REPORT

Fenland Outline Water Cycle Study

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Acronyms

Acronym	Acronym description
AEP	Annual Exceedance Probability
AMP	Asset Management Plan
AMR	Annual Monitoring Report
BAP	(UK) Biodiversity Action Plan
BGS	British Geographical Society
CAMS	Catchment Abstraction Management Strategy
CDA	Critical Drainage Area
CFMP	Catchment Flood Management Plan
CROW	Countryside and Rights of Way Act
CSO	Combined Sewer Overflow
CWS	County Wildlife Sites
DEFRA	Department for Environment, Food and Rural Affairs
DG5	Director General Performance Measure 5
DPD	Development Plan Documents
DWF	Dry Weather Flow
DYAA	Dry Year Annual Average
DYCP	Dry Year Critical Period
EIA	Environmental Impact Assessment
FCERM	Flood and Coastal Erosion Risk Management
FMS	(Peterborough) Flood Risk Management Strategy
FDC	Fenland District Council
FRA	Flood Risk Assessment
FRMP	Flood Risk Management Plan
FRR	Flood Risk Regulations (2009)
FWMA	Flood and Water Management Act (2010)
HOF	Hands-off flow
HRA	Habitat Regulations Assessment
IDB	Internal Drainage Board
l/p/d	Litres per person per day
l/h/d	Litres per household per day

Acronym	Acronym description
LFRMS	Local Flood Risk Management Strategy
LLFA	Lead Local Flood Authority
LPA	Local Planning Authority
NNR / LNR	National Nature Reserve / Local Nature Reserve
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
NVZ	Nitrate Vulnerable Zone
OAN	Objectively Assessed Need
PCC	Per Capita Consumption
PE	Population Equivalent
PFRA	Preliminary Flood Risk Assessment
RBMP	River Basin Management Plan
RMA	Risk Management Authority
SAC	Special Area of Conservation
SFRA	Strategic Flood Risk Assessment
SHMA	Strategic Housing Market Assessment
SPA	Special Protection Area
SPD	Supplementary Planning Document
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
SWMP	Surface Water Management Plan
uFMfSW	Updated Flood Map for Surface Water
UKCIP	UK Climate Impacts Programme
WCS	Water Cycle Study
WFD	Water Framework Directive
WRC	Water Recycling Centre
WRMP	Water Resources Management Plan
WRLTMP	Water Recycling Long Term Management Plan
WRZ	Water Resource Zone

Executive Summary

Introduction

Fenland's growing population requires local, safe, and healthy housing and employment. Fenland District Council is actively engaged with this growth, fully responding and planning to ensure that the development to support this growth is undertaken sustainably and will allow for the delivery of sustainable communities. To facilitate this population growth, the Council is working on a new Fenland Local Plan, which will set out how the district will grow and change over the next 20 years, from 2020 to 2040.

Sustainable development in Fenland needs to take into account the risk of flooding and ensure that the water supply and sewerage system have sufficient capacity. Climate change also presents further challenges to the water infrastructure network, including due to increased intensive rainfall events (with an associated increase in flood risk) and a higher frequency of drought events. The National Planning Policy Framework outlines that Local Plans should be supported by a Strategic Flood Risk Assessment (SFRA) and Local Planning Authorities should use the findings to inform strategic land use planning. A Water Cycle Study (WCS) is also recommended to provide evidence for the Local Plan on the constraints and requirements from potential growth on the local water infrastructure, and that the proposed growth targets can be met without adversely affecting the water environment

This Water Cycle Study

This report presents the draft outcomes of the Outline Water Cycle Study (WCS) for Fenland. An associated Level 1 Strategic Flood Risk Assessment (SFRA) has also been developed, as a separate report. These reports have been prepared to inform the site selection process in the Local Plan and aim to identify existing connections between planning and water related policies and needs in an integrated way. Both studies have used available information from Fenland District Council and its partners, including the Environment Agency, Cambridgeshire County Council (as the Lead Local Flood Authority), Anglian Water and the local Internal Drainage Boards (IDBs). Where the Council is unable to allocate its development based on this level of study, then further studies in the form of a Detailed WCS and/or Level 2 SFRA may be required.

The water cycle is presented in the figure below, which shows how natural and man-made processes and systems interact to collect, store and/or transport water in the environment.

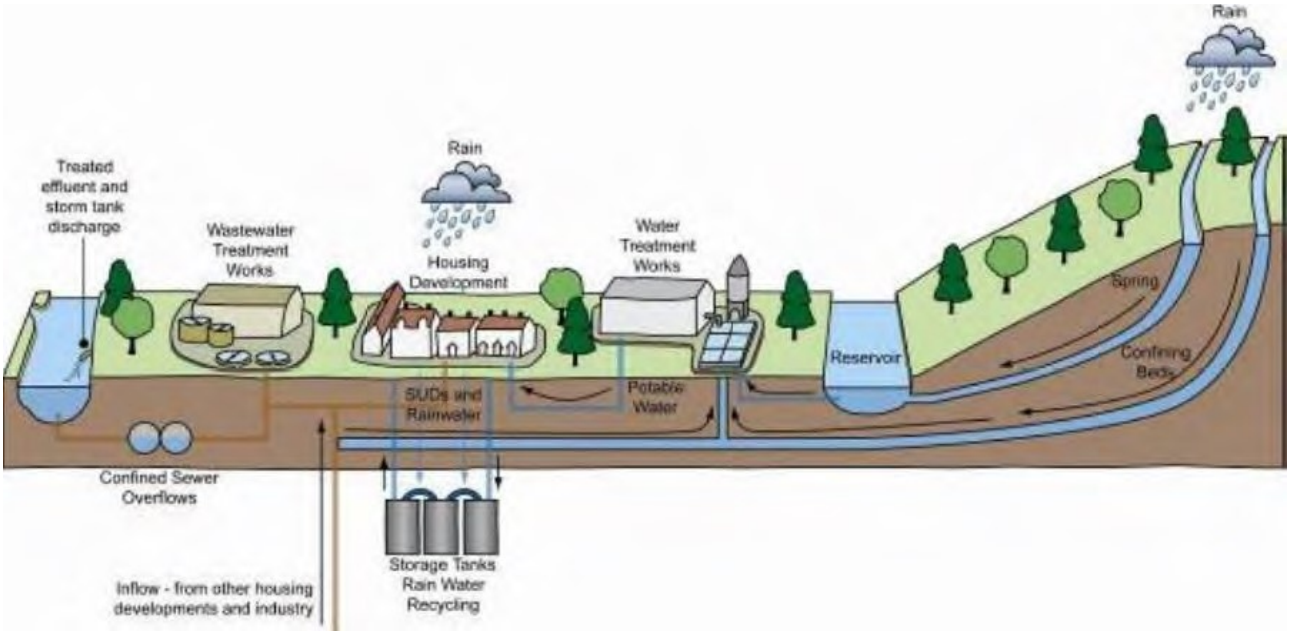

Figure: The Water Cycle (Source: Environment Agency, Ref. 54)

Development in Fenland

Based on the September 2021 assessment of Local Housing Need, approximately 9,823 dwellings are required to be built in Fenland between 2020 and 2040, an average of 517 new dwellings per year. This is calculated based on the Planning Practice Guidance's Housing Need Assessment (National Planning Policy Framework, Ref. 75), which sets out the government's standard methodology for assessing Local Housing Need (LHN). In addition to dwellings, the Council must allocate sites for other forms of development. The Employment Needs Assessment identifies a need for between 18,000 and 23,000 jobs requiring an allocation of 215 to 270 hectares of land.

The Council issued an initial call for potential sites in late 2019, as part of the 'Issues and Options' consultation. A second call was issued between July and September 2020. The Council's preliminary review of these sites and other sites known to be available for development identified a range of 'reasonable alternatives' for development, referred to as Growth Options. The Growth Options identified principally include sites for housing and employment development, although some proposals include a range or mix of potential uses.

This Outline WCS has assessed all sites included in the Growth Options described in the table below, covering 202 sites in total. The draft Local Plan will allocate sites based on the proposed Growth Options, considering the outcomes of relevant studies and Sequential Tests, such as this SFRA and WCS.

Option	Description
Growth Option 1	**Baseline** - This option includes only those sites with existing planning permission. This option does not deliver sufficient growth to meet Fenland's housing needs and as such additional land needs to be allocated for development. Alternative options for this additional allocation are considered in Growth Options 2, 2A, 3 and 4.
Growth Option 2	**Market town-led growth:** This option concentrates growth principally in the towns of Wisbech, March, Whittlesey and Chatteris, providing only limited additional growth in villages.
Growth Option 2A	**Additional growth option:** This option was developed following an initial review of the suitability of the sites included in Growth Options 2, 3 and 4.
Growth Option 3	**More growth in villages:** This option allocates more sites in villages and excludes those sites of lesser suitability in market towns.
Growth Option 4	**Strategic growth in certain villages:** As Option 3, but also proposes strategic growth at Wimblington and at Coates and Eastrea.
Employment Option 1	Baseline option including sites suitable for employment development which have existing planning permission.
Employment Option 2	Includes additional sites suitable for employment development.
Employment Option 2A	Refinement of Employment Option 2 based on updated information regarding the employment land requirement, and including existing industrial estates, business parks, employment clusters, etc. (allocated to regularise these uses and safeguard these locations for future employment development).

Water resources and supply

Fenland District is located within the South Fenland Water Resource Zone, within an area classified as being under considerable water availability stress. Anglian Water is responsible for supplying the area with water, which is abstracted from a combination of groundwater in the Norfolk Chalk aquifers and the River Nar.

Based on Anglian Water's Water Resources Management Plan (WRMP, 2019), the existing water resources and associated supply infrastructure in the South Fenland WRZ will not be able to accommodate the forecast supply demand for any of the potential Growth Options without demand management and improved transfers between adjacent Resource Zones.

Anglian Water's WRMP sets out a strategy for water resources and supply which redresses the water supply deficit and allows sufficient additional capacity (referred to as 'headroom') for uncertainties in development type and capacity. However, considering the significant water stress to the area, lowering consumption levels

is a priority to offset resource development. Anglian Water aims to use a combined strategy of smart metering, water efficiency and leakage reduction to reduce demand. A scheme is also proposed to improve the clean water network transfer capability between Ruthamford North and South Fenland, to improve supply security and to transfer water to Resource Zones to the east. The WRMP also identifies the potential for a new reservoir in the adjacent North Fenland Water Resource Zone which could have a positive impact on water supply in the district in the longer term.

In addition to Anglian Water's WRMP, the importance of integrated water resources management in Eastern England is recognised. As such, Water Resources East (WRE) Are in the process of developing a regional Water Resources Management Plan, which is due to be published in 2023. The WRE Regional WRMP will focus on demand management, large infrastructure options with regional or national significance, smaller infrastructure projects which require the local knowledge of WRE members, and supporting water innovations.

Although an appropriate strategy is in place to improve the security of water resources and supply to Fenland District, due to the current constraints on water availability the summary table included in Section 6 classifies all sites as Amber (Medium Risk). **Wastewater collection, treatment and water quality**
Anglian Water provides wastewater services to Fenland District, which is served by nine Water Recycling Centres (WRC). As the sewerage undertaker under Section 94 of the Water Industry Act 1991, Anglian Water has a duty to provide sewerage and treat wastewater arising from new development.

The current growth risk assessments for the WRCs serving Fenland District indicates that further capacity is likely to be required within the current Asset Management Plan period (2020-2025). However, no additional investment in the WRCs is likely other than that currently planned for 2020-2025. Anglian Water has confirmed that when growth locations, numbers and phasing are confirmed then this would be factored into future WRC investment plans, which would be confirmed by Ofwat as the regulator of Anglian Water.

Improvements to the foul sewer network are generally funded or part funded by developer contributions via the relevant sections of the Water Industry Act 1991. The cost and extent of the required network improvements are investigated and determined on a case-by-case basis when Anglian Water is approached by a developer. Early engagement by developers with Anglian Water is therefore essential to ensure that sewerage capacity can be provided without delaying the development.

At a more strategic level, the required infrastructure upgrades will be assessed once growth locations and expected build rates per site are established and adopted in the Local Plan. Anglian Water has provided details of expected investments to provide further capacity within the existing foul sewerage network during the 2020-2025 period. Developments which come forward before 2025 would fund sewer network improvements, with the aim of achieving the most efficient and lowest carbon solution to use existing WRC headroom. In addition, AW supports the use of SuDS to remove the need for surface water to be managed via the public sewer network.

The summary table included in Section 6 classifies all sites with more than 10 dwellings proposed as 'Medium Risk' in terms of wastewater collection.

The potential impact of the proposed growth on the water quality of the receiving watercourses, Water Framework Directive water bodies and associated protected areas has also been assessed, including:

- the capacity of the WRCs to accommodate additional wastewater flows;
- the water quality status of the WRC receiving waters and WFD water bodies; and
- the potential impacts of the growth options on water quality.

The results of this assessment show that the extra flows generated by the proposed increase in dwellings would exceed the existing capacity of Doddington, Manea Town Lots, Whittlesey, March and Parsons Drove WRCs. The proposed development sites in the emerging Local Plan have been classified based on the available treatment capacity of their local Water Recycling Centres, with 57 sites assessed as high risk for wastewater treatment capacity.

Whilst individual developments may not have a noticeable impact on water quality, which is currently Moderate for all receiving water bodies, the assessment of the potential impact of the proposed growth on water quality has shown that there could be a significant cumulative impact, particularly on the Middle Level water body, which is already under pressure.

Biodiversity and conservation

New development within Fenland can have both positive and negative impacts on biodiversity and conservation, depending on how this development is managed. Enhancing and conserving the existing biodiversity is a clear requirement in the Fenland area, and Biodiversity Net Gain of at least 10% will be a legal requirement for all developments when this part of the Environment Act is enabled (due Winter 2023). New developments should consider how water and nutrient neutrality and improvements to water quality can be achieved at the site. There are a number of designated nature and heritage sites including Sites of Special Scientific Interest (SSSI), Local Nature Reserves, Conservation Areas and Listed Buildings in the vicinity of the development sites proposed in the emerging Local Plan, which are shown on the Developer Guidance Sheets.

Recommendations

A Detailed WCS is recommended to assess in more detail the impact of specific growth areas on receiving WRCs, associated infrastructure and water quality, and to include any cumulative impacts and determine potential mitigation measures.

The following policy recommendations should be considered by Fenland District Council in the development of the emerging Local Plan:

- New development and re-development of land should wherever possible seek opportunities to implement water efficiency, water storage and water recycling measures. Fenland District Council should monitor the application of such measures.
- Fenland District Council should adopt the more stringent water efficiency requirement of 110 l/p/d in the Flood and Water policies to be set out in the emerging Local Plan.
- Development that may adversely affect green infrastructure assets should not be permitted. Developments should demonstrate opportunities to create and enhance green infrastructure.
- Developers should consult the Cambridgeshire Flood and Water SPD (Ref. 46), which provides guidance on the approach that should be taken to design new developments to manage and mitigate flood risk and include sustainable drainage systems (SuDS), which have benefits for water quality as well as for flood risk. Fenland District Council should monitor the application of SuDS to developments in areas at risk of flooding.

A successful cooperation for a successful management

This report has been developed in partnership with key public and private stakeholders. The continued cooperation of these key stakeholders is essential for a successful management of the full range of water services infrastructure requirements, policy recommendations and additional guidance and supporting sustainable growth for Fenland.

Summary table: status and capacity of selected sites

A summary table is provided in **Section 6** of this report which outlines the status and capacity of the latest available list of individual sites included in the Growth Options, based on the assessments undertaken by this Outline WCS and the associated Level 1 SFRA. It is important to note that the assessment of the sites has been undertaken on an individual basis only. The assessment of cumulative impact has not been undertaken at this Outline WCS stage.

1 INTRODUCTION

1.1 Background

Fenland's growing population requires local, safe, and healthy housing and employment. Fenland District Council (hereinafter referred to as the Council) is actively engaged with this growth, fully responding and planning to ensure that the development to support this growth is undertaken sustainably and will allow for the delivery of sustainable communities.

New developments need to be planned with regard to flood risk and ensure that the water supply and sewerage system have the capacity to supply and dispose of water safely without causing any additional flood risk or water supply/demand issues. To facilitate this population growth, the Council has started to work on a new Fenland Local Plan, which will set out how the district will grow and change over the next 20 years, from 2020 to 2040.

Royal HaskoningDHV has, in collaboration with Fenland District Council and other stakeholders, prepared this Outline Water Cycle Study (WCS) and the associated Level 1 Strategic Flood Risk Assessment (SFRA) document to inform the site selection process in the Local Plan and support satisfying water related policies and needs.

1.2 A new Local Plan for Fenland

The new Local Plan is an important document that will ensure any future development is safe and can be supported with appropriate infrastructure as well as being viable for the local economy. It will replace the current Local Plan (Ref. 29), which was adopted in May 2014. When finalised, the new Local Plan will set a clear ambition for the Council and community as to where development should and should not go, and what sort of development is needed over the next 20 years.

1.3 This Outline WCS

Water Cycle Studies (WCS) are recommended to provide evidence for a Local Plan that the growth targets proposed can be met without adversely impacting on the water environment. They make use of water and planning expertise to understand environmental and infrastructure capacity, so that required improvements can be planned for and implemented alongside new development, in a timely and phased manner.

The Council is aiming for a Local Plan that allows it to tackle challenges and constraints accompanying growth in an efficient and sustainable manner and to highlight opportunities for partnered approaches. The integrated preparation of this Outline WCS and the associated Level 1 SFRA is therefore in tune with this strategy, identifying existing connections between planning and water related policies and needs in a more integrated exercise than two separate documents. The preparation of these reports stimulated discussion between all stakeholders involved, facilitating a better understanding of the water issues in Fenland.

1.4 Study area

The study covers Fenland District, which is bounded by five planning authority areas: King's Lynn and West Norfolk District, South Holland District, Peterborough City, Huntingdonshire District and East Cambridgeshire District, as shown in **Figure 1-1** and **Map A: Study Area**. Unless otherwise specified, this report refers to Fenland District as 'Fenland'.

The Fenland area was once a large marshland with some higher level dry 'islands' where small settlements were located. In the 17th century a large-scale drainage project resulted in large areas of farmland being created from the drained marshlands. By the end of the 17th century, it became clear that the land was shrinking, eventually resulting in the features of raised rivers, clay ridges and clay islands (areas of higher ground, due to underlying geology) which are visible today. Management of surface water within the lower drained areas became necessary, resulting in large open areas of arable farmland and a landscape dominated by a system of drainage channels which are crucial for agriculture. These drainage channels are currently managed by Internal Drainage Boards (**Map P**).

The largest rivers flowing through Fenland are the River Nene and Great Ouse/Bedford River (**Figure 1-1**), which are both designated as main rivers and the responsibility of the Environment Agency in terms of flood risk (**Figure 1-2)**. These rivers have large upstream catchments and are heavily influenced by activities outside the study area, particularly discharges from the urban areas of Peterborough, Kettering and Northampton which lie along the River Nene upstream of Fenland. Likewise, the Ouse System accommodates flows from Bedford, Milton Keynes and Huntingdon. Parts of the upstream catchments are within the Oxford Cambridge Arc, for which significant development is proposed. The Fenland area is important for the management of flows from these upstream catchments, and in regulating flows to the downstream catchments.

Fenland contains several important wetlands which are remnants of the original fenland landscape. These include the Ouse and Nene Washes, which are important flood storage areas and officially designated as reservoirs (see **Map M** for risk of reservoir flooding), as well as having designated Ramsar status as habitats for wildfowl.

Fenland is both one of the driest areas of the UK and one of the lowest lying, which makes it particularly vulnerable to the impacts of climate change including heightened risks of both drought and flooding.

1.5 Sources of data

The data used in the study has been obtained from several sources. A review of publicly available documents for the study area has been undertaken and refreshed with valuable up to date information obtained in consultation with all stakeholders involved:

- Fenland District Council
- Cambridgeshire County Council (LLFA)
- Environment Agency
- Anglian Water
- Internal Drainage Boards (IDB): North Level IDB, King's Lynn IDB, and Middle Level Commissioners.

A detailed list of all data used in the study and corresponding sources is presented in **Appendix A**.

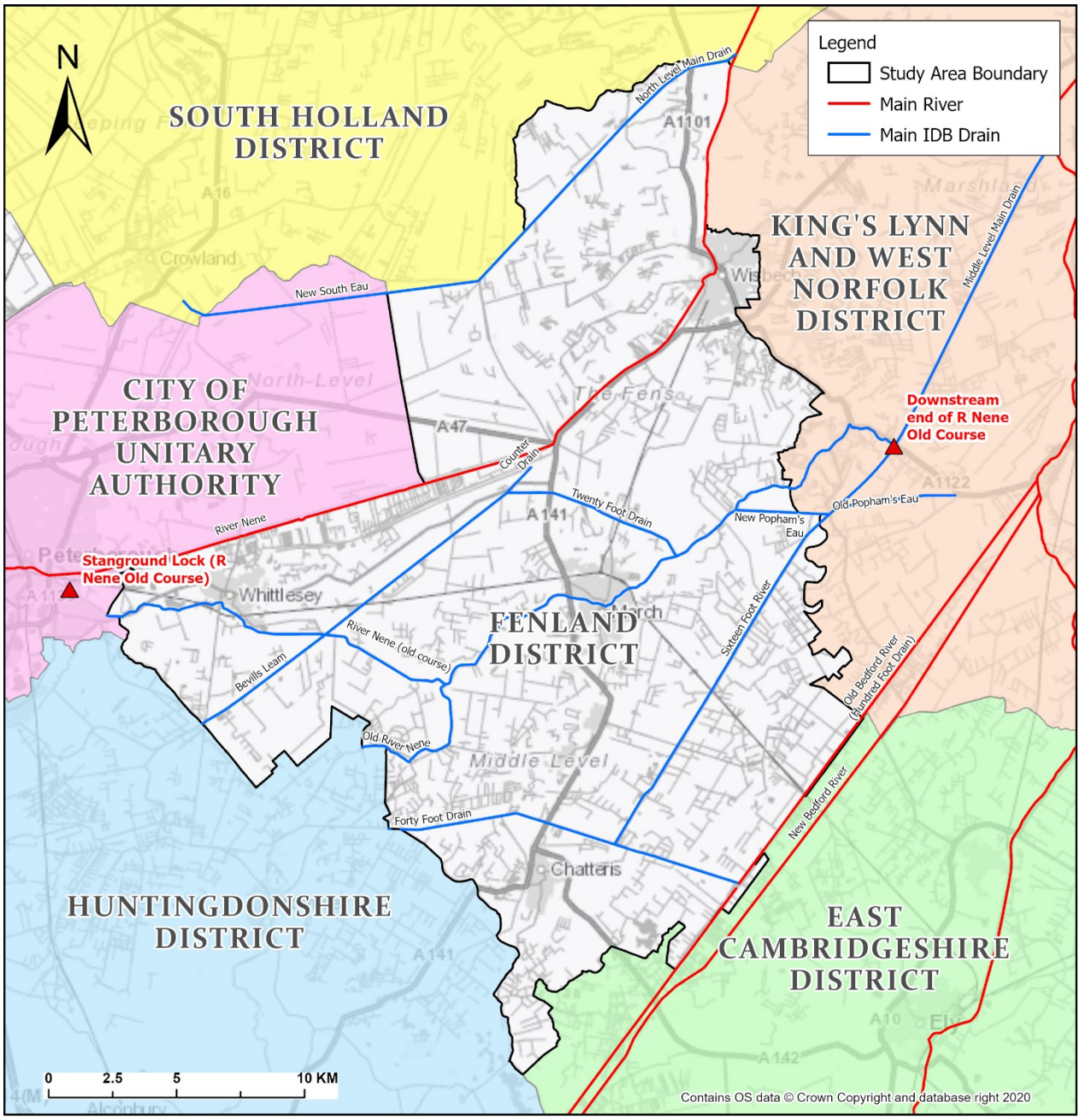

Figure 1-1: Study area boundary showing neighbouring planning authorities and watercourses
(Source – Office for National Statistics, Fenland District Council)

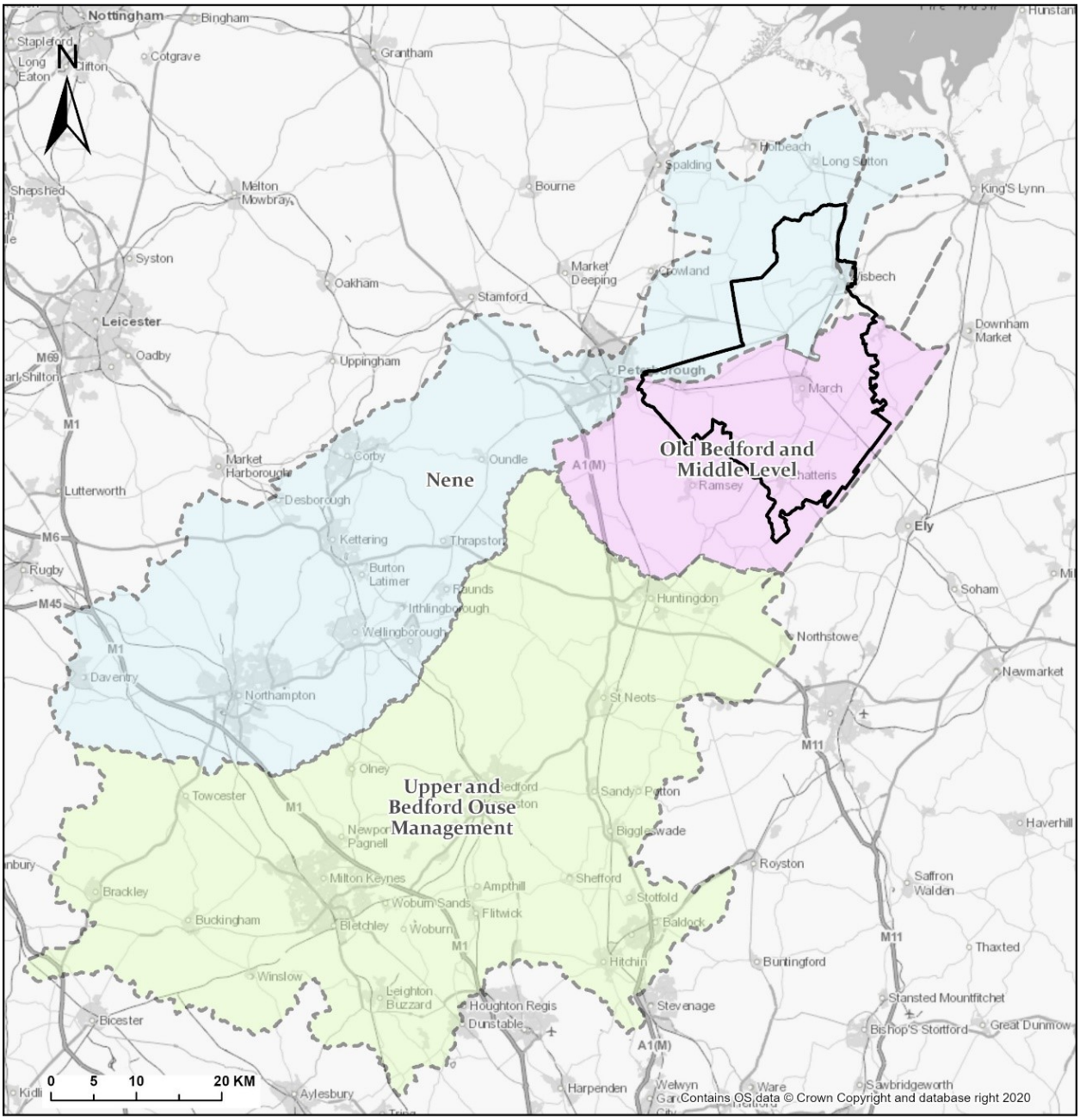

Figure 1-2: EA Operational Catchment Management Boundaries
(Source – Environment Agency, Ordinance Survey)

1.6 Data quality and assumptions

As with all studies of this nature, the analysis relies heavily on data and information supplied by third parties. This Outline WCS has collated data from many parties, using the best available information at the time of preparation, including the most recent flood risk data and current national planning policy and guidance. Data has been checked and reviewed for accuracy wherever possible, but it is generally assumed that all data provided is accurate and up to date.

Much of this data is not static and is regularly being updated and revised as new information is collected or trends in development change. This study reflects a point in time and may need to be reconsidered at a later point, when data updates or review against changes to legislation or planning guidance may be required.

1.7 Structure of this report

Section 1 provides an introduction to this report and **Section 2** sets out a brief description of the proposed development in Fenland based on the current version of the emerging Local Plan.

The specific technical information for each WCS topic is presented Sections 3 to 6. **Section 3** covers Water Resources and Supply, and Wastewater Collection, Treatment and Water Quality are assessed in **Section 4**. Biodiversity and Conservation are assessed in **Section 5**.

The outcomes of the assessment are set out **Section 6**, followed by Conclusions and Recommendations in **Section 7**. The overarching assessment of the potential development sites is provided in **Section 6** as a summary table, plus 'Developer Guidance Sheets' for the sites included in the preferred Growth Option.

Reports, documents and websites referenced by this report are listed in chronological order of publishing at the end of the document, followed by various Appendices.

Maps of the key datasets relating to all aspects of this Outline WCS and the associated Level 1 SFRA are presented at a district-wide scale and provided alongside this report.

Appendix A schedules the data sources which have been used to develop this report.

2 DEVELOPMENT IN FENLAND

This chapter presents a summary of the housing and employment growth forecast upon which the Local Plan and this Outline WCS is being conceived.

2.1 Estimated growth

The required growth for the period covered by the new Fenland Local Plan (2020-2040) is approximately 9,823 new homes – an average of 517 new dwellings per year. This compares to a target of 550 dwellings per year in the 2014 Local Plan. Over the past five years (2016-2021), a total of 2,202 dwellings were delivered – an average of 440 new dwellings per year.

To calculate the yearly local housing need, the Council uses the Planning Practice Guidance's (of the National Planning Policy Framework, Ref. 75) Housing Need Assessment, which sets out the government's standard methodology for assessing Local Housing Need (LHN).

The assessment of local housing need is updated annually. This report is based on the assessment of housing need undertaken in September 2021. As such, the required housing need calculation may have changed since this report was prepared. Such changes should not impact on the sites assessed for this Outline WCS and the associated Level 1 SFRA, as the annual changes in the local housing need calculation are not usually significant.

2.1.1 Calculating Local Housing Need in Fenland

Based on 2014 Household Growth Projections (Ref. 44), the annual household growth for Fenland District Council is 426.1 households. Accounting for local wealth based on 'House Price to Workplace based earnings' database (Ref. 71), Fenland's local affordability ratio (LAR) of 7.41 is used to derive an Adjustment Factor:

$$Adjustment\ Factor = \left(\frac{7.41 - 4}{4}\right) * 0.25 = 0.213125$$

The Adjustment Factor is used to calculate the Annual Local Housing Need based on projected annual household growth, such that:

$$Annual\ LHN = (1 + 0.213125) * 426.1 = \mathbf{517}\ \text{dwellings (rounded)}$$

Table 2-1: Fenland District Council Housing Factors
(Source – Fenland District Council)

Factor	Number
Annual Household Projection	426.1
Local Affordability Ratio	7.41
Adjustment Factor	0.213125
Annual Local Housing Need (LHN)	517 dwellings

The 2021 LHN figure of 517 dwellings per year is a reduction on the 2019 figure of 550 – the Local Housing Need that informs the new Local Plan for Fenland should always reflect this latest yearly recalculated figure; the current year forms the first year of any future outlook. The method used for calculating Fenland's yearly LHN is set out in detail in the Council's 'Five Year Housing Land Supply' report (Ref. 65).

