical status		
		Bad	Poor	Moderate	Good	High	Fail	Good	Does not require assessment
Hoffer Brook	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	▪	✓	▪	▪	▪	✓
Mel	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
Mill River	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
Millbridge and Potton Brooks	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
Old West River	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
Rhee (DS Wendy)	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
Rhee (US Wendy)	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
Shep	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	▪	✓	▪	▪	▪	✓
Swaffham – Bulbeck Lode	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
Swavesey Drain	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
Tributary of Cam	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
Tributary of Rhee	2019	▪	▪	✓	▪	▪	✓	▪	▪
	2022	▪	▪	✓	▪	▪	▪	▪	✓
West Brook	2019	▪	▪	✓	▪	▪	✓	▪	▪

Water Body	Year	Ecological status or potential					Chemical status		
		Bad	Poor	Moderate	Good	High	Fail	Good	Does not require assessment
	2022	·	·	✓	·	·	·	·	✓
Whaddon Brook	2019	·	·	✓	·	·	✓	·	·
	2022	·	·	✓	·	·	·	·	✓
Total	**2019**	**0**	**1**	**23**	**1**	**0**	**25**	**0**	**0**
	2022	**0**	**1**	**21**	**3**	**0**	**0**	**0**	**25**

5.3.13 Only the surface waterbodies whose ecological classification is failing WFD standards (not “High” / “Good”) are listed in **Table 5.4** (namely, the surface waterbodies whose ecological classification is classed as ‘High’ or ‘Good’, are not presented in the **Table 5.4** below). As the chemical elements for all of the listed water bodies are classed as ‘Does not require assessment’, the overall classification of the water bodies is focused on the Ecological, Physio-chemical and Biological quality elements.

5.3.14 It is noted that the following waterbodies:

- Millbridge and Potton Brooks
- Rhee (US Wendy)
- Bourn Brook

have ‘Moderate’ overall waterbody classification, despite having a ‘Poor’ or ‘Bad’ (only for Rhee (US Wendy)) biological classification. That is because the Hydromorphological Designation for those three waterbodies is classed as ‘Heavily modified’, and therefore, the waterbodies are assessed against their ‘ecological potential’.

Table 5.4: Surface waterbodies 2022 WFD Classifications and ecological sub-classifications. For clarity, only those items assessed as failing WFD standards are shown (not 'High'/'Good'). (Colour coding also shown in Table 5.1: High = Blue, Good = Green, Moderate = Yellow, Poor = Amber, Bad = Red).

Waterbody		Overall Water Body	Ecological Classification Items											
			Supporting elements (Surface Water)		Biological quality elements				Hydro-morphological supporting elements	Physico-chemical quality elements				
ID	Name		Overall classification	Mitigation measures assessment	Overall classification	Fish	Invertebrates	Macrophytes and Phytobenthos		Overall classification	Ammonia (Phys-Chem)	Dissolved oxygen	Phosphate	Temperature
GB105033037570	Tributary of Cam	Moderate	Good	Good	Good	*	*	Good	Not High	Moderate	High	Poor	Moderate	High
GB105033037590	Cam (Audley End to Stapleford)	Poor	Moderate	Moderate or Less	Poor	Moderate	High	Poor	Not High	Moderate	High	Moderate	Poor	High
GB105033037600	Cam (Stapleford to Hauxton Junction)	Moderate	Moderate	Moderate or Less	Moderate	Good	High	Moderate	Not High	Moderate	High	High	Poor	Moderate
GB105033037610	Rhee (DS Wendy)	Moderate	Moderate	Moderate or Less	Moderate	Moderate	High	*	Not High	Moderate	High	Moderate	Poor	High
GB105033037620	Hobson's Brook	Moderate	Moderate	Moderate or Less	Good	*	Good	Good	Not High	Good	High	Good	High	High
GB105033037810	Granta	Moderate	*	*	Moderate	Moderate	Good	Moderate	Not High	Good	High	Good	Good	High
GB105033037820	Millbridge and Potton Brooks	Moderate	Moderate	Moderate or less	Poor	High	Poor	Good	Not High	Moderate	Good	Moderate	Moderate	High
GB105033038020	Whaddon Brook	Moderate	Good	Good	Moderate	High	Moderate	*	*	Moderate	High	Moderate	Poor	High
GB105033038030	Mill River	Moderate	Moderate	Moderate or Less	High	*	High	*	Not High	Moderate	High	High	Poor	High
GB105033038060	Mel	Moderate	Moderate	Moderate or Less	Moderate	Moderate	High	*	*	High	High	High	High	High
GB105033038100	Rhee (US Wendy)	Moderate	Moderate	Moderate or Less	Bad	Bad	High	*	*	Moderate	High	High	Poor	High
GB105033038150	Tributary of Rhee	Moderate	Moderate	Moderate or Less	High	*	High	*	Not High	Good	High	High	Good	High
GB105033042670	Cherry Hinton Brook	Moderate	Moderate	Moderate or Less	Moderate	*	Moderate	Good	Not High	Moderate	Moderate	Poor	Moderate	High
GB105033042680	Bin Brook	Moderate	Moderate	Moderate or Less	Moderate	*	Moderate	*	Not High	Moderate	High	Good	Poor	High

GB105033042690	**Bourn Brook**	Moderate	Moderate	Moderate or Less	Poor	Poor	Good	*	Not High	Moderate	High	Good	Poor	High
GB105033042700	**Bottisham Lode - Quy Water**	Moderate	Good	Good	Good	*	Good	*	*	Moderate	High	Moderate	Poor	High
GB105033042710	**Swaffham – Bulbeck Lode**	Moderate	Moderate	Moderate or Less	High	*	High	*	*	Moderate	High	High	Poor	High
GB105033042730	**West Brook**	Moderate	Good	Good	Good	*	Good	*	Not High	Moderate	High	High	Poor	High
GB105033042750	**Cam**	Moderate	Moderate	Moderate or Less	Good	*	Good	*	Not High	Moderate	High	High	Poor	Good
GB105033042770	**Swavesey Drain**	Moderate	Moderate	Moderate or Less	Moderate	Moderate	Moderate	*	Not High	Moderate	High	Good	Poor	High
GB105033043240	**Abbotsley and Hen Brooks**	Moderate	Moderate	Moderate or Less	Moderate	*	Moderate	*	Not High	Moderate	High	Poor	Poor	High
GB205033043375	**Old West River**	Moderate	Moderate	Moderate or Less	Good	*	Good	*	Not High	Moderate	High	Moderate	Moderate	High

5.4 Water Quality Management Objectives and Measures

5.4.1 Objectives and measures for managing water quality in the Greater Cambridge area are set out in the Anglian RBMP (2022)[55] and are shown in EA Catchment Data Explorer[5].

