

Tendring Water Cycle Study

Tendring District Council

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Quality information

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Abbreviations

Acronym	Definition
ALS	Abstraction Licensing Strategies
AMP	Asset Management Plan
AW	Affinity Water
AWS	Anglian Water Services
BREAAM	Building Research Establishment Environmental Assessment Method
CAMS	Catchment Management Abstraction Strategy
CCC	Colchester City Council
CIWEM	Chartered Institution of Water & Environmental Management
Defra	Department for Environment, Food & Rural Affairs
DWF	Dry Weather Flow
DWMP	Drainage and Wastewater Management Plan
EA	Environment Agency
EIS	Environmental Incentive Scheme (run by Anglian Water Services)
EIP	Environmental Improvement Plan (2023)
ECC	Essex County Council
EFI	Environmental Flow Indicator
EWSC	Enabling Water Smart Communities
LFRMS	Local Flood Risk Management Strategy
LLFA	Lead Local Flood Authority
LPA	Local Planning Authority
MHCLG	Ministry of Housing and Local Government
MWELS	Mandatory Water Efficiency Labelling Scheme
NbS	Nature based Solution(s)
NFM	Natural Flood Management
NPPF	National Planning Policy Framework
Ofwat	Office for Water Services
PBDE	Polybrominated Diphenyl Ether
PCC	Per Capita Consumption
PPG	Planning Practice Guidance
RBMP	River Basin Management Plan
RNAG	Reasons for Not Achieving Good (WFD Regulations)
RQP	River Quality Planning
SFRA	Strategic Flood Risk Assessment
SPZ	Source Protection Zones

Acronym	Definition
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
TDC	Tendring District Council
WAFU	Water Available For Use
WCS	Water Cycle Study
WEDS	Water Efficient Design Statement
WFD	Water Framework Directive
WMS	Written Ministerial Statement
WRC	Water Recycling Centre
WRE	Water Resources East
WRMP	Water Resources Management Plan
WRZ	Water Resource Zone
WSI	Water Services Infrastructure
WWNP	Working with Natural Processes

1. Introduction

1.1 Water Cycle Study purpose

This Water Cycle Study (WCS) has been produced for Tendring District Council (TDC) as part of the evidence base informing the Council's new Local Plan. The WCS has been produced in line with Environment Agency guidance¹ for WCS and incorporates both the Scoping and Detailed WCS requirements in one report.

The objective of a WCS is to identify any constraints on planned housing and employment growth that may be imposed by the water cycle. The WCS then identifies whether there are solutions to resolve constraints e.g. through ensuring that appropriate Water Services Infrastructure (WSI) can be provided to support the proposed development, including the planning policy required to deliver it.

A broad overview of the interaction between the water environment and WSI which the WCS is concerned with is provided within Figure 1-1².

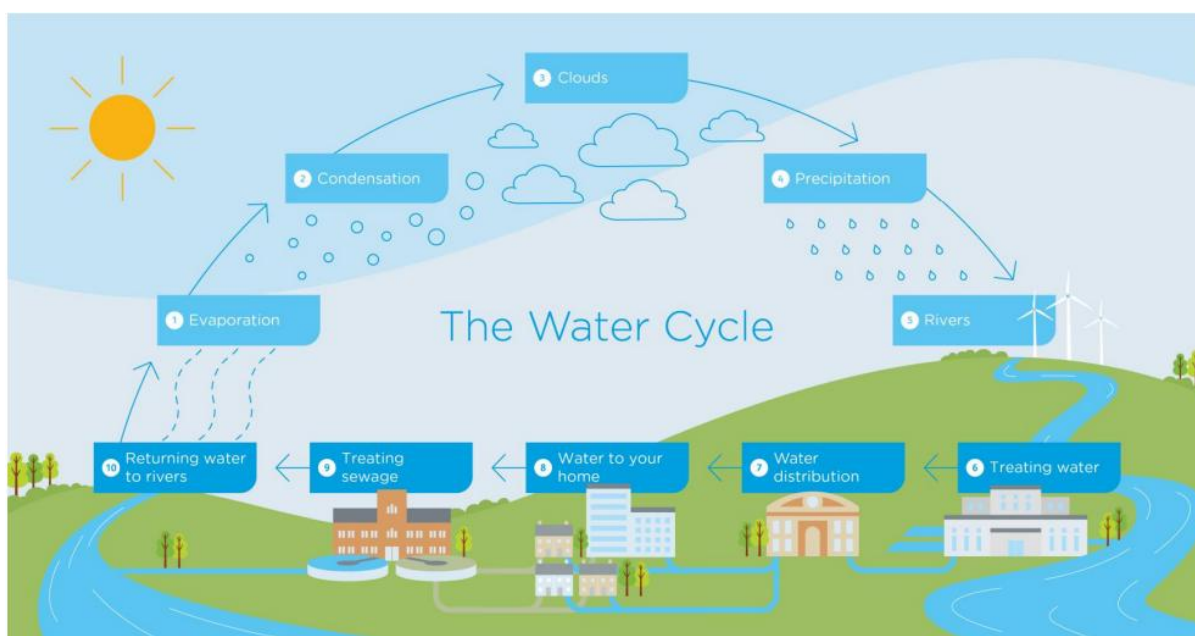


Figure 1-1 The water environment and water services infrastructure components

1.2 Study partners

The WCS has been carried out with the following contributors and partners:

- TDC as the Local Planning Authority (LPA).
- Colchester City Council (CCC) as joint study partners³ and as a key neighbouring authority.
- Anglian Water Services (AWS) as the wastewater provider.
- Affinity Water (AW) as the provider of public water supply.

¹ Environment Agency (2021) Water cycle studies. Available at: <https://www.gov.uk/guidance/water-cycle-studies> (Accessed July 2023)

² Source: <https://www.thameswater.co.uk/about-us/responsibility/education/the-water-cycle>

³ The WCS for TDC has been undertaken as a joint project with CCC, but with reports for both authorities being produced separately due to differences in Local Plan consultation timeframes

- The Environment Agency.

The WCS has used relevant information from the following organisations:

- Natural England.
- Essex County Council (ECC) as the Lead Local Flood Authority (LLFA).
- Water Resources East (WRE).
- British Geological Survey.

1.3 Report structure

The Scoping WCS report is structured as follows:

- Section 2: **Study drivers** – explains why a WCS required, including the policy context.
- Section 3: **Growth proposals and study area** - defines the study area and growth sites assessed.
- Section 4: **Water environment baseline summary** - provides information on the existing hydrological and hydrogeological baseline context in the TDC administrative area.
- Section 5: **Water infrastructure baseline summary** - provides information on the current WSI baseline, including capacity within the infrastructure before growth is assessed.
- Section 6: **Wastewater capacity assessment** - sets out the assessment of wastewater infrastructure capacity and environmental capacity allowing for the impact of growth and identifies required solutions.
- Section 7: **Water supply assessment** - sets out the assessment of available water supply allowing for the impact of growth and identifies required solutions.
- Section 8: **Growth area scoping summary** – acts as a summary of the WCS findings, presented spatially across the TDC area according to areas of growth.
- Section 9: **Recommendations** – summarises key recommendations for the Local Plan emerging from the WCS, including policy recommendations.

2. Study drivers

There are several legislative, regulatory and policy level drivers which define the need for and shape the approach to the WCS. A full list of key legislative drivers is detailed in Appendix A with key aspects summarised in this report section.

2.1 National planning policy

The National Planning Policy Framework (NPPF)⁴ includes several water-related requirements which support the need for a WCS to support Local Plans and influence the scope of the WCS, including:

- Strategic policies in development plan documents should make sufficient provision for infrastructure for water supply, wastewater and flood risk and coastal change management.
- The planning system should take full account of climate change impacts including water scarcity, storm and flood risks and coastal change. Local Plans should take a proactive approach to mitigating and adapting to these climate change risks.

The Planning Policy Guidance (PPG)⁵ which accompanies the NPPF states that a WCS can help plan for sustainable growth as part of Local Plan development. WCSs prepared at an early stage of plan-making can provide the evidence base to ensure local development plans are sound. This is the key driver for completing a WCS as part of the Local Plan evidence base.

2.2 Legislation

The primary legislative drivers for this study are the Water Environment (Water Framework Directive (WFD)) Regulations 2017 (referred to herein as the 'WFD regulations'), the Conservation of Habitats and Species Regulations 2017 (as amended) and the Environment Act (2021). This is because these instruments set out how the water environment needs to be protected and hence influence the regulation of WSI which interacts with the environment. In making Local Plans, LPAs need to have due regard to the protection of the water environment and associated habitats. These instruments are summarised below, alongside other relevant legislative instruments which influence the WCS.

2.2.1 Water Framework Directive Regulations

The environmental objectives of the WFD Regulations, as published in the Environment Agency's River Basin Management Plans (RBMPs)⁶ relevant to this WCS are:

- To prevent deterioration of the status of surface waters and groundwater.
- To achieve objectives and standards for protective areas.
- To aim to achieve Good Status for all water bodies or, for heavily modified water bodies and artificial water bodies, good ecological potential and good surface water chemical status.

These environmental objectives are legally binding, and all public bodies should have regard to these objectives when making decisions (such as allocating sites for development in their Local Plan) that could affect the quality of the water environment. The Environment Agency publishes the WFD status and objectives of each surface water and groundwater body. Surface water bodies can be classed as high, good, moderate, poor or bad status and groundwater bodies are classed based on quantitative and chemical status which can be classified as good or poor.

⁴ Ministry of Housing, Communities & Local Government (Feb 2025) National Planning Policy Framework. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework-2#full-publication-update-history> (Accessed May 2025)

⁵ Department for Levelling Up, Housing and Communities, Ministry of Housing, Communities and Local Government (2024) Planning Practice Guidance. Available at: <https://www.gov.uk/government/collections/planning-practice-guidance> (Accessed Dec 2024)

⁶ Thames River Basin District Management Plan (2022). Available at: <https://www.gov.uk/guidance/thames-river-basin-district-river-basin-management-plan-updated-2022> (Accessed July 2023)

The WFD Regulations are important to the WCS because provision of new WSI needs to ensure that the objectives of the Regulations are not compromised by ensuring that additional demand for water and generation of additional wastewater does not adversely impact on the current and future status of waterbodies.

2.2.2 Conservation of Habitats and Species Regulations

The Conservation of Habitats and Species Regulations 2017 have designated some sites as areas that require protection to maintain or enhance the rare ecological species or habitats associated with them. Although the Regulations do not directly set overarching environmental standards related to water quality and quantity (flow or level), the Regulations can, by the requirement to ensure no detrimental impact on designated sites, require site specific water quality, water level and water flow targets to be set for specific locations.

This may in turn require restrictions on discharges to (or abstractions from) water bodies which are hydrologically connected to water dependant habitats. These Regulations are important to the WCS as the provision of new WSI needs to ensure no detrimental impact on designated sites through discharge and abstraction impacts.

2.2.3 Environment Act 2021

The Environment Act 2021 provides a legal framework for environmental governance in the UK bringing in measures for improvement of the environment including for water. The Act is relevant to the WCS process as it:

- Places a duty on water companies to secure a reduction in adverse impacts of discharges from storm overflows on the environment; growth proposed in Local Plans significantly influences how these reductions can be achieved.
- Makes drainage and sewerage planning a statutory duty through the requirement for water companies to produce Drainage and Wastewater Management Plans which should take account of planned growth.
- Enables the revocation or variation of permanent abstraction licences where the change is necessary to protect the environment or where the licence is consistently underused; this may affect water available to service proposed growth.

2.3 Relevant strategies and plans

Full details of relevant regulatory strategies or plans which relate to the water environment or provision of WSI for development in TDC are provided in Appendix A. The key strategies or plans most relevant to the WCS include, but are not limited to:

- Storm overflows discharge reduction plan (Defra, 2023)
- Integrated Plan for Delivering Clean and Plentiful Water (Defra, 2023).
- Environmental Improvement Plan 2023 (Defra, 2023).
- Drainage and Wastewater Management Plan (DWMP) (AWS, 2024).
- Water Resources Management Plan (AW, 2024).
- Regional Water Resources Plan for Water Resources East (WRE, 2023).
- Tendring District Council Level 1 Strategic Flood Risk Assessment (SFRA) (2017).
- Water Strategy for Essex (ECC 2024).
- Essex Local Flood Risk Management Strategy (LFRMS) (ECC, 2018).
- Essex Local Nature Recovery Strategy (ECC, 2025).

- Anglian River Basin District River Basin Management Plan (Environment Agency, 2016).

3. Growth proposals and study area

3.1 Study area

The WCS study area is based largely on the administrative boundary of TDC. The administrative area of Tendring is displayed in Appendix F Figure 1. The WCS study area extends into the administrative area of Colchester City Council (CCC) to include the Colchester Water Recycling Centre (WRC); as the Tendring Borders Garden Community, which makes up part of the Local Plan for both TDC and CCC, would drain wastewater to the Colchester WRC for treatment. This is explained further in Section 6.

3.2 Growth proposal summary

TDC's updated Local Plan would cover the period 2025 to 2043 and will make new allocations which would deliver approximately 11,521 new dwellings over the plan period as shown in Table 3-1. Appendix F, Figure 2 shows the location of the allocation sites in the updated Plan.

For the wastewater assessments within the WCS, it has also been essential to include development which is not to be allocated in the new Plan, but which is already committed. This is to ensure the impact of cumulative growth on wastewater infrastructure capacity is fully understood. Table 3-1 includes details of existing commitments not yet built, provided by TDC. Taking account of commitments and new allocations in the updated Plan gives a total of 19,225 dwellings assessed in the WCS. It should be noted that this does not include for a windfall allowance as by definition, it cannot be spatially determined where this windfall will occur.

The Tendring Borders Garden Community has been excluded from the wastewater assessments as the full quantum of growth to be delivered by the garden community within the Local Plan period has been assessed separately in the Colchester WCS⁷.

Table 3-1: Growth proposals

WRC catchment	Potential Emerging Allocations	Existing Commitments	Total
Brightlingsea - Church Road	150	41	191
Clacton Holland Haven	3,921	2,196	6,117
Colchester	0	59	59
Great Bromley	1,475	79	1,554
Harwich and Dovercourt	2,036	766	2,802
Jaywick	1,040	2,691	3,731
Little Bentley Tendring Road	12	0	12
Manningtree	245	819	1,064
St Osyth	100	370	470
Thorington	480	316	796
Walton on the Naze	560	367	927
Wix	20	0	20
Sites served by a new WRC	1,450	0	1,450
Sites not within a WRC catchment	32	0	32
Total	11,521	7,704	19,225

⁷ AECOM (2026) Colchester Water Cycle Study P05

4. Water environment baseline

4.1 Introduction

This section defines the existing water environment baseline in the TDC area and its current condition and where there may be constraints or opportunities for future growth linked to the provision of WSI.

It sets out current condition of the surface water and groundwater bodies which are relevant to proposed allocation sites in the TDC area (e.g. through wastewater discharges and surface water runoff), as well as dependencies on those water bodies such as water dependent habitats and bathing water designations.

4.2 Surface water

4.2.1 Catchment context

Appendix F, Figure 3 displays the WFD surface water catchments covering TDC as defined within the Anglian RBMP.

The entirety of TDC is covered by the Essex Combined Management Catchment which comprises numerous WFD Operational Catchments, three of which cover the study area. The majority of TDC is covered by the Colne Essex Operational Catchment, and the north is covered by the Stour OC Operational Catchment. The area around the River Colne estuary falls within the Essex Transitional Water Body.

The Colne Essex Operational Catchment is made up of 16 WFD surface water body catchments, five of which fall within the study area: Salary Brook, Sixpenny Brook, Tenpenny Brook, St Osyth Drain, and Holland Brook.

The Stour OC Operational Catchment is made up of 21 WFD surface water body catchments, three of which fall within the study area: Stour (DS Lamarsh), Ramsey River, and the Lower Stour.

The extent of the catchment areas of each of these surface water bodies can be seen in Appendix F, Figure 4.

The rest of the Essex Combined Management Catchment area within TDC which is not covered by the Operational catchments stated above consist of small watercourses which drain to the Transitional Catchments, five of which are within the study area: Colne, Blackwater Outer, Essex, Hamford Water, Harwich Approaches, and Stour (demarcated by the pink catchment boundary in Appendix F, Figure 4).

4.2.2 Surface water body condition

Defining the overall WFD 'status' of a surface water body is a complex assessment that combines standards for water quality, hydromorphology, and biology. Where a surface water body is classified under the WFD, the overall status of the water body is derived from the classification hierarchy made up of 'elements', and the type of water body will dictate what types of elements are assessed within it. Broadly, a WFD surface water body is given an ecological status and a chemical status, and these two aspects make up the overall WFD status of each surface water body.

Appendix F, Figure 4 depicts the ecological status component of the WFD surface water bodies in the study area. Stour Estuary is the only waterbody within the study area which has a 'Good' Ecological Status; this means the biological, hydromorphology and water quality elements making up Ecological Status are all classified as Good. The Sixpenny Brook waterbody has 'Poor' Ecological Status. The remaining WFD water body catchments in the study area, have a 'Moderate' Ecological Status.

Appendix F, Figure 5 shows the physico-chemical status (which is a contributing element to Ecological Status) of most of these surface waterbodies is moderate. In some cases, the status of one of the physico-chemical elements is less than Moderate (e.g. Poor or Bad), but in keeping with WFD classification methodology, the water bodies are limited at Moderate status. In most cases, where an element is less than Moderate, it relates to the phosphate element, and in one case it relates to the dissolved oxygen element. This demonstrates that water quality, particularly nutrient quality, is a key aspect for why Ecological Status is limited to moderate for the majority of WFD surface waterbodies in the study area. The exception is the Stour Estuary which has a Good physico-chemical status, and St Osyth Drain which has no data.

Appendix F Figure 6 identifies reasons the WFD catchments have not achieved a status of 'Good'; these are termed Reasons for Not Achieving Good status (RNAG) under the WFD regulations. Four waterbodies within TDC have RNAGs associated with water industry sewage discharges, while seven have RNAGs associated with poor nutrient management, one associated with physical modifications, one associated with surface water abstraction, and two with unknown causes. Table 4-1 provides additional detail on water body RNAGs.

Table 4-1: Reasons for Not Achieving 'Good' status- surface water bodies

Waterbody	Cause	WFD Status Element Affected
Salary Brook	- Poor Nutrient Management	- Phosphate
Sixpenny Brook	- Poor Nutrient Management	- Phosphate
Tenpenny Brook	- Water Industry Sewage Discharge	- Phosphate
Colne TraC	- Physical Modification	- HMWB Mitigation Measures
Holland Brook	- Poor Nutrient Management	- Phosphate
Wrabness Brook	- Surface Water Abstraction	- Hydrological Regime
St Osyth Drain	- N/A	- N/A
Lower Stour	- Water Industry Sewage Discharge - Poor Nutrient Management	- HMWB Mitigation Measures
Stour TraC	- Water Industry Sewage Discharge - Poor Nutrient Management	- Dissolved Inorganic Nitrogen
Ramsay River	- Water Industry Sewage Discharge - Poor Nutrient Management	- Phosphate
Harwich Approaches	- Unknown/Pending	- N/A
Hamford Water	- Unknown/Pending	- N/A

4.3 Groundwater

4.3.1 Geology

The bedrock geology underlying the TDC study is shown in Appendix F, Figure 7A. The bedrock geology is mostly comprised of London Clay Formation including Thames Group which overlies and confines the deeper Chalk formations; this represents 93% of the study area.

Along the northern boundary and the River Stour there is a band of Thanet Formation and Lambeth Group (undifferentiated), as well as pockets of Red Crag Formation. Along the south east coast is a band of Thanet Formation.

Much of the bedrock in the TDC area is overlain by superficial deposits, which are more prominent in the north west and along the estuaries.

The superficial geology across TDC is shown in Appendix F, Figure 7B. In total, there are 14 types of superficial geology with the two most spatially common being the Cover Sand and the Kesgrave Catchment SubGroup. These three formations make up approximately 85% of the superficial geology exposed at surface in the TDC area. Intertidal deposits are present in the Colne and Stour Estuaries with alluvium, head, and River Terrace deposits present in the larger river valleys.

4.3.2 Hydrogeology context

In terms of bedrock aquifers, the London Clay Formation (including Thames Group), as well as the Red Crag Formation is classed as Unproductive. Unproductive aquifers are largely unable to provide usable water supplies and are unlikely to have surface water and wetland ecosystems dependent on them.

The Thanet Formation and Lambeth Group (undifferentiated) is classed as a 'Secondary A' Aquifer. These aquifers are defined as those which comprise permeable layers that can support local water supplies and may form an important source of baseflow to rivers. This geology type underlies roughly 2% of the study area.

Table 4-2 shows the aquifer designations for each of the bedrock geology types underlying the study area, demonstrating that the majority of TDC is underlain by impermeable bedrock geology.

Table 4-2: Bedrock Geology Aquifer Designations

Bedrock Geology	Aquifer Designation
London Clay Formation including Thames Group	Unproductive
Red Crag Formation	Unproductive
Thanet Formation and Lambeth Group (undifferentiated)	Secondary A

Apart from a small part of the far north of the study area (associated with the Thanet Formation and Lambeth Group Secondary A Aquifer) the bedrock geology is not significant from an aquifer perspective.

Aquifers are present in the superficial geology associated with the Cover Sand, the Kesgrave Catchment SubGroup and the various river valley deposits. The Cover Sand, Kesgrave Catchment SubGroup and river valley deposits are mostly Secondary A Aquifers. The Secondary A Aquifers are collectively classified as a groundwater body under the WFD regulations (Essex Gravels). This groundwater body is shown in Appendix F, Figure 8 alongside very small spatial extents of the North Essex Chalk WFD water body and the North Essex Lower London tertiaries groundwater body to the north.

Appendix F, Figure 8 also displays the extent of Source Protection Zones (SPZs) across TDC. SPZs are defined around large and public potable groundwater abstraction sites with the aim of reducing potentially polluting activities around these areas and to protect the quality of the groundwater for abstraction and potable use. SPZs are defined based on the time it takes for pollutants to reach an

abstraction point from any point at the water table. The transmission time enables the Environment Agency to define three zones around a groundwater abstraction point.

- Zone 1 (Inner Protection Zone) – This is defined by a 50-day travel time for pollution from any point below the water table to reach the abstraction source.
- Zone 2 (Outer Protection Zone) – This is defined by a 400-day travel time from a point below the water table.
- Zone 3 (Total Catchment) – This is defined as the area around an abstraction source within which all groundwater can potentially feed into the abstraction source.

There is a large extent of Zone 3 area which covers the north west of TDC; this reflects the extent of the deeper Chalk formation (widely used for public water supply abstraction) which underlies the impermeable London Clay and is confined over most of the TDC area by the impermeable Clay bedrock.

4.3.3 Hydrogeological condition

Appendix F, Figure 9 displays the WFD chemical status of the WFD groundwater bodies in TDC. The very small extent of North Essex Lower London Tertiaries has 'Good' chemical status, while the Essex Gravels has 'Poor' chemical status. According to the Catchment Data Explorer, the General Chemical Test is rated as 'Poor' leading to this overall groundwater body chemical status.

Appendix F, Figure 10 displays the WFD quantitative status of the two WFD groundwater bodies in TDC. The Essex Gravels has 'Good' quantitative status while the small extent of North Essex Lower London Tertiaries has 'Poor' quantitative status. According to the Catchment Data Explorer, the Quantitative Dependent Surface Water Body was rated as 'Poor' leading to a 'Poor' quantitative status.

There are no confirmed RNAG for the groundwater bodies in the study area.

4.4 Flood risk

Table 4-3 summarises flood risk across TDC using flood risk maps produced within the Level 1 Strategic Flood Risk Assessment (SFRA). Further detail on flood risk is set out within the Level 1 SFRA.

Table 4-3: Summary of Flood Sources and Risk

Flood Source	Description
Rivers and the Sea (Tendring District Council Level 1 SFRA 2017 Addendum Appendix 4)	Areas adjacent to the River Colne and the Colne Estuary, including Brightlingsea and Brightlingsea Creek, are defined as Flood Zone 3 i.e. high probability of flooding ignoring the presence of defences from a combination of tidal flooding and fluvial flooding. Areas near Jaywick and Seawick are also shown to be within Flood Zone 3. In the east of the study area, land along the lower reaches of the Holland Brook, including its tributaries, are shown to be within Flood Zone 3 as well as land around the Hamford Water National Nature Reserve. Areas along the Ramsey River including parts of Harwich are shown to be within Flood Zone 3. Also, areas along the Lower Stour and Stour Estuary, particularly near Manningtree, are shown to be within Flood Zone 3.
Surface Water (Tendring District Council Level 1 SFRA 2017 Addendum Appendix 6 and 7)	There are numerous flow paths of surface water flooding throughout the study area ranging from high to low probability.
Groundwater (Tendring District Council Level 1 SFRA 2017 Addendum Appendix 10)	The groundwater flood risk varies throughout the study area. Much of the central area of TDC is less than 25% susceptible to groundwater flooding. Much of the north of the study area is more than 50% susceptible to groundwater flooding associated with the Stour Estuary, along with the area around the Hamford Water National Nature Reserve. The Colne Estuary and Brightlingsea Creek are also highly susceptible to groundwater flooding ($\geq 50\%$), as well as areas to the south of the study area including Jaywick and Clacton-on Sea.

Flood Source	Description
Sewers (Tendring District Council Level 1 SFRA 2009)	The Tendring District Council Level 1 SFRA identifies that sewer flooding is not a significant problem in TDC compared to elsewhere in the country. Five post districts out of seven within TDC have some sewer flood risk issue, higher number of incidents have been recorded in CO7, CO13 and CO16 up to February 2009.
Reservoirs	Most of the study area is not at risk of reservoir flooding. Land adjacent to the Salary Brook near Colchester is at risk of flooding from reservoirs, as well as much of the Colne Estuary, including Brightlingsea Creek. Land adjacent to the Holland Brook and Ramsay River are also at risk of flooding from reservoirs.

4.5 Water dependent habitats

There are several sites of ecological importance within the study area (or hydrologically connected to it), including Sites of Special Scientific Interest (SSSIs) and Special Protection Areas (SPAs). These sites have been reviewed to identify which have a material water dependency and hence which are considered as 'water dependent habitats' for this study.

Appendix F, Figure 11 displays the water dependent habitats within (or downstream of) the TDC area. Table 4-4 provides further information for each water dependent habitat, including connected water body, WRCs which may influence water quality at the site, hydrological dependency and water based pressures. Table 4-4 has drawn information from the Environment Agency's Catchment Data Explorer for the WFD (Cycle 3, 2022) and Site Improvement Plans where available.

Table 4-4: Water dependant habitats & hydrological connectivity

Site	Connected water body (in Tendring)	Connected WRCs	Key water dependencies/aspects	Identified hydrological and water quality issues & pressures
Hamford Water SSSI, SPA and Ramsar	Hamford Water	Walton on the Naze WRC	Hamford Water is a tidal inlet whose mouth is about three miles south of Harwich. It is a large and shallow estuarine basin comprising tidal creeks, intertidal mud and sand flats, saltmarshes, islands, beaches and marsh grasslands.	- WFD classified waterbody - less than Good Status for: - Dissolved inorganic N (Moderate). - Also fails WFD chemical status for Mercury (and its compounds), and Polybrominated Diphenyl Ether (PBDE). - SSSI Pressures: Other / Unknown Sources of Water Pollution (Potential pressure with medium risk). - SPA Site Improvement Plan (SIP) actions: - Address impacts of coastal squeeze. - Investigate nutrient levels.
Stour Estuary SSSI and Stour and Orwell Estuaries SPA and Ramsar	- Ramsay River - Stour Estuary (Suffolk)	- Manningtree WRC - Wrabness-Wheatshead Close WRC - Harwich and Dovercourt WRC - Wix WRC	The Stour Estuary is nationally important for 13 species of wintering waterfowl and three species on autumn passage. The estuary is also of national importance for coastal saltmarsh, sheltered muddy shores, two scarce marine invertebrates and a vascular scarce plant assemblage.	- Stour (Essex) Trac WFD classified waterbody – less than Good Status for: - Dissolved inorganic N (Moderate). - Hydrological regime (doesn't support Good). - Also fails WFD chemical status for Mercury (and its compounds), and PBDE. - SSSI Pressures: Water Level Changes (Not FRM or Abstraction Related) (Potential pressure with medium risk). - SPA Site Improvement Plan (SIP) actions: - Address impacts of coastal squeeze. - Investigate nutrient levels.
Cattawade Marshes SSSI and Stour and Orwell Estuaries SPA and Ramsar	Lower Stour		Cattawade Marshes lie at the head of the Stour Estuary, between freshwater and tidal channels of the River Stour. These grazing marshes with associated open water and fen habitats are of major importance for the diversity of their breeding bird community.	- Stour (Essex) Trac WFD classified waterbody – less than Good Status for: - Dissolved inorganic N (Moderate). - Hydrological regime (doesn't support Good). - Also fails WFD chemical status for Mercury (and its compounds), and PBDE. - SSSI Pressures: Water Level Changes (Not FRM or Abstraction Related) (Potential pressure with medium risk). - SPA Site Improvement Plan (SIP) actions: - Address impacts of coastal squeeze. - Investigate nutrient levels.

Site	Connected water body (in Tendring)	Connected WRCs	Key water dependencies/aspects	Identified hydrological and water quality issues & pressures
Colne Estuary SSSI, SPA and Ramsar (part of Essex Estuaries)	- Tenpenny Brook - Sixpenny Brook - St Osyth Drain	- St Osyth WRC - Brightlingsea – Mill Street WRC - Brightlingsea – Church Road WRC - Thorrington WRC - Great Bromley WRC - Jaywick WRC	The Colne Estuary is comparatively short and branching, with five tidal arms which flow into the main river channel. The variety of habitats which include mudflat, saltmarsh, grazing marsh, sand and shingle spits, disused gravel pits and reed beds, support outstanding assemblages of invertebrates and plants. The Essex Estuaries are a typical, undeveloped, coastal plain estuarine system with associated open coast mudflats and sandbanks. The site comprises the major estuaries of the Colne, Blackwater, Crouch and Roach rivers.	- Colne Trac WFD classified waterbody – less than Good Status for: - Dissolved inorganic N (Moderate). - Hydrological regime (doesn't support Good). - Failing Mitigation Measures assessment. - Essex WFD classified waterbody – less than Good Status for: - Dissolved inorganic N (Moderate). - Failing Mitigation Measures assessment. - Also fails WFD chemical status for Mercury (and its compounds), and PBDE. - Blackwater Outlet WFD classified waterbody – less than Good Status for: - Dissolved inorganic N (Moderate). - Also fails WFD chemical status for Mercury (and its compounds), and PBDE. - SAC Objectives. Maintain or restore; - The extent and distribution of qualifying natural habitats - The structure and function (including typical species) of qualifying natural habitats, and - The supporting processes on which qualifying natural habitats rely - SSSI Pressures: Flood and Coastal Erosion Risk Management Measures (FCERM) (Active pressure with high risk). - SPA Site Improvement Plan (SIP) actions: - Address impacts of coastal squeeze. - Investigate nutrient levels.

4.6 Other designations

4.6.1 Bathing waters

The UK has over 600 designated bathing waters defined as areas of inshore waters designated for public swimming, these areas are typically characterised by large numbers of swimmers and visitors per year. The Bathing Waters Directive sets out water quality standards to protect the environment at bathing waters throughout the Bathing Water Season, in England this is between 15th May and 30th September. The Environment Agency are required to monitor water quality at these sites regularly throughout the Bathing Water Season.

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

As shown in Appendix F, Figure 12, there are ten designated bathing waters in TDC. Table 4-5 provides further information for each bathing water site, including classification of the bathing water and the samples the classification is based on.

Table 4-5: Bathing Water Sites

Bathing Water Site	Classification	Year
Manningtree Beach, Stour Estuary	Good	2025
Dovercourt	Excellent	2021 to 2025
Walton	Excellent	2021 to 2025
Frinton	Excellent	2021 to 2025
Holland	Excellent	2025
Clacton	Excellent	2021 to 2025
Clacton (Groyne 41)	Permanent advice against bathing is in place at this water.	
Clacton Beach (Martello Tower)	Good	2021 to 2025
Jaywick	Excellent	2025
Brightlingsea	Excellent	2021 to 2025

4.6.2 Shellfish waters

The WFD Regulations are designed to protect the ecological health of water bodies, and where relevant the shellfish growing within it. The WFD regulations follow the repeal of the Shellfish Waters Directive in 2013 and are intended to ensure that the protections provided by the Shellfish Waters Directive continue as part of the WFD Regulations.

Technical advice from the UK technical advisory group for the implementation of the WFD indicate that the physical and chemical parameters set within the WFD for protecting water quality are equivalent or better than the requirements which were set in the Shellfish Waters Directive. The shellfish water protected areas in the study area are shown in Appendix F, Figure 12 and include Colne, Dengie, and Walton Backwaters.

4.7 NbS opportunities

Nature based Solutions (NbS) are a multidisciplinary tool for sustainably utilising the landscape and its features to address socio-environmental challenges. Opportunities for NbS in TDC have been identified

to explore existing and potential new nature-based solutions to manage water resources and flood risk. NbS can be used as standalone adaptation measures, or they can be combined with traditional grey infrastructure solutions to provide water and flood risk benefit.

To identify the potential for water based NbS solutions which could provide water and flood risk management benefits in TDC, a review was undertaken of opportunities within the Working With Natural Processes (WWNP)⁸ dataset for Natural Flood Management (NFM) opportunities. Appendix F, Figure 13 displays the opportunities for water based NbS identified.

In addition to these datasets, the Essex Local Nature Recovery Strategy document produced in July 2025 includes a series of maps highlighting areas with potential to be of particular importance and could contribute to habitat creation opportunities. River buffer creation, ghost pond re-establishment, saltmarsh restoration, and creation of coastal grazing marsh are identified as key actions within the plan. The Bigger Habitat Priorities relating to freshwater and coastal habitats listed within the report were:

- To create 22,000 hectares of new freshwater habitats and to enhance the water quality of our river network, by creating 6,000 hectares of new river buffer habitat; and,
- To create 4,000 hectares of new coastal habitat, and 1,000 hectares of new marine habitat to support the creation of a dynamic, resilient ecosystem.

Appendix G shows a series of maps included in the Essex Local Nature Recovery Strategy which detail areas with potential for habitat creation.

The WWNP dataset shows that areas for riparian woodland potential are distributed along watercourses across TDC, with a particular concentration in the central and southern area. Areas with floodplain woodland potential are mostly restricted alongside the St Osyth Drain, the tributary of the Holland Brook near Tendring and the tributary of the Tenpenny Brook near Bromley Cross. There are small pockets of potential for runoff attenuation features, particularly in the central and southeastern areas near Great Holland, Weeley and Thorpe-Le-Soken. Floodplain reconnection potential is concentrated in the eastern and southern areas, particularly the Holland Brook, Ramsay River and Lower Stour.

⁸ Working with Natural Processes (2018). Available at: https://assets.publishing.service.gov.uk/media/6036c5468fa8f5480a5386e9/Working_with_natural_processes_evidence_directory.pdf (Accessed January 2024)

5. Water infrastructure baseline summary

5.1 Infrastructure provision

There are two WSI providers operating within the study area:

- AWS are responsible for providing sewerage and wastewater treatment for all the TDC area.
- AW are responsible for providing potable (clean) water to TDC.

5.2 Water infrastructure planning

Before setting out the baseline condition of WSI provision, it is important to set out how water companies must plan for water and wastewater services through various statutory processes. It is also important to the planning timelines for both the Local Plan and AWS and AW in terms of the funding mechanisms for new WSI. AWS and AW have a statutory duty to supply water and wastewater services for residential development and therefore input to the planning process; however, the statutory planning process for water companies differs in timing to that of Local Plan making.

WSI financial and asset planning

Water company planning for asset management and funding is governed by the Asset Management Plan (AMP) process which runs in 5-year cycles. The Office for Water Services (Ofwat) is the economic regulator of the water and sewerage industry in England and Wales and regulates this overall process.

To undertake maintenance of its existing assets and to enable the building of new assets, water companies seek funding by charging customers according to the level of investment the company needs to make. The process of determining how much asset investment is required is undertaken in conjunction with key regulators and the outcome is a 5-yearly Business Plan which is produced by each water company setting out the required asset investment over the next 5-year period. The Business Plan also sets out the justification for the investment and the price increase required to fund it.

Overall, the determination of how much a water company can charge its customers is undertaken by Ofwat. Ofwat consider the views of the water company, the other regulators (Environment Agency, and the Drinking Water Inspectorate) and consumer groups such as the Consumer Council for Water when determining the price limits it will allow a water company to charge to enable future asset investment.

This process is known as the Price Review (PR) and is undertaken in 5-year cycles. When Ofwat determine a water company's business plan, the price limits are set for the following 5 years allowing the water company to raise funds required to undertake the necessary investment within the AMP round. The current AMP period at the time of completing this WCS is known as AMP8 which commenced on the 1st April March 2025. The business plan for this period was initially submitted to Ofwat in 2023 (the PR24 process). The PR24 business plans for AWS and AW therefore contain the WSI proposals to be delivered (or commenced) up to 2035 which will be critical to supporting proposed growth within the early part of the new Local Plan. Subsequent AMP periods will also be critical to delivering the full quantum of growth across the Local Plan period.

Regional Water resources planning

Water Resources East (WRE) is a multi-sector alliance, including the four water companies that supply drinking water across East England, including ESW. WRE published a regional plan in December 2023 to ensure that there are resilient water resources available to meet the needs of the environment, growing population and regional economy through to 2050 and beyond, taking full account of climate change.

Water Resources Management Plan (WRMP)

Water companies undertake statutory medium to long term planning of water resources to demonstrate that there is a long-term plan for delivering sustainable water supply within its operational area to meet existing and future demand. This is reported via a statutory WRMP produced every five years to coincide with each of the water companies' five-yearly asset management (or business) plans. AW produced their latest WRMP for the 2025-2075 time period in 2024.

Drainage and Wastewater Management Plan (DWMP)

Water and sewerage companies undertake long-term planning of wastewater management to improve drainage and environmental water quality. This is reported via a DWMP which is a long-term plan spanning 25 years that sets out how wastewater companies intend to extend, improve, and maintain a robust and resilient drainage and wastewater system. AWS published their current (non-statutory) DWMP in May 2023 which covers TDC's area; this was produced under initial guidance.

The Environment Act 2021 has made the future production of DWMPs statutory to assess current and future capacity, pressures, and risks to sewerage networks, and outline the investment needs to meet the challenges posed by population growth and climate change. The next DWMP iteration will be produced as a statutory requirement under section 79 of the Environment Act using updated guidance.

5.3 Water supply baseline

5.3.1 Water stress classification

Along with the rest of the southeast and east of England, the Environment Agency classified TDC to be within an area of serious water stress in 2021⁹. Water stress in this context applies to both the natural environment and to public water supplies, including how both are affected by climate change. A severe water stressed classification reflects that the household demand for water is a high proportion of effective rainfall that is available in the area to meet that demand.

The classification outcome shows where the Environment Agency believe there are (or are likely to be) environmental impacts caused by public water supplies and/or where the Environment Agency consider the need for major water resources developments.

5.3.2 Local surface water availability

The Environment Agency manages water resources at the local level using abstraction licensing strategies (ALS). Within the ALS, the Environment Agency's assessment of the availability of water resources is presented as a classification system. The classification gives a resource availability status which indicates the relative balance between the environmental requirements for water and how much remains as available to be licensed for abstraction. In doing so, it sets out whether water is available for further abstraction and areas where abstraction is already too high and needs to be limited or reduced.

The general categories of resource availability status for ALS are shown in Table 5-1. The classification is based on an assessment of a river system's ecological sensitivity to abstraction-related flow reduction. This classification is then used to assess the potential for additional water resource abstractions in each catchment.

⁹ Environment Agency Water Stressed Areas <https://www.gov.uk/government/publications/water-stressed-areas-2021-classification> (Accessed July 2023)

Table 5-1: Water Resource Availability Status Categories

Indicative Resource Availability Status	License Availability
Water Available for Licensing	There is more water than required to meet the need of the environment. New licenses can be considered depending on local and downstream impacts.
Restricted water available for licensing	Full Licensed flows fall below the Environmental Flow Indicators (EFIs). If all licensed water is abstracted there will not be enough water left for the needs of the environment. No new consumptive licenses would be granted. It may also be appropriate to investigate the possibilities for reducing fully licensed risks. Water may be available if you can 'buy' (known as licence trading) the entitlement to abstract water from an existing license holder.
No water available for licensing	Recent actual flows are below the EFI. This scenario highlights water bodies where flows are below the indicative flow requirement to help support Good Ecological Status. No further consumptive licences will be granted. Water may be available if you can 'buy' (known as license trading) the amount equivalent to recently abstracted from an existing licence holder.
Discharge Rich Waterbodies	These waterbodies have a modified flow that is influenced by reservoir compensation releases, or they have flows that are augmented. These are often known as 'regulated rivers' and may be managed through an operating agreement often held by a water company. The availability of water is dependent on these operating agreements. There may be water available for abstraction, the EA would need to be contacted to find out more.

The Environment Agency aims to protect the annual flow variability in rivers, from low to high flow conditions through the application of flow statistics. Flow statistics are expressed as the percentage of time that flow is exceeded. Resource availability is calculated by the Environment Agency for four different flow scenarios:

- Q95 (lower flow);
- Q70;
- Q50; and,
- Q30 (higher flow)

Appendix F, Figure 14 identifies the water availability for the four different flow scenarios for river catchments within TDC. This shows that water bodies within the Stour Operational catchment do not have the capacity to support any new abstraction licences, with no water available for licencing in all flow scenarios.

Water bodies within the wider Colne Essex operational catchment have some degree of water available for licencing. When river flows are high, the majority of the water bodies within the wider Colne Essex operational catchment have water available for licencing, with the exception of the St Osyth Drain catchment which has restricted availability. At average flows (Q50) only the Holland Brook catchment has water available for licencing, the other water bodies only have restricted water available. At very low flows, only Holland Brook has restricted water available for licensing, with all other water bodies having no water available for licencing.

This demonstrates there is a limited capacity in the surface water systems for new (consumptive) abstractions to support non-water company usage. There is potential within some of the Colne Essex catchments to abstract and store at higher flows; however, all Essex Colne water bodies would be restricted at lower flows and the Stour water bodies have no capacity to support any new abstraction.

5.3.3 Local groundwater availability

Much of TDC is covered by confined chalk and therefore is assumed as having no water available for abstraction. This means that the groundwater unit balance shows more water has been abstracted based on recent amounts than the amount available and hence the Environment Agency will not grant further licenses to abstract from groundwater.

5.3.4 Water company supply

AW supply potable water to TDC. All water companies have a statutory duty to plan for water supply over a minimum of 25-year periods via the production of 5-yearly WRMPs. Once approved by regulators, the WRMPs then inform the Business Plans produced by water companies for each AMP period, identifying where and when investment in water resources is required in that period.

All water companies plan for water resource availability within planning areas called Water Resource Zones (WRZ) where all customers within each WRZ share access and connectivity to the same sources of potable supply via the water supply grid. TDC is located within the Brett WRZ which covers mostly only Tendring, but with the addition of small areas of CCC around Dedham and Wivenhoe as shown in Appendix F, Figure 15.

5.3.4.1 Brett WRZ – baseline water availability

The need for new water resource interventions to meet demand is identified through a detailed process of calculating available water supply available to the WRZ over the WRMP period (25 years) and comparing it to future demand for water within the WRZ allowing for growth and climate change. This process is called supply and demand balance forecasting and results in all water company WRZs assessed as having a balanced supply and demand (supply equals demand), a surplus (supply exceeds demand), or a deficit (demand exceeds supply).

AW's WRMP24¹⁰ gives an outline of their proposed strategy to meet customer demand for the next 25 years. The WRMP notes that without additional supply measures, but accounting for climate change and population growth, the Brett WRZ would run a surplus in the supply and demand balance until 2040. After 2040 (and into the last 2 years of the updated TDC Local Plan), it would switch to a deficit.

This means that for the majority of updated TDC Local Plan period, there would be sufficient water to supply growth based on AW's prediction for additional housing; however, additional measures would be required between 2040 and 2043 and the WCS is required to examine consistency in new housing provision data used for the 2024 WRMP and the updated Local Plan (see section 6.2.16).

5.4 Wastewater services baseline

TDC is served by sixteen Water Recycling Centres (WRCs) which process, treat and return wastewater from housing and non-residential sources safely back to the water environment; these WRCs are all operated by AWS. Colchester WRC, although located within CCC's boundary, serves a small section of TDC located to the east of the City and would serve growth proposed as part of the Tendring Borders Garden Community.

Much of TDC is connected to the WRCs by a wastewater network separated into foul and surface water sewers. A combined (surface and foul collected in one system) network is present within parts of the coastal towns of Clacton-on-sea, Frinton-on-sea, Walton-on-the-Naze and Harwich.

The WRC catchments and wastewater network can be seen in Appendix F, Figure 16.

¹⁰ Affinity Water (2024) Water Resources Management Plan 2024. Available at: <https://affinitywater.uk/engagementthq.com/4398/widgets/107738/documents/71001> (Accessed 36/03/2025)

A baseline capacity assessment for each WRC was completed prior to considering the impact of growth on capacity¹¹ (see Appendix B, B1 for detailed method and details). This identified that the baseline capacity of existing WRCs across TDC is variable as shown in Table 5-2 which identifies capacity for WRCs where growth is likely to occur in the WRC drainage catchment.

The baseline capacity assessment shows that WRCs serving Clacton Holland Haven and Manningtree have no existing capacity. Growth in these locations would trigger the immediate need for new permits to discharge and possible WRC investment and upgrades to allow additional wastewater flow to be treated. The assessment of future capacity after growth is set out in Section 6.