In late March 2022 ONS published new data thereby requiring the housing need to be recalculated. From 2022 onwards, the standard method generates a local housing need for Fenland of 556 dwellings per annum. Due to the number of variables in the calculation and the need to re-consider this on an annual basis it is expected that the number of dwellings required will fluctuate to some degree from year to year.

Fenland District Council considers that the sites considered by this Outline WCS should have sufficient capacity overall to provide for its preferred growth option in the emerging Local Plan.

In addition to dwellings, the Council must allocate sites for other forms of development, such as employment. The Employment Needs Assessment has identified a need for between 18,000 and 23,000 new jobs, requiring allocation of 215 to 270 hectares of land.

2.1.2 Five-Year Housing Land Supply

In accordance with NPPF, Fenland District Council has identified the expected supply of specific deliverable sites to provide a minimum of five years' worth of housing need. This assessment is set out in full in the Council's 'Five Year Housing Land Supply' report (Ref. 65), with the deliverable sites summarised in **Table 2-2** below.

Table 2-2: Summary of Five-Year Housing Land Supply
(Source – Fenland District Council)

Site Category	Five Year Supply					
	Year 1	Year 2	Year 3	Year 4	Year 5	Total Five Year
Dwellings with detailed planning or outline permission on non-major sites	108	393	181	0	0	**682**
Dwellings with detailed permission on major sites	118	568	182	111	92	**1,071**
Dwellings with outline planning permission on major sites	0	0	343	205	181	**729**
Strategic Allocations & Broad Locations for Growth in adopted Local Plan	0	0	40	223	283	**546**
Dwellings approved subject to S106 legal agreement	0	0	0	0	0	**0**
Windfall allowance	0	0	94	188	188	**470**
Older people's accommodation	0	85	51	0	0	**136**
Total	**226**	**1,046**	**891**	**727**	**744**	**3,634**

The Council has identified land that is estimated to be capable of delivering 3,634 dwellings within the five year period, which is 920 more dwellings than the five year requirement (including a 5% buffer) of 2,716 dwellings.

2.2 Site allocations for development

In October 2019, the Council published the Issues and Options Consultation document for the Fenland Local Plan. This consultation included an initial call for sites. A further call for sites was made between July and September 2020. Local agents, developers, landowners, Parish Councils and local residents were invited to suggest sites to be considered as potential allocations to meet the future growth.

The Council's preliminary assessment of these sites and other sites known to be available for development identified a range of 'reasonable alternatives' for development, referred to as Growth Options. The Growth Options principally include sites for housing and employment development, although some proposals suggest a range or mix of potential uses. The Growth Options do not have formal planning status and have not been formally endorsed by Fenland District Council. They have been formulated by Council officers to inform the preparation of the Local Plan.

Table 2-3: Growth options considered by the Local Plan
(Source – Fenland District Council)

Option	Description
Growth Option 1	**Baseline** - This option only includes sites with existing planning permission. This option does not deliver sufficient growth to meet Fenland's housing needs and as such additional land needs to be allocated for development. Alternative options for this additional allocation are considered in Growth Options 2, 2A, 3 and 4.
Growth Option 2	**Market town-led growth:** This option concentrates growth principally in the towns of Wisbech, March, Whittlesey and Chatteris, providing only limited additional growth in villages.
Growth Option 2A	**Additional growth option:** This option was developed following an initial review of the suitability of the sites included in Growth Options 2, 3 and 4.
Growth Option 3	**More growth in villages:** This option allocates more sites in villages and excludes those sites of lesser suitability in market towns.
Growth Option 4	**Strategic growth in certain villages:** As Option 3, but also proposes strategic growth at Wimblington and at Coates and Eastrea.
Employment Option 1	Baseline option including sites suitable for employment development with existing planning permission.
Employment Option 2	Includes additional sites suitable for employment development.
Employment Option 2A	Refinement of Employment Option 2 based on updated information regarding the employment land requirement, and including existing industrial estates, business parks, employment clusters, etc. (allocated to regularise these uses and safeguard these locations for future employment development).

The draft Local Plan sets the overall spatial distribution of development sites for each Growth Option and identifies the sites to meet the growth target and the overall distribution. **Table 2-4** and **Table 2-5** summarise the total number or area of development sites for each growth option. **Table 2-6** summarises the development sites for each growth option by individual settlement, showing the settlement hierarchy of each settlement. **Table 2-7** provides the full list of potential sites, identifying the relevant Growth Option(s) for each site. The location of these sites is provided in **Maps B to E: Potential Site Allocations** for each of the Growth Options.

It is envisaged that the draft Local Plan will allocate sites contained in either Growth Option 2, 2A, 3 or 4, plus existing employment areas and sites shown in Employment Option 2 or 2A. This WCS and the associated Level 1 SFRA have undertaken an assessment of the sites included in each of the Growth Options, covering 202 sites in total.

Table 2-4: High level distribution of housing growth for Fenland
(Source – Fenland District Council)

Settlement Hierarchy	Growth Option 1		Growth Option 2		Growth Option 2A		Growth Option 3		Growth Option 4	
	Number of dwellings (2020-40)	% of Housing Growth	Number of dwellings (2020-40)	% of Housing Growth	Number of dwellings(2020-40)	% of Housing Growth	Number of dwellings (2020-40)	% of Housing Growth	Number of dwellings(2020-40)	% of Housing Growth
Market Town	1,080	61.89	8,812	90.68	6,205	70.60	7,691	80.92	7,691	72.27
Large Village	159	9.11	260	2.68	738	8.40	742	7.81	995	9.35
Medium Village	475	27.22	585	6.02	1,683	19.15	866	9.11	866	8.14
Small Village A	31	1.78	61	0.63	118	1.34	188	1.98	1,073	10.08
Small Village B	0	0.00	0	0.00	45	0.51	17	0.18	17	0.16
Other settlement	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Open countryside	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	**1,745**	**100**	**9,718**	**100**	**8,789**	**100**	**9,504**	**100**	**10,642**	**100**

Table 2-5: High level distribution of employment sites for Fenland
(Source – Fenland District Council)

Settlement Hierarchy	Employment Option 1		Employment Option 2		Employment Option 2A	
	Area (ha) (2020-40)	% of Employment Growth	Area (ha) (2020-40)	% of Employment Growth	Area (ha) (2020-40)	% of Employment Growth
Market Town	57	99.38	294	73.92	418	60.06
Large Village	0	0.00	0	0.00	0	0.00
Medium Village	0	0.00	5	1.20	5	0.69
Small Village A	0	0.00	0	0.00	0	0.00
Small Village B	0	0.00	0	0.00	0	0.00
Other settlement	0	0.00	0	0.00	0	0.00
Open countryside	0	0.62	99	24.88	273	39.25
Total	**57**	**100**	**398**	**100**	**697**	**100**

Table 2-6: Distribution of proposed sites by settlement
(Source – Fenland District Council)

Location	Settlement Hierarchy	Growth Option (Number of sites, 2020-2040)					Employment Option (Area, ha)		
		1	2	2A	3	4	1	2	2A
Benwick	Medium Village	0	0	0	57	57	0	0	0
Chatteris	Market Town	71	1,800	1,698	1,540	1,540	21	35	150
Christchurch	Small Village A	25	48	58	48	48	0	0	0
Church End	Small Village B	0	0	0	0	0	0	0	0
Coates	Medium Village	80	80	429	80	80	0	5	5
Coldham	Small Village B	0	0	11	11	11	0	0	0
Collet's Bridge	Small Village B	0	0	10	0	0	0	0	0
Doddington	Large Village	13	68	334	324	324	0	0	0
Eastrea	Small Village A	6	6	6	113	998	0	0	0
Elm	Medium Village	55	55	270	55	55	0	0	0
Foul Anchor	Other Settlement	0	0	0	0	0	0	0	0
Friday Bridge	Medium Village	0	6	230	230	230	0	0	0
Gorefield	Medium Village	19	19	49	19	19	0	0	0
Guyhirn	Small Village A	0	0	35	20	20	0	0	0
Leverington	Medium Village	229	325	425	325	325	0	0	0
Manea	Large Village	79	79	194	194	194	0	0	0
March	Market Town	394	3,410	2,661	3,312	3,312	8	90	100
Murrow	Small Village A	0	7	7	7	7	0	0	0
Newton	Small Village B	0	0	6	6	6	0	0	0
Open countryside	Open countryside	0	0	0	0	0	0	99	273
Parson Drove	Medium Village	5	13	43	13	13	0	0	0
Pondersbridge	Small Village B	0	0	0	0	0	0	0	0

Location	Settlement Hierarchy	Growth Option (Number of sites, 2020-2040)					Employment Option (Area, ha)		
		1	2	2A	3	4	1	2	2A
Rings End	Small Village B	0	0	8	0	0	0	0	0
Tholomas Drove	Small Village B	0	0	10	0	0	0	0	0
Turves	Small Village B	0	0	0	0	0	0	0	0
Tydd Gote	Small Village B	0	0	0	0	0	0	0	0
Tydd St Giles	Small Village A	0	0	12	0	0	0	0	0
Whittlesey	Market Town	256	1,691	875	928	928	10	23	23
Wimblington	Large Village	67	113	210	224	477	0	0	0
Wisbech	Market Town	359	1,911	971	1,911	1,911	18	146	146
Wisbech St Mary	Medium Village	87	87	237	87	87	0	0	0
Total		**1,745**	**9,718**	**8,789**	**9,504**	**10,642**	**57**	**398**	**697**
Additional net commitment		553	553	553	553	553			
Windfall allowance		1,500	1,500	1,500	1,500	1,500			
Total supply		**3,798**	**11,771**	**10,842**	**11,557**	**12,695**			

Table 2-7: Summary details of each site included in the Growth Options, October 2021
(Source: Fenland District Council)

Site Ref.	Growth Option								2012 Site Status	Site Name	Location	Area (ha)	Proposed Use	Local Plan Capacity
	1	2	2A	3	4	E1	E2	E2A						
40001		✓		✓	✓				Allocated	East Wisbech	Wisbech	47.7	Housing	950
40002							✓	✓	Allocated	South Wisbech	Wisbech	91.3	Mixed use	0
40004							✓	✓	Allocated	Nene Waterfront and Port	Wisbech	40.0	Mixed use	0
40005		✓		✓	✓				Allocated	South-east March	March	34.2	Housing	750
40007		✓		✓	✓				Allocated	West March	March	102.7	Housing	1500
40008							✓	✓	Allocated	March Trading Estate	March	78.4	Employment	0
40012		✓	✓	✓	✓				Allocated	N & S of Eastrea Road	Whittlesey	29.8	Housing	452
40017	✓	✓	✓	✓	✓				Approved	Land at 35 North End	Wisbech	0.0	Housing	11
40020	✓	✓	✓	✓	✓				Approved	Land W of Council Depot	March	4.0	Housing	14
40022	✓	✓	✓	✓	✓				Approved	Aware House Learning Dev. Aids Ltd	Wisbech	0.2	Housing	10
40025	✓	✓	✓	✓	✓				Approved	Land E of 46 Old Lynn Rd	Wisbech	5.6	Housing	149
40028	✓	✓	✓	✓	✓				Approved	Christchurch Memorial Hall	Christchurch	0.4	Housing	9
40031	✓	✓	✓	✓	✓				Approved	Former Kingswood Park Res. Home	March	1.0	Housing	24
40033	✓	✓	✓	✓	✓				Approved	Land S of Jones Lane	Eastrea	0.3	Housing	6
40036	✓	✓	✓	✓	✓				Approved	Land E of Davern Workwear Ltd	March	0.5	Housing	12
40037	✓	✓	✓	✓	✓				Approved	Davern Workwear Ltd	March	0.7	Housing	18
40038	✓	✓	✓	✓	✓				Approved	Land N of 28-30 High St	Manea	0.9	Housing	32
40041	✓	✓	✓	✓	✓				Approved	Land E of Berryfield	March	1.2	Housing	28
40042	✓	✓	✓	✓	✓				Approved	Land N of Whittlesey E of E Delph	Whittlesey	15.0	Housing	220
40043	✓	✓	✓	✓	✓				Approved	Land Rear of 36 High St	March	0.1	Housing	7
40045	✓	✓	✓	✓	✓				Approved	Land N of Orchard House	Wisbech St M	3.8	Housing	76
40048	✓	✓	✓	✓	✓				Approved	Lavender Mill Bungalow	Manea	1.1	Housing	29
40050	✓	✓	✓	✓	✓				Approved	Former Highways Depot	March	1.1	Housing	34
40052	✓	✓	✓	✓	✓				Approved	321 Wisbech Road	March	0.7	Housing	9

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Site Ref.	Growth Option								2012 Site Status	Site Name	Location	Area (ha)	Proposed Use	Local Plan Capacity
	1	2	2A	3	4	E1	E2	E2A						
40053	✓	✓	✓	✓	✓				Approved	33 And Land N Of 17-31	Elm	1.7	Housing	50
40054	✓	✓	✓	✓	✓				Approved	26 Bridge Street	Chatteris	0.0	Housing	5
40056	✓	✓	✓	✓	✓				Approved	College Of West Anglia	Wisbech	6.1	Housing	137
40057	✓	✓	✓	✓	✓				Approved	Land W of 15 Fairbairn Way	Chatteris	1.8	Housing	50
40059			✓						Approved	CFC Disposals Ltd	Christchurch	0.7	Housing	16
40060	✓	✓	✓	✓	✓				Approved	Land E Of 38 March Road	Wimblington	3.3	Housing	5
40067	✓	✓	✓	✓	✓				Approved	Land E Of 88 Sutton Road	Leverington	8.7	Housing	220
40070	✓	✓	✓	✓	✓				Approved	Land SE of 208 Coates Rd	Coates	2.7	Housing	60
40072	✓	✓	✓	✓	✓				Approved	Land W & S of 74 West St	Chatteris	2.8	Housing	58
40073	✓	✓	✓	✓	✓				Approved	Former Gas Distribution Centre	March	0.5	Housing	19
40074	✓	✓	✓	✓	✓				Approved	Land N Of 37-45 King S	Wimblington	1.7	Housing	25
40076			✓						Approved	Land E Of 11-21 Park Rd	Manea	1.2	Housing	13
40077			✓						Approved	Land N of The Green, N Of 145-159 Wisbech Rd	March	4.9	Housing	118
40079		✓	✓	✓	✓				Approved	Land N&E of 1-3 Wimblington Rd	Doddington	1.1	Housing	13
40082					✓				Approved	Land N & W Of Elliott Lodge	March	0.4	Housing	13
40083			✓						Approved	Land W of Cedar Way (from Grove Gardens)	Elm	0.9	Housing	5
40087		✓	✓	✓	✓				Approved	Land N Of 3A-9 Bridge Lane	Wimblington	1.5	Housing	7
40093			✓	✓	✓				Approved	Land NW of 12 Knights End Rd	March	0.7	Housing	9
40103				✓	✓				New site	Trafford Farm	Wisbech St M	3.6	Mixed use	90
40104			✓	✓	✓				New site	Land at Gote Lane	Gorefield	1.2	Housing	30
40105			✓	✓	✓				New site	Rear of 131-137 Upwell Rd	March	0.5	Housing	9
40115					✓				New site	Land at Mill Hill	March	2.2	Housing	55
40117			✓						New site	Lake Drove	Eastrea	6.8	Housing	147
40126				✓	✓				New site	Land east of Berryfield	March	1.0	Housing	24
40127		✓	✓	✓	✓				New site	Well End	Friday Bridge	0.5	Housing	6
40133			✓						New site	Land E of Woodgate Rd	Leverington	3.9	Housing	96
40135		✓	✓	✓	✓				New site	Land N of March Road	Coldham	0.3	Housing	11
40137			✓						New site	Collett's Bridge Lane	Collet's Bridge	0.5	Housing	10
40139			✓	✓	✓				New site	Land to S of 4-40 Benwick Rd	Doddington	2.2	Housing	53
40140			✓	✓	✓				New site	Land W of Turf Fen Lane and S of Newgate St	Doddington	13.8	Housing	155
40143		✓	✓						New site	Land off Wood Street Ph3	Doddington	0.6	Housing	17
40145			✓						New site	Land at Wype Road	Eastrea	5.1	Housing	109
40147	✓	✓	✓	✓	✓				New site	Land at Gull Drove	Guyhirn	0.9	Housing	15
40150			✓	✓	✓				New site	Front Road	Murrow	0.5	Housing	7
40151			✓						New site	Land at Blue Lane	Wimblington	3.1	Housing	77
40152					✓				New site	Land north of King St	Wimblington	1.6	Housing	46
40158					✓				New site	Land at Meadowgate	Wisbech	1.2	Housing	10
40163			✓	✓	✓				New site	Chrysanthemum House	Wisbech	2.0	Care Home	77
40171					✓				New site	Land at Sunset, Station Rd	Wisbech St M	2.1	Housing	51
40173					✓				New site	Land off Wood St Ph2	Doddington	0.4	Housing	10
40185			✓						New site	Land to rear of 15 Westfield Rd	Manea	0.7	Housing	10
40190		✓							New site	Land to rear of No. 81	March	3.9	Housing	98
40194			✓						New site	Land SE of 433 Wisbech Rd	March	0.5	Housing	8
40198				✓	✓				New site	Minuet Phase 2	Coates	1.3	Housing	20
40207		✓	✓	✓	✓				New site	Land to rear of Neneside	Guyhirn	0.4	Housing	5

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Site Ref.	Growth Option								2012 Site Status	Site Name	Location	Area (ha)	Proposed Use	Local Plan Capacity
	1	2	2A	3	4	E1	E2	E2A						
40211					✓				New site	S of Salisbury House, Blackmill Rd	Chatteris	4.2	Housing	100
40215				✓	✓				New site	Land south of Bridge Lane	Wimblington	2.3	Housing	50
40217		✓	✓	✓	✓				New site	Land south of Bridge Lane	Wimblington	3.1	Housing	66
40223		✓	✓	✓	✓				New site	West Field	Manea	4.2	Housing	105
40229		✓	✓	✓	✓				New site	Land at Sparrow Lane	Wimblington	0.4	Housing	9
40233			✓						New site	Land S of 80 Coates Rd	Eastrea	8.2	Housing	177
40235							✓	✓	New site	Land N of Benwick Road	Doddington	1.1	Housing	31
40237				✓	✓				New site	Land off Eastrea Road	Whittlesey	27.2	Housing	584
40241								✓	New site	6 March Road	Rings End	0.2	Housing	8
40250			✓		✓				New site	Land S of 16A Doddington Rd	Benwick	1.1	Housing	31
40252		✓							New site	Land north east of March	March	13.7	Housing	294
40258			✓						New site	Land South of Coates Rd	Eastrea	10.9	Housing	233
40259								✓	New site	Land rear of 127 Wype Rd	Eastrea	5.0	Housing	107
40262		✓	✓	✓	✓				New site	Behind High St shops S of river	March	4.5	Mixed use	55
40263							✓	✓	New site	Land to west of Hereward Hall	March	0.6	Housing	19
40264		✓	✓	✓	✓				New site	Land to E of Norwood Road	March	1.8	Housing	50
40265		✓	✓	✓	✓				New site	Land north of March Road	Coates	10.8	Housing	232
40270			✓	✓	✓				New site	Land SW of proposed A605 realignment at Kings Dyke	Whittlesey	11.8	Mixed use	0
40274			✓	✓	✓				New site	Land NE of 39B-43 Ramsey Rd	Benwick	8.3	Mixed use	6
40276			✓						New site	Land N of Mill Hill Garage	March	0.4	Employment	0
40278		✓	✓	✓	✓				New site	Land east of March Road	Wimblington	3.9	Housing	97
40284		✓	✓	✓	✓				New site	Land off Wenny Road	Chatteris	26.0	Housing	260
40285			✓	✓	✓				New site	N of Knight's End Rd, E of A141	March	50.5	Housing	1200
40286							✓	✓	New site	Land N of Isle of Ely Way	March	4.0	Mixed use	0
40288		✓	✓	✓	✓				New site	Land W side of Fenland Way	Chatteris	15.2	Mixed use	20
40290		✓	✓	✓	✓				New site	Westry Retail Park	March	6.5	Employment	0
40300							✓	✓	New site	Land at Eastrea Road	Whittlesey	7.3	Housing	156
40302			✓						New site	Land at Swanbridge Farm	Parson Drove	0.4	Housing	8
40303		✓	✓	✓	✓				New site	Land at Selwyn Lodge Farm	Guyhirn	0.9	Housing	15
40305		✓	✓	✓	✓				New site	Land at Rookery Farm	Friday Bridge	3.5	Housing	87
40307		✓	✓	✓	✓				New site	Land at Willock Farm	Wisbech St M	0.7	Housing	10
40315		✓							New site	Hereward Hall	March	1.4	Mixed use	19
40316								✓	New site	Queen's Street Close Car Park	March	0.2	Housing	6
40319			✓						New site	Land East of Flint Way	Friday Bridge	6.4	Housing	137
40321		✓	✓	✓	✓				New site	Land East of Ben Burgess	Coates	4.8	Employment	0
40325		✓	✓	✓	✓				New site	Land rear of 2-8 Gibside	Chatteris	0.2	Housing	6
40326			✓	✓	✓				New site	Land East of 80 The Elms	Chatteris	3.7	Housing	90
40327			✓						New site	South Fens Enterprise Park	Chatteris	0.9	Employment	0
40328		✓	✓	✓	✓				New site	Land S of 104-178 March Rd	Coates	6.1	Housing	117
40335					✓				New site	Land to rear of 98-112 Drybread Rd	Whittlesey	0.3	Housing	11
40337				✓	✓				New site	Site at 5 North Street	Wisbech	0.1	Mixed use	10
40338					✓				New site	Nene Waterfront	Wisbech	1.6	Mixed use	178
40348				✓	✓				New site	Land to E & S of Drybread Rd	Whittlesey	8.4	Housing	179
40351		✓	✓	✓	✓				New site	Land to NW of Mill Hill Roundabout	Countryside	5.3	Employment	0
40364		✓	✓	✓	✓				New site	Hockland Road plot	Tydd St Giles	0.4	Housing	12
40366						✓	✓	✓	New site	Former Pike Textiles	Wisbech	0.6	Housing	21

Site Ref.	Growth Option								2012 Site Status	Site Name	Location	Area (ha)	Proposed Use	Local Plan Capacity
	1	2	2A	3	4	E1	E2	E2A						
40367						✓			New site	Womb Farm	Chatteris	8.4	Housing	248
40368						✓			New site	Land adjoining Parrock View	Newton	0.3	Housing	6
40369						✓	✓	✓	New site	Land adjacent to the fern	Christchurch	0.3	Housing	10
40371						✓	✓	✓	New site	Land off Halfpenny Lane	Wisbech	14.7	Housing	316
40372						✓	✓	✓	New site	Land SW of Wype Road	Eastrea	6.7	Mixed use	144
40374						✓			New site	Land N of 47 King Street	Wimblington	1.5	Housing	33
40375						✓	✓	✓	New site	Land north of 17 Doddington Rd	Benwick	0.7	Housing	20
40376						✓	✓	✓	New site	Land South of Jones Lane	Eastrea	3.5	Housing	75
40380						✓			New site	Land opp Coney Walk, Blue Lane	Wimblington	1.2	Housing	34
40382						✓	✓	✓	New site	Land S of Knight's End Road and W of Wimblington Road	March	15.9	Housing	341
40384						✓			New site	Land South of Chatteris	Chatteris	67.7	Mixed use	1000
40386						✓	✓	✓	Approved	Freedom Motorcycles, Mill View	March	0.2	Employment	0
40390			✓						Approved	Land W of 30, Thorby Avenue	March	0.5	Employment	0
40393			✓						Approved	Land W of Roll out the Red	March	0.6	Mixed use	0
40398				✓	✓				Approved	Plot 4 Land South West of 47 Algores Way	Wisbech	0.2	Employment	0
40402								✓	Approved	Land S of Foster Business Park, Boleness Road	Wisbech	1.7	Mixed use	0
40403							✓	✓	Approved	Eclipse Scientific Group	Chatteris	0.7	Employment	0
40404								✓	Approved	Agrihold Farm Machinery UK Ltd, 1, Martin Avenue	March	0.8	Employment	0
40408								✓	Approved	W of Fenton Way, E of Iretons Way	Chatteris	8.7	Mixed use	0
40409					✓				Approved	SW of Doddington Road	Chatteris	0.2	Employment	0
40411		✓	✓	✓	✓				Approved	Land North Of 57, Thorby Avenue	March	0.5	Mixed use	0
40412							✓	✓	Approved	Land at Junc of A47 & Cromwell Rd	Wisbech	3.6	Mixed use	0
40415	✓	✓	✓	✓	✓				Approved	H L Hutchinson, Weasenham Lane	Wisbech	0.6	Employment	0
40416	✓	✓	✓	✓	✓				Approved	Land at Wombfarm	Chatteris	9.2	Mixed use	0
40417	✓	✓	✓	✓	✓				Approved	Lattersey Field, Benwick Rd	Whittlesey	9.3	Mixed use	0
40420	✓	✓	✓	✓	✓				Approved	March Cold Stores, Marwick Road	March	3.0	Employment	0
40424	✓	✓	✓	✓	✓				New site	Station Road, Grantchester House	Wisbech St M	0.3	Housing	9
40426	✓	✓	✓	✓	✓				New site	Land south of Benwick Road	Doddington	2.0	Housing	55
40427	✓	✓	✓	✓	✓				New site	Land S of Wimblington Rd	Doddington	3.2	Housing	40
40430	✓	✓	✓	✓	✓				New site	Westry Hall	March	2.5	Mixed use	62
40434	✓	✓	✓	✓	✓				New site	Land fronting Elm Road and S/W of Highfield House	March	0.3	Housing	9
40443	✓	✓	✓	✓	✓				Approved	Land at Showfields	Whittlesey	1.9	Housing	53
40444	✓	✓	✓	✓	✓				New site	28 Wimblington Road	Doddington	0.4	Housing	13
40446	✓	✓	✓	✓	✓				New site	Land W of 85 Wimblington Rd	March	0.8	Mixed use	18
40447	✓	✓	✓	✓	✓				New site	Womb Farm	Chatteris	1.9	Mixed use	53
40450	✓	✓	✓	✓	✓				New site	Slaves Hill	Doddington	4.7	Housing	100
40451	✓	✓	✓	✓	✓				New site	Land S of Brewery Close and Ingham Hall Gardens	Parson Drove	1.8	Housing	30
40453	✓	✓	✓	✓	✓				New site	Land W of 35 New Street	Doddington	0.5	Housing	11
40454	✓	✓	✓	✓	✓				New site	First Furlong Drove	Chatteris	70.5	Employment	0
40455	✓	✓	✓	✓	✓				New site	Honeysome Road	Chatteris	11.2	Employment	0
40456						✓	✓	✓	New site	Ireton's Way	Chatteris	11.3	Employment	0
40457						✓	✓	✓	New site	Fenton Way	Chatteris	13.4	Employment	0
40458						✓	✓	✓	New site	Fenton Way Mandleys	Chatteris	8.4	Employment	0
40459						✓	✓	✓	New site	Short First Nightlayers	Chatteris	7.0	Employment	0

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Site Ref.	Growth Option								2012 Site Status	Site Name	Location	Area (ha)	Proposed Use	Local Plan Capacity
	1	2	2A	3	4	E1	E2	E2A						
40463						✓	✓	✓	New site	Land NW of Syringa House	Christchurch	0.8	Housing	23
40468						✓	✓	✓	New site	Coldham Wind Farm	Countryside	98.7	Wind energy	0
40469						✓	✓	✓	New site	Land next to Graysmoor Drove	Countryside	174.2	Wind energy	0
40491						✓	✓	✓	New site	Land off New Road	Chatteris	0.8	Employment	0
40496						✓	✓	✓	New site	Land at 16 Bridge Lane	Wimblington	0.5	Housing	11
40497						✓	✓	✓	New site	Metalcraft Business Park	Chatteris	14.6	Mixed use	0
40499			✓						New site	Land on W side of 92 London Rd	Chatteris	1.9	Housing	52
40502			✓						New site	Vacant site, Kings Dyke	Whittlesey	1.2	Mixed use	0
40503	✓	✓	✓	✓	✓				Approved	Land NE of 53 The Chase	Leverington	0.9	Housing	9
40504	✓	✓	✓	✓	✓				Approved	Land E of The Silverings	Parson Drove	0.4	Housing	5
40505	✓	✓	✓	✓	✓				Approved	22 London Road	Chatteris	0.3	Housing	7
40506	✓	✓	✓	✓	✓				Approved	11-12 High Street	Wisbech	0.0	Housing	15
40509	✓	✓	✓	✓	✓				Approved	Wisbech Vehicle Exchange	Wisbech	0.2	Housing	9
40511	✓	✓	✓	✓	✓				Approved	Nelson House, 22 Norwood Rd	March	0.1	Housing	5
40513	✓	✓	✓	✓	✓				Approved	Old British Gas Depot	Wisbech	0.5	Housing	19
40514	✓	✓	✓	✓	✓				Approved	Land North Of 3A-15	Gorefield	0.5	Housing	5
40517	✓	✓	✓	✓	✓				New site	15 Station Road	March	0.1	Housing	26
40518	✓	✓	✓	✓	✓				Approved	Land N of The Barn, High Road	Wisbech St M	0.3	Housing	5
40519	✓	✓	✓	✓	✓				Approved	Land E of 133 High Street	Chatteris	0.3	Housing	9
40520	✓	✓	✓	✓	✓				Approved	NW of Nemphlar Begdale Road, Elm	Countryside	0.9	Traveller site	0
40521	✓	✓	✓	✓	✓				Approved	Dennicks Yard Back Road	Gorefield	2.4	Housing	14
40522	✓	✓	✓	✓	✓				Approved	18 Westfield Road	Manea	0.2	Housing	5
40523	✓	✓	✓	✓	✓				Approved	72-74 High Street	March	0.1	Housing	9
40524	✓	✓	✓	✓	✓				Approved	WH Feltham & Son, Cawood Close	March	0.6	Housing	9
40525	✓	✓	✓	✓	✓				Approved	Land SW of 1-23 Springfield Ave	March	1.6	Housing	40
40526	✓	✓	✓	✓	✓				Approved	158 Stonald Road	Whittlesey	1.3	Housing	18
40527	✓	✓	✓	✓	✓				Approved	Land N&S Of Grosvenor House, Grosvenor Road	Whittlesey	0.1	Housing	9
40528	✓	✓	✓	✓	✓				Approved	Land W of 36 Peterborough Rd	Whittlesey	0.3	Housing	9
40529	✓	✓	✓	✓	✓				Approved	Land N of Stoneleigh, Eaton Estate	Wimblington	1.4	Housing	30
40530						✓	✓	✓	Approved	134A Ramnoth Road	Wisbech	0.5	Housing	9
40531						✓	✓	✓	Approved	Land W of Sunset Rooms Station Rd	Wisbech St M	0.3	Housing	6
40532						✓	✓	✓	Approved	NE of 1 Ashley Industrial Estate	Whittlesey	0.4	Employment	0
40533						✓	✓	✓	Approved	Land S of Newberry, Roman Bank	Countryside	0.4	Employment	0
40534						✓	✓	✓	Approved	Land SE of Burrall Plas Tec Ltd	Wisbech	7.5	Employment	0
40535						✓	✓	✓	Approved	Gaul Farm Industrial Units	March	1.0	Mixed use	0
40536						✓	✓	✓	Approved	Land NE of 25 Cromwell Rd	Wisbech	2.0	Mixed use	0
40537						✓	✓	✓	Approved	Dagless Ltd, N of Brigstock Road	Wisbech	1.9	Employment	0
40538						✓	✓	✓	Approved	11 Europa Way	Wisbech	0.8	Employment	0
40539						✓	✓	✓	Approved	Unit W of Jacks, Fenland Way	Chatteris	1.7	Employment	0
40540			✓						Approved	38 Whittlesey Road	March	0.7	Employment	0
40541			✓						Approved	Coleseed Business Complex	March	0.6	Employment	0
40322/ 40306R			✓						New site	Revised proposal sites 40322 & 40360R	Elm	10.0	Housing	215
40373/ 40498R		✓	✓						New site	Revised proposal for sites 40373 & 40498	Leverington	4.3	Housing	100

3 WATER RESOURCES AND SUPPLY

3.1 Water resources policies and guidance

3.1.1 National guidance

National Planning Policy Framework and Planning practice guidance

A water cycle study is a voluntary study that helps organisations work together to plan for sustainable growth. It uses water and planning evidence to understand environmental and infrastructure capacity. It can identify joined up and cost-effective solutions, that are resilient to climate change for the lifetime of the development. When prepared at an early stage of plan-making, water cycle studies provide evidence for plans and sustainability appraisals. They are usually led by local authorities (or groups of local authorities), since their chief aim is to provide evidence for robust plans. Other partners often include the Environment Agency and water companies.