5.4.2 The environmental objectives of the WFD are:

- To prevent deterioration of the status of surface waters and groundwater.
- To achieve the objectives and standards for protected areas.
- To aim to achieve good status for all water bodies, or, for heavily modified water bodies and artificial water bodies, good ecological potential and good surface water chemical status.
- To reverse any significant and sustained upward trends in pollutant concentrations in groundwater.
- To cease discharges, emissions and losses of priority hazardous substances into surface waters.
- To progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants

5.4.3 Environmental objectives were set for each water body in the 2022 RBMP. These objectives are legally binding and all public bodies must have regard to these objectives when making decisions that could affect the quality of the water environment. In certain specific circumstances, exemptions from some of the objectives may be applied.

Water body status objectives

5.4.4 For surface waters, objectives are set for ecological and chemical status. For artificial or heavily modified water bodies, objectives are set for ecological potential and chemical status. For groundwater, objectives are set for quantitative and chemical status.

5.4.5 Water body objectives consist of 2 pieces of information: the status (for example, good) and the date by which that status is planned to be achieved (for example, by 2021).

5.4.6 The status part of an objective is based on a prediction of the future status that would be achieved if technically feasible measures are implemented and, when implemented, would produce more benefits than they cost. The objective also considers the requirement to prevent deterioration and achieving protected area objectives.

5.4.7 The date part of an objective is the year by which the future status is predicted to be achieved. The date is determined by considering whether the measures needed to achieve the planned status are currently affordable, and once implemented, the time taken for the ecology or the groundwater to recover.

5.4.8 The water body objectives are:

- ‘x’ status by 2015: 2015 status matches the predicted future status or potential. Here the predicted future status has already been achieved and no further improvement in status is expected. The main environmental objective is to prevent deterioration in status between 2015 and 2021.
- ‘x’ status by 2021: there is confidence that as a result of the programme of measures, the water body will improve from its 2015 status or potential to achieve the predicted future status by 2021. The ‘by 2015’ date has been used to clearly distinguish water bodies and elements where the reported 2015 status matches the predicted future status (and so no further improvement is expected), from water bodies and elements where an improvement from the reported 2015 status is required to achieve the predicted future status by 2021.
- ‘x’ status by 2027: the deadline for achieving the status or potential has been extended to 2027. Where the time extension is due to ecological or groundwater recovery time, there is confidence that the measures needed to achieve the improvement in status are already in place or will be in place by 2021. Where the time extension is due to practical constraints delaying implementation of the measures, there is confidence the process of implementing the measures will begin before 2021. For the remaining objectives with a 2027 date, there is currently not enough confidence that the improvement in status can be achieved by an earlier date.
- ‘x’ status by 2040 or ‘x’ status by 2050 or ‘x’ status by 2060: the deadlines for achieving the planned status or potential have only been extended beyond 2027 where either ecological recovery time or groundwater recovery time will delay the achieving of the planned status. In these cases, there is confidence that the measures needed to achieve the improvement in status are already in place or will be in place by 2021.

5.4.9 Where the status is less than good, this means that a less stringent objective has been set.

5.4.10 The objectives (that is the planned status of each waterbody that must be achieved or maintained) for the groundwater bodies and surface water bodies in Greater Cambridge, are illustrated in **Table 5.5** and **Table 5.6** , respectively.

Groundwater bodies objectives

5.4.11 Four out of five groundwater bodies assessed are not required to meet ‘Good’ standards (refer to **Table 5.5**). These four groundwater bodies (Cam and Ely Ouse Chalk, North Essex Chalk, Upper Bedford Ouse Chalk and Upper Bedford Ouse Woburn Sands) are expected to remain at ‘Poor’ classification status, due to disproportionate costs and unfavourable balance of costs and benefits. Only Cam and Ely Ouse Woburn Sands is expected to remain at its ‘Good’ status. Comparing the groundwater body objectives between the current WCS and the 2021 WCS, the four groundwater bodies (Cam and Ely Ouse Chalk, North Essex Chalk, Upper Bedford Ouse Chalk and Upper Bedford Ouse Woburn

Sands) are still expected to remain at 'Poor' classification by 2015, meaning that the predicted future status has already been achieved and no further improvement in status is expected. On the other hand, the objective for the Cam and Ely Ouse Woburn Sands has been improved from 'Poor' by 2015, to 'Good' by 2021.

Table 5.5: Overall Water body classification Objective for groundwater bodies in Greater Cambridge (Colour coding also shown in Table 5.1: Good = Green, Poor = Amber).

Groundwater Body
Cam & Ely Ouse Chalk
Year
2015
Overall Water body objective
Poor
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens; Disproportionately expensive: Unfavourable balance of costs and benefits

Groundwater Body
North Essex Chalk
Year
2015
Overall Water body objective
Poor
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens; Disproportionately expensive: Unfavourable balance of costs and benefits

Groundwater Body
Upper Bedford Ouse Chalk
Year
2015
Overall Water body objective
Poor
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens; Disproportionately expensive: Unfavourable balance of costs and benefits

Groundwater Body
Upper Bedford Ouse Woburn Sands
Year
2015
Overall Water body objective
Poor
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens; Disproportionately expensive: Unfavourable balance of costs and benefits

Groundwater Body
Cam & Ely Ouse Woburn Sands
Year
2021

Overall Water body objective
Good
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens

Surface water bodies objectives

5.4.12 As shown in **Table 5.6**, 24 surface water bodies have been assessed against their planned objectives. Out of those, 11 waterbodies are aiming to achieve a 'Good' overall status by 2027 (with Low confidence, apart from Mill River). The main reasons for alternative objectives include disproportionate costs and disproportionate burdens.

5.4.13 Additionally, 3 surface water bodies (Fen Drayton Drain, Hoffer Brook and The Shep), are aiming to retain their existing status to 'Good' (the objective is set to 'Good' by 2015 or by 2021, namely no further improvement in status is expected).

5.4.14 Ten further water bodies (Bottisham Lode-Quy Water, Cam, Cam (Stapleford to Hauxton Junction), Granta, Millbridge and Potton Brooks, Old West River, Rhee (DS Wendy), Swavesey Drain, Tributary of Cam, Whaddon Brook) have their objective set to 'Moderate' by 2015. The overall water body status for current 2022 Cycle for these water bodies is shown as 'Moderate' in **Table 5.3**, meaning that no further improvement in status in expected. The main reasons for alternative objectives include disproportionate costs, unfavourable balance of costs and benefits, technically infeasible and no known technical solution.

5.4.15 Finally, the objective of Cam (Audley End to Stapleford), whose current overall waterbody status is shown as 'Poor' in **Table 5.3**, is set to 'Moderate' by 2027. As described above, the main reasons for alternative objectives include disproportionate costs, unfavourable balance of costs and benefits, technically infeasible and no known technical solution.

Table 5.6: Overall Water body classification Objective for surface water bodies in Greater Cambridge (Colour coding also shown in Table 5.1: Good = Green, Moderate = Yellow).