Table 5-2: Baseline (pre-growth) capacity at WRCs likely to receive growth

Site Name	Permitted Capacity ¹² Remaining
BRIGHTLINGSEA - CHURCH ROAD WRC	22%
CLACTON HOLLAND HAVEN WRC	No capacity
GREAT BROMLEY WRC	22%
HARWICH AND DOVERCOURT WRC	27%
JAYWICK WRC	4%
MANNINGTREE WRC	No capacity
ST OSYTH WRC	17%
THORRINGTON WRC	22%
WALTON ON THE NAZE WRC	36%
WIX WRC	23%

5.4.1 Wastewater planning

AWS undertake long-term planning of wastewater assets via the production of a five-yearly DWMP. The DWMP sets out risks and solutions for wastewater asset management over a 25-year planning period.

AWS published their current DWMP¹³ in May 2023. The DWMP identifies existing risks to a series of planning objectives linked to capacity of the wastewater network and treatment capacity at WRCs. Where a very significant baseline risk (2020) to a planning objective has been identified for each of the WRC catchments in TDC, these have been set out in Table 5-3.

¹¹ This assessment used information available on measured WRC discharge volumes at the time the calculations were undertaken (during 2024) – see Appendix B, section B1.

¹² Based on permitted Dry Weather Flows (DWF) see Appendix B1

¹³ Anglian Water (2023) Drainage and Wastewater Management Plan. Available at: <https://www.anglianwater.co.uk/about-us/our-strategies-and-plans/drainage-wastewater-management-plan/> (Accessed May 2025)

Table 5-3: Existing (2025) 'very significant' risks to planning objectives for WRC catchments in TDC

WRC/catchment	Sewer catchment risks	WRC risks
Brightlingsea	- Sewer collapses - Storm overflows	- None identified
Clacton-Holland Haven WRC	- Sewer collapses - Storm overflows - Level of Green Infrastructure	- Flow (permit) compliance
Great Bromley WRC	- Access to amenity	- None identified
Harwich & Dovercourt WRC	- Internal sewer flooding - Sewer collapses - Storm overflows	- None identified
Jaywick WRC	- Sewer collapses - Storm overflows - Level of Green Infrastructure	- Flow (permit) compliance
Little Bentley	- Access to amenity	- None identified
Manningtree WRC	- Sewer collapses	- Flow (permit) compliance - Pollution risk
Tendring Green	- Access to amenity - Level of Green Infrastructure	- None identified
Thorrington WRC	- Storm overflows	- None identified
Walton on-the-Naze WRC	- Sewer collapses - Storm overflows - Level of Green Infrastructure	- Pollution risk
Wix WRC	- Access to amenity	- None identified

6. Wastewater capacity assessment

This section presents the assessment of wastewater infrastructure capacity taking into the scale and spatial pattern of preferred site allocations. It considers the following aspects of wastewater infrastructure:

- The capacity of wastewater treatment facilities (WRCs) to be able to accommodate additional wastewater from growth without impacting on the water environment.
- Connectivity of proposed site allocations to existing wastewater network – this identifies challenges with how site allocations can be connected to existing sewers, including operation of storm overflows.

6.1 Approach to assessments

6.1.1 WRC capacity

Each WRC has an environmental permit under the Environmental Permitting Regulations¹⁴. For the majority of WRCs, these permits set out limitations on the discharge of treated wastewater to a water body, with the key aim of protecting environmental quality. The conditions generally include a limit on how much treated flow can be discharged to a water body as well as limits on the quality of the water discharged across a range of potentially polluting substances.

The limit on treated flow volumes essentially defines the flow capacity, or 'headroom capacity' of each WRC; this in turn determines how many additional people the facility can serve before a new permit, or treatment upgrades may be required. The conditions on quality influence the environmental capacity of the receiving waterbody and hence determine limits on how much additional wastewater flow (beyond their permitted limit) each WRC can realistically treat.

Both the flow capacity and environmental capacity of the WRCs in the TDC study area have been considered based on the spatial distribution and scale of allocated sites. The assessment methodology detail is included in Appendix B and outcomes are presented in the WRC detailed assessments presented in this chapter.

6.1.2 Wastewater network connectivity

The WCS has also considered the location of sewer overflows relative to growth locations. This assessment has used publicly available information on measured spill frequency from existing overflows and compared it to the long-term government set targets¹⁵ for spill frequency reduction (no more than 10 spills per annum on average).

6.2 WRC detailed assessments

6.2.1 Assessment results summary

Appendix C sets out the results of the flow capacity assessments across all WRCs considering growth to the end of the Plan period. This assessment accounts for new dwelling connections based on:

- existing commitments which have planning permission, but which are not yet built and connected to the sewer system; and,
- sites to be allocated in the new plan.

¹⁴ <https://www.legislation.gov.uk/ukxi/2016/1154/contents> (accessed Dec 2004)

¹⁵ [Storm overflows discharge reduction plan](#) (updated September 2023)

The assessment also accounts for employment growth based on employment allocations (including both existing commitments and allocated sites) that were provided by TDC, as shown in Appendix F, Figure 2. This assessment also accounts for an increase in water ingress to the sewer network (infiltration) based on a percentage increase - see Appendix B for details.

In summary, the capacity assessment demonstrates the following:

- A total of 11 WRCs would be expected to receive wastewater flows from allocations or existing commitments by the end of the plan period. These WRCs are: Brightlingsea – Church Road, Clacton Holland Haven, Great Bromley, Harwich and Dovercourt, Jaywick, Little Bentley Tendring Road, Manningtree, St Osyth, Thorrington, Walton on the Naze and Wix.
- Five of these WRC would have sufficient flow capacity within their existing permit to accommodate the level of proposed growth and would have greater than 10% of the permitted capacity remaining after growth is connected. These WRCs are: Brightlingsea – Church Road, Harwich and Dovercourt Thorrington, Walton on the Naze and Wix WRCs. Growth at these WRCs does not represent a significant infrastructure barrier and hence only simplified environmental and solution assessments have been carried out below for these WRCs.
- Five WRCs (Clacton Holland Haven, Great Bromley, Jaywick, Manningtree and St Osyth) would be expected to be at, or exceed, flow limits within their existing discharge permits once all growth is considered. Treatment capacity is therefore a potential barrier to growth in these locations. The environmental capacity of the receiving watercourse has been assessed at these WRCs to determine if future solutions are feasible based on legislative water quality standards, limits of current treatment technology, wider environmental needs and limitations on the timing of funding within the AMP cycles.
- Little Bentley Tendring Road WCS has a descriptive permit without routine effluent flow or quality measurement so the impact of additional connections on the current discharge rate cannot be quantified precisely.

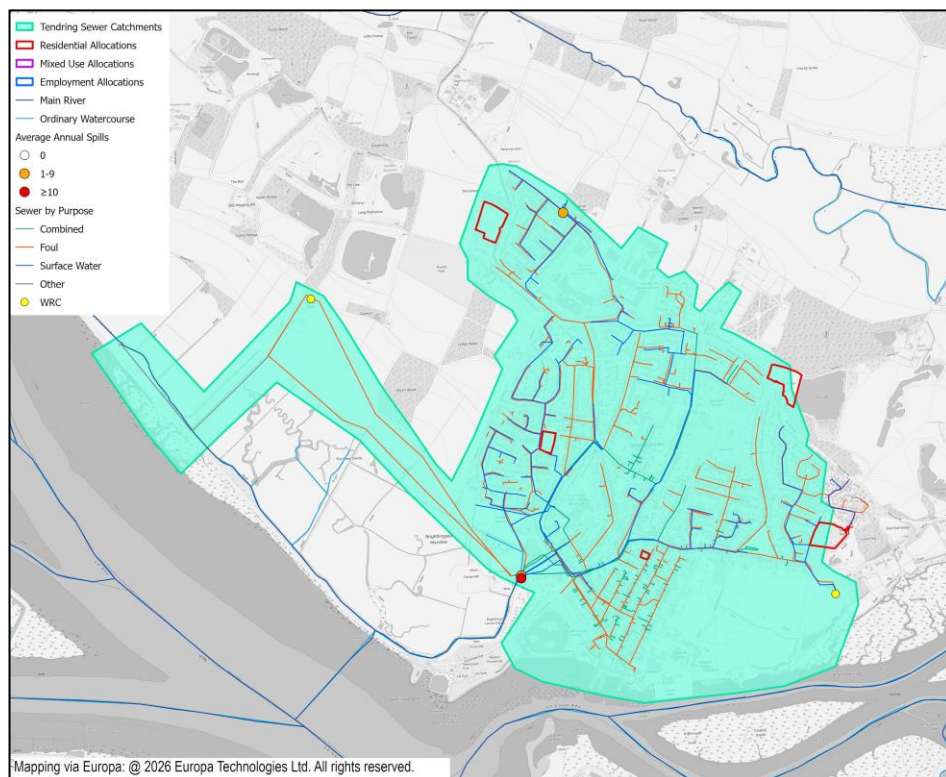
6.2.2 Cumulative growth from other authorities

The only WRC which serves the administrative area of TDC in addition to another planning authority is Colchester WRC. The catchment area for the Colchester WRC extends slightly into the very western extent of TDC and the only TDC allocation within the catchment area of the Colchester WRC is the Tendring Borders Garden Community. This site will support housing need of both CCC and TDC and the additional flow allowance from this development has been assessed in totality within the CCC Water Cycle Study⁷. The CCC Water Cycle Study also considers the impact of existing commitments and new allocations in the CCC area on Colchester WRC and further cumulative impact assessment is not required in this TDC WCS. Reference should be made to the parallel CCC WCS for additional information on Tendring Borders Garden Community.

The results of the WRC assessments are set out in the proceeding report sections.

6.2.3 Brightlingsea – Church Road WRC

Figure 6-1: Brightlingsea – Church Road WRC catchment - key features



6.2.3.1 Flow capacity assessment

Brightlingsea – Church Road WRC serves the settlement of Brightlingsea. A total of 191 dwellings would be constructed within the catchment of Brightlingsea – Church Road WRC by the end of Plan period. 150 would be from an allocation within the new plan and 41 from existing commitments. This represents 1.0% of the total housing to be delivered across TDC over the Plan period.

It is estimated that the new dwellings would contribute an additional 57 m³/d to the WRC, an increase of 3% compared to the current DWF. The WRC currently has a large headroom capacity in its permit (22% capacity remaining) which means there is sufficient headroom to serve the proposed growth without requiring WRC upgrades. No detailed water quality modelling is therefore required.

6.2.3.2 Environmental capacity assessment

High level water quality assessment

Brightlingsea – Church Road WRC discharges into the Colne Transitional WFD water body (GB520503713800). Load standstill calculations (see Appendix D) show a small change is required to quality permits to ensure no increase in current load. The changes are clearly within Technically Achievable Limits (TAL) and hence achievable within the Plan period.

Connected water dependent habitats

Table 4-4 shows that Brightlingsea – Church Road WRC is hydrologically connected to the Colne Estuary SSSI, Ramsar and SPA (including the Essex Estuaries SAC) via discharge to the tidal Colne.

The discharge is also linked to the Brightlingsea designated Bathing Water and the designated Shellfish Waters of the Colne, Dengie and Pyefleet.

Managing the pollutant load through a new discharge permit and implementation of improvements to the discharge quality from the WRC such that there is no change in overall pollutant load would also ensure no impact on the designated sites identified here.

Future investment for treatment

The AWS DWMP identifies that a SuDS strategy within the WRC drainage network may be required in the medium term with 25% surface water removal by 2050. These solutions are required to ensure sufficient sewer network connectivity capacity as well as manage water quality of discharges connected to Bathing Water and Shellfish Water.

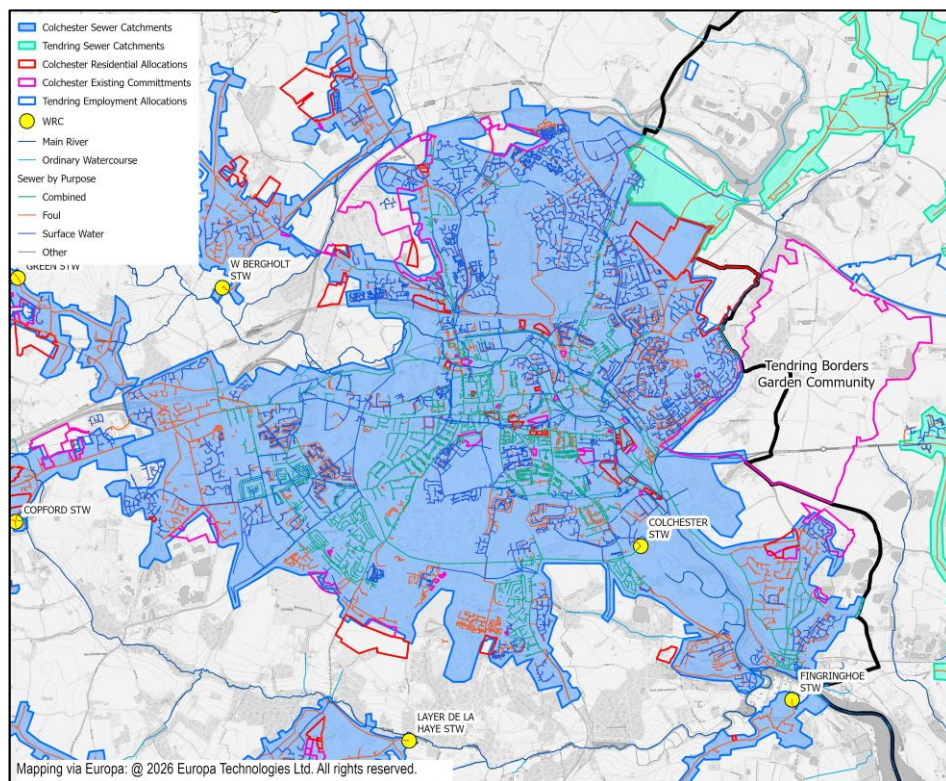
The current AWS Business Plan for the AMP8 investment period does not include for planned investment at Brightlingsea – Church Road WRC.

Sewer network and CSOs

There are 2 CSOs in the WRC sewer network as shown in Appendix F, Figure 17. The DWMP identifies Brightlingsea – Church Road WRC as having a high risk related to the planning objective of managing storm overflows, indicating there is a sewer spill risk in the catchment, which is linked to Bathing Waters compliance. To enable spills to be managed in the long-term, the WCS recommends a policy for allocated development in these settlements which prevents surface water generated from sites from being discharged to the foul sewer network.

6.2.4 Colchester WRC

Figure 6-2: Colchester WRC catchment - key features



6.2.4.1 Flow capacity assessment

Colchester WRC is a large treatment facility which serves the city of Colchester and its suburban area, including the settlements of Wivenhoe and Rowhedge.

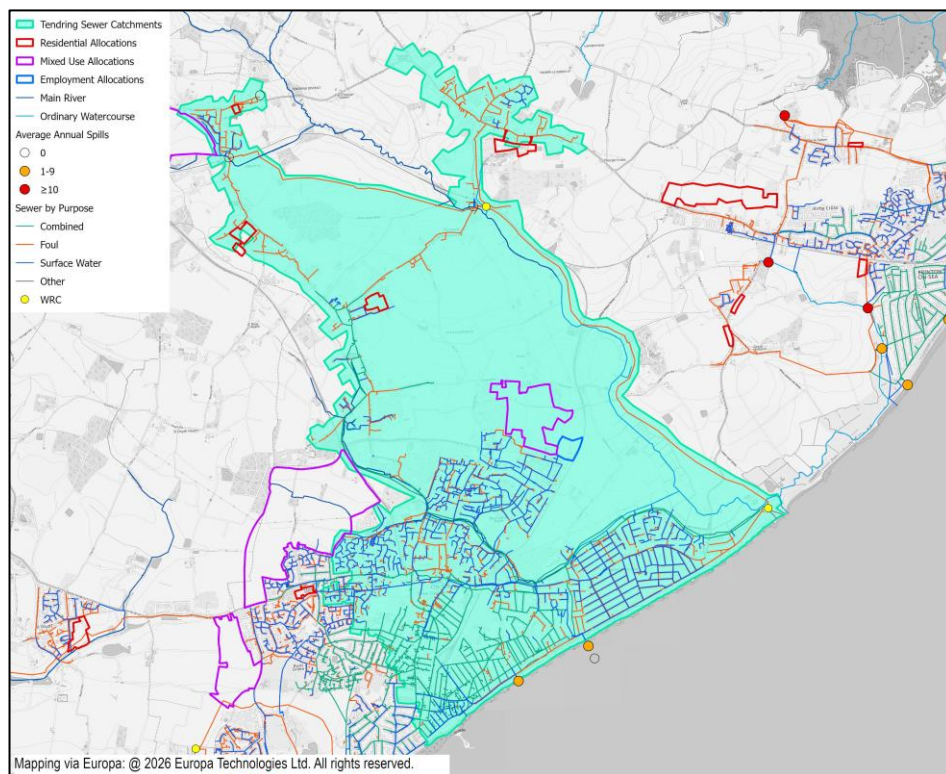
The Colchester WCS⁷ assessed a total of 12,046 dwellings which would be constructed within the catchment of Colchester WRC by the end of the Colchester Local Plan period (2025 to 2043) and the Tendring Local Plan Period (2025 to

2043). This includes for a quantum of growth in this period from the Tendring Borders Garden Community (providing housing target contribution to both CCC and TDC's Local Plans). A total of 3,750 dwellings would be from allocations made within the new plan, 1,110 from existing allocations in the current plan, and 7,186 from existing commitments. The total number of existing commitments for Colchester WRC includes the full quantum of growth (3750 dwellings) to be delivered for the Tendring Borders Garden Community by both Colchester City Council and Tendring District Council over the Local Plan period. 1,875 dwellings are allocated for the Tendring Borders Garden Community within Tendring's boundary. This represents over half (56.4%) of the total housing to be delivered across CCC over the Plan period.

The Colchester WCS sets out the short-term and long-term capacity of the Colchester WRC with the overall conclusion that capacity at Colchester WRC is likely to have been utilised by the end of the plan period, likely between 2038 and 2042 depending on site phasing and connections from existing commitments. A high level water quality assessment was also undertaken which demonstrated that a change in permitted quality conditions would be required to ensure that a new permit to discharge would not significantly alter the quality of the Colne transitional WFD water body. The changes are within TAL and hence achievable within the Colchester Local Plan period.

6.2.5 Clacton Holland Haven WRC

Figure 6-3: Clacton Holland Haven WRC catchment - key features



6.2.5.1 Flow capacity assessment

Clacton Holland Haven WRC serves the settlements of Clacton on Sea, Weeley and Thorpe-le-Soken. A total of 6,117 dwellings would be constructed within the catchment of Clacton Holland Haven WRC by the end of Plan period. 3,921 would be from an allocation within the new plan and 2,196 from existing commitments. This represents 31.8% of the total housing to be delivered across TDC over the Plan period.

The WRC is currently at its permitted maximum discharge volumes and has no capacity to accommodate further connections without a change in permit. Therefore, additional environmental capacity assessment was required. The WRC discharges to tidal waters, and hence RQP modelling was not suitable. A load standstill calculation has been completed to determine consent conditions required for future discharge volumes.

6.2.5.2 Environmental capacity assessment

High level water quality assessment

Clacton Holland Haven WRC discharges into the Essex Transitional WFD water body (GB650503520001). Load standstill calculations (see Appendix D) show the change required to quality permits to ensure no increase in current load. The changes are clearly within Technically Achievable Limits (TAL) and hence achievable within the Plan period.

Connected water dependent habitats

Clacton Holland Haven WRC discharges to the Essex Transitional WFD water body which is not hydrologically connected to any water dependant habitats.

The discharge is linked to the Holland designated Bathing Water.

Future investment for treatment

The current AWS Business Plan for the AMP8 investment period includes a named growth scheme for Clacton Holland Haven WRC. AWS request a pre-occupation condition to be applied to planning applications until the growth scheme is delivered and operational with the updated permit. A future growth scheme may need to be implemented in future AMPs when there is more certainty in the deliverability of the allocations.

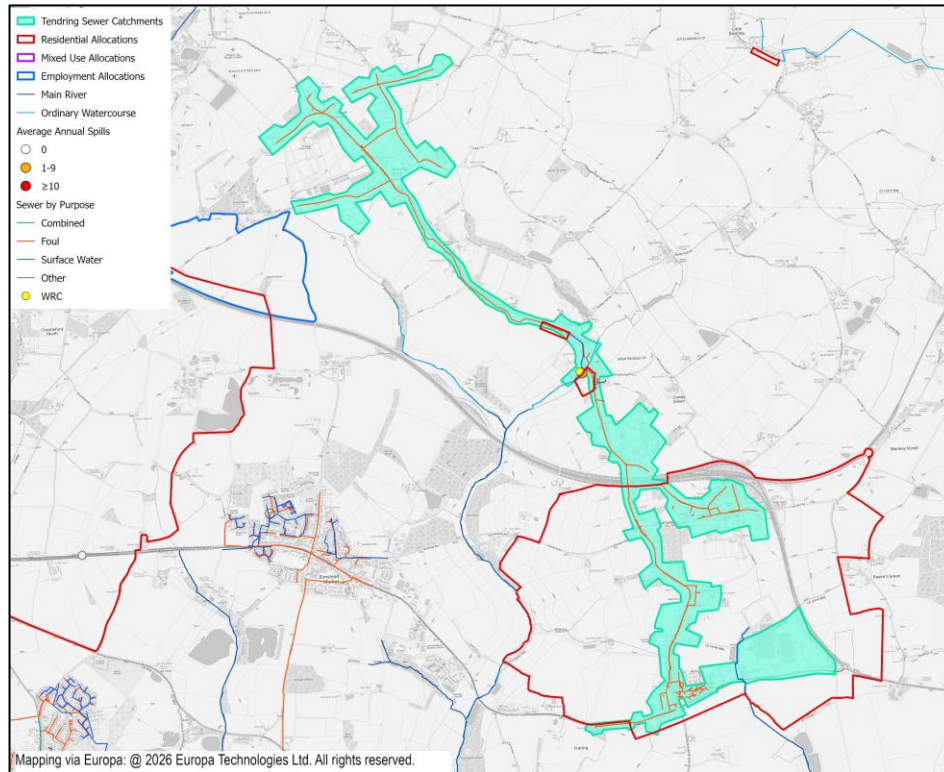
The AWS DWMP identifies that a new permit and increased capacity at the WRC may be required in the medium term. By 2050 the DWMP identifies 10% surface water removal and investigation into a strategy with Jaywick.

Sewer network and CSOs

There are 6 CSOs in the WRC sewer network as shown in Appendix F, Figure 17. The DWMP identifies Clacton Holland Haven WRC as having a high risk related to the planning objective of managing storm overflows, indicating there is a sewer spill risk in the catchment. To enable spills to be managed in the long-term, the WCS recommends a policy for allocated development in these settlements which prevents surface water generated from sites from being discharged to the foul sewer network.

6.2.6 Great Bromley WRC

Figure 6-4: Great Bromley WRC catchment - key features



6.2.6.1 Flow capacity assessment

Great Bromley WRC serves the settlements of Frating Green, Hare Green and Great Bromley. A total of 1,554 dwellings would be constructed within the catchment of Great Bromley WRC by the end of Plan period. 1,475 would be from an allocation within the new plan and 79 from existing commitments. This represents 8.1% of the total housing to be delivered across TDC over the Plan period.

Note: The WCS assessed 1,475 dwellings from allocations within the new Local Plan; however, the latest estimate indicates that this may increase to around 1,725 dwellings.

The WRC is currently near its permitted maximum discharge volumes and has no DWF capacity to accommodate further connections without a change in permit. Therefore, additional environmental capacity assessment is required and has been carried out using RQP modelling (Appendix E).

6.2.6.2 Environmental capacity assessment

Receiving water quality

Great Bromley WRC discharges into the Tenpenny Brook, specifically the WFD water body (GB105037041310). The RQP modelling in Appendix E demonstrates that:

- The current quality classification of the Tenpenny Brook water body upstream of the point of discharge is High with respect to ammonia, deteriorating to Moderate downstream of the discharge point. The impacts of additional flow arising from the new development can be limited to that of the current discharge if a change to the permitted quality limit is applied to the discharge for ammonia. This new ammonia limit would be achievable within TAL.
- The Tenpenny Brook waterbody has a target status of Good for ammonia. Improvements to the discharge quality would be required to deliver this status downstream of the discharge point. The permit limits required would be within TAL both with and without growth. Housing growth within the catchment of Great Bromley WRC is therefore not a limiting factor on achieving the future Good target status of the Tenpenny Brook for Ammonia.
- The current quality classification of the Tenpenny Brook water body upstream of the point of discharge is Bad with respect to phosphate, improving to Poor downstream of the discharge point. The permitted quality limit for phosphate applied at Great Bromley WRC is lower than the concentrations in the watercourse upstream of the discharge. The classification of the watercourse downstream of the point of discharge can be maintained after growth without changes to the permitted quality limits currently applied.

- Tests assuming the phosphate quality of the Tenpenny Brook water body is improved to the future target Good WFD Status in the future show that improvements to the discharge quality would be required both with and without growth in order to maintain Good WFD Status downstream, however these are not within TAL. Housing growth within the catchment of Great Bromley WRC is therefore not a limiting factor on achieving the future Good target status of the Tenpenny Brook for Phosphate.
- A load standstill calculation has been carried out for BOD as there is no current BOD waterbody classification status or measured data. The results (see Appendix D) show the change required to BOD quality permits to ensure no increase in current load. The change is clearly within Technically Achievable Limits (TAL) and hence achievable within the Plan period.

It would therefore be possible to set a new permit that ensures no increase in the current impact of discharges from Great Bromley WRC on the quality of the Tenpenny Brook and accounts for future development. This would require improvements in the quality of discharge for ammonia.

Connected water dependent habitats

Table 4-4 shows that Great Bromley WRC is hydrologically connected to the Colne Estuary SSSI, Ramsar and SPA (including the Essex Estuaries SAC) via the Tenpenny Brook and its confluence with the tidal Colne.

The discharge is also indirectly linked to the Brightlingsea designated Bathing Water and the designated Shellfish Waters of the Colne, Dengie and Pyefleet.

Managing the pollutant load through a new discharge permit for additional flow and improved ammonia and phosphate treatment (within TAL) to ensure no increase in load at mixing point would also ensure no impact on the designated sites linked to the Tenpenny Brook.

Future investment for treatment

The AWS DWMP does not identify a need for a medium term improvement solution and a 'wait and see' strategy is set out for the longer term to 2050; this is in keeping with the capacity assessed as available in the WCS.

The current AWS Business Plan for the AMP8 investment period does not include for planned investment at Great Bromley WRC.

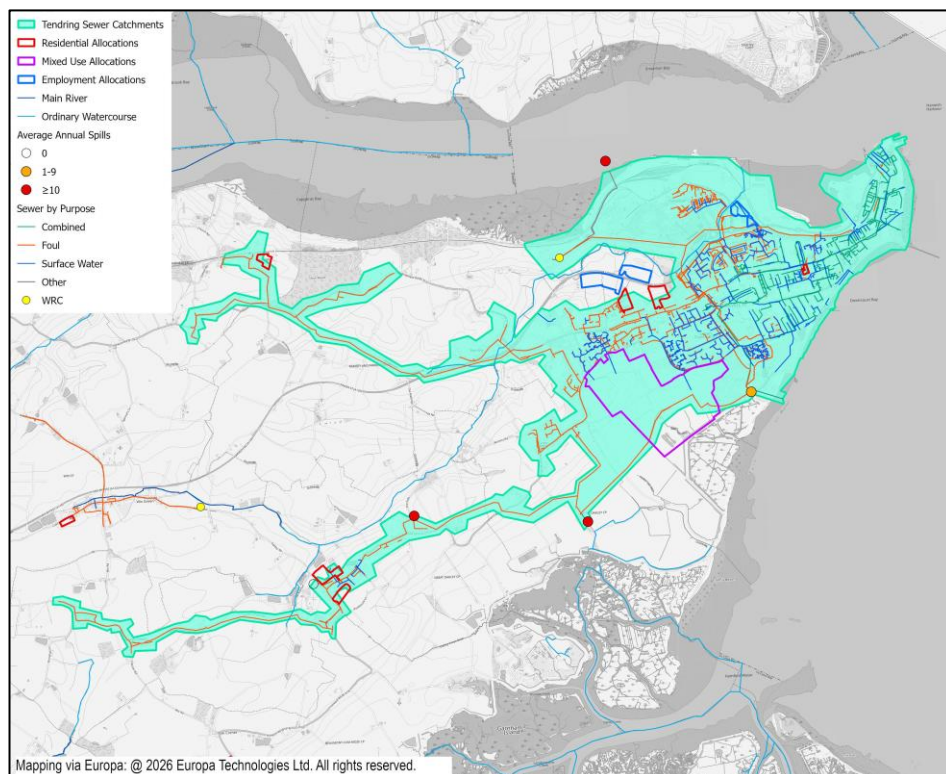
AWS recommend that all new WRCs brought forward by developers should be built to a prescribed standard that is capable of adoption by water companies.

Sewer network and CSOs

There is 1 CSOs in the WRC sewer network as shown in Appendix F, Figure 17. The DWMP identifies Great Bromley WRC as having a high risk related to the planning objective of managing storm overflows, indicating there is a sewer spill risk in the catchment. To enable spills to be managed in the long-term, the WCS recommends a policy for allocated development in these settlements which prevents surface water generated from sites from being discharged to the foul sewer network.

6.2.7 Harwich and Dovercourt WRC

Figure 6-5: Harwich and Dovercourt WRC catchment - key features



6.2.7.1 Flow capacity assessment

Harwich and Dovercourt WRC serves the settlements of Harwich, Ramsey, Great Oakley and Little Oakley. A total of 2,802 dwellings would be constructed within the catchment of Harwich and Dovercourt WRC by the end of Plan period. 2,036 would be from an allocation within the new plan and 766 from existing commitments. This represents 14.6% of the total housing to be delivered across TDC over the Plan period.

It is estimated at the new development will supply an additional 530 m³/d to the WRC, equivalent to 17% of the current DWF. The WRC currently has headroom capacity in its permit (27% capacity remaining) which means there is sufficient headroom to serve the proposed growth without requiring WRC upgrades. No detailed water quality modelling was therefore required.

6.2.7.2 Environmental capacity assessment

High level water quality assessment

Harwich and Dovercourt WRC discharges into the Stour (Essex) Transitional WFD water body (GB520503613602). Load standstill calculations (see Appendix D) show a small change is required to quality permits to ensure no increase in current load. The changes are clearly within Technically Achievable Limits (TAL) and hence achievable within the Plan period.

Connected water dependent habitats

Table 4-4 shows that Harwich and Dovercourt WRC is hydrologically connected to the Stour Estuary SSSI and Stour and Orwell Estuaries SPA and Ramsar via the Ramsay River and its confluence with the tidal Stour.

Managing the pollutant load through a new discharge permit and implementation of improvements to the discharge quality from the WRC such that there is no change in overall pollutant load would also ensure no impact on the designated sites identified here.

Future investment for treatment

The AWS DWMP identifies that a SuDS strategy within the WRC drainage network may be required in the medium term with 25% surface water removal by 2050.

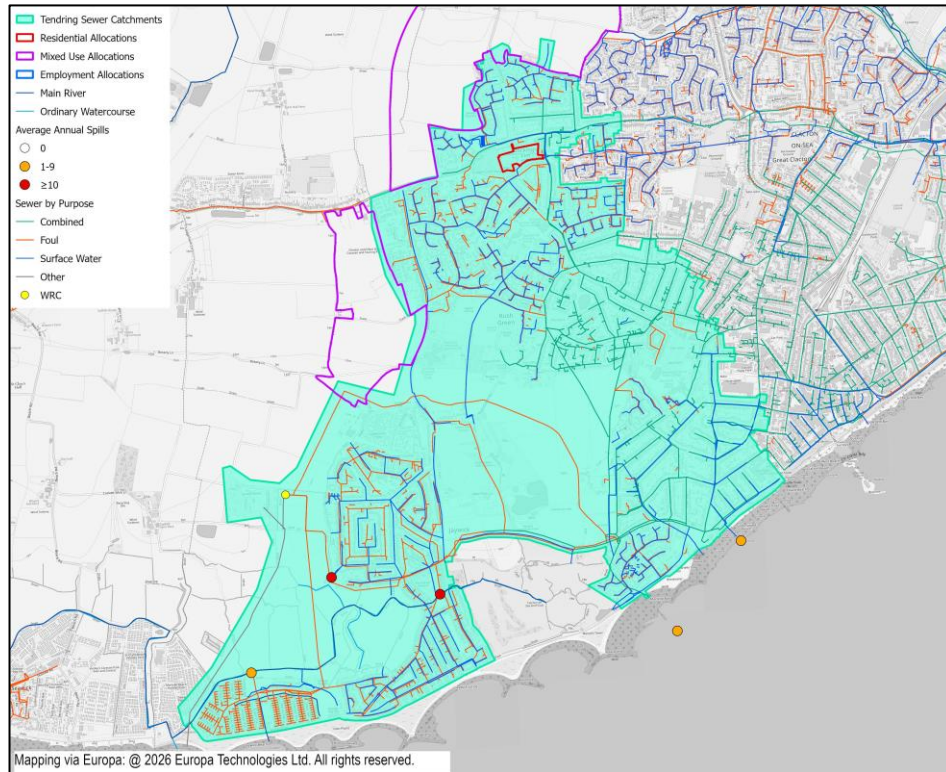
The current AWS Business Plan for the AMP8 investment period does not include planned investment at Harwich and Dovercourt WRC.

Sewer network and CSOs

There are 5 CSOs in the WRC sewer network as shown in Appendix F, Figure 17. The DWMP identifies Harwich and Dovercourt WRC as having a high risk related to the planning objective of managing storm overflows, indicating there is a sewer spill risk in the catchment. To enable spills to be managed in the long-term, the WCS recommends a policy for allocated development in these settlements which prevents surface water generated from sites from being discharged to the foul sewer network.

6.2.8 Jaywick WRC

Figure 6-6: Jaywick WRC catchment - key features



6.2.8.1 Flow capacity assessment

Jaywick WRC serves the settlements of Jaywick and Bocking's Elm. A total of 3,731 dwellings would be constructed within the catchment of Jaywick WRC by the end of Plan period. 1,040 would be from an allocation within the new plan and 2,691 from existing commitments. This represents 19.4% of the total housing to be delivered across TDC over the Plan period.

The WRC is currently near its permitted maximum discharge volumes and has no DWF capacity to accommodate further connections without a change in permit. Therefore, additional environmental capacity assessment is required. There is no available chemistry or flow data available for the receiving watercourse and the watercourse may be tidally influenced at the outfall location. RQP modelling has therefore not been undertaken and a load standstill calculation has been completed to determine consent conditions required for future discharge volumes.

6.2.8.2 Environmental capacity assessment

High level water quality assessment

Jaywick WRC discharges into the Essex Transitional WFD water body (GB650503520001). Load standstill calculations (see Appendix D) show a small change is required to quality permits to ensure no increase in current load. The changes are clearly within Technically Achievable Limits (TAL) and hence achievable within the Plan period.

Connected water dependent habitats

Table 4-4 shows that Jaywick WRC is hydrologically connected to Essex Estuaries SAC via its direct discharge into the North Sea.

The discharge is also linked to the Jaywick and Clacton Beach Martello Tower designated Bathing Water.

Managing the pollutant load through a new discharge permit and implementation of improvements to the discharge quality from the WRC such that there is no change in overall pollutant load would also ensure no impact on the designated sites identified here.

Future investment for treatment

The AWS DWMP identifies that no risk is identified in the medium term with 10% surface water removal by 2050.

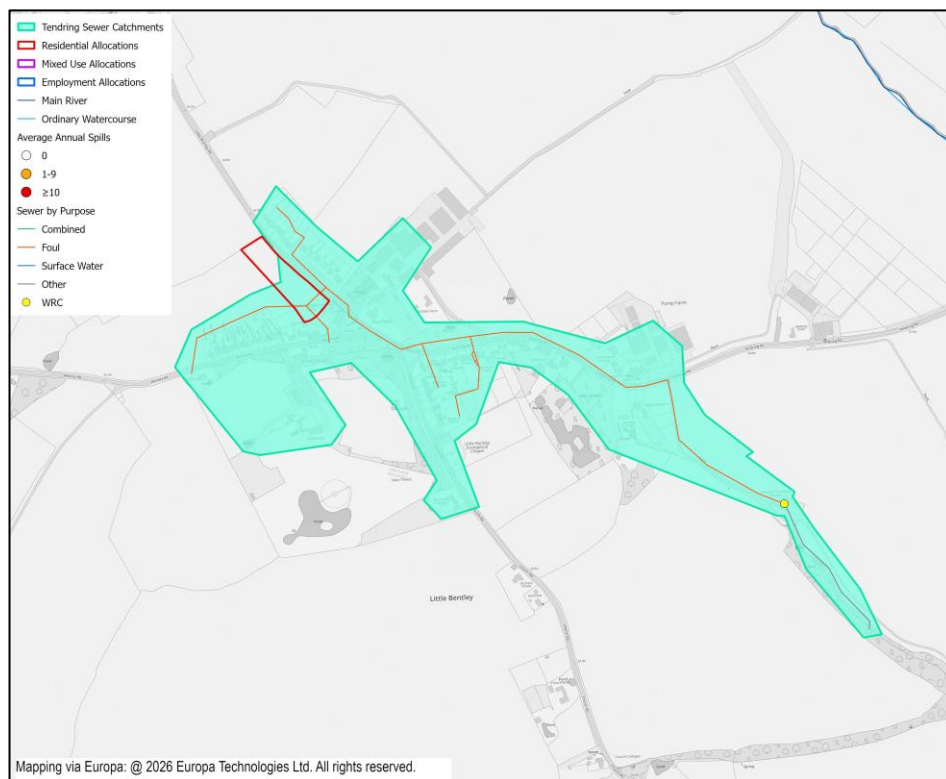
The current AWS Business Plan for the AMP8 investment period does not include for planned investment at Jaywick WRC.

Sewer network and CSOs

There are 6 CSOs in the WRC sewer network as shown in Appendix F, Figure 17. The DWMP identifies Jaywick WRC as having a high risk related to the planning objective of managing storm overflows, indicating there is a sewer spill risk in the catchment.

6.2.9 Little Bentley Tendring Road WRC

Figure 6-7: Little Bentley Tendring Road WRC catchment - key features



6.2.9.1 Flow capacity assessment

Little Bentley Tendring Road WRC serves the settlements of Little Bentley and Mill Green. A total of 12 dwellings would be constructed within the catchment of Little Bentley Tendring Road WRC by the end of Plan period, all from a single allocation within the new plan. This is a very small percentage of the total housing to be delivered across TDC over the Plan period.

The WRC currently has a descriptive permit. These permits apply to small WRC's that serve a small number of properties and are for low-risk discharges. Descriptive permits do not contain any numerical limit conditions for the discharge but rely on descriptive conditions only – meaning there is generally no requirement for flow or effluent quality measurement at these sites. AWS' position is that locations with descriptive works are unsuitable for any form of growth that requires a connection to their network, unless proposals are supported by WRC monitoring data for a one-year period to demonstrate there is headroom available to accommodate the proposed growth. Alternatively, proposed new development may be served by alternative/private wastewater treatment facilities such as package treatment plants and subject to the general binding rules or required discharge permit from the EA¹⁶.

6.2.9.2 Environmental capacity assessment

High level water quality assessment

Little Bentley Tendring Road WRC discharges into the Holland Brook WFD water body (GB105037077810). A water quality assessment has not been undertaken for Little Bentley Tendring Road WRC as the WRC currently has a descriptive permit.

¹⁶ Anglian Water (2025) Water Recycling Centres with Descriptive Permits Anglian Water Position Statement. <https://www.anglianwater.co.uk/siteassets/developers/new-content/p--c/descriptive-works-position-statement-march-2025.pdf> (Accessed November 2025)

Connected water dependent habitats

Little Bentley Tendring Road WRC is not hydrologically connected to any water dependant habitats.

The discharge is indirectly linked to the Holland designated Bathing Water.

Future investment for treatment

The AWS DWMP identifies a 'wait and see' strategy for the medium and longer term to 2050.

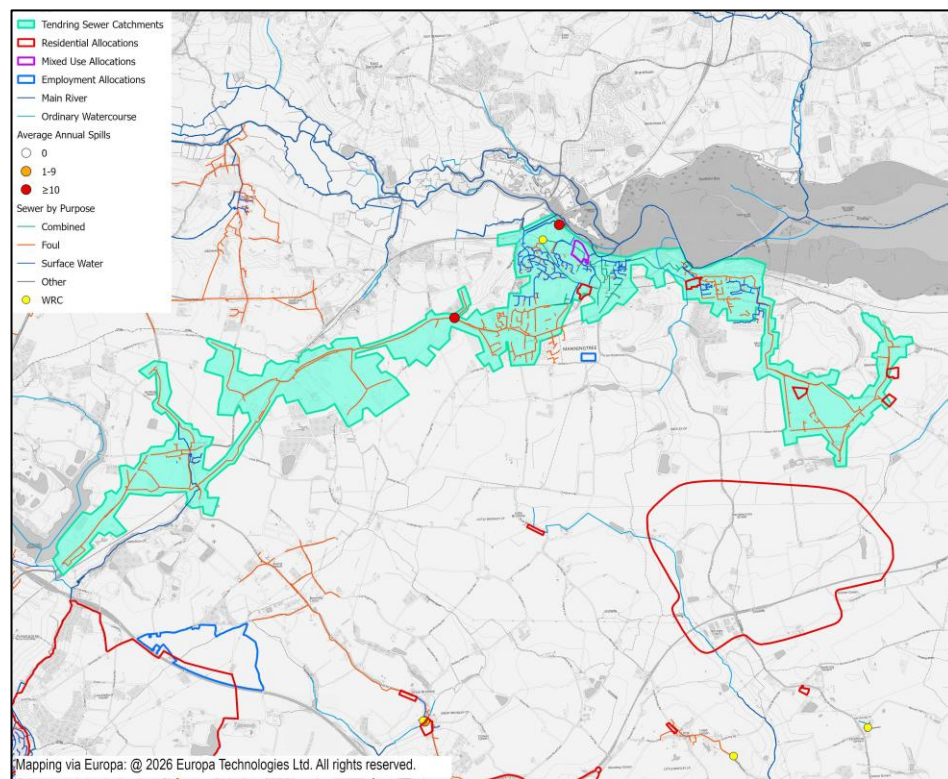
The current AWS Business Plan for the AMP8 investment period does not include for planned investment at Little Bentley Tendring Road WRC.

Sewer network and CSOs

There are no CSOs in the WRC sewer network as shown in Appendix F, Figure 17.

6.2.10 Manningtree WRC

Figure 6-8: Manningtree WRC catchment - key features



6.2.10.1 Flow capacity assessment

Manningtree WRC serves the settlements of Manningtree, Mistley, Lawford, Bradfield and Ardleigh. A total of 1,064 dwellings would be constructed within the catchment of Manningtree WRC by the end of Plan period. 245 would be from allocations within the new plan and 819 from existing commitments. This

represents 5.5% of the total housing to be delivered across TDC over the Plan period.

The WRC is currently at its permitted maximum discharge volumes and has no capacity to accommodate further connections without a change in permit. Therefore, additional environmental capacity assessment was required. The WRC discharges to tidal waters, and hence RQP modelling was not suitable. A load standstill calculation has been completed to determine consent conditions required for future discharge volumes.

6.2.10.2 Environmental capacity assessment

High level water quality assessment

Manningtree WRC discharges into the Stour (Essex) Transitional WFD water body (GB520503613602). Load standstill calculations (see Appendix D) show a minimal change is required to quality permits to ensure no increase in current load. The changes are clearly within Technically Achievable Limits (TAL) and hence achievable within the Plan period.

Connected water dependent habitats

Table 4-4 shows that Manningtree WRC is hydrologically connected to the Stour Estuary SSSI and Stour and Orwell Estuaries SPA and Ramsar via the Stour Estuary (Suffolk).

Managing the pollutant load through a new discharge permit and implementation of improvements to the discharge quality from the WRC such that there is no change in overall pollutant load would also ensure no impact on the designated sites identified here.

Future investment for treatment

The AWS DWMP identifies that a SuDS strategy within the WRC drainage network may be required in the medium term along with increased capacity at the WRC. In the longer term, the strategy by 2050 is 25% surface water removal.

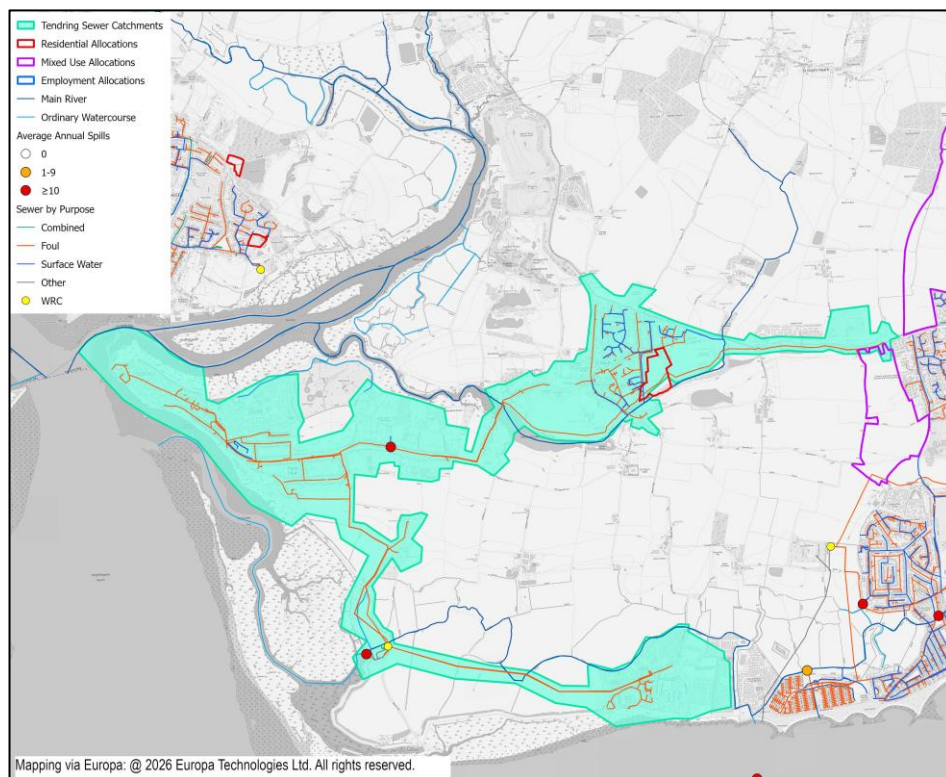
The current AWS Business Plan for the AMP8 investment period does not include for planned investment at Manningtree WRC. AWS indicate that the Manningtree WRC is highly constrained with little scope for expansion. AWS suggest that future development is phased in the catchment to enable future investment to come forward in subsequent AMPs from 2030.