Unlike an SFRA, a WCS is not a requirement of the National Planning Policy Framework (NPPF, Ref. 75). However, the NPPF states that strategic policies in development plan documents should make 'sufficient provision' for infrastructure for water supply and wastewater, and planning practice guidance (Ref. 53) states that a water cycle study can help in the preparation of a plan for sustainable growth.

Water cycle studies provide evidence for plans and sustainability appraisals and are ideally completed at an early stage of plan-making. Local authorities (or groups of local authorities) usually lead water cycle studies, as a chief aim is to provide evidence for sound plans.

Water stress classification for England and Wales

The Environment Agency and Natural Resources Wales have reviewed the current and future water usage and climate change scenarios, to provide an indicative water stress classification for areas in England and Wales (Ref. 14). Water stress is defined in the Water Industry (Prescribed Conditions) Regulations 1999, amended in 2007, as where:

"'The current household demand for water is a high proportion of the current effective rainfall which is available to meet that demand. Or, the future household demand for water is likely to be a high proportion of the effective rainfall which is likely to be available to meet that demand."

High population density and high levels of demand increase the pressure on available supplies, as well as environmental factors such as local water resource availability.

Two assessments of water stress are undertaken. The first relates to the water companies' stress, in which the following criteria were used to determine the relative level of water stress for water company areas:

- Current per capita demand for water[1]
- Forecast growth in per capita demand for water
- Forecast population growth
- Current water resource availability
- Forecast resource availability

[1] It should be noted that the water stress criteria 'current per capita demand for water' relates to potable water supplies. Taken with other criteria, this indicator may merit a Local Plan evidence development to consider the requirement for higher levels of water efficiency in new developments.

The water stress methodology provides an indication of relative water stress in individual water company areas by assessing the degree to which the resources in each water body within the area are exploited. **Fenland District is within the Anglian Water service area, which is classed as in a 'serious' water stress by the Environment Agency.** For the full methodology on the derivation of scores to determine the water stress classification, see Annex 1 of 'Areas of water stress: final classification' (Ref. 27).

The second assessment is water body stress. **The water bodies within Fenland District are at 'low' to 'moderate' stress**, indicating that the level of stress placed on the water environment by the use of water through abstraction, discharge and management of storage in Fenland is not as serious as the Anglian-wide catchment. The population change and development proposed in the Local Plan would further aggravate the level of water stress for both the water company and the water bodies.

As of February 2021, the Environment Agency has been in the process of consultation to update the determination of water stressed areas in England (Ref. 73). With a greater understanding of population growth, climate change and environmental requirements since the 2013 publication (Ref. 27), the outcomes of the consultation and subsequent determination of water stressed areas may change the classification of the level of stress affecting Fenland's water bodies.

Building Regulations and Optional Technical Standards

In 2013-2014 the Government undertook a significant amendment to the existing Building Regulations, carrying out a Housing Standards Review followed by a Ministerial Statement on Building Regulations and related note in March 2014 (Ref. 35). The initiative aimed to simplify government regulations and multiple local standards into one key set of 'tiered' standards in relation to Access, Security, Water, Energy and Space. Significantly, the Ministerial Statement proposed to introduce a new, tighter (Housing) Optional Technical Standard for water efficiency to be set at 110 litres/person/day (l/p/d) to replace the existing water consumption target of 125 l/p/d (Ref. 35).

The NPPF enables LPAs to set out optional water efficiency requirements in a Local Plan, with the aim of improving efficiency standards for new development where it can be demonstrated there is a clear need. Given the location of Fenland in an area of high water stress, it is recommended that the Council adopt the more stringent water efficiency requirement of 110 l/p/d in Flood and Water policies to be set out in the emerging Local Plan.

In addition, the Water Act 2003 (s.83) (Ref. 1) states that "in exercising its function and conducting its affairs, each public authority shall take into account, where relevant, the desirability of conserving water supplied or to be supplied to premises."

An investigation by the Environment Agency and the Energy Saving Trust (Ref. 5) found that as sustainable building standards are tightened in new homes, CO_2 emissions from hot water use are likely to form a progressively larger component of overall household emissions, and may eventually exceed emissions from heating the home. It also found that more efficient water use could contribute to lower CO_2 emissions.

3.1.2 Regional Guidance

Water Resources Management Plan (WRMP)

Water companies are obliged to produce water resources management plans (WRMPs) every 5 years, with the current plans, published in 2019, setting out how the companies will maintain customer supplies over the period 2020-2045. The regulatory assessments show which companies have been identified as having sufficient supplies, within present legislation, to meet growth. They also show any strategic schemes that are needed to achieve this, along with reducing demands and leakage.

Anglian Water's WRMP 2019 (Ref. 60) shows how Anglian Water plans to maintain the balance between water supplies and demand. It also provides robust justification for securing a tighter water efficiency standard and shows the water company's plans to meet the longer-term challenge of population increase, climate change and growing environmental need.

The WRMP is the result of a comprehensive water resource planning exercise and consultation with stakeholders. Established cost-benefit and cost-effectiveness methods have been applied to assess supply-demand needs and the uncertainties regarding the future have been covered through the use of target headroom allowances. The process allows identification of priority actions and to optimise economic and water resources. The WRMP also identifies the potential for a new reservoir in the adjacent North Fenland Water Resource Zone which could have a positive impact on water supply in the district in the longer term.

Catchment Abstraction Management Strategy (CAMS)

A Catchment Abstraction Management Strategy (CAMS) sets out how the Environment Agency will manage water abstraction in each catchment (e.g. the River Nene catchment). CAMS documents describe where water is available for abstraction and the implications water resource availability has for new and existing water abstraction licences, and contributes to the Water Framework Directive (WFD) by:

- providing a water resource assessment of rivers, lakes, reservoirs, estuaries and groundwater;
- identifying water bodies that fail the flow conditions expected to support good ecological status;
- preventing deterioration of water body status due to new abstractions; and
- providing results which inform River Basin Management Plans (RBMPs).

A discussion on the individual CAMS zones and their respective water resources is presented below.

The Nene CAMS (Ref. 24)

The River Nene is an important source of raw water. Approximately 90% (by volume) of the licensed abstractions in the area are made by Anglian Water with the majority of the water stored in Pitsford Water and Rutland Water. The remaining 10% are split between spray irrigation, farming, industrial and amenity.

The CAMS process defines a number of Assessment Points (AP) throughout the whole River Nene catchment, although only one is within the study area; AP16 Nene Downstream. The AP is in areas where there is restricted water available for licensing. Therefore, during low and medium river flow periods the water resource is appropriately protected by hands-off flow (HOF) conditions. This translates into specific conditions for new and existing abstraction licences that should be taken into account for large additional developments, if applicable.

There are three level-dependent environments within Fenland District; Cross Guns, Dog in a Doublet and Nene Washes. The level-dependent environments are characterised by a network of river channels flowing above the level of the surrounding land. The low-lying land has a network of drainage ditches, which remove water from the low-lying land into the main river channels during the winter/high flows and provide an irrigation resource during the summer/low flows.

Whilst the Nene CAMS was published in 2013, this remains the current strategy for water abstraction in the River Nene catchment.

The Old Bedford including Middle Level CAMS (Ref. 26)

The Old Bedford and Middle Level catchment has some of the most fertile and productive agricultural soils in the UK, making agriculture the predominant land use and key to the local economy. The main water resource pressure in this catchment occurs during summer months when agricultural demand exceeds supply. The Middle Level Commissioners have a long-term plan to store winter water for use in the summer

to top up their drains for environmental and navigation purposes. The watercourses in the catchment comprise a dense network of high and low-level interlinked drains which are used to move and hold water where it is needed. Public water supplies are all sourced from outside the catchment.

River Basin Management Plan and Catchment Partnerships

The Anglian River Basin District (RBD) River Basin Management Plan (Ref. 37) is a six year plan that reviews the current health of the river environment and identifies any necessary improvements. Due to the close links between water and land resources, it also informs decisions on land-use planning. RBMPs take a catchment-based approach, bridging the gap between strategic management planning and local water body scale management.

Catchment Partnerships were established as part of Defra's Catchment Based Approach (Ref. 78), with the aim that locally based partnerships would aid the process of 'translating environmental problems into actions'. Actions delivered by catchment partnerships vary in scale, and range from practical works (e.g. catchment restoration) to providing comment or feedback on river basin planning consultations.

The River Nene Regional Park Community Interest Company is the Nene's catchment partnership (Ref. 83). The Water Care Partnership is the counterpart for the Old Bedford and Middle Level. These organisations want to inform the river basin management planning process and implement measures and initiatives to improve the water environment in their areas. These projects are identified in the Nene Catchment Partnership Management Plan and the Water Care Partnership Catchment Action Plan, respectively, and aim to achieve maximum benefit with a strong focus on river basin management improvements, natural flood risk reduction and improved public amenity and access.

The identified priority issues to tackle in the Nene and the Old Bedford and Middle Level catchments are water quality, habitat quality, and hydromorphology.

Environment Agency guidance and recommendations

The Environment Agency expects future WRMPs and WCSs to be more sustainable in terms of abstraction. Therefore, it is likely that alternative sustainable sources of water will be needed to supply growth areas, also accounting for the need for climate resilience.

The Environment Agency recommends that any proposed development considers water resources as a key issue and that the impact of long term increases in abstraction is recognised. The combined effect of growth across the region on demand for water should also be taken into account.

The use of water efficiency measures is recommended, especially in new developments. The use of technology that ensures efficient use of natural resources could support the environmental benefits of future development proposals and could help attract investment to the area.

Environmental design principles are also supported by the Environment Agency, including:

- Protect existing natural environment assets including green and blue infrastructure.
- Restore and enhance local and regional natural systems to increase climate resilience and carbon capture.
- Establish a network of green and open spaces that create benefits for the whole community.

Water Resources East (WRE) Regional Water Resource Plan

Water Resources East (WRE, Ref. 85) was formed in 2014 by Anglian Water, with the aim of learning from international best practice on how to develop a more collaborative approach to water resource management planning in a region under significant pressure due to population growth and economic ambition, the need for enhanced environmental protection and climate change pressure. WRE's focus is on multi-sector water

resource planning, because Eastern England is characterised by its diversity of water use, including very significant non-public water supply users such as irrigated agriculture, food production and energy. WRE's vision for Eastern England is:

> *"to have sufficient water resources to support a flourishing economy, a thriving environment and the needs of its population, and for the region to be seen as an international exemplar for collaborative integrated water resource management."*

WRE is planning for sustainable and resilient water resources for the next 50 years and beyond. As such, WRE are developing a regional Water Resources Management Plan (WRMP), due to be published in 2023, and initial consultation has been completed on the emerging plan. The WRE Regional WRMP will focus on:

1. Demand management – leakage and Per Capital Consumption (PCC) reduction with multi-sector water efficiency measures.
2. Large infrastructure options (10Ml/d, e.g. reservoirs, transfers, desalination, effluent re-use) which have a regional or national significance.
3. 'Local' non-water company and smaller water company infrastructure projects and schemes which require the specialist, local knowledge of WRE members.
4. Supporting, facilitating or overseeing water innovations and exemplars in Eastern England which push the 'art of the possible'.

3.1.3 Local Guidance

Fenland Local Plan and Sustainability Appraisal framework

The existing Local Plan was adopted in May 2014 (Ref. 29). A stated objective of the adopted Local Plan is to *"increase water efficiency and limit water consumption to levels supportable by natural processes and storage systems"*.

Policy LP14 of the adopted Local Plan (Responding to Climate Change and Managing the Risk of Flooding in Fenland) aims to ensure in all cases that new development is able to explicitly demonstrate what reasonable contribution the development will make towards minimising resource consumption above and beyond what is required by Building Regulations and/or other standard planning policies. All developments are encouraged to incorporate on-site renewable and/or decentralised renewable or low carbon energy sources, water saving measures and measures to help the development withstand the longer-term impacts of climate change.

Fenland District Council is currently preparing a new Local Plan to replace the 2014 adopted Local Plan, and initial consultations have been undertaken. A Sustainability Appraisal Scoping Report has been prepared for the emerging Fenland Local Plan (Ref. 57, October 2019), which assesses the baseline social, environmental and economic situation in the Plan area, aiming to identify which issues need to be addressed by the subsequent Sustainability Appraisal of the Local Plan. The Scoping Report sets out nine themes that have been identified as the main issues that the new Local Plan will seek to address and which, once adopted, will be key to helping deliver the priorities of the Council's Business Plan.

Water Resources is one of the themes of the emerging Local Plan, and the following sustainability objectives have been identified in relation to this theme:

7.1 Minimise water consumption and encourage re-use
7.2 Avoid deterioration and seek opportunities to enhance water quality in rivers and other water bodies.

The sustainability objectives identified in the Sustainability Appraisal will also form the objectives of the Local Plan. As the Local Plan is being progressed, each emerging Policy will be assessed against the sustainability objectives using the criteria set out in the Sustainability Appraisal Scoping Report.

3.2 Existing situation

Fenland District is covered by the South Fenland and Ruthamford North Water Resource Zones (WRZ) (**Figure 3-1**). The South Fenland WRZ was recently realigned, with the Hunstanton WRZ incorporated into the North Fenland WRZ (Ref. 60). The Ruthamford North WRZ is supplied by surface water, with abstractions from the River Nene and Welland to Pitsford and Rutland Water respectively. In the South Fenland WRZ, water is abstracted from a combination of groundwater in the Norfolk Chalk aquifers and the River Nar (Ref. 61).

The supply-demand balance in the region is under significant pressure from population growth, climate change, sustainability reductions and the need to increase resilience to severe drought, as shown by **Figure 3-2**, which is an extract from the WRMP (Ref. 60). These challenges are acute in the Anglian region, which is characterised by low rainfall and which has many wetland sites of conservation interest. The South Fenland and Ruthamford North WRZ are areas which are particularly affected by these impacts. These pressures drive the need for investment by Anglian Water in both demand and supply management.

The Supply Demand Balance forecast included in the WRMP uses 2017/2018 as the base year, with the forecast extending to 2045. The per-capita consumption for South Fenland and Ruthamford North WRZ is shown in **Table 3-1** below (Ref. 58). These values can be compared with Ruthamford South WRZ, which has the highest unmeasured demand in the Anglian region of 260.9 litres per household per day (l/h/d), and Ixworth with the lowest unmeasured demand of 48.8 l/h/d. Ixworth has the highest measured demand in the region (147.8 l/h/d) and North Norfolk Coast the lowest (117.4 l/h/d).

Table 3-1: Per-capita consumption (PCC) in the WRZ covering Fenland
(Source: Anglian Water)

WRZ	Per capita consumption (2017/18)		
	Measured PCC (l/h/d)	Unmeasured PCC (l/h/d)	Weighted average (l/h/d)
Ruthamford North	134.9	151.1	138.1
South Fenland	131.0	219.0	156.9

Demand management is a priority of Anglian Water. Since Anglian Water was privatised in 1989, the company has reduced its water take despite an increase in the properties they serve of more than 30%. Anglian Water has reviewed its leakage performance against other suppliers in the UK and have been found to be leaders in leakage management performance. By the end of 2020, Anglian Water aimed to have 93% of households metered with 86% paying metered charges. Progress against this target was affected by the Covid-19 pandemic, with >80% of households in the region currently having a water meter fitted. No specific figures are available for the South Fenland WRZ in the WRMP 2019.

Fenland District Council produces annual monitoring reports (AMR) which provide a review of performance and progress in the delivery of the Local Plan policies (Ref. 34). The AMRs for 2014 to 2020 have been reviewed to identify any information about the application and effectiveness of Policy LP14 in delivering energy and water efficiency measures on development sites approved since 2014. For all of these reports, there was no reference to resource consumption, other than that the Resource Use and Renewable Energy Supplementary Planning Document was adopted in 2014. Renewable energy generation was addressed, but only in the context of standalone applications for renewable energy generation sites, and not where renewable energy is part of a larger scheme, such as a major housing development.

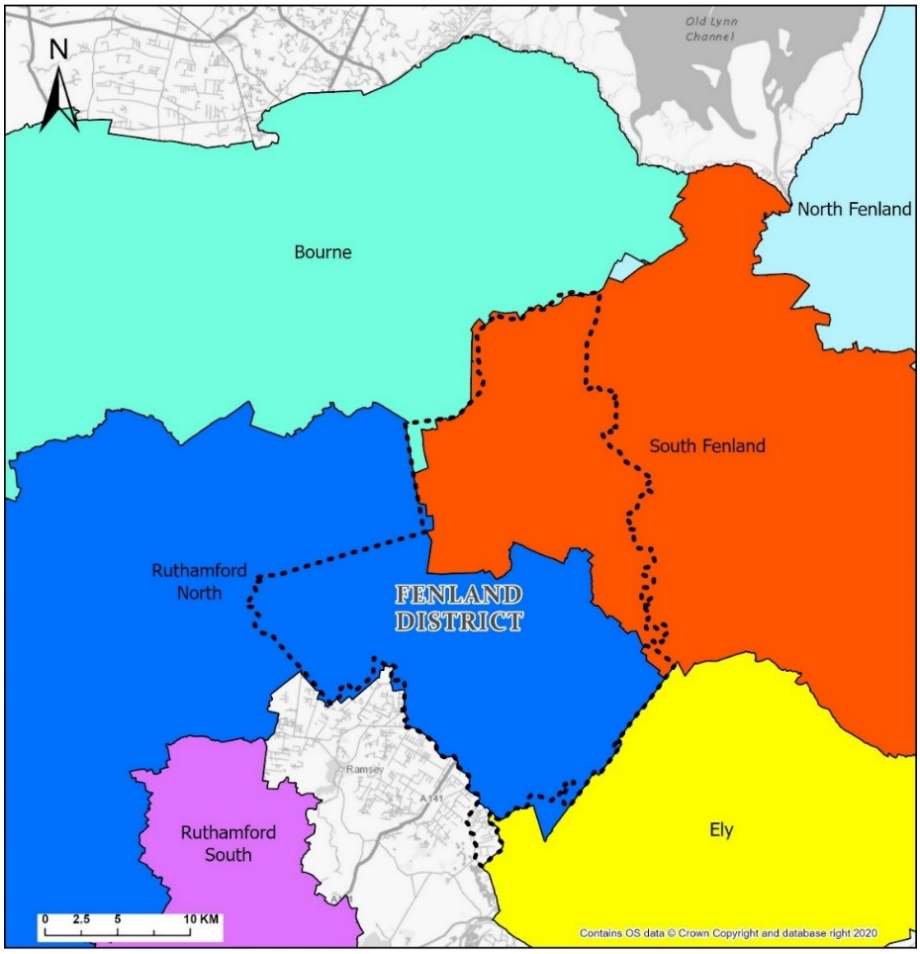


Figure 3-1: Anglian Water Resource Zones
(Source: Water Resource Zones in WRMP 2019 (Ref. 60), Anglian Water)

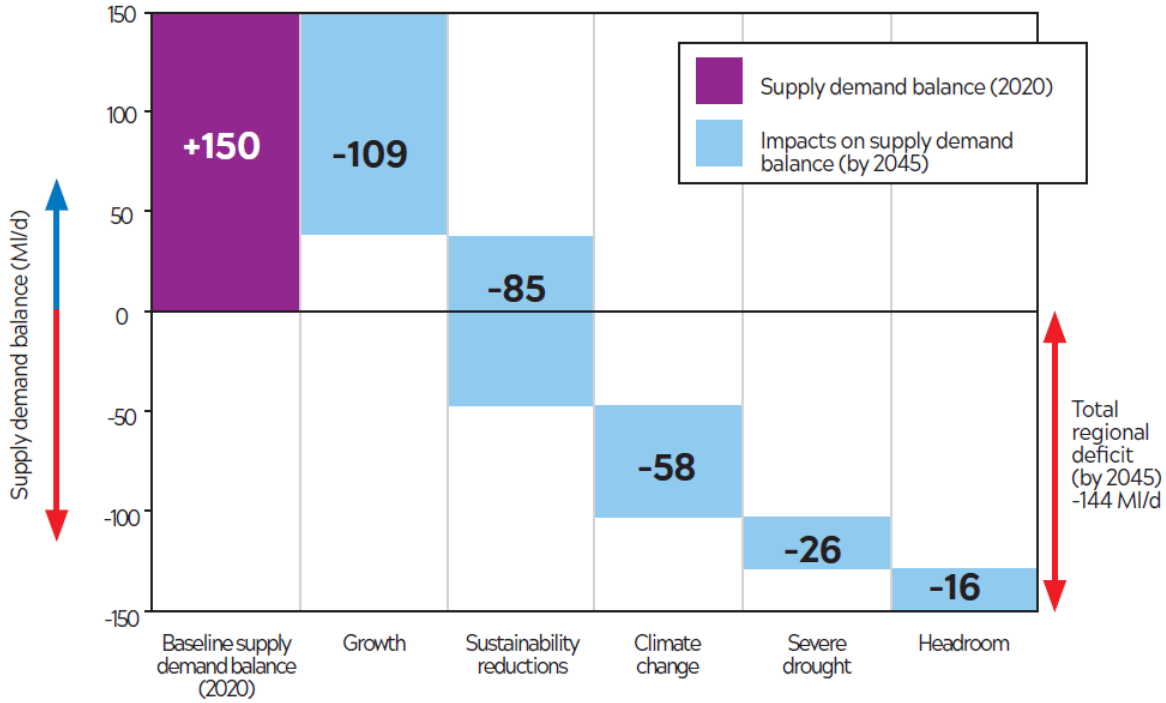


Figure 3-2: Pressures on the supply demand balance in the Anglian region
(Source: Anglian Water)

3.3 Impact of development on water resources

3.3.1 Baseline supply-demand balance

South Fenland WRZ

Anglian Water's Demand Forecast (Ref. 58) assumed a baseline population for South Fenland WRZ of 95,068 people for 2017/18. Anglian Water forecasts around 4,370 new properties per 5-year AMP period in the short term for South Fenland. In line with the local authority figures, this reduces to 1,500 properties per AMP period in the medium to long term.

The WRMP 2019 shows that the South Fenland WRZ will have a supply shortage of more than 15 million litres per day in 2045 based on projected demand (Ref. 60). This will be exacerbated by the potential for severe drought in this WRZ, which Anglian Water aims to offset through strategic transfers between the Fenland WRZs and Ruthamford North, which includes potable water transfer. The weighted average PCC is expected to fall from 156.9 l/h/d to 134.1 l/h/d in the final plan forecast, as demand management option savings are realised, and customers switch from unmeasured to measured status.

Table 3-2: and **Table 3-3** below correspond to Tables 3.4.5 and 3.4.6 from the WRMP – WRZ Summaries (Ref. 61). They show a forecast surplus of 3.5 Ml/d (Dry Year Annual Average (DYAA)) and 2.7 Ml/d (Critical Period (CP)) for the first year of AMP7 (2020/2021). By the end of AMP11 (2044/2045) Anglian Water estimates that there is a greater than 95% probability that the WRZ water balance will be in deficit (Ref. 58).

Table 3-2: South Fenland baseline supply demand balance to 2045 for dry year annual average (DYAA) conditions (deficits highlighted in red) (Source: Anglian Water)

	2020-21 (start of AMP7)	2024-25 (end of AMP7)	2029-30 (end of AMP8)	2034-35 (end of AMP9)	2039-40 (end of AMP10)	2044-45 (end of AMP11)
Total DYAA Water available for use: Area sources* (Ml/d)	32.38	32.55	10.79	10.79	10.79	10.79
Net transfers into Area (Ml/d	3.30	3.30	3.30	3.30	3.30	3.30
Total DYAA Water available for use: including transfers* (Ml/d)	35.68	35.85	14.09	14.09	14.09	14.09
Total DYAA Distribution Input (Ml/d)	30.80	31.25	31.44	31.46	31.52	31.57
Total DYAA Target Headroom (Ml/d)	1.37	1.48	1.61	1.79	1.96	2.05
DYAA supply-demand balance (Ml/d)	3.50	3.12	-18.96	-19.15	-19.39	-19.53

** bulk imports, exports, and inter-zone transfers*

Table 3-3: South Fenland baseline supply-demand balance to 2045 for critical period (CP) conditions (deficits highlighted in red) (Source: Anglian Water)

	2020-21 (start of AMP7)	2024-25 (end of AMP7)	2029-30 (end of AMP8)	2034-35 (end of AMP9)	2039-40 (end of AMP10)	2044-45 (end of AMP11)
Total CP Water available for Use: Area sources* (Ml/d)	42.95	42.95	19.81	19.81	19.81	19.81
Net transfers into Area (Ml/d	0.10	0.10	3.30	3.30	3.30	3.30
Total CP Water available for Use: including transfers* (Ml/d)	43.05	43.05	23.11	23.11	23.11	23.11
Total CP Distribution Input (Ml/d)	38.61	39.17	39.40	39.44	39.56	39.69
Total CP Target Headroom (Ml/d)	1.72	1.85	2.02	2.24	2.47	2.58
CP supply-demand balance (Ml/d)	2.71	2.03	-18.31	-18.56	-18.91	-19.16

** bulk imports, exports, and inter-zone transfers*

Ruthamford North WRZ

Anglian Water's Demand Forecast (Ref. 58) assumed a baseline population for Ruthamford North WRZ of 385,000 people for 2017/18. Property growth rates vary from 40,000 per 5-year AMP period in the short term, reducing to 20,000 properties per AMP period in the medium to long term. It should be noted that the Ruthamford North WRZ includes Northamptonshire and Peterborough as well as southern part of Fenland, so the property growth rates are dominated by the forecasts for the larger urban areas within the WRZ.

The WRMP 2019 shows that the Ruthamford North WRZ will have a supply shortage of more than 47 million litres per day in 2045 based on projected demand (Ref. 60). The weighted average PCC is expected to fall from 134.9 l/h/d to 122.7 l/h/d in the Final plan forecast, as demand management option savings are realised, and customers switch from unmeasured to measured status.

Table 3-4 corresponds to Table 2.4.5 from the WRMP – WRZ Summaries (Ref. 61). It shows a forecast surplus of 6.97 Ml/d (Dry Year Annual Average (DYAA)) for the first year of AMP7 (2020/2021). By the end of AMP11 (2044/2045) Anglian Water estimates that there is a greater than 95% probability that the WRZ water balance will be in deficit (Ref. 58).

Table 3-4: Ruthamford North baseline supply demand balance to 2045 for dry year annual average (DYAA) conditions (deficits highlighted in red) (Source: Anglian Water)

	2020-21 (start of AMP7)	2024-25 (end of AMP7)	2029-30 (end of AMP8)	2034-35 (end of AMP9)	2039-40 (end of AMP10)	2044-45 (end of AMP11)
Total DYAA Water available for Use: Area sources* (Ml/d)	285.40	283.82	281.84	279.86	277.88	275.90
Net transfers into Area (Ml/d	-39.60	-46.34	-47.16	-47.74	-48.30	-48.86
Total DYAA Water available for Use: including transfers* (Ml/d)	245.80	237.48	234.68	232.12	229.58	227.04
Total DYAA Distribution Input (Ml/d)	223.21	231.02	236.18	239.88	244.21	248.30
Total DYAA Target Headroom (Ml/d)	15.63	16.90	17.72	18.00	148.32	16.14
DYAA supply-demand balance (Ml/d)	6.97	-10.45	-19.23	-25.75	-32.95	-37.40

** bulk imports, exports, and inter-zone transfers*

3.3.2 Options for maintaining the supply-demand balance

Anglian Water acknowledges that, despite there currently being surpluses in the South Fenland WRZ, projected future deficits and deficits in adjacent WRZs (including Ruthamford North WRZ) mean that it is necessary to consider developing additional resource transfer routes. Feasible options of the South Lincolnshire WRZ to Ruthamford North WRZ Transfer (67 Ml/d) and the Ruthamford North WRZ to South Fenland WRZ Transfer (40 Ml/d) have been developed.

Following WRMP guidelines, Anglian Water applied option appraisal techniques to determine the most cost-effective plan for maintaining the supply-demand balance over the next 25 years. These techniques are based on an established framework for water supply-demand planning, where the supply-demand risk is accounted for through the use of a planning allowance, target headroom.

Scenario testing was undertaken for the various options available to improve the transfer between Ruthamford North and South Fenland. Three scenarios were modelled for the Ruthamford North to South Fenland Transfer and used to select an optimal version of the plan, aiming to provide a balance between adequate future-proof capacity and actual utilisation in a business as usual scenario. This version became Anglian Water's preferred strategy and is referred to as the Best Value Plan going forward.

Anglian Water had to clearly demonstrate the additional benefits of increasing capacity for certain transfer options and therefore assessed a least cost version of their Best Value Plan, which is referred to as the Alternative Least Cost Plan. The Alternative Least Cost Plan is presented as being consistent with the strategy for their best value plan but with scheme capacities sized only to address the supply demand deficits identified for WRMP19 without any allowance for future uncertainty. A Least Cost Plan was also identified as the default least cost strategy, but it is recognised that this plan does not provide the flexibility or connectivity required to meet the future challenges and is infeasible for implementation in AMP7. The least-cost plan was then subject to amendment to take account of the social and environmental costs and sensitivity to alternative levels of service, climate change and sustainability reduction effects. These options are summarised in **Table 3-5**.

For the proposed South Lincolnshire WRZ to Ruthamford North WRZ, there was only one viable option, which is also included in **Table 3-5**.
The Best Value Plan was submitted by Anglian Water in their September 2018 Business Plan and provides additional benefits to address future uncertainty.

Table 3-5: Comparison of Transfer Plan Solutions
(Source: Extract from Table 3.3: Comparison of Solutions in AMP7 (Ref. 59), Anglian Water)

Option Na	Plan	Option Ref.	Option Name	Capacity (Ml/d)	Capex
South Lincolnshire WRZ to Ruthamford North WRZ Transfer	Least Cost Plan	SFN3	Ruthamford North WRZ to South Fenland WRZ Transfer (22 Ml/d)	22	35,307
	Alternative Cost Plan	LCP13	Ruthamford North WRZ to South Fenland WRZ Transfer (32 Ml/d)	32	42,260
	Best Value Plan	SFN4	Ruthamford North WRZ to South Fenland WRZ Transfer (40 Ml/d)	40	50,290
Ruthamford North WRZ to South Fenland WRZ Transfer	Best Value Plan	RTN27	Ruthamford North WRZ to South Fenland WRZ Transfer (67 Ml/d)	67	55,240

3.3.3 Preferred plan

South Fenland WRZ

Lowering consumption levels is a priority to offset resource development, therefore leakage reduction, enhanced metering and water efficiency programmes have been given special attention and are included in the baseline. Anglian Water presented the following Final Plan scenario with demand management options forecast:

- Household demand to increase over the WRMP period from 14.92 Ml/d to 15.79 Ml/d;
- Leakage to decrease by 35% from the baseline value of 6.76 Ml/d (2020) to 4.36 Ml/d at the end of the WRMP plan period (2045) with demand management option savings;
- Non-household demand to decrease from 8.64 Ml/d to 7.09 Ml/d over the WRMP period; and
- Distribution Input to decrease slightly from 31.25 Ml/d to 28.17 Ml/d once the influence of demand management option savings is included.