Surface Water Body
Abbotsley & Hen Brooks
Year
2027-Low confidence
Overall Water body objective
Good
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens

Surface Water Body
Bin Brook
Year
2027-Low confidence
Overall Water body objective
Good
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens

Surface Water Body
Bottisham Lode - Quy Water
Year
2015
Overall Water body objective
Moderate
Reasons for alternative Objectives
Disproportionately expensive: Unfavourable balance of costs and benefits; Technically infeasible: No known technical solution is available

Surface Water Body
Bourn Brook
Year
2027-Low confidence
Overall Water body objective
Good

Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens
Surface Water Body
Cam
Year
2015
Overall Water body objective
Moderate
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens; Technically infeasible: No known technical solution is available

Surface Water Body
Cam (Audley End to Stapleford)
Year
2027
Overall Water body objective
Moderate
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens; Disproportionately expensive: Unfavourable balance of costs and benefits; Technically infeasible: No known technical solution is available

Surface Water Body
Cam (Stapleford to Hauxton Junction)
Year
2015
Overall Water body objective
Moderate
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens; Disproportionately expensive: Unfavourable balance of costs and benefits; Technically infeasible: No known technical solution is available

Surface Water Body
Cherry Hinton Brook
Year
2027-Low confidence
Overall Water body objective

Good
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens
Surface Water Body
Fen Drayton Drain
Year
2021
Overall Water body objective
Good
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens

Surface Water Body
Granta
Year
2015
Overall Water body objective
Moderate
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens; Disproportionately expensive: Unfavourable balance of costs and benefits; Technically infeasible: No known technical solution is available

Surface Water Body
Hobson’s Brook
Year
2027-Low confidence
Overall Water body objective
Good
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens

Surface Water Body
Hoffer Brook
Year
2015
Overall Water body objective
Good
Reasons for alternative Objectives
No reasons provided

Surface Water Body
Mel
Year
2027-Low confidence
Overall Water body objective
Good
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens; Technically infeasible: No known technical solution is available

Surface Water Body
Mill River
Year
2027

Overall Water body objective
Good
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens

Surface Water Body
Millbridge and Potton Brooks
Year
2015
Overall Water body objective
Moderate
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens; Disproportionately expensive: Unfavourable balance of costs and benefits; Technically infeasible: No known technical solution is available

Surface Water Body
Old West River
Year
2015
Overall Water body objective
Moderate
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens; Disproportionately expensive: Unfavourable balance of costs and benefits; Technically infeasible: No known technical solution is available

Surface Water Body
Rhee (DS Wendy)
Year
2015
Overall Water body objective
Moderate
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens; Disproportionately expensive: Unfavourable balance of costs and benefits; Technically infeasible: No known technical solution is available

Surface Water Body
Rhee (US Wendy)
Year
2027-Low confidence
Overall Water body objective
Good
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens

Surface Water Body
Shep
Year
2015
Overall Water body objective
Good
Reasons for alternative Objectives
No reasons provided

Surface Water Body
Swaffham – Bulbeck Lode
Year
2027-Low confidence
Overall Water body objective
Good
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens

Surface Water Body
Swavesey Drain
Year
2015
Overall Water body objective
Moderate
Reasons for alternative Objectives

Disproportionately expensive: Disproportionate burdens; Disproportionately expensive: Unfavourable balance of costs and benefits; Technically infeasible: No known technical solution is available

Surface Water Body
Tributary of Cam
Year
2015
Overall Water body objective
Moderate
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens

Surface Water Body
Tributary of Rhee
Year
2027-Low confidence
Overall Water body objective
Good
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens; Good status prevented by A/HMWB designated use: Action to get biological element to good would have significant adverse impact on use

Surface Water Body
West Brook
Year
2027-Low confidence
Overall Water body objective
Good
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens

Surface Water Body
Whaddon Brook

Year
2015
Overall Water body objective
Moderate
Reasons for alternative Objectives
Disproportionately expensive: Disproportionate burdens; Disproportionately expensive: Unfavourable balance of costs and benefits; Technically infeasible: No known technical solution is available

5.4.16 Measures to implement objectives include a main programme and local initiatives. The main programme includes:

5.4.17 Water company investment programmes. The Water Industry National Environment Programme[56] (WINEP)[56] is a programme of investigations and actions for environmental improvement schemes that allow water companies to meet European Directives, national targets and statutory obligations.

5.4.18 The WINEP schemes include a variety of actions ranging from:

- Actions to improve (for example increasing Flow to Full Treatment[59] (FFT), placing measures to reduce ammonia phosphorus, BOD and nitrogen at WRCs in order to meet the waterbodies WFD standards).
- Actions to prevent deterioration (for example WRC storm capacity to be increased).
- Long-term monitoring (for example installation of Event Duration Monitoring (EDM)[46] on WRC overflows).

5.4.19 A summary of the most recent WINEP programme for the Greater Cambridge area is listed below. The list includes the WRCs in the region together WINEP statutory obligations and regulatory actions for AW relating to actions and investigations for water quality. The WINEP dataset below was last updated in July 2025.

- Arrington WRC discharging to River Rhee (DS Wendy)
    - Long Term monitoring: Installation of Event Duration Monitoring[46] (EDM) on WRC overflows.

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[59] Flow to Full Treatment is a measure of how much wastewater a WRC must be able to treat at any time. All wastewater treatment works are built to be able to deal with a certain amount of wastewater, calculated depending on the area they serve and many have a requirement in their environmental permit about the FFT level they must work to. If the amount of wastewater going to the works is more than the FFT level, for example if there is a storm and heavy rain, then the environmental permit for the treatment works will normally allow the extra amount coming into the works to be diverted to storm tanks (where the works has them), until the storm passes. The contents of these storm tanks can then be returned to be treated by the works. If the storm is prolonged or sustained, then the environmental permit will allow the water company to release the extra incoming rainwater and diluted wastewater into the environment, normally after partial treatment, through a combined sewerage overflow (CSO). If a water company is diverting this rain and wastewater to storm tanks or the environment before reaching the works' FFT level, they could be breaking the conditions of their environmental permit.

- Investigation: Investigation to confirm whether existing flow monitors can be used to measure Pass Forward Flow[60] (PFF) to full treatment at WRC.

- Balsham WRC discharging to Bottisham Lode - Quy Water
    - Long Term monitoring: Installation of EDM on WRC overflows.
    - Investigation: Investigation to confirm whether existing flow monitors can be used to measure PFF to full treatment at WRC.

- Barley WRC discharging to Cam Rhee and Granta
    - Long Term monitoring: Installation of EDM on WRC overflows.
    - Investigation: Investigation to confirm whether existing flow monitors can be used to measure PFF to full treatment at WRC.

- Bassingbourn WRC discharging to Mill River
    - Action (to improve): Measures to reduce ammonia, phosphorus, BOD or nitrogen at WRCs in order to meet WFD standards in rivers, transitional or coastal waters.