Sewer network and CSOs

There are 2 CSOs in the WRC sewer network as shown in Appendix F, Figure 17. The DWMP identifies Manningtree WRC as having a high risk related to the planning objective of managing storm overflows, indicating there is a sewer spill risk in the catchment. To enable spills to be managed in the long-term, the WCS recommends a policy for allocated development in these settlements which prevents surface water generated from sites from being discharged to the foul sewer network.

6.2.11 St Osyth WRC

Figure 6-9: St Osyth WRC catchment - key features



6.2.11.1 Flow capacity assessment

St Osyth WRC serves the settlements of St Osyth and Point Clear. A total of 470 dwellings would be constructed within the catchment of St Osyth WRC by the end of Plan period. 100 would be from an allocation within the new plan and 370 from existing commitments. This represents 2.4% of the total housing to be delivered across TDC over the Plan period.

The WRC is currently below its permitted maximum discharge volumes; however, it is predicted to have inadequate capacity to accommodate flows from all planned growth without a change in permit. The WRC discharges to tidal waters, and hence RQP modelling was not suitable. A load standstill calculation has been completed to determine consent conditions required for future discharge volumes.

6.2.11.2 Environmental capacity assessment

High level water quality assessment

St Osyth WRC discharges into the Blackwater Outer Transitional WFD water body (GB650503200000). Load standstill calculations (see Appendix D) show a small change is required to quality permits to ensure no increase in current load. The changes are clearly within Technically Achievable Limits (TAL) and hence achievable within the Plan period.

Connected water dependent habitats

Table 4-4 shows that St Osyth WRC is hydrologically connected to the Colne Estuary SSSI, Ramsar and SPA (including the Essex Estuaries SAC) via the St Osyth Drain into the tidal Colne.

The discharge is also linked to the designated Shellfish Waters of the Colne and Dengie.

Managing the pollutant load through a new discharge permit and implementation of improvements to the discharge quality from the WRC such that there is no change in overall pollutant load would also ensure no impact on the designated sites identified here.

Future investment for treatment

The AWS DWMP identifies that a SuDS strategy within the WRC drainage network may be required in the medium term with 50% surface water removal by 2050.

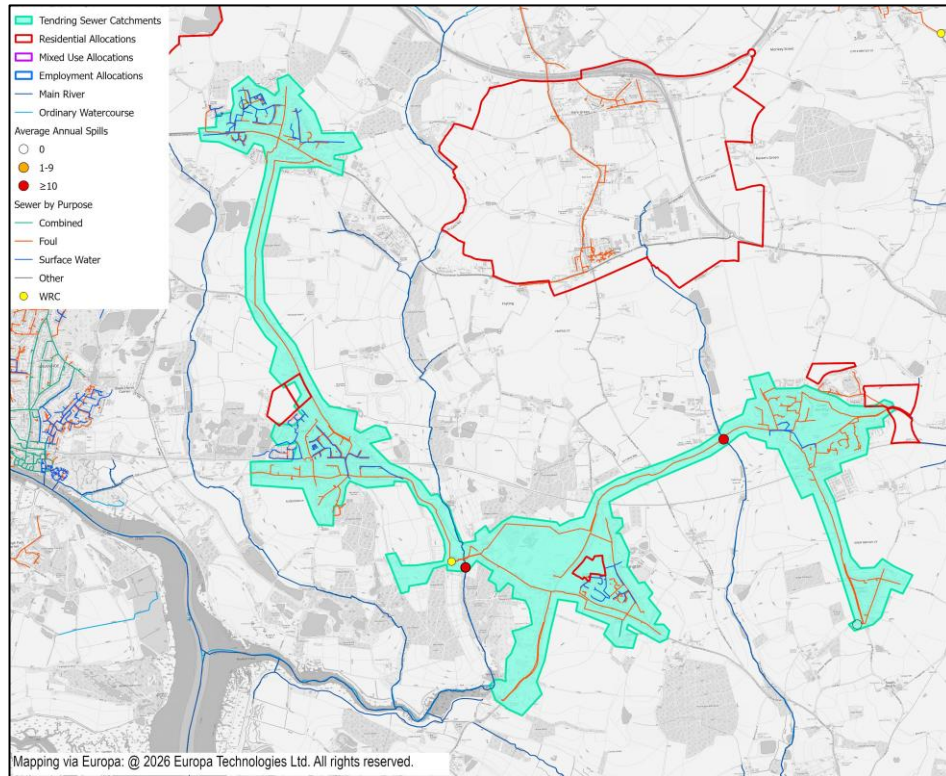
The current AWS Business Plan for the AMP8 investment period does not include for planned investment at St Osyth WRC.

Sewer network and CSOs

There are 3 CSOs in the WRC sewer network as shown in Appendix F, Figure 17. The DWMP identifies St Osyth WRC as having a high risk related to the planning objective of managing storm overflows, indicating there is a sewer spill risk in the catchment. To enable spills to be managed in the long-term, the WCS recommends a policy for allocated development in these settlements which prevents surface water generated from sites from being discharged to the foul sewer network.

6.2.12 Thorrington WRC

Figure 6-10: Thorrington WRC catchment - key features



6.2.12.1 Flow capacity assessment

Thorrington WRC serves the settlements of Great Bentley, Thorrington, Alresford and Elmstead Market. A total of 796 dwellings would be constructed within the catchment of Thorrington WRC by the end of Plan period. 480 would be from an allocation within the new plan and 316 from existing commitments. This

represents 4.1% of the total housing to be delivered across TDC over the Plan period.

It is estimated that the additional development would contribute 239 m³/d to the WRC, equivalent to 13% of the current DWF. The WRC currently has a large headroom capacity in its permit (22% capacity remaining) which means there is sufficient headroom to serve the proposed growth without requiring WRC upgrades. No detailed water quality modelling was therefore required.

6.2.12.2 Environmental capacity assessment

High level water quality assessment

Thorrington WRC discharges into the Colne (Transitional) WFD water body (GB520503713800). Load standstill calculations (see Appendix D) show a minimal change is required to quality permits to ensure no increase in current load. The changes are clearly within Technically Achievable Limits (TAL) and hence achievable within the Plan period.

Connected water dependent habitats

Table 4-4 shows that Thorrington WRC is hydrologically connected to the Colne Estuary SSSI, Ramsar and SPA (including the Essex Estuaries SAC) via the Tenpenny Brook into the tidal Colne.

The discharge is also indirectly linked to the Brightlingsea designated Bathing Water and the designated Shellfish Waters of the Colne, Dengie and Pyefleet.

Managing the pollutant load through a new discharge permit and implementation of improvements to the discharge quality from the WRC such that there is no change in overall pollutant load would also ensure no impact on the designated sites identified here.

Future investment for treatment

The AWS DWMP identifies that a SuDS strategy within the WRC drainage network may be required in the medium term with 10% surface water removal by 2050.

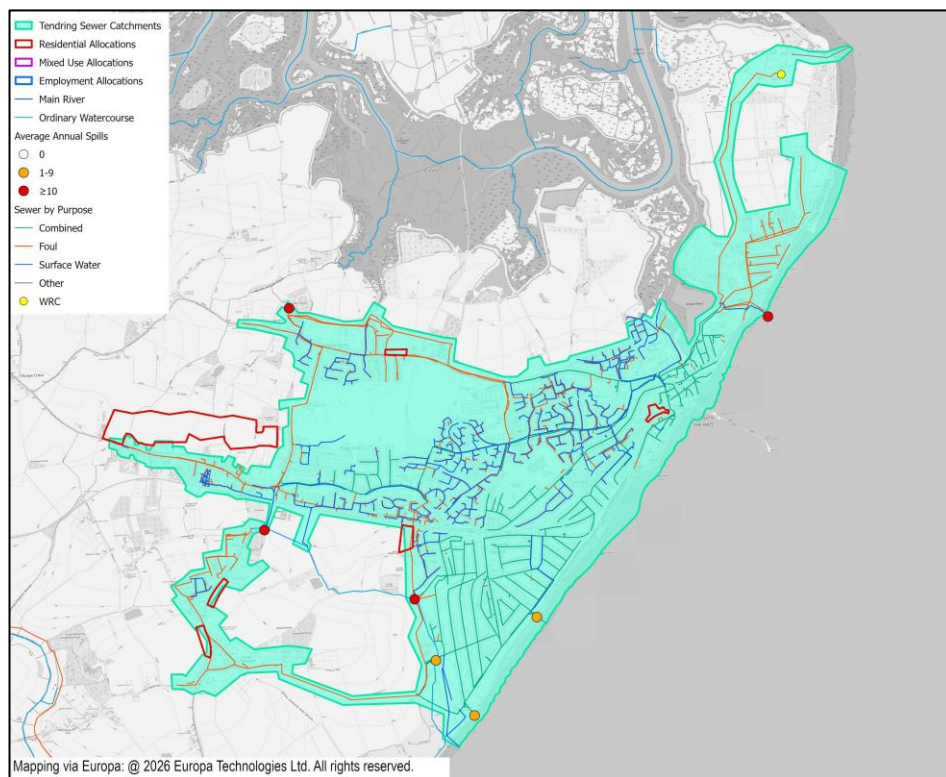
The current AWS Business Plan for the AMP8 investment period does not include for planned investment at Thorrington WRC.

Sewer network and CSOs

There are 4 CSOs in the WRC sewer network as shown in Appendix F, Figure 17. The DWMP identifies Thorrington WRC as having a high risk related to the planning objective of managing storm overflows, indicating there is a sewer spill risk in the catchment. To enable spills to be managed in the long-term, the WCS recommends a policy for allocated development in these settlements which prevents surface water generated from sites from being discharged to the foul sewer network.

6.2.13 Walton on the Naze WRC

Figure 6-11: Walton on the Naze WRC catchment - key features



6.2.13.1 Flow capacity assessment

Walton on the Naze WRC serves the settlements of Frinton-on-Sea, Kirby Cross, Kirby-le-Soken, Walton on the Naze and Great Holland. A total of 927 dwellings would be constructed within the catchment of Walton on the Naze WRC by the end of Plan period. 560 would be from an allocation within the new plan and 367 from existing commitments. This represents 4.8% of the total housing to be delivered across TDC over the Plan period.

It is estimated that the additional development would contribute 278 m³/d to the WRC, equivalent to 7% of the current DWF. The WRC currently has a large headroom capacity in its permit (36% capacity remaining) which means there is sufficient headroom to serve the proposed growth without requiring WRC upgrades. No detailed water quality modelling was therefore required.

6.2.13.2 Environmental capacity assessment

High level water quality assessment

Walton on the Naze WRC discharges into the Harwich Approaches (Transitional) WFD water body (GB650503190000). Load standstill calculations (see Appendix D) show a minimal change is required to quality permits to ensure no increase in current load. The changes are clearly within Technically Achievable Limits (TAL) and hence achievable within the Plan period.

Connected water dependent habitats

Table 4-4 shows that Walton on the Naze WRC is hydrologically connected to the Hamford Water SSSI, SPA and Ramsar via the Harwich Approaches (Transitional) water body.

The discharge is also indirectly linked to the Walton designated Bathing Water.

Managing the pollutant load through a new discharge permit and implementation of improvements to the discharge quality from the WRC such that there is no change in overall pollutant load would also ensure no impact on the designated sites identified here.

Future investment for treatment

The AWS DWMP identifies that a 'wait and see' strategy is set out for the medium term with 10% surface water removal by 2050. These solutions are required to ensure sufficient sewer network connectivity capacity as well as manage water quality of discharges connected to Bathing Water and Shellfish Water.

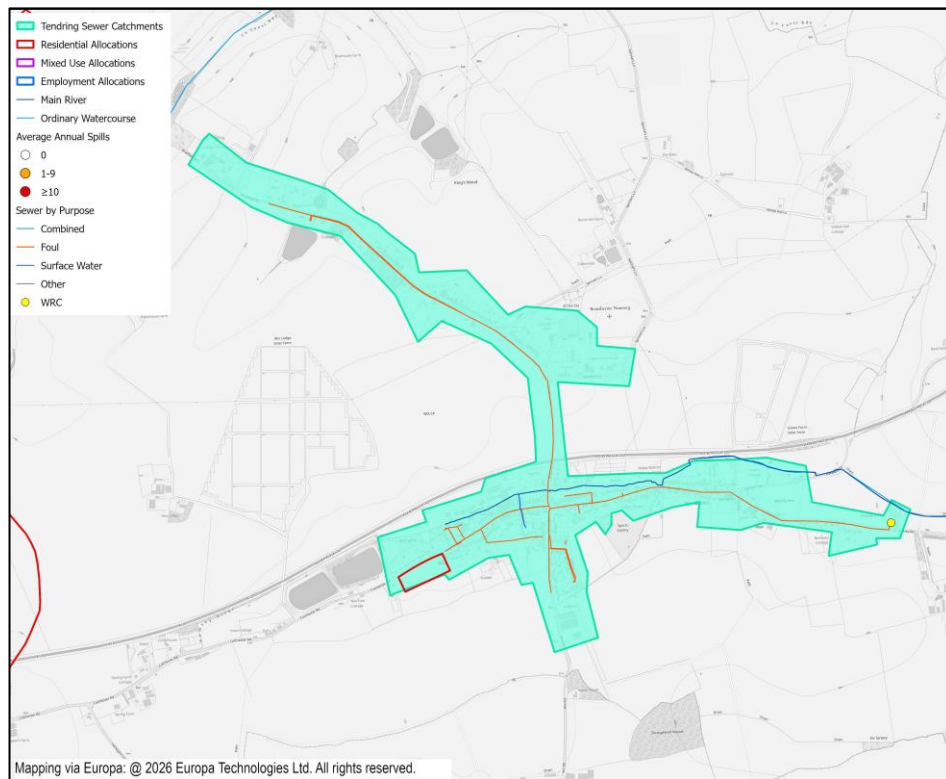
The current AWS Business Plan for the AMP8 investment period does not include for planned investment at Walton on the Naze WRC.

Sewer network and CSOs

There are 7 CSOs in the WRC sewer network as shown in Appendix F, Figure 17. The DWMP identifies Walton on the Naze WRC as having a high risk related to the planning objective of managing storm overflows, indicating there is a sewer spill risk in the catchment, which is linked to Bathing Waters compliance. To enable spills to be managed in the long-term, the WCS recommends a policy for allocated development in these settlements which prevents surface water generated from sites from being discharged to the foul sewer network.

6.2.14 Wix WRC

Figure 6-12: Wix WRC catchment - key features



6.2.14.1 Flow capacity assessment

Wix WRC serves the settlements of Wix and Wix Green. A total of 20 dwellings would be constructed within the catchment of Wix WRC by the end of Plan period. All of these would be from allocations within the new plan. This is a very small percentage of the total housing to be delivered across TDC over the Plan period.

It is estimated that the additional development would contribute 6 m³/d to the WRC, equivalent to 5% of the current DWF. The WRC currently has a large headroom capacity in its permit (23% capacity remaining) which means there is sufficient headroom to serve the proposed growth without requiring WRC upgrades. No detailed water quality modelling was therefore required.

6.2.14.2 Environmental capacity assessment

High level water quality assessment

Wix WRC discharges into the Stour (Essex) Transitional WFD water body (GB520503613602). Load standstill calculations (see Appendix D) show a minimal change is required to quality permits to ensure no increase in current load. The changes are clearly within Technically Achievable Limits (TAL) and hence achievable within the Plan period.

Connected water dependent habitats

Table 4-4 shows that Manningtree WRC is hydrologically connected to the Stour Estuary SSSI and Stour and Orwell Estuaries SPA and Ramsar via the Ramsay River.

Managing the pollutant load through a new discharge permit and implementation of improvements to the discharge quality from the WRC such that there is no change in overall pollutant load would also ensure no impact on the designated sites identified here.

Future investment for treatment

The AWS DWMP does not identify a need for a medium term improvement solution and a 'wait and see' strategy is set out for the longer term to 2050; this is in keeping with the capacity assessed as available in the WCS.

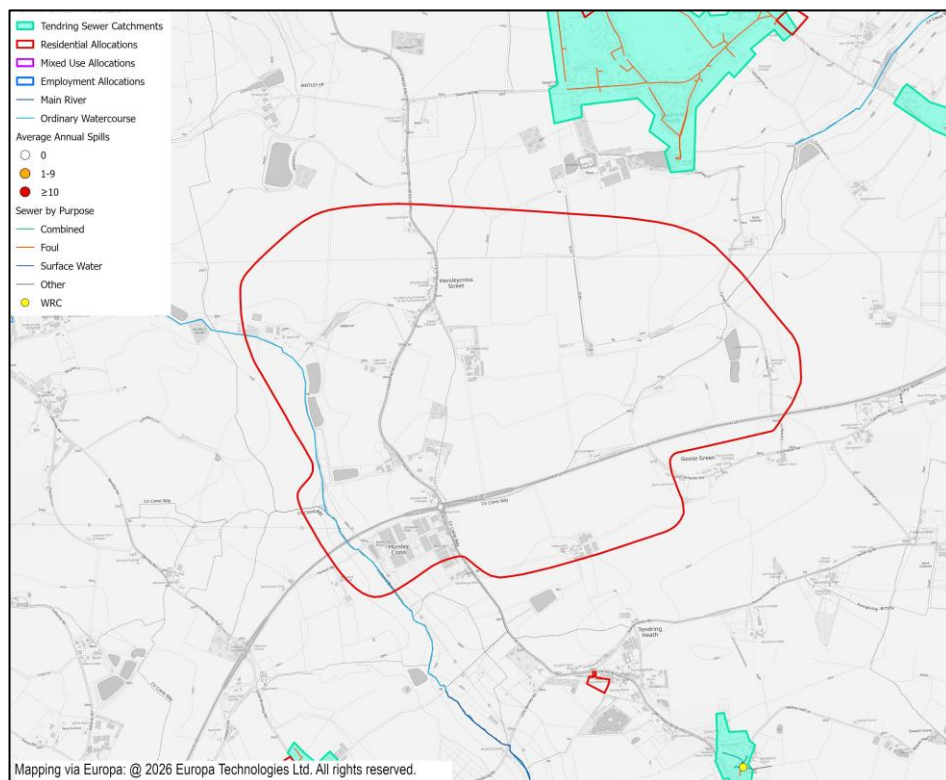
The current AWS Business Plan for the AMP8 investment period does not include for planned investment at Wix WRC.

Sewer network and CSOs

There are no CSOs in the WRC sewer network as shown in Appendix F, Figure 17, however the DWMP identifies Wix WRC as having a high risk related to the planning objective of managing storm overflows, indicating there is a sewer spill risk in the catchment. To enable spills to be managed in the long-term, the WCS recommends a policy for allocated development in these settlements which prevents surface water generated from sites from being discharged to the foul sewer network.

6.2.15 Horsley Garden Community

Figure 6-13: Location of Horsley Garden Community relative to wastewater assets



6.2.15.1 Capacity assessment

The Horsley Garden Community location is located within an area that is not currently connected to a sewer network draining to an existing WRC. A new WRC may be required for this development. This WCS examines the feasibility of a new WRC facility by establishing the effluent quality required for a discharge to

the nearest watercourse (Holland Brook) given the need to maintain the current water quality status of this watercourse.

The new WRC would need to serve 1700 dwellings. Note: The WCS assessed 1,540 dwellings from allocations within the new Local Plan; however, the latest estimate indicates that this may increase to 1,700 dwellings.

TDC have confirmed that the no new dwellings would be delivered within the first 5 years of the updated Local Plan period.

6.2.15.2 Environmental capacity assessment

High level water quality assessment

A new WRC would discharge into the Holland Brook, specifically the WFD water body (GB105037077810) and RQP modelling for the discharge into this water body has been undertaken. Full results are provided in Appendix E. In summary, the modelling demonstrates that:

- It is not possible to ensure no deterioration of the current High WFD status at the assumed future discharge point point after growth for Ammonia, as the quality of discharge would not be achievable within TAL.
- A permit quality condition could be applied within TAL to ensure no deterioration in the current High WFD BOD status and the Poor WFD phosphate status of the Holland Brook water body at the assumed future discharge point.
- Tests assuming the phosphate quality of the Holland Brook water body is improved to the future target Moderate WFD Status in the future (through catchment measures) show that a permit quality within TAL could be applied at the new WRC to maintain this status following development. Growth would therefore not limit attainment of future Moderate Status.

It may therefore not be appropriate to treat the entire wastewater flow arising from the future Horsely Garden community at a single WRC which discharges to Holland Brook due to impacts on watercourse ammonia concentrations. Future options for the treatment and management of wastewater flows from this development would need to be evaluated as part of the development planning

and agreed with AWS and the Environment Agency. Options may include routing flows from different areas of the site to a different WRC (new or existing) to reduce the impacts on a single receiving waterbody.

Connected water dependent habitats

Holland Brook is not hydraulically connected to any water dependent habitats but is indirectly linked to the Holland designated Bathing Water.

Future investment for treatment

The current AWS Business Plan for the AMP8 investment period does not include for planned investment for a new WRC to treat the Horsley Garden Community wastewater flows.

AWS suggest that a new wastewater treatment facility would be required to serve the development, and the developer should investigate opportunities to bring this forward to serve the site where there is no existing network. AWS recommend that an appropriate discharge point for a new WRC should be discussed with the Environment Agency. Developers should look at water holistically and consider integrated water management measures, such as water reuse, wherever possible, to reduce potable water use and potentially reduce wastewater flows.

AWS recommend that all new WRCs brought forward by developers should be built to a prescribed standard that is capable of adoption by water companies.

Sewer network and CSOs

There are no CSOs in the WRC sewer network as shown in Appendix F, Figure 17.

6.2.16 Allocations without a WRC catchment

A small number of allocations within the updated Local Plan are located in areas that are not currently connected to a sewer network draining to an existing WRC. These include:

- MSA22, Haulage Depot, Heath Road, Tendring Village
- MSA20, Land south of Shop Road, Little Bromley
- MSA8, Land adj Village Hall, Harwich Road, Beaumont

In these locations, it may be possible to obtain a new public sewer connection via a formal request to AWS; however, this may be infeasible or too costly to deliver in comparison to the size of the development. In these circumstances, the Environment Agency will only accept and permit an alternative non-mains solution if they deem it is not reasonable to connect to the existing system. This would need to be discussed on a case by case basis by the developer with AWS and the Environment Agency. Options for non-mains solutions include:

- A site specific sewage treatment works;
- Septic tanks; or,
- Cesspits.

It is recommended that the developers for these sites demonstrate they have undertaken appropriate liaison with AWS and the Environment Agency as part of their planning applications, and demonstrate that a solution to treat wastewater is achievable and permissible.

7. Water supply assessment

This part of the WCS sets out how AW proposes to meet the increase in expected water demand in the WRZ covering TDC (Brett WRZ). It then summarises a comparison of AW's WRMP projections planned growth within the WRZ with growth targets proposed by TDC in the Local Plan, to determine whether the WRMP adequately caters for the Local Plan level of growth.

Finally, it considers requirements for a policy to reduce water demand in new development to ensure that the supply and demand balance predicted by AWS can be achieved.

7.1 The supply and demand balance for TDC

7.1.1 Baseline summary

As set out in 5.3.4 of this report, AW calculate a supply surplus in the Brett WRZ until 2040 without measures to manage demand and provide additional water supply but accounting for climate change and population growth. This means the majority of the TDC area would have sufficient potable water to meet AW's minimum supply standards of service without the implementation of water resource management measures. From 2040 onwards (and into the last 2 years of the updated TDC Local Plan), AW calculate a supply deficit in the Brett WRZ. Since daily licences for the Brett group groundwater sources are much higher than the five-year rolling capability, particularly after WFD licence capping, the risk of deficits in the supply-demand balance in the Brett WRZ is dominated by the average deployable output condition.

7.1.2 Proposed future solutions

AW sets out their proposed future solutions in their published WRMP. As a result of the anticipated ambitious governmental target on demand management, no schemes are required in the statutory plan period (2025-2050), even under the 'high' (enhanced) environmental destination scenario.

If government-led demand management initiatives are not successful, then additional schemes are only required if 'high' environmental destination is required under that scenario, so the risk that supply side development will be required for this WRZ is very small.

AW plan to revert back to a 50/50 sharing arrangement with Anglian Water for Ardleigh reservoir, post 2025. AW recognise in their published WRMP that they will need to refine operational rules and governance of the Ardleigh reservoir to ensure this is robustly implemented, however there is no notable investment required for this solution.

7.1.3 Comparing growth – WRMP and the Local Plan

Consultation with AW has indicated that the number of dwellings to be delivered over the TDC plan period is broadly in-line with the forecast dwelling and population increases assumed within the WRMP supply and demand forecasting process.

The WRMP shows that AW expect to see an increase in demand from approximately 30.5 MI/d in 2025/26 to 37 MI/d by the end of the Local Plan period in 2042, an increase of approximately 6.5 MI/d. This includes both household and non-household use.

The estimated increase in demand has been calculated for the future scenarios based on the housing numbers provided by TDC. These calculations also include an allowance for non-household use. Assuming the mandatory PCC standard as set out in the Building Regulations (Part G) which requires new homes to be built to use no more than 125 l/p/d, an increase to 7.22 MI/d has been calculated as shown in Figure 7-1. More detail on household domestic water demand is outlined in Section 7.2. Therefore the demand from the number of dwellings to be delivered over the TDC Local Plan period is likely to be covered by the demand increase within the WRMP.

This means the WRMP conclusions of AW can be relied upon as evidence that water supply to meet domestic supply is planned for in the long-term and not a constraint to the number of dwellings allocated,. The WRMP is subject to various statutory environmental assessments¹⁷, including Strategic Environmental Assessment, WFD Assessment and Habitat Regulations Assessment, further demonstrating that an environmentally sustainable water supply is likely to be available to meet this level of demand.

7.2 Lowering future demand

The comparison of planned growth against the WRMP household projections shows planned housing growth is generally catered for; however, there are clear drivers set out in this WCS, and within legislation and wider national policy and strategies for targeting policies which reduce both PCC for new dwellings and demand in non-household water use.

7.2.1 Household demand – lowering PCC

At the time of completing this WCS, the only national mandatory PCC standard is set out in the Building Regulations (Part G)¹⁸, requiring new homes to be built to use no more than 125 l/p/d. The Regulations recommend an optional standard of 110 l/p/d, but this optional standard is not mandated through the Regulations. In October 2025, Defra and the Ministry of Housing Communities and Local Government (MHCLG) jointly launched a consultation on reviewing the water efficiency standards in the Building Regulations including a reduction in the mandatory target to 105 l/p/d and the optional target to 100 l/p/d. This consultation was due to close in December 2025.

Whilst government have set out (and commenced) actions to review the need for higher PCC standards for new homes in water stressed parts of England, those actions have yet to result in mandated standards; at the time of completing this WCS, the findings from the consultation of water efficiency targets in the Building Regulations were not available. Therefore, Local Plans remain one of the only vehicles to mandate higher water efficiency standards for new development through effective local policy.

7.2.1.1 Demonstrating PCC reduction outcomes

Five household domestic water demand scenarios have been tested in this WCS (detailed in Table 7-1) to demonstrate the effect that lower PCCs can have on managing demand. These reflect a range of possible future PCCs for new dwellings ranging from the Building Regulations Mandatory standard to a PCC which would require both the highest efficiency fixtures and fittings as well as some level of water reuse technology for non-potable water uses. The estimated increase in demand has been calculated for the future scenarios and is shown graphically in Figure 7-1.

Table 7-1: Household domestic water demand scenarios.

Projection	PCC (l/p/d)	Reasoning
Projection 1	125	Building Regulations mandatory standard
Projection 2	110	Building Regulations optional standard.
Projection 3	100	A lower intervention approach using efficient fixtures and fittings
Projection 4	85	Lowest likely use achievable with only a fixtures and fittings approach.
Projection 5	80	Maximum efficiency fixtures and fittings and reuse (via rainwater harvesting).

¹⁷ Available at: <https://www.anglianwater.co.uk/corporate/strategies-and-plans/water-resources-management-plan/> (Accessed 30/01/2025)

¹⁸ The Building Regulations (2010) Part G

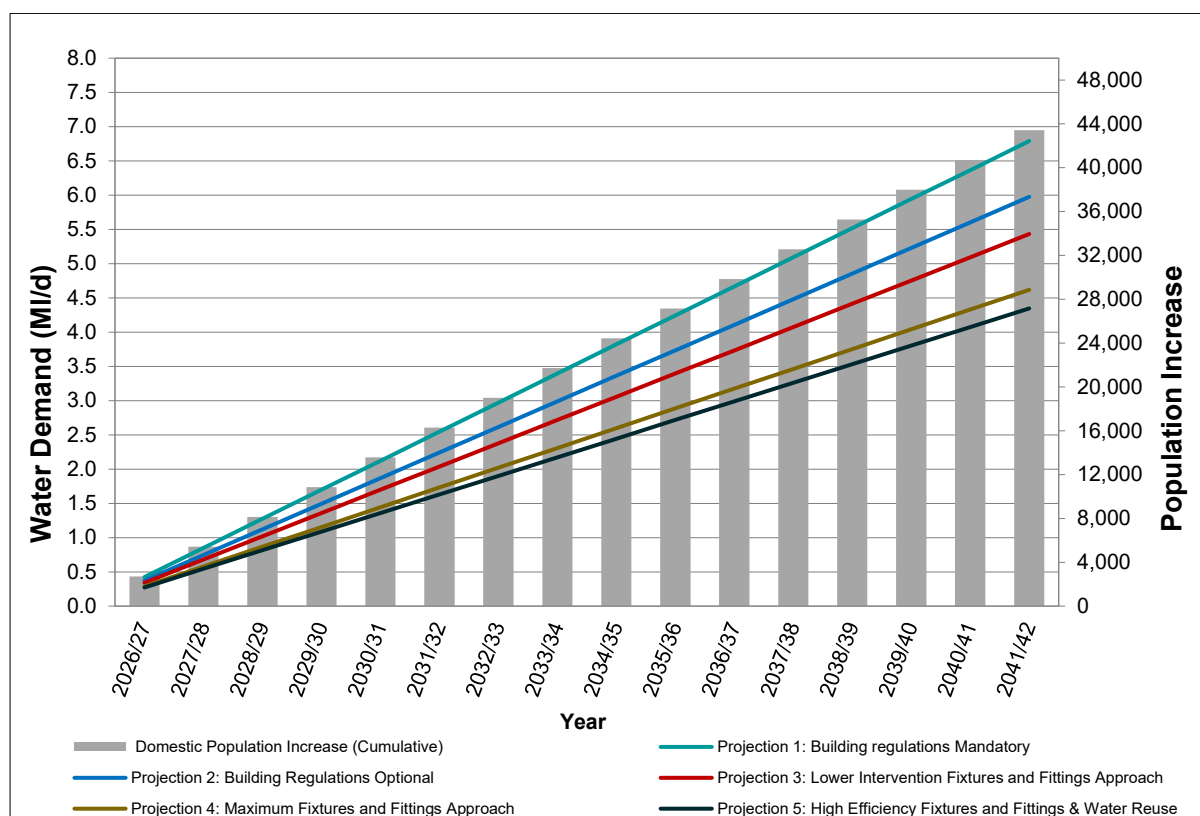


Figure 7-1: Household domestic water demand scenarios

The results show that, by 2042/43 the maximum increase in domestic water demand would be 6.79 MI/d (assuming PCC limited only by Building Regulations mandatory standard). Adopting a policy delivering 100 l/p/d PCC would result in a lower total demand by the end of the plan period, at 5.43 MI/d (1.36 MI/d less than if a business as usual approach is adopted). Further reducing the PCC to 85 l/p/d would result in a significantly lower total demand by the end of the plan period, at 4.62 MI/d (2.17 MI/d less than if a business as usual approach is adopted). These savings would significantly improve the supply and demand balance in the Brett WRZ increasing resilience and reducing reliance on the timing of new strategic resources linked to Environmental Destinations in the long term.

7.2.1.2 Drivers for PCC reduction

WCS identified drivers

The WCS sets out that TDC is in area classified as seriously water stressed, in particular as Essex relies on imports of water from outside of the County as it does not have sufficient resources within the surface water catchments and groundwater locally to provide for its water needs.

The WCS has set out how demand management is essential to AW maintaining a surplus in the supply and demand balance to 2050 and achieving that beyond 2050. This requires both a reduction in existing household demand, as well as future demand from new households to be lowered as far as reasonably practicable. To deliver this part of their WRMP, AW are reliant on effective local plan policies to mandate higher water efficiency targets for new homes. Figure 7-1 demonstrate the efficacy of lowering PCC for new households on the cumulative increase in water demand by the end of the Plan period.

The WCS has also summarised that the preferred AW plan to balance supply and demand in the medium to long term relies on more ambitious governmental targets on demand management.

Finally, the WCS has set out that reducing PCC with a policy of 100 l/p/d (or lower to 85 l/p/d) would have significant benefit in maintaining treatment headroom at some of the WRCs because less wastewater would be generated. This may delay or prevent the need for upgrades to WRCs within the

Local Plan period and would have the effect of reducing impact on water bodies through reduced storm spills and reduced treated discharges from WRC.

Legislative, policy and strategy drivers for PCC reduction

The Environment Act 2021 includes a legally binding target to reduce the use of public water supply in England per head of population by 20% by 2038¹⁹, with interim targets by 2027 and 2032. Minimising water demand in new households (and within non-households) is central to achieving this target.

The Act mandates the 5-yearly update of the 25 Year Environment Plan (2018), with the first update published in 2023 as the Environmental Improvement Plan²⁰ (EIP). The EIP sets out the actions needed to deliver on the legally binding public water supply reduction target, including the following related to PCC reduction in new housing:

- The production of a Roadmap to Water Efficiency in new developments (included in the EIP and the proceeding Plan for Water).
- Develop clear guidance on 'water positive' or 'net zero water' developments.
- Review water efficiency options in planning and building regulations.
- Work with Ofwat to ensure the water industry can play a central role in retrofitting water efficient products in households, businesses, charities and the public sector.
- Deliver the mandatory water efficiency labelling scheme.
- Investigate dual pipe systems and water reuse options for new housing development as part of the review of the planning framework.
- Enable innovative water efficiency approaches in buildings, including technologies and approaches to funding and maintenance.

The government followed the EIP with the development of the 2023 "Plan for Water"²¹ which includes the following actions that build on, or are additional to the actions within the EIP:

- Establishing targets for water efficiency in new homes - the plan supports achieving a design standard of up to 85 l/p/d in new residential developments in some parts of England.
- Offering incentives to developers who incorporate water-saving measures and technologies in new homes - this includes financial incentives and support for implementing water reuse systems.
- Encouraging Integrated Water Management - promoting the use of integrated water management practices in new developments, such as rainwater harvesting and greywater recycling, to reduce reliance on mains water supply.

As part of the delivery of these actions, the Written Ministerial Statement (WMS) 'The Next Stage in Our Long Term Plan for Housing Update' (2023) encourages LPAs to set more stringent standards in Local Plans and in planning permissions in areas of water stress.

The Water Strategy for Essex²² summarises that Essex faces significant water stress, consuming more water per person than most of England. By 2050, the East of England is expected to experience a public water supply shortage of around 730 million litres per day. The strategy highlights the importance of reducing demand through the implementation of water-efficient technologies to tackle this. It also sets out an action to ensure implementation of systems to reuse and recycle water for non-potable purposes.

Related to the Essex Strategy, ECC are advising LPAs to target a PCC of between 80 l/p/d to 90 l/p/d for new homes through Local Plan updates to minimise water demand from housing growth. TDC have

¹⁹ Against a 2019/20 baseline

²⁰ Environmental Improvement Plan (2023) Defra

²¹ Plan for Water: Our Integrated Plan for Delivering Clean and Plentiful Water (2023) Defra

²² Water Strategy for Essex (2024) Essex County Council

advised that reducing PCC to 85 l/p/d is not currently viable, with Policy in the Regulation 18 Local Plan being set at 100 l/p/d.

Collectively, these drivers support the need for a local plan policy which sets water efficiency/PCC standards for new homes lower than the mandatory Building Regulations requirements. To this end, water companies in the east of England (including AW) have joined together with WRE, Natural England and the Environment Agency to produce a guidance document: Shared Standards in Water Efficiency for Local Plans²³ (referred to herein as the Shared Standards document). The Shared Standards document, along with other publicly available guidance, has been used in this WCS to set out an evidence base for how a policy of limiting water use in new homes to lower than 100 l/p/d in TDC can be achieved. This evidence is set out in the following sections.

7.2.1.3 How to achieve an 85 l/p/d PCC target

Fixtures and fittings approach

Within the industry, it has widely been considered that to achieve a standard lower than a 100 l/p/d requires some of the non-potable water uses in a home (e.g. toilet flushing, or outdoor use) to be met from recycled water (such as rainwater harvesting or greywater recycling) instead of using potable water for these purposes. However, Table 7.2 outlines water efficient appliances that are widely available on the market that can achieve 85 l/p/d through an efficient fixtures and fittings approach.

Table 7.2: Total Consumption of water efficient household appliances available to achieve a PCC of 85 l/p/d

Category	Unit	Litres	Basis	Product examples
Toilet	l/p/d	15.45	Short flush 3, Long flush 4.5	• EcoDelux Metro Water Saving Close Coupled Modern.
Basin Tap	l/p/d	7.9	4 litres / min	• Deva Profile Basin Taps (Pair) DCM101/FR101-4 Deck Mounted Chrome
Kitchen Tap	l/p/d	13.0	6 litres / min	• Class line eco swan neck kitchen tap -
Bath	l/p/d	0.00	n/a	-
Dishwasher	l/p/d	2.02	0.56 litres / place setting	• KENWOOD KID16X23 Full-size Fully Integrated Dishwasher
Washing Machine	l/p/d	10.29	4.9 litres / kg	• SAMSUNG Series 5 SpaceMax WW11DG5B25ABEU WiFi-enabled 11 kg 1400 Spin Washing Machine
Shower	l/p/d	39.2	7 litres / min	• Flowpoint Dark Grey Shower Head
Normalisation factor	Factor	0.91	n/a	-
External use	l/p/d	5	n/a	-
Total PCC	l/p/d	85.0		

Source: Shared Standards in Water Efficiency for Local Plans (2025)

The Shared Standards document states that the approach to water efficiency in new developments, as set out in Table 7.2, will be formalised by the Mandatory Water Efficiency Labelling Scheme (MWELS) with a government aim for implementation in 2025. MWELS applies to plumbing and water consuming appliances to ensure that water efficiency ratings are clearly identifiable to developers and consumers.

The Shared Standards document also refers to the Future Homes Hub's Water Ready report²⁴, commissioned by Defra to support the government's action of developing a Roadmap to Water Efficiency. Table 3 of the Water Ready report illustrates how water efficiency as low as 75 l/p/d could be achieved using a fittings-based approach, including with a variety of technology options. Achieving as

²³ [Shared Standards in Water Efficiency for Local Plans \(2025\)](#)

²⁴ [Water Ready Report \(2024\) Future Homes Hub](#)

low as 75 l/p/d includes both known and foreseeable fittings which may not be available at scale until 2030; nevertheless, costs are provided in the report which demonstrate feasible and affordable options which will increase in availability and range as the Local Plan timeframe progresses.

Water reuse

At the time of completing this WCS, there is uncertainty as to whether statutory water companies²⁵ can legally supply recycled water²⁶ for into properties which require water for domestic purposes, even in the case where it is to be used for non-potable uses; this is due to legislative definitions of statutory water companies needing to supply 'wholesome water' for domestic purposes regardless of its intended end use.

As part of the Roadmap to Water Efficiency (as set out in the EIP and the Plan for Water), Defra has committed to looking into this legislative barrier regarding the provision of wholesome water. Until that is resolved and the legislation updated, this uncertainty limits opportunity for new development to utilise water reuse as potential suppliers and operators of technology and facilities would be limited to private companies who are not statutory water companies. It should be noted that this specific legislative restriction does not apply to non-domestic purposes (i.e. industrial, manufacturing or car washing facilities) where statutory water companies can supply recycled water which does not need to be 'wholesome'.

Due the current legislative restrictions, the Shared Standards document does not suggest that local plan policies are developed which rely on (or refer to the need for) water reuse. Despite this, there is available research from a publication²⁷ by the Enabling Water Smart Communities (EWSC) and the Chartered Institution of Water and Environmental Managers (CIWEM) that provides evidence of the financial viability of privately operated community based water reuse schemes to deliver higher PCC standards. The cost ranges set out in Table 7.3 demonstrates that water reuse is a credible approach to significantly reducing PCC.

Table 7.3: Total per plot cost range for water reuse installations

Additional cost	Rainwater harvesting	Greywater recycling
Per community recycling	£1,100 - £3,700	£1,900 - £9,900
Per plot reuse	£1,900 - £6,400	£3,800 - £4,600

Source: *Water Reuse in New Housing (2025) - ESWC & CIWEM*

In summary the water reuse in new housing report concludes:

- Community-scale rainwater reuse is the most cost-effective option (rather than per plot), even for smaller sized developments of 40-50 homes.
- There is a significant fall in costs for water reuse approaches in developments of at least 100 units.
- Higher density development sites yield lower costs due to factors such as less pipework needed between properties.
- Water reuse can help achieve average per capita household water consumption levels of 80 l/p/d when supported by standard water efficient appliances.
- The growth area summaries for this WCS (section 8) set out where allocated sites in key locations are of a sufficient size (150 dwellings or more) to consider water reuse opportunities, provided by private companies, based on the evidence presented. This is particularly pertinent to the proposals for new garden communities within TDC.

²⁵ including companies new to the market known as New Appointments & Variations (or NAV)

²⁶ From rainwater harvesting or grey water recycling

²⁷ [Water re-use in new housing – understanding the business case \(2025\) EWSC & CIWEM](#)

Offsetting options

In setting a policy which requires a PCC standard to be met, TDC could consider adopting a water re-use offset scheme which allows developers to pay into an offset fund; this would be for the limited number of developers who can demonstrate they are unable to viably meet the set target. The offset fund would then be used by TDC to install retrofit water reuse schemes in council owned property such as schools, council offices, and leisure centres within the Brett WRZ, thereby providing a water demand offset. Such a scheme has been developed by the London Borough of Tower Hamlets as part of its new Local Plan. Further information can be found in the Council's [Local Plan Topic Paper – Water Efficiency \(2024\)](#).

The government is leading development of a similar 'water credit' scheme for Cambridge as part of the "The Case for Cambridge"²⁸ proposals for sustainable growth in the city. The proposals for growth in Cambridge are limited by lack of available water in the short-term whilst Cambridge Water and AWS work together to provide longer-term new supply sources. Detailed design work on the credits system is underway with the LPA, developers, the Environment Agency and other key stakeholders, but is not yet published and functional.

Developer Incentives

AW offer environmental incentives to developers to deliver water efficient homes in exchange for discounted infrastructure charges which would also assist in improving viability of a PCC policy.

Case studies for PCC policy

The Shared Standards document refers to Crawley Borough Council's [Local Plan](#) as a case study of how effective local policy can be set which requires stringent water efficiency targets as part of a wider policy need to ensure a 'water neutral' position. Water neutral refers to the outcome where new development does not increase total water supply demand above the baseline demand before the development is occupied. This need is driven by Natural England advice that a water neutral position is required to demonstrate new development/Local Plans in the affected WRZ will not adversely impact protected ecological sites. This is required until the unsustainable abstractions volumes currently impacting the sites are replaced with new supply schemes by Southern Water.

In response, the Council have developed a water neutral delivery system for their Local Plan which requires both an offset mechanism and strict water efficiency/PCC policy requirements from developers (85 l/p/d); this demonstrates that such PCC policies are viable and deliverable.

Horsham District Council are also affected by the issue within the same WRZ and in conjunction with Crawley Borough Council and other affected authorities, have developed an offsetting scheme called the [Sussex North Offsetting Water Scheme \(SNOWS\)](#). This allows developers to ensure that increased water demand does not exceed the water savings generated by Southern Water in their next Water Resources Management Plan (WRMP).

7.2.2 Non-housing growth – lowering demand

The Plan for Water includes proposals to reduce non-household water use by 9% by 2038 as part of the response to the legally binding target²⁹ to reduce the use of public water supply in England per head of population by the same date. This requires reductions in existing non-household demand and demand from new non-housing development to be managed.

AW have responded to the Environment Act target and the Plan for Water proposals by carrying out research with the Water Resources East companies to look at how they can promote water efficient amongst non-household customers. The results of the research identified four propositions:

²⁸ [The Case for Cambridge \(2024\) HM Government](#)

²⁹ in the Environment Act

1. Reduce leakage on business premises (alterations and subsidised repairs)
2. Enable businesses to reduce water use (self-audits, retailer audits and Business Water Efficiency Checks)
3. Encourage water recycling (audits and business plan developments)
4. Encourage businesses to consider water efficiency actions (incentive approaches to provide rebates, supported by information and accreditation)
5. In the short term during AMP8, AW's approach will focus on propositions 1 and 2 where they are able to implement required initiatives and have demonstrated viable case studies through AMP7 projects. Beyond AMP8, the intention is to develop and utilise data and services sharing platforms that will allow market-based delivery against all four pillars of the strategy.