Table 3-6 and **Table 3-7** below correspond to Tables 3.4.11 and 3.4.12 from the WRMP – WRZ Summaries (Ref. 61). They forecast a surplus of 0.5 Ml/d (DYAA) and 2.97 Ml/d (CP) for the first year of AMP7 (2020/2021). However, by the end of AMP11 (2044/2045) Anglian Water expects the WRZ water balance to be neutral (Ref. 58).

Table 3-6: South Fenland final supply demand balance to 2045 (dry year annual average (DYAA) conditions)
(Source: Anglian Water)

	2020-21 (start of AMP7)	2024-25 (end of AMP7)	2029-30 (end of AMP8)	2034-35 (end of AMP9)	2039-40 (end of AMP10)	2044-45 (end of AMP11)
Total DYAA Water available for Use* (Ml/d)	32.48	32.65	30.69	30.67	30.44	30.22
Total DYAA Distribution Input (Ml/d)	30.56	29.09	29.08	28.88	28.47	28.17
Total DYAA Target Headroom (Ml/d)	1.37	1.48	1.61	1.79	1.96	2.05
DYAA supply-demand balance (Ml/d)	0.54	2.08	0.00	0.00	0.00	0.00

** Includes bulk imports, exports, and inter-zone transfers*

Table 3-7: South Fenland final supply-demand balance to 2045 for critical period (CP) conditions
(Source: Anglian Water)

	2020-21 (start of AMP7)	2024-25 (end of AMP7)	2029-30 (end of AMP8)	2034-35 (end of AMP9)	2039-40 (end of AMP10)	2044-45 (end of AMP11)
Total CP Water available for Use: Area sources* (Ml/d)	42.95	45.53	19.81	19.81	19.81	19.81
Net transfers into Area (Ml/d)	0.10	0.10	20.01	19.98	19.82	19.70
Total CP Water available for Use: including transfers* (Ml/d)	43.05	43.05	38.78	38.76	38.60	38.48
Total CP Distribution Input (Ml/d)	38.35	36.78	36.76	36.52	36.13	35.89
Total CP Target Headroom (Ml/d)	1.72	1.85	2.02	2.24	2.47	2.58
CP supply-demand balance (Ml/d)	2.97	4.42	0.00	0.00	0.00	0.00

** Includes bulk imports, exports, and inter-zone transfers*

Ruthamford North WRZ

Lowering consumption levels is a priority to offset resource development, therefore leakage reduction, enhanced metering and water efficiency programmes have been given special attention and included in the baseline. Anglian Water presented the following Final Plan scenario with demand management options forecast:

- Household demand to increase over the WRMP period from 125.47 Ml/d to 143.48 Ml/d;
- Leakage to decrease by 42% from the baseline value of 37.11 Ml/d (2020) to 21.47 Ml/d at the end of the WRMP plan period (2045) with demand management option savings;
- Non-household demand to increase slightly from 50.27 Ml/d to 50.84 Ml/d over the WRMP period; and
- Distribution Input to increase slightly from 219.36 Ml/d to 222.30 Ml/d once the influence of demand management option savings is included.

Table 3-8 below corresponds to Table 2.4.10 from the WRMP – WRZ Summaries (Ref. 61). A neutral supply-demand balance is forecast for all AMP periods up to the end of AMP11 (2044/2045).

Table 3-8: Ruthamford North final supply demand balance to 2045 for dry year annual average (DYAA) conditions
(Source: Anglian Water)

	2020-21 (start of AMP7)	2024-25 (end of AMP7)	2029-30 (end of AMP8)	2034-35 (end of AMP9)	2039-40 (end of AMP10)	2044-45 (end of AMP11)
Total DYAA Water available for Use* (Ml/d)	285.40	283.82	281.84	279.86	377.88	275.90
Net transfers into area (Ml/d)	-48.57	50.28	-45.85	-42.14	-38.79	-37.46
Total DYAA Water available for Use: including transfers* (Ml/d)	236.83	233.54	235.99	237.72	239.09	238.44
Total DYAA Distribution Input (Ml/d)	221.20	216.64	218.27	219.72	239.09	238.44
Total DYAA Target Headroom (Ml/d)	15.63	16.90	17.72	18.00	18.32	16.14
DYAA supply-demand balance (Ml/d)	0.00	0.00	0.00	0.00	0.00	0.00

** Includes bulk imports, exports, and inter-zone transfers*

3.3.4 Other potential water resources issues

Although this document predominantly considers potable water supply, other water resource issues within the study area should also be considered, such as agricultural use, navigation, amenity, and biodiversity.

Whilst it is recognised that agriculture, navigation and tourism are not likely to significantly impact on the larger "growth" issues, the study area is likely to remain primarily agriculturally based for the foreseeable future, and will therefore, create employment and contribute to the economy. Navigation and tourism have employment and economic benefits on a smaller scale.

Regarding the future water demands of agriculture, there is the potential to explore opportunities for new development to support local agricultural demands, e.g. via SuDS attenuation, greywater, etc. This could be another way of reducing the water stress in the region.

Increasing population and a changing climate will have an impact on water resources in the future. Water resources are limited across the district and need to be managed and used effectively to meet the needs of people and the natural environment. Water efficiency measures play a key role in reducing demand on water resources and accommodating growth in business, housing, and population requirements without the need to increase overall consumption. Drivers for water efficiency include: delivery of the objectives of the Water Framework Directive; reducing pressure on wastewater treatment capacity; adapting to the impacts of climate change; and reducing domestic energy use.

3.3.5 Impact of Climate Change on Water Resources

Work carried out by the UK Climate Impacts Programme (UKCIP) predicts that winter rainfall will increase whereas summer rainfall will decrease in future. In addition, increasing temperatures will reduce the length of the winter recharge season and increase water supply demand (Ref. 27).

The impact of climate change has been analysed by Anglian Water as part of the WRMP 2019 (Ref. 60). The impact assessment confirmed that across their distribution area their winter storage reservoirs and direct river abstraction intakes were most vulnerable. However, the South Fenland WRZ was considered to have no vulnerability to climate change. However, South Fenland was identified as being impacted by severe drought, with the potential risk of rota-cuts and standpipes being implemented to maintain supplies.

3.4 Proposed strategy for Water Resources and Supply

Anglian Water's WRMP confirms that the existing water resources and associated supply infrastructure in the South Fenland WRZ are not able to accommodate the forecast supply demand without demand management and improving transfers between Water Resource Zones. The WRMP sets out a strategy for water resources and supply which redresses the deficit and allows sufficient headroom for uncertainties in development type and capacity. However, Fenland District is located within an area under considerable water abstraction stress.

Lowering consumption levels is therefore a priority to offset resource development. Anglian Water aims to use a combined strategy of smart metering, water efficiency and leakage reduction to reduce demand. In addition, Anglian Water plan to reduce leakage by 35% from 6.76 Ml/d in 2020 to 4.36 Ml/d in 2045.

A clean water network transfer scheme between Ruthamford North and South Fenland is currently proposed, which aims to improve the clean water network transfer capability, both to improve the supply security during periods of drought and to transfer water to the WRZs to the east.

4 WASTEWATER COLLECTION, TREATMENT AND WATER QUALITY

4.1 Planning and the Water Framework Directive

4.1.1 The Water Environment (WFD) (England and Wales) Regulations 2017

The EU Water Framework Directive 2000/60/EC (WFD) was transposed into UK law through the Water Environment (WFD) (England and Wales) Regulations (2003/2015/2017). These remain in force following the UK's withdrawal from the European Union under the amendments presented in the Floods and Water (Amendment etc.) (EU Exit) Regulations 2019.

The amended WFD Regulations require a 'good ecological status' to be achieved in all surface freshwater bodies, i.e. having biological, chemical, and structural characteristics similar to those expected in nearly undisturbed conditions. Development proposals affecting the water environment may impact the biological, hydromorphological, physico-chemical and/or chemical quality elements. Impacts leading either to deterioration in the status of a water body or to the water body being unable to achieve its status objectives are unlikely to be permitted.

New developments must be assessed to identify if they will:

- cause deterioration, or
- lead to failures in achieving ecological objectives.

The Anglian River Basin Management Plan (Ref. 37) details pressures facing the water environment and measures that need to be taken by all partners in order to meet the requirements of the directive in the Anglian region. Current levels of water abstraction are causing, or risk causing, environmental damage in various river catchments across East Anglia. Measures have been identified in the RBMP to address this, and have been allocated to the water companies for delivery through the Water Industry National Environment Programme for the period 2020-25.

The majority of watercourses in Fenland District are not in their natural state. Modifications such as channel straightening or dredging have taken place over centuries for reasons such as transport, urbanisation, land drainage and flood defence. In most cases, the watercourses in Fenland District still serve these important purposes and hence channels cannot be returned to a more natural state. Such watercourses have been designated as heavily modified or artificial water bodies under the WFD Regulations and are given the alternative objective of 'good ecological potential'.

Developers proposing large or industrial developments are strongly encouraged to liaise with the Environment Agency at an early stage in the planning process to gain further local information.

4.1.2 Fenland District Local Plan

The existing Local Plan 2014 (Ref. 29) identifies *Water Quality* as a relevant sustainability topic. Policy LP14 – Responding to Climate Change and Managing the Risk of Flooding in Fenland, aims to ensure:

> *"The discharge of surface water from developments should be designed to contribute to an improvement in water quality in the receiving water course or aquifer in accordance with the objectives of the Water Framework Directive."*

As previously discussed in Section 3.1.3, Fenland District Council is currently preparing a new Local Plan to replace the 2014 adopted Local Plan and a Sustainability Appraisal Scoping Report has been prepared

for this (Ref. 57). The Scoping Report identifies the following sustainability objectives for Water Resources, which are also relevant in terms of Wastewater Collection, Treatment and Water Quality:

7.1 Minimise water consumption and encourage re-use
7.2 Avoid deterioration and seek opportunities to enhance water quality in rivers and other water bodies.

It is intended that these objectives will be included in the objectives of the Local Plan, with the emerging Plan Policies being assessed against the sustainability objectives using the criteria set out in the Sustainability Appraisal Scoping Report.

4.1.3 Assessment of developments: who, when and what

The duty to ensure that WFD requirements are met by developers lies with the Environment Agency. Early engagement with the local planning authority, the Environment Agency and relevant water and sewerage companies can help to establish if water quality is likely to be a significant planning concern and, if it is, to clarify what assessment will be needed to support the application.
During the planning process a screening of the development is carried out, based on three issues, in this order of importance:

1. Causing deterioration - Does the development have the potential to cause deterioration in the WFD status of a water body? What is the expected impact of additional loads of treated sewage effluent?
2. Preventing improvements - Does the development prevent future improvement to the water body and therefore prevent it from reaching good ecological status/potential?
3. Protecting and enhancing – Are there opportunities for development to assist with protecting and improving the ecological status of water bodies and meeting WFD objectives.

Where water quality has the potential to be a significant planning concern an applicant should be able to explain how the proposed development would affect a relevant water body in a river basin management plan and how they propose to mitigate the impacts. Applicants should provide sufficient information for the local planning authority to be able to identify the likely impacts on water quality. The information supplied should be proportionate to the nature and scale of development proposed and the level of concern about water quality.

In those cases where it is likely that a proposal would have a significant adverse impact on water quality then a more detailed assessment will be required, alongside liaison with the water company. The water company will assess whether there is sufficient capacity within the existing infrastructure to accommodate foul flows from the site and within the sewerage catchment. If there is insufficient capacity to accommodate foul flows then a detailed site wide Foul Water Drainage Strategy shall be submitted to and agreed in writing by the local planning authority. The strategy should include the phasing of such works.

The assessment and drainage strategy should form part of the environmental statement if one is required because of a likely significant effect on water. Development which may require further assessment includes, but is not limited to (Ref. 3):

- Development within 20 metres of a watercourse where changes are proposed to the channel or bank form or where the long-term management of the watercourse would be affected;
- Development requiring EIA for reasons linked to the water environment;
- Where WRC capacity is at or close to permitted DWF capacity;
- New water infrastructure; and
- Developments on contaminated land.

Deterioration can be mitigated and multiple benefits for people and the environment can be achievable through good design such as SuDS, green infrastructure, and river restoration. For example, flood risk can be reduced, and biodiversity and amenity improved by designing development that includes permeable

surfaces and other sustainable drainage systems, removing artificial physical modifications and recreating natural features. Water quality can be improved by protecting and enhancing green infrastructure.

Fenland District Council produces annual monitoring reports (AMR) which provide a review of performance and progress in the delivery of the Local Plan policies (Ref. 34). The AMRs for 2014 to 2020 have been reviewed to identify any information about the application and effectiveness of Policy LP14 in delivering surface water management for new developments which has improved water quality or provided other mitigation. For all of these reports, there was no reference to water quality improvements achieved.

4.2 Existing situation and evidence base

4.2.1 Sewerage and wastewater treatment catchment

Fenland district is served by nine Water Recycling Centres (WRC). The catchments associated with each WRC are focused on the urban areas which they serve. **Map N – Water Recycling Catchments** shows the wastewater drainage catchments associated with each WRC.

Details of each WRC are presented in **Table 4-1**, including (where available) existing population figures, sewer catchment length and number of combined sewer outfalls (CSOs), alongside the percentage growth figures assumed for the next asset management period and for the next 25 years.

The Fenland catchment is relatively flat and consequently much of the wastewater transfer occurs via a series of pumping stations. Locations of pumping stations are shown in **Map P – IDB Catchments**.

Table 4-1: Extract of the Cambridgeshire County Summary for the Settlements
(Source: Water Recycling Long Term Management Plan 2018 (WRLTMP, Ref. 50), Anglian Water)

WRC / Settlement	Household Population	Population Equivalent [2]	No. of CSOs	% growth 2020 - 2025	% growth 2020 - 2045	Responsible
Benwick	912	923	-	-	-	Anglian Water
Chatteris-Nightlayer Fen	10,506	10,959	4	13	22	Anglian Water
Doddington	3,756	3,858	-	-	-	Anglian Water
Manea – Town Lots	1,716	1,737	-	-	-	Anglian Water
Whittlesey	14,973	15,170	6	13	19	Anglian Water
March	20,821	21,533	9	11	12	Anglian Water
Parsons Drove	482	489	-	-	-	Anglian Water
Tipps End Green Lane	192	194	-	-	-	Anglian Water
West Walton (Wisbech) [3]	41,401	104,677	9	9	21	Anglian Water

4.2.2 Wastewater treatment capacity

Anglian Water's Water Recycling Long Term Strategy (Ref. 50) was produced in 2018 with the aim of focusing investment appropriately and managing future risks associated with water recycling. One of the most significant future risks for Anglian Water's water recycling services is urban growth and development. If Anglian Water does not receive sufficient funding from economic regulation decisions and via developers,

[2] The Population Equivalent (PE) value includes the equivalent polluting potential (in terms of biodegradable organic matter) of industries located within the WRC area. The industrial polluting potential is compared with the number of people which would produce the same polluting load.

[3] Figures for West Walton (Wisbech) relate to the full drainage catchment served by the West Walton WRC, which includes a sizeable area in Norfolk.

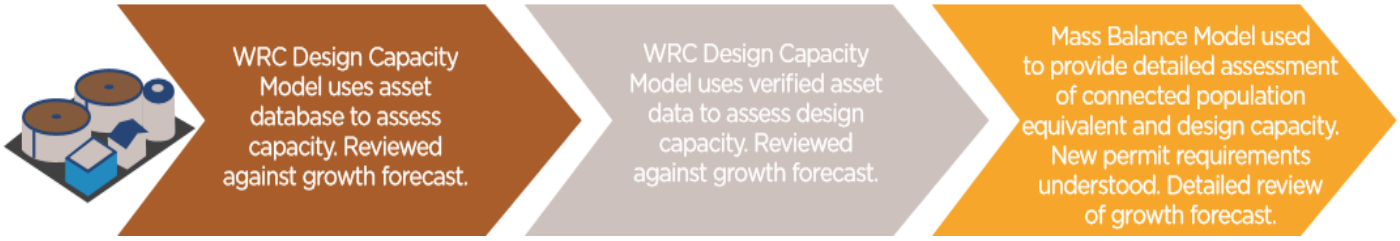
they may be unable to make sufficient investment in water recycling facilities and infrastructure. This could mean that continued urban development might result in:

- increased flows and load due to growth, urban creep, and climate change;
- breach of discharge consents set to control flow and quality of treated sewage;
- increased volumes of sludge to manage; and
- more housing being situated near Water Recycling Centres, leading to an increased likelihood of nuisance complaints, like odour.

Anglian Water considers WRC capacity from two perspectives, i) flow capacity – the amount of headroom available within the permit; and ii) biological capacity – the ability to treat load as designed.

All of Anglian Water's WRCs are assessed at Bronze level. If a capacity deficit is identified, then further assessment is undertaken at Silver level. Those that remain at high risk are promoted to Gold level and further detailed assessment is undertaken (**Figure 4-1**). The detailed assessment provides data to support the development of potential solutions.

Figure 4-1: Summary of the WRC capacity assessment process
(Source: Anglian Water WRLTMP, Ref. 50)



Anglian Water have an adaptive strategy to manage growth uncertainty. The capacity risk assessment process for WRCs is undertaken on an annual basis, to ensure investment is continually prioritised. Once growth locations and expected build rates per site are established and adopted in the Local Plan, a detailed assessment of the long-term required infrastructure upgrades regarding WRCs can be undertaken[4].

The permitted and measured dry weather flows (DWF) for each Fenland WRC are provided in **Table 4-2.** The Q80, or average value exceeded by 80 percent of all daily measured flows, is considered to be the accurate DWF measure. To allow for weather variations, Q90 is the average value which is exceeded by 90 percent of all daily measured flows, and is the compliance measure for the permitted DWF. The current permitted DWF is also provided in the table for each WRC, where available. Should a site be non-compliant, investigations are undertaken to identify the cause and remedial actions where appropriate.

Anglian Water aim to manage flows within their sewer network to provide a reliable service to customers, to reduce incidents of flooding and pollution events, minimise impact on communities and reduce expenditure. A three-stage risk assessment process, similar in principle to the WRC assessment process, is applied to assess capacity to serve growth, urban creep and climate change (**Figure 4-2**). As part of Anglian Water's adaptive strategy to manage growth uncertainty, risk is reassessed annually, and investment reprioritised where required.

The sewer capacity is influenced by flow rates, root ingress, misconnections, infiltration, silt and the build-up of fats, oils, and greases. Although Anglian Water usually knows the locations of sewers and their sizes, other information like pipe gradients, connectivity, dry weather flows (DWFs) and surface water runoff is not always available.

[4] *UK water companies are in the process of producing Drainage and Wastewater Management Plans (DWMP), covering 2025-2050, due to publish Spring 2023 updated every five years thereafter. The aim of this document is to detail long-term investment strategy to maintain a robust drainage and wastewater infrastructure.*

Table 4-2: Dry Weather Flows (DWF) for Water Recycling Centres in Fenland District
(Source – Anglian Water)

Water Recycling Centre	DWF Q80 (m3/d)			DWF Q90 (m3/d)			Permitted DWF (m3/d)
	2017	2018	2021	2017	2018	2021	
Benwick	68	69	99	63	63	92	180
Chatteris Nightlayer Fen	1,736	1,609	2030	1,626	1,482	1855	3,800
Doddington	740	829	758	709	769	720	800
Manea Town Lots	332	396	403	304	368	374	320
Whittlesey	1,712	2,972	3187	1,658	2,814	3034	3,200
March	4,243	3,817	4150	3,994	3,601	3950	5,148
Parsons Drove	66	63	73	63	59	68	100
Tipps End Green Lane	34	30	N/A	29	23	N/A	236
West Walton (Wisbech)	11,302	11,989	12,121	10,711	11,286	11,071	14,421

Figure 4-2: Summary of the sewer catchment capacity assessment process
(Source: Anglian Water WRLTMP, Ref. 50)

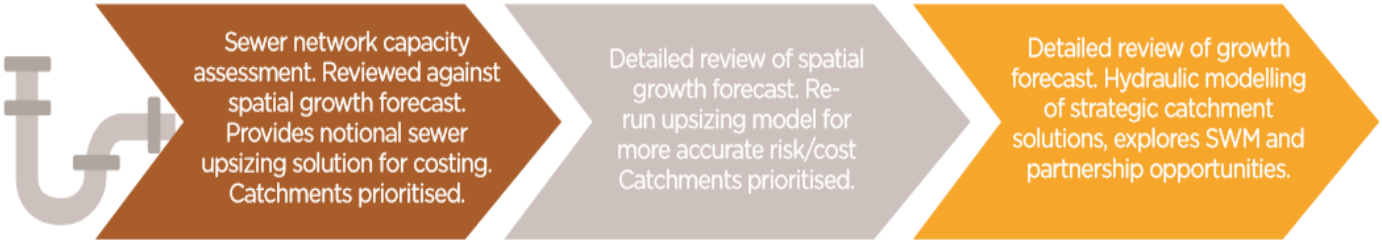


Table 4-3 shows the current DWF headroom at each WRC. Most of the WRCs have available headroom for future development, although Doddington WRC and Whittlesey WRC are within 10% of the permitted DWF, and Manea Town Lots WRC is currently exceeding its DWF permit.

Table 4-3 Fenland WRC locations and flow data
(Source: Environment Agency Catchment Data Exploere, Anglian Water)

WRC	Receiving watercourse	Permitted DWF, m^3/day	Actual DWF[5] (Q90), m3/day	WRC headroom, m^3/day	% of permitted DWF in use	Capacity Assessment
Benwick	Old Course River Nene	180	92	88	51.1	>40%
Chatteris Nightlayer Fen	Vermuydens Drain	3,800	1,855	1,945	48.8	>40%
Doddington	Tributary of Ranson Moor Drain	800	720	80	90.1	<20%
Manea Town Lots	Welney IDB Drain	320	374	- 54	116.8	Exceeding
Whittlesey	Whittlesey Dike	3,200	3,034	166	94.8	<20%
March	Twenty Foot Rover	5,148	3,950	1,198	76.7	>20%
Parson Drove	Tributary of North Level Main Drain	100	68	32	68.0	>20%
Tipps End Green Lane	Sixteen Foot River	236	23	213	9.7	>40%
West Walton	River Nene	14,421	11,071	3,710	78.3	>20%

[5] *For Tipps End Green Lane WRC and West Walton WRC, 2018 data is used for the actual DWF (Q90). The 2021 Q90 data is used for all other WRCs.*

As part of the site assessment included in **Section 6,** the development sites proposed in the emerging Local Plan have been assessed based on the expected current capacity of the receiving WRC. There are 57 sites for which the receiving WRC has less than 20% capacity. These sites are assessed as High risk.

4.2.3 Water Quality

Water quality can be affected by new development due to point source and/or diffuse pollution:

- Point source pollution enters a water body at a specific site and is generally readily identified. Potential point sources of pollution include discharges of effluent from sewage treatment works and combined sewer outfalls, discharges from industrial sites, and leachate from landfill sites.
- Diffuse pollution cannot be attributed to a precise point or incident but is the cumulative effect of activities over a large area, including agriculture, construction, road runoff and domestic misconnections to the surface drainage network. It is often difficult to identify specific sources of such pollution and therefore take immediate action to prevent it.

Water Framework Directive: status of the water bodies
For the purposes of the WFD, the overall classification of a water body is based on both Ecological status and Chemical status (see **Appendix B** for further details of assessment criteria):

- **Ecological status** is an assessment of the quality of water ecosystem, and shows the influence of pressures (e.g. pollution and habitat degradation) on a range of biological, physico-chemical and hydromorphological quality elements. The overall ecological status classification for a water body is determined by the element with the worst status out of all the biological and supporting quality elements.
- **Chemical status** is an assessment of the chemical concentrations in the water body. Good Chemical status means that no concentrations of priority substances exceed the relevant environmental quality standards set out in the WFD. The environmental quality standards aim to protect the most sensitive species from direct toxicity, including predators and humans via secondary poisoning.

The overall status of water bodies in Fenland District is Moderate to Good. Ecological status is Moderate to Good, but most of the water bodies in Fenland are failing for their Chemical status (Ref. 63).

Common pressures on water body status in the area include:

- A high proportion of phosphorus, predominantly from diffuse pollution from agricultural land and treated wastewater from WRC point source discharge. Phosphorus is a plant macro nutrient that can lead to accelerated growth of algae and other plants (eutrophication). This has implications for other aspects of water quality, such as dissolved oxygen levels, and for the characteristics of river habitats.
- A high proportion of other nutrients, such as nitrates, from both point source pollution (consented discharges) and diffuse pollution (agricultural runoff). These present similar eutrophication risks to those explained above.
- A high proportion of fine sediments, from urban and agricultural surface water runoff. Excessive fine sediment, in suspension or deposited on the channel bed, can have damaging physiological, behavioural and habitat impacts on all life stages of fish, invertebrates and plants, as well as transfer and storage of contaminants and decreasing oxygen levels.
- A low proportion of dissolved oxygen exacerbated by high concentrations of nutrients and fine sediments.

Table 4-4 below provides a summary overview of the WFD status for all river water bodies passing through Fenland, according to the Environment Agency's web resource *Catchment Data Explorer* (Ref. 63). Objectives to be achieved and detailed information for each water body has been reviewed and can be found in **Appendix B**. The location of the water bodies is shown in

Impact of development on wastewater and water quality

4.2.4 Sewerage network

New development leads to an increase in demand for sewerage services and hence increased treated discharge flows from Water Recycling Centres (WRCs). Sewage effluent is collected and directed to the closest WRC. Increased discharges from WRCs may have an adverse impact on flood risk that needs to be taken into consideration.

Anglian Water has indicated that available capacity in foul water networks will be determined by more detailed analysis for each proposed development, and for developments of greater than 10 properties it is assumed that some enhancement to capacity may be required. Infrastructure charges paid by new developments contribute to funding upgrades to the sewerage network.

Anglian Water's planned investments in the sewerage network are set out in **Table 4-6.** Further details on investment plans will be available over the next year as the Anglian Water Drainage and Wastewater Management Plan (DWMP) is developed and consulted on.
Figure 4-3.

Table 4-4: WFD status and objectives of water bodies in Fenland District
(Source: Environment Agency Catchment Data Explorer)

Water Body	Operational Catchment	Current Overall Status (2019)	Current Ecological Status (2019)	Current Chemical Status (2019)	Overall Water Body Status Objective (by year 20xx)
Nene Catchment					
Islip to tidal	Middle Nene	Moderate	Moderate	Fail	Moderate (2015)
Mortons Leam	Lower Nene	Moderate	Moderate	Fail	Good (2027)
North Level Main Drain	Lower Nene	Good	Good	Fail	Good (2027)
North Level Pumped Areas 2 and 3	Lower Nene	Moderate	Moderate	Fail	Moderate (2015)
Middle Level and Old Bedford Catchment					
Middle Level	Middle Level	Moderate	Moderate	Fail	Good (2027)
Counter Drain (Manea and Welney IDB)	Old Bedford	Moderate	Moderate	Fail	Good (2027)
Counter Drain (Sutton and Mepal IDB)	Old Bedford	Moderate	Moderate	Fail	Good (2027)
Old Bedford River / River Delph incl. The Hundred Foot Washes	Old Bedford	Moderate	Moderate	Fail	Good (2027)
Anglian TraC Catchment					
Nene	The Wash TraC	Moderate	Moderate	Fail	Moderate (2015)

Physical modifications to river channels

Almost all watercourses in the Nene catchment and Middle Level and Old Bedford catchment have been subjected to significant levels of modification, with the main river itself considered to be disconnected from the floodplain, primarily as a result of navigation and flood defence works.

The link between water quality and hydromorphology has been mentioned earlier in this section. The impacts of these modifications are reflected in the WFD methodology - for heavily modified and artificial water bodies the environmental objective is referred to as achieving good ecological potential instead of good ecological status. In such cases, water quality is even more dependent on the implementation of relevant mitigation measures, such as controlling quantities/volumes of substances entering sewers or implementing nutrient

reduction measures (e.g. creating new wetlands to strip nutrients from water) New developments must therefore support and not hinder implementation of these mitigation measures.

Water Care Partnership Catchment Management Plan for Old Bedford and Middle Level

The Water Care Partnership provides a catchment based approach to managing the Old Bedford and Middle Level and has developed a catchment management plan prepared in 2017 (Ref. 48). The Action Plan developed from this management plan is updated approximately every 4 months.

The stakeholders within the Water Care Partnership consider the pressures and opportunities for water quality improvement in the catchment. The plan identifies point source pollution from the WRCs in Fenland District at Benwick and Chatteris. The catchment plan acknowledges that the WRCs are contributing phosphates and/or ammonia into the waterbodies in significant quantities. However, many WRCs do not exceed their permit limits on average although there may be fluctuations in discharge levels over a year. Whilst phosphate strippers are installed at some WRCs, the catchment plan acknowledges that Anglian Water are unlikely to be able to install phosphate strippers at all sites with cause for concern due to high installation costs and subsequent running costs. The catchment plan indicates that (at the time of production of the plan) Anglian Water was removing phosphate laden sediment from key drains to mitigate against this pollution. No plans were indicated for ongoing maintenance or monitoring of the effects of the WRCs.

The plan proposed two actions relevant to Fenland:

1. To engage more with Anglian Water; and
2. To undertake more monitoring and sampling to gather further information of phosphate levels up and downstream of WRCs, identify upstream diffuse phosphate sources and the effect of raised phosphate levels on the effected watercourses and across the catchment.

Since the catchment plan was published, Anglian Water have worked with the Environment Agency and an increase in the permit was approved for Doddington, effective from April 2019.

Discharge consents

The capacity of the receiving watercourse to dilute WRC discharges is important for determining future impacts of development. WRC discharge consents refer to physico-chemical elements, e.g. Ammonia, Biological Oxygen Demand (BOD), or Phosphates. Information on discharge consent quality requirements for the three identified key parameters to ensure 'no deterioration' occurs in the current WFD status has been provided by the Environment Agency for the WRCs in Fenland and is presented in **Table 4-5** below.

Table 4-5: Discharge consent quality requirements for Fenland District WRCs
(Source: Environment Agency)

Water Recycling Centre	Suspended Solids (SS) (mg/l)	Biological Oxygen Demand (BOD) (mg/l)		Ammonia (mg/l N)		Consented DWF Flow (m^3/d)
	Limit	Limit	Upper Tier limit	Limit	Upper Tier limit	
Benwick	30	15	-	17	-	180
Chatteris	30	15	50	6	23	3,800
Doddington	19	16	51	-	-	800
Manea	20	15	50	5	20	320
Whittlesey	30	15	50	8	30	3,200
March	20	10	40	3	12	5,148
Parsons Drove	30	15	-	10	-	100
Tipps End Green Lane	60	30	-	20	-	236
West Walton (Wisbech)	80	40	80	20	48	14,421

4.3 Impact of development on wastewater and water quality

4.3.1 Sewerage network

New development leads to an increase in demand for sewerage services and hence increased treated discharge flows from Water Recycling Centres (WRCs). Sewage effluent is collected and directed to the closest WRC. Increased discharges from WRCs may have an adverse impact on flood risk that needs to be taken into consideration.

Anglian Water has indicated that available capacity in foul water networks will be determined by more detailed analysis for each proposed development, and for developments of greater than 10 properties it is assumed that some enhancement to capacity may be required. Infrastructure charges paid by new developments contribute to funding upgrades to the sewerage network.

Anglian Water's planned investments in the sewerage network are set out in **Table 4-6**. Further details on investment plans will be available over the next year as the Anglian Water Drainage and Wastewater Management Plan (DWMP) is developed and consulted on.