- Bourn WRC discharging to Bourn Brook
    - Action (to improve): Measures to reduce ammonia, phosphorus, BOD or nitrogen at WRCs in order to meet WFD standards in rivers, transitional or coastal waters.

- Brinkley WRC: No WINEP data available

- Cambridge WRC discharging to River Cam
    - Long Term monitoring: Installation of EDM on WRC overflows.
    - Investigation: Investigation to confirm whether existing flow monitors can be used to measure PFF to full treatment at WRC.
    - Action (to improve): Flow to Full Treatment (FFT) to be increased.

- Shudy Camps (Camps) WRC discharging to River Granta
    - Action (to improve): Measures to reduce ammonia, phosphorus, BOD or nitrogen at WRCs in order to meet WFD standards in rivers, transitional or coastal waters.

- Coton WRC discharging to Bin Brook

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[60] Pass Forward Flow (PFF) is the instantaneous upstream flow that a Combined Sewer Overflow (CSO) or pumping station can accept.

- Action (to improve): Measures to reduce ammonia, phosphorus, BOD or nitrogen at WRCs in order to meet WFD standards in rivers, transitional or coastal waters.

- Duxford WRC discharging to Hoffer Brook
  - Action (to prevent deterioration): Measures related to load standstill requirements for chemicals.
- Elmdon WRC discharging to River Cam
  - Action (to improve): Measures to reduce ammonia, phosphorus, BOD or nitrogen at WRCs in order to meet WFD standards in rivers, transitional or coastal waters.
- Foxton (Cambs) WRC discharging to River Rhee (DS Wendy)
  - Investigation: Investigation to confirm whether existing flow monitors can be used to measure PFF to full treatment at WRC.
- Gamilingay WRC: No WINEP data available
- Great Chesterford WRC discharging to River Cam (Audley End to Stapleford)
  - Long Term monitoring: Installation of EDM on WRC overflows.
  - Long Term monitoring: Install Monitoring Certification Scheme (MCERTS) flow monitoring as close to the overflow as practicable to record FFT at WRC where the existing flow monitoring, cannot be readily used.
- Guilden Morden WRC discharging to River Rhee (US Wendy)
  - Long Term monitoring: Installation of EDM on WRC overflows.
  - Long Term monitoring: Install MCERTS flow monitoring as close to the overflow as practicable to record FFT at WRC where the existing flow monitoring, cannot be readily used.
  - Action (to improve): WRC storm tank capacity to be increased.
- Guilden Morden WRC discharging to River Rhee
  - Long Term monitoring: EDM of storm discharges identified.
- Haslingfield WRC discharging to Rhee (DS Wendy)
  - Long Term monitoring: Installation of EDM on WRC overflows.

  - Long Term monitoring: Install MCERTS flow monitoring as close to the overflow as practicable to record FFT at WRC where the existing flow monitoring, cannot be readily used.
  - Action (to improve): WRC storm tank capacity to be increased.
- Hatley St George WRC discharging to Millbridge and Potton Brooks
  - Long Term monitoring: Installation of EDM on WRC overflows.
  - Investigation: Investigation to confirm whether existing flow monitors can be used to measure PFF to full treatment at WRC.
- Linton WRC discharging to River Granta
  - Action (to improve): Measures to reduce ammonia, phosphorus, BOD or nitrogen at WRCs in order to meet WFD standards in rivers, transitional or coastal waters.
  - Long Term monitoring: Installation of EDM on WRC overflows.
  - Investigation: Investigation to confirm whether existing flow monitors can be used to measure PFF to full treatment at WRC.
- Litlington WRC: No WINEP data available
- Melbourn WRC discharging to River Shep
  - Long Term monitoring: Installation of EDM on WRC overflows.
  - Investigation: Investigation to confirm whether existing flow monitors can be used to measure PFF to full treatment at WRC.
  - Action (to improve): FFT to be increased.
  - Action (to improve): WRC storm tank capacity to be increased.
- Over WRC discharging to Old West River
  - Long Term monitoring: Installation of EDM on WRC overflows.
  - Long Term monitoring: Install MCERTS flow monitoring as close to the overflow as practicable to record FFT at WRC where the existing flow monitoring, cannot be readily used.
  - Action (to improve): WRC storm tank capacity to be increased.
  - Action (to prevent deterioration): Schemes to meet requirements in order to prevent deterioration in a) ammonia, b) phosphorus, c) nitrates in Transitional and Coastal waterbodies and d) chemical status.

- Papworth Everard WRC discharging to West Brook
  - Action (to improve): Measures to reduce ammonia, phosphorus, BOD or nitrogen at WRCs in order to meet WFD standards in rivers, transitional or coastal waters.
  - Long Term monitoring: Installation of EDM on WRC overflows.
  - Long Term monitoring: Install MCERTS flow monitoring as close to the overflow as practicable to record FFT at WRC where the existing flow monitoring, cannot be readily used.
- Royston WRC discharging to Whaddon Brook
  - Investigation: Effluent monitoring to assess chemical substance reduction.
  - Action (to prevent deterioration): Measures related to load standstill requirements for chemicals.
- Sawston WRC discharging to River Cam (Audley End to Stapleford)
  - Long Term monitoring: Installation of EDM on WRC overflows.
  - Long Term monitoring: Install MCERTS flow monitoring as close to the overflow as practicable to record FFT at WRC where the existing flow monitoring, cannot be readily used.
  - Action (to improve): FFT to be increased.
- Tadlow WRC: No WINEP data available
- Teversham WRC discharging to Bottisham Lode – Quy Water
  - Long Term monitoring: Installation of EDM on WRC overflows.
  - Investigation: Investigation to confirm whether existing flow monitors can be used to measure PFF to full treatment at WRC.
  - Action (to improve): WRC storm tank capacity to be increased.
- Thurlow WRC discharging to River Stour
  - Action (to improve): Measures to reduce ammonia, phosphorus, BOD or nitrogen at WRCs in order to meet WFD standards in rivers, transitional or coastal waters.
- Uttons Drove (Bar Hill) WRC discharging to Swavesey Drain)
  - Long Term monitoring: Installation of EDM on WRC overflows.

  - Long Term monitoring: Install MCERTS flow monitoring as close to the overflow as practicable to record FFT at WRC where the existing flow monitoring, cannot be readily used.
  - Action (to prevent deterioration): Schemes to meet requirements in order to prevent deterioration in a) ammonia, b) phosphorus, c) nitrates in Transitional and Coastal waterbodies and d) chemical.
  - Action (to improve): WRC storm tank capacity to be increased.
- Waresley WRC discharging to Abbotsley and Hen Brooks
  - Action(to improve): Measures to reduce ammonia, phosphorus, BOD or nitrogen at WRCs in order to meet WFD standards in rivers, transitional or coastal waters.
  - Action (to prevent deterioration): Schemes to meet requirements in order to prevent deterioration in a) ammonia, b) phosphorus, c) nitrates in Transitional and Coastal waterbodies and d) chemical status.
  - Long Term Monitoring: Installation of EDM on WRC overflows.
  - Investigation: Investigation to confirm whether existing flow monitors can be used to measure PFF to full treatment at WRC.
- Waterbeach WRC discharging to River Cam
  - Action (to improve): Schemes to improve discharges that, through population growth, have crossed the population thresholds in the Urban Waste Water Treatment (UWWTR) and therefore must achieve more stringent UWWTR requirements.
- West Wickham WRC: No WINEP data available

5.4.20 Environmental Stewardship[61]: Environmental Stewardship is a land management scheme that provides funding to farmers and other land managers in England to deliver effective environmental management on their land. **Figure 5.7** indicates that large areas of the Greater Cambridge region are already covered by these agreements. The Environmental Stewardship Scheme Agreements were last updated in June 2025.