The WRMP shows that AW expect to achieve the 9% reduction target with a 13.6% reduction in non-household consumption between 2019/20 and 2037/38 and a 15% reduction by 2050.

The water supply baseline section of this WCS sets out that locally available non-tidal water supply sources are spatially limited in TDC due to abstraction licencing limitations put in place for environmental protection (see section 5.3.2 and 5.3.3). The Stour catchment is severely limited, and abstractions within the Colne Essex catchment are limited at lower flows reducing reliability of water availability without options such as winter storage. This limits the available options non-household development has to source reliable, stand-alone supply. Therefore, the WCS recommends that the following policy (taken partly from the Shared Standards document) be adopted for non-household sites:

- All major non-household developments to include water saving measures and water reuse in their designs with a focus on rainwater harvesting as the primary source (unless it can be demonstrated that reuse is not viable).
- New, extended or redeveloped non-household buildings aim to achieve full credits within the 4 water categories (WAT01, WAT02, WAT03, and WAT04) for BREAAAM standard within a minimum score of 3 credits within WAT01 Water Consumption issue category, or an equivalent standard set out in any future update to BREAAAM. The applicant will be required to justify and evidence why full credits is not possible/viable for the development.
- A Water Efficient Design Statement (WEDS) must be submitted with the application at the earliest stage to demonstrate how policy requirements have been met and will be maintained in relation to water efficient design. The statement shall provide, as a minimum, the following:
- Baseline information relating to existing water use within a development site; and
- Full calculations relating to expected water use within a proposed development (such as water efficient fixtures and fittings, rainwater/stormwater harvesting or reuse).

8. Growth area summaries

8.1 Introduction

This section of the report provides a summary of the WCS assessments and outcomes. It has been presented as growth area summaries, to aid planners using the WCS to see the key infrastructure issues, phasing impacts and policy recommendations for different spatial areas.

WRC catchments have been used to define growth areas, as wastewater treatment is the key aspect which affects infrastructure timing delivery and phasing impacts across TDC.

8.2 Brightlingsea

8.2.1 Wastewater treatment summary

Is there capacity at the WRC for any new dwellings?	Yes, approximately 1,600 dwelling capacity
Is there sufficient capacity for all new homes planned within the WRC catchment?	Yes - approximately 190 dwellings would be allocated in the WRC catchment.

8.2.2 Wastewater sewer capacity

Is there a risk of sewer outfall discharges increasing?	- The sewer network is largely separated; however, there are some areas of combined sewer and the DWMP identifies the catchment as a high risk for the planning objective of storm overflows. - There are two outfalls in the sewer catchment, one is medium risk (1-9 spills), the other is high risk (>10 spills). Additional flows to the sewer may limit the efficacy of future spill reduction measures.
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8.2.3 Catchment risks and opportunities

Allocated sites are located in area of TDC which eventually drain to the Colne (Transitional) WFD Water body catchment. Surface water runoff from these sites has the potential to influence water quality within this WFD water body. The Brightlingsea – Church Road and Brightlingsea – Mill Road WRC’s which would treat wastewater from these sites, also discharge to this water body.

The water body is failing to meet Good Status, in part due to Nitrogen levels being less than Good Status. Physical modification of the waterbody is a confirmed reason for not achieving Good Status.

The underlying Essex Gravels groundwater body also has a Poor overall status, due to Poor chemical status.

This highlights the need for developments in this growth area to manage surface water through the provision of SuDS with a focus on managing water quality and to avoid development within riparian zones around watercourses to reduce pressures around watercourse modification.

There are some limited NBS opportunities for two allocated sites in this growth area related to riparian woodland planting potential. Developers of these sites should be encouraged to contribute towards NBS opportunities. The location of NBS opportunities in the Brightlingsea growth area are shown in Figure 8-1.

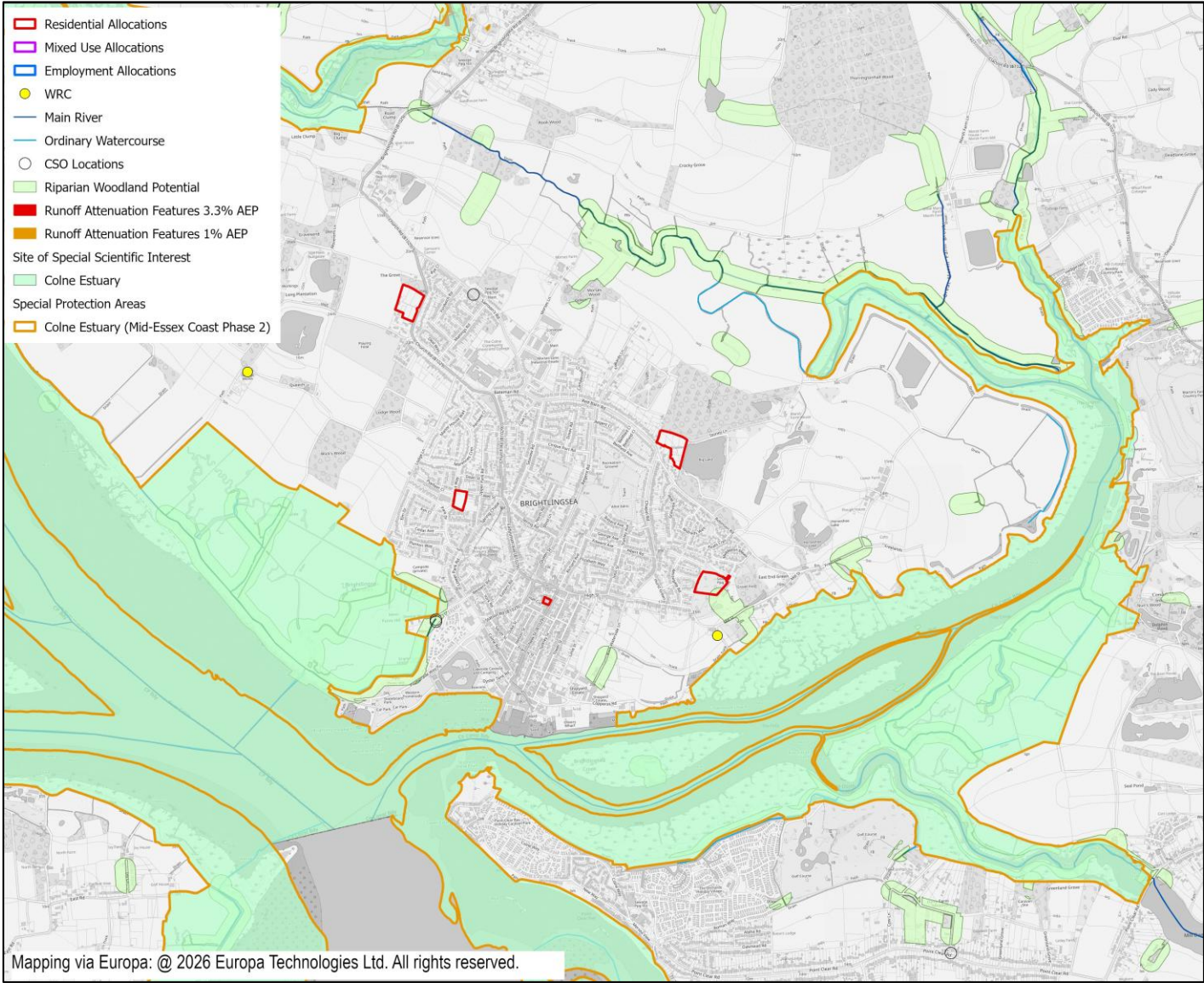


Figure 8-1: Location of water dependent habitats and NBS relative to allocated sites in Brightlingsea

8.2.4 Water Supply

There is no water available for abstraction from surface water or groundwater in very low flow conditions, and restricted flows available in average to medium flows. Water is only available for abstraction during high flow conditions. Therefore, there is limited scope for development to consider local sources of supply. The growth area is located within the Brett WRZ managed by AW. The WCS has identified that there is sufficient water to manage the scale of growth proposed within the Local Plan across this WRZ until 2040. After this, additional measures would be required.

8.2.5 Growth area specific policy

The following water policy areas are recommended for development for this growth area:

- A 100 l/p/d PCC target for new homes in these allocated sites; this will support both sustainable water resource provision as well as potentially remove the need for further upgrades to the WRC at the end of the plan period. It may also help with reducing impact from storm overflows. Reducing this target to 80 l/p/d PCC would provide further benefits.

- To enable CSO spills to be managed in the long-term, require all allocated development in these settlements to prevent surface water generated from sites being discharged to the foul sewer network.
- Require SuDS built to the updated national SuDS standards to attenuate surface water runoff for flood risk purposes and be expected to manage, and where possible improve water quality, particularly nutrient discharge.
- Encourage developers to contribute to NBS for riparian management.

8.3 Clacton Holland Haven

8.3.1 Wastewater treatment summary

Is there capacity at the WRC for any new dwellings?	No – WRC is at capacity.
Is there a WRC solution proposed in the current investment period to 2030?	Yes, level of funding for improvement, is currently under review, but planned for delivery in AMP8.
Is there a medium to long term WRC solution proposed in the AWS Drainage and Wastewater Management Plan?	Yes – The AMP8 growth scheme may not provide sufficient capacity for the proposed Local Plan growth, but the DWMP outlines improvements with the main solution of a new DWF permit and increased capacity in the medium term (to 2035). 10% surface water removal in the longer-term 2050 Strategy.
Can a future permit be implemented in the future to protect water quality within Technically Achievable Limits?	Yes – upgrades required may be significant.

8.3.2 Wastewater sewer capacity

Is there a risk of sewer outfall discharges increasing?	• The DWMP identifies a very significant planning objective risk for Stom overflows in the current baseline (2025). • The sewer network is combined in some parts of the city (specifically the town centre), so there is an elevated risk of increasing sewer spills. • There are six outfalls in the sewer catchment, 2 at medium risk (1-9 spills) and 4 at low risk (0 spills). Additional flows to the sewer may limit the efficacy of future spill reduction measures.
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8.3.3 Catchment risks and opportunities

Allocated sites are located in area of TDC which eventually drain to the Essex (Transitional) WFD Water body catchment. Surface water runoff from these sites has the potential to influence water quality within this WFD water body. The Clacton Holland Haven WRC which would treat wastewater from these sites, also discharges to this water body.

The water body is failing to meet Good Status, in part due to Nitrogen levels being less than Good Status. Physical modification of the waterbody is a confirmed reason for not achieving Good Status.

The underlying Essex Gravels groundwater body also has a Poor overall status, due to Poor chemical status.

This highlights the need for developments in this growth area to manage surface water through the provision of SuDS with a focus on managing water quality and to avoid development within riparian zones around watercourses to reduce pressures around watercourse modification.

There are some identified NBS opportunities for the allocated sites in Clacton Holland Haven relating to riparian woodland potential and runoff attenuation features. Developers should be encouraged to contribute towards NBS opportunities and incorporate similar NBS in their site as part of SuDS delivery. The location of NBS opportunities in the Clacton Holland Haven growth area are shown in Figure 8-2.

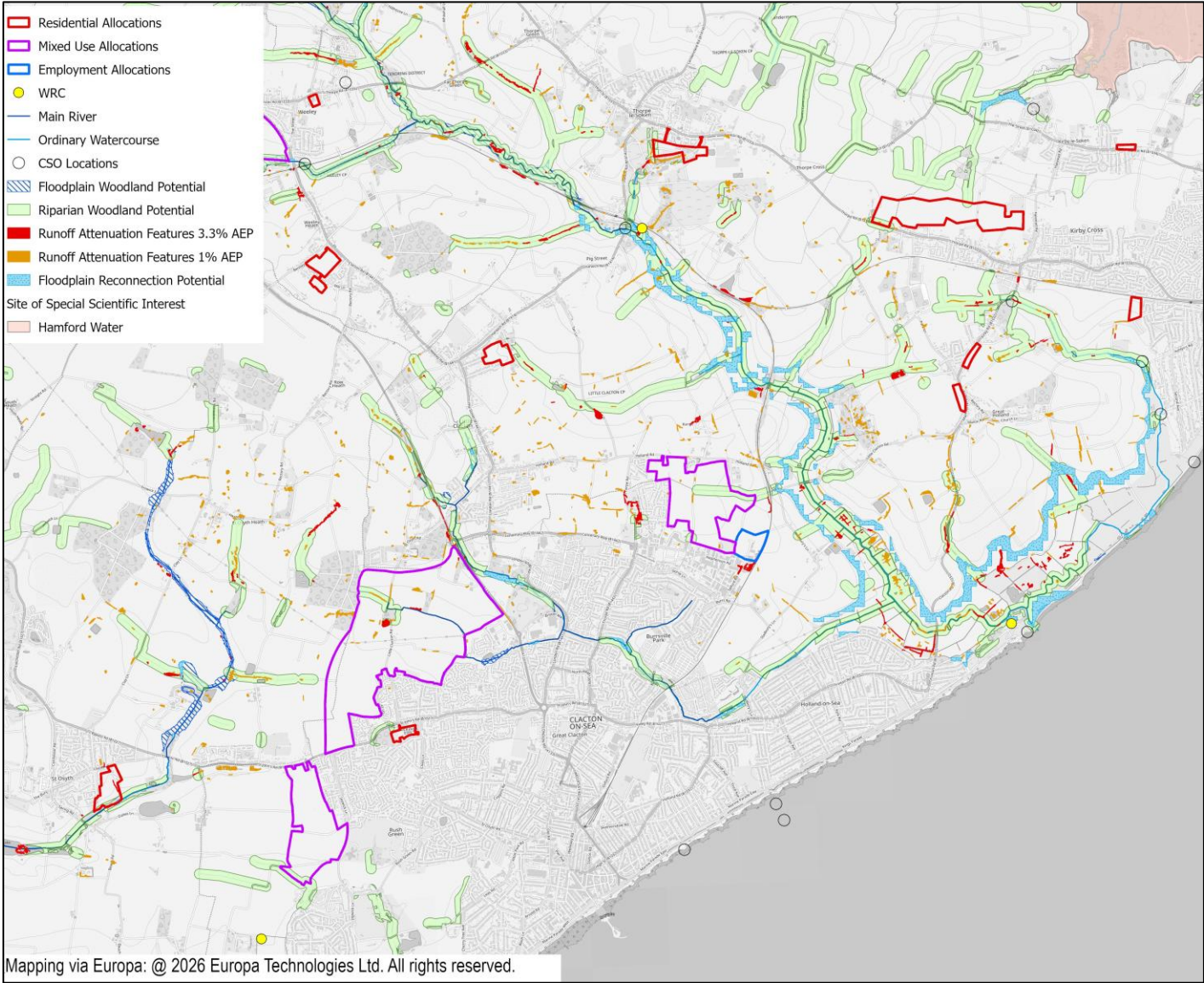


Figure 8-2: Location of water dependent habitats and NBS relative to allocated sites in Clacton Holland Haven

8.3.4 Water Supply

There is restricted water available for abstraction from surface water or groundwater in low flow conditions, water is only available for abstraction in average to higher flows. Therefore, there is some scope for development to consider local sources of supply. The growth area is located within the Brett WRZ managed by AW. The WCS has identified that there is sufficient water to manage the scale of growth proposed within the Local Plan across this WRZ until 2040. After this, additional measures would be required.

Site SAMU2 at Hartley Gardens, site SAMU3 at Oakwood Park and site SAMU6 at Weeley Green Garden Village, are large sites (150 dwellings or more) and of a scale where water reuse could be considered by developers for supplying non-potable uses to meet 85l/p/d PCC (or lower).

8.3.5 Growth area specific policy

The following water policy areas are recommended for development for this growth area:

- A 100 l/p/d PCC target for new homes in these allocated sites; this will support both sustainable water resource provision as well as potentially remove the need for further upgrades to the WRC at the end of the plan period. It

may also help with reducing impact from storm overflows. Reducing this target to 80 l/p/d PCC would provide further benefits.

- To enable CSO spills to be managed in the long-term, require all allocated development in these settlements to prevent surface water generated from sites being discharged to the foul sewer network.
- Require SuDS built to the updated national SuDS standards to attenuate surface water runoff for flood risk purposes and be expected to manage, and where possible improve water quality, particularly nutrient discharge.
- Encourage developers to contribute to NBS for riparian management.

8.4 Great Bromley

Note: This section is based on 1,450 dwellings allocated at Hare Green Garden Community; however, the latest estimate indicates that this may increase to around 1,700 dwellings.

8.4.1 Wastewater treatment summary

Is there capacity at the WRC for any new dwellings?	Yes, approximately 270 dwelling capacity
Is there sufficient capacity for all new homes planned within the WRC catchment?	No – capacity would be exceeded.
Is there a WRC solution proposed in the current investment period to 2030?	No – AWS do not have a growth solution identified in AMP8 (between 2025 and 2030).
Is there a medium to long term WRC solution proposed in the AWS Drainage and Wastewater Management Plan?	No – a growth scheme is not identified in the AWS Drainage & Wastewater Management Plan, with a ‘wait and see’ proposal for the long term solution.
Can a future permit be implemented to protect water quality within Technically Achievable Limits?	No – modelling demonstrated that it would not be feasible for Ammonia to be within TAL at a future point.

8.4.2 Wastewater sewer capacity

Is there a risk of sewer outfall discharges increasing?	• The sewer network is separated so risk is generally low. • There is one outfall in the sewer catchment at medium risk (1-9 spills) where additional flows to the sewer may limit the efficacy of future spill reduction measures.
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8.4.3 Catchment risks and opportunities

Allocated sites are located in area of TDC which eventually drain to the Tenpenny Brook WFD Water body catchment. Surface water runoff from these sites has the potential to influence water quality within this WFD water body. The Great Bromley WRC which would treat wastewater from these sites, also discharges to this water body.

The water body is failing to meet Good Status, in part due to Phosphate levels being less than Good Status. Continuous sewage discharge and physical modification of the waterbody is a confirmed reason for not achieving Good Status.

The underlying Essex Gravels groundwater body also has a Poor overall status, due to Poor chemical status.

This highlights the need for developments in this growth area to manage surface water through the provision of SuDS with a focus on managing water quality and to avoid development within riparian zones around watercourses to reduce pressures around watercourse modification.

There are some identified NBS opportunities for the allocated sites in Great Bromley relating to riparian woodland potential, floodplain woodland potential and runoff attenuation features. Developers should be encouraged to contribute towards NBS opportunities and incorporate similar NBS in their site as part of SuDS delivery. The location of NBS opportunities in the Great Bromley growth area are shown in

Figure 8-3.

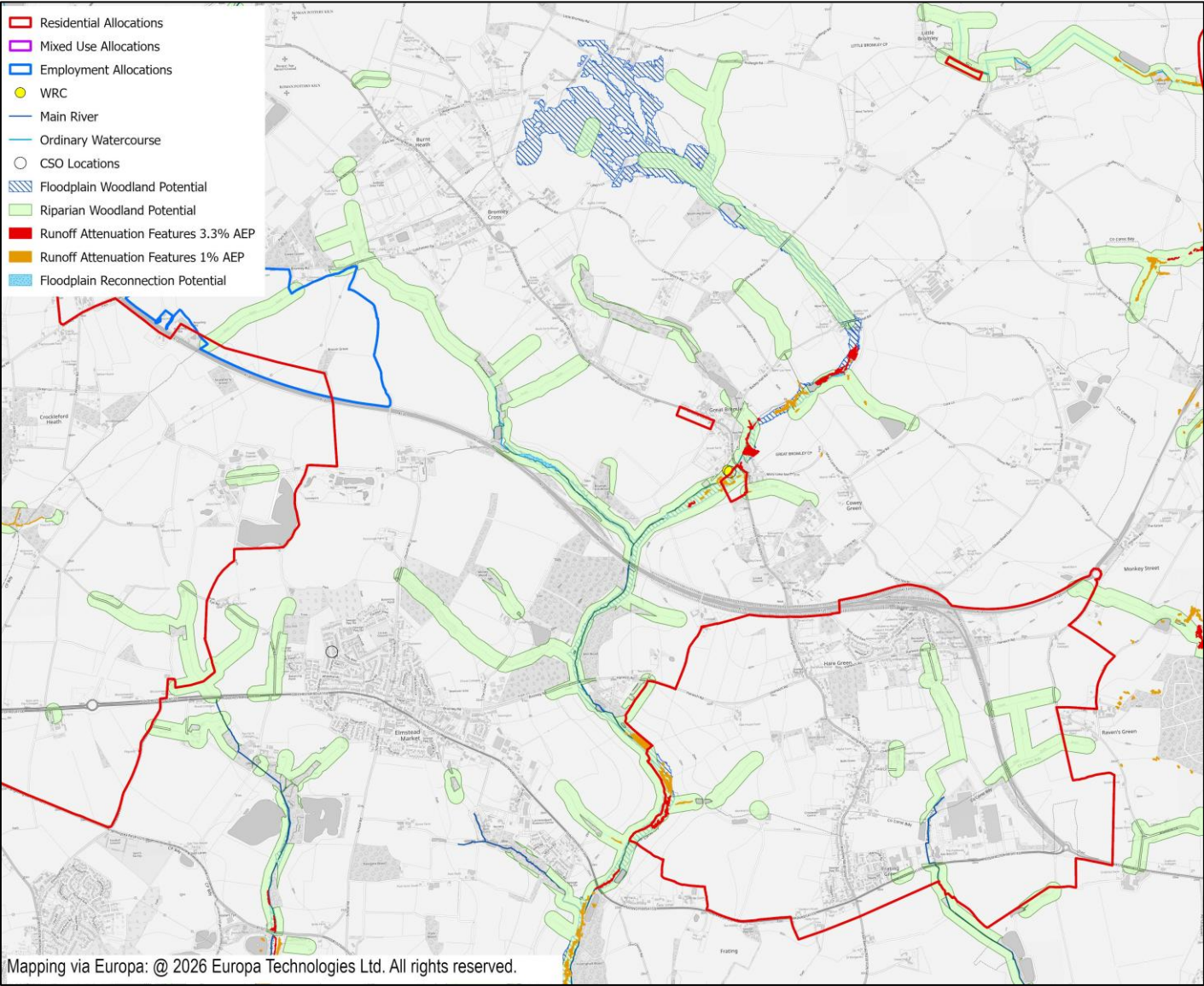


Figure 8-3: Location of water dependent habitats and NBS relative to allocated sites in Great Bromley

8.4.4 Water Supply

There is no water available for abstraction from surface water or groundwater in very low flow conditions, and restricted flows available in average to medium flows. Water is only available for abstraction during high flow conditions. Therefore, there is limited scope for development to consider local sources of supply. The growth area is located within the Brett WRZ managed by AW. The WCS has identified that there is sufficient water to manage the scale of growth proposed within the Local Plan across this WRZ until 2040. After this, additional measures would be required.

Site SAMU8 Hare Green Garden Village is a large site (150 dwellings or more) and of a scale where water reuse could be considered by developers for supplying non-potable uses to meet 85l/p/d PCC (or lower).

8.4.5 Growth area specific policy

The following water policy areas are recommended for development for this growth area:

- A 100 l/p/d PCC target for new homes in these allocated sites; this will support both sustainable water resource provision as well as potentially remove the need for further upgrades to the WRC at the end of the plan period. It

may also help with reducing impact from storm overflows. Reducing this target to 80 l/p/d PCC would provide further benefits.

- To enable CSO spills to be managed in the long-term, require all allocated development in these settlements to prevent surface water generated from sites being discharged to the foul sewer network.
- Require SuDS built to the updated national SuDS standards to attenuate surface water runoff for flood risk purposes and be expected to manage, and where possible improve water quality, particularly nutrient discharge.
- Encourage developers to contribute to NBS for riparian management.

8.5 Harwich

8.5.1 Wastewater treatment summary

Is there capacity at the WRC for any new dwellings?	Yes, approximately 6,198 dwelling capacity
Is there sufficient capacity for all new homes planned within the WRC catchment?	Yes - approximately 2,802 dwellings would be allocated in the WRC catchment.

8.5.2 Wastewater sewer capacity

Is there a risk of sewer outfall discharges increasing?	• The DWMP identifies a very significant planning objective risk for Stom overflows in the current baseline (2025). • The sewer network is separated so risk is generally low. • There are five outfalls in the sewer catchment, three at high risk (>10 spills), one at medium risk (1-9 spills) and one at low risk (zero spills). Additional flows to the sewer may limit the efficacy of future spill reduction measures.
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8.5.3 Catchment risks and opportunities

Allocated sites are located in area of TDC which eventually drain to the Stour (Essex) Transitional WFD Water body catchment. Surface water runoff from these sites has the potential to influence water quality within this WFD water body. The Harwich and Dovercourt WRC which would treat wastewater from these sites, also discharges to this water body.

The water body is failing to meet Good Status, in part due to Nitrogen levels being less than Good Status. Continuous sewage discharge, poor nutrient management and groundwater abstraction of the waterbody is a confirmed reason for not achieving Good Status.

The underlying Essex Gravels groundwater body also has a Poor overall status, due to Poor chemical status.

This highlights the need for developments in this growth area to manage surface water through the provision of SuDS with a focus on managing water quality and to avoid development within riparian zones around watercourses to reduce pressures around watercourse modification.

There are some limited NBS opportunities for two allocated sites in this growth area related to riparian woodland planting potential. Developers of these sites should be encouraged to contribute towards NBS opportunities. The location of NBS opportunities in the Harwich growth area are shown in Figure 8-4.

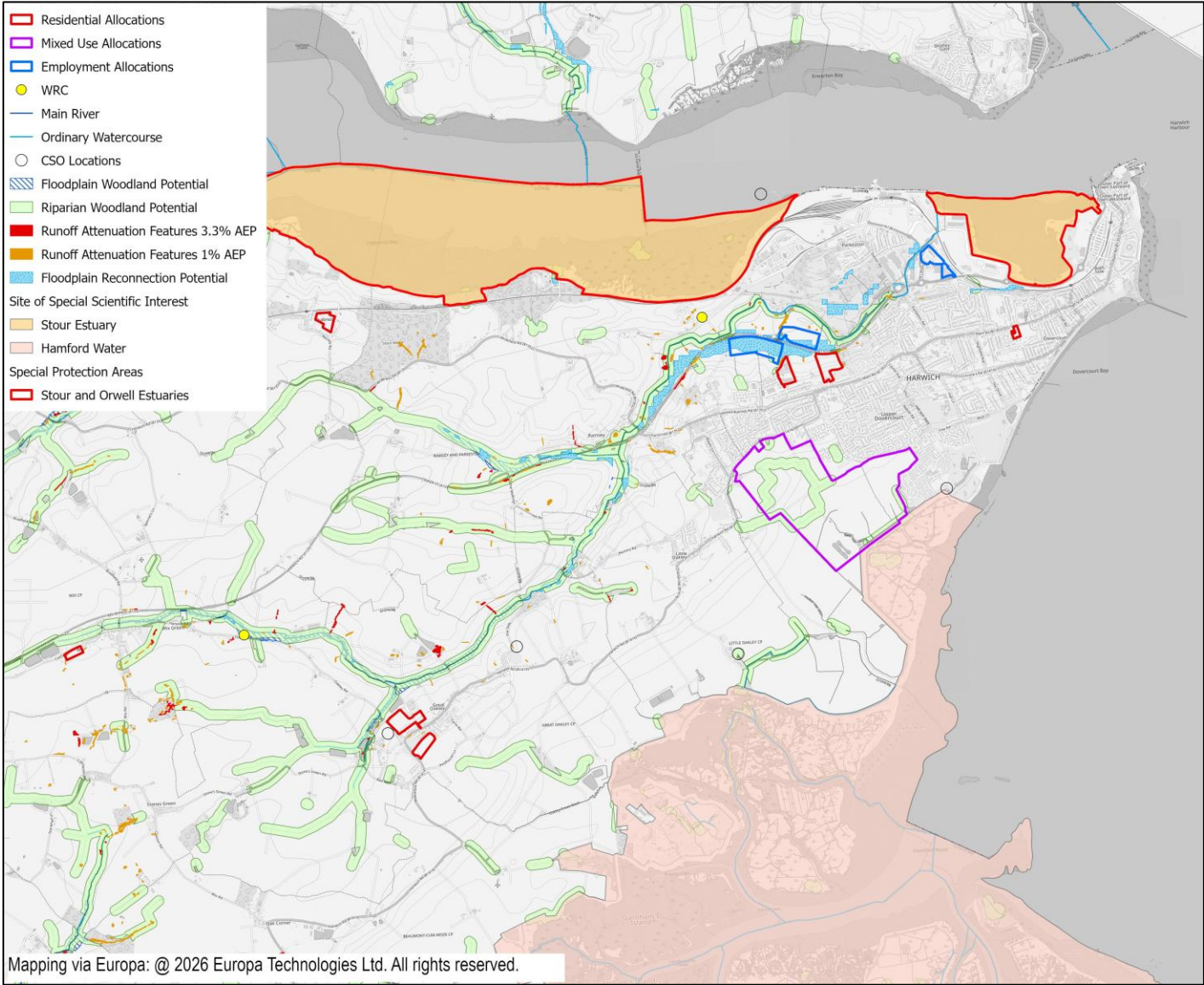


Figure 8-4: Location of water dependent habitats and NBS relative to allocated sites in Harwich

8.5.4 Water Supply

There is no water available for abstraction from groundwater and no significant source if surface freshwater abstraction. Therefore, there is limited scope for development to consider local sources of supply. The growth area is located within the Brett WRZ managed by AW. The WCS has identified that there is sufficient water to manage the scale of growth proposed within the Local Plan across this WRZ until 2040. After this, additional measures would be required.

Site SAMU5, Land off Deane’s Lane and Oakley Road, Dovercourt and Site SAH1, Land at Vicarage Farm, Dovercourt are large sites (150 dwellings or more) and of a scale where water reuse could be considered by developers for supplying non-potable uses to meet 85l/p/d PCC (or lower).

8.5.5 Growth area specific policy

The following water policy areas are recommended for development for this growth area:

- A 100 l/p/d PCC target for new homes in these allocated sites; this will support both sustainable water resource provision as well as potentially remove the need for further upgrades to the WRC at the end of the plan period. It

may also help with reducing impact from storm overflows. Reducing this target to 80 l/p/d PCC would provide further benefits.

- To enable CSO spills to be managed in the long-term, require all allocated development in these settlements to prevent surface water generated from sites being discharged to the foul sewer network.
- Require SuDS built to the updated national SuDS standards to attenuate surface water runoff for flood risk purposes and be expected to manage, and where possible improve water quality, particularly nutrient discharge.
- Encourage developers to contribute to NBS for riparian management.

8.6 Horsley Garden Community

Note: This section is based on 1,450 dwellings allocated at Horsely Green Garden Community; however, the latest estimate indicates that this may increase to around 1,700 dwellings.

8.6.1 Wastewater treatment summary

The site location for the Horsley Garden community is not within a catchment area of an existing WRC. Connection options to existing WRCs are limited. Future connections via rising mains to Manningtree WRC (to the north), or Harwich and Dovercourt WRC (to the west) may be possible, but capacity at Manningtree WRC is limited and Harwich and Dovercourt WRC would not have sufficient capacity for all growth proposed.

This WCS has therefore assumed a new, developer delivered onsite treatment facility would be required and the feasibility of this has been considered, assuming a local discharge to the nearby Holland Brook watercourse.

A new WRC would discharge into the Holland Brook, specifically the WFD water body (GB105037077810) and RQP modelling for the discharge into this water body has been undertaken. The modelling demonstrates that:

- It is not possible to ensure no deterioration of WFD status at mixing point after growth for Ammonia, as the quality of discharge would not be achievable within TAL.
- A permit quality condition could be applied within TAL to ensure no deterioration in the High WFD BOD status and the Poor WFD Phosphate status of the Holland Brook water body at the discharge point to the river.
- Tests assuming the phosphate quality of the Holland Brook water body is improved to the future target Moderate WFD Status in the future (through catchment measures) show that, improvements to the discharge quality would not be required with growth. Growth, related to a new WRC serving Horsley Garden Community is therefore not a limiting factor on achieving the future target Status of the Holland Brook.

It would therefore be possible to set a new permit that ensures no deterioration in the current quality of the Holland Brook for BOD and Phosphate when taking account of proposed WRC discharges from Horsley Garden Community. For Ammonia, permit quality conditions could not be applied within TAL to ensure no deterioration in the High WFD status.

8.6.2 Catchment risks and opportunities

The Horsley Garden Community is located in area of TDC which eventually drains to the Holland Brook WFD Water body catchment. Surface water runoff from this site has the potential to influence water quality within this WFD water body. The proposed WRC which would treat wastewater from this site, would also discharge to this water body.

The water body is failing to meet Good Status, in part due to Phosphate levels being less than Good Status. Private sewage treatment, poor nutrient management and physical modification of the waterbody is a confirmed reason for not achieving Good Status.

The underlying Essex Gravels groundwater body also has a Poor overall status, due to Poor chemical status.

This highlights the need for developments in this growth area to manage surface water through the provision of SuDS with a focus on managing water quality and to avoid development within riparian zones around watercourses to reduce pressures around watercourse modification.

There are some NBS opportunities for the allocated site in this growth area related to riparian and floodplain woodland planting potential, floodplain reconnection potential and runoff attenuation features. Developers of this site should be encouraged to contribute towards NBS opportunities. The location of NBS opportunities in the Horsley Garden Community growth area are shown in Figure 8-5.

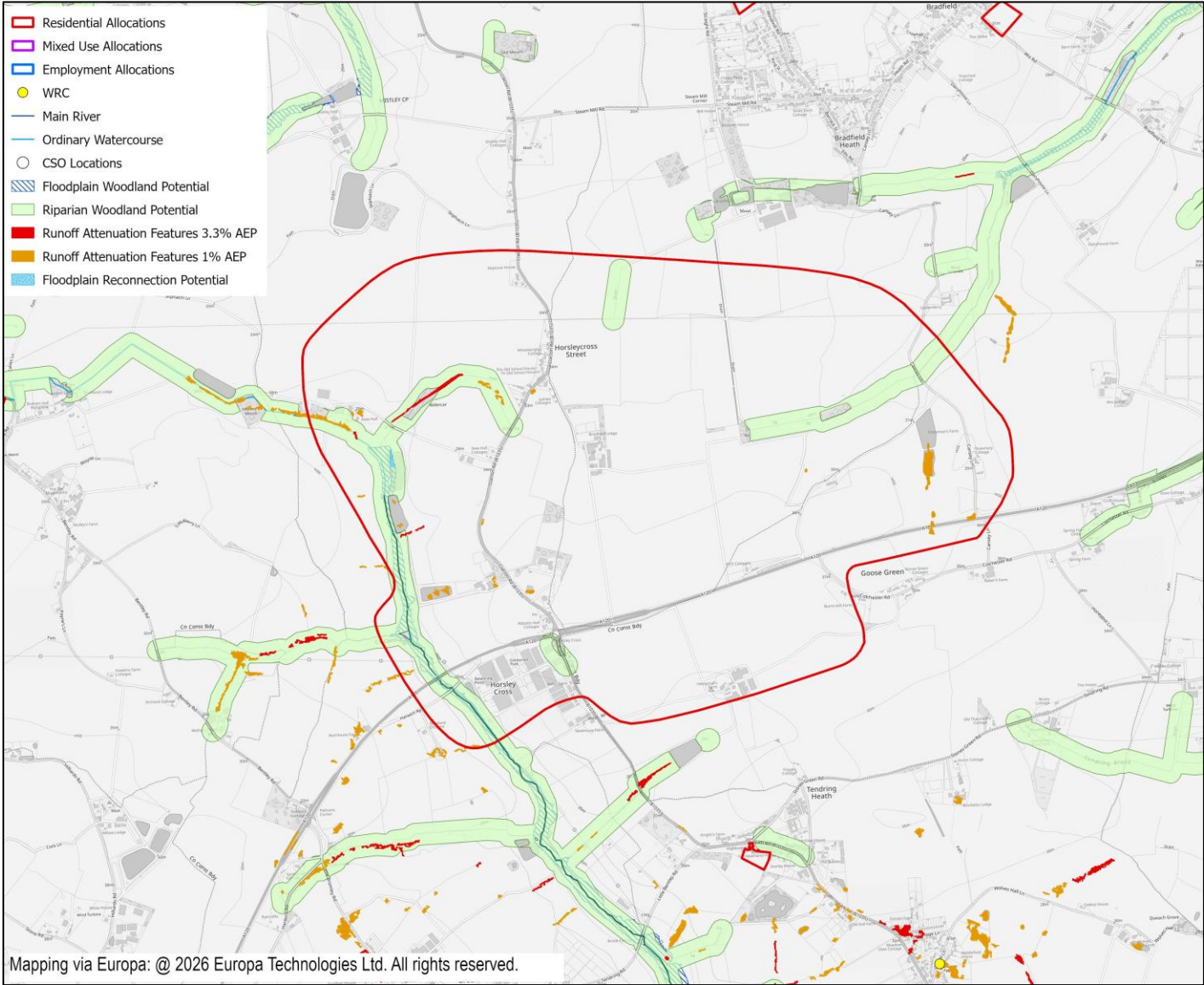


Figure 8-5: Location of water dependent habitats and NBS relative to allocated sites in Horsley Garden Community

8.6.3 Water Supply

There is restricted water available for abstraction from surface water or groundwater in low flow conditions, water is only available for abstraction in average to higher flows. Therefore, there is some scope for development to consider local sources of supply. The growth area is located within the Brett WRZ managed by AW. The WCS has identified that there is sufficient water to manage the scale of growth proposed within the Local Plan across this WRZ until 2040. After this, additional measures would be required.

8.6.4 Growth area specific policy

The following water policy areas are recommended for development for this growth area:

- A 100 l/p/d PCC target for new homes in these allocated sites; this will support both sustainable water resource provision as well as potentially remove the need for further upgrades to the WRC at the end of the plan period. It may also help with reducing impact from storm overflows. Reducing this target to 80 l/p/d PCC would provide further benefits.

- To enable CSO spills to be managed in the long-term, require all allocated development in these settlements to prevent surface water generated from sites being discharged to the foul sewer network.
- Require SuDS built to the updated national SuDS standards to attenuate surface water runoff for flood risk purposes and be expected to manage, and where possible improve water quality, particularly nutrient discharge.
- Encourage developers to contribute to NBS for riparian management.

8.7 Jaywick

8.7.1 Wastewater treatment summary

Is there capacity at the WRC for any new dwellings?	Yes, approximately 220 dwelling capacity.
Is there sufficient capacity for all new homes planned within the WRC catchment?	No – capacity would be exceeded.
Is there a WRC solution proposed in the current investment period to 2030?	No – AWS do not have a growth solution identified in AMP8 (between 2025 and 2030).
Is there a medium to long term WRC solution proposed in the AWS Drainage and Wastewater Management Plan?	Yes – The AMP8 growth scheme may not provide sufficient capacity for the proposed Local Plan growth but the DWMP outlines 10% surface water removal in the longer-term 2050 strategy.
Can a future permit be implemented in the future to protect water quality within Technically Achievable Limits?	Yes – modelling demonstrated small permit condition changes would be required.

8.7.2 Wastewater sewer capacity

Is there a risk of sewer outfall discharges increasing?	• The sewer network is largely separated; however, there are some areas of combined sewer. • There are five outfalls in the sewer catchment, two are high risk (>10 spills) and three are medium risk (1-9 spills). Additional flows to the sewer may limit the efficacy of future spill reduction measures.
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8.7.3 Catchment risks and opportunities

Allocated sites are located in area of TDC which eventually drain to the Stour (Essex) Transitional WFD Water body catchment. Surface water runoff from these sites has the potential to influence water quality within this WFD water body. The Jaywick WRC which would treat wastewater from these sites, also discharges to this water body.

The water body is failing to meet Good Status, in part due to Nitrogen levels being less than Good Status. Continuous sewage discharge, poor nutrient management and groundwater abstraction of the waterbody is a confirmed reason for not achieving Good Status.

The underlying Essex Gravels groundwater body also has a Poor overall status, due to Poor chemical status.

This highlights the need for developments in this growth area to manage surface water through the provision of SuDS with a focus on managing water quality and to avoid development within riparian zones around watercourses to reduce pressures around watercourse modification.

There are some limited NBS opportunities for two allocated sites in this growth area related to riparian woodland planting potential. Developers of these sites should be encouraged to contribute towards NBS opportunities. The location of NBS opportunities in the Jaywick growth area are shown in

Figure 8-6.

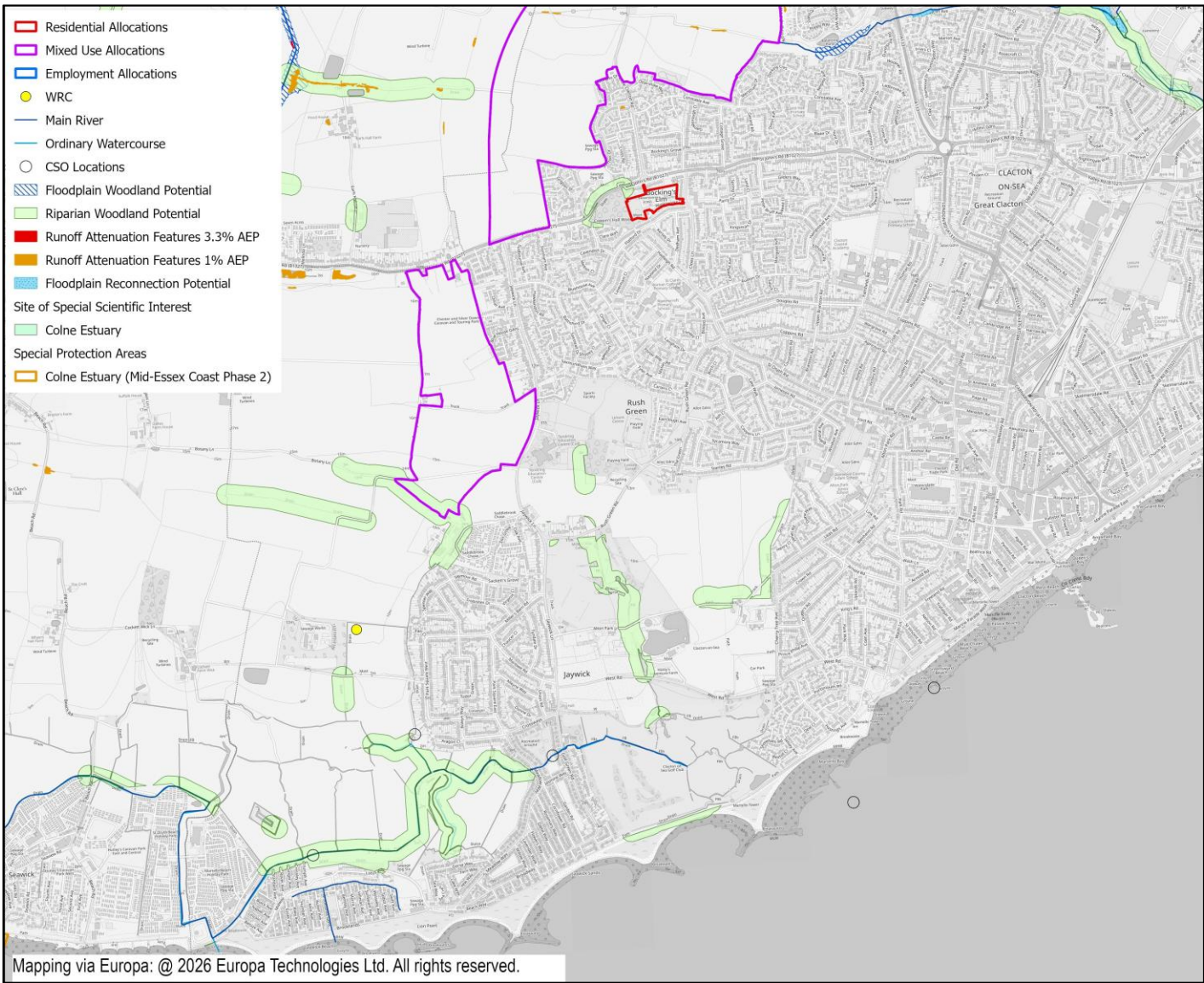


Figure 8-6: Location of water dependent habitats and NBS relative to allocated sites in Jaywick

8.7.4 Water Supply

There is no water available for abstraction from groundwater and no significant source if surface freshwater abstraction. Therefore, there is limited scope for development to consider local sources of supply. The growth area is located within the Brett WRZ managed by AW. The WCS has identified that there is sufficient water to manage the scale of growth proposed within the Local Plan across this WRZ until 2040. After this, additional measures would be required.

Site SAMU4, Rouses Farm is a large site (150 dwellings or more) and of a scale where water reuse could be considered by developers for supplying non-potable uses to meet 85l/p/d PCC (or lower).

8.7.5 Growth area specific policy

The following water policy areas are recommended for development for this growth area:

- A 100 l/p/d PCC target for new homes in these allocated sites; this will support both sustainable water resource provision as well as potentially remove the need for further upgrades to the WRC at the end of the plan period. It may also help with reducing impact from storm overflows. Reducing this target to 80 l/p/d PCC would provide further benefits.

- To enable CSO spills to be managed in the long-term, require all allocated development in these settlements to prevent surface water generated from sites being discharged to the foul sewer network.
- Require SuDS built to the updated national SuDS standards to attenuate surface water runoff for flood risk purposes and be expected to manage, and where possible improve water quality, particularly nutrient discharge.
- Encourage developers to contribute to NBS for riparian management.