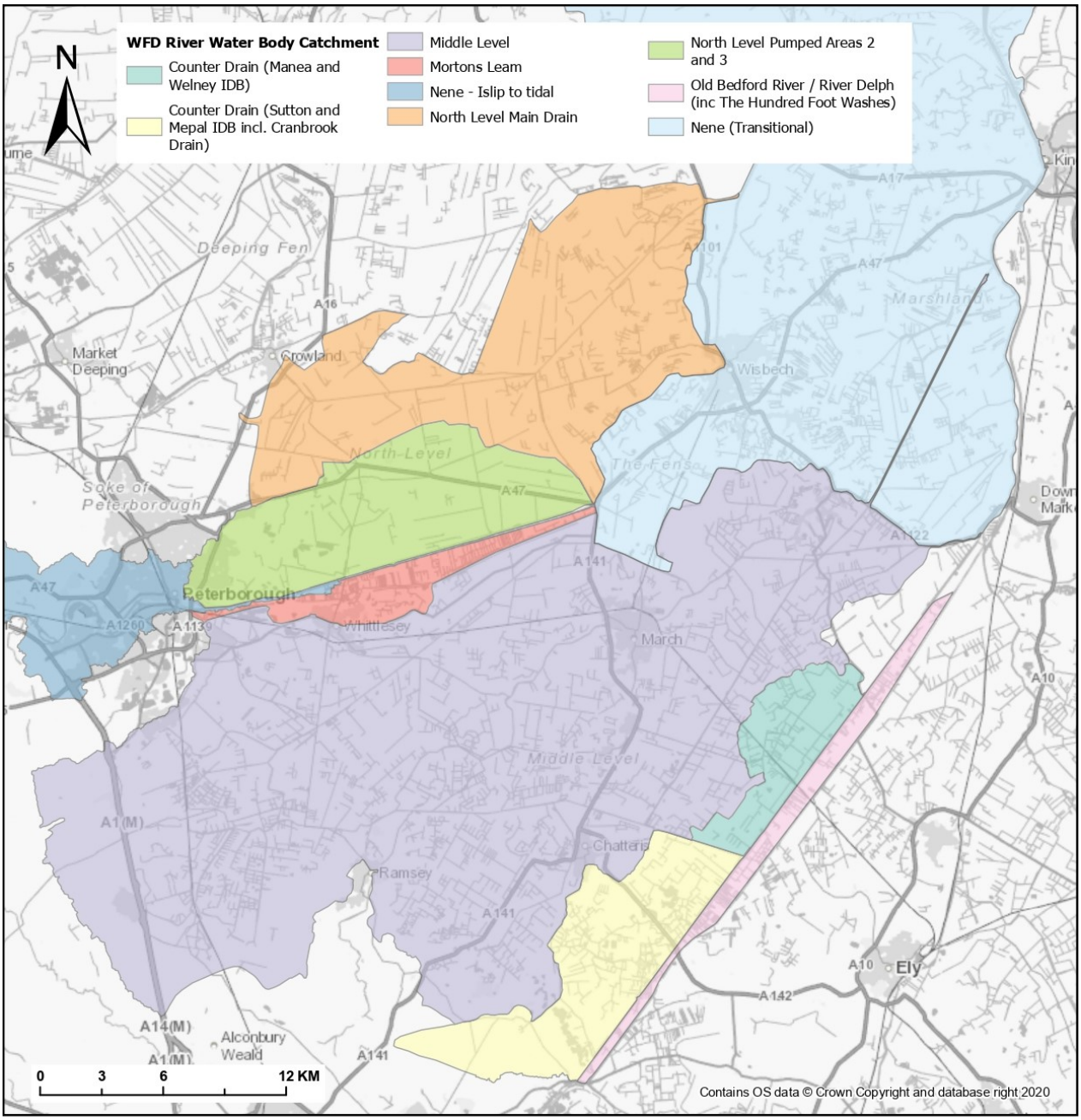


Figure 4-3: Location of river water bodies within Fenland District
(Source: Environment Agency Catchment Data Explorer)

Table 4-6: Planned water recycling investments for drainage catchments in Fenland
(Source: Anglian Water WRLTMP, Ref. 50)

Drainage Catchment	Proposed Improvements	Spend Profile (£millions)					AMP 7 Delivery Year
		AMP 7 (2020-25)	AMP 8 (2025-30)	AMP 9 (2030-35)	AMP 10 (2035-40)	AMP 11 (2040-45)	
Benwick	None						
Chatteris	None						
Doddington	Additional WRC Flow Capacity	0	3.367	0	0	0	N/A
Manea	Additional WRC Flow Capacity	0	1.271	0	0	1.500	N/A
March	CSO Investigations	0.019	0	0	0	0	2032
	CSO Improvements	0	0.416	0	0	0	2032
	Increased Drainage Capacity / Surface Water Management	0	3.059	0	0	0	N/A
Parsons Drove	None						
Tipps End Green Lane	No Information Provided						
West Walton (Wisbech)	Increase Drainage Capacity	0.725	0.725	0	0	0	2027
Whittlesey	Increase Drainage Capacity	2.747	0.767	0	0	0	2027

4.3.2 Wastewater treatment capacity

All new development sites will reduce the wastewater network capacity. Therefore, mitigation measures are required so that sewer flooding risk is not increased.

A catchment-based assessment of the available capacity at WRCs was made by Anglian Water based on the 2014 Local Plan. This considered build rates and proposed flow into the catchment, and the expected timing of investment in order for upgrades and enhancements to be carried out at the appropriate time. Based on the expected growth for the district as defined by the 2014 Local Plan, Anglian Water's growth risk assessments for the WRCs within Fenland District indicate that additional investment is required to provide further capacity within this Asset Management Plan period (AMP 7, 2020-2025).

An additional assessment of WRC capacity in terms of the new development proposed in the emerging Local Plan has been made to inform this report, as follows:

- The percentage increase in population was calculated based on 2018 population equivalent data and the predicted future growth, using Growth Option GO2A to estimate the expected number of additional dwellings in each WRC catchment and the national average occupancy rate of 2.4.
- The same percentage increase was applied to the current Q90 flow to calculate the projected future DWF.
- The projected DWF was then compared to the permitted DWF to determine the current capacity of the treatment works to accept future flows.

The findings of this assessment are provided in **Table 4-7**, which shows that Doddington, Manea Town Lots and Whittlesey WRCs will exceed their current DWF permitted value as a result of future growth. March and Parson Drove WRCs will be within 10% of their permitted DWF. These WRCs will require additional investment and treatment capacity upgrades to meet the requirements of the proposed development in the emerging Local Plan.

Table 4-7: Capacity within permitted DWF headroom to accept future flows
(Source: Fenland District Council, Anglian Water)

WRC	Estimated dwellings (GO2A)	Estimated additional occupancy	Current PE (2018)	Future PE	Population Growth (%)	Projected DWF (m^3/day)	Permitted DWF (m^3/day)	Capacity (m^3/day)	Future Capacity
Benwick	0	0	923	923	0	92	180	88	>40%
Chatteris Nightlayer Fen	1,698	4,075	10,959	15,034	37	2,545	3,800	1,255	>20%
Doddington	544	1,306	3,858	5,164	34	964	800	- 64	Exceeding
Manea Town Lots	194	466	1,737	2,203	40	523	320	- 203	Exceeding
Whittlesey	1,310	3,144	15,170	18,314	21	3,662	3,200	- 462	Exceeding
March	2,661	6,386	21,533	27,919	30	5,122	5,148	26	<20%
Parson Drove	43	103	489	592	40	95	100	5	<20%
Tipps End Green Lane	58	139	194	333	40	32	236	204	>40%
West Walton	2,281	5,474	104,677	110,151	5	11,650	14,421	2,771	<20%
Total	**9,292**	**22,301**							

A number of studies, including this WCS, will inform the Council in the decision of the location and scale of housing and employment allocations in the Local Plan. The joint approach with all relevant stakeholders needs to ensure an adequate available wastewater treatment capacity over the assessed period. A Detailed Water Cycle Study is recommended to improve the assessment of the cumulative impact of development on both water treatment capacity and water quality and to identify potential mitigation measures.

4.3.3 Asset encroachment

Some of the proposed development sites could be within close proximity of existing pumping stations. The layout of these sites will need to be adjusted so as not to encroach on the protection zone, in effect meaning that development should be located a minimum of 15 metres from pumping stations. The landowner or developer is advised to contact Anglian Water's development services team at the earliest opportunity to discuss the viability of the sites (planningliaison@anglianwater.co.uk).

Where there are sewers or water mains crossing the site, the site layout should be designed to take these into account; this existing infrastructure is protected by easements and should not be built over or located in private gardens where access for maintenance and repair could be restricted. The sewers or mains should be located in highways or public open space. If it is not possible to accommodate the existing sewers or mains within the design then diversion may be possible under section 185 of the Water Industry Act 1991 or the possibility of entering into a build over/near agreement may be considered. Further information can be obtained through consultation with Anglian Water.

4.3.4 Water quality

According to the growth estimates included in the emerging Local Plan, the majority of the proposed development from 2020 to 2045 will be residential and will discharge via the corresponding WRC. Compliance with discharge quality requirements will be paramount to ensure that the proposed growth has no negative impact on water quality. New discharge consenting applications from other type of developments will need to be assessed against water quality policies.

An initial assessment has been made of whether the proposed growth would make it more difficult to achieve Good Ecological and Chemical Status/Potential according to WFD objectives, as follows:

- The river water bodies that receive waters of each WRC were identified and a qualitative assessment undertaken of the potential impacts of new development on ecological and physico-chemical status. Particular reference was made to phosphates, as there would be additional loadings from the WRCs. Protected areas associated with each water body were also assessed.
- Additional wastewater flows due to the proposed development were assessed based on a range of potential future usage scenarios;
- Increases in nutrient loading as a result of wastewater flow increases were calculated based on the wastewater loading (at 110 l/person/day) multiplied by the average discharge concentration for the period January 2020 to February 2022.

Water body status

The receiving WFD water body for each WRC is presented in **Table 4-8.** The majority of the development is proposed to take place within the Middle Level (GB205033000050) water body.

Table 4-8: Associated WFD water body for each WRC
(Source: Environment Agency Catchment Data Explorer, Fenland District Council)

WRC	WFD water body	Estimated dwellings (GO2A)	Estimated additional occupancy
Benwick	Middle Level (GB205033000050)	6,213	14,911
Chatteris Nightlayer Fen			
Doddington			
March			
Whittlesey			
Manea Town Lots	Counter Drain (Manea and Welney IDB) (GB205033000020)	252	605
Tipps End Green Lane			
Parson Drove	North Level Main Drain (GB205032050395)	43	103
West Walton	River Nene (GB530503200200)	2,281	5,474

The WFD status of the water bodies that receive discharges from each WRC is typically Moderate (ecological) and Fail (chemical), with a Moderate status for phosphates (**Table 4-9)**. The North Level Main Drain is currently classified as Good for phosphates. Water quality pressures are associated with land management practices (farming and diffuse pollution, land drainage) and sewage discharge.

Protected areas associated with the WFD water bodies may be sensitive to extra flows discharged to receiving waters, e.g. Nitrate Vulnerable Zones (NVZ) and SACs (**Table 4-9)**. Impacts on the condition of both Fenland SAC and the Ouse Washes SAC include pollution to groundwater (point sources and diffuse sources). Extra phosphates generated by the proposed developed could potentially add to these impacts.

Table 4-9: Receiving waters WFD status
(Source: Environment Agency Catchment Data Explorer)

WRC	Receiving watercourse	WFD water body	WFD Status					Protected areas
			Ecological	Chemical	Phosphates	RNAG [6]	RNAG element	
Benwick	Old Course R. Nene	Middle Level (GB205033000050)	Moderate	Fail	Moderate	Poor soil management Sewage discharge (continuous) Land drainage Flow (below the Environmental Flow Indicator but not causing an ecological failure)	Macrophytes and phytobenthos combined Ammonia (Phys-Chem) Phosphate Polybrominated diphenyl ethers (PBDE) Mercury and its compounds Hydrological Regime	Relief Channel/Polver Drain NVZ S834, Middle Level NVZ S386 (Nitrates Directive) Middle Level (Urban Waste Water Treatment Directive (UKENRI70) Fenland SAC (Habitats and Species Directive)
Chatteris Nightlayer Fen	Vermuydens Drain							
Doddington	Tributary of Ranson Moor Drain							
March	Twenty Foot River							
Whittlesey	Whittlesey Dike							
Manea Town Lots	Welney IDB Drain	Counter Drain (Manea and Welney IDB) (GB205033000020)	Moderate	Fail	Moderate	Measures delivered to address reason, awaiting classification (no further detail available, isted as no sector responsible).	Polybrominated diphenyl ethers (PBDE) Mercury and its compounds	Ouse Washes SPA (Conservation of Wild Birds Directive) Ouse Washes SAC (Habitats and Species Directive) Counter drain and 100 Foot. Drain NVZ S831 (Nitrates Directive)
Parson Drove	Tributary of North Level Main Drain	North Level Main Drain (GB205032050395)	Moderate	Fail	Good	High to Good deterioration (phosphate) Measures delivered to address pressures, awaiting evaluation of effectiveness	Polybrominated diphenyl ethers (PBDE) Mercury and its compounds Phosphate Dissolved oxygen	N/A
West Walton	River Nene	Nene (GB530503200200)	Moderate	Fail	Moderate	Poor nutrient management	Dissolved inorganic nitrogen Polybrominated diphenyl ethers (PBDE) Mercury and its compounds Mitigation measures assessment [7]	The Wash and North Norfolk Coast SAC (Habitats and Species Directive) The Wash SPA (Conservation of Wild Birds Directive) South East Wash (Shellfish Water Directive) Nene Washes SPA (Conservation of Wild Birds Directive)

[6] RNAG – Reasons for Not Achieving Good Status
[7] Ecological Potential in artificial and heavily modified water bodies is determined by an assessment of whether measures are properly in place to mitigate the impacts of any modification on the ecology of the water body. If all mitigation measures are in place, the water body has been classified as being at Good Potential. If one or more identified mitigation measures are absent the water body has been classified as Moderate Potential.

Additional wastewater flows

Estimated flows generated by the additional occupancy were assessed for the following usage scenarios, and are shown in **Table 4-10.**

- High level mean PCC of 136 l/p/d in 2022, falling to 107 l/p/d in 2050;
- 110 l/p/d current water efficiency policy target; and
- 85 l/p/d future low target.

For the current water efficiency target of 110 l/p/d, and the 2050 forecast of 107 l/p/d, the development proposed in the emerging Local Plan would increase flows in the range of 11 m^3/day at Parson Drove to 683-703 m^3/day at March.

Table 4-10: Additional flows based on future water usage scenarios
(Source: Fenland District Council, Anglian Water)

WRC	Estimated additional flows with proposed Local Plan development (m^3/day)			
	136 l/p/d	110 l/p/d	107 l/p/d	85 l/p/d
Benwick	0.0	0.0	0.0	0.0
Chatteris Nightlayer Fen	554.2	448.3	436.0	346.4
Doddington	177.6	143.6	139.7	111.0
Manea Town Lots	63.3	51.2	49.8	39.6
Whittlesey	427.6	345.8	336.4	267.2
March	868.6	702.5	683.3	542.8
Parson Drove	14.0	11.4	11.0	8.8
Tipps End Green Lane	18.9	15.3	14.9	11.8
West Walton	744.5	602.2	585.8	465.3

Nutrient loading

Additional nutrient loading (e.g. from nitrates and phosphates resulting from sewage discharges) associated with the proposed development in the emerging Local Plan could exacerbate pollution problems in Fenland's water bodies. Water bodies currently classified as Moderate status could be at risk of deterioration from additional phosphates associated with the proposed development.

Table 4-11 provides an estimate of the increased nutrient loading to the catchment from the proposed development in the emerging Local Plan. Wastewater volumes, assuming 110 l/person/day water usage, were multiplied by the average foul effluent discharge concentration of the WRCs in the catchment. **Table 4.12** outlines the nutrient discharges per WFD water body.

The majority of the additional nutrient discharges as a result of the proposed development will be within the Middle Level WFD water body, which has a 28% population growth forecast over the next 20 years. The Middle Level, the Counter Drain (Manea and Welney IDB) and the River Nene water bodies are currently classified as Moderate for phosphate concentrations, with phosphate pollution from sewage discharge already a reason why the water body is not achieving good status. Further development could exacerbate this issue.

The North Level Main Drain water body is currently classified as Good for phosphate concentrations. New development would increase phosphate concentrations, which could result in a deterioration in water quality. Whilst only 43 new dwellings are proposed for the area served by Parson's Drove WRC (see **Table 4-7**), this is potentially quite a high percentage increase in population (approx.. 40%). This proposed development could impact on the future water quality status of the North Level Main Drain.

Table 4-11 Additional nutrient loading from the development proposed in the emerging Local Plan
(Source: Fenland District Council, Anglian Water, Natural England)

WRC	*Population Growth (%)*	Wastewater volume (l/day)	Phosphorous		Nitrogen	
			Average discharge concentration (mg/l)	Additional discharge (kg/yr)	Average discharge concentration (mg/l)	Additional Discharge (kg/yr)
Benwick	0	-	8.00 [8]	-	27 [9]	-
Chatteris Nightlayer Fen	37	448,272	1.27	207	27	4,418
Doddington	34	143,616	8.00	419	27	1,415
Manea Town Lots	40	51,216	1.25	23	27	505
Whittlesey	21	345,840	0.83	105	27	3,408
March	30	702,504	1.38	354	27	6,923
Parson Drove	40	11,352	8.00	33	27	112
Tipps End Green Lane	40	15,312	8.00	45	27	151
West Walton	5	602,184	8.00	1,758	27	5,935
Total	**-**	**2,320,296**	-	**2,945**	-	**28,194**

Table 4.12: Nutrient loading per WFD water body
(Source: Anglian Water, Environment Agency)

WRC	WFD water body	Additional phosphorus discharge (kg/yr)	Additional nitrogen Discharge (kg/yr)
Benwick	Middle Level (GB205033000050)	1,085	16,164
Chatteris Nightlayer Fen			
Doddington			
March			
Whittlesey			
Manea Town Lots	Counter Drain (Manea and Welney IDB) (GB205033000020)	68	656
Tipps End Green Lane			
Parson Drove	North Level Main Drain (GB205032050395)	33	112
West Walton	River Nene (GB530503200200)	1,758	5,953

As part of the site assessment included in **Section 6,** proposed development sites in the emerging Local Plan which would increase the population of the WRC area by more than 5% have been assessed as being at High risk for water quality impacts. All other sites have been assessed as Medium risk.

Based on the assessment of potential impacts on water quality, whilst individual developments may not have a noticeable impact (currently Moderate for all receiving water bodies), the cumulative impact of the proposed new development for each Growth Option is likely to cause water quality issues for all receiving

[8,9] Discharge concentration values of 8.00 mg/l (Phosphorous) and 27 mg/l (Nitrogen) are from Natural England Advice on Nutrient Neutrality for New Development in the Stour Catchment in Relation to Stodmarsh Designated Sites, 2020 (Ref. 67)

waters. To avoid any deterioration in water body status associated with physico-chemical quality elements, mitigation measures may be needed to reduce offsite environmental impacts, i.e. within water bodies and associated protected areas.

A Detailed Water Cycle Study is recommended to improve the assessment of the cumulative impact of development on both water treatment capacity and water quality and to identify potential mitigation measures.

4.4 Proposed strategy for Wastewater Collection, Treatment and Water Quality

Foul network improvements are generally funded, or part funded, by developer contribution via the relevant sections of the Water Industry Act 1991. The cost and extent of the required network improvements are investigated and determined on a case-by-case basis when Anglian Water is approached by a developer and an appraisal is carried out. Upgrades may need to be provided within catchments where development is proposed and the assessment should also address the potential flooding identified at each of the localities to ensure the possibility of such events is reduced.

Improvements to Manea Town Lots, Doddington, March, Whittlesey and West Walton (Wisbech) WRCs are included in Anglian Water's Water recycling long term plan for AMP 7-11 (2020 to 2045). However, most of these WRCs are already close to or exceeding their capacity. Parson Drove WRC is expected to exceed its current capacity with the proposed development in the emerging Local Plan, and improvements are not currently planned for this WRC. It is important that for any development proposed for the WRC areas which are close to capacity and any other area which is not identified for investment by Anglian Water, there is close communication with the water and wastewater company.

Anglian Water's preferred method of surface water disposal is through implementation of SuDS on site, with connection to sewers being only considered as the last option. Anglian Water develops sustainable surface water management solutions wherever possible, working with its flood risk partners, with the aim of achieving no detriment to the environment or flood risk.

New development should take opportunities to improve water quality in Fenland District and contribute to related Local Plan objectives. Water quality enhancement could be achieved with measures such as:

- Increasing water efficiency for new and existing residential and industrial developments. This would help reduce both discharge and abstraction rates;
- Encouraging partnered approaches that involve local/regional environmental bodies, the Environment Agency, Anglian Water and developers to contribute to WFD targets through the consenting agenda;
- Implementing measures to reduce and/or mitigate pollution from surface water runoff in new urbanised areas, e.g. through the use of SuDS;
- Encouraging community or on-site rainwater harvesting. This could also be achieved by making use of SuDS features; and
- Encouraging community or on-site re-use and recycling of grey water. This would also reduce volumes discharged into the sewer system and support the emerging Local Plan and Sustainability Appraisal Scoping Report objectives.

4.5 Recommendations for Detailed Water Cycle Study

A Detailed Water Cycle Study is recommended to improve the assessment of the cumulative impact of specific growth areas on receiving WRCs, associated infrastructure and water quality. This additional study should include:

- Reviewing the likely timing of delivery of the preferred growth option to determine the requirements for infrastructure investment and the potential impacts on water supply / abstraction requirements;
- Refining the assessment of potential increases in WRC pollution loadings based on up-to-date local data for discharge concentrations and permit limits, including e.g. phosphorus, ammonia, biological oxygen demand;
- Further assessment to improve understanding of how an increase in pollutant load from a WRC could cause deterioration and potentially cause a review of Environmental Permits;
- A screening study is required to examine the potential for developing nutrient mitigation measures;
- Assessment of the impact of increased wastewater flows on the risk of sewer flooding;
- Review the preferred growth option and the potential cumulative impacts with Anglian Water and the Environment Agency, in order to identify potential mitigation measures and plan positively for accommodating the planned growth in the emerging Local Plan.

5 BIODIVERSITY AND CONSERVATION

5.1 Planning and biodiversity and conservation policy

5.1.1 Natural Environment and Rural Communities Act 2006

Section 40 of the Natural Environment and Rural Communities Act 2006 places a duty on all public authorities in England and Wales to have regard, in the exercise of their functions, to the purpose of conserving biodiversity. Local and neighbourhood plans and planning decisions have the potential to affect biodiversity or geodiversity outside as well as inside designated areas of importance for biodiversity or geodiversity. This duty is now strengthened by the requirements of the Environment Act 2021 (**Section 5.1.3**).

5.1.2 National Planning Policy Framework (NPPF)

The NPPF (paragraphs 174 and 175) states (Ref. 75):

"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;
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.

Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework ; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries."

Paragraph 179 adds:

"To protect and enhance biodiversity and geodiversity, plans should:

a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and

b) *promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity."*

Paragraphs 180 to 182 of the NPPF includes a series of principles to guide planning application consents.

Requirements relating to pollution are set out in Paragraphs 185 to 188, with Paragraph 185 including the following statement:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development."

5.1.3 The Environment Act 2021

The Environment Act 2021 strengthens Section 40 of the Natural Environment and Rural Communities Act 2006 by placing a duty on public authorities, including Fenland District Council, to both ***enhance*** as well as conserve biodiversity. This is known as the 'general biodiversity objective'.

The Environment Act 2021 (Ref. 79) aims to improve air and water quality, protect wildlife, increase recycling and reduce plastic waste. The Act provides a new legal framework for environmental protection as the UK no longer comes under EU law. The Environment Act was enacted in November 2021 and requires Statutory Instruments setting out environmental targets for the UK to be laid before parliament by 31 October 2022.

The Environment Act introduces a mandatory requirement for Biodiversity Net Gain as a condition of consenting in order to conserve and enhance biodiversity. In England, the biodiversity value of each habitat within a development must exceed the pre-development biodiversity value by at least 10%. Biodiversity Net Gain is calculated as a percentage of proxy units using a metric developed by Defra (Ref. 74). It applies to terrestrial, river and intertidal habitats. Marine habitats will be required by the end of 2021.

When submitting plans for consent under the Town and Country Planning Act or Development Consent Order, developers must now demonstrate how biodiversity will be improved through enhancements to existing habitats, or via the creation of new habitats in or off site. It must be stated how those habitats will be maintained for 30 years.

5.1.4 Anglian River Basin Management Plan

The Anglian RBMP is focused on an overall environmental enhancement which encompasses a wide range of opportunities and objectives. Reference has been made throughout this report to specific impacts of the RBMP on various elements of the WCS, in particular in Section 3.1.2 and Section 4.1.1 which refer to the links between the RBMP and the WFD. In terms of biodiversity and conservation, the RMBP brings together these aspirations to facilitate wider ecological, conservation and biodiversity benefits.

5.1.5 Local Policies and guidance

Local Plan

The adopted Local Plan (May 2014) identifies *Biodiversity* as a relevant sustainability topic within the Local Plan framework, and more specifically Objective 2 - Biodiversity: *to avoid damage to designated sites and protected species and to maintain and enhance the geographical range, amount and viability of habitats and species.*

Biodiversity, Conservation, Water Quality and Water Resource Management are also considered in relation to the water environment throughout the adopted local plan. The following policies within the adopted Local Plan are related to conservation and biodiversity issues:

- Policy LP7 – Urban Extensions
- Policy LP12 – Rural Areas Development Policy
- Policy LP14 – Responding to Climate Change and Managing the Risk of Flooding in Fenland
- Policy LP16 - Delivering and Protecting High Quality Environments across the District
- Policy LP19 – The Natural Environment

Policy LP19 – *The Natural Environment* states "*The Council, working in partnership with all relevant stakeholders, will conserve, enhance and promote the biodiversity and geological interest of the natural environment throughout Fenland.*"

A Sustainability Appraisal Scoping Report (Part 1) was published in January 2011, which was followed up in Sustainability Appraisal Scoping Report (Part 2) in September 2013. These were prepared alongside the Local Plan to assess whether the plan would contribute to environmental, social and economic objectives (Ref. 30). The current Habitat Regulations Assessment (HRA) (Ref. 23) was produced in September 2013 to support the adopted Local Plan with the aim of identifying actions such that the adopted policies do not adversely affect the integrity of any conservation natural site. It is expected that a new HRA will be prepared to support the new local plan and that this will take into account the information from this WCS and other complementary studies.

As previously discussed in Sections 3.1.3 and 4.1.2, Fenland District Council is currently preparing a new Local Plan to replace the 2014 adopted Local Plan and a Sustainability Appraisal Scoping Report has been prepared for this (Ref. 57). The sustainability objectives identified by the Scoping Report which relate to Biodiversity and Conservation are summarised below. It is intended that these objectives will be included in the objectives of the Local Plan, with the emerging Plan Policies being assessed against the sustainability objectives using the criteria set out in the Sustainability Appraisal Scoping Report.

- **Healthy Communities**

1.3 Create and enhance multifunctional open space that is accessible, links with a high quality green infrastructure network and improves opportunities for people to access and appreciate wildlife and wild places.

- **Heritage, Placemaking and Landscape**

4.1 Conserve and where appropriate, enhance heritage assets, their setting and the wider historic environment.

4.3 Retain the distinctive character of Fenland's landscape.

- **Land Use and Wildlife**

6.1 Minimise the irreversible loss of undeveloped land, particularly high grade agricultural land.

6.2 Utilise brownfield sites for re-development in appropriate circumstances.

6.3 Minimise and avoid where possible impacts to biodiversity and geodiversity, both within and beyond designated sites of international, national or local significance, and on protected species.

6.4 Achieve net gains in biodiversity and create and enhance an ecological network that is resilient to the effects of climate change.

5.2 Existing situation and evidence base

A summary of all designated sites that lie within the study area is provided in **Table 5-1**.

Table 5-1: Designated Sites in Fenland
(Source: DEFRA)

Designated Site		Total Area (hectares)
SAC	Nene Washes	88
	Ouse Washes	333
SPA	Nene Washes	1,520
	Ouse Washes	2,494
Ramsar Site	Nene Washes	2,514
	Ouse Washes	1,520
NNR / LNR	Lattersey Field	12
	Ring's End	8

The district falls within Natural England's Countryside Character Area 46 - The Fens (Ref. 39). The River Nene runs west to east, along the north western boundary of the district, while the River Ouse runs west to north east along the south-eastern boundary. There are five landscape character areas which have been identified within Fenland (Ref. 8), as set out in **Table 5-2.**

Table 5-2: Landscape Character Areas in Fenland District
(Source: Natural England)

Landscape Character	Landscape Character Area
Drained Fenland	The Fens
Settled Fen	Wisbech Settled Fen
Clay Fen Island	Chatteris Clay Island
	March Clay Island
Extracted Clay Fen Island	Whittlesey Island

5.3 Impact of development on biodiversity and conservation

Development within Fenland District can have both positive and negative impacts on biodiversity and conservation, depending on how development is managed. Some of the potential issues related to water resources availability have been discussed in Section 3.3.4. Both the potential adverse impacts and the opportunities for improving biodiversity and conservation are presented in this section.

5.3.1 Potential Adverse Impacts

Statutory Requirements Constraining Growth

A number of environmental statutory requirements need to be taken on board to ensure that biodiversity and conservation attributes are not adversely affected by development and growth:

- Ramsar Convention (1975): Covers the designation of wetlands of international importance as Ramsar sites; the promotion of the appropriate use of all wetlands; and international co-operation with other countries to further the wise use of wetlands and their resources;
- Birds Directive (1979): At EU level, provides a framework for the conservation and management of, and human interactions with, wild birds in Europe;

- Wildlife and Countryside Act (1981): Consolidates and amends existing national legislation to implement the Bern Convention (Convention on the Conservation of European Wildlife and Natural Habitats) and the Birds Directive in Great Britain;
- Habitats Directive (1992): At EU level, promotes the maintenance of biodiversity through a requirement to maintain or restore natural habitats and wild species at a favourable conservation status and introducing robust protection for those habitats and species of European importance;
- Natural Environment and Rural Communities Act (2006): Extends the biodiversity duty set out in the Countryside and Rights of Way (CROW) Act to public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity. This includes Fenland District Council as local authority.
- The Conservation of Habitats and Species Regulations (2017): Transposes the Habitats and Birds Directives into national law;
- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019: Maintain the Habitats and Birds Directives in national law following the UK's withdrawal from the EU; and
- Environment Act (2021): Places a duty on placing a duty on public authorities to both enhance as well as conserve biodiversity.

Sites of international interest: Habitat Regulations Assessment (HRA)

A key element influencing new development is the presence of conservation sites in the study area; any changes or works, including associated infrastructure, proposed as part of the WCS must ensure that there are no detrimental impacts on such sites.

A source of information regarding the impacts of development in Fenland on biodiversity and conservation is the Habitat Regulations Assessment (HRA) (Ref. 23) of internationally important sites (SAC, SPA, Ramsar, collectively referred to as Natura 2000 sites). A HRA Screening Report was prepared in 2012 and updated in 2013 to support the preparation of the previous Local Plan and Core Strategy. **Table 5-3** includes the comments provided in the HRA on the vulnerabilities of the Nene Washes and the Ouse Washes.

It should be noted that the HRA does not provide detailed information about water supply to the Nene and Ouse Washes, such as where, how often and how much these are maintained from different sources, such as sewage treatment works or agricultural sources.

The emerging Local Plan is in its early stages of development and further information is anticipated in relation to effects to biodiversity and environmental conservation. The Council is likely to prepare a new HRA for the emerging Local Plan that will identify potential adverse effects from the proposed development. It is recommended that any future HRA specifically considers the vulnerability of the Nene and Ouse Washes in terms of the input of water from sources with high nutrient levels.