5.4.21 National Highways Environment fund: This fund invests in environmental improvements including reducing pollution from major highways run-off, for example by retrofitting SuDS. The National Highways Environmental

[61] Environmental Stewardship Scheme Agreements (England) | Natural England Open Data Geoportal

Sustainability Strategy[62] does not provide any recent or future schemes in the Greater Cambridge area.

5.4.22 Cam and Ely Ouse Catchment Partnership[1818]: Cam and Ely Ouse Catchment Partnership (CamEO) is a partnership initiative hosted by the Rivers Trust and supported by the EA. The CamEO Partnership is one of the UK's Catchment Based Approach[17] (CaBA) Partnerships. The CaBA is part of the UK's solution to improving the Chemical and Ecological Status of the UK waters, under the WFD regulations.

5.4.23 The CamEO Partnership have identified four key themes to focus partnership delivery through the current Catchment Partnership Strategy [63]for the period 2022 to 2027. Each sub-catchment partnership has developed individual action plans which are embedded and support the direct delivery of these themes within the CamEO Catchment Partnership Strategy. The four key themes are:

- Water Flow: Improve awareness and engagement of the use of water resources and improving understanding of the water resources picture within each sub-catchment.
- Water Quality: Increase monitoring of water quality across sub-catchments, combining institutional data with citizen science, working with all stakeholders to reduce pollution. Develop monitoring and mapping frameworks to assess whole catchments.
- Biodiversity and Landscape: Restore rivers so far as possible to their original courses, reconnect them to their floodplains, open up culverted and piped sections, remove unnecessary weirs and other structures, and adopt Nature-based Solutions in managing flood risks in place of engineered and chemical solutions.
- Delivering as Partnerships: Establishing shared and open data for partners to review collaboratively and feed into combined platforms. Identifying opportunities to gain funding and deliver projects through joint partnerships to achieve greater catchment-scale impact and improvements.

5.4.24 Upper and Bedford Ouse Catchment Partnership[19]: The Upper and Bedford Ouse Catchment Partnership is hosted by Bedfordshire Rural Communities Charity and covers part of the Greater Cambridge area. The Upper and Bedford Ouse Catchment Plan will establish a strong framework for collaborative working to deliver integrated enhancements within the catchment. The Plan will develop as the Partnership grows and will lead to providing multiple benefits for partner organisations, local communities and the environment. Benefits may include reducing flood risk whilst also cleaning up pollution, protecting drinking water resources, improving biodiversity and improving health and recreation for local communities.

[62] nh-environmental-sustainability-strategy_final_020523.pdf

[63] PowerPoint Presentation

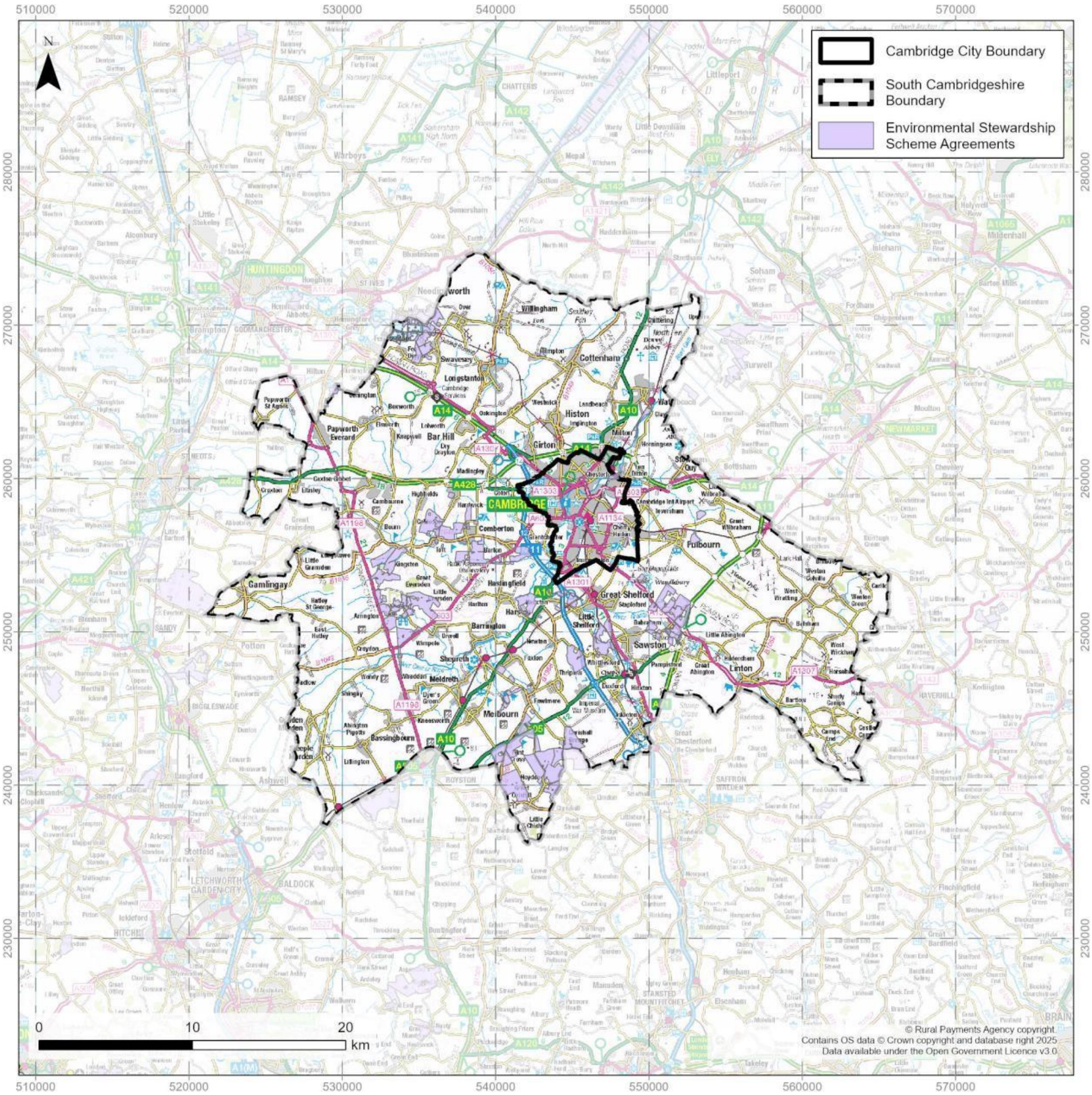

Figure 5.7: Environmental Stewardship Scheme Agreements

5.5 Impacts of Development on Water Quality

5.5.1 The information reviewed here indicates that the majority of water bodies in Greater Cambridge are currently failing to meet "Good" water quality standards based on the Cycle 2 2022 datasets. As discussed in **Section 5.3**, only three surface water bodies (Shep, Hoffer Brook and Fen Drayton Drain) are classified having an Overall 'Good' water body status.