8.8 Manningtree and Ardleigh

8.8.1 Wastewater treatment summary

Is there capacity at the WRC for any new dwellings?	No - WRC is at capacity.
Is there a WRC solution proposed in the current investment period to 2030?	No – AWS do not have a growth solution identified in AMP8 (between 2025 and 2030).
Is there a medium to long term WRC solution proposed in the AWS Drainage and Wastewater Management Plan?	Yes – increased capacity at the WRC and improvements to the network with a mixed strategy with the main solution of SuDs in the medium term. 25% surface water removal in the 2050 Strategy.
Can a future permit be implemented in the future to protect water quality within Technically Achievable Limits?	Yes – modelling demonstrated small permit condition changes would be required.

8.8.2 Wastewater sewer capacity

Is there a risk of sewer outfall discharges increasing?	• The sewer network is largely separated; however, there are some areas of combined sewer. • There are two outfalls in the sewer catchment, both are high risk (>10 spills). Additional flows to the sewer may limit the efficacy of future spill reduction measures.
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8.8.3 Catchment risks and opportunities

Allocated sites are located in area of TDC which eventually drain to the Stour (Essex) Transitional WFD Water body catchment. Surface water runoff from these sites has the potential to influence water quality within this WFD water body. The Manningtree WRC which would treat wastewater from these sites, also discharges to this water body.

The water body is failing to meet Good Status, in part due to Nitrogen levels being less than Good Status. Continuous sewage discharge, poor nutrient management and groundwater abstraction of the waterbody is a confirmed reason for not achieving Good Status.

The underlying Essex Gravels groundwater body also has a Poor overall status, due to Poor chemical status.

This highlights the need for developments in this growth area to manage surface water through the provision of SuDS with a focus on managing water quality and to avoid development within riparian zones around watercourses to reduce pressures around watercourse modification.

There are some limited NBS opportunities for two allocated sites in this growth area related to riparian woodland planting potential. Developers of these sites should be encouraged to contribute towards NBS opportunities. The location of NBS opportunities in the Manningtree and Ardleigh growth area are shown in Figure 8-7.

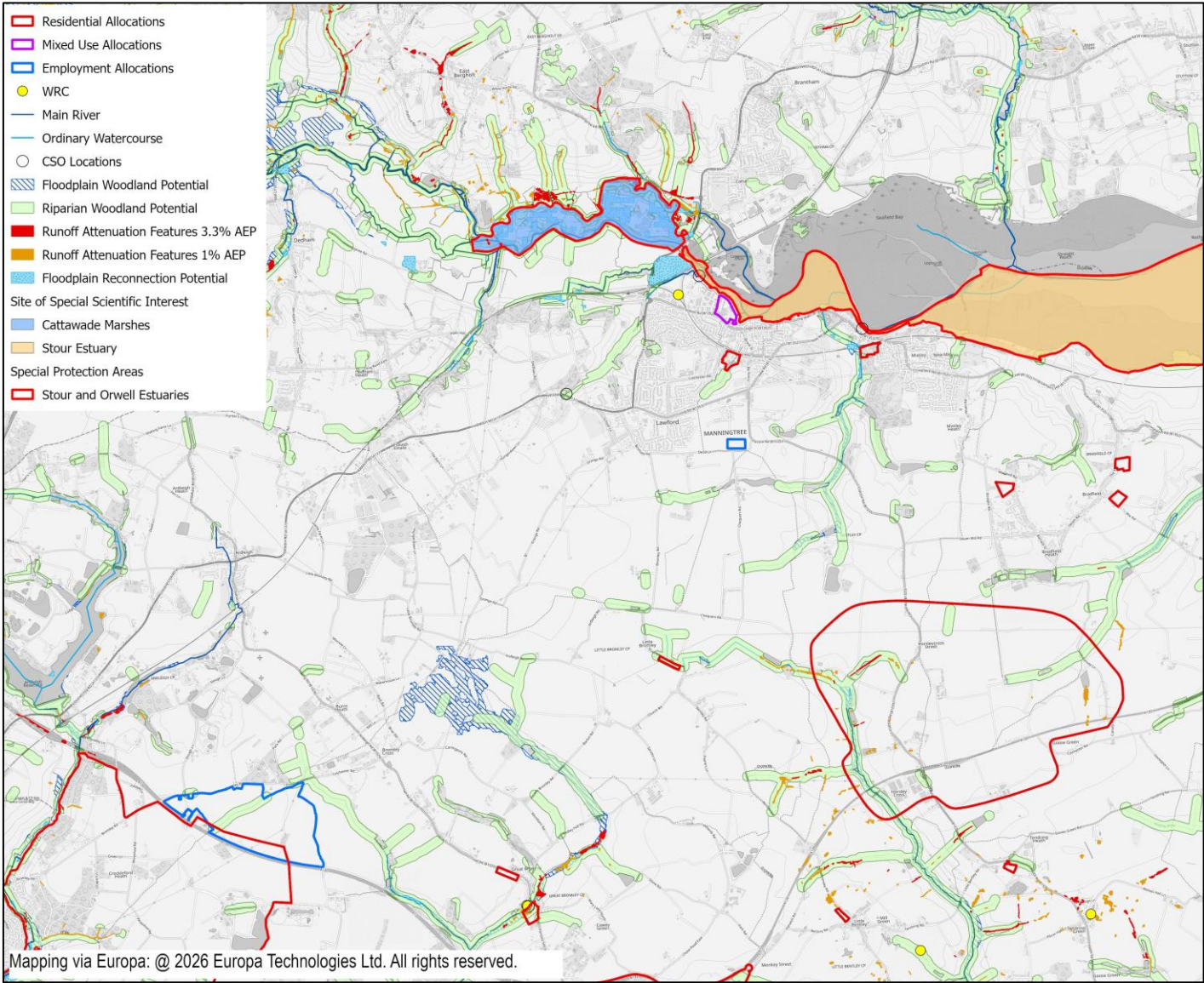


Figure 8-7: Location of water dependent habitats and NBS relative to allocated sites in Manningtree and Ardleigh

8.8.4 Water Supply

There is no water available for abstraction from groundwater and no significant source if surface freshwater abstraction. Therefore, there is limited scope for development to consider local sources of supply. The growth area is located within the Brett WRZ managed by AW. The WCS has identified that there is sufficient water to manage the scale of growth proposed within the Local Plan across this WRZ until 2040. After this, additional measures would be required.

8.8.5 Growth area specific policy

The following water policy areas are recommended for development for this growth area:

- A 100 l/p/d PCC target for new homes in these allocated sites; this will support both sustainable water resource provision as well as potentially remove the need for further upgrades to the WRC at the end of the plan period. It may also help with reducing impact from storm overflows. Reducing this target to 80 l/p/d PCC would provide further benefits.

- To enable CSO spills to be managed in the long-term, require all allocated development in these settlements to prevent surface water generated from sites being discharged to the foul sewer network.
- Require SuDS built to the updated national SuDS standards to attenuate surface water runoff for flood risk purposes and be expected to manage, and where possible improve water quality, particularly nutrient discharge.
- Encourage developers to contribute to NBS for riparian management.

8.9 Seawick and St Osyth

8.9.1 Wastewater treatment summary

Is there capacity at the WRC for any new dwellings?	Yes, approximately 880 dwelling capacity
Is there sufficient capacity for all new homes planned within the WRC catchment?	Yes - approximately 470 dwellings would be allocated in the WRC catchment.

8.9.2 Wastewater sewer capacity

Is there a risk of sewer outfall discharges increasing?	- The sewer network is largely separated; however, there is a small area of combined sewer near the WRC. - There are two outfalls in the sewer catchment, both are high risk (>10 spills). Additional flows to the sewer may limit the efficacy of future spill reduction measures.
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8.9.3 Catchment risks and opportunities

Allocated sites are located in area of TDC which eventually drain to the Blackwater Outer Transitional WFD Water body catchment. Surface water runoff from these sites has the potential to influence water quality within this WFD water body. The St Osyth WRC which would treat wastewater from these sites, also discharges to this water body.

The water body is failing to meet Good Status, in part due to Nitrogen levels being less than Good Status. Dissolved Inorganic Nitrogen is a confirmed reason for not achieving Good Status.

The underlying Essex Gravels groundwater body also has a Poor overall status, due to Poor chemical status.

This highlights the need for developments in this growth area to manage surface water through the provision of SuDS with a focus on managing water quality and to avoid development within riparian zones around watercourses to reduce pressures around watercourse modification.

There are limited NBS opportunities for the allocated site in this growth area related to runoff attenuation features (3.3% AEP). Developers of this site should be encouraged to contribute towards NBS opportunities. The location of NBS opportunities in the Seawick and St Osyth growth area are shown in Figure 8-8.

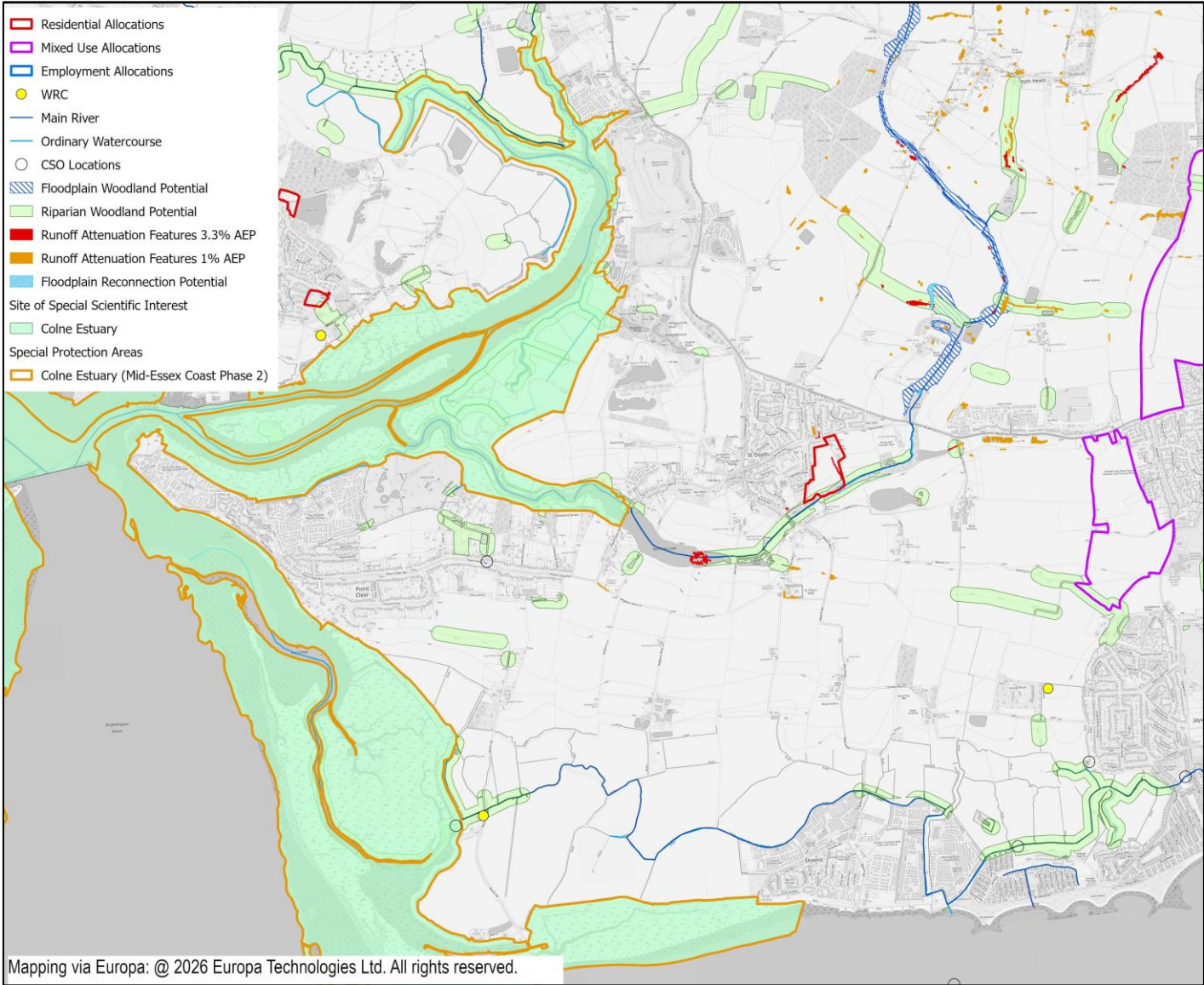


Figure 8-8: Location of water dependent habitats and NBS relative to allocated sites in Seawick and St Osyth

8.9.4 Water Supply

There is no information available to demonstrate whether abstraction from surface water or groundwater would be supported. Opportunities in this growth area for consumptive freshwater abstraction are unlikely to be available. The growth area is located within the Brett WRZ managed by AW. The WCS has identified that there is sufficient water to manage the scale of growth proposed within the Local Plan across this WRZ until 2040. After this, additional measures would be required.

8.9.5 Growth area specific policy

The following water policy areas are recommended for development for this growth area:

- A 100 l/p/d PCC target for new homes in these allocated sites; this will support both sustainable water resource provision as well as potentially remove the need for further upgrades to the WRC at the end of the plan period. It may also help with reducing impact from storm overflows. Reducing this target to 80 l/p/d PCC would provide further benefits.

- To enable CSO spills to be managed in the long-term, require all allocated development in these settlements to prevent surface water generated from sites being discharged to the foul sewer network.
- Require SuDS built to the updated national SuDS standards to attenuate surface water runoff for flood risk purposes and be expected to manage, and where possible improve water quality, particularly nutrient discharge.
- Encourage developers to contribute to NBS for riparian management.

8.10 Thorrington, Alresford, Elmstead Market and Great Bentley

8.10.1Wastewater treatment summary

Is there capacity at the WRC for any new dwellings?	Yes, approximately 7.600 dwelling capacity
Is there sufficient capacity for all new homes planned within the WRC catchment?	Yes - approximately 800 dwellings would be allocated in the WRC catchment.

8.10.2Wastewater sewer capacity

Is there a risk of sewer outfall discharges increasing?	• The sewer network is largely separated; however, there is a small area of combined sewer near the WRC and the DWMP identifies the catchment as a high risk for the planning objective of storm overflows. • There are three outfalls in the sewer catchment, two are high risk (>10 spills) and 1 at low risk (0 spills). Additional flows to the sewer may limit the efficacy of future spill reduction measures.
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8.10.3Catchment risks and opportunities

Allocated sites are located in area of TDC which eventually drain to the Colne (Transitional) WFD Water body catchment. Surface water runoff from these sites has the potential to influence water quality within this WFD water body. The Thorrington WRC’s which would treat wastewater from these sites, also discharge to this water body.

The water body is failing to meet Good Status, in part due to Nitrogen levels being less than Good Status. Physical modification of the waterbody is a confirmed reason for not achieving Good Status.

The underlying Essex Gravels groundwater body also has a Poor overall status, due to Poor chemical status.

This highlights the need for developments in this growth area to manage surface water through the provision of SuDS with a focus on managing water quality and to avoid development within riparian zones around watercourses to reduce pressures around watercourse modification.

There are some limited NBS opportunities for one allocated sites in this growth area related to riparian woodland planting potential. Developers of these sites should be encouraged to contribute towards NBS opportunities. The location of NBS opportunities in the Thorrington, Alresford, Elmstead Market and Great Bentley growth area are shown in

Figure 8-9.

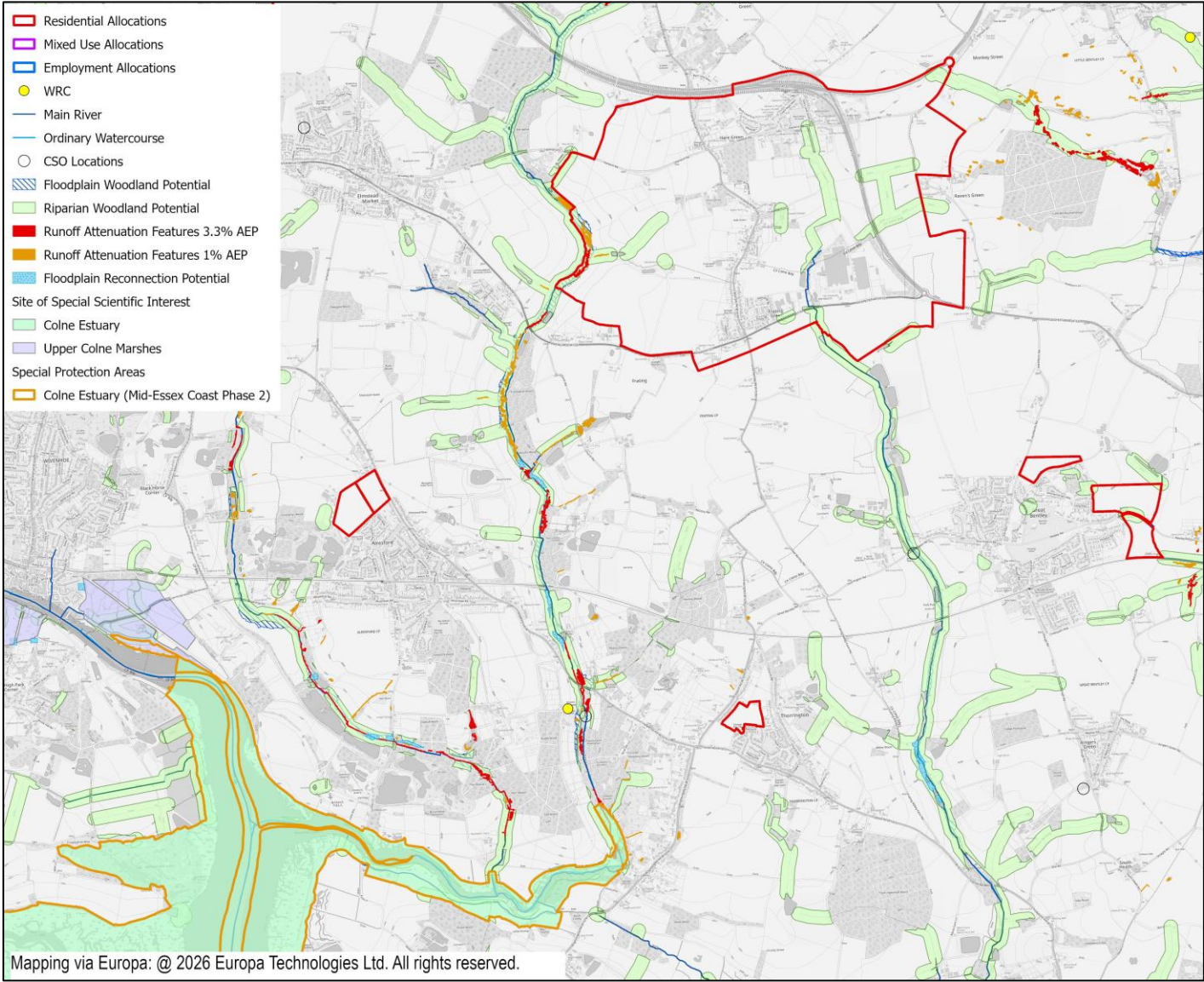


Figure 8-9: Location of water dependent habitats and NBS relative to allocated sites in Thorrington, Alresford, Elmstead Market and Great Bentley.

8.10.4Water Supply

There is no water available for abstraction from surface water or groundwater in very low flow conditions, and restricted flows available in average to medium flows. Water is only available for abstraction during high flow conditions. Therefore, there is limited scope for development to consider local sources of supply. The growth area is located within the Brett WRZ managed by AW. The WCS has identified that there is sufficient water to manage the scale of growth proposed within the Local Plan across this WRZ until 2040. After this, additional measures would be required.

8.10.5Growth area specific policy

The following water policy areas are recommended for development for this growth area:

- A 100 l/p/d PCC target for new homes in these allocated sites; this will support both sustainable water resource provision as well as potentially remove the need for further upgrades to the WRC at the end of the plan period. It may also help with reducing impact from storm overflows. Reducing this target to 80 l/p/d PCC would provide further benefits.

- To enable CSO spills to be managed in the long-term, require all allocated development in these settlements to prevent surface water generated from sites being discharged to the foul sewer network.
- Require SuDS built to the updated national SuDS standards to attenuate surface water runoff for flood risk purposes and be expected to manage, and where possible improve water quality, particularly nutrient discharge.
- Encourage developers to contribute to NBS for riparian management.

8.11 Walton on the Naze and Frinton on Sea

8.11.1Wastewater treatment summary

Is there capacity at the WRC for any new dwellings?	Yes, approximately 7,600 dwelling capacity
Is there sufficient capacity for all new homes planned within the WRC catchment?	Yes – approximately 930 dwellings would be allocated in the WRC catchment.

8.11.2Wastewater sewer capacity

Is there a risk of sewer outfall discharges increasing?	• The DWMP identifies a very significant planning objective risk for Storm overflows in the current baseline (2025). • The sewer network is combined in some parts of the town (specifically in the Frinton on Sea area), so there is an elevated risk of increasing sewer spills. • There are seven outfalls in the sewer catchment, four are high risk (>10 spills) and three are medium risk (1-9 spills). Additional flows to the sewer may limit the efficacy of future spill reduction measures.
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8.11.3Catchment risks and opportunities

Allocated sites are located in area of TDC which eventually drain to the Harwich Approaches (Transitional) WFD Water body catchment. Surface water runoff from these sites has the potential to influence water quality within this WFD water body. The Walton on the Naze WRC’s which would treat wastewater from these sites, also discharge to this water body.

The water body is failing to meet Good Status, in part due to Nitrogen levels being less than Good Status. Dissolved Inorganic Nitrogen is a confirmed reason for not achieving Good Status.

The underlying Essex Gravels groundwater body also has a Poor overall status, due to Poor chemical status.

This highlights the need for developments in this growth area to manage surface water through the provision of SuDS with a focus on managing water quality and to avoid development within riparian zones around watercourses to reduce pressures around watercourse modification.

There are some limited NBS opportunities for two allocated sites in this growth area related to riparian woodland planting potential and runoff attenuation features. Developers of these sites should be encouraged to contribute towards NBS opportunities. The location of NBS opportunities in the Walton on the Naze and Frinton on Sea growth area are shown in Figure 8-10.

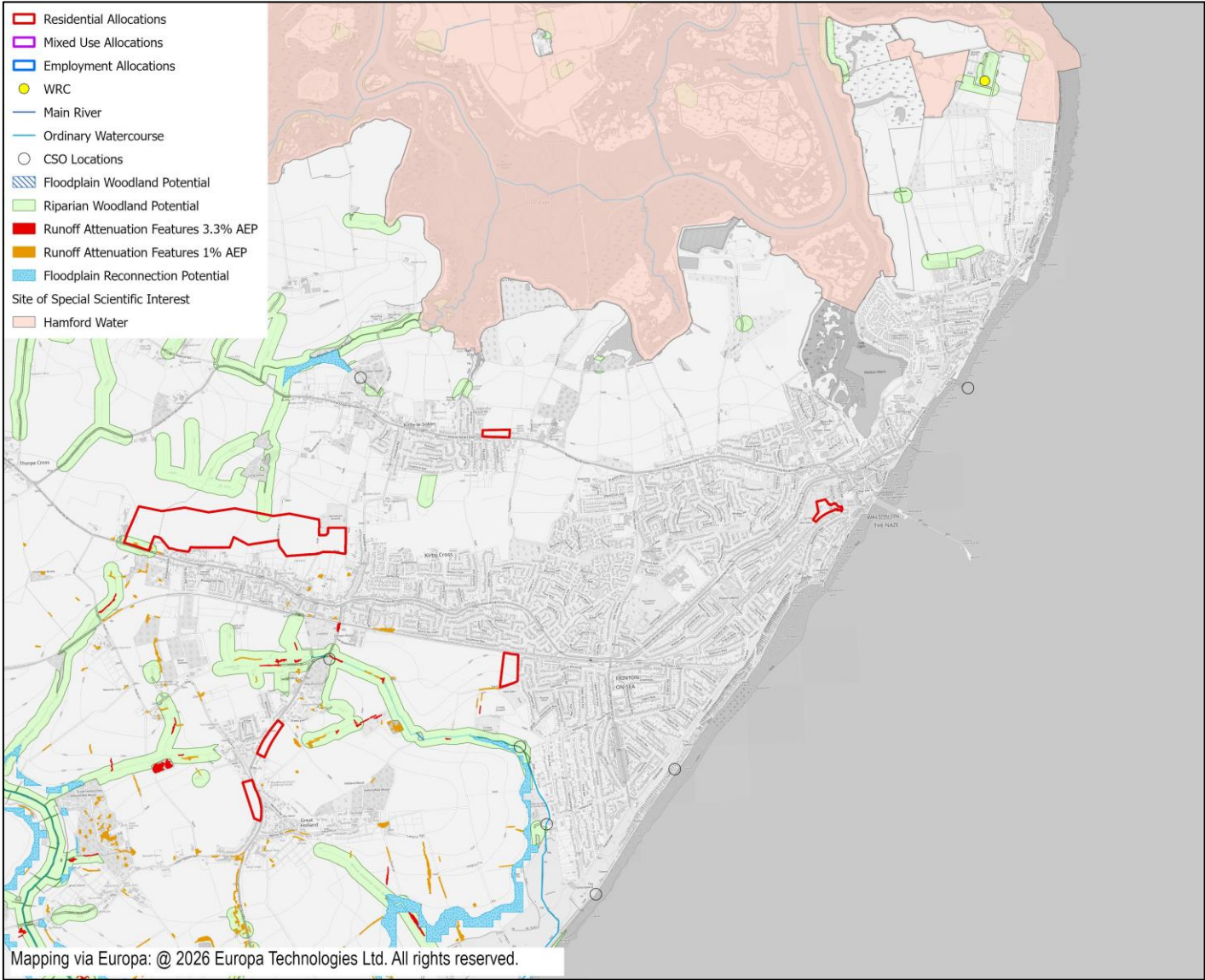


Figure 8-10: Location of water dependent habitats and NBS relative to allocated sites in Walton on the Naze and Frinton on Sea

8.11.4Water Supply

There is no information available to demonstrate whether abstraction from surface water or groundwater would be supported. Opportunities in this growth area for consumptive freshwater abstraction are unlikely to be available. The growth area is located within the Brett WRZ managed by AW. The WCS has identified that there is sufficient water to manage the scale of growth proposed within the Local Plan across this WRZ until 2040. After this, additional measures would be required.

Site SAH2, Land north of Thorpe Road, Kirby Cross is a large site (150 dwellings or more) and of a scale where water reuse could be considered by developers for supplying non-potable uses to meet 85l/p/d PCC (or lower).

8.11.5Growth area specific policy

The following water policy areas are recommended for development for this growth area:

- A 100 l/p/d PCC target for new homes in these allocated sites; this will support both sustainable water resource provision as well as potentially remove the need for further upgrades to the WRC at the end of the plan period. It

may also help with reducing impact from storm overflows. Reducing this target to 80 l/p/d PCC would provide further benefits.

- To enable CSO spills to be managed in the long-term, require all allocated development in these settlements to prevent surface water generated from sites being discharged to the foul sewer network.
- Require SuDS built to the updated national SuDS standards to attenuate surface water runoff for flood risk purposes and be expected to manage, and where possible improve water quality, particularly nutrient discharge.
- Encourage developers to contribute to NBS for riparian management.

8.12 Wix

8.12.1Wastewater treatment summary

Is there capacity at the WRC for any new dwellings?	Yes, approximately 125 dwelling capacity
Is there sufficient capacity for all new homes planned within the WRC catchment?	Yes – only a small number of dwellings (20) would be allocated in the WRC catchment.

8.12.2Wastewater sewer capacity

Is there a risk of sewer outfall discharges increasing?	• The sewer network is separated so risk is generally low. • There are no identified sewer overflow risks in the growth area.
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8.12.3Catchment risks and opportunities

Allocated sites are located in area of TDC which eventually drain to the Stour (Essex) Transitional WFD Water body catchment. Surface water runoff from these sites has the potential to influence water quality within this WFD water body. The Wix WRC which would treat wastewater from these sites, also discharges to this water body.

The water body is failing to meet Good Status, in part due to Nitrogen levels being less than Good Status. Continuous sewage discharge, poor nutrient management and groundwater abstraction of the waterbody is a confirmed reason for not achieving Good Status.

The underlying Essex Gravels groundwater body also has a Poor overall status, due to Poor chemical status.

This highlights the need for developments in this growth area to manage surface water through the provision of SuDS with a focus on managing water quality and to avoid development within riparian zones around watercourses to reduce pressures around watercourse modification.

There are some limited NBS opportunities for the two allocated sites in this growth area related to riparian woodland planting potential and runoff attenuation features. Developers of these sites should be encouraged to contribute towards NBS opportunities. The location of NBS opportunities in the Wix growth area are shown in Figure 8-11.

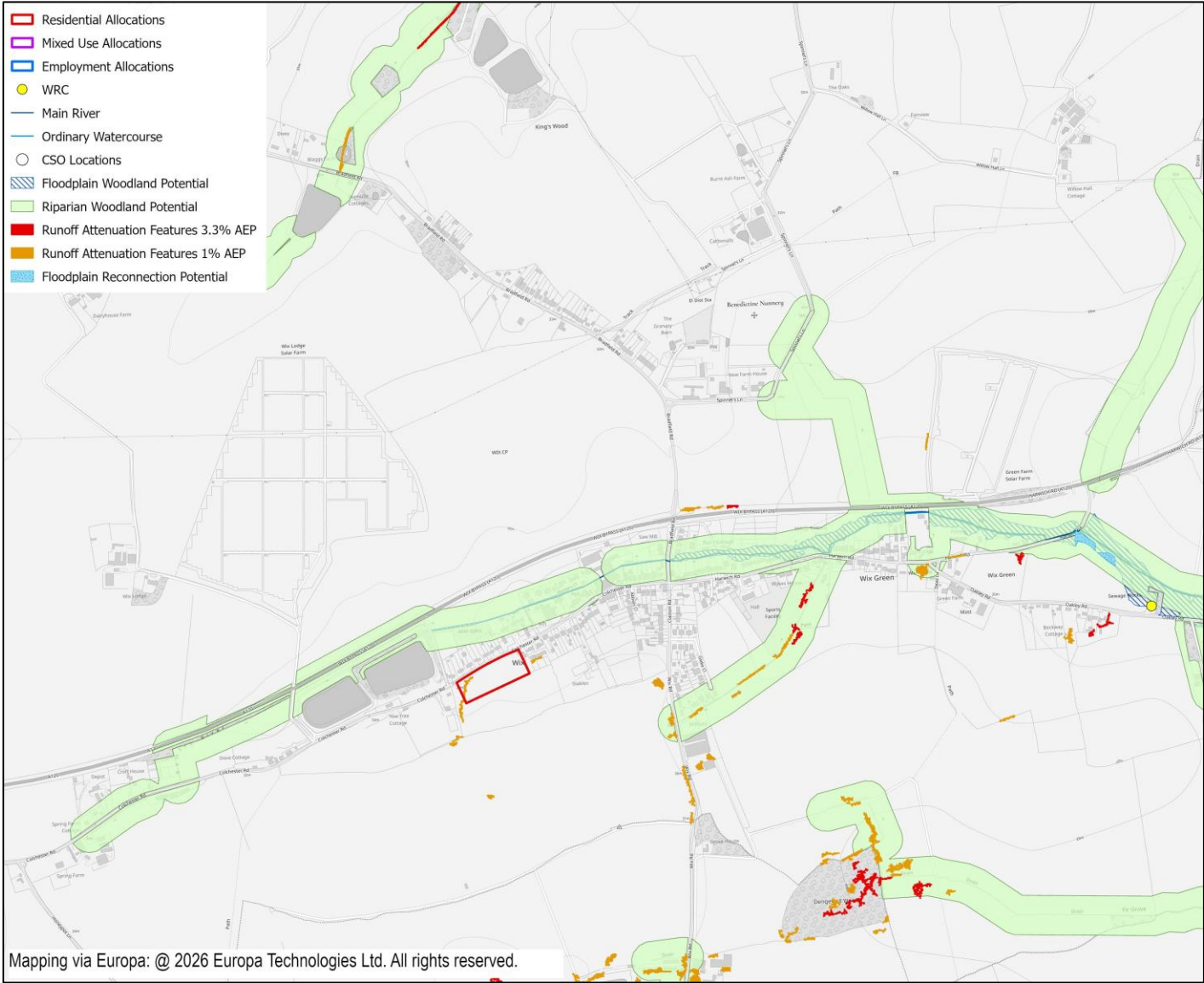


Figure 8-11: Location of water dependent habitats and NBS relative to allocated sites in Wix

8.12.4Water Supply

There is no water available for abstraction from groundwater and no significant source if surface freshwater abstraction. Therefore, there is limited scope for development to consider local sources of supply. The growth area is located within the Brett WRZ managed by AW. The WCS has identified that there is sufficient water to manage the scale of growth proposed within the Local Plan across this WRZ until 2040. After this, additional measures would be required.

8.12.5Growth area specific policy

The following water policy areas are recommended for development for this growth area:

- A 100 l/p/d PCC target for new homes in these allocated sites; this will support both sustainable water resource provision as well as potentially remove the need for further upgrades to the WRC at the end of the plan period. It may also help with reducing impact from storm overflows. Reducing this target to 80 l/p/d PCC would provide further benefits.
- To enable CSO spills to be managed in the long-term, require all allocated development in these settlements to prevent surface water generated from sites being discharged to the foul sewer network.

- Require SuDS built to the updated national SuDS standards to attenuate surface water runoff for flood risk purposes and be expected to manage, and where possible improve water quality, particularly nutrient discharge.
- Encourage developers to contribute to NBS for riparian management.

9. Policy recommendations

Based on the assessments completed, the following policy recommendations have been put forward to TDC for consideration as part of the Local Plan development.

9.1.1 Per capita consumption – domestic

The TDC area is classified as water stressed by the Environment Agency. Whilst AW have measures to maintain a surplus of supply in the long term, this will require demand from new housing to be managed. Therefore, there is evidence that a stricter PCC policy for new development would significantly contribute to managing and maintaining a surplus of supply within the TDC area. This is in keeping with Government plans to address water scarcity in response to the Environment Act 2021.

Additionally, the wastewater assessment has shown that proposed dwellings in some allocations being restricted to a water use of 85 l/p/d would significantly improve the available capacity at WRCs across the TDC area, and in some cases, removing the need for an improvement scheme to be implemented in the plan period.

It is recommended that a policy requiring all dwellings within allocated sites within the Local Plan to meet a PCC target of 100 l/p/d or lower. This WCS has set out evidence for why this target is applicable and how it can be achieved.

9.1.2 Confirmation of WRC capacity in key locations

There is no (or limited) baseline wastewater treatment capacity in some WRCs, for which some have no improvement plans proposed in the current 5-year water company investment period (AMP8 – from 2025 to 2030). This applies to:

- Clacton Holland Haven
- Great Bromley
- Jaywick; and
- Manningtree

For development in these catchments, it is recommended that a Local Plan policy is developed requiring developers to undertake pre-planning engagement with Anglian Water at the earliest opportunity to assess infrastructure capacity, and any specific requirements that may be needed to deliver the proposed development, which may include sustainable points of connection to the water supply and wastewater networks to minimise impacts on existing communities and the environment.

The site location for the Horsley Garden Community is not within a catchment area of an existing WRC. Connection options to existing WRCs are limited, therefore this WCS recommends a new, developer delivered onsite treatment facility would be required, assuming a local discharge to the nearby Holland Brook watercourse.

AWS recommend for new development proposals, developers must demonstrate that there is capacity available in the sewerage network and at the receiving water recycling centre to accommodate wastewater flows from the site.

9.1.3 SuDS and surface water management:

All new developments to provide separate surface water drainage systems and incorporate SuDS in accordance with the updated national SUDS standards and good practice guidance. Require SuDS to attenuate surface water runoff for flood risk purposes and be expected to manage, and where possible improve water quality, particularly nutrient discharge.

Surface water disposal routes should be considered in accordance with the surface water disposal hierarchy. No new surface water connections should be made to the foul sewer system.

9.2 Consultation recommendations

Specific areas for further consultation have been identified as follows:

9.2.1 AWS for wastewater

- Further discussion around the implications of the development on existing infrastructure capacity and investment needed to accommodate the development, including any significant local network constraints that might impact on the ability to deliver. To include more detailed understanding of dependence on further investment and the planned timing, and expectations for those catchments where the investment needs have not been defined or highlighted as needing investment in the DWMP. Also to clarify investment expected to be delivered as per the current business plan.
- Discussion around potential opportunities for development to contribute to investment, either through financial contributions or delivery as part of the development to consider how this may feed into policy.
- Discussion around expectations for consultation and involvement as the Local Plan is developed and as developments subsequently come forward to manage future delivery risks, particularly where there are no identified growth solutions in WRC catchments which have limited capacity to 2030.

9.2.2 AW for water supply

- Details of growth forecasts used in the final WRMP, including timing, and any implications in relation to the numbers and trajectory being considered for the emerging Local Plan.
- Discussion around the implications of the development on existing infrastructure capacity and investment needed to accommodate the development, including any significant local network constraints that might impact on the ability to deliver.
- Discussion around potential opportunities for development to contribute to investment, either through financial contributions or delivery as part of the development to consider how this may feed into policy.

Appendix A - Policy and legislative drivers shaping the WCS

A.1 WFD surface water body status

Status	Description
High	Near natural conditions. No restriction on the beneficial uses of the water body. No impacts on amenity, wildlife or fisheries
Good	Slight change from natural conditions as a result of human activity. No restriction on the beneficial uses of the water body. No impact on amenity or fisheries. Protects all but the most sensitive wildlife.
Moderate	Moderate change from natural conditions as a result of human activity. Some restriction on the beneficial uses of the water body. No impact on amenity. Some impact on wildlife and fisheries.
Poor	Major change from natural conditions as a result of human activity. Some restrictions on the beneficial uses of the waterbody. Some impact on amenity. Moderate impact on wildlife and fisheries.
Bad	Severe change from natural conditions as a result of human activity. Significant restriction on the beneficial uses of the water body. Major impact on amenity. Major impact on wildlife and fisheries with many species not present.

A.2 Relevant Legislation

Directive/Legislation/Guidance	Description
The Conservation of Offshore Marine Habitats and Species Regulations 2017	Provides for the designation of Special Protection Areas.
Building Regulations Approved Document G – sanitation, hot water safety and water efficiency (March 2010)	The current edition covers the standards required for cold water supply, water efficiency, hot water supply and systems, sanitary conveniences and washing facilities, bathrooms and kitchens and food preparation areas.
Environment Act 1995	Sets out the role and responsibility of the Environment Agency.
Environment Act 2021	Provides a legal framework for environmental governance in the UK. Brings in measures for improvement of the environment in relation to waste, resource efficiency, air quality, water, nature and biodiversity, and conservation.
Environmental Protection Act 1990	Integrated Pollution Control (IPC) system for emissions to air, land and water.

Directive/Legislation/Guidance	Description
Flood & Water Management Act 2010	The Flood and Water Management Act 2010 is the outcome of a thorough review of the responsibilities of regulators, local authorities, water companies and other stakeholders in the management of flood risk and the water industry in the UK. Its key features relevant to this WCS are: 1. To give the Environment Agency an overview of all flood and coastal erosion risk management and unitary and county councils the lead in managing the risk of all local floods. 2. To encourage the uptake of sustainable drainage systems by removing the automatic right to connect to sewers and providing for unitary and county councils to adopt SuDS for new developments and redevelopments. 3. To widen the list of uses of water that water companies can control during periods of water shortage and enable Government to add to and remove uses from the list. 4. To enable water and sewerage companies to operate concessionary schemes for community groups on surface water drainage charges. 5. To make it easier for water and sewerage companies to develop and implement social tariffs where companies consider there is a good cause to do so, and in light of guidance that will be issued by the Secretary of State following a full public consultation.
Future Water, February 2008	Sets the Government's vision for water in England to 2030. The strategy sets out an integrated approach to the sustainable management of all aspects of the water cycle, from rainfall and drainage, through to treatment and discharge, focusing on practical ways to achieve the vision to ensure sustainable use of water. The aim is to ensure sustainable delivery of water supplies and help improve the water environment for future generations.
The Groundwater (Water Framework Directive) (England) Direction 2016	To protect groundwater against pollution by 'List 1 and 2' Dangerous Substances.
The Conservation of Habitats and Species Regulations 2017	To conserve the natural habitats and to conserve wild fauna and flora with the main aim to promote the maintenance of biodiversity taking account of social, economic, cultural and regional requirements. In relation to abstractions and discharges, can require changes to these through if they are impacting on designated European Sites. Also, the legislation that provides for the designation of Special Areas of Conservation provides special protection to certain non-avian species and sets out the requirement for Appropriate Assessment of projects and plans likely to have a significant effect on an internationally designated wildlife site.
Land Drainage Act 1991	Sets out the statutory roles and responsibilities of key organisations such as Internal Drainage Boards, local authorities, the Environment Agency and Riparian owners with jurisdiction over watercourses and land drainage infrastructure.

Directive/Legislation/Guidance Description

National Planning Framework	Policy	Planning policy in the UK is set by the National Planning Policy Framework (NPPF). NPPF advises local authorities and others on planning policy and operation of the planning system.
		A WCS helps to balance the requirements of various planning policy documents and ensure that land-use planning and water cycle infrastructure provision is sustainable.
Pollution Prevention and Control Act (PPCA) 1999		Implements the IPPC Directive. Replaces IPC with a Pollution Prevention and Control (PPC) system, which is similar but applies to a wider range of installations.
Ramsar Convention		Provides for the designation of wetlands of international importance
Urban Waste Water Treatment Directive (UWWTD)		This Directive concerns the collection, treatment and discharge of urban waste water and the treatment and discharge of waste water from certain industrial sectors. Its aim is to protect the environment from any adverse effects caused by the discharge of such waters.
Water Act 2003		Implements changes to the water abstraction management system and to regulatory arrangements to make water use more sustainable.
The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017		The WFD, combines water quantity and water quality issues together. An integrated approach to the management of all freshwater bodies, groundwaters, estuaries and coastal waters at the river basin level has been adopted. The overall requirement of the directive is that all river basins must achieve 'Good ecological status' by 2015 or by 2027 if there are no grounds for derogation. The Environment Agency is the body responsible for the implementation of the WFD in the UK. The Environment Agency have been supported by UKTAG³⁰, an advisory body which has proposed water quality, ecology, water abstraction and river flow standards to be adopted in order to ensure that the water bodies in the UK (including groundwater) meet the required status³¹. Standards and waterbody classifications are published via River Management Plans (RBMP) the latest of which were completed in 2015.
Natural Environment & Rural Communities Act 2006		Covering Duties of public bodies – recognises that biodiversity is core to sustainable communities and that Public bodies have a statutory duty that states that “every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.
Water Resources Act 1991		Protection of the quantity and quality of water resources and aquatic habitats. Parts have been amended by the Water Act 2003.

³⁰ The UKTAG (UK Technical Advisory Group) is a working group of experts drawn from environment and conservation agencies. It was formed to provide technical advice to the UK's government administrations and its own member agencies. The UKTAG also includes representatives from the Republic of Ireland.

³¹ UK Environmental Standards and Conditions (Phase I) Final Report, April 2008, UK Technical Advisory Group on the Water Framework Directive.

Directive/Legislation/Guidance Description

Wildlife & Countryside Act 1981 (as amended)	Legislation that provides for the protection and designation of SSSIs and specific protection for certain species of animal and plant among other provisions.
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A.3 Strategies and plans

Category	Author	Document Name	Publication Date
Flood Risk	AECOM	Tendring District Council Level 1 Strategic Flood Risk Assessment	2017
Flood Risk	ECC	Essex Local Flood Risk Management Strategy	2018
Water Resources	Defra	Storm overflows discharge reduction plan	2023
Water Resources	DEFRA	Integrated Plan for Delivering Clean and Plentiful Water	2023
Water Resources	DEFRA	Environmental Improvement Plan	2023
Water Resources	AW	Water Resources Management Plan	2024
Water Resources	AWS	Drainage and Wastewater Management Plan	2024
Water Resources	WRE	Regional Water Resources Plan for Water Resources East	2023
Water Resources	Essex County Council	Water Strategy for Essex	2024
Water Resources	Essex County Council	Essex Local Nature Recovery Strategy	2024
Water Resources / Flood Risk	Environment Agency	Anglian River Basin District River Basin Management Plan	2016

Appendix B – WRC capacity assessment methodologies

B1: Approach overview

An increase in residential and employment growth will have a corresponding increase in the volume and flow of wastewater generated within the study area, therefore it is essential to consider the capacity of each WRC in the study area to accept this additional wastewater flow. WRC capacity is considered in terms of flow capacity and environmental capacity.

WRC flow capacity

The flow (or treatment headroom) capacity of a WRC is defined as the volume of additional flow that a WRC can treat before it would exceed the volume of discharge it is allowed to discharge within the conditions of its discharge permit. The following questions were answered through the assessment:

- Is there sufficient treatment capacity (headroom) within existing WRCs?
- What new infrastructure is required to provide for the additional wastewater treatment?

Environmental capacity

Environmental capacity is defined in this WCS as the water quality needed in the receiving waterbodies to maintain the current (and future required) conditions of aquatic environments. The following objectives are answered through an assessment of environmental capacity using modelling and calculation techniques:

- Could an increase in WRC discharge cause deterioration in water quality?
- Could an increase in WRC discharge cause deterioration in WFD status of any element of a water body? It is a requirement of the WFD to prevent status deterioration.
- Could development alone prevent the receiving water from achieving its Future Target WFD Status or Potential? This is also a requirement of the WFD, which can be separated into the following two objectives:
 - Is the Future Target Status possible now assuming adoption of best available technology? To determine if it is TAL that would prevent the Future Target Status being achieved.
 - Is the Future Target Status technically possible after development and adoption of best available technology? To determine if it is growth that would prevent the Future Target Status being achieved.
- Will development cause deterioration in downstream designated water-dependent sites?