Table 5-3: Vulnerabilities identified the in the HRA (Ref. 23) for the Natura 2000 sites
(Source: Habitat Regulations Assessment)

Site Name	Natura 2000 Status	Vulnerability Comments
Nene Washes	SAC, SPA and Ramsar	Currently threatened by abstraction from several sources including angling lakes and SSSI's. Water levels are frequently maintained by nutrient rich water from sewage treatment works. Off-site changes in hydrology have the potential to affect the site's integrity. The site is particularly dependent upon the maintenance of suitable water level and quality and is therefore vulnerable to abstraction, and agricultural drainage and run-off.
Ouse Washes	SAC, SPA and Ramsar	The Ouse Washes are extremely vulnerable to changes in hydrology and the site is currently suffering from nutrification and changes in water quality as a result of agricultural run-off and the input of water with high nutrient levels from sewage treatment works. Off-site changes in hydrology have the potential to affect the site's integrity.

Sites of national and local interest

An initial identification and assessment of non-Natura 2000 sites in relation to the potential hydrological impacts of developments was undertaken as part of the previous WCS and is presented in **Table 5-4**. The Fenland District Sites of Special Scientific Interest (SSSI), mostly overlap with the Natura 2000 with the exception of Bassenhally Pit SSSI, the Local Nature Reserves (LNR) and County Wildlife Sites (CWS).

Table 5-4: Potential Impacts to national and local conservation sites
(Source: Habitat Regulations Assessment)

Conservation Site	Potential Impact
Sites of Special Scientific Interest	
Bassenhally Pit SSSI	This site does contain wetland habitats. However, the site is not known to be linked to any WRCs.
Nene Washes SSSI	Currently, the site is threatened by abstraction from several sources including angling lakes and SSSI's. Water levels are frequently maintained by nutrient rich water from sewage treatment works. Off-site changes in hydrology have the potential to affect the site's integrity. The site is particularly dependent upon the maintenance of suitable water level and quality and is therefore vulnerable to abstraction, and agricultural drainage and run-off.
Ouse Washes SSSI	The Ouse Washes are extremely vulnerable to changes in hydrology and the site is currently suffering from nutrification and changes in water quality as a result of agricultural run-off and the input of water with high nutrient levels from sewage treatment works. Off-site changes in hydrology have the potential to affect the site's integrity.
Local Nature Reserve Sites	
Rings End LNR	This site includes wetland habitats although the previous WCS (Ref. 15) was unable to establish any link to WRC or to abstraction activities.
Lattersey LNR	This site does contain wetland habitats. However, the previous WCS (Ref. 15) identifies this as a former clay pit and therefore likely to be disconnected from abstraction activities and is not linked to any WRCs.

Protected Species

In addition to considering the impacts on habitats, the impacts on protected species must also be taken into consideration. The protected species as classified under the Wildlife and Countryside Act 1981 that have been previously recorded in the Cambridgeshire area are listed in **Appendix C** (Ref. 33, 77). The protected species list comprises 26 species of bird, 11 mammalian species, 6 species of amphibians, 110 invertebrate species, 2 non-marine fish species and 43 plant and fungi species.

The potential presence of these species in Fenland should be viewed as a constraint until it can be demonstrated that there will be no adverse impacts. In order to do this, Environmental Impact Assessments (EIA) should be prepared for new developments, if covered by the EIA regulations 2(1) and schedules 1 and 2, to assess:

- Impacts of any additional water services infrastructure;
- Impacts of surface water runoff and systems to manage runoff; and
- Impacts of any increased foul flows to the environment from combined sewer overflows or WRCs.

Cambridgeshire and Peterborough are also home to important populations of some species not on the UK Priority list, but which are still special and in need of conservation. These species may be nationally rare species for which Cambridgeshire holds a large proportion of the entire UK population. As these are not UK Priority Species, they are not covered by the requirements in national and local planning policies and there is no specific obligation to consider them. However, they have been identified as valuable in a local context and have been recommended as target species to be considered for conservation where appropriate. A list of these additional species of interest has been produced and can also be found in **Appendix C**. This list has no legal obligations associated with it and is based on knowledge and suggestions from local experts.

5.3.2 Opportunities for Biodiversity Enhancement

Development in Fenland should also seek to provide opportunities for biodiversity enhancement, and will be legally required to do so following the assent of the Environment Act (**Section 5.1.3**).

The potential for enhancement has been assessed in relation to each relevant Biodiversity Action Plan (BAP) priority habitat available at the Cambridgeshire and Peterborough Biodiversity Group website (Ref. 77). The Cambridgeshire and Peterborough Biodiversity Partnership delivers biodiversity action across the county. It is strongly recommended that development strategies and policy included in the Local Plan encourage the implementation of enhancement measures.

When creating multifunctional infrastructure and new areas of public open space, aspects such as management, maintenance and safety must be considered in the long-term to prevent any future water related impact issues. Whilst considering all potential biodiversity improvements, the maintenance of such systems for their intended use must be also considered. Care needs to be taken to ensure that the functionality of any water level management or flood defence systems is not impaired. **Table 5-5** shows potential enhancements to biodiversity.

Table 5-5: Potential enhancements to biodiversity
(Source: Cambridgeshire and Peterborough Biodiversity Group)

BAP Priority Habitat	Opportunity for enhancement
Coastal and Floodplain Grazing Marsh	• Improvement of water quality. This can be achieved by an efficient control of surface water runoff and discharges, use of SuDS and favouring green corridors in and/or around new developments. • Management for appropriate water levels.
Eutrophic Standing waters	• Improvement of water quality. This can be achieved by an efficient control of surface water runoff and discharges, use of SuDS in new developments. • Management of water levels as part of Flood Risk Management strategies.
Lowland Fens	• Improvement and management of the ditches for wildlife. The use of SuDS and establishment of green corridors would also have a positive impact on the fens. • Management of appropriate water levels.
Ponds	• Promotion of the creation of ponds and associated habitats in parks and open spaces. • Restoration and improve management of existing ponds.
Reedbeds	• Management of seasonal flooding as part of Flood Risk Management strategies. • Encouragement of small scale reedbed creation in appropriate areas.
Rivers	• Implementation of flood defences that avoid negative impact on seasonal flooding. • Provide opportunities for naturalised flows. • Improvement and/or maintenance of water quality. This can be achieved by an efficient control of surface water runoff and discharges, use of SuDS and favouring green corridors in and/or around new developments.
Wood-Pasture and Parkland	• Improvement of water quality. This can be achieved by an efficient control of surface water runoff and discharges, use of SuDS and favouring green corridors in and/or around new developments. • Use ‘easements’ on water service infrastructure to create new green corridors.

5.3.3 Summary of Biodiversity and Conservation and proposed strategy

Enhancing and conserving the existing biodiversity is a clear requirement in Fenland. A draft of the emerging Local Plan is yet to be made available; however, the adopted Local Plan (May 2014) includes Objective *2 - Biodiversity: to avoid damage to designated sites and protected species and to maintain and enhance the geographical range, amount and viability of habitats and species.*

Policy LP19 – *The Natural Environment* states "T*he Council, working in partnership with all relevant stakeholders, will conserve, enhance and promote the biodiversity and geological interest of the natural environment throughout Fenland.".* This policy aims to prevent any adverse effect on the natural environment, including designated sites, habitats or species of principle importance or interest. Where significant harm cannot be avoided, either through developing an alternative site or through effective mitigation, appropriate compensation will be sought. In all cases a net gain in biodiversity should be achieved.

A Sustainability Appraisal Scoping Report Part 1 was published in January 2011 and followed up in Sustainability Appraisal Scoping Report Part 2 in September 2013 (Ref. 30). These were prepared alongside the existing local plan to assess whether the plan would contribute to environmental, social and economic objectives. A new Sustainability Appraisal is to be prepared to support the emerging Local Plan. The Sustainability Appraisal Scoping Report 2019 sets out a range of environmental, social and economic objectives to inform local plan preparation.

The current Habitat Regulations Assessment (HRA) (Ref. 23) was produced in 2013 to support the adopted Local Plan with the aim to identify actions so that the adopted policies do not adversely affect the integrity of any conservation natural site. It is expected that a new HRA would be prepared to support the new local plan and will take into account the information from this CS and other complementary studies. It is recommended that any future HRA specifically considers the vulnerability of the Nene and Ouse Washes in terms of the input of water from sources with high nutrient levels.

There are a number of designated SSSI and LNR in Fenland District. New development provides opportunities to enhance biodiversity through:

- Improvement of water quality through consideration of appropriate land uses and surface water pathways, and control of surface water runoff and point discharges;
- Use of SuDS on upstream developments and integrated green corridors;
- Management of seasonal flooding as part of FMS strategies;
- Encouragement of smaller scale reedbed creation;
- Management of water levels as part of FMS strategies and control of surface water discharges from new developments;
- Creation of new green corridors via 'easements' on water services infrastructure; and
- Biodiversity Net Gain.

It is unlikely that the need for EIAs as part of water services infrastructure proposals or SuDS integration will constrain development in Fenland District, provided that comprehensive forward planning and mitigation is carried out by all parties involved.

6 ASSESSMENT OF THE PROPOSED DEVELOPMENT SITES

6.1 Summary of site assessment

An assessment has been completed of the suitability of all sites included in the Growth Options (refer to **Section 2.2),** based on the various assessments undertaken by this Outline WCS and the associated Level 1 SFRA. **Table 6-1** below provides a full list of the assessed sites and a summary of the status and capacity for each development.

Fenland District Council has undertaken an initial assessment of the suitability of all potential sites, based on a range of criteria considered by this report and the associated Level 1 SFRA, including flood risk and water and wastewater infrastructure capacity. Growth Option 2A and Employment Option 2A are currently the preferred growth options. Therefore, Developer Guidance Sheets have been provided as an Annex to this Report. For each of the preferred sites the Guidance Sheets present the following information:

- Site number/reference
- Site Name
- Site Status (e.g. existing allocated site, site with planning approval, new site, etc.)
- Proposed and Current Use: Housing, Employment or Mixed Use
- Site Area (ha)
- Capacity (number of dwellings)
- A summary table setting out the assessment of the site status for flood risk, water resources, water supply, wastewater collection capacity, wastewater treatment capacity, water quality and compatibility with infiltration SuDS.
- Flood risk for the site: assessment, mitigation measures in place and development vulnerability. Information regarding the need for a Sequential and Exception Test is provided based on Flood Zones only, although other sources of flooding would need to be considered in accordance with the NPPF. Includes a summary map, and whether a site-specific FRA is required.
- Water resources and supply: information obtained regarding availability of water resources for the proposed development. Includes a summary map.
- Wastewater collection, treatment and water quality: data obtained regarding WRC capacity, foul sewerage network capacity and WFD status of the waterbody to which the proposed development drains. It is important to note that Anglian Water cannot reserve capacity and the available capacity at the WRC can be reduced at any time due to growth and environmental and regulation driven changes. Includes a summary map.
- Biodiversity and conservation: information obtained regarding whether the proposed development is located within or nearby a conservation area. Includes a summary map.

Table 6-1 should be referred to when reviewing the Developer Guidance Sheets, as this provides a traffic light (Red, Amber, Green) assessment of the suitability of each site.

Explanatory key for Summary Table	
Green - Low Risk	• More than 98% of the site is within Flood Zone 1[10]. Surface water flood risk is low or very low with less than 1% annual probability of flooding from excessive rainfall. There is limited or no potential for groundwater flooding to occur at the site. **The site passes the Sequential Test.** **A site-specific flood risk assessment should be produced for all sites larger than 1ha.** • Water resources, water supply, wastewater collection and wastewater treatment capacity – capacity available to serve the proposed growth. • Water quality of receiving water bodies – Good (WFD current overall status, 2019) • SuDS[11] – Site compatible for infiltration and attenuation SuDS.
Amber - Medium Risk	• Site is not fully within Flood Zone 1 but has 10% or less of its area in Flood Zone 3, *AND/OR* surface water flood risk has an annual probability of between 1% and 3.33%, *AND/OR* there is a high risk of groundwater flooding occuring at the site, *AND/OR* there is a high risk of sewer flooding at the site. • Further understanding of the impact of flood defences, the influence of climate change on flood risk and surface water flood risk will be required for the site to be taken forward for allocation. A site-specific flood risk assessment should be produced. • Water resources, water supply, wastewater collection and wastewater treatment capacity – Infrastructure and/or treatment upgrades required to serve proposed growth, or diversion of assets may be required. • Water quality of receiving water bodies – Moderate (WFD current overall status, 2019) • SuDS – Site with opportunities for bespoke infiltration SuDS and attenuation SuDS.
Red - High Risk	• Sites with more than 10% of their area in Flood Zone 3, which may need to pass the Exception Test. *AND/OR* surface water flood risk has an annual probability of more than 3.33%. • Further understanding of the impact of flood defences, the influence of climate change on flood risk and surface water flood risk will be required for the site to be taken forward for allocation. A site-specific flood risk assessment should be produced. • Water resources, water supply, wastewater collection, wastewater treatment capacity – Major Constraints to Provision of infrastructure and/or treatment to serve proposed growth. • Water quality of receiving water bodies – Bad or Moderate to Bad (WFD current overall status, 2019), AND/OR Site will increase the population of a WRC area by >5%. • SuDS – Site with significant constraints for infiltration SuDS. There may be opportunities for attenuation SuDS.

[10] Refer to Appendix D for definition of Flood Zones.

[11] Whilst constraints on infiltration SuDS may be indicated in the table below, it is recognised that large parts of the district are suitably compatible for attenuation SuDS.

Table 6-1: Status and capacity of potential sites in emerging Local Plan
(Source: Fenland District Council, Environment Agency, British Geological Society)

Note: If sites in Flood Zone 3 are defined as 'Low' Flood Risk Suitability, this is because less than 10% of the site area is within Flood Zone 3. If sites in Flood Zone 1 are defined as 'High' Flood Risk Suitability, this is due to surface water flooding risks (SW reference included). If sites in Flood Zone 1 are defined as 'Medium' Flood Risk Suitability, this is due to groundwater or sewer flooding risks (GW/S references included). Refer to Level 1 SFRA and Site Guidance Sheets.

Site Ref.	Growth Option								Location	Proposed Use	Local Plan Capacity	Flood Zone	Surface Water Flood Risk	Flood Risk Suitability	Water Resources & Supply	Wastewater collection	Wastewater Treatment	Water Quality	Infiltration SuDS Compatible
	1	2	2A	3	4	E1	E2	E2A											
40001		✔		✔	✔				Wisbech	Allocated	950	1	Low	Low	Medium	Medium	>20%	Medium	Bespoke
40002							✔	✔	Wisbech	Allocated	0	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40004							✔	✔	Wisbech	Allocated	0	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40005		✔		✔	✔				March	Allocated	750	3	Low	Medium	Medium	Medium	>20%	High	Constraints
40007		✔		✔	✔				March	Allocated	1500	3	Medium	Medium	Medium	Medium	>20%	High	Bespoke
40008							✔	✔	March	Allocated	0	3	Medium	High	Medium	Low	>20%	Medium	Constraints
40012		✔	✔	✔	✔				Whittlesey	Allocated	452	1	Low	Medium (GW)	Medium	Medium	<20%	High	Bespoke
40017	✔	✔	✔	✔	✔				Wisbech	Approved	11	3	Low	High	Medium	Medium	>20%	Medium	Bespoke
40020	✔	✔	✔	✔	✔				March	Approved	14	3	High	High	Medium	Medium	>20%	Medium	Constraints
40022	✔	✔	✔	✔	✔				Wisbech	Approved	10	1	High	High (SW)	Medium	Low	>20%	Medium	Bespoke
40025	✔	✔	✔	✔	✔				Wisbech	Approved	149	3	Low	High	Medium	Medium	>20%	Medium	Bespoke
40028	✔	✔	✔	✔	✔				Christchurch	Approved	9	1	Low	Low	Medium	Low	>40%	High	Bespoke
40031	✔	✔	✔	✔	✔				March	Approved	24	1	High	High (SW)	Medium	Medium	>20%	Medium	Constraints
40033	✔	✔	✔	✔	✔				Eastrea	Approved	6	1	Low	Low	Medium	Low	<20%	Medium	Bespoke
40036	✔	✔	✔	✔	✔				March	Approved	12	3	Medium	High	Medium	Medium	>20%	Medium	Bespoke
40037	✔	✔	✔	✔	✔				March	Approved	18	3	Low	High	Medium	Medium	>20%	Medium	Bespoke
40038	✔	✔	✔	✔	✔				Manea	Approved	32	1	Low	Low	Medium	Medium	Exceeding	Medium	Bespoke
40041	✔	✔	✔	✔	✔				March	Approved	28	1	Low	Medium (S/GW)	Medium	Medium	>20%	Medium	Constraints
40042	✔	✔	✔	✔	✔				Whittlesey	Approved	220	3	Low	High	Medium	Medium	<20%	Medium	Constraints
40043	✔	✔	✔	✔	✔				March	Approved	7	1	Low	Medium (S)	Medium	Low	>20%	Medium	Bespoke
40045	✔	✔	✔	✔	✔				Wisbech St Mary	Approved	76	3	Low	High	Medium	Medium	>20%	Medium	Bespoke
40048	✔	✔	✔	✔	✔				Manea	Approved	29	2	Low	Medium	Medium	Medium	Exceeding	Medium	Bespoke
40050	✔	✔	✔	✔	✔				March	Approved	34	1	High	High (SW)	Medium	Medium	>20%	Medium	Constraints
40052	✔	✔	✔	✔	✔				March	Approved	9	1	Low	Low	Medium	Low	>20%	Medium	Bespoke
40053	✔	✔	✔	✔	✔				Elm	Approved	50	1	Low	Low	Medium	Medium	>20%	Medium	Bespoke
40054	✔	✔	✔	✔	✔				Chatteris	Approved	5	1	Low	Low	Medium	Low	>40%	Medium	Bespoke
40056	✔	✔	✔	✔	✔				Wisbech	Approved	137	1	Low	Low	Medium	Medium	>20%	Medium	Bespoke
40057	✔	✔	✔	✔	✔				Chatteris	Approved	50	1	Low	Medium (GW)	Medium	Medium	>40%	Medium	Bespoke
40059	✔	✔	✔	✔	✔				Christchurch	Approved	16	1	Low	Low	Medium	Medium	>40%	High	Bespoke

Site Ref.	Growth Option 1	2	2A	3	4	E1	E2	E2A	Location	Proposed Use	Local Plan Capacity	Flood Zone	Surface Water Flood Risk	Flood Risk Suitability	Water Resources & Supply	Wastewater collection	Wastewater Treatment	Water Quality	Infiltration SuDS Compatible
40060	✓	✓	✓	✓	✓				Wimblington	Approved	5	1	Low	Medium (GW)	Medium	Low	<20%	Medium	Constraints
40067	✓	✓	✓	✓	✓				Leverington	Approved	220	3	Low	High	Medium	Medium	>20%	Medium	Bespoke
40070	✓	✓	✓	✓	✓				Coates	Approved	60	1	Low	Medium (GW)	Medium	Medium	<20%	Medium	Bespoke
40072			✓						Chatteris	Approved	58	3	Low	High	Medium	Medium	>40%	Medium	Bespoke
40073	✓	✓	✓	✓	✓				March	Approved	19	1	Low	Medium (GW/S)	Medium	Medium	>20%	Medium	Constraints
40074	✓	✓	✓	✓	✓				Wimblington	Approved	25	1	Low	Medium (GW)	Medium	Medium	<20%	Medium	Bespoke
40076	✓	✓	✓	✓	✓				Manea	Approved	13	1	Low	Medium (GW)	Medium	Medium	Exceeding	Medium	Constraints
40077	✓	✓	✓	✓	✓				March	Approved	118	3	Low	High	Medium	Medium	>20%	Medium	Constraints
40079	✓	✓	✓	✓	✓				Doddington	Approved	13	1	Low	Medium (GW)	Medium	Medium	<20%	Medium	Constraints
40082	✓	✓	✓	✓	✓				March	Approved	13	1	Low	Medium (S)	Medium	Medium	>20%	Medium	Bespoke
40083	✓	✓	✓	✓	✓				Elm	Approved	5	1	Low	Low	Medium	Low	>20%	Medium	Bespoke
40087	✓	✓	✓	✓	✓				Wimblington	Approved	7	1	Low	Medium (GW)	Medium	Low	<20%	Medium	Constraints
40093	✓	✓	✓	✓	✓				March	Approved	9	1	Low	Medium (GW/S)	Medium	Low	>20%	Medium	Constraints
40103			✓						Wisbech St Mary	New site	90	1	Low	Low	Medium	Medium	>20%	Medium	Bespoke
40104R			✓						Gorefield	New site	30	1	Low	Low	Medium	Medium	>20%	Medium	Bespoke
40105		✓	✓	✓	✓				March	New site	9	1	Low	Medium (GW)	Medium	Low	>20%	Medium	Constraints
40115			✓						March	New site	55	1	Low	Medium (GW)	Medium	Medium	>20%	Medium	Constraints
40117					✓				Eastrea	New site	147	3	Low	Medium	Medium	Medium	<20%	Medium	Bespoke
40126R			✓						March	New site	24	2	Low	Medium	Medium	Medium	>20%	Medium	Constraints
40127		✓	✓	✓	✓				Friday Bridge	New site	6	1	Low	Low	Medium	Low	>20%	Medium	Bespoke
40133		✓	✓	✓	✓				Leverington	New site	96	1	Low	Low	Medium	Medium	>20%	Medium	Bespoke
40135			✓	✓	✓				Coldham	New site	11	2	Low	Medium	Medium	Medium	>20%	Medium	Bespoke
40137			✓						Collet's Bridge	New site	10	1	Low	Low	Medium	Low	>20%	Medium	Bespoke
40139				✓	✓				Doddington	New site	53	1	Low	Medium (GW)	Medium	Medium	<20%	Medium	Bespoke
40140R			✓	✓	✓				Doddington	New site	155	3	Low	High	Medium	Medium	<20%	High	Bespoke
40143			✓	✓	✓				Doddington	New site	17	1	Low	Low	Medium	Medium	<20%	Medium	Bespoke
40145					✓				Eastrea	New site	109	1	Low	Low	Medium	Medium	<20%	Medium	Bespoke
40147			✓						Guyhirn	New site	15	3	Low	Medium (GW)	Medium	Medium	>20%	Medium	Constraints
40150		✓	✓	✓	✓				Murrow	New site	7	1	Low	Medium (GW)	Medium	Low	>20%	Medium	Constraints
40151				✓	✓				Wimblington	New site	77	1	Low	Low	Medium	Medium	<20%	Medium	Bespoke
40152		✓	✓	✓	✓				Wimblington	New site	46	1	Low	Medium (GW)	Medium	Medium	<20%	Medium	Bespoke
40158			✓						Wisbech	New site	10	1	Low	Low	Medium	Low	>20%	Medium	Bespoke
40163		✓	✓	✓	✓				Wisbech	New site	77	3	Low	High	Medium	Medium	>20%	Medium	Bespoke
40171			✓						Wisbech St Mary	New site	51	1	Low	Low	Medium	Medium	>20%	Medium	Bespoke
40173			✓	✓	✓				Doddington	New site	10	1	Low	Medium (GW)	Medium	Low	<20%	Medium	Bespoke

Site Ref.	Growth Option 1	2	2A	3	4	E1	E2	E2A	Location	Proposed Use	Local Plan Capacity	Flood Zone	Surface Water Flood Risk	Flood Risk Suitability	Water Resources & Supply	Wastewater collection	Wastewater Treatment	Water Quality	Infiltration SuDS Compatible
40185			✔	✔	✔				Manea	New site	10	1	Low	Medium (GW)	Medium	Low	Exceeding	Medium	Bespoke
40190		✔	✔						March	New site	98	1	Low	Medium (GW/S)	Medium	Medium	>20%	Medium	Constraints
40194			✔						March	New site	8	1	Low	Low	Medium	Low	>20%	Medium	Bespoke
40198	✔	✔	✔	✔	✔				Coates	New site	20	1	Low	Low	Medium	Medium	<20%	Medium	Bespoke
40207R			✔	✔	✔				Guyhirn	New site	5	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40211R			✔						Chatteris	New site	100	1	Low	Low	Medium	Medium	>40%	Medium	Bespoke
40215					✔				Wimblington	New site	50	1	Medium	Medium (SW)	Medium	Medium	<20%	Medium	Constraints
40217					✔				Wimblington	New site	66	1	Low	Medium (GW)	Medium	Medium	<20%	Medium	Bespoke
40223			✔	✔	✔				Manea	New site	105	1	Low	Low	Medium	Medium	Exceeding	High	Bespoke
40229					✔				Wimblington	New site	9	1	Low	Low	Medium	Low	<20%	Medium	Bespoke
40233					✔				Eastrea	New site	177	1	Low	Low	Medium	Medium	<20%	Medium	Bespoke
40235			✔						Doddington	New site	31	1	Low	Medium (GW)	Medium	Medium	<20%	Medium	Bespoke
40237		✔							Whittlesey	New site	584	1	Low	Medium (GW)	Medium	Medium	<20%	High	Constraints
40241R			✔						Rings End	New site	8	1	Low	Low	Medium	Low	>20%	Medium	Bespoke
40250				✔	✔				Benwick	New site	31	3	Low	High	Medium	Medium	>40%	High	Constraints
40252		✔	✔	✔	✔				March	New site	294	1	Low	Medium (GW)	Medium	Medium	>20%	Medium	Constraints
40258					✔				Eastrea	New site	233	3	Low	Medium	Medium	Medium	<20%	Medium	Bespoke
40259				✔	✔				Eastrea	New site	107	3	Low	Medium	Medium	Medium	<20%	Medium	Bespoke
40262		✔	✔	✔	✔				March	New site	55	1	Low	Medium (GW/S)	Medium	Medium	>20%	Medium	Bespoke
40263		✔	✔	✔	✔				March	New site	19	1	Low	Medium (GW/S)	Medium	Medium	>20%	Medium	Constraints
40264		✔	✔	✔	✔				March	New site	50	1	Low	Medium (GW/S)	Medium	Medium	>20%	Medium	Constraints
40265			✔						Coates	New site	232	1	Low	Low	Medium	Medium	<20%	Medium	Bespoke
40270							✔	✔	Whittlesey	New site	0	3	Low	High	Medium	Low	<20%	Medium	Bespoke
40274				✔	✔				Benwick	New site	6	3	Low	High	Medium	Low	>40%	Medium	Bespoke
40276								✔	March	New site	0	1	Low	Medium (GW)	Medium	Low	>20%	Medium	Constraints
40278			✔		✔				Wimblington	New site	97	1	Low	Medium (GW)	Medium	Medium	<20%	High	Constraints
40284		✔							Chatteris	New site	260	1	Low	Medium (GW)	Medium	Medium	>40%	High	Bespoke
40285			✔						March	New site	1200	3	Low	Medium	Medium	Medium	>20%	High	Bespoke
40286								✔	March	New site	0	3	Low	High	Medium	Low	>20%	Medium	Constraints
40288		✔	✔	✔	✔				Chatteris	New site	20	3	Low	High	Medium	Medium	>40%	Medium	Bespoke
40290							✔	✔	March	New site	0	3	High	High	Medium	Low	>20%	Medium	Bespoke
40300		✔	✔	✔	✔				Whittlesey	New site	156	1	Low	Medium	Medium	Medium	<20%	Medium	Bespoke
40302		✔	✔	✔	✔				Parson Drove	New site	8	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40303			✔	✔	✔				Guyhirn	New site	15	3	Low	High	Medium	Medium	>20%	Medium	Constraints
40305			✔	✔	✔				Friday Bridge	New site	87	2	Low	Medium	Medium	Medium	>20%	Medium	Bespoke

Site Ref.	Growth Option 1	2	2A	3	4	E1	E2	E2A	Location	Proposed Use	Local Plan Capacity	Flood Zone	Surface Water Flood Risk	Flood Risk Suitability	Water Resources & Supply	Wastewater collection	Wastewater Treatment	Water Quality	Infiltration SuDS Compatible
40307R			✔						Wisbech St Mary	New site	10	1	Low	Medium	Medium	Low	>20%	Medium	Constraints
40315		✔	✔	✔	✔				March	New site	19	1	Medium	Medium (SW)	Medium	Medium	>20%	Medium	Constraints
40316		✔	✔	✔	✔				March	New site	6	1	Low	Medium (GW/S)	Medium	Low	>20%	Medium	Constraints
40319			✔	✔	✔				Friday Bridge	New site	137	1	Low	Low	Medium	Medium	>20%	Medium	Bespoke
40321							✔	✔	Coates	New site	0	3	Low	Medium	Medium	Low	<20%	Medium	Bespoke
40325		✔	✔	✔	✔				Chatteris	New site	6	1	Low	Low	Medium	Low	>40%	Medium	Bespoke
40326		✔	✔	✔	✔				Chatteris	New site	90	1	Medium	Medium (SW)	Medium	Medium	>40%	Medium	Bespoke
40327							✔	✔	Chatteris	New site	0	3	Low	High	Medium	Low	>40%	Medium	Bespoke
40328			✔						Coates	New site	117	3	Low	Medium	Medium	Medium	<20%	Medium	Constraints
40335		✔	✔	✔	✔				Whittlesey	New site	11	1	Low	Low	Medium	Medium	<20%	Medium	Bespoke
40337		✔	✔	✔	✔				Wisbech	New site	10	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40338		✔	✔	✔	✔				Wisbech	New site	178	3	Low	High	Medium	Medium	>20%	Medium	Bespoke
40348		✔							Whittlesey	New site	179	1	Low	Medium (GW)	Medium	Medium	<20%	Medium	Bespoke
40351								✔	Countryside	New site	0	1	Low	Medium (GW)	Medium	Low	>20%	Medium	Bespoke
40364R			✔						Tydd St Giles	New site	12	1	Low	Low	Medium	Medium	>20%	Medium	Bespoke
40366		✔	✔	✔	✔				Wisbech	New site	21	3	Low	High	Medium	Medium	>20%	Medium	Bespoke
40367		✔	✔	✔	✔				Chatteris	New site	248	1	Low	Medium (GW)	Medium	Medium	>40%	High	Bespoke
40368			✔	✔	✔				Newton	New site	6	1	Low	Low	Medium	Low	>20%	Medium	Bespoke
40369R			✔						Christchurch	New site	10	1	Low	Low	Medium	Low	>40%	High	Bespoke
40371		✔	✔	✔	✔				Wisbech	New site	316	1	Low	Low	Medium	Medium	>20%	Medium	Bespoke
40372					✔				Eastrea	New site	144	3	Low	Medium	Medium	Medium	<20%	Medium	Bespoke
40374					✔				Wimblington	New site	33	1	Low	Medium (GW)	Medium	Medium	<20%	Medium	Bespoke
40375				✔	✔				Benwick	New site	20	3	Low	High	Medium	Medium	>40%	High	Constraints
40376					✔				Eastrea	New site	75	3	Low	Medium	Medium	Medium	<20%	Medium	Bespoke
40380				✔	✔				Wimblington	New site	34	1	Low	Low	Medium	Medium	<20%	Medium	Bespoke
40382		✔	✔	✔	✔				March	New site	341	1	High	High (SW)	Medium	Medium	>20%	Medium	Constraints
40384		✔	✔	✔	✔				Chatteris	New site	1000	1	Low	Medium (GW)	Medium	Medium	>40%	High	Bespoke
40386						✔	✔	✔	March	Approved	0	1	Low	Medium (GW/S)	Medium	Low	>20%	Medium	Bespoke
40390						✔			March	Approved	0	1	Low	Medium (GW)	Medium	Low	>20%	Medium	Constraints
40393						✔			March	Approved	0	1	Low	Medium (GW)	Medium	Low	>20%	Medium	Bespoke
40398						✔	✔	✔	Wisbech	Approved	0	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40402						✔	✔	✔	Wisbech	Approved	0	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40403						✔	✔	✔	Chatteris	Approved	0	1	Low	Low	Medium	Low	>40%	Medium	Bespoke
40404						✔			March	Approved	0	1	Low	Medium (GW)	Medium	Low	>20%	Medium	Bespoke
40408						✔	✔	✔	Chatteris	Approved	0	3	Low	High	Medium	Low	>40%	Medium	Bespoke