5.5.2 To meet legislative requirements, it will be necessary for the Local Plan to demonstrate that it will not contribute to any deterioration in WFD status, and where possible, that it will support measures to implement objectives for each water body.

5.5.3 Development can detrimentally impact water quality by:

- Increasing the volume of wastewater requiring treatment and discharge to surface waters. This can increase the levels of phosphorus, ammonia and organic matter in receiving watercourses.

- Increasing pollutants in surface water runoff from development surfaces, including roads and pavements. Rainwater draining from development roads and pavements can carry many pollutants, including metals, vehicle emissions, salt, grid, oil, microplastics and household chemicals.

- Decreasing typical flows in watercourses due to increased abstraction for water supply, leading to increased concentration of pollutants.

5.5.4 These impacts and possible mitigation options are considered further below. Well-designed developments can provide opportunities for betterment, by removing land from intensive agricultural usage and providing green-blue infrastructure to control urban sources of pollution.

5.6 Increases in volume of wastewater due to additional growth and development

5.6.1 Wastewater can contain nutrients such as phosphorus and nitrates, harmful chemicals including ammonia and metals, and other harmful substances including viruses and bacteria. Increased volumes of wastewater, without mitigation, can lead to increases in both the concentration and total loading of pollutants entering watercourses from treated effluent, and an increased frequency and/or duration of sewer storm overflows.

5.6.2 The concentration and total load of pollutants in treated effluent is managed through permits. Where there is existing headroom between current discharges and the permitted level, development could lead to a detrimental impact on water quality as there would be no requirement to mitigate the increase in pollutants if it remained below the permitted level. The Environment Agency is responsible for setting and reviewing permitted levels. A load standstill approach can be applied to approximate permit revisions which prevent increases in pollutants due to increased wastewater (see **Section 4.9** on the load standstill approach), although water quality modelling may be needed to set permits accurately.

5.6.3 Although theoretically attractive, the practicalities of offsetting nutrient neutrality through land use change become problematic at the larger strategic scale, due to the costs of purchasing land to guarantee particular land use management in perpetuity. Wetlands and WRC upgrades are more plausible to plan and deliver, but may need to be delivered within the AMP funding cycle process. The timings of upgrades will be important to avoid any deterioration in water quality as a result of development.

5.6.4 When wastewater volumes increase there is less capacity to carry stormwater in combined sewers which may result in increased frequency and volume of Storm Overflow spills. **Section 4.4** summarised the 2023 and 2024 Storm Overflow spill records that are published by the EA each year within Greater Cambridge. The majority of pumping stations have less than 10 spills per year.

However, there are a few WRCs in which more than 100 spills occurred during 2024, including Foxton WRC, Haslingfield WRC, Melbourn WRC, Over WRC and Teversham WRC. It should be noted though that the AMP8 WINEP obligations include investment at Haslingfield WRC to address a high spilling Storm Overflow, so that it does not discharge more than 10 rainfall events per year.

5.6.5 The effect of Storm Overflow spills can be heighted if impermeable areas increase (for example new developments on greenfield sites, paving of gardens) and/or climate change increases the frequency of heavy rainfall. The combined effect of these influences is hard to predict without use of sewer network hydraulic models. To mitigate these effects and further reduce the occurrence of Storm Overflow operation, AW can make local improvements to sewer network capacity and manage stormwater runoff both by designing new or by retrofitting Sustainable Drainage Systems (SuDS). As outlined in **Section 4.4**, the SODRP (2023) provided the delivery programme to secure the necessary improvements on storm overflows spills.

5.7 Increases in Surface Water Runoff Pollutants

5.7.1 Development can lead to a decrease in the quality of surface water run-off, due to the introduction of pollutants from roads, pavements and other surfaces, and due to misuse of the surface water drainage network (for example misconnections and illegal disposal of chemicals). Microplastics are a pollutant of increasing concern which travel to the oceans via surface runoff and rivers.

5.7.2 In new developments, sustainable drainage systems (SuDS) should be used to provide treatment to water quality, as well as reducing flood risk downstream. Where SuDS include blue-green infrastructure (for example ponds, swales green roofs, buffer strips) they also deliver valuable wider benefits in terms of improved biodiversity and protection from summer temperature extremes. Further details on SuDS can be found in the accompanying Greater Cambridge Level 1 Strategic Flood Risk Assessment, and the Cambridgeshire Floods and Water Supplementary Planning Document[64].

5.7.3 In existing developments, reducing pollution can be complex, with the cost of measures often high and ownership of the problem unclear. Regeneration schemes should be used to incorporate blue infrastructure and SuDS that rectify any misconnections, reduce burdens on combined sewer systems, and provide water quality improvements for surface water drainage. Local Plan Policies and the LLFA should support these schemes.

5.8 Development improving water quality

5.8.1 Development can improve water quality by being an investment driver for the latest wastewater treatment improvements or entire new treatment facilities. The proposed new Cambridge WRC is a great example where it is expected that ultra-low phosphorous permits in particular will result in downstream water quality improvements and safeguard capacity issues for years to come. The

[64] Cambridgeshire Flood and Water SPD

new facility will contribute towards AW's goal to reach net zero emissions by 2030 by reducing energy consumption and contributing towards the circular economy.

5.8.2 The Greater Cambridge region is considered to be a nitrate vulnerable zone (**Figure 5.5**) but is not subject to Nutrient Neutrality restrictions. However, the rivers in the region drain to the Great Ouse and thence to the Wash at Kings Lynn. Sites of special conservation, sites of special protection and Ramsar sites exist within the Wash and at the Ouse Marshes and thus developments in Cambridge are subject to Habitats Regulations Assessments (HRA) and could in the future be considered as requiring nutrient neutrality. The Appropriate Assessment for the HRA for the new Cambridge WRC concluded that no impacts on protected sites would occur as long as appropriate mitigation measures were in place during construction, and discharges were appropriately managed during operation.

5.9 Bathing Water Designation

5.9.1 The Bathing Water Regulations define a bathing water as a surface water where "…the Secretary of State expects a large number of people to bathe, having regard in particular to past trends, and any infrastructure or facilities provided, or other measures taken, to promote bathing at these waters". The objective of designating a beach or inland water as a bathing water is to protect bather's health by monitoring for intestinal enterococci and E.coli in the water. The Environment Agency takes water quality samples at designated sites during the bathing season, which in England runs from 15 May to 30 September.