Assumptions and input data

Several key assumptions were used in the assessments as follows:

- The wastewater generation per new household was based on an assumed Occupancy Rate (OR) of 2.4 people per house and an average consumption of 125 l/p/d).
- Employment allocations (including existing commitments and allocated sites) were provided by TDC as shown in Appendix F, Figure 2. The total area of the employment sites (232 hectares) and total job number target of 11,581 have been used to calculate an assumed employment flow, based on the total area of employment sites within each of the WRC catchments as shown in Table B-1. An assumed consumption per job of 0.016 m³/h/d has been used.

Table B-1: Employment Flow Calculations

WRC	Area of employment sites from total %	Calculated Job number target/demand	Employment Flow m3/d
Colchester	44.4	5142	82.27
Clacton Holland	6.8	789	12.62
Great Bromley	34.5	3993	63.90
Harwich & Dovercourt	6.4	744	11.90
Manningtree	0.9	100	1.60
Horsley Garden Community (New WRC)	6.0	699	11.18

- The dwelling capacity assessment requires an estimate of water which would enter the drainage network via groundwater or water in the soil (called 'infiltration') as this uses available treatment capacity. A global assumption has been applied whereby a percentage of the water used by new dwellings would be added to as infiltration once in the sewer network to allow for this aspect. The infiltration percentage was set to 25% of water used.
- The WRC current/measured discharge flows were taken as the Q80 of measured flow to give the Dry Weather Flow (DWF) assumption. Measured flows were provided by AWS in 2026 (using the 5 years of data 2021 to 2025). Future discharge flows at each WRC were calculated by adding the volume of additional wastewater generated by new dwellings and employment (using an OR of 2.4 and a consumption value of 100l/p/d multiplied by 1.35 (10% for employment and 25% for infiltration)) to the current permitted DWF value.
- WRC current discharge quality was taken as the last three years of permit monitoring data where available for each WRC, or the current permitted limits for each water quality element, allowing for recent AMP 7 improvements in phosphate consents where advised by AWS. Where monitoring data was not available, figures for the mean and standard deviation of each element were calculated based on permit levels using RQP 2.5 software.
- Raw river water quality data for modelling was taken from the Environment Agency WIMS database where available, using the nearest upstream monitoring locations and taking the last three years of data. Where no data was available, the current WFD Status was used, taking Status mid-points for each parameter.
- The WFD 'no deterioration' target for each WRC was the current Status for each water quality element of the receiving water body, based on the latest Status from the Catchment Data Explorer.
- For the purposes of this study, TAL for each determinant are considered to be:
 - 5mg/l for BOD;
 - 1mg/l for Ammoniacal-N; and
 - 0.25mg/l for Phosphate.

B2: Assessment methodology

WRC Flow capacity assessment

This assessment was the first step to determine both flow capacity and which WRC required water quality assessment. It also informed the type and complexity of water quality assessment required.

A WRC flow headroom calculator was developed and used to inform this assessment. The calculator identified which WRC within the study area will receive future growth based on allocation sites and existing commitment site locations.

The permitted flow headroom capacity within an existing permit is assumed to be usable; therefore, the following steps were applied to calculate approximately how much available headroom each WRC has:

1. Determine the quantity of growth within a WRC catchment to determine the additional flow expected at each WRC;
2. Calculate the additional wastewater flow generated at each WRC;
3. Calculate the remaining permitted flow headroom at each WRC;
4. Determine whether the growth can be accommodated within existing headroom (or PE allowance).

Results are presented Appendix C.

Environmental capacity – water quality assessment

Water quality assessment was then required whenever levels of growth (and hence wastewater generation) were defined as significant in relation to the available headroom at a WRC or the sensitivity of the watercourse receiving the treated flows; this defined the environmental capacity.

The water quality assessment determines whether significant growth served by a WRC has the potential to result in water quality impacts on receiving watercourse and is a key tool to determine where WRC treatment upgrades, or new treatment solutions may be required. In the context of the WCS aims, significant growth is defined as being when the future wastewater flows would result in:

- a WRC exceeding its permitted headroom and require a new discharge permit; or,
- a WRC having less than 10% remaining headroom when compared to the DWF permit limit.

WRCs which would receive significant growth and where they discharge to a fluvial (freshwater) water body, were identified for water quality modelling using the River Quality Planning tool (RQP). WRCs which would receive growth but where the growth is considered not to be significant (greater than 10% residual headroom after growth) had a simpler load standstill calculation undertaken to consider water quality implications. WRCs which would receive significant growth and which discharge to tidal water bodies also had load standstill calculations undertaken, and not RQP. WRCs which would receive no growth were scoped out of the assessment.

RQP Modelling

Modelling of the quality permits required to meet the two WFD requirements (no deterioration and future target Status) was undertaken, using RQP 2.5 (River Quality Planning). This tool is the Environment Agency's software for calculating permit conditions.

The software is a monte-carlo based statistical tool that determines what statistical quality is required from discharges to meet defined downstream targets, or to determine the impact of a discharge on downstream water quality compliance statistics. Modelling was completed for four tests under two main banners of 'no deterioration' and 'meeting future WFD Status':

Step 1: No deterioration – modelling to determine:

- *Test C1*: the permit required after growth but which would maintain the same river quality at the discharge mixing point as modelled for the current discharge volume. This would ensure no deterioration from the current river condition;
- *Test C2*: the permit required after growth but which would limit deterioration in the river at the mixing point to less than 10% of the current modelled quality; and,

- **Test C3:** the permit required after growth that would ensure no deterioration in WFD status of the waterbody at the mixing point.

Step 2: whether growth would prevent future objective WFD status from being attained.

Step 1 – ‘No Deterioration’ – Tests C1 to C3

Table B-1 provides detail on each of the modelling steps related to no deterioration and the sequence in which these are performed.

Table B-1: Step 1, no deterioration tests, C1, C2 and C3.

Test Ref	Calculation Name	Calculation Detail	Reason for Calculation
C1	Maintain mixing point quality	No change in current modelled discharge quality at mixing point	To determine if it is technically feasible to ensure no change in current quality as a result of growth
C2	Limit deterioration to 10%	No deterioration from current downstream quality + 10% with future effluent flow	To determine if it is technically feasible to limit deterioration to no more than 10% of the current downstream water quality
C3	No deterioration (Current)	No deterioration from current status with current effluent flow	To calculate what quality condition is currently needed to avoid deterioration in the current status downstream with the current flow

If ‘No Deterioration’ could be achieved, then a proposed discharge permit standard was calculated which will be needed as soon as the growth causes the WRC flow permit to be exceeded.

Step 2 – Meeting Future ‘Good’ Status – C4 and C5

For all WRC meeting the requirement for RQP modelling, and where the current downstream quality of the receiving watercourse is less than good, a calculation was undertaken to determine if the receiving watercourse could achieve its future objective status as set out in the online Catchment Data Explorer, with the proposed growth within Technically Achievable Limits (TAL) treatment technology and what permit limits would be required to achieve this.

The assessment of attainment of future status assumed that other measures will be put in place to ensure the target status upstream, so that the modelling assumed upstream water quality is at the midpoint of the target status for each element and set the downstream target as the lower boundary of the target status for each element.

If the target status could be achieved with growth with permits achievable within TAL, then a proposed discharge permit standard which may be needed in the future was determined.

If the modelling showed that the watercourse could not meet future target status with the proposed growth within TAL, then the scenario is rerun with current WRC flows. If the additional run shows that future targets could be met without growth, then it is concluded that growth would be a limiting factor in achieving the future target status and an alternative solution is required. If the modelling shows the future target status could not be achieved either with, or without growth, then the planned growth is concluded not to be a limiting factor in future target status requirements.

Table B-2: Step 2, meeting future 'Good' status, C4 and C5

Test Ref	Calculation Name	Calculation Detail	Reason for Calculation
C4	Achieve target status (Current)	Achieving target status with current effluent flow	To test what effluent quality would be needed to achieve target status with the current flow permit
C5	Achieve target status (Future)	Achieving target status with future effluent flow	To assess whether the future quality permit limits needed to achieve target status will be significantly more onerous and difficult to achieve than those currently needed (calculation 4)

Results are presented in Appendix E.

Load standstill calculations

For WRC where growth was not significant (more than 10% capacity remaining after growth), or where the growth is significant and the discharge is to a tidal water body, load standstill calculations were undertaken using Microsoft Excel. This used estimates of current measured flow at each WRC (Q80) to determine load amounts based on current permitted conditions for each quality parameter. These load amounts were then compared to the load amounts that would occur with the same quality conditions applied but for the calculated WRC flow once growth had been accounted for. The goal seek tool in Excel was then used to adjust the future quality conditions required for each parameter to reduce future load amounts back to the load amounts calculated.

Where the quality conditions would need to be less than the TAL, then a new solution was deemed to be required.

Load standstill results are presented in Appendix D.

Appendix C – WRC flow capacity results

Table C1 sets out the results of the WRC headroom capacity assessment for each WRC receiving growth from allocations within the Tendring Local Plan.

Table C1: Headroom capacity assessment summary

Water Recycling Centres	Total dwelling numbers assessed	DWF Permitted flow (m3/d)	Current measured DWF (Q80) (m3/d)	Headroom Capacity pre-growth (m3/d)	Post growth DWF estimate (m3/d)	Headroom Capacity post-growth (m3/d)	Percentage capacity after growth
Brightlingsea - Church Road	191	2,160	1687.3	473	1,745	415	19%
Clacton Holland Haven	6,117	10,546	11071.1	-525	12,919	-2,373	-22%
Great Bromley	1,554	365	283.2	82	813	-448	-123%
Harwich and Dovercourt	2,802	6,782	4922.6	1,859	5,775	1,007	15%
Jaywick	3,731	5,000	4779.2	221	5,899	-899	-18%
Little Bentley Tendring Road	12	Descriptive permit	N/A	N/A	4	N/A	N/A
Manningtree	1,064	2,999	3130.9	-132	3,452	-453	-15%
New WRC	1,450	N/A	N/A	N/A	446	N/A	N/A
No WRC Catchment	32	N/A	N/A	N/A	10	N/A	N/A
St Osyth	470	1,600	1335.1	265	1,476	124	8%
Thorington	796	2,400	1875.5	525	2,114	286	12%
Walton on the Naze	927	6,364	4075.6	2,288	4,354	2,010	32%
Wix	20	160	122.7	37	129	31	19%

Appendix D – Load standstill results

A summary of the results from the water quality assessment using the load standstill method are included in this section and presented in Table D1.

Table D1: Load standstill results

	Brightlingsea WRC	Clacton Holland Haven WRC	Great Bromley WRC	Harwich and Dovercourt WRC	Jaywick WRC	Manningtree WRC	St WRC	Osyth	Thorrington WRC	Walton the WRC	on Naze	Wix WRC
Current BOD Technically Achievable Limit (mg/l – 95th percentile)	5	5	5	5	5	5	5	5	5	5		5
Current Ammonia Technically Achievable Limit (mg/l – 95th percentile)	1	1	1	1	1	1	1	1	1	1		1
Current Phosphate Technically Achievable Limit (mg/l - AA)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		0.25
Current DWF Permit (m3/day)	2,160	10,546	365	6,782	5,000	2,999	1,600	2,400	6,364	160		
Measured flow Q80 (m3 /day)	1,687	11,071	283	4,923	4,779	3,131	1,335	1,876	4,076	123		
Current DWF capacity (m3 /day)	473	-525	82	1,859	221	-132	265	525	2,288	37		
BOD Permit limits (mg/l - 95% percentile)	40	100	20	60	100	50	50	10	40	35		
Ammonia Permit Limits (mg/l - 95% percentile)	-	-	15	50	-	20	-	3	-	-		
Phosphate Permit Limits (mg/l - annual average)	-	-	-	-	-	-	-	-	-	-		
Future DWF (m3 /day)	1,745	12,919	813	5,775	5,899	3,452	1,476	2,114	4,354	129		
Discharge Permit required*												
Effluent Quality permit required for BOD (mg/l - 95% percentile)	38.7	85.7	7.0	51.1	81.0	45.4	45.2	8.9	37.4	33.2		
Effluent Quality permit required for Ammonia (mg/l - 95% percentile)	-	-	-	42.6	-	18.1	-	2.7	-	-		
Effluent Quality permit required for Phosphate (mg/l - annual average)	-	-	-	-	-	-	-	-	-	-		

* Colour key: Green – no change to permit; Amber – change tightening, but within TAL; permit required not achievable within TAL.

Appendix E - RQP assessment results

The results from the water quality assessment using the RQP tool are included in this Appendix. A summary table of results is provided first, followed by an explanation of the findings for each WRC.

	New WRC			GREAT BROMLEY		
Parameters considered	New WRC	BOD (mg/l - 95%ile)	Phosphate (mg/l - mean)	Ammonia (mg/l - 90%ile)	BOD (mg/l - 90%ile)	Phosphate (mg/l - mean)
Permit condition	1	5	0.25	15	20	0.25
Measured quality of current discharge (taken from RQP output)	N/A	N/A	N/A	6.32	-	0.18
Technically achievable limits (TAL)	1	5	0.25	1	5	0.25
WFD receiving waterbody and WFD Waterbody ID	Holland Brook Water Body (GB105037077810)			Tenpenny Brook Water Body (GB105037041310)		
Parameters considered	Ammonia (mg/l - 90%ile)	BOD (mg/l - 90%ile)	Phosphate (mg/l - mean)	Ammonia (mg/l - 90%ile)	BOD (mg/l - 90%ile)	Phosphate (mg/l - mean)
Receiving waterbody Quality Element Published Status	High	High	Poor	High	N/A	Bad
Upstream sample point	No upstream monitoring pt available			No upstream monitoring pt available		
Measured quality upstream of discharge	0.15	1.09	0.91	0.15	N/A - no data (Status mid pt used)	1.05
Quality Element Status based on measured data	High	High	Poor	High	N/A	Poor
Test 1 - Maintain Current Quality and limit to 10% deterioration	Ammonia (mg/l)	BOD (mg/l)	Phosphate (mg/l)	Ammonia (mg/l)	BOD (mg/l)	Phosphate (mg/l)
Mixing Point Quality with current WRC flow	N/A	N/A	N/A	1.01	N/A	0.89
Modelled status at mixing point with current flow	N/A	N/A	N/A	Moderate	N/A	Poor
Permit condition required to maintain mixing point quality	N/A	N/A	N/A	3.43	N/A	0.62
river target to limit to 10% deterioration limit	N/A	N/A	N/A	1.11	N/A	0.98
Permit condition required to be within 10% deterioration target	N/A	N/A	N/A	3.78	N/A	0.85
Test 2 - WFD Status: no deterioration (waterbody status)	Ammonia (mg/l)	BOD (mg/l)	Phosphate (mg/l)	Ammonia (mg/l)		Phosphate (mg/l)
Threshold at which status deterioration would occur	0.30	4.00	1.042	1.10	N/A	1.054
permit condition required at mixing point - current WRC flow	N/A	N/A	N/A	7.04	N/A	1.04
permit condition required at mixing point - after growth	0.56	7.62	1.81	3.74	N/A	1.05
Test 3 - Future WFD Status	Ammonia 90%ile (mg/l)	BOD 90%ile (mg/l)	Phosphate mean (mg/l)	Ammonia 90%ile (mg/l)	BOD 90%ile (mg/l)	Phosphate mean (mg/l)
Is future objective /target WFD status higher than the current status?	No	No	Yes	No	N/A	Yes
Target future status	N/A	N/A	Moderate	Good	N/A	Good
Permit condition required - current WRC flow			N/A	2.21		0.15
Permit condition required - after growth			0.30	1.43		0.11
Will Growth prevent future target status?			No			No - not achievable with or without growth

E1. RQP outputs for WRCs

Great Bromley WRC assessment

Receiving watercourse

The Tenpenny Brook (GB105037041310) receives treated effluent from Great Bromley WRC and currently has an overall 2022 waterbody status of Poor. The 2022 status of the physio-chemical elements considered in this assessment are provided in Table E1. Phosphate is currently at Bad Status but has a future objective of Good Status by 2027 which must be considered for future wastewater discharges.

Note: This section is based on 1,450 dwellings allocated at Hare Green Garden Community; however, the latest estimate indicates that this may increase to around 1,700 dwellings.

Table E1: WFD Status summary for the Tenpenny Brook waterbody

Classification Element	Current Status (2022)	Upstream Current Mixing Point Quality Status	Future Objective Status
Ammonia	High	Moderate	Good
Phosphate	Bad	Poor	Good

Revised permit conditions – modelling results

The revised discharge permit required by the end of the plan period (i.e. accounting for proposed growth) for each determinant and for each modelled scenario are presented in Table E2.

Table E2: RQP modelled permit quality conditions required for Great Bromley WRC

Determinant	Current permit condition	Maintain current mixing point quality	Limit deterioration to 10%	Ensure no deterioration in WFD element Status at mixing point	Achieve future WFD objective status
Ammonia (mg/l 95%ile)	15	3.43	3.78	3.74	1.43
Phosphate (mg/l annual average)	0.25	0.62	0.85	1.05	0.11

Based on 2021 to 2025 data, the Great Bromley WRC flow permit would be exceeded once all the growth within its catchment is delivered by the end of the plan period and a new permit would be required. Water quality modelling has shown that the new permit would require improvements to the permit limits for ammonia to ensure there was no increase in water quality impact in the Tenpenny Brook as a result of the additional treated discharge. These changes would be significant and would likely require significant treatment process upgrades, however, the changes are possible within TAL. Further reductions in effluent ammonia concentrations would be required to achieve the target Good Status at

the mixing point. The ammonia concentration would be deliverable within TAL, allowing for the increased future discharge rate.

The current status for phosphate can be maintained at the point of mixing without changes to permit limits. Modelling has also been undertaken to determine if Good Status can be maintained for phosphate at the mixing point of the discharge if the current upstream status improves to Good (the current 2022 status is bad). This modelling shows that it would not be possible to achieve this status at this point in the watercourse once growth has been considered within TAL. However, model runs demonstrate that this would also not be possible with the current volume of discharge (requiring a permit limit of 0.11 mg/l mean) which demonstrates that growth is not a factor in the waterbody not being able to achieve Good Status for phosphate at the mixing point.

Horsley Garden Community new WRC assessment

Receiving watercourse

A new WRC serving Horsley Garden Community would require a new WRC which would discharge treated effluent into the Holland Brook (GB105037077810). The Holland Brook currently has an overall 2022 waterbody status of Moderate. The 2022 status of the physico-chemical elements considered in this assessment are provided in Table E3. Phosphate is currently at Poor Status but has a future objective of Moderate Status by 2021 which must be considered for future wastewater discharges.

Note: This section is based on 1,450 dwellings allocated at Horsely Green Garden Community; however, the latest estimate indicates that this may increase to around 1,700 dwellings.

Table E3: WFD Status summary for the Holland Brook waterbody

Classification Element	Current Status (2022)	Future Objective
Ammonia	High	High ³²
BOD	High	N/A
Phosphate	Poor	Moderate

Revised permit conditions – modelling results

The revised discharge permit required by the end of the plan period for each determinant and for each modelled scenario are presented in Table E4.

Table E4: RQP modelled permit quality conditions required for a new WRC serving Horsley Garden Community

Determinant	Technically Achievable Limit	Ensure no deterioration in WFD element Status at mixing point	Achieve future WFD objective status (if 2022 status less than good)
Ammonia (mg/l 90%ile)	1	0.56	N/A
BOD (mg/l 90%ile)	5	7.62	N/A

³² The target status given on the Catchment Data Explorer is Good Status for ammonia. However the current observed classification is High Status and this has been used in the calculations in line with the "no deterioration" principle.

Phosphate (mg/l annual average)	0.25	1.81	0.30
---------------------------------------	-------------	-------------	-------------

Modelling has shown it would not be possible to ensure no deterioration of WFD status at the mixing point after growth for ammonia, as the quality of discharge would not be achievable within TAL. For BOD and phosphate, it would be possible to maintain current WFD Status at the point of mixing after growth.

Modelling has also been undertaken to determine if Moderate Status can be maintained for phosphate at the mixing point of the discharge if this improved status is achieved upstream (the upstream current 2022 status is Poor). This modelling shows that it would be possible to achieve this status at this point in the watercourse once growth has been considered within TAL. Growth would therefore not limit attainment of future Moderate Status.

Appendix F - Figures

Figure 1	Study Area
Figure 2	Allocated Sites
Figure 3	WFD Catchments and Waterbodies
Figure 4	WFD Surface Waterbodies – Ecological Status
Figure 5	WFD Surface Waterbodies – Physico-Chemical Status
Figure 6	WFD Surface and Transitional Waterbodies RNAG
Figure 7	Superficial Geology
Figure 8	WFD Groundwater Bodies and Source Protection Zones
Figure 9	WFD Groundwater Body Chemical Status
Figure 10	WFD Groundwater Body Quantitative Status
Figure 11	Water Dependent Habitats
Figure 12	Bathing Waters and Shellfish Waters
Figure 13	Nature Based Solutions Opportunities
Figure 14	CAMS Surface Water Availability
Figure 15	Water Resource Zones
Figure 16	Wastewater Assets
Figure 17	CSO Locations and Spill Frequency

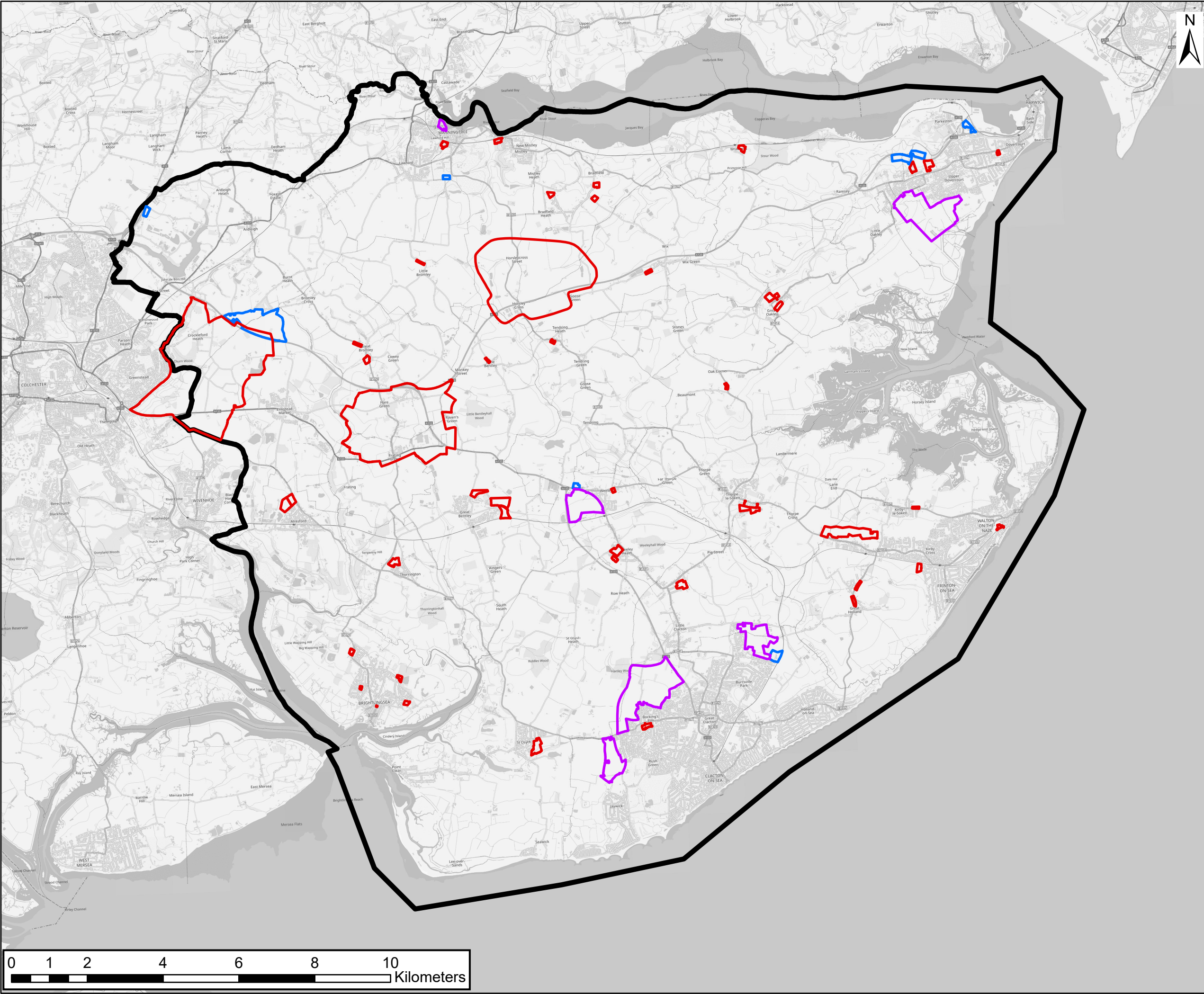


 Tendring District Boundary
 Main River
 Ordinary Watercourse

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Study Area

Figure 1



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Colchester City Council
WATER CYCLE STUDY

CLIENT
Colchester City Council

CONSULTANT

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Portwall Lane
Bristol, United Kingdom
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LEGEND

- Tendring District Boundary
- Residential Allocations
- Mixed Use Allocations
- Employment Allocations

NOTES
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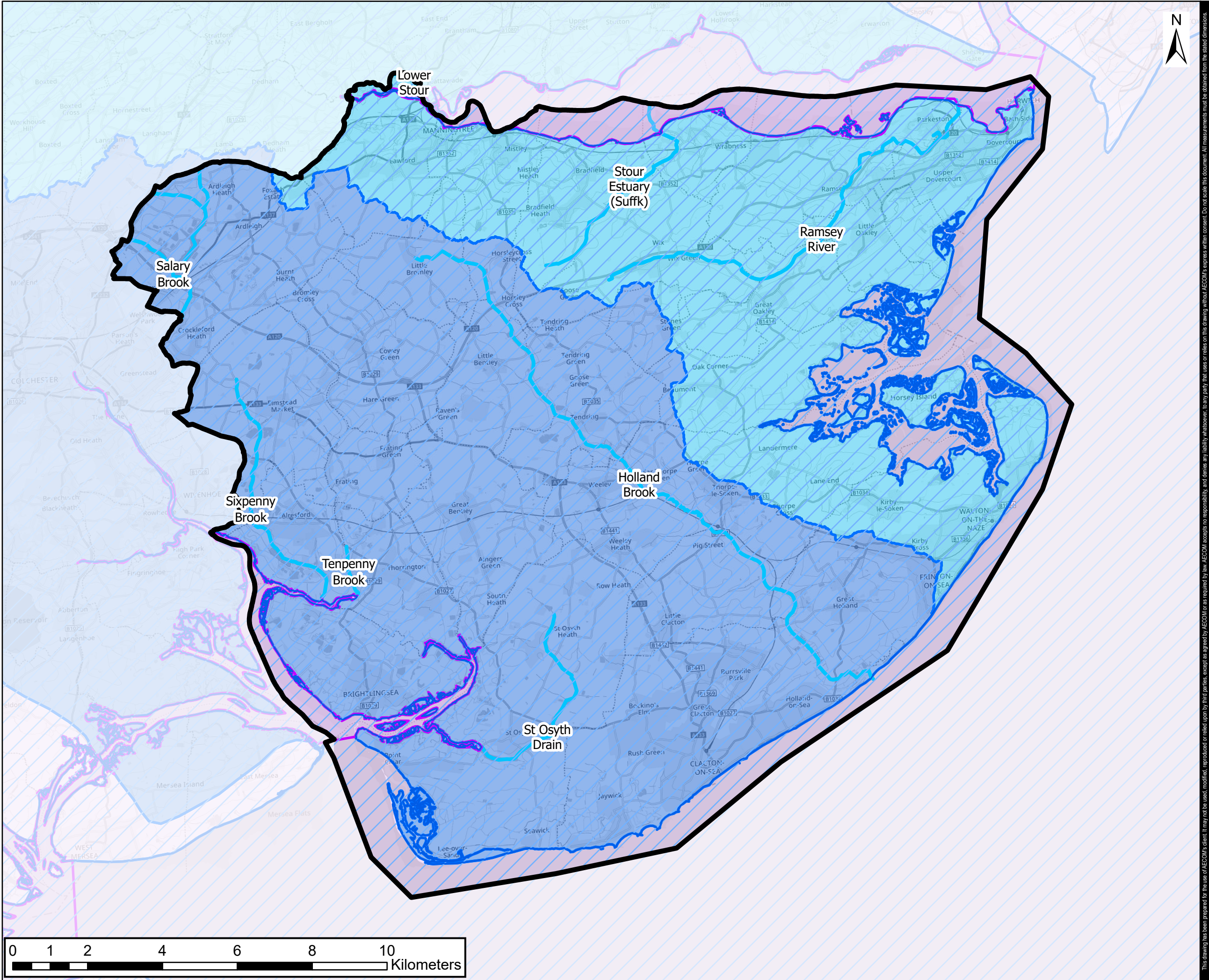
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FIGURE TITLE
Allocated Sites

FIGURE NUMBER
Figure 2

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LEGEND

- Tendring District Boundary
- Essex Combined Management Catchment
- River Water Body
- Essex Transitional Water Body
- Operational Catchments
 - Colne Essex
 - Stour OC

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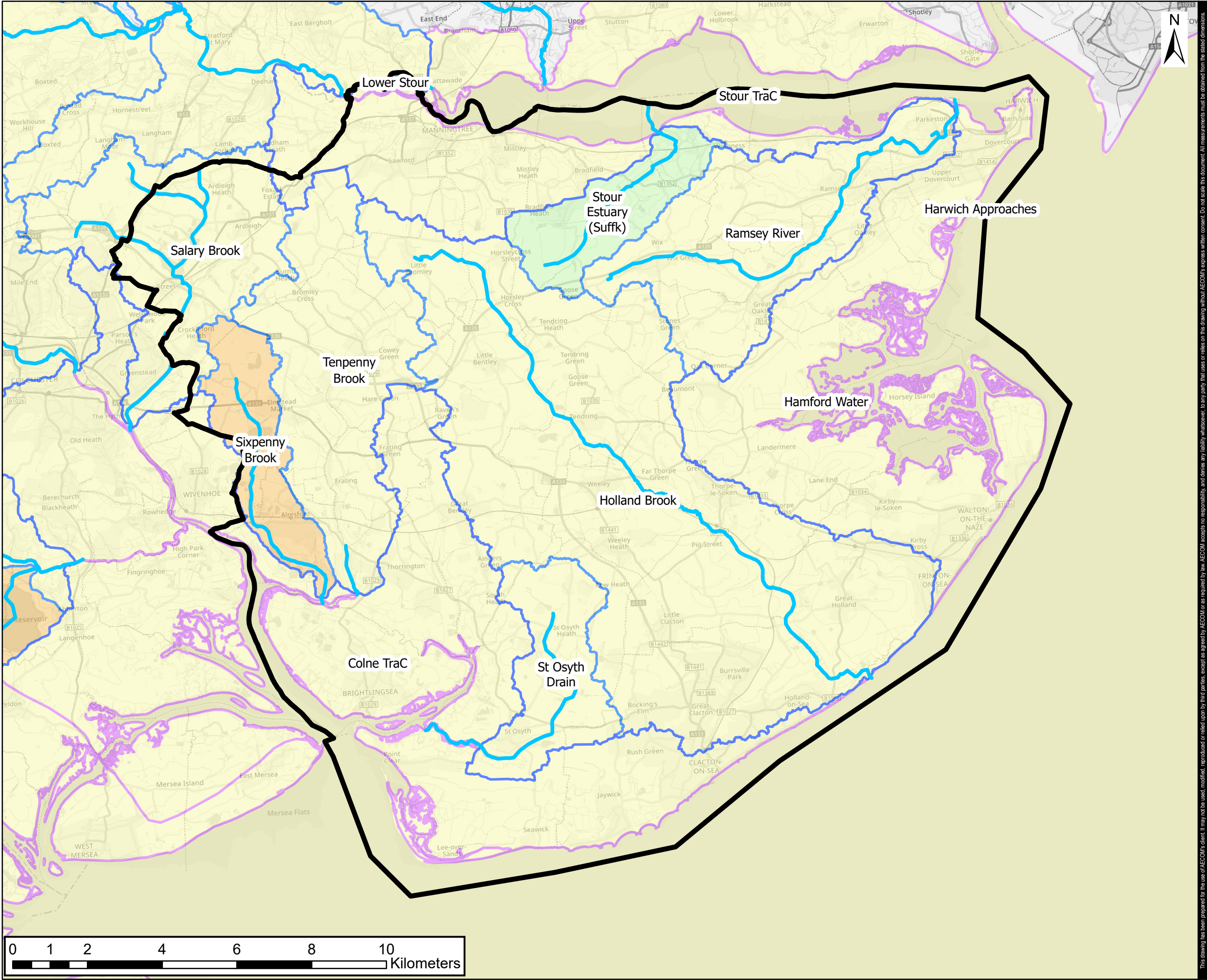
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FIGURE TITLE

WFD Catchments and Waterbodies

FIGURE NUMBER

Figure 3



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WATER CYCLE STUDY

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LEGEND

- Tendring District Boundary
- Surface Water Catchments
- Transitional Catchments
- River Water Bodies

Ecological Status

- High
- Good
- Moderate
- Poor
- Bad

NOTES

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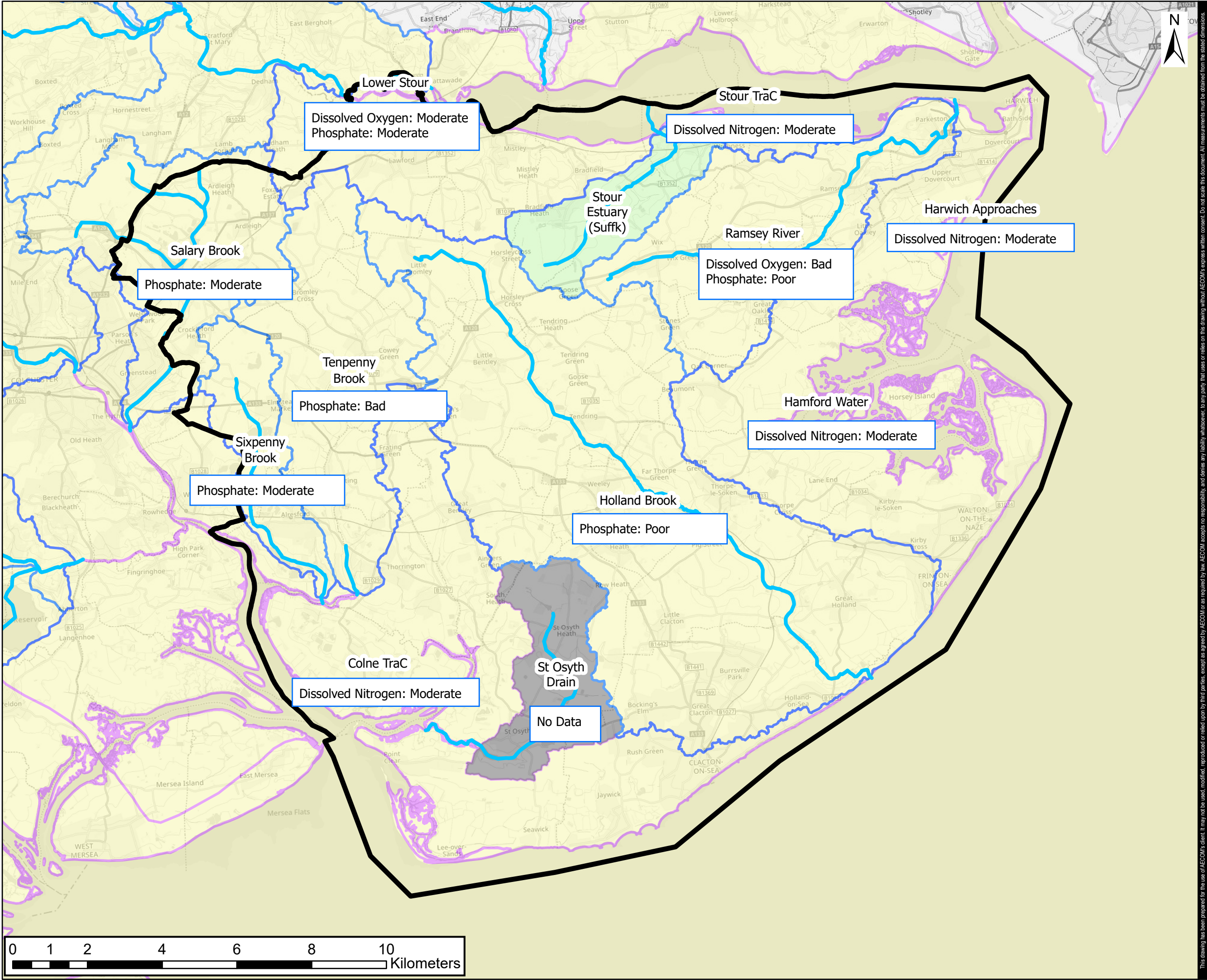
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FIGURE TITLE

WFD surface water bodies – Ecological Status

FIGURE NUMBER

Figure 4



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LEGEND

- Tendring District Boundary
 - Surface Water Catchments
 - Transitional Catchments
 - River Water Bodies
- Physico-Chemical Status
- High
 - Good
 - Moderate
 - Poor
 - Bad

NOTES

Where a waterbody has less than good physico-chemical status, the parameter(s) resulting in less than good status have been identified

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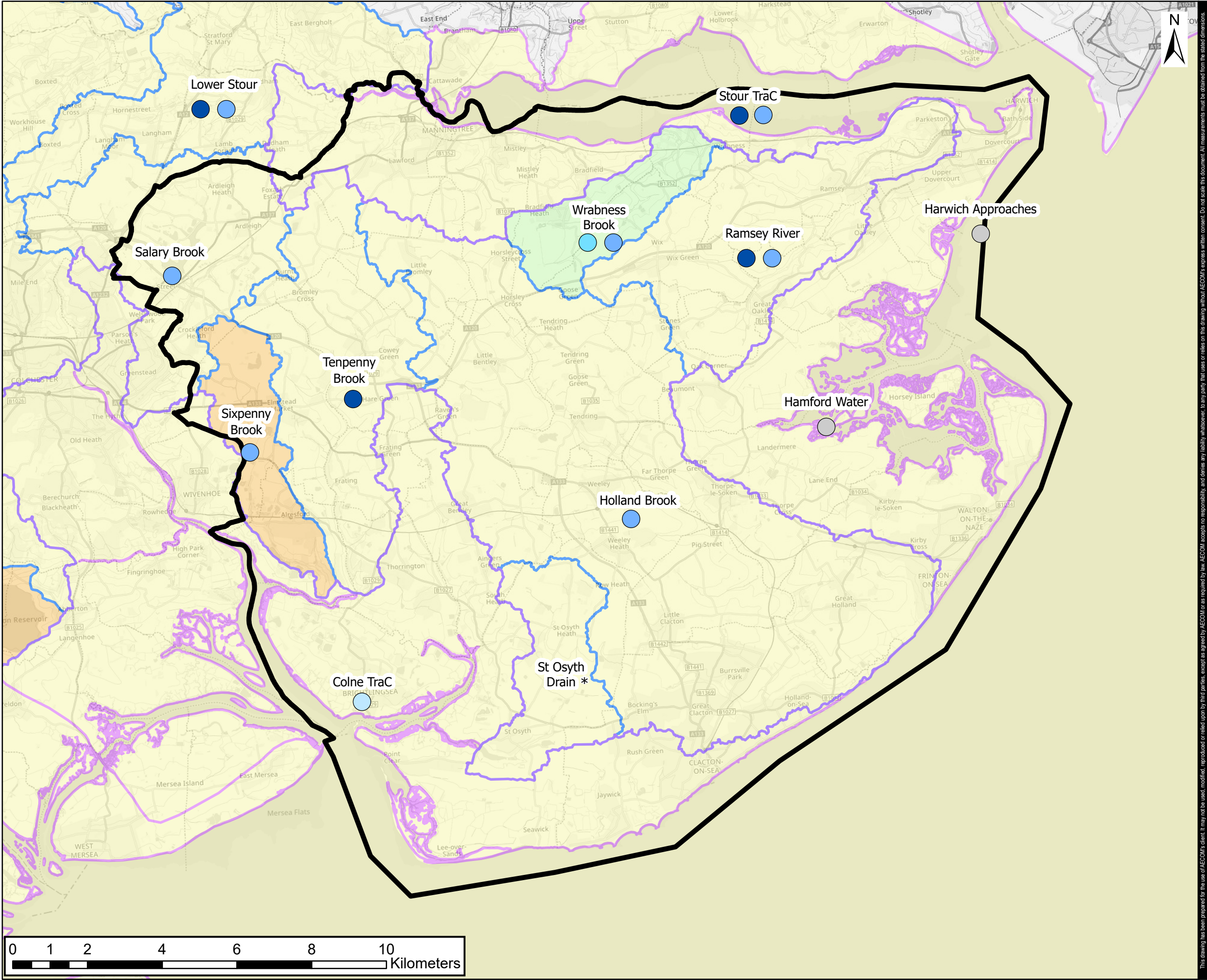
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FIGURE TITLE

WFD surface water bodies – Physico-Chemical Status

FIGURE NUMBER

Figure 5



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LEGEND

Tendring District Boundary

Ecological Status

- High
- Good
- Moderate
- Poor
- Bad

Cause

- Water Industry Sewage Discharge
- Poor Nutrient management
- Physical Modification
- Surface Water Abstraction
- Unknown/Pending

NOTES

* No confirmed or probable RNAGs identified

Refer to the report for detail on the elements affected

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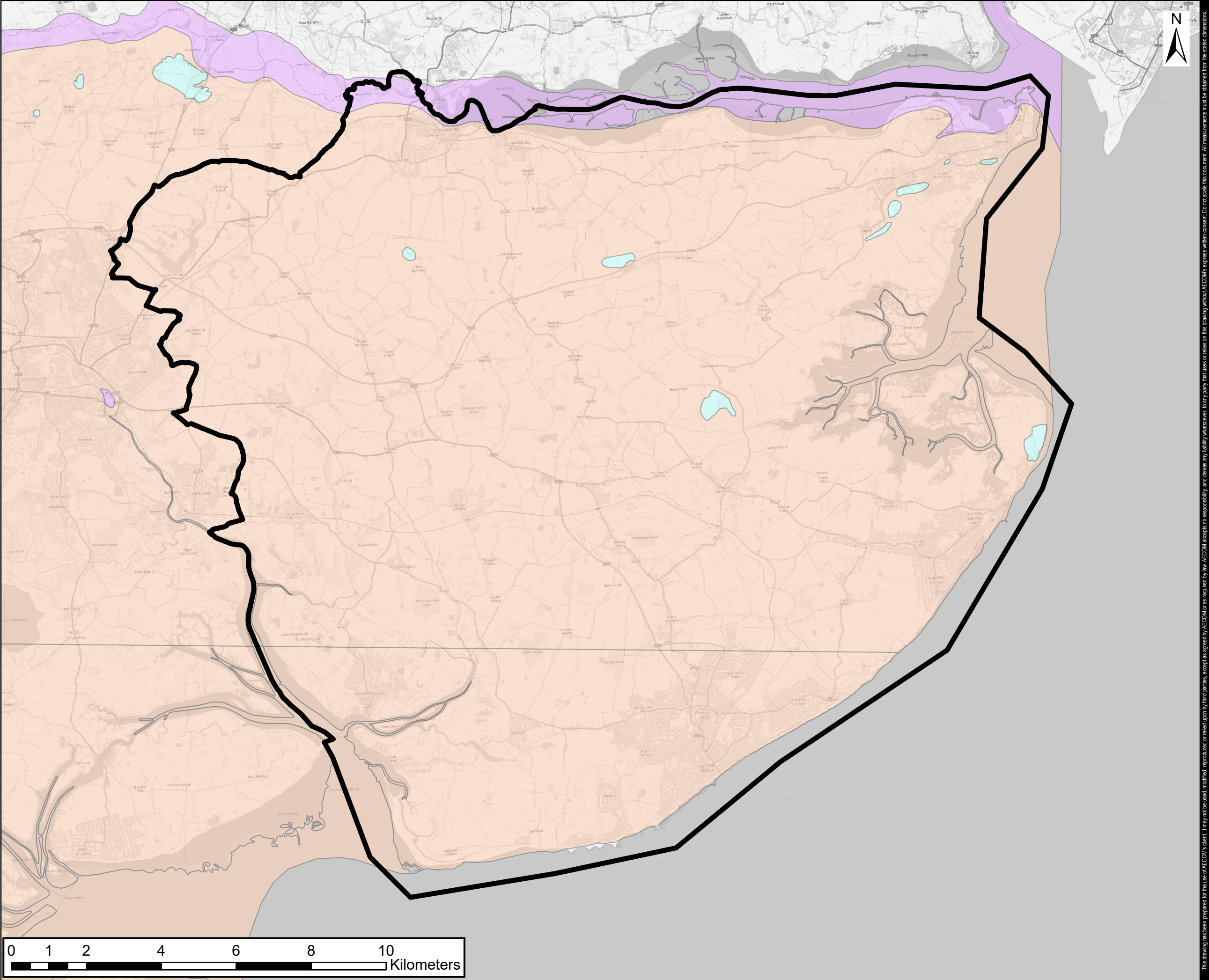
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FIGURE TITLE

Reasons for Not Achieving Good Status

FIGURE NUMBER

Figure 6



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LEGEND

Tendring District Boundary

Bedrock Geology

- CRAG GROUP
- LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)
- LONDON CLAY FORMATION INCLUDING THAMES GROUP
- RED CRAG FORMATION
- THANET FORMATION
- THANET FORMATION AND LAMBETH GROUP (UNDIFFERENTIATED)