Site Ref.	Growth Option 1	2	2A	3	4	E1	E2	E2A	Location	Proposed Use	Local Plan Capacity	Flood Zone	Surface Water Flood Risk	Flood Risk Suitability	Water Resources & Supply	Wastewater collection	Wastewater Treatment	Water Quality	Infiltration SuDS Compatible
40409						✓	✓	✓	Chatteris	Approved	0	1	Low	Low	Medium	Low	>40%	Medium	Bespoke
40411						✓			March	Approved	0	1	High	High (SW)	Medium	Low	>20%	Medium	Constraints
40412						✓			Wisbech	Approved	0	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40415						✓	✓	✓	Wisbech	Approved	0	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40416						✓			Chatteris	Approved	0	3	Low	Medium	Medium	Low	>40%	Medium	Bespoke
40417						✓	✓	✓	Whittlesey	Approved	0	1	Low	Medium (GW)	Medium	Low	<20%	Medium	Constraints
40420						✓	✓	✓	March	Approved	0	1	Low	Medium (GW/S)	Medium	Low	>20%	Medium	Constraints
40424R			✓						Wisbech St Mary	New site	9	1	Low	Low	Medium	Low	>20%	Medium	Bespoke
40426		✓	✓	✓	✓				Doddington	New site	55	1	Low	Low	Medium	Medium	<20%	Medium	Bespoke
40427			✓						Doddington	New site	40	1	Low	Medium (GW)	Medium	Medium	<20%	Medium	Constraints
40430			✓						March	New site	62	1	Low	Low	Medium	Medium	>20%	Medium	Bespoke
40434		✓	✓	✓	✓				March	New site	9	1	Low	Medium (GW/S)	Medium	Low	>20%	Medium	Constraints
40443		✓		✓	✓				Whittlesey	Approved	53	3	Low	High	Medium	Medium	<20%	Medium	Bespoke
40444			✓						Doddington	New site	13	1	Low	Medium (GW)	Medium	Medium	<20%	Medium	Constraints
40446		✓	✓	✓	✓				March	New site	18	1	Low	Medium (GW/S)	Medium	Medium	>20%	Medium	Constraints
40447		✓	✓	✓	✓				Chatteris	New site	53	3	Low	High	Medium	Medium	>40%	Medium	Bespoke
40450				✓	✓				Doddington	New site	100	1	Low	Low	Medium	Medium	<20%	High	Bespoke
40451R			✓						Parson Drove	New site	30	1	Low	Medium (GW)	Medium	Medium	>20%	High	Constraints
40453				✓	✓				Doddington	New site	11	1	Low	Low	Medium	Medium	<20%	Medium	Bespoke
40454								✓	Chatteris	New site	0	3	Low	High	Medium	Low	>40%	Medium	Bespoke
40455								✓	Chatteris	New site	0	3	Low	High	Medium	Low	>40%	Medium	Bespoke
40456								✓	Chatteris	New site	0	3	Low	High	Medium	Low	>40%	Medium	Constraints
40457								✓	Chatteris	New site	0	3	Low	High	Medium	Low	>40%	Medium	Bespoke
40458							✓	✓	Chatteris	New site	0	3	Low	High	Medium	Low	>40%	Medium	Bespoke
40459								✓	Chatteris	New site	0	3	Low	High	Medium	Low	>40%	Medium	Bespoke
40463		✓	✓	✓	✓				Christchurch	New site	23	1	Low	Low	Medium	Medium	>40%	High	Bespoke
40468							✓	✓	Countryside	New site	0	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40469								✓	Countryside	New site	0	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40491								✓	Chatteris	New site	0	3	Low	High	Medium	Low	>40%	Medium	Bespoke
40496					✓				Wimblington	New site	11	1	Low	Medium (GW)	Medium	Medium	<20%	Medium	Constraints
40497							✓	✓	Chatteris	New site	0	3	Low	High	Medium	Low	>40%	Medium	Bespoke
40499		✓	✓	✓	✓				Chatteris	New site	52	1	Low	Medium (GW)	Medium	Medium	>40%	Medium	Constraints
40502							✓	✓	Whittlesey	New site	0	1	Low	Low	Medium	Low	<20%	Medium	Bespoke
40503	✓	✓	✓	✓	✓				Leverington	Approved	9	2	Low	Medium	Medium	Low	>20%	Medium	Bespoke
40504	✓	✓	✓	✓	✓				Parson Drove	Approved	5	3	Low	High	Medium	Low	>20%	Medium	Bespoke

Site Ref.	Growth Option 1	2	2A	3	4	E1	E2	E2A	Location	Proposed Use	Local Plan Capacity	Flood Zone	Surface Water Flood Risk	Flood Risk Suitability	Water Resources & Supply	Wastewater collection	Wastewater Treatment	Water Quality	Infiltration SuDS Compatible
40505	✓	✓	✓	✓	✓				Chatteris	Approved	7	1	Low	Low	Medium	Low	>40%	Medium	Bespoke
40506	✓	✓	✓	✓	✓				Wisbech	Approved	15	1	Low	Low	Medium	Medium	>20%	Medium	Bespoke
40509	✓	✓	✓	✓	✓				Wisbech	Approved	9	1	Low	Low	Medium	Low	>20%	Medium	Bespoke
40511	✓	✓	✓	✓	✓				March	Approved	5	1	Low	Medium (GW/S)	Medium	Low	>20%	Medium	Constraints
40513	✓	✓	✓	✓	✓				Wisbech	Approved	19	3	Low	High	Medium	Medium	>20%	Medium	Bespoke
40514	✓	✓	✓	✓	✓				Gorefield	Approved	5	2	Low	Medium	Medium	Low	>20%	Medium	Bespoke
40517	✓	✓	✓	✓	✓				March	New site	26	1	Low	Medium (GW/S)	Medium	Medium	>20%	Medium	Bespoke
40518	✓	✓	✓	✓	✓				Wisbech St Mary	Approved	5	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40519	✓	✓	✓	✓	✓				Chatteris	Approved	9	1	Low	Low	Medium	Low	>40%	Medium	Bespoke
40520	✓	✓	✓	✓	✓				Countryside	Approved	0	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40521	✓	✓	✓	✓	✓				Gorefield	Approved	14	3	Low	Medium	Medium	Medium	>20%	Medium	Bespoke
40522	✓	✓	✓	✓	✓				Manea	Approved	5	1	Low	Low	Medium	Low	Exceeding	Medium	Bespoke
40523	✓	✓	✓	✓	✓				March	Approved	9	1	Low	Medium (GW/S)	Medium	Low	>20%	Medium	Constraints
40524	✓	✓	✓	✓	✓				March	Approved	9	1	High	High (SW)	Medium	Low	>20%	Medium	Constraints
40525	✓	✓	✓	✓	✓				March	Approved	40	1	High	High (SW)	Medium	Medium	>20%	Medium	Constraints
40526	✓	✓	✓	✓	✓				Whittlesey	Approved	18	3	Low	High	Medium	Medium	<20%	Medium	Bespoke
40527	✓	✓	✓	✓	✓				Whittlesey	Approved	9	1	Low	Low	Medium	Low	<20%	Medium	Bespoke
40528	✓	✓	✓	✓	✓				Whittlesey	Approved	9	1	Low	Low	Medium	Low	<20%	Medium	Bespoke
40529	✓	✓	✓	✓	✓				Wimblington	Approved	30	1	Low	Medium (GW)	Medium	Medium	<20%	Medium	Constraints
40530	✓	✓	✓	✓	✓				Wisbech	Approved	9	1	Low	Low	Medium	Low	>20%	Medium	Bespoke
40531	✓	✓	✓	✓	✓				Wisbech St Mary	Approved	6	1	Low	Low	Medium	Low	>20%	Medium	Bespoke
40532						✓	✓	✓	Whittlesey	Approved	0	1	Low	Medium (GW)	Medium	Low	<20%	Medium	Bespoke
40533						✓	✓	✓	Countryside	Approved	0	1	Low	Low	Medium	Low	>20%	Medium	Bespoke
40534						✓	✓	✓	Wisbech	Approved	0	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40535						✓	✓	✓	March	Approved	0	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40536						✓	✓	✓	Wisbech	Approved	0	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40537						✓	✓	✓	Wisbech	Approved	0	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40538						✓	✓	✓	Wisbech	Approved	0	3	High	High	Medium	Low	>20%	Medium	Bespoke
40539						✓	✓	✓	Chatteris	Approved	0	3	Low	High	Medium	Low	>40%	Medium	Bespoke
40540						✓	✓	✓	March	Approved	0	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40541						✓	✓	✓	March	Approved	0	3	Low	High	Medium	Low	>20%	Medium	Bespoke
40322/ 40306R			✓						Elm	New site	215	1	Low	Low	Medium	Medium	>20%	Medium	Bespoke
40373/ 40498R			✓						Leverington	New site	100	1	Low	Low	Medium	Medium	>20%	Medium	Bespoke

7 SUMMARY OF OUTLINE WCS OUTCOMES

7.1 Conclusions

This section summarises the main conclusions from the Outline WCS. The assessments supporting the conclusions are provided in Sections 3 to 6 of this report.

Development in Fenland District

- The emerging Local Plan (2020-2040) requires that approximately 9,823 new homes (average 517 per year) be built to satisfy the growth ambitions of the Council's Local Housing Need (LHN), based on the September 2021 assessment. The methodology used to calculate these numbers is based on the PPG's Housing Need Assessment.
- Growth Options have been developed to support different approaches to growth across the district to achieve the housing and employment development requirements of the emerging Local Plan.
- Permission has already been granted for 3,088 dwellings. As a result, the Local Plan will need to provide allocation for at least a further 6,735 new dwellings.

Water Resources

- Water resources and associated supply infrastructure for Fenland District are expected to be able to accommodate the forecast development. However, Fenland District is located within an area under considerable water abstraction stress. For this reason all development sites are classified as Medium risk for water resources and supply.
- Anglian Water have confirmed the following per capita consumption (PCC) values for the baseline year of 2017/18:
    - South Fenland WRZ - Measured PCC 131 l/h/d; Unmeasured PCC 219 l/h/d, weighted average 156.9 l/h/d.
    - Ruthamford North WRZ - Measured PCC 135 l/h/d; Unmeasured PCC 151 l/h/d, weighted average 138 l/h/d.
    - The weighted average PCC values for South Fenland WRZ and Ruthamford North WRZ are expected to fall to 134.1 l/h/d and 122.7 l/h/d respectively by 2045 in the Final plan forecast, as demand management option savings are realised and customers switch from unmeasured to measured status.
- Anglian Water aims to reduce leakage by 35% from 6.76 Ml/d in 2020 to 4.36 Ml/d in 2045.
- Anglian Water presented the Final Plan scenario for South Fenland FZ with demand management options forecast over the WRMP period (to 2045) as follows:
    - Household demand to increase from 14.92 Ml/d to 15.79 Ml/d;
    - Leakage to decrease from the baseline value of 6.76 Ml/d to 4.36 Ml/d at the end of the WRMP plan period with demand management option savings;
    - Non-household demand to decrease from 8.64 Ml/d to 7.09 Ml/d over the WRMP period; and
    - Distribution Input to decrease slightly from 31.25 Ml/d to 28.17 Ml/d, once the influence of demand management option savings are included.
- The use of SuDS on all new developments provides multiple benefits and may contribute to reducing water consumption issues via solutions such as rainwater harvesting.

Wastewater Collection, Treatment and Water Quality

- There are nine Water Recycling Centres (WRCs) located in Fenland District. Water companies plan over 5-year cycles and the period covered by the emerging Local Plan extends beyond the current Asset Management Plan (AMP) period. In general, WRC upgrades that are required to provide for additional growth are wholly funded by Anglian Water through their Asset Management Plan.
- Anglian Water has recently produced their Water Recycling Long Term Strategy with the aim of focusing investment appropriately and managing the risks associated with water recycling in the future.
- Anglian Water has confirmed that the growth risk assessments for the water recycling centres in Fenland indicate that additional investment would be required to provide further capacity.
- Additional assessment of the current capacity of the WRCs has shown that most have some headroom available for future development. However, Doddington and Whittlesey WRCs are within 10% of the permitted DWF, and Manea Town Lots WRC is currently exceeding its DWF permit. There are 57 development sites for which the receiving WRC has less than 20% capacity. These sites are assessed as being at high risk in terms of wastewater treatment capacity.
- With the development strategy proposed in Growth Option GO2A, the wastewater network capacity will be reduced. Assessment of WRC capacity in terms of the expected new development shows that Doddington, Manea Town Lots and Whittlesey WRCs will exceed their current DWF permitted value as a result of future growth, and March and Parson Drove WRCs will be within 10% of their permitted DWF. These WRCs and will require additional investment and treatment capacity upgrades to meet the requirements of the proposed development so that the risk of sewer flooding is not increased.
- Sewer network improvements are generally funded or partly funded through developer contribution via the relevant sections of the Water Industry Act 1991. The cost and extent of the required network improvements are assessed on a case-by-case basis when Anglian Water is approached by a developer and an appraisal is carried out. For developments of greater than 10 properties it is assumed that some enhancement to capacity may be required.
- Compliance with discharge quality requirements is paramount to guarantee that the estimated growth has no significant negative impact on water quality elsewhere. The majority of the development is proposed to take place within the Middle Level water body, with 28% population growth forecast over the next 20 years. The Middle Level, the Counter Drain (Manea and Welney IDB) and the River Nene water bodies are currently classified as Moderate for phosphate concentrations, with phosphate pollution from sewage discharge already a reason why the water bodies are not achieving good status. Further development could exacerbate this issue and could also cause deterioration in the condition of the North Level Main Drain water body (currently classified as Good for phosphate concentrations).
- As part of the site assessment included in **Section 6,** proposed development sites which would increase the population of the WRC area by more than 5% have been assessed as being at High risk for water quality impacts. All other sites have been assessed as Medium risk.
- The cumulative impact of the proposed new development is likely to cause water quality issues for all receiving waters. To avoid any deterioration in water body status associated with physico-chemical quality elements, mitigation measures may be needed to reduce offsite environmental impacts, i.e. within water bodies and associated protected areas.
- As new urbanised areas will increase impermeable surface, new sources and pathways for diffuse pollution pose a risk for water quality that will need to be mitigated as part of the development of a site.
- New development may provide opportunities to improve water quality through good design and mitigation, e.g. by implementing some of the measures included in the Anglian River Basin Management Plan. The use of SuDS on all new developments provides multiple benefits including management of surface water runoff and reduction of sewerage flows. Protection and enhancement of green

infrastructure, removal of artificial physical modifications and recreating natural features are good practice approaches that can improve water quality.

Biodiversity and Conservation

- Two international nature conservation sites lie within Fenland District: Nene Washes, and Ouse Washes.
- Development within Fenland District can have both positive and negative impacts on biodiversity and conservation, depending on how this development is managed. Biodiversity Net Gain of at least 10% will be a statutory requirement for all development sites following publication of regulations as set out in the Environment Act (anticipated late 2023).
- The use of SuDS on all new developments provides multiple benefits including the mitigation of potential negative impacts to water quality and biodiversity.
- Developers should contact the Environment Agency regarding site-specific opportunities to contribute to WFD objectives on water quality and biodiversity improvements, e.g. by implementing some of the measures identified in the Anglian River Basin Management Plan or in Section 4.4 of this report.

7.2 Recommendations

The ongoing support and cooperation of the key stakeholders and responsible parties is required for the full range of water services infrastructure requirements, policy recommendations and additional guidance to be effective in supporting sustainable growth. Key stakeholders and responsible parties must take an active role in influencing the implementation of key water services infrastructure solutions and recommendations from this WCS and other strategies to support and benefit Fenland's growth plans.

Fenland District Council

1. A Detailed WCS is recommended to assess the impact of specific growth areas on receiving WRCs, associated infrastructure and water quality in more detail. This should include a review with Anglian Water and the Environment Agency of the preferred site allocations and the potential cumulative impacts, particularly on water quality, in order to identify potential mitigation measures and plan positively for accommodating the planned growth in the emerging Local Plan.
2. The Council should work in partnership with Anglian Water to implement adequate water efficiency standard requirements via the Local Plan. As local planning authority, the Council may set higher water consumption targets in line with the Government's Optional Housing Technical Standards. It is therefore recommended that the Council adopts the higher water efficiency standard of 110 l/p/d in its Local Plan policies. Both the Council and Anglian Water should work together to ensure their infrastructure provision and water efficiency plans keep up with the water and sewerage requirements of new development, both in terms of demand reduction and through the sustainable design of new development.
3. The Council should use their role as Local Planning Authority to engage in effective partnership with Cambridgeshire County Council (as LLFA) and Anglian Water to ensure effective Sustainable Drainage Systems are delivered as part of the planning approval process. SuDS can mitigate flood risk and negative environmental impacts of development (including on water quality), as well as reducing demand on wastewater collection infrastructure. Therefore, SuDS and are the preferred option for surface water drainage.
4. The Council should link development planning to the Water Framework Directive objectives and River Basin Management Plan measures, as well as Biodiversity Action Plan (BAP) priority habitats and emerging targets relating to the Environment Act. The emerging Local Plan should favour the creation

of green corridors, ponds and other similar habitats to enhance biodiversity in Fenland District and to put measures in place to protect conservation areas and characteristic landscapes.

5. A new HRA should be prepared to support the new Local Plan, taking into account the information from this WCS and other complementary studies, and specifically considering the vulnerability of the Nene and Ouse Washes in terms of the input of water from sources with high nutrient levels. The Council should assess the potential benefits (reductions in shortfalls) that could be brought about through the promotion of rainwater harvesting and grey water recycling, and consider the measures needed to encourage their uptake.
6. Recommendations for policy to be included in the Local Plan are set out in **Section 7.3**.

Cambridgeshire County Council

1. Cambridgeshire County Council should use its role as LLFA to ensure effective Sustainable Drainage Systems are delivered as part of the planning approval process to help to reduce flood risk and improve water quality.

Anglian Water

1. Anglian Water should continue to take a proactive role providing advice to the Council for development planning purposes, including in relation to the provision, maintenance and adoption of SuDS and other water management systems within new developments.
2. Anglian Water and the Council should work together to target a reduction in water consumption through water efficiency measures and user campaigns. Water meters should be promoted by all stakeholders.
3. The close collaboration between Anglian Water and the Council should ensure all future planning applications include all necessary studies, assessments and infrastructure required to support development is in place prior to construction. Anglian Water is responsible for managing the developer requisition process and identifying required key infrastructure or water supply and wastewater/drainage network upgrades.
4. Anglian Water should continue supporting the Council in making sure that Habitat Regulations Assessment - Appropriate Assessments and detailed Environmental Impact Assessments take into account potential impacts of proposed sewerage options and discharge consents.

Developers

1. Developers should use information provided in this document, and in particular the development guidance sheets (when available) to support the planning and site-specific Flood Risk Assessment (FRA) for new developments. FRAs should incorporate all relevant points included in the *Site-Specific Flood Risk Assessment: CHECKLIST* that appears in the NPPG (Ref. 28) and the Cambridgeshire Flood and Water SPD.
2. Developers should seek to implement water efficiency measures and explore ways in which the proposed development may enhance water quality and amenity – e.g. including green and/or blue infrastructure, such as SuDS measures. CIRIA's SuDS Manual (Ref. 41) provide further information on SuDS types.
3. Developers should plan for delivering Biodiversity Net Gain of at least 10% on all sites, in order to comply with the Environment Act.
4. In all cases, developers should ensure that the new development does not have a negative impact on the environment.

7.3 Policy Recommendations

The following policy recommendations should be considered by Fenland District Council in the development of the Local Plan:

- **Water resources and supply**

New development and re-development of land should wherever possible seek opportunities to implement water efficiency, water storage and water recycling measures. Fenland District Council should monitor the application of such measures.

Fenland District Council should adopt the more stringent water efficiency requirement of 110 l/p/d in the Flood and Water policies to be set out in the emerging Local Plan.

- **Water Framework Directive**

Development that may adversely affect green infrastructure assets and water quality should not be permitted. Developments should demonstrate opportunities to create and enhance green infrastructure.

- **Surface water management and SuDS**

Developers should consult the Cambridgeshire Flood and Water SPD (Ref. 46), which provides guidance on the approach that should be taken to design new developments to manage and mitigate flood risk and include sustainable drainage systems (SuDS), which have benefits for water quality as well as for flood risk. Fenland District Council should monitor the application of SuDS to developments in areas at risk of flooding.

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MAPS

Royal HaskoningDHV

DEVELOPER GUIDANCE SHEETS

Royal HaskoningDHV

Appendix A

Data Sources

Royal HaskoningDHV

Abbreviations

FDC	Fenland District Council
EA	Environment Agency
CCC	Cambridgeshire County Council (as Lead Local Flood Authority)

Type of Information	Description	Data Source
OS Mapping	Ordnance Survey 1:10k, 1:25k, 1:50k. 1:250k and Mastermap Maps	FDC
Water Cycle Strategy	Report	FDC
Strategic Flood Risk Assessment	Reports, modelling and GIS files	FDC
Surface Water Management Plan	Report	FDC
Flood Areas	• Flood Alert Areas • Flood Map - Areas Benefiting from Flood Defences • Flood Map - Flood Storage Areas • Flood Map - Flood Zone 2 and Flood Zone 3 • Flood Map - Spatial Flood Defences (without standardised attributes) • Flood Risk Areas • Groundwater Vulnerability • Recorded Flood Outlines • Risk of Flooding from Rivers and Sea (Detailed) - Properties in Areas • Flood Map for Surface Water (RoSWF) Complex • Flood Warning Zones • Tidal Hazard Mapping (River Nene)	EA Geostore
Historic Flood Map	GIS Files	EA
Historic Flood Incident Records	Flooding from all sources in Fenland 2012-2020	CCC
BGS Infiltration SuDS	• Drainage Summary • Ground Stability Summary • Ground Water Protection Summary • Infiltration Constraints Summary • Infiltration SuDS Map Summary	FDC
Environmental Designations	• Local Nature Reserves • Conservation Areas • Special Protection Area • Listed Buildings • Scheduled Monuments • Sites of Special Scientific Interest	FDC / EA Geostore
Watercourses	Detailed River Network	EA Geostore
Internal Drainage Board catchments	Boundaries, drains, catchments, inspection chambers, pipes, pumping stations, raised embankments, slackers, weirs and water retention structures	Middle Level / North Level IDBs
Water Framework Directory	All	EA Geostore

Type of Information	Description	Data Source
National Receptor Dataset 2014	All	EA Geostore
Preliminary list of preferred sites		FDC
Catchment Flood Management Plan	Report	EA
2019 Water Resource Management Plan	With information on Water Resource Zones and Planning Zones	Anglian Water
2018 Water Recycling Long-term Plan		Anglian Water
Copy of DG5 Flooding Records - Fenland District	Wastewater Flooding Incident Locations 2014-2017	Anglian Water
Planned infrastructure improvement works	• Wastewater treatment capacity • Foul network capacity • Clean water treatment capacity • Clean water network capacity	Anglian Water
Areas with Critical Drainage Problems		EA
Anglian River Basin District Results	Geo PDF's	EA
Anglian River Basin District - River Basin management Plan	Part 1	EA
Site Allocations	SHEELA Site Allocation	FDC
Flood and Water Management	Planning supplementary document	FDC
EA flood risk assessment of SHEELA sites	EA flood risk assessment of SHEELA sites	EA

Appendix B

Water Framework Directive - status and objectives of water bodies in Fenland District

Royal HaskoningDHV

Table B1 Water Body Classification Objectives

Water Body	Operational Catchment	Current Overall Status (2019)	Overall Waterbody Status Objective (by year 20xx)	Ecological Status Objective (by year 20xx)	Chemical Status Objective (by year 20xx)
Nene Catchment					
Islip to tidal	Middle Nene	Moderate	Moderate (2015)	Moderate (2015)	Good (2015)
Mortons Leam	Lower Nene	Moderate	Good (2027)	Good (2027)	Good (2027)
North Level Main Drain	Lower Nene	Moderate	Good (2027)	Good (2027)	Good (2015)
North Level Pumped Areas 2 and 3	Lower Nene	Moderate	Moderate (2015)	Moderate (2015)	Good (2015)
Middle Level and Old Bedford Catchment					
Middle Level	Middle Level	Moderate	Good (2027)	Good (2027)	Good (2027)
Counter Drain (Manea and Welney IDB)	Old Bedford	Moderate	Good (2027)	Good (2027)	Good (2027)
Counter Drain (Sutton and Mepal IDB)	Old Bedford	Moderate	Good (2027)	Good (2027)	Good (2021)
Old Bedford River / River Delph inc The Hundred Foot Washes	Old Bedford	Moderate	Good (2027)	Good (2027)	Good (2027)
Anglian TraC Catchment					
Nene	The Wash TraC	Moderate	Moderate (2015)	Moderate (2015)	Good (2015)

Table B2: Nene River – Islip to tidal

Water Body Details	**Water body name**		Nene – Islip to tidal	
	Water body ID		GB105032050381	
	Water body type		River	
	Management catchment		Nene	
	Operational catchment		Middle Nene	
	Hydromorphological designation		Heavily Modified	
	Sensitive habitats		Nitrates Directive, Habitats and Species Directive, Drinking Water Directive and Conservation of Wild Birds Directive	
	Current Overall Status		Moderate	
	Objective Status		Moderate	
	Ecological Status / Potential		Moderate	
	Chemical Status		Fail	
Ecological	**Quality elements**	**Elements**	**Classification**	**Objective**
	Biological	Overall	Good	Good
		Fish	Good	High
		Invertebrates	Good	Good
	Hydromorphological	Overall	Supports Good	Supports Good
		Hydrological Regime	Supports Good	Supports Good
	Physico-chemical	Overall	Moderate	Moderate
		Acid Neutralising Capacity	High	
		Ammonia (Phys-Chem)	High	Good
		BOD	High	-
		Dissolved oxygen	High	Good
		pH	High	Good
		Phosphate	Poor	Moderate
		Temperature	Good	Good
	Specific pollutants	Overall	High	High
	Supporting elements (Surface Water)	Overall	Moderate	Good
		Mitigation Measures Assessment	Moderate or less	Good
Chemical	Priority hazardous substances	Overall	Good	Fail
	Priority substances	Overall	Good	Good
	Other Pollutants	Overall	Good	Good
Mitigation Measures Assessment	Reasons for not achieving Good Status	Mitigation Measures Assessment: Other (navigation including ports) (confirmed)		
		Temperature – High to Good Deterioration, no action required (RFD only)		
		Phosphate: Continuous sewage discharge (confirmed)		
		Phosphate: Livestock field (probable)		
		Phosphate: Land use – arable (probable)		
Water Body Level Measures	Appropriate vessel management		Install nutrient reduction	
	Fisheries management plan		Removal of sediment and/ or fit / improve instream sediment traps	
	Enable fish passage (e.g. fish pass)		Protect existing vegetation	
	Bank rehabilitation / reprofiling		Change vegetation management techniques, plant new vegetation	
	Increase in-channel morphological diversity		Control and eradication of selected high risk species	
	Removal or modification of hard structures with soft engineering solution		Reduce point source pollution at source (control of quantities/volumes of substances entering sewers)	
	Improve floodplain connectivity		Mitigate / remediate point source impacts on receptors	
	Habitat creation and restoration		Reduce diffuse pollution at source (arable soils and livestock)	
	Habitat management		Reduce diffuse pollution pathways (surface runoff and drainage)	

Table B3: Mortons Leam

Water Body Details	**Water body name**		Mortons Leam	
	Water body ID		GB105032050382	
	Water body type		River	
	Management catchment		Nene	
	Operational catchment		Lower Nene	
	Hydromorphological designation		Artificial	
	Sensitive habitats		Nitrates Directive, Habitats and Species Directive and Conservation of Wild Birds Directive	
	Current Overall Status		Moderate	
	Objective Status		Good	
	Ecological Status / Potential		Moderate	
	Chemical Status		Fail	
Ecological	**Quality elements**	**Elements**	**Classification**	**Objective**
	Biological	Overall	Moderate	Good
		Fish	Poor	Good
		Invertebrates	Good	Good
	Hydromorphological	Overall	Supports Good	Supports Good
		Hydrological Regime	Supports Good	Supports Good
	Physico-chemical	Overall	Good	Good
		Ammonia (Phys-Chem)	High	Good
		BOD	Moderate	-
		Dissolved oxygen	Good	Good
		pH	High	Good
		Phosphate	Good	Good
		Temperature	High	Good
	Specific pollutants	Overall	-	Not assessed
	Supporting elements (Surface Water)	Overall	Moderate	Good
		Mitigation Measures Assessment	Moderate or less	Good
Chemical	Priority hazardous substances	Overall	Fail	Does not require assessment
	Priority substances	Overall	Good	Does not require assessment
	Other Pollutants	Overall	Does not require assessment	Does not require assessment
Mitigation Measures Assessment	Reasons for not achieving Good Status	Mitigation Measures Assessment: Other (flood protection) (confirmed)		
		Mitigation Measures Assessment: Other (land drainage) (confirmed)		
		Phosphate: Continuous sewage discharge (probable)		
		Phosphate: Housing drainage (suspected)		
		Fish: Unknown		
		Fish – Poor soil management		
		Fish – land drainage		
		Fish – poor livestock management		
		Fish – inland boating and structures		
		Fish – Chinese mitten crab (invasive non-native species)		
Water Body Level Measures	Habitat creation Plant new vegetation		Increase in-channel morphological diversity	

Table B4: North Level Main Drain

Water Body Details	**Water body name**		North Level Main Drain	
	Water body ID		GB205032050395	
	Water body type		River	
	Management catchment		Nene	
	Operational catchment		Lower Nene	
	Hydromorphological designation		Artificial	
	Sensitive habitats		-	
	Current Overall Status		Moderate	
	Objective Status		Good	
	Ecological Status / Potential		Moderate	
	Chemical Status		Fail	
Ecological	**Quality elements**	**Elements**	**Classification**	**Objective**
	Biological	Overall	High	Good
		Fish	High	Good
		Invertebrates	-	-
	Hydromorphological	Overall	Supports Good	Supports Good
		Hydrological Regime	Supports Good	Supports Good
	Physico-chemical	Overall	Moderate	Good
		Ammonia (Phys-Chem)	Good	Good
		BOD	Good	-
		Dissolved oxygen	Moderate	Good
		pH	High	Good
		Phosphate	Good	Good
		Temperature	High	Good
	Specific pollutants	Overall	-	Not assessed
	Supporting elements (Surface Water)	Overall	Good	Good
		Mitigation Measures Assessment	Good	Good
Chemical	Priority hazardous substances	Overall	Fail	Does not require assessment
	Priority substances	Overall	Good	Does not require assessment
	Other Pollutants	Overall	Does not require assessment	Does not require assessment
Mitigation Measures Assessment	Reasons for not achieving Good Status	Dissolved oxygen: Surface water abstraction (probable)		
		Dissolved oxygen: Continuous sewage discharge (probable)		
		Biochemical Oxygen Demand (BOD): surface water abstraction (probable)		
		Biochemical Oxygen Demand (BOD): Continuous sewage discharge (probable)		
		Phosphate – high to good deterioration, no action required (RFD only)		
Water Body Level Measures	Habitat creation Plant new vegetation		Increase in-channel morphological diversity	