5.9.2 The monitoring data are used to make annual water quality classifications of Excellent, Good, Sufficient or Poor. If the water quality does not meet the standards set out by the Regulations, the Environment Agency will investigate the sources of pollution to identify remedial measures that can be put in place. Bathing waters may be affected by pollution from water company assets such as Combined Storm Overflows, and/or by diffuse pollution caused by run-off from agricultural and urban areas.

5.9.3 A bathing water will be de-designated and the Environment Agency will issue permanent advice against bathing if it is "infeasible or disproportionately expensive for the bathing water to achieve a classification of "sufficient"", or if the bathing water has been classified as "poor" for five consecutive years.

5.9.4 The River Cam at Sheep's Green received Bathing Water Designation status in 2024. The EA's most recent Bathing Water Quality[65] data for Sheep's Green states that bathing is not advised, and the 2024 status was defined as 'Poor'. According to the EA Bathing Water Quality dataset for Sheep's Green, Haslingfield WRC is approximately 5km upstream of Sheep's Green. There are several other WRCs, Pumping Stations and Combined Storm Overflows (CSOs) in the upstream catchments. As this is a newly designated site, disinfection (Such as Ultra-Violet light) is not present at the Haslingfield WRC. Compliance

[65] Bathing water API reference

visits to AW assets will continue in the upstream catchment. It is noted that the EA will work with AW on investigations and improvements at their assets.

5.10 Water Quality Summary

Headline findings of baseline conditions

<u>Groundwater bodies</u>

5.10.1 The status for groundwater bodies in the Greater Cambridge area is based on the EA 2022 assessment. The majority of the groundwater bodies are classed as being of ‘Poor’ quantitative and chemical status. The exceptions are: Upper Bedford Ouse Woburn Sands, which has a ‘Good’ chemical status and the Cam and Ely Ouse Woburn Sands, which has both ‘Good’ quantitative and chemical status. The reasons for not achieving good status include diffuse source pollution (highways drainage and poor rural land nutrient management), point source pollution (sewage discharge), and flows (groundwater abstraction).

5.10.2 Four out of five groundwater bodies assessed are not required to meet ‘Good’ standards. These four groundwater bodies (Cam and Ely Ouse Chalk, North Essex Chalk, Upper Bedford Ouse Chalk and Upper Bedford Ouse Woburn Sands) are expected to remain at ‘Poor’ classification status, due to disproportionate costs and unfavourable balance of costs and benefits. Only Cam and Ely Ouse Woburn Sands is expected to remain at its ‘Good’ status.

<u>Surface water bodies</u>

5.10.3 All surface water bodies surveyed in 2019 have achieved a chemical status of ‘Fail’, due to inclusion of new tests and standards for priority substances. However, the assessment of chemical quality within the waterbodies has been excluded in the updated River Basin Management Plans in 2022. This has resulted in Chemical Status of all the surface water bodies being classified as ‘Does not require assessment’, with priority substances not being assessed.

5.10.4 The majority of the surface waterbodies are classified as having a ‘Moderate’ ecological status.

5.10.5 However, one surface water body, Cam (Audley End to Stapleford), is classified with ‘Poor’ ecological status, due to poor biological quality elements (Macrophytes and Phytobenthos). The Reasons for Not Achieving Good status (RNAGs) include Groundwater abstraction (Hydrological regime), Trade industry discharge / Continuous sewage discharge (Phosphate, Macrophytes and Phytobenthos combined), Surface water abstraction (Hydrological regime), Flood protection (Mitigation measures assessment) and Land drainage (Mitigation measures assessment).

5.10.6 Three surface water bodies are classified as having “Good” ecological status. These are:

- Shep (moving from a ‘Moderate ecological status in the 2019 Cycle to a ‘Good’ status in the 2022 Cycle)

- Hoffer Brook (moving from a ‘Moderate ecological status in the 2019 Cycle to a ‘Good’ status in the 2022 Cycle) and

- Fen Drayton Drain (which was also classified as having a ‘Good’ ecological status in the 2019 Cycle).

5.10.7 As described in **Section 5.4**, 24 surface water bodies have been assessed against their planned objectives. Out of those, 11 waterbodies are aiming to achieve a ‘Good’ overall status by 2027 (with Low confidence, apart from Mill River). The main reasons for alternative objectives include disproportionate costs and disproportionate burdens. Additionally, 3 surface water bodies (Fen Drayton Drain, Hoffer Brook and The Shep), are aiming to retain their existing status to ‘Good’ (the objective is set to ‘Good’ by 2015 or by 2021, so no further improvement in status is expected). Ten further water bodies (Bottisham Lode-Quy Water, Cam, Cam (Stapleford to Hauxton Junction), Granta, Millbridge and Potton Brooks, Old West River, Rhee (DS Wendy), Swavesey Drain, Tributary of Cam, Whaddon Brook) have their objective set to ‘Moderate’ by 2015. The overall water body status for current 2022 Cycle for these water bodies is classified as ‘Moderate’, meaning that no further improvement in status in expected. The main reasons for alternative objectives include disproportionate costs, unfavourable balance of costs and benefits, technically infeasible and no known technical solution. Finally, the objective of Cam (Audley End to Stapleford), whose current overall waterbody status is shown as ‘Poor’, is set to ‘Moderate’ by 2027. As described above, the main reasons for alternative objectives include disproportionate costs, unfavourable balance of costs and benefits, technically infeasible and no known technical solution.

Opportunities for development

5.10.8 WRC upgrades could allow improvements to the quality of water bodies that are currently not meeting “good” standards due to point source pollution from sewage treatment. However, it is noted that Total Phosphorus limits have the potential to be exceeded by current discharge quality.

5.10.9 Well-designed green / blue infrastructure including SuDS will contribute to improved water quality and habitat both within sites and downstream, as well as providing wider benefits for people, wildlife, landscape, soils including the remnant peat resource, and mitigating the potential impacts of climate change. The installation of SuDS is included with AW’s DWMP as a method of reducing Storm Overflow spills and improving works compliance.

5.10.10 Well-designed developments can also provide an opportunity for betterment to diffuse pollution, by removing land from intensive agricultural usage, if urban sources of pollution such as highways runoff are controlled and mitigated.

5.10.11 Other environmental enhancements linked with development, such as reduced agricultural runoff and tree planting for carbon offsetting, could contribute to improved water quality, by reducing diffuse sources of pollution into the receiving water course or run-off into drains.

Constraints and Uncertainties

5.10.12 Although point source pollution managed through permits should not increase, there is a risk of increase of diffuse and point source pollution from other sources increasing due to development, for example highways runoff. Positive countermeasures will be necessary to offset impacts.