NOTES

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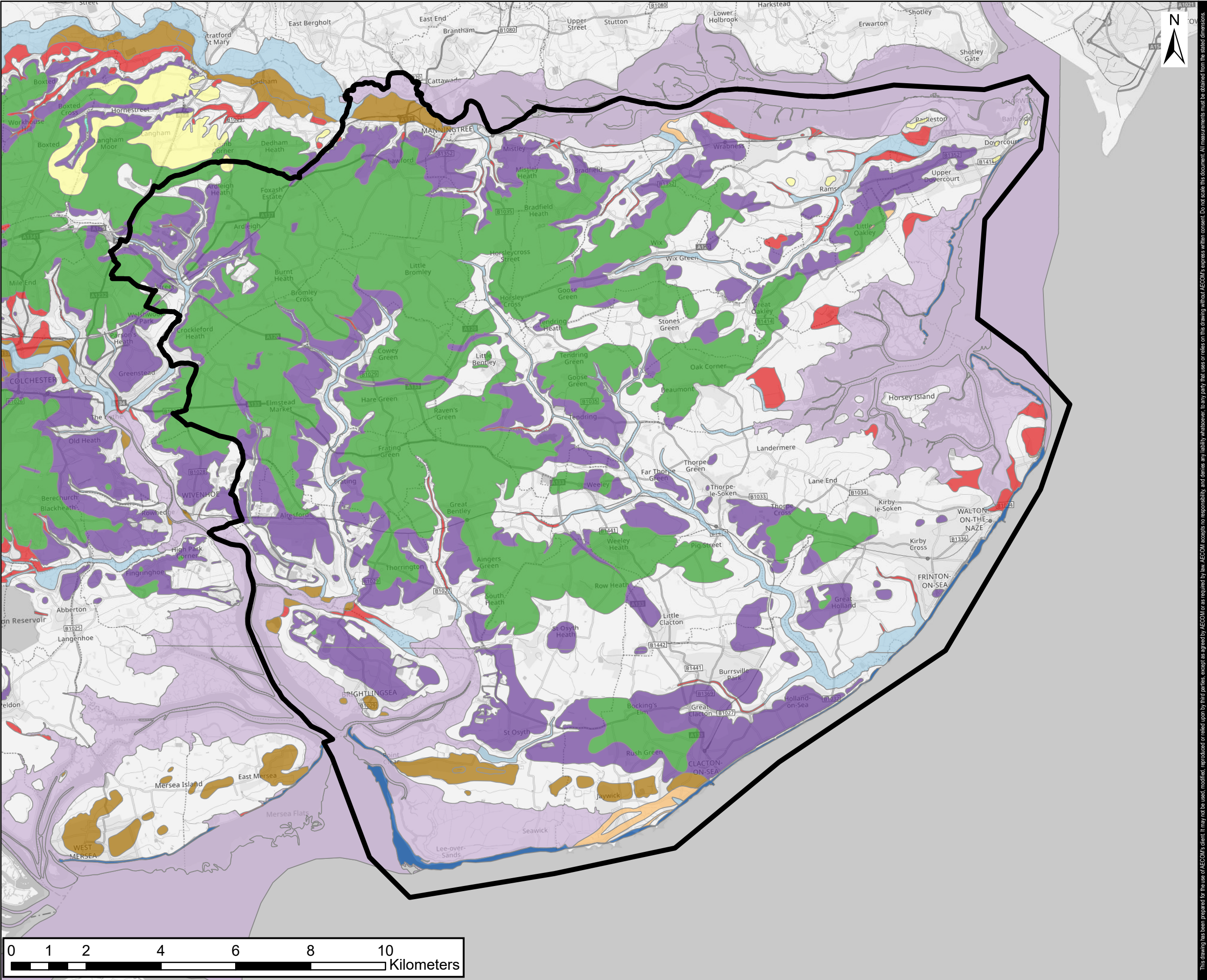
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FIGURE TITLE

Bedrock Geology

FIGURE NUMBER

Figure 7A



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LEGEND

Tendring District Boundary

Superficial Deposits

ALLUVIUM

BEACH AND TIDAL FLAT DEPOSITS
(UNDIFFERENTIATED)

COVER SAND

GLACIOFLUVIAL DEPOSITS, MID
PLEISTOCENE

HEAD

INTERGLACIAL DEPOSITS

INTERGLACIAL LACUSTRINE DEPOSITS

INTERTIDAL DEPOSITS
(UNDIFFERENTIATED)

KESGRAVE CATCHMENT SUBGROUP

LOWESTOFT FORMATION

PEAT

RIVER TERRACE DEPOSITS

STORM BEACH DEPOSITS

TIDAL FLAT DEPOSITS

NOTES

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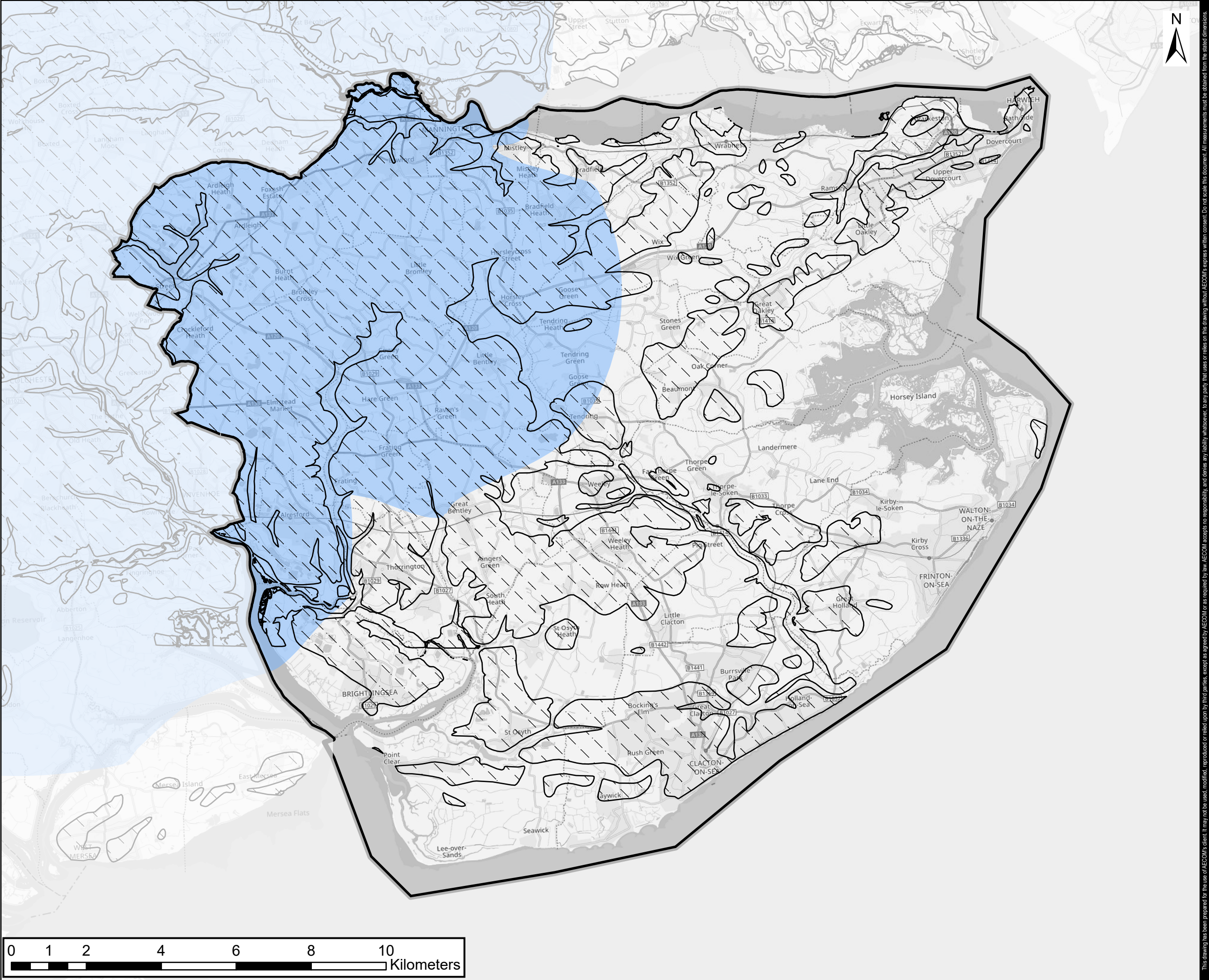
FIGURE TITLE

Superficial Deposits

FIGURE NUMBER

Figure 7B

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WATER CYCLE STUDY

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LEGEND

Tendring District Boundary

Groundwater Bodies

North Essex Chalk

North Essex Lower London Tertiaries

Essex Gravels

Source Protection Zone

Zone I - Inner Protection Zone

Zone II - Outer Protection Zone

Zone III - Total Catchment

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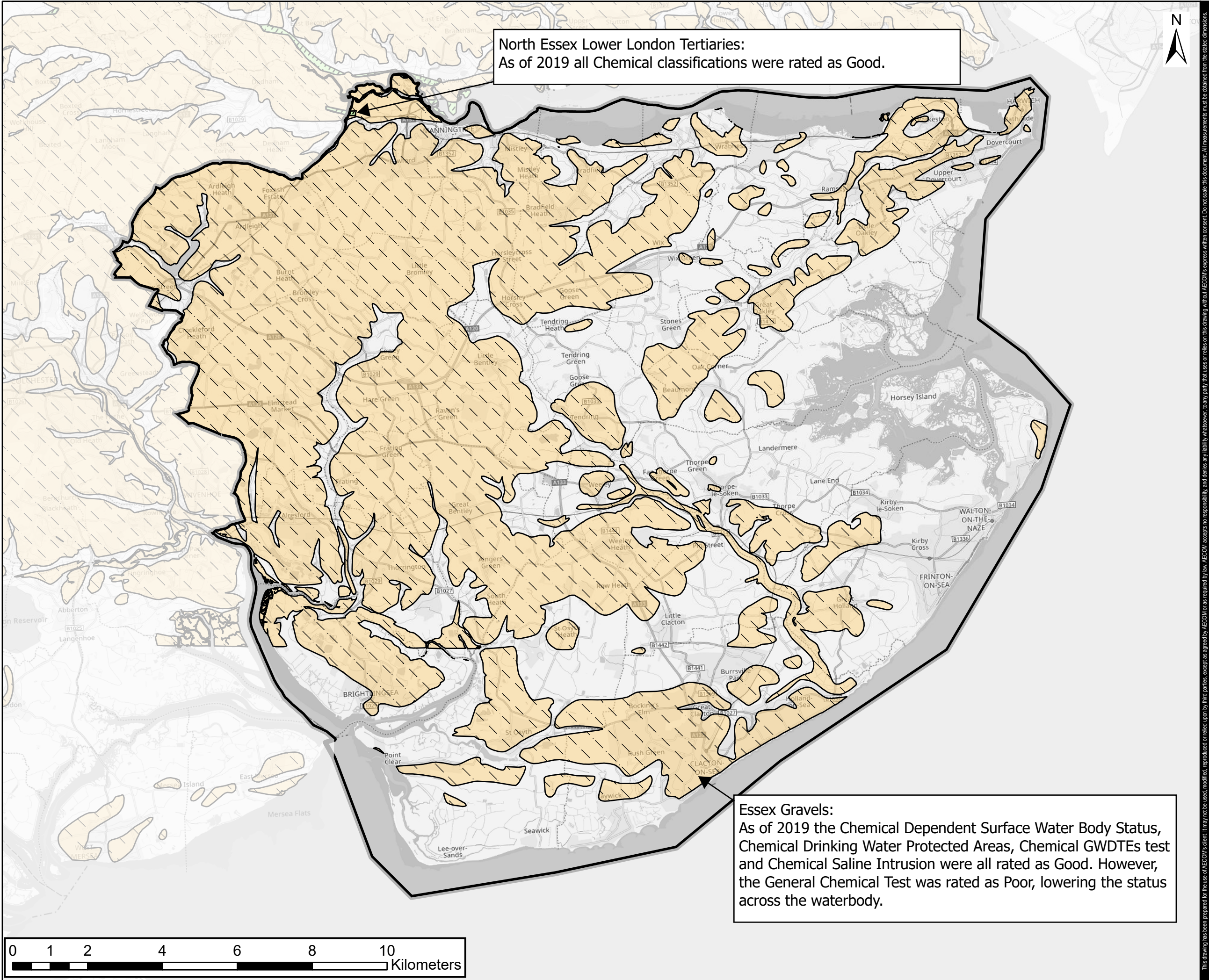
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FIGURE TITLE

WFD Groundwater bodies and Source Protection Zones

FIGURE NUMBER

Figure 8



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LEGEND

Tendring District Boundary

Groundwater Bodies

North Essex Lower London Tertiaries

Essex Gravels

Chemical Status

Good

Poor

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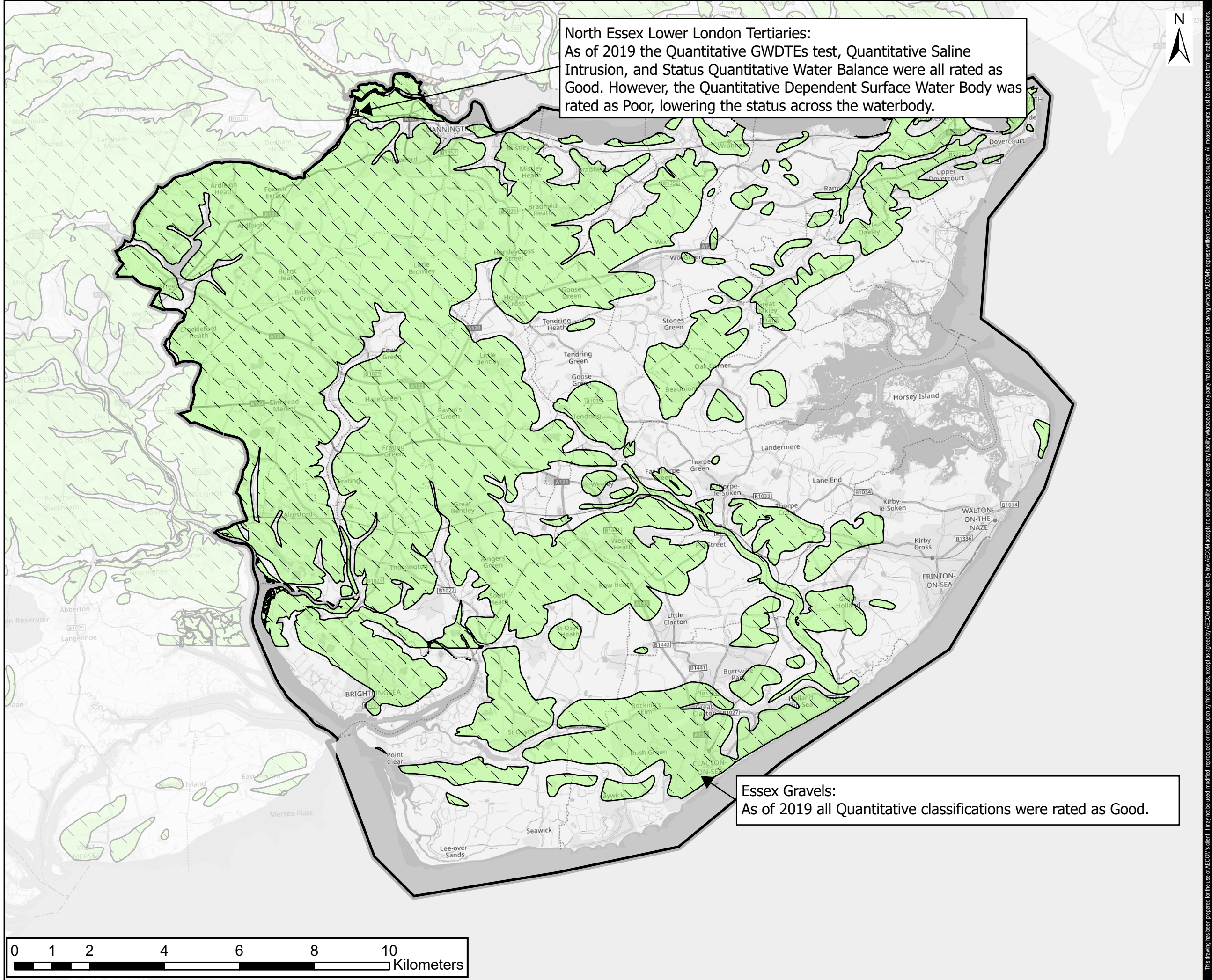
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FIGURE TITLE

WFD Groundwater Body Chemical Status

FIGURE NUMBER

Figure 9



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LEGEND

Tendring District Boundary

Groundwater Bodies

North Essex Lower London Tertiaries

Essex Gravels

Quantitative Status

Good

Poor

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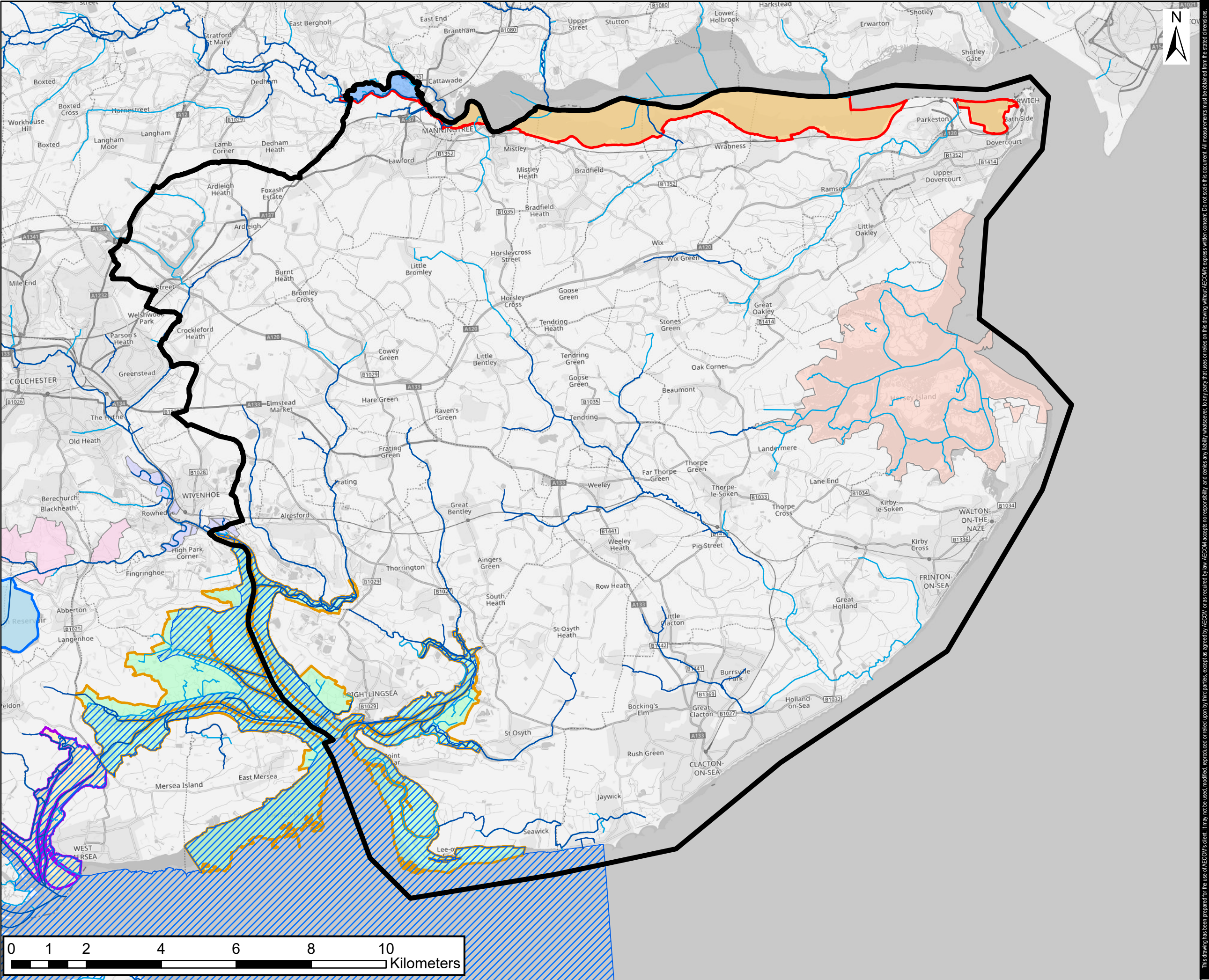
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FIGURE TITLE

Groundwater Body Quantitative Status

FIGURE NUMBER

Figure 10



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WATER CYCLE STUDY

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LEGEND

- Tendring District Boundary
- Main River
- Ordinary Watercourse
- Special Areas of Conservation
 - Essex Estuaries
- Site of Special Scientific Interest
 - Abberton Reservoir
 - Blackwater Estuary
 - Cattawade Marshes
 - Colne Estuary
 - Roman River
 - Stour Estuary
 - Upper Colne Marshes
 - Hamford Water
- Special Protection Areas
 - Abberton Reservoir
 - Blackwater Estuary (Mid-Essex Coast Phase 4)
 - Colne Estuary (Mid-Essex Coast Phase 2)
 - Stour and Orwell Estuaries

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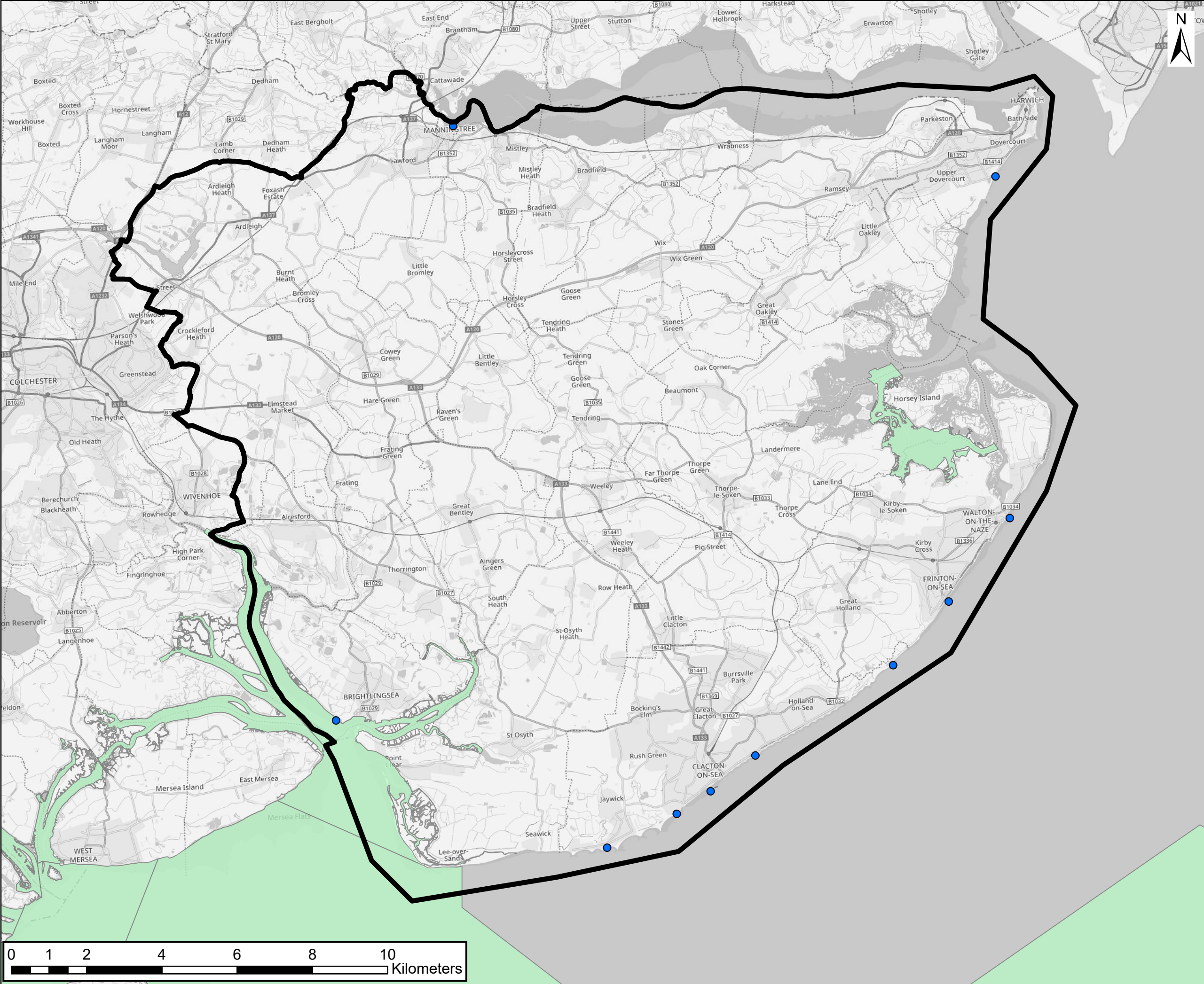
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FIGURE TITLE

Water Dependent Habitats

FIGURE NUMBER

Figure 11



PROJECT

Tendring District Council
WATER CYCLE STUDY

CLIENT

Tendring District Council

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LEGEND

- Tendring District Boundary
- Bathing Waters Monitoring Location
- WFD Shellfish Water Protected Area

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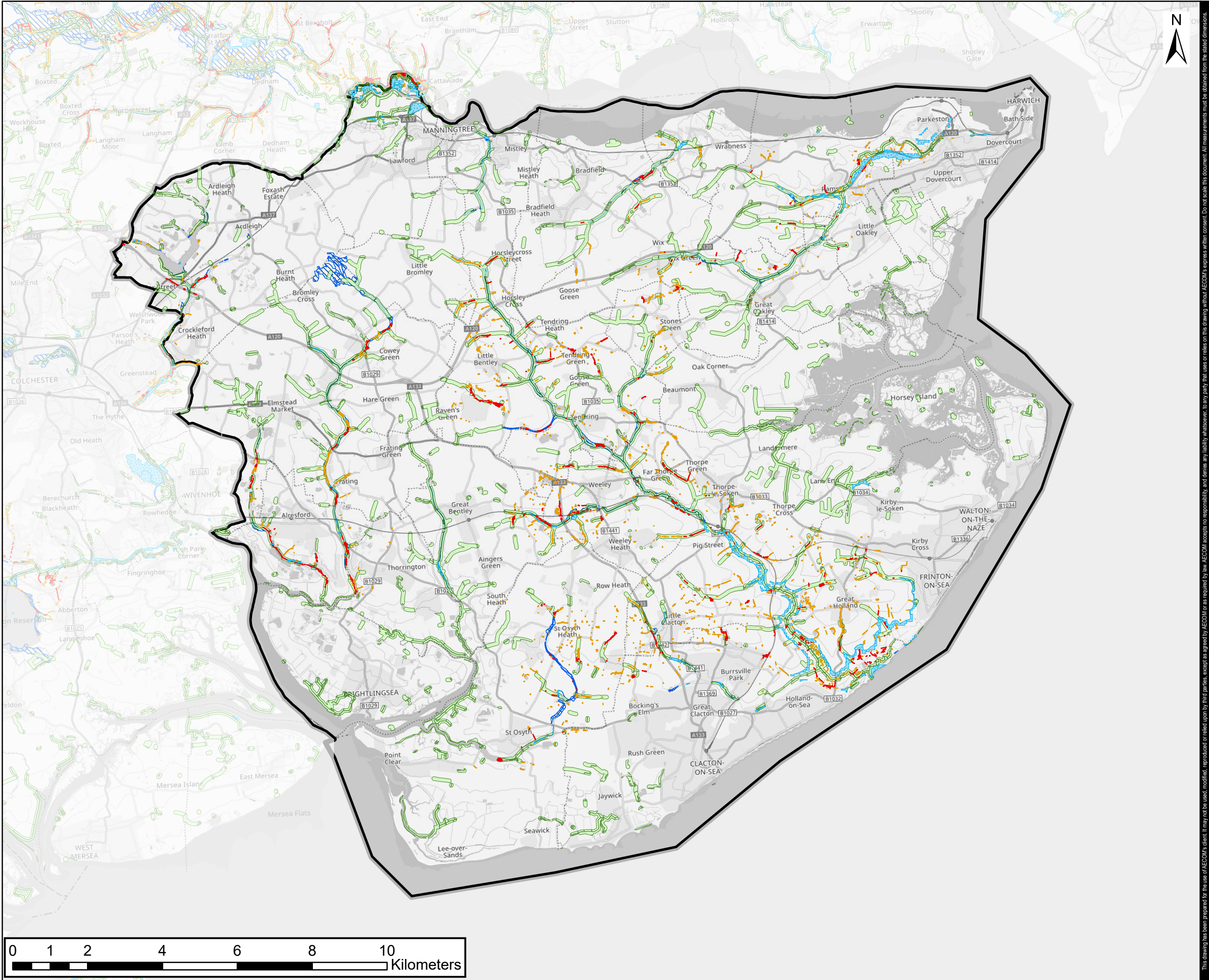
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FIGURE TITLE

Designated Bathing Waters and
Shellfish Water Protected Areas

FIGURE NUMBER

Figure 12



PROJECT

Tendring District Council
WATER CYCLE STUDY

CLIENT

Tendring District Council

CONSULTANT

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3rd Floor Portwall Place
Portwall Lane
Bristol, United Kingdom
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LEGEND

- Tendring District Boundary
- Floodplain Woodland Potential
- Riparian Woodland Potential
- Runoff Attenuation Features 3.3% AEP
- Runoff Attenuation Features 1% AEP
- Floodplain Reconnection Potential

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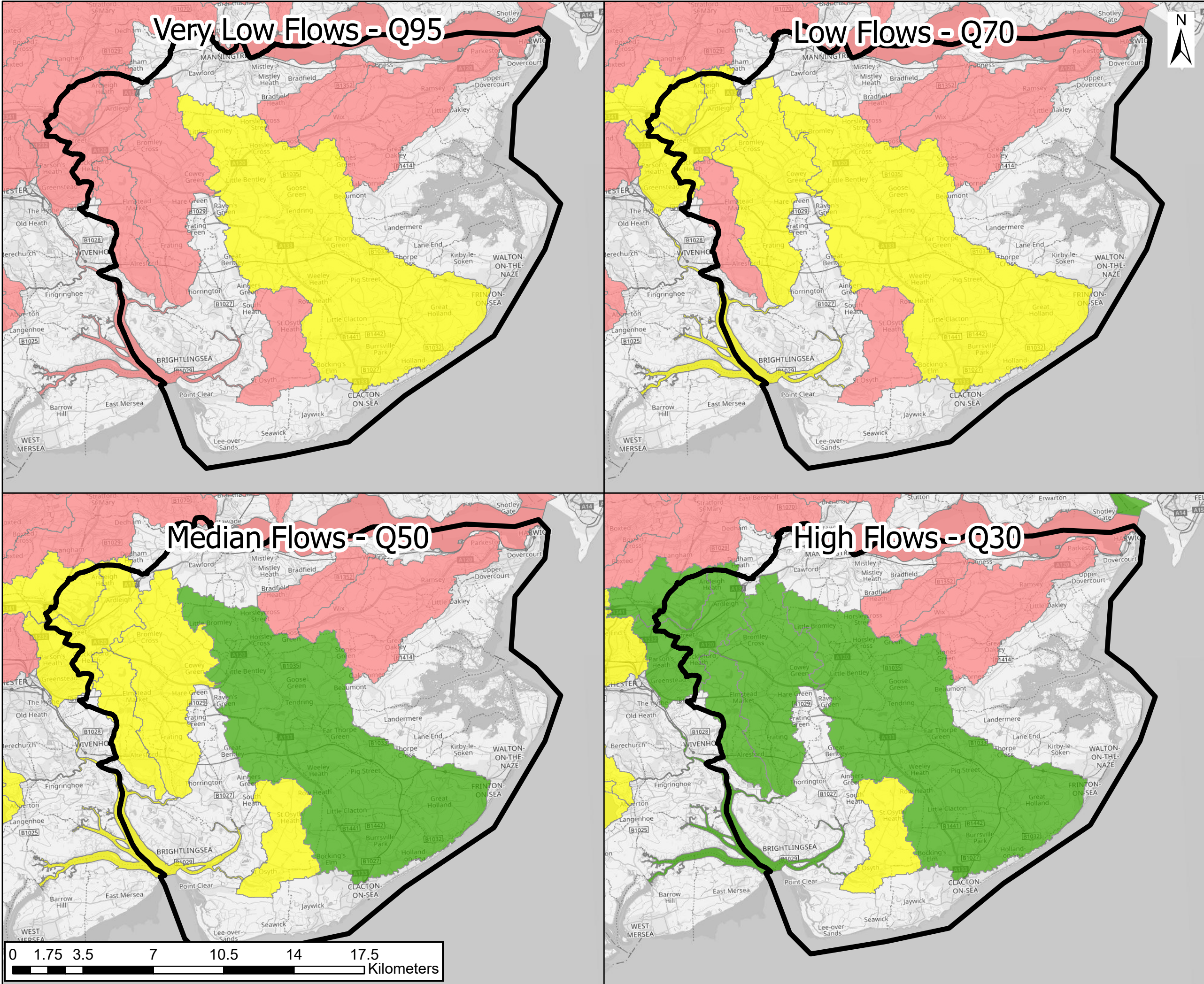
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FIGURE TITLE

Nature-Based Solutions Opportunities

FIGURE NUMBER

Figure 13



AECOM

PROJECT

Tendring District Council
WATER CYCLE STUDY

CLIENT

Tendring District Council

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Portwall Lane
Bristol, United Kingdom
T +44 (0)117 315 0700

LEGEND

Tendring District Boundary

CAMS Water Availability

Water Available for Licensing

Water Not Available for Licensing

Restricted Water Available for Licensing

NOTES

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

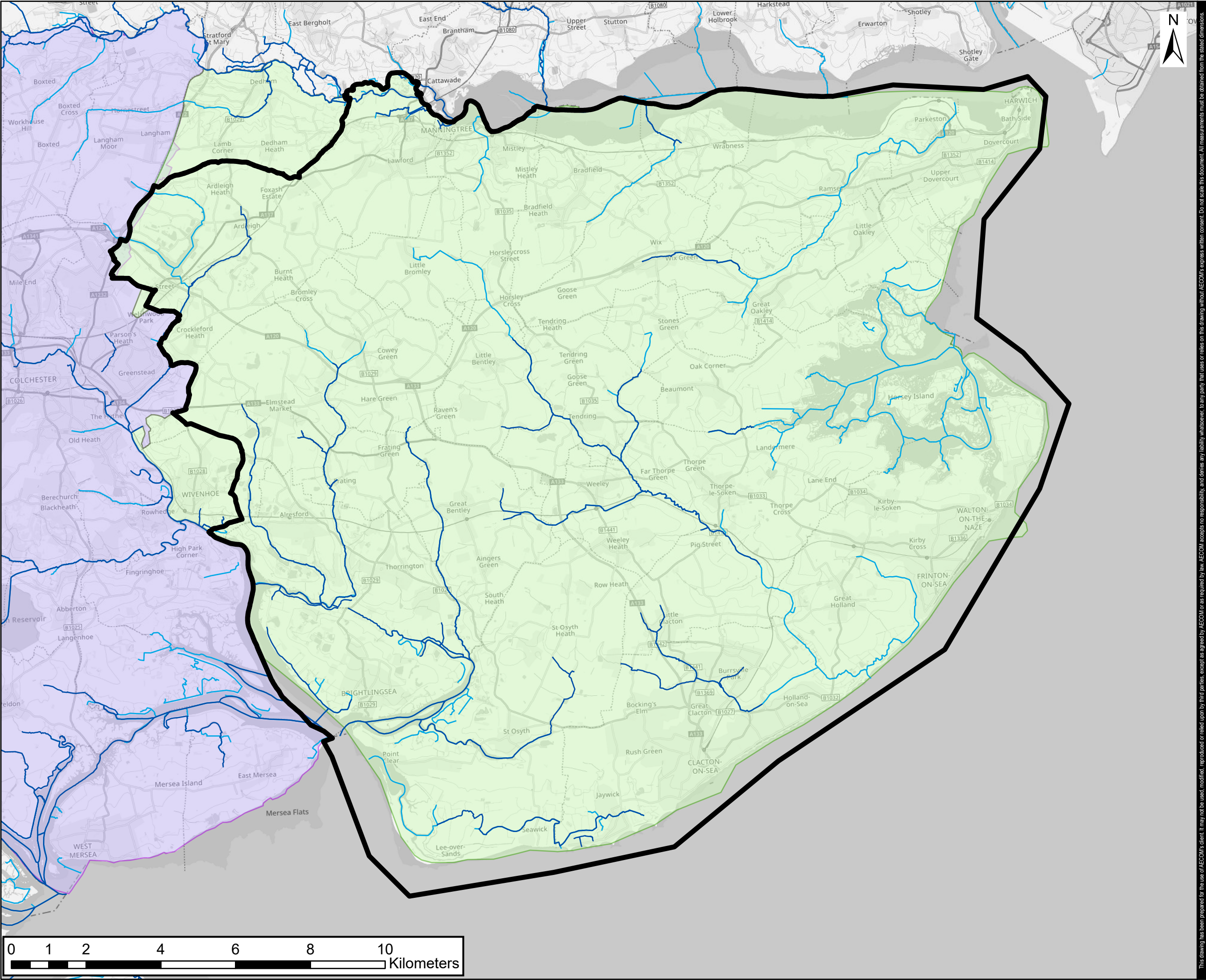
60733445

FIGURE TITLE

CAMS Surface Water Availability

FIGURE NUMBER

Figure 14



PROJECT

Tendring District Council
WATER CYCLE STUDY

CLIENT

Tendring District Council

CONSULTANT

AECOM Limited
3rd Floor Portwall Place
Portwall Lane
Bristol, United Kingdom
T +44 (0)117 315 0700

LEGEND

- Tendring District Boundary
- Main River
- Ordinary Watercourse
- South Essex WRZ (Anglian Water)
- Brett WRZ (Affinity Water)

NOTES

This map shows the water resource zones within the Colchester area.

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60733445

FIGURE TITLE

Water Resource Zones

FIGURE NUMBER

Figure 15

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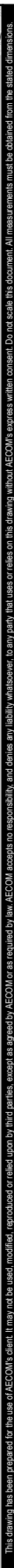
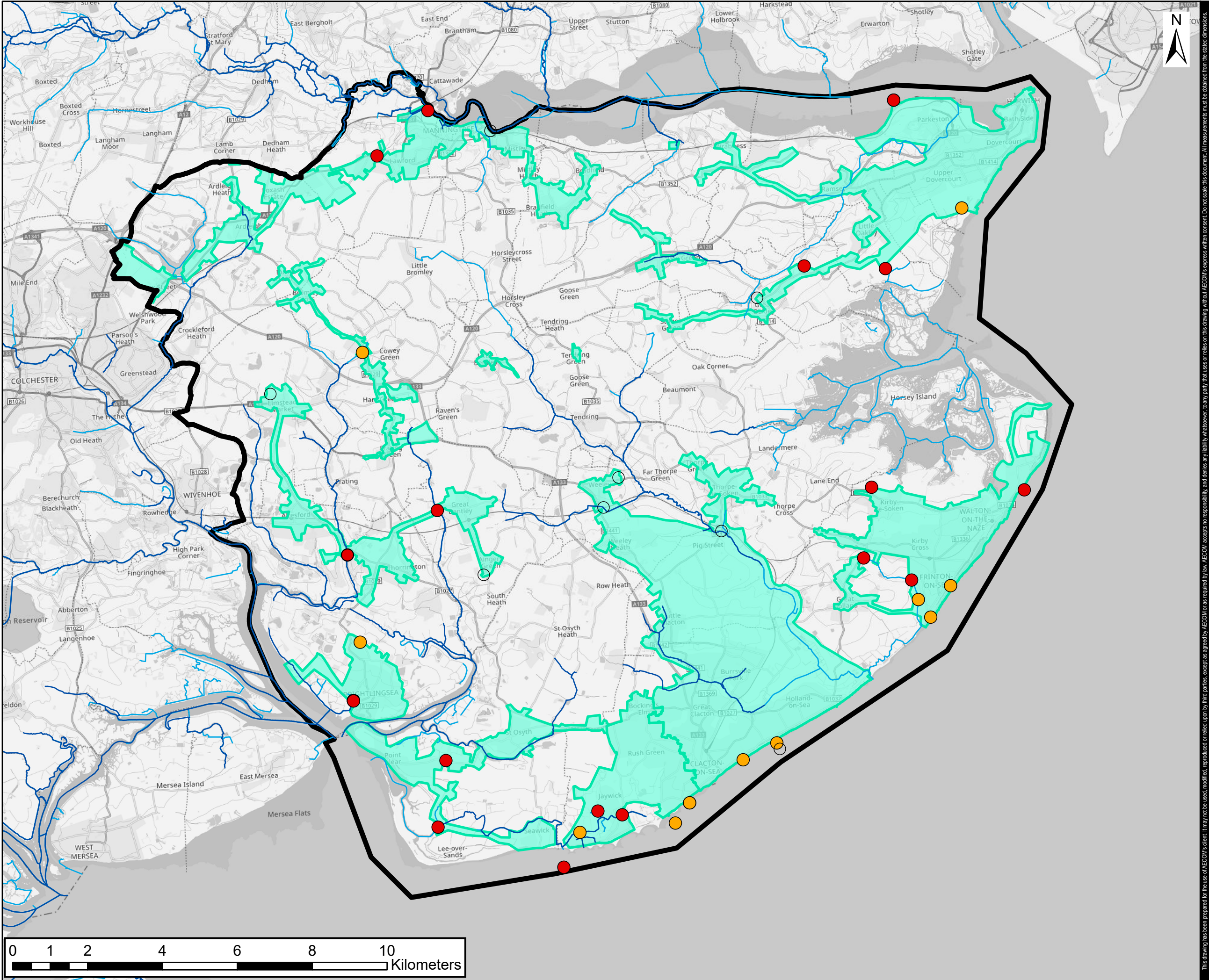


FIGURE NUMBER

Figure 16



PROJECT

Tendring District Council
WATER CYCLE STUDY

CLIENT

Tendring District Council

CONSULTANT

AECOM Limited
3rd Floor Portwall Place
Portwall Lane
Bristol, United Kingdom
T +44 (0)117 315 0700
LEGEND

- Tendring District Boundary
 - Main River
 - Ordinary Watercourse
 - Tendring Sewer Catchments
- Average Annual Spills
- 0
 - 1-9
 - ≥10

NOTES

This map shows the average number of annual spills at each CSO location throughout the period 2021-2023

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60733445

FIGURE TITLE

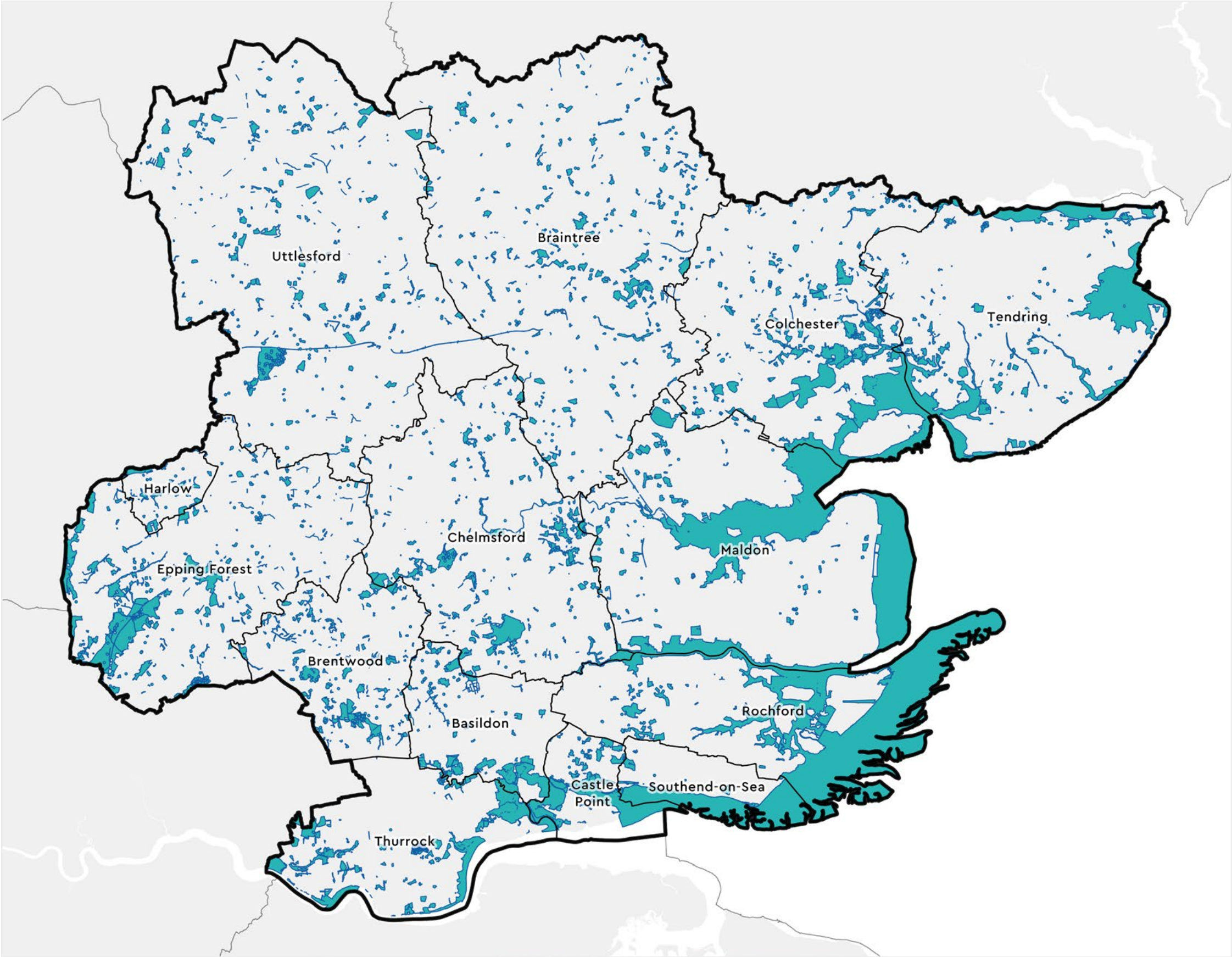
CSO Locations and Annual Spill Frequency

FIGURE NUMBER

Figure 17

Appendix G – LNRS Excerpts

5.2 Areas of Particular Importance for Biodiversity (APIBs)



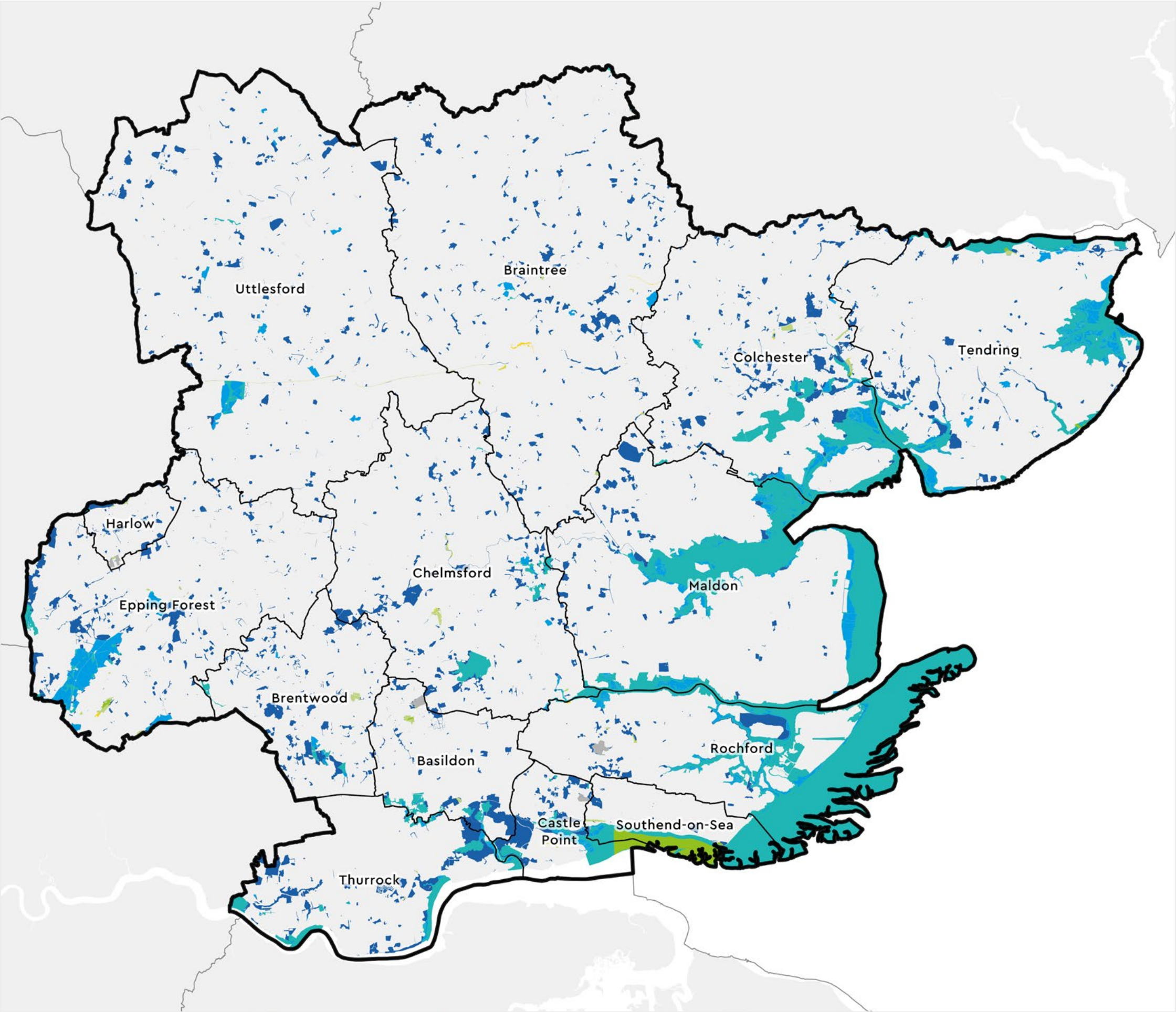
Map 1:
Areas of particular importance for biodiversity (APIBs)

Areas of particular importance for biodiversity (APIBs) include: national conservation sites; local nature reserves; and ‘other areas of particular importance for biodiversity’. The APIB map presents the current situation of natural spaces in Greater Essex. APIBs cover 14% of the Greater Essex LNRS region in total. All input datasets correct as of February 2024.