Table B5: North Level Pumped Areas 2 and 3

Water Body Details	**Water body name**		North Level Pumped Areas 2 and 3	
	Water body ID		GB105032050382	
	Water body type		River	
	Management catchment		Nene	
	Operational catchment		Lower Nene	
	Hydromorphological designation		Artificial	
	Sensitive habitats		Nitrates Directive, Habitats and Species Directive and Conservation of Wild Birds Directive	
	Current Overall Status		Moderate	
	Objective Status		Moderate	
	Ecological Status / Potential		Moderate	
	Chemical Status		Fail	
Ecological	**Quality elements**	**Elements**	**Classification**	**Objective**
	Biological	Overall	-	-
		Fish	-	-
		Invertebrates	-	-
	Hydromorphological	Overall	Supports Good	Supports Good
		Hydrological Regime	Supports Good	Supports Good
	Physico-chemical	Overall	Moderate	Moderate
		Ammonia (Phys-Chem)	Poor	Bad
		BOD	-	-
		Dissolved oxygen	Good	Poor
		pH	High	Good
		Phosphate	Poor	Bad
		Temperature	Good	Good
	Specific pollutants	Overall	-	Not assessed
	Supporting elements (Surface Water)	Overall	Good	Good
		Mitigation Measures Assessment	Good	Good
Chemical	Priority hazardous substances	Overall	Fail	Does not require assessment
	Priority substances	Overall	Good	Does not require assessment
	Other Pollutants	Overall	Does not require assessment	Does not require assessment
Mitigation Measures Assessment	Reasons for not achieving Good Status	Ammonia (Phys-Chem): Continuous sewage discharge (confirmed)		
		Ammonia (Phys-Chem): Intermittent sewage discharge (confirmed)		
		Ammonia (Phys-Chem):- Natural conditions (other)		
		Phosphate: Continuous sewage discharge (confirmed)		
		Temperature – High to good deterioration, no action required (RFD only)		
		Dissolved oxygen: Continuous sewage discharge (probable)		
		Dissolved oxygen: Intermittent sewage discharge (probable)		
		Dissolved oxygen: Land drainage (probable)		
Water Body Level Measures	Habitat creation Plant new vegetation		Increase in-channel morphological diversity	

Table B6: Middle Level

Water Body Details	**Water body name**		Middle Level	
	Water body ID		GB205033000050	
	Water body type		River	
	Management catchment		Old Bedford and Middle Level	
	Operational catchment		Middle Level	
	Hydromorphological designation		Artificial	
	Sensitive habitats		-	
	Current Overall Status		Moderate	
	Objective Status		Good	
	Ecological Status / Potential		Moderate	
	Chemical Status		Fail	
Ecological	**Quality elements**	**Elements**	**Classification**	**Objective**
	Biological	Overall	Moderate	-
		Fish	High	-
		Macrophytes and Phytobenthos Combined	Moderate	Good
		Invertebrates	High-	Good
	Hydromorphological	Overall	Supports Good	Supports Good
		Hydrological Regime	Does Not Support Good	Does Not Support Good
	Physico-chemical	Overall	Moderate	Moderate
		Ammonia (Phys-Chem)	High	Good
		BOD	-	-
		Dissolved oxygen	Poor	Good
		pH	High	Good
		Phosphate	Moderate	Good
		Temperature	Good	Good
	Specific pollutants	Overall	High	High
	Supporting elements (Surface Water)	Overall	Moderate	Good
		Mitigation Measures Assessment	Moderate or less	Good
Chemical	Priority hazardous substances	Overall	Fail	Good
	Priority substances	Overall	Good	Good
	Other Pollutants	Overall	Good	Good
Mitigation Measures Assessment	Reasons for not achieving Good Status	Ammonia (Phys-Chem): Continuous sewage discharge (confirmed)		
		Marcophytes and Phytobenthos Combined – poor soil management		
		Marcophytes and Phytobenthos Combined – land drainage		
		Hydrological Regime – No further action (Flow is below the EFI but NOT causing an ecological failure)		
Water Body Level Measures	Not stated			

Table B7: Counter Drain (Manea and Welney IDB)

Water Body Details	**Water body name**		Counter Drain (Manea and Welney IDB)	
	Water body ID		GB205033000020	
	Water body type		River	
	Management catchment		Old Bedford and Middle Level	
	Operational catchment		Old Bedford	
	Hydromorphological designation		Artificial	
	Sensitive habitats		-	
	Current Overall Status		Moderate	
	Objective Status		Good	
	Ecological Status / Potential		Moderate	
	Chemical Status		Fail	
Ecological	**Quality elements**	**Elements**	**Classification**	**Objective**
	Biological	Overall	Moderate	Good
		Fish	Good	Good
		Macrophytes and Phytobenthos Combined	-	Not Assessed
		Invertebrates	High-	Good
	Hydromorphological	Overall	Supports Good	Supports Good
		Hydrological Regime	Supports Good	Supports Good
	Physico-chemical	Overall	Moderate	Good
		Ammonia (Phys-Chem)	High	Good
		BOD	High	-
		Dissolved oxygen	Poor	Good
		pH	High	Good
		Phosphate	Moderate	Good
		Temperature	Good	Good
	Specific pollutants	Overall	High	High
	Supporting elements (Surface Water)	Overall	Moderate	Good
		Mitigation Measures Assessment	Moderate or less	Good
Chemical	Priority hazardous substances	Overall	Fail	Does not require assessment
	Priority substances	Overall	Good	Does not require assessment
	Other Pollutants	Overall	Does not require assessment	Does not require assessment
Mitigation Measures Assessment	Reasons for not achieving Good Status	N/A		
Water Body Level Measures	Not stated			

Table B8: Counter Drain (Sutton and Mepal IDB incl. Cranbrook Drain)

Water Body Details	**Water body name**		Counter Drain (Sutton and Mepal IDB incl. Cranbrook Drain)	
	Water body ID		GB205033000010	
	Water body type		River	
	Management catchment		Old Bedford and Middle Level	
	Operational catchment		Old Bedford	
	Hydromorphological designation		Artificial	
	Sensitive habitats		-	
	Current Overall Status		Moderate	
	Objective Status		Good	
	Ecological Status / Potential		Moderate	
	Chemical Status		Fail	
Ecological	**Quality elements**	**Elements**	**Classification**	**Objective**
	Biological	Overall	Moderate	Good
		Fish	Moderate	Good
		Macrophytes and Phytobenthos Combined	-	Not Assessed
		Invertebrates	High-	Good
	Hydromorphological	Overall	Supports Good	Supports Good
		Hydrological Regime	Supports Good	Supports Good
	Physico-chemical	Overall	Moderate	Good
		Ammonia (Phys-Chem)	Poor	Good
		BOD	High	-
		Dissolved oxygen	Moderate	Good
		pH	High	Good
		Phosphate	High	Good
		Temperature	Good	Good
	Specific pollutants	Overall	High	Not Assessed
	Supporting elements (Surface Water)	Overall	Moderate	Good
		Mitigation Measures Assessment	Moderate or less	Good
Chemical	Priority hazardous substances	Overall	Fail	Does not require assessment
	Priority substances	Overall	Good	Does not require assessment
	Other Pollutants	Overall	Does not require assessment	Does not require assessment
Mitigation Measures Assessment	Reasons for not achieving Good Status	Ammonia (Phys-Chem) – Land drainage, operational management		
		Ammonia (Phys-Chem) – Poor nutrient management		
		Hydrological Regime – No further action (Flow is below the EFI but NOT causing an ecological failure)		
		Hydrological Regime – No further action (Flow is below the EFI but NOT causing an ecological failure)		
		Ammonia (Phys-Chem) – Sewage discharge (continuous)		
		Macrophytes and Pyhtobenthos Combined – ecological recovery time, surface waters		
		Macrophytes and Pyhtobenthos Combined – Land drainage		
		Macrophytes and Pyhtobenthos Combined – other		
		Dissolved Oxygen – other		
Water Body Level Measures	Not stated			

Table B9: Old Bedford River / River Delph (incl. the hundreds Foot Washes)

Water Body Details	**Water body name**		Old Bedford River / River Delph (incl. the hundreds Foot Washes)	
	Water body ID		GB205033000010	
	Water body type		River	
	Management catchment		Old Bedford and Middle Level	
	Operational catchment		Old Bedford	
	Hydromorphological designation		Artificial	
	Sensitive habitats		-	
	Current Overall Status		Moderate	
	Objective Status		Good	
	Ecological Status / Potential		Moderate	
	Chemical Status		Fail	
Ecological	**Quality elements**	**Elements**	**Classification**	**Objective**
	Biological	Overall	High	Good
		Fish		Good
		Macrophytes and Phytobenthos Combined	-	Not Assessed
		Invertebrates	High-	Good
	Hydromorphological	Overall	Supports Good	Supports Good
		Hydrological Regime	High	Supports Good
	Physico-chemical	Overall	Moderate	Good
		Ammonia (Phys-Chem)	Good	Good
		BOD	High	-
		Dissolved oxygen	Poor	Good
		pH	High	Good
		Phosphate	Poor	Good
		Temperature	Good	Good
	Specific pollutants	Overall	High	High
	Supporting elements (Surface Water)	Overall	Moderate	Good
		Mitigation Measures Assessment	Moderate or less	Good
Chemical	Priority hazardous substances	Overall	Fail	Does not require assessment
	Priority substances	Overall	Good	Does not require assessment
	Other Pollutants	Overall	Good	Does not require assessment
Mitigation Measures Assessment	Reasons for not achieving Good Status	Dissolved oxygen – unknown (pending investigation)		
		Fish – flood protection, other operational management		
		Fish – Low Flow (not drought)		
		Fish – Flood protection, other operational management		
		Fish – Low flow (not drought)		
Water Body Level Measures	Not stated			

Table B10: Nene

Water Body Details	**Water body name**		Nene	
	Water body ID		GB530503200200	
	Water body type		Transitional Water	
	Management catchment		Anglian TraC	
	Operational catchment		The Wash TraC	
	Hydromorphological designation		Heavily modified	
	Sensitive habitats		-	
	Current Overall Status		Moderate	
	Objective Status		Moderate	
	Ecological Status / Potential		Moderate	
	Chemical Status		Fail	
Ecological	**Quality elements**	**Elements**	**Classification**	**Objective**
	Biological	Overall	-	Not Assessed
		Fish	-	Not Assessed
		Macrophytes and Phytobenthos Combined	-	Not Assessed
		Invertebrates	-	Not Assessed
	Hydromorphological	Overall	Supports Good	Supports Good
		Hydrological Regime	Supports Good	Supports Good
	Physico-chemical	Overall	Moderate	Good
		Dissolved Inorganic Nitrogen	Moderate	Moderate
		Ammonia (Phys-Chem)	-	-
		BOD	-	-
		Dissolved oxygen	Good	Good
		pH	-	-
		Phosphate	-	-
		Temperature	-	-
	Specific pollutants	Overall	High	Not Assessed
	Supporting elements (Surface Water)	Overall	Moderate	Good
		Mitigation Measures Assessment	Moderate or less	Good
Chemical	Priority hazardous substances	Overall	Fail	Does not require assessment
	Priority substances	Overall	Good	Good
	Other Pollutants	Overall	Good	Does not require assessment
Mitigation Measures Assessment	Reasons for not achieving Good Status	Mitigation measures assessment - other		
		Dissolved Inorganic Nitrogen – poor nutrient management		
Water Body Level Measures	Not stated			

Appendix C

Protected Species in Fenland District

Royal HaskoningDHV

Table C1: Protected Species observed in Cambridgeshire

Scientific name	Common name
Birds	
Limosa limosa (limosa)	Black-tailed Godwit
Pyrrhula pyrrhula (pileata)	Common Bullfinch
Locustella naevia	Common Grasshopper Warbler
Carduelis cannabina (autochthona/cannabina)	Common Linnet
Emberiza calandra (calandra/clanceyi)	Corn Bunting
Crex crex	Corn Crake
Numenius arquata	Eurasian Curlew
Passer montanus	Eurasian Tree Sparrow
Streptopelia turtur	European Turtle Dove
Botaurus stellaris	Great Bittern
Perdix perdix	Grey Partridge
Coccothraustes coccothraustes	Hawfinch
Larus argentatus (argenteus)	Herring Gull
Passer domesticus	House Sparrow
Carduelis cabaret	Lesser Redpoll
Dendrocopos minor subsp. comminutus	Lesser Spotted Woodpecker
Poecile palustris (palustris/dresseri)	Marsh Tit
Vanellus vanellus	Northern Lapwing
Emberiza schoeniclus	Reed Bunting
Alauda arvensis (arvensis/scotica)	Sky Lark
Turdus philomelos (clarkei)	Song Thrush
Muscicapa striata	Spotted Flycatcher
Burhinus oedicnemus	Stone-curlew
Cygnus columbianus (bewickii)	Tundra Swan
Motacilla flava (flavissima)	Yellow Wagtail
Emberiza citronella	Yellowhammer
Fish (excluding purely marine species)	
Anguilla Anguilla	European eel
Cobitis taenia	Spined loach
Herptiles (amphibians and reptiles)	
Bufo bufo	Common Toad
Triturus cristatus	Great Crested Newt
Vipera berus	Adder
Zootoca vivipara	Common Lizard
Natrix natrix	Grass Snake
Anguis fragilis	Slow-worm
Mammals	
Barbastella barbastellus	Barbastelle Bat
Lepus europaeus	Brown Hare
Plecotus auritus	Brown long-eared bat
Muscardinus avellanarius	Dormouse
Micromys minutus	Harvest Mouse
Nyctalus noctula	Noctule
Lutra lutra	Otter
Mustela putorius	Polecat
Pipistrellus pygmaeus	Soprano Pipistrelle
Arvicola terrestris	Water Vole
Erinaceus europaeus	West European Hedgehog

Scientific name	Common name
Plants	
Orthotricum obtusifolium	Blunt-leaved Bristle-moss
Tortula vahliana	Chalk Screw-moss
Weissia squarrosa	Spreading-leaved Beardless-moss
Weissia sterilis	Sterile Beardless-moss
Chara canescens	Bearded Stonewort
Nitella tenuissima	Dwarf Stonewort
Tolypella prolifera	Great Tassel Stonewort
Bombus ruderatus	Large Garden Bumblebee
Bombus ruderarius	Red-shanked Carder-bee
Ophonus puncticollis	a Downy-back Ground Beetle
Agonum scitulum	a Ground Beetle
Orchestes testaceus	Alder Flea Weevil
Oberea oculata	Eyed Longhorn Beetle
Ophonus melletii	Mellet's Downy-back
Carabus monilis	Necklace Ground Beetle
Melanapion minimum	Sallow Guest Weevil
Bembidion quadripustulatum	Scarce Four-dot Pin-palp
Chrysolina graminis	Tansy Beetle
Ribautodelphax imitans	Tall Fescue Planthopper
Erynnis tages	Dingy Skipper
Pyrgus malvae	Grizzled Skipper
Cupido minimus	Small Blue
Coenonympha pamphilus	Small Heath
Lasiommata megera	Wall
Limenitis camilla	White Admiral
Satyrium w-album	White Letter Hairstreak
Austropotamobius pallipes	White-clawed freshwater crayfish
Aeshna isosceles	Norfolk Hawker
Lipara similis	Cigarillo Gall-fly
Dorylomorpha clavifemora	Clubbed Big-headed Fly
Callicera spinolae	Golden Hoverfly
Dorycera graminum	Phoenix Fly
Pseudanodonta complanata	Depressed river mussel
Vertigo moulinsiana	Desmoulin's Whorl Snail
Valvata macrostoma	Large-mouthed Valve Snail
Ennomos quercinaria	August Thorn
Eugnorisma glareosa	Autumnal Rustic
Pareulype berberata	Barberry Carpet
Trichopteryx polycommata	Barred Tooth-striped
Agrochola lychnidis	Beaded Chestnut
Timandra comae	Blood-vein
Lycia hirtaria	Brindled Beauty
Melanchra pisi	Broom Moth
Agrochola litura	Brown-spot Pinion
Spilosoma luteum	Buff Ermine
Atethmia centrago	Centre-barred Sallow
Scotopteryx bipunctaria	Chalk Carpet
Pechipogo strigilata	Common Fan-foot
Blepharita adusta	Dark Brocade
Pelurga comitata	Dark Spinach
Xanthorhoe ferrugata	Dark-barred Twin-spot Carpet
Aporophyla lutulenta	Deep-brown Dart
Melanchra persicariae	Dot Moth

Scientific name	Common name
Plants	
Graphiphora augur	Double Dart
Apamea remissa	Dusky Brocade
Ennomos fuscantaria	Dusky Thorn
Xanthia gilvago	Dusky-lemon Sallow
Amphipoea oculea	Ear Moth
Cyclophora porata	False Mocha
Tholera decimalis	Feathered Gothic
Diloba caeruleocephala	Figure Of Eight
Agrochola helvola	Flounced Chestnut
Tyta luctuosa	Four-Spotted Moth
Epirrhoe galiata	Galium Carpet
Euxoa nigricans	Garden Dart
Arctia caja	Garden Tiger
Hepialus humuli	Ghost Moth
Cossus cossus	Goat Moth
Perizoma albulata subsp. albulata	Grass Rivulet
Allophyes oxyacanthae	Green-brindled Crescent
Acronicta psi	Grey Dagger
Tholera cespitis	Hedge Rustic
Nemophora fasciella	Horehound Long-horn Moth
Acronicta rumicis	Knot Grass
Apamea anceps	Large Nutmeg
Rhizedra lutosa	Large Wainscot
Chiasmia clathrata	Latticed Heath
Noctua orbona	Lunar Yellow Underwing
Brachylomia viminalis	Minor Shoulder-knot
Caradrina morpheus	Mottled Rustic
Amphipyra tragopoginis	Mouse Moth
Scopula marginepunctata	Mullein Wave
Watsonalla binaria	Oak Hook-tip
Cymatophorima diluta	Oak Lutestring
Orthonama vittata	Oblique Carpet
Trichiura crataegi	Pale Eggar
Orthosia gracilis	Powdered Quaker
Melanthia procellata	Pretty Chalk Carpet
Mesoligia literosa	Rosy Minor
Hydraecia micacea	Rosy Rustic
Sciota hostilis	Scarce Aspen Knot-horn
Phyllonorycter sagitella	Scarce Aspen Midget Moth
Ennomos erosaria	September Thorn
Scotopteryx chenopodiata	Shaded Broad-bar
Mythimna comma	Shoulder-striped Wainscot
Hemistola chrysoprasaria	Small Emerald
Ecliptopera silaceata	Small Phoenix
Diarsia rubi	Small Square-spot
Tyria jacobaeae	The Cinnabar
Chortodes extrema	The Concolorous
Celaena leucostigma	The Crescent
Adscita statices	The Forester
Malacosoma neustria	The Lackey
Hoplodrina blanda	The Rustic
Xanthia icteritia	The Sallow
Eulithis mellinata	The Spinach
Asteroscopus sphinx	The Sprawler

Scientific name	Common name
Plants	
Chesias legatella	The Streak
Macaria wauaria	V-moth
Spilosoma lubricipeda	White Ermine
Euxoa tritici	White-line Dart
Cosmia diffinis	White-spotted Pinion
Clubiona rosserae	Rosser's Sac-spider
Sitticus caricis	Sedge Jumper
Meioneta mollis	Thin Weblet
Odynerus melanocephalus	Black-headed Mason Wasp
Cerceris quinquefasciata	Five-banded Weevil-wasp
Scleranthus annuus	Annual Knawel
Clinopodium acinos	Basil Thyme
Filago pyramidata	Broad-leaved Cudweed
Euphrasia pseudokerneri	Chalk Eyebright
Ranunculus arvensis	Corn Buttercup
Galium tricornutum	Corn Cleavers
Centaurea cyanus	Cornflower
Melampyrum cristatum	Crested Cow-wheat
Lolium temulentum	Darnel
Senecio paludosus	Fen Ragwort
Viola persicifolia	Fen Violet
Luzula pallidula	Fen Wood-rush
Blysmus compressus	Flat-sedge
Ophrys insectifera	Fly Orchid
Coeloglossum viride	Frog Orchid
Lythrum hyssopifolia	Grass-poly
Potamogeton compressus	Grass-wrack Pondweed
Sium latifolium	Greater Water Parsnip
Juniperus communis	Juniper
Aceras anthropophorum	Man Orchid
Stellaria palustris	Marsh Stitchwort
Pulsatilla vulgaris	Pasqueflower
Mentha pulegium	Pennyroyal
Adonis annua	Pheasants-eye
Astragalus danicus	Purple Milk-vetch
Carex ericetorum	Rare Spring-sedge
Galeopsis angustifolia	Red Hemp-nettle
Centaurea calcitrapa	Red Star-thistle
Alisma gramineum	Ribbon-leaved Water-Plantain
Hordeum marinum	Sea Barley
Scandix pecten-veneris	Shepherd's Needle
Bupleurum tenuissimum	Slender Hare`s-ear
Silene otites	Spanish Catchfly
Torilis arvensis	Spreading Hedge Parsley
Arabis glabra	Tower Mustard
Oenanthe fistulosa	Tubular Water-dropwort
Teucrium scordium	Water Germander
Cephalanthera damasonium	White Helleborine
Iberis amara	Wild Candytuft
Fungi (including lichens)	
Entoloma bloxamii	Big Blue Pinkgill
Caloplaca virescens	a Lichen
Bacidia incompta	a Lichen
Caloplaca luteoalba	Orange-Fruited Elm-lichen

Table C2: Additional Species of interest in Cambridgeshire

Scientific Name	Common Name
Birds	
Apus apus	Swift
Grus grus	Common Crane
Tyto alba	Barn Owl
Invertebrates	
Osmia bicolor	Snail shell bee
Agabus undulatus	
Hydrochus crenatus	
Oulimnius rivularis	
Sphaerius acaroides	
Tettigonia viridissima	Great Green Bush-cricket
Apatura iris	Purple Emperor
Callophrys rubi	Green Hairstreak
Satyrium pruni	Black Hairstreak
Cordulia aenea	Downy Emerald
Forficula lesnei	Lesne's Earwig
Labia minor	Lesser Earwig
Myrmeleotettix maculata	Mottled Grasshopper
Omocestus viridulus	Common Green Grasshopper
Stenobothrus lineatus	Stripe-winged Grasshopper
Tetrix ceparoi	Cepero's Groundhopper
Mutilla europaea	Velvet Ant

Scientific Name	Common Name
Plants	
Chara aculeolata	Hedgehog Stonewort
Tolypella glomerata	Clustered Stonewort
Achillea ptarmica	Sneezewort
Agrimonia procera	Fragrant Agrimony
Alisma lanceolatum	Narrow-leaved Water-plantain
Anacamptis morio	Green-winged Orchid
Anacamptis pyramidalis	Pyramidal Orchid
Antennaria dioica	Mountain Everlasting
Asperula cynanchica	Squinancywort
Astragalus glycyphyllos	Wild Liquorice
Avenella flexuosa	Wavy Hair-grass
Baldellia ranunculoides	Lesser Water-plantain
Betonica officinalis	Betony
Briza media	Quaking Grass
Buglossoides arvensis	Field Gromwell
Bunium bulbocastanum	Great Pignut
Calluna vulgaris	Heather
Campanula glomerata	Clustered Bellflower
Campanula rotundifolia	Harebell
Campanula trachelium	Nettle-leaved Bellflower
Cardamine amara	Large Bitter-cress
Carex appropinquata	Fibrous Tussock Sedge
Carex binervis	Green-ribbed Sedge
Carex demissa	Common Yellow Sedge
Carex divulsa (leersii)	Many-leaved Sedge
Carex echinata	Star Sedge
Carex elata	Tufted Sedge
Carex hostiana	Tawny Sedge
Carex lasiocarpa	Slender Sedge

Scientific Name	Common Name
Plants	
Carex lepidocarpa	Long-stalked Yellow Sedge
Carex muricata (pairae)	Small-fruited Prickly Sedge
Carex nigra	Common Sedge
Carex pallescens	Pale Sedge
Carex paniculata	Greater Tussock Sedge
Carex pilulifera	Pill Sedge
Carex pulicaris	Flea Sedge
Carex rostrata	Bottle Sedge
Carex strigosa	Thin-spiked Wood Sedge
Carex vesicaria	Bladder Sedge
Carex viridula	Small-fruited Yellow Sedge
Catabrosa aquatica	Whorl-grass
Cerastium arvense	Field Mouse-ear
Cirsium dissectum	Meadow Thistle
Cladium mariscus	Great Fen Sedge
Clinopodium nepeta	Lesser Calamint
Conopodium majus	Pignut
Convallaria majalis	Lily-of-the-valley
Cuscuta epithymum	Dodder
Cuscuta europaea	Greater Dodder
Dactylorhiza incarnata	Early Marsh Orchid
Dactylorhiza praetermissa	Southern Marsh Orchid
Danthonia decumbens	Heath Grass
Dianthus deltoides	Maiden Pink
Eleocharis acicularis	Needle Spike-rush
Eleocharis quinqueflora	Few-flowered Spike-rush
Eleocharis uniglumis	Slender Spike-rush
Eleogiton fluitans	Floating Club-rush
Epilobium palustre	Marsh Willowherb
Epipactis helleborine	Broad-leaved Helleborine
Epipactis palustris	Marsh Helleborine
Epipactis phyllanthes	Green-flowered Helleborine
Epipactis purpurata	Violet Helleborine
Erica tetralix	Cross-leaved Heath
Eriophorum angustifolium	Common Cottongrass
Ervum gracile	Slender Tare
Euphorbia exigua	Dwarf Spurge
Filipendula vulgaris	Dropwort
Galium parisiense	Wall Bedstraw
Genista tinctoria	Dyer's Greenweed
Gentianella amarella	Autumn Gentian
Geum rivale	Water Avens
Groenlandia densa	Opposite-leaved Pondweed
Gymnadenia conopsea	Chalk Fragrant Orchid
Gymnadenia densiflora	Marsh Fragrant Orchid
Helianthemum nummularium	Common Rock-Rose
Helictochloa pratensis	Meadow Oat-Grass
Helleborus viridis	Green Hellebore
Himantoglossum hircinum	Lizard Orchid
Hippocrepis comosa	Horseshoe Vetch
Hottonia palustris	Water-violet
Hydrocharis morsus-ranae	Frogbit
Hydrocotyle vulgaris	Marsh Pennywort
Hypericum humifusum	Trailing St John's Wort

Scientific Name	Common Name
Plants	
Hypericum pulchrum	Slender St John's Wort
Hypochaeris maculata	Spotted Cat's-ear
Jacobaea aquatica	Marsh Ragwort
Juncus bulbosus	Bulbous Rush
Koeleria macrantha	Crested Hair-grass
Lathraea squamaria	Toothwort
Lathyrus palustris	Marsh Pea
Lathyrus sylvestris	Narrow-leaved Everlasting-pea
Linum perenne (anglicum)	Perennial Flax
Lysimachia tenella	Bog Pimpernel
Melica nutans	Mountain Melick
Menyanthes trifoliata	Bogbean
Molinia caerulea	Purple Moor-grass
Myosurus minimus	Mouse-tail
Myrica gale	Bog Myrtle
Myriophyllum verticillatum	Whorled Water-milfoil
Neottia nidus-avis	Birds-nest Orchid
Neottia ovata	Common Twayblade
Nepeta cataria	Cat-mint
Nymphoides peltata	Fringed Water-lily
Oenanthe aquatica	Fine-leaved Water-dropwort
Oenanthe fluviatilis	River Water-dropwort
Oenanthe lachenalii	Parsley Water-dropwort
Oenanthe silaifolia	Narrow-leaved Water-dropwort
Ononis spinosa	Spiny Restharrow
Ophioglossum vulgatum	Adder's Tongue Fern
Orobanche elatior	Knapweed Broomrape
Paris quadrifolia	Herb Paris
Pedicularis palustris	Marsh Lousewort
Persicaria mitis	Tasteless Water-pepper
Phleum phleoides	Purple-stem Cat's-tail
Pimpinella major	Greater Burnet-saxifrage
Pinguicula vulgaris	Common Butterwort
Platanthera chlorantha	Greater Butterfly Orchid
Populus nigra subsp. betulifolia	Black Poplar
Potamogeton coloratus	Fen Pondweed
Potamogeton friesii	Flat-stalked Pondweed

Scientific Name	Common Name
Plants	
Potamogeton lucens	Shining Pondweed
Potamogeton trichoides	Hairlike Pondweed
Potentilla verna	Spring Cinquefoil
Primula elatior	Oxlip
Ranunculus flammula	Lesser Spearwort
Ranunculus lingua	Greater Spearwort
Rumex palustris	Marsh Dock
Sagina nodosa	Knotted Pearlwort
Salix repens	Creeping Willow
Sanguisorba officinalis	Great Burnet
Saxifraga granulata	Meadow Saxifrage
Scabiosa columbaria	Small Scabious
Schoenus nigricans	Black Bog Rush
Selinum carvifolia	Cambridge Milk-parsley
Serratula tinctoria	Saw Wort
Seseli libanotis	Moon Carrot
Silaum silaus	Pepper Saxifrage
Sonchus palustris	Marsh Sow-thistle
Spiranthes spiralis	Autumn Lady's-tresses
Stellaria alsine	Bog Stitchwort
Succisa pratensis	Devil's-bit Scabious
Thalictrum flavum	Common Meadow Rue
Thalictrum minus	Lesser Meadow Rue
Thelypteris palustris	Marsh Fern
Thesium humifusum	Bastard Toadflax
Thymus pulegioides	Large Thyme
Thysselinum palustre	Milk Parsley
Trifolium fragiferum	Strawberry Clover
Trifolium ochroleucon	Sulphur Clover
Triglochin palustris	Marsh Arrowgrass
Utricularia vulgaris agg.	Bladderwort
Valeriana dioica	Marsh Valerian
Valeriana officinalis	Common Valerian
Veronica spicata	Spiked Speedwell
Viola canina	Heath Dog-violet

Appendix D

Flood Zones, Vulnerability Classifications and Compatibility

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D1 Definition of Flood Zones

Table 1 of NPPG (Ref. 28) sets out the definitions of the Flood Zones, from low to high probability of river and sea flooding, and refers to the Environment Agency's Flood Map for Planning (Rivers and Sea) which shows the location of these Flood Zones. This map and maps showing other sources of flooding are available from the Environment Agency.

Table B1: Table 1 of Planning Practice Guidance – Flood Zones

Flood Zone	Definition
Zone 1 - Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea (tidal) flooding.
Zone 2 - Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea (tidal) flooding.
Zone 3a - High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea (tidal) flooding.
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency.

D2 Vulnerability classification

Table 2 of NPPG classifies vulnerability according to the type of development and vulnerability of its users.

Table B2: Table 2 of Planning Practice Guidance – Flood risk vulnerability classification

Essential Infrastructure
• Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. • Wind turbines.
Highly Vulnerable
• Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure').
More Vulnerable
• Hospitals • Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels. • Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels. • Non–residential uses for health services, nurseries and educational establishments. • Landfill* and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
Less Vulnerable
• Police, ambulance and fire stations which are not required to be operational during flooding. • Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'More Vulnerable' class; and assembly and leisure.

- Land and buildings used for agriculture and forestry.
- Waste treatment (except landfill* and hazardous waste facilities).
- Minerals working and processing (except for sand and gravel working).
- Water treatment works which do not need to remain operational during times of flood.
- Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.

Water-Compatible Development

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).
- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

Table 3 of NPPG relates flood risk vulnerability to flood risk compatibility, i.e. it indicates what types of development are or not allowed in each Flood Zone. Table 3 of NPPG also informs in which cases an Exception Test will be required. Consistently with this SFRA/WCS, the same traffic light visualisation method has been applied to this table.

Table B3: Table 3 of Planning Practice Guidance – Flood risk vulnerability and flood zone 'compatibility'

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	✗	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	✗	✗	✗	✓*

Key:

✓ Development is appropriate

✗ Development should not be permitted.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

* In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

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