5.10.13 Upgrades to WRC and other mitigation measures (such as additional land use change) will be necessary to maintain an overall load standstill / nutrient neutrality. The timing of upgrades will be important to avoid any deterioration in water quality as a result of development.

5.10.14 Improvements to Storm Overflows will be necessary to offset more frequent operation due to growth. The timing of upgrades will be important to avoid any deterioration in water quality as a result of development.

5.10.15 Source protection zones will influence requirements for site drainage infrastructure, and development should be undertaken with due regard to such constraints in these areas.

5.10.16 Depending on specific site allocations, more detailed investigations of the impact of development on protected sites (for example Sites of Special Scientific Interest, Special Areas of Conservation) may be necessary.

6 Flood Risk overview

6.1 Overview

6.1.1 The purpose of this chapter is to summarise information on flood risk opportunities, constraints and uncertainties, that have been explored in more detail in the separate Level 1 and Level 2 Strategic Flood Risk Assessments (SFRAs).

6.2 Opportunities, Constraints and Uncertainties Summary

Headline findings of baseline conditions

6.2.1 Although fluvial flood risk from Main Rivers is reasonably well understood, surface water flood risk and Ordinary Watercourse fluvial flood risk is less well understood and affects many existing properties and settlements. Other potential sources of flood risk include groundwater, sewer and reservoir flooding.

6.2.2 The Level 1 and Level 2 SFRAs should be used when applying the Sequential and Exception Tests to direct development to areas of lowest flood risk where possible. The Level 1 SFRA provides information and mapping on all types of flood risk including the impacts of climate change in Greater Cambridge. The Level 2 SFRA provides further detail on flood risk on sites identified for allocation for development including recommendations on mitigation measures and the content of site-specific Flood Risk Assessments to accompany planning applications.

6.2.3 To date, studies have not identified any economically justified strategic schemes that will reduce flood risk at the most at-risk hotspots. Property level resilience is likely to be the most cost-effective solution, in line with the Government's national strategy to promote greater resilience towards flooding[66].

6.2.4 There may be larger strategic flood storage schemes in the catchment in the future, following the Environment Agency's River Great Ouse catchment storage and conveyance study currently being undertaken. Locations and volumes are currently unknown.

Opportunities for development

6.2.5 Potential for flood management and SuDS schemes to deliver multi-functional benefits including biodiversity enhancements and net gain, green infrastructure, landscape enhancements, and climate change adaption.

6.2.6 Opportunities for landscape-scale enhancements such as distributed natural flood management techniques to benefit and enhance designated wildlife sites. Potential for channel improvements and additional flood storage to be delivered

[66] National Flood and Coastal Erosion Risk Management Strategy for England - GOV.UK

within riparian corridors in development sites, focussing on natural flood management techniques and reconnecting watercourses to floodplains.

6.2.7 Potential for daylighting of existing culverted watercourses.

6.2.8 Potential for development on brownfield sites to reduce runoff to greenfield rates or lower, reducing existing surface water and sewer flood risk in local area.

6.2.9 Potential for flood resilient buildings redevelopment in existing areas of flood risk.

6.2.10 Potential for site-specific hydraulic modelling to contribute to the improved understanding of local flood risk and impacts of climate change beyond site boundaries.

6.2.11 Potential for retrofitting of SuDS to existing developments, including sustainable retrofitting of wastewater utilities to reduce the risk of combined sewer flooding.

6.2.12 Potential for local resource options to store winter flows and make these available for irrigation or water supply purposes.

Constraints and Uncertainties

6.2.13 Known surface water and fluvial flood zones are constraints to development, depending on specific site location. Known flood extents are mapped in the accompanying Level 1 SFRA.

6.2.14 Pumped catchment capacities may present a constraint to runoff rates and required storage volumes, requiring additional long-term storage and mitigation measures.

6.2.15 Risk of fluvial flooding following embankment breach may need updated modelling, depending on specific site location (River Great Ouse and lower parts of River Cam).

6.2.16 Further investigations of groundwater, sewer and reservoir breach flood risk may be necessary depending on specific site location; this is covered further in the Level 2 SFRA.

6.2.17 The Level 2 SFRA undertook site-specific flood risk analysis for several sites that have been screened for further investigation and provided recommendations for potential flood risk mitigation measures.

7 Local Plan recommendations

7.1 Conclusions

7.1.1 This Detailed Water Cycle Study (WCS) provides evidence on existing infrastructure and environmental conditions for water aspects relevant to the new Local Plan: planned development trajectories, wastewater, water quality and flood risk. Opportunities, constraints and uncertainties for each of these aspects have been identified.

7.1.2 Due to the work being undertaken under the Government's Cambridge Water Scarcity Group on planned growth trajectories and water supply availability, the water supply and water resources elements of this Detailed WCS are covered in a separate study, Cambridge Area Water Supply Evidence (2025).

7.1.3 This report is based on information received to date from stakeholders including Anglian Water and the Environment Agency. Therefore, it is recommended that this study is reviewed and updated periodically, with input from the stakeholder group.

7.1.4 It should also be reiterated that the Local Plan is one of the influencing mechanisms regarding the water environment and that an integrated approach is required from all the key stakeholders in order to have a positive effect on the potential impacts of growth on the water environment.

7.1.5 For wastewater treatment, water quality and flood risk, there are constraints to development due to existing and future wastewater treatment capacity, existing diffuse and point source pollution and areas of high flood risk. Proposals within AW's DWMP, WINEP and PR24 Business Plan will result in capacity constraints being addressed at Uttons Drove (Bar Hill) and Melbourn, but the loss of funding for the new Cambridge WRC has placed constraints on developments in Cambridge and Waterbeach and AW are considering future options.

7.1.6 Anglian Water is committed to enabling sustainable growth and is collaborating with external stakeholders to find solutions to capacity challenges. AW is working to secure policy and regulatory change that allows water companies to better support growth, for example by allowing to invest strategically to create new capacity ahead of growth materialising, and by changing charging rules to allow for developer contributions to new infrastructure.

7.1.7 Anglian Water is also working closely with Defra's Ministerial Water Delivery Taskforce, regulators and other stakeholders such as the Cambridge Water Scarcity Group to resolve ongoing challenges around growth in the region. This includes ensuring that Cambridge WRC has sufficient capacity to enable current and future growth (including growth identified in this emerging Greater Cambridge Local Plan and the wider government growth ambitions for Cambridge.

7.1.8 Current and proposed effluent quality permits are breached at a number of works, prior to and after proposed development, and particularly when climate change is considered. To maintain or improve the quality of surface water bodies receiving discharges, further works to separate surface water and foul water, increase SuDS, reuse effluent and increase treatment capacity is required.

7.1.9 At minimum, development will need to mitigate any further detrimental impacts on wastewater treatment, water quality and flood risk, to have a neutral impact. There are also opportunities for major development to offer betterment to existing conditions, for example by reducing flood risk downstream, reducing point and diffuse pollution, and supporting larger integrated water management schemes including more natural wastewater treatment options.