Key

■ Area of particular importance for biodiversity

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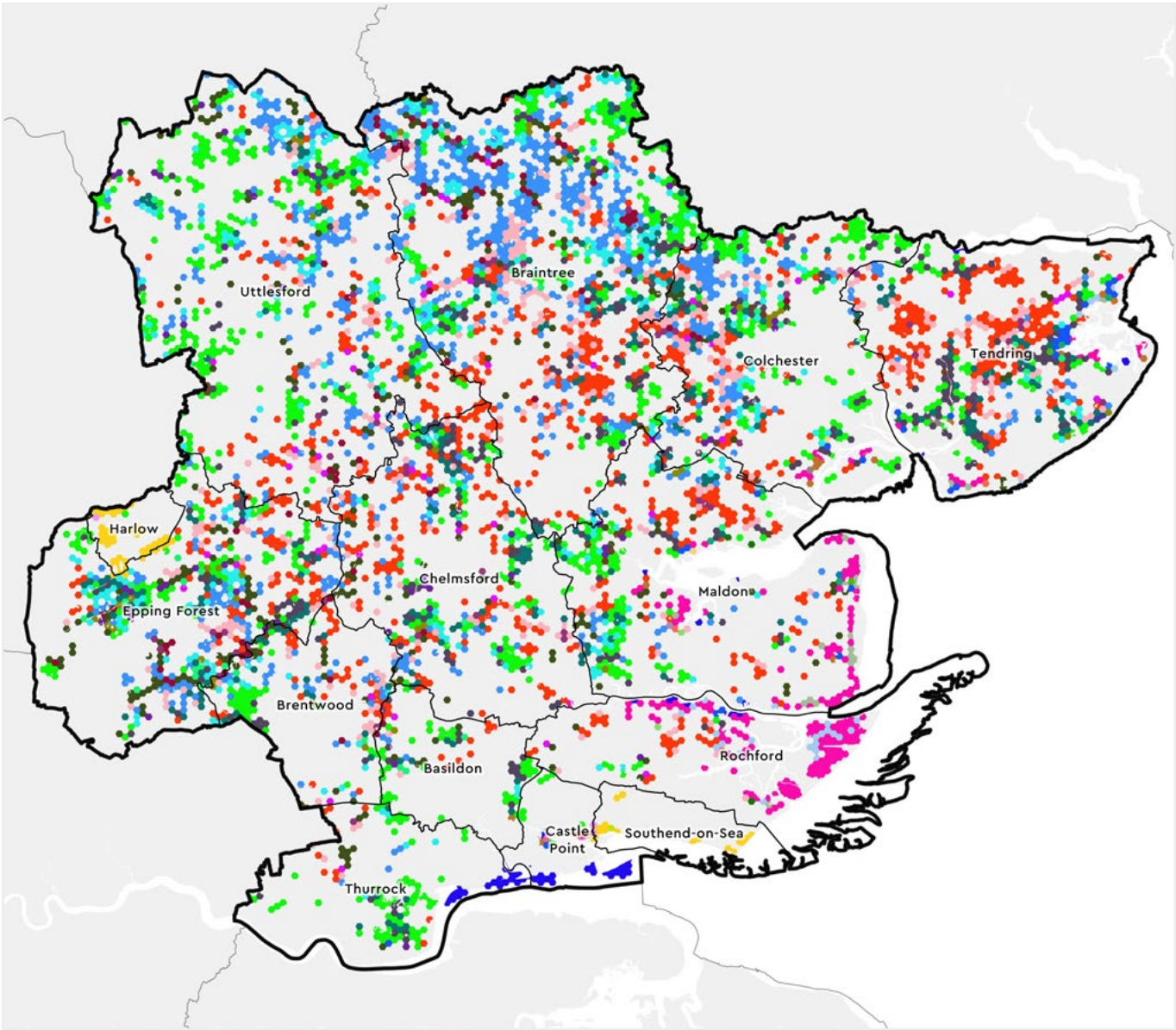
Map 2:
Areas of particular importance for biodiversity (APIBs)

Areas of particular importance for biodiversity (APIBs) include: national conservation sites; local nature reserves; and ‘other areas of particular importance for biodiversity’. The APIB map presents the current, designated spaces for nature in Greater Essex. APIBs cover 14% of the Greater Essex LNRS region in total. All input datasets correct as of February 2024.

- Key**
- National Conservation Site Only
 - Local Nature Reserve Only
 - Other Area of Particular Importance Only
 - National Conservation Site and Local Nature Reserve
 - National Conservation Site and Other Area of Particular Importance
 - Local Nature Reserve and Other Area of Particular Importance
 - National Conservation Site, Local Nature Reserve and Other Area of Particular Importance

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5.3 Opportunity maps



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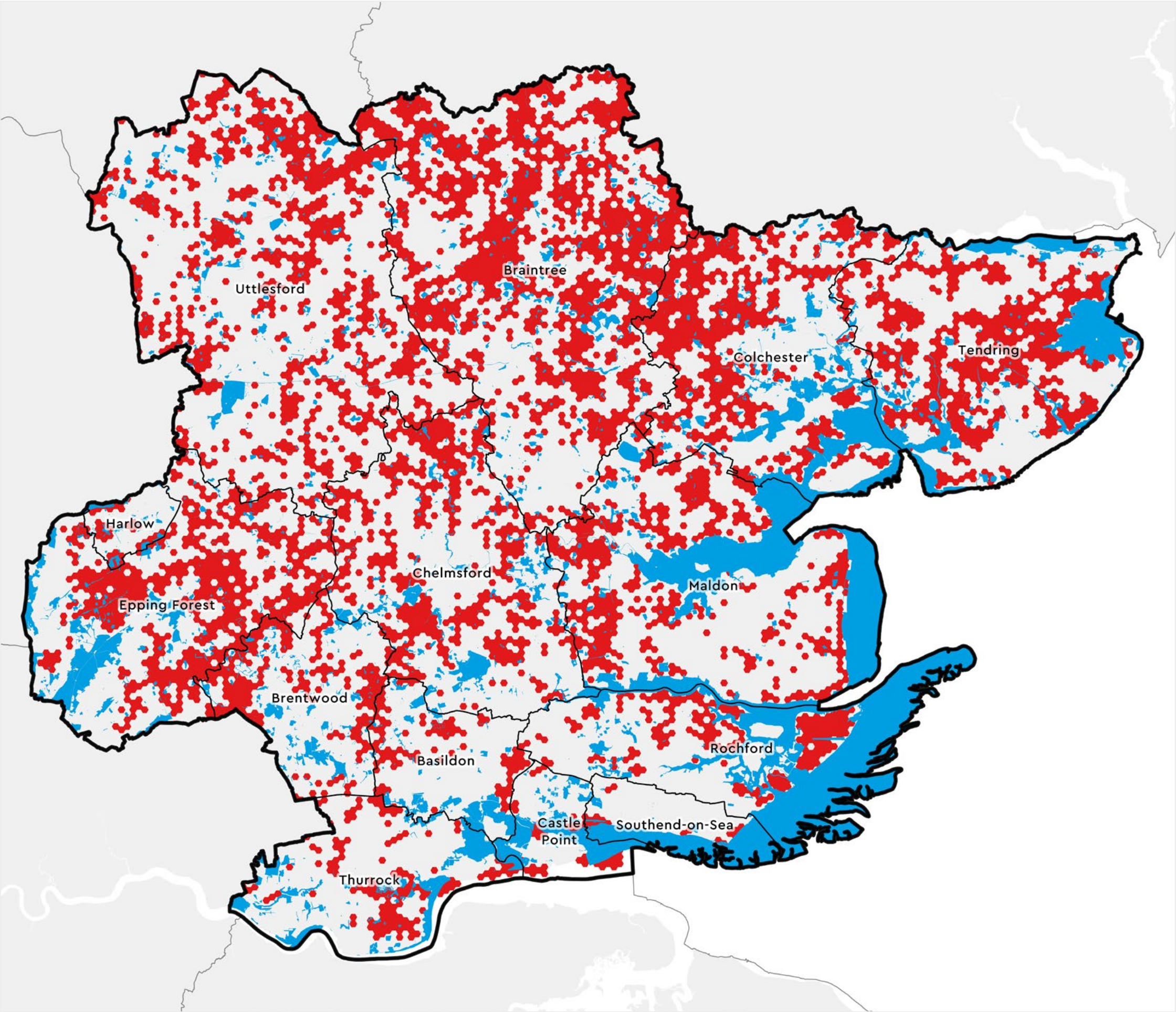
Map 3:
Combined Strategic
Creation Opportunities

Areas that could become of particular importance – ‘strategic’ combined habitat creation opportunities.

Analysis results presented as a generalised 0.25km² hexagonal grid and categorised by habitat type. All combined ‘strategic’ habitat creation opportunities cover 30% of the Greater Essex LNRS region. APIBs removed. ABIPS removed from all categories, apart from ‘Strategic Sites selected by Local Authority’.

Key

- Woodland Only (1)
- Grassland Only (1)
- Freshwater Standing Water Only (1)
- Freshwater River Buffer Only (1)
- Coast Only (1)
- Marine Only (1)
- Strategic sites selected by Local Authority only (1)
- Woodland and Grassland (2)
- Woodland and Freshwater Standing Water (2)
- Woodland and Freshwater River Buffer (2)
- Woodland and Coast (2)
- Grassland and Freshwater Standing Water (2)
- Grassland and Freshwater River Buffer (2)
- Grassland and Coast (2)
- Grassland and Strategic sites selected by Local Authority (2)
- Freshwater Standing Water and Freshwater River Buffer (2)
- Freshwater Standing Water and Coast (2)
- Freshwater River Buffer and Coast (2)
- Marine and Strategic sites selected by Local Authority
- Woodland, Grassland and Freshwater Standing Water (3)
- Woodland, Grassland and Freshwater River Buffer (3)
- Woodland, Grassland and Coast (3)
- Woodland, Freshwater Standing Water and Freshwater River Buffer (3)
- Woodland, Freshwater Standing Water and Coast (3)
- Grassland, Freshwater Standing Water and Freshwater River Buffer (3)
- Grassland, Freshwater Standing Water and Coast (3)
- Grassland, Freshwater River Buffer and Coast (3)
- Grassland, Coast and Marine (3)
- Freshwater Standing Water, Freshwater River Buffer and Coast (3)
- Woodland, Grassland, Freshwater Standing Water and Freshwater River Buffer (4)
- Woodland, Grassland, Freshwater Standing Water and Coast (4)
- Woodland, Grassland, Freshwater River Buffer and Coast (4)
- Woodland, Freshwater Standing Water, Freshwater River Buffer and Coast (4)
- Grassland, Freshwater Standing Water, Freshwater River Buffer and Coast (4)
- Grassland, Freshwater Standing Water, Freshwater River Buffer and Strategic sites selected by Local Authority (4)
- Woodland, Grassland, Freshwater Standing Water, Freshwater River Buffer and Coast (5)



Map 4:
**Combined Strategic
Creation Opportunities
and Areas of particular
importance for
biodiversity (APIBs)**

Areas of particular importance for biodiversity (APIBs) and areas that could become of particular importance – combined ‘strategic’ habitat creation opportunities.

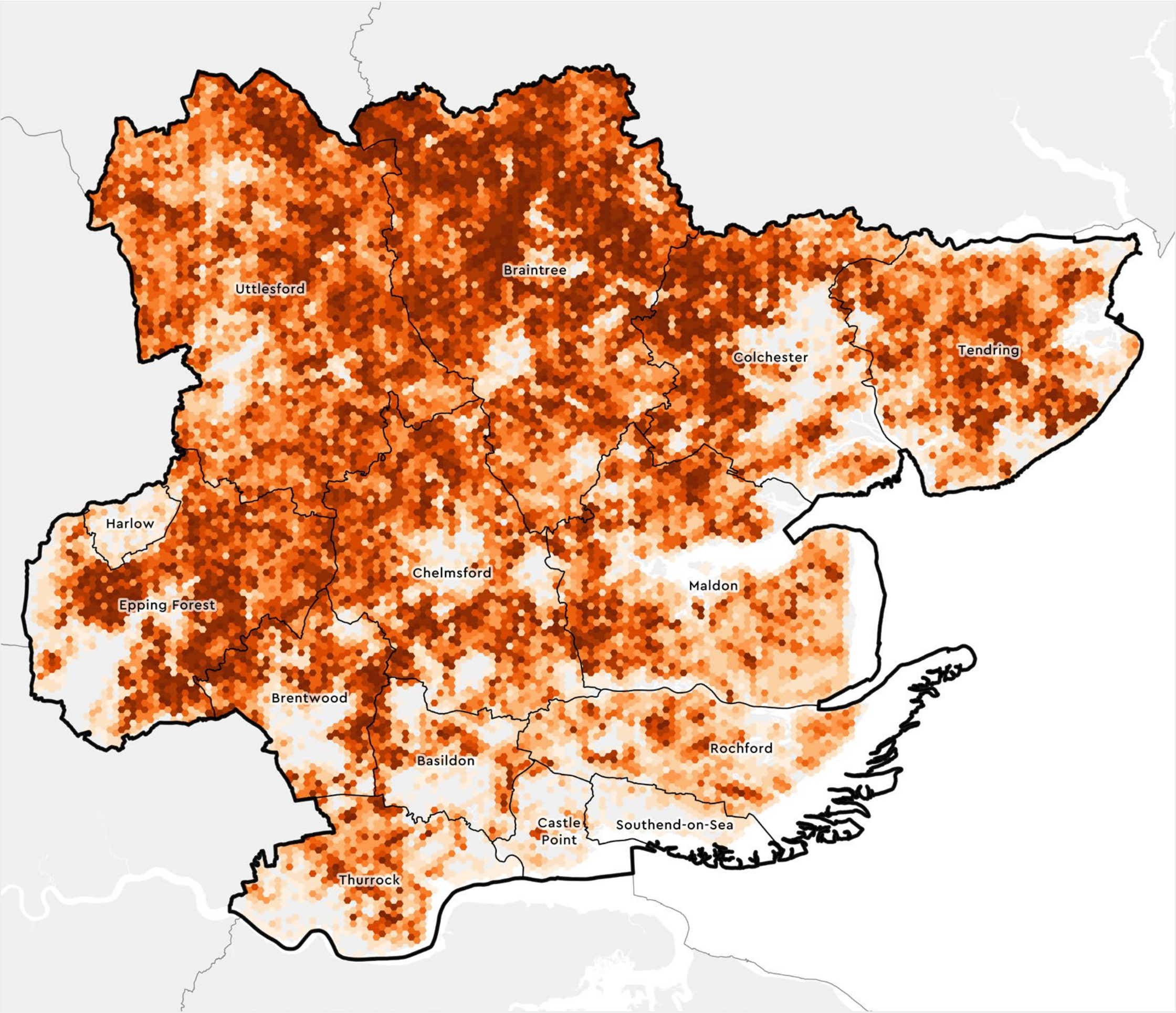
Areas of particular importance for biodiversity (APIBs) include national conservation sites; local nature reserves; and ‘other areas of particular importance for biodiversity’. APIBs cover 14% of the Greater Essex LNRS region in total. All input datasets correct as of February 2024. Areas that could become of particular importance – combined ‘strategic’ habitat creation opportunities presented as a generalised 0.25km² hexagonal grid and categorised by habitat type. All combined ‘strategic’ habitat creation opportunities cover 30% of the Greater Essex LNRS region.

Key

Area of Particular Importance for Biodiversity

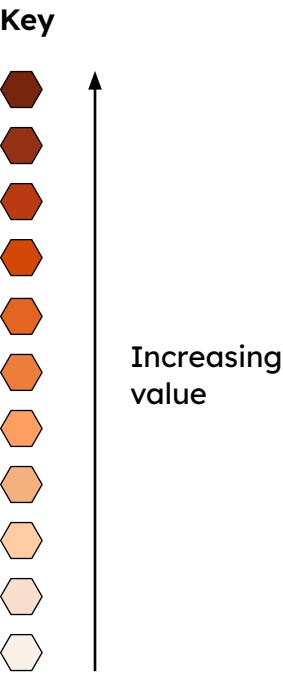
Strategic Combined Opportunities

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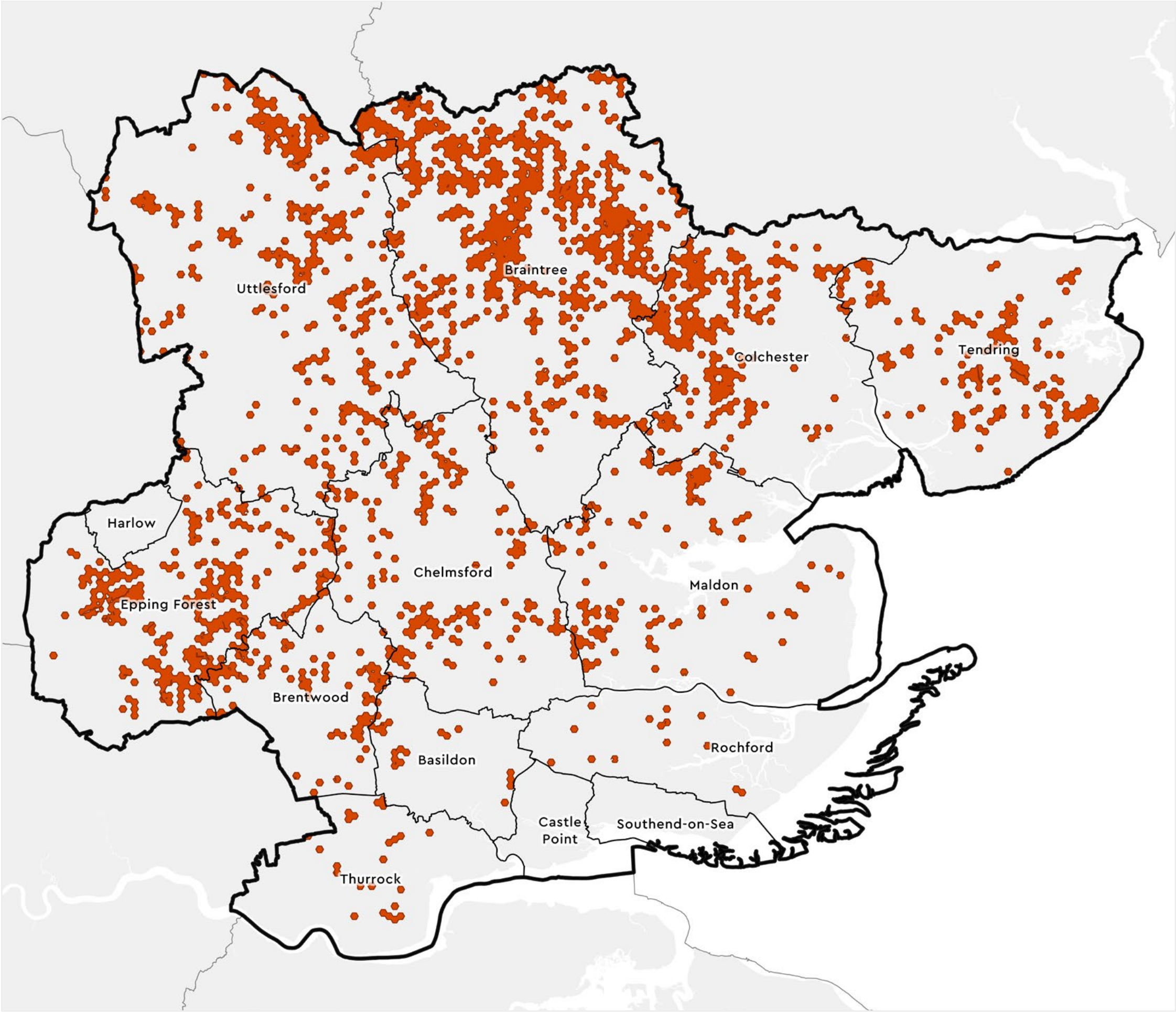


Map 5:
Areas that could become of particular importance – ‘all’ woodland creation opportunities

All woodland creation opportunities presented as a generalised 0.25km² hexagonal grid and categorised by the ‘value’ (quality) of opportunity. Darker shades represent ‘higher value’ (greater quality) opportunities for woodland creation. APIBs not removed.



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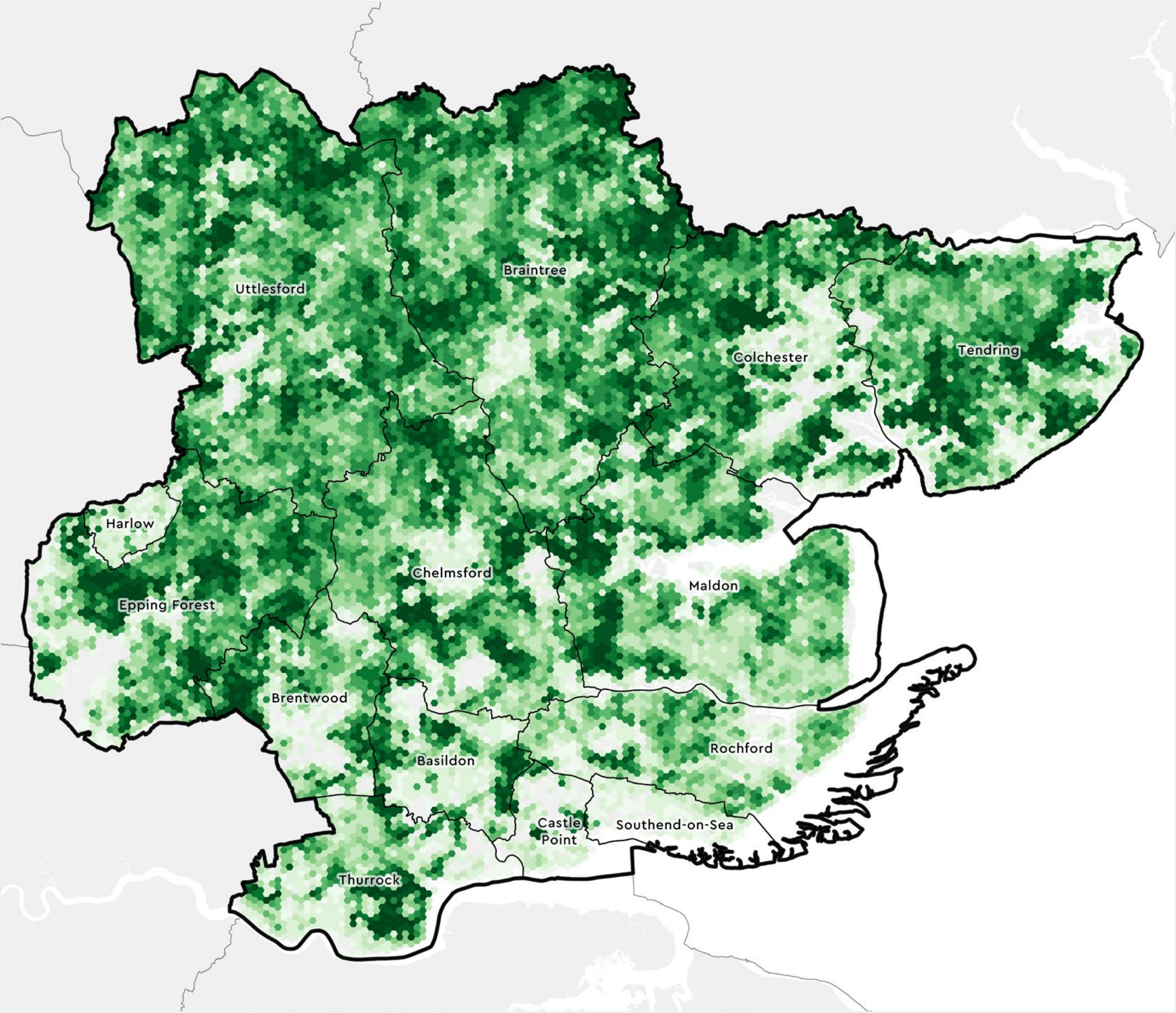
Map 6:
Areas that could become
of particular importance
for biodiversity –
‘strategic’ woodland
creation opportunities

‘Strategic’ woodland creation opportunities defined as the ‘top’ (greatest quality) 15% of ‘all’ woodland creation opportunities, covering 12.8% of the Greater Essex LNRS region in total. APIBs removed.

Key

Strategic Opportunities

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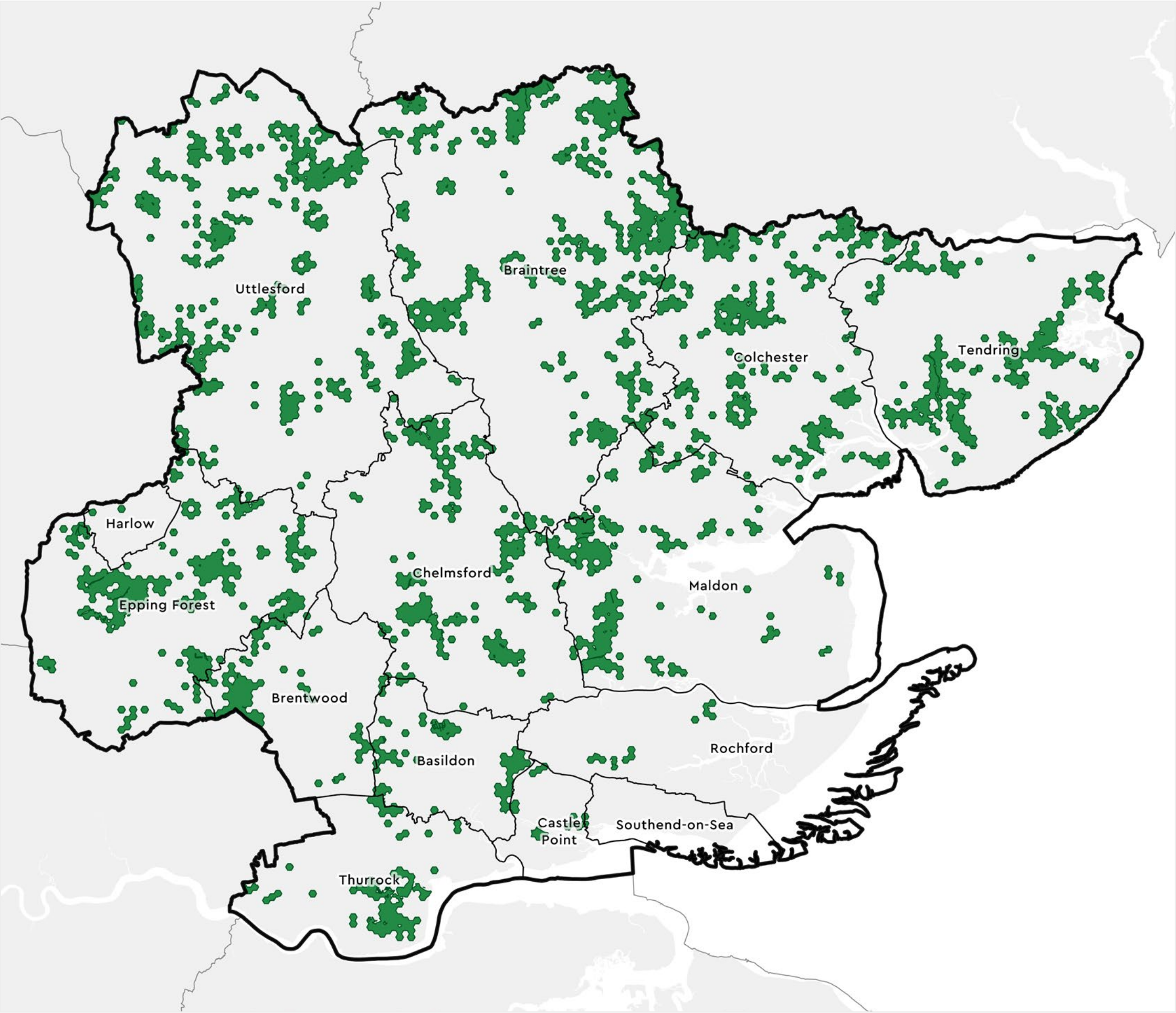


Map 7:
Areas that could become
of particular importance
– ‘all’ grassland and
heathland creation
opportunities

All grassland and heathland creation opportunities presented as a generalised 0.25km² hexagonal grid and categorised by the ‘value’ (quality) of opportunity. Darker shades represent ‘higher value’ (greater quality) opportunities for grassland and heathland creation. APIBs not removed.



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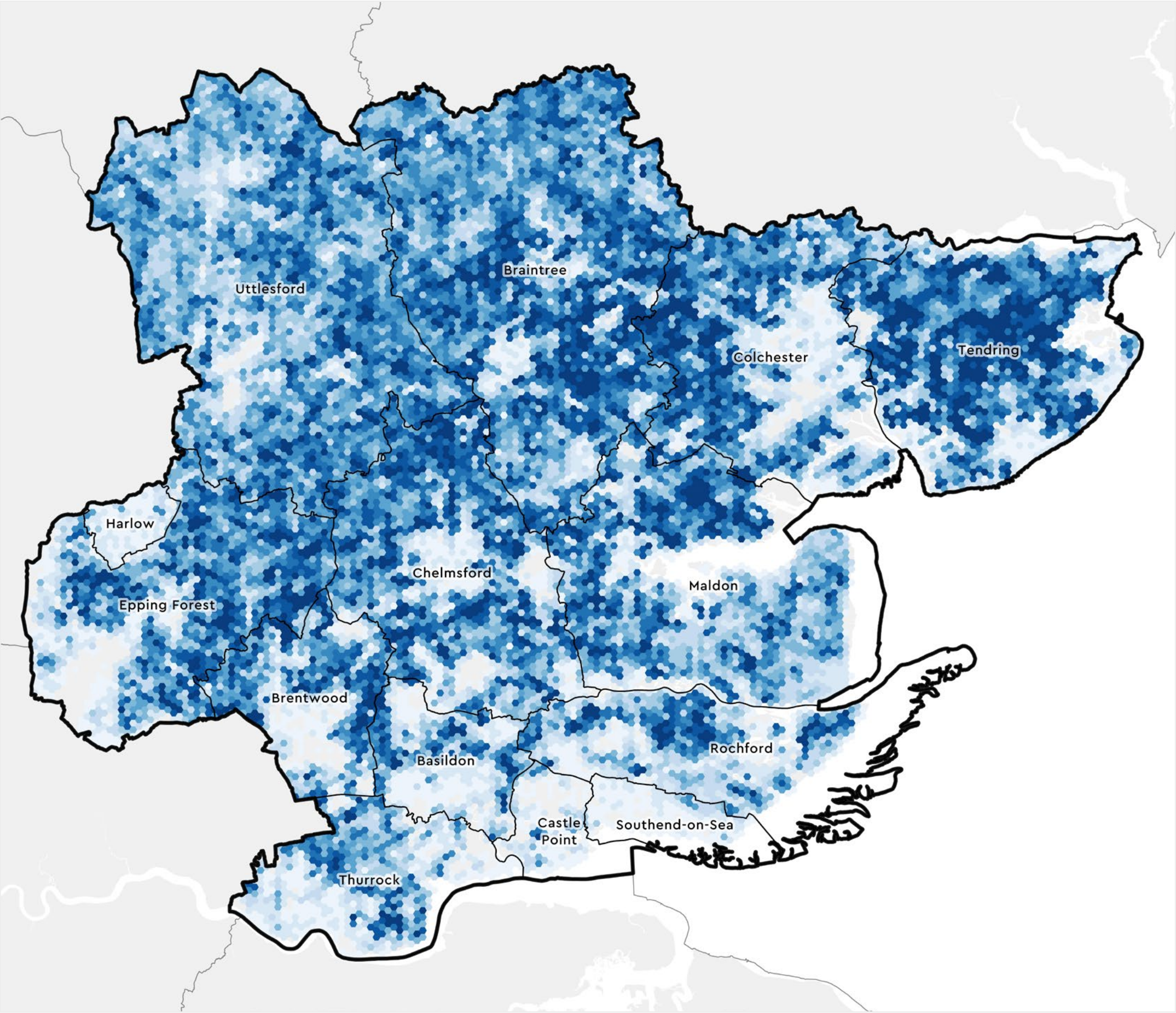
Map 8:
Areas that could become
of particular importance
for biodiversity –
‘strategic’ grassland
habitat creation
opportunities

‘Strategic’ grassland habitat creation opportunities defined as the ‘top’ (greatest quality) 15% of ‘all’ grassland habitat creation opportunities, covering 13.2% of the Greater Essex LNRS region in total. APIBs removed.

Key

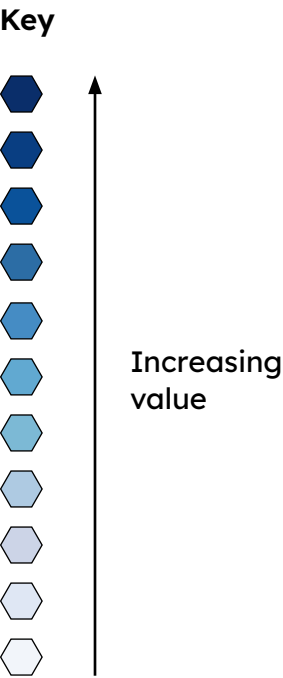
■ Strategic Opportunities

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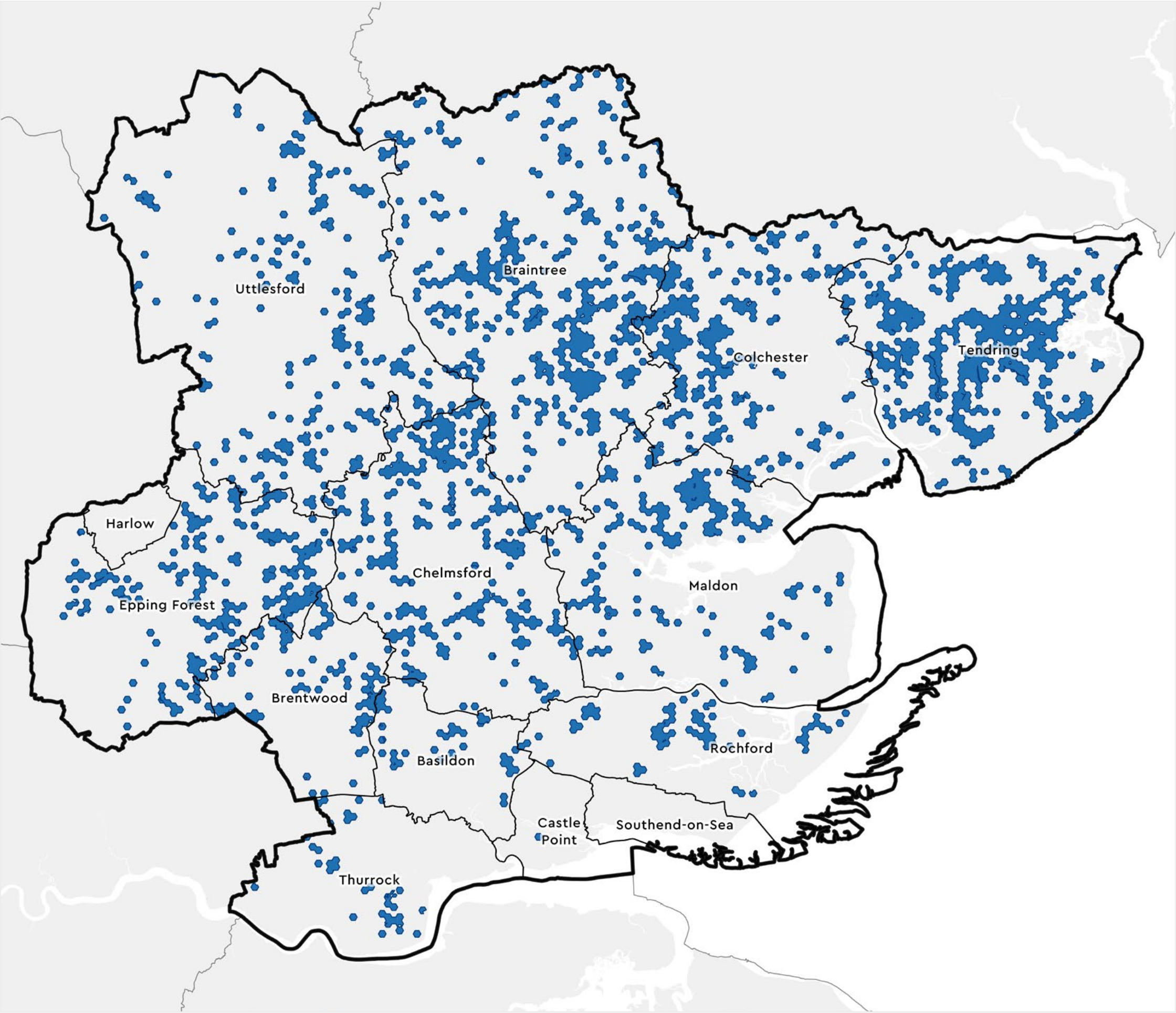


Map 9:
Areas that could become
of particular importance
– ‘all’ freshwater
standing water creation
opportunities

All freshwater standing water creation opportunities presented as a generalised 0.25km² hexagonal grid and categorised by the ‘value’ (quality) of opportunity. Darker shades represent ‘higher value’ (greater quality) opportunities for freshwater standing water creation. APIBs not removed.



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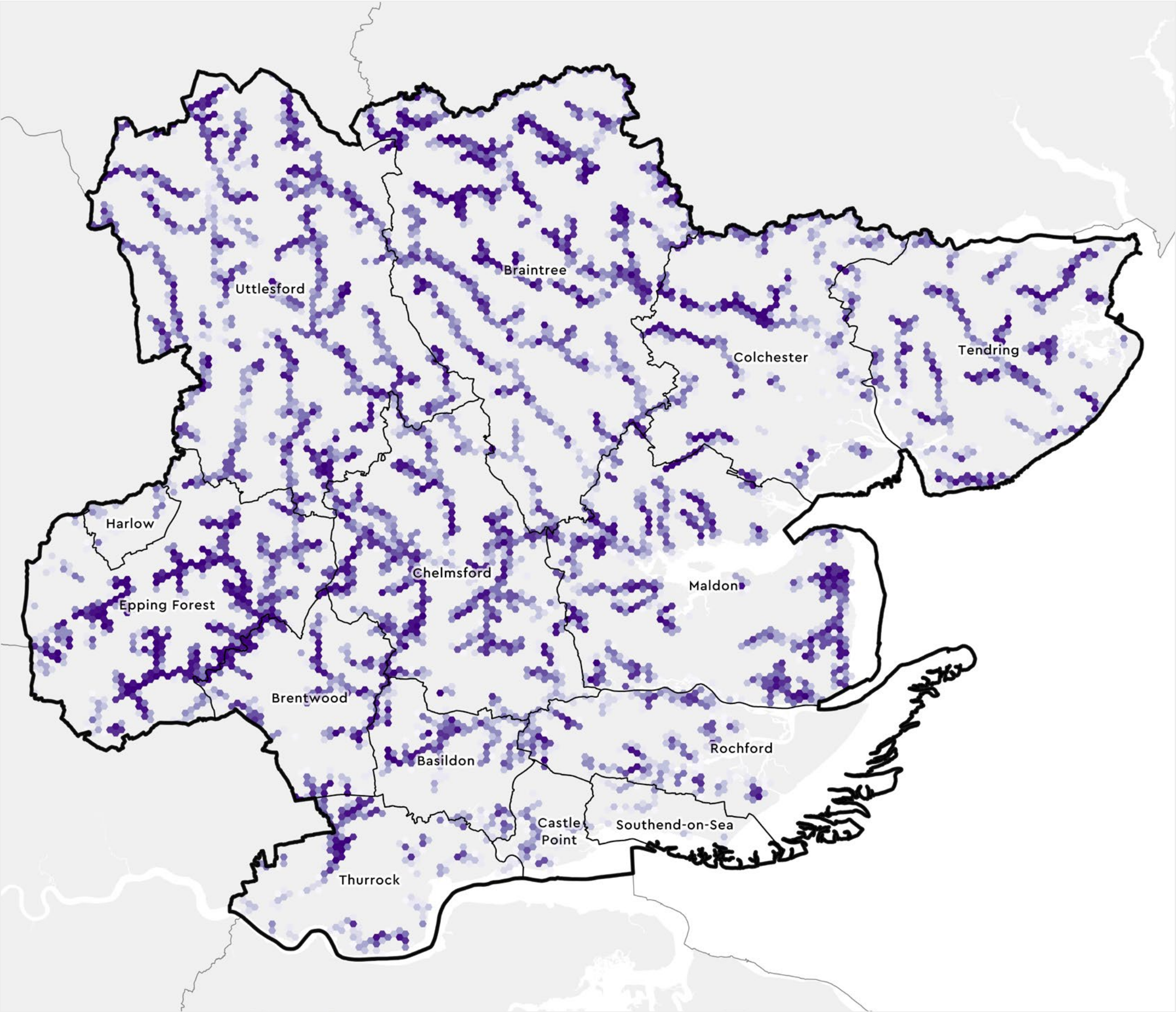
Map 10:
Areas that could become
of particular importance
– ‘strategic’ freshwater
standing water creation
opportunities

‘Strategic’ freshwater standing water creation opportunities defined as the ‘top’ (greatest quality) 15% of ‘all’ freshwater standing water creation opportunities, covering 13.4% of the Greater Essex LNRS region in total. APIBs removed.

Key

Strategic Opportunities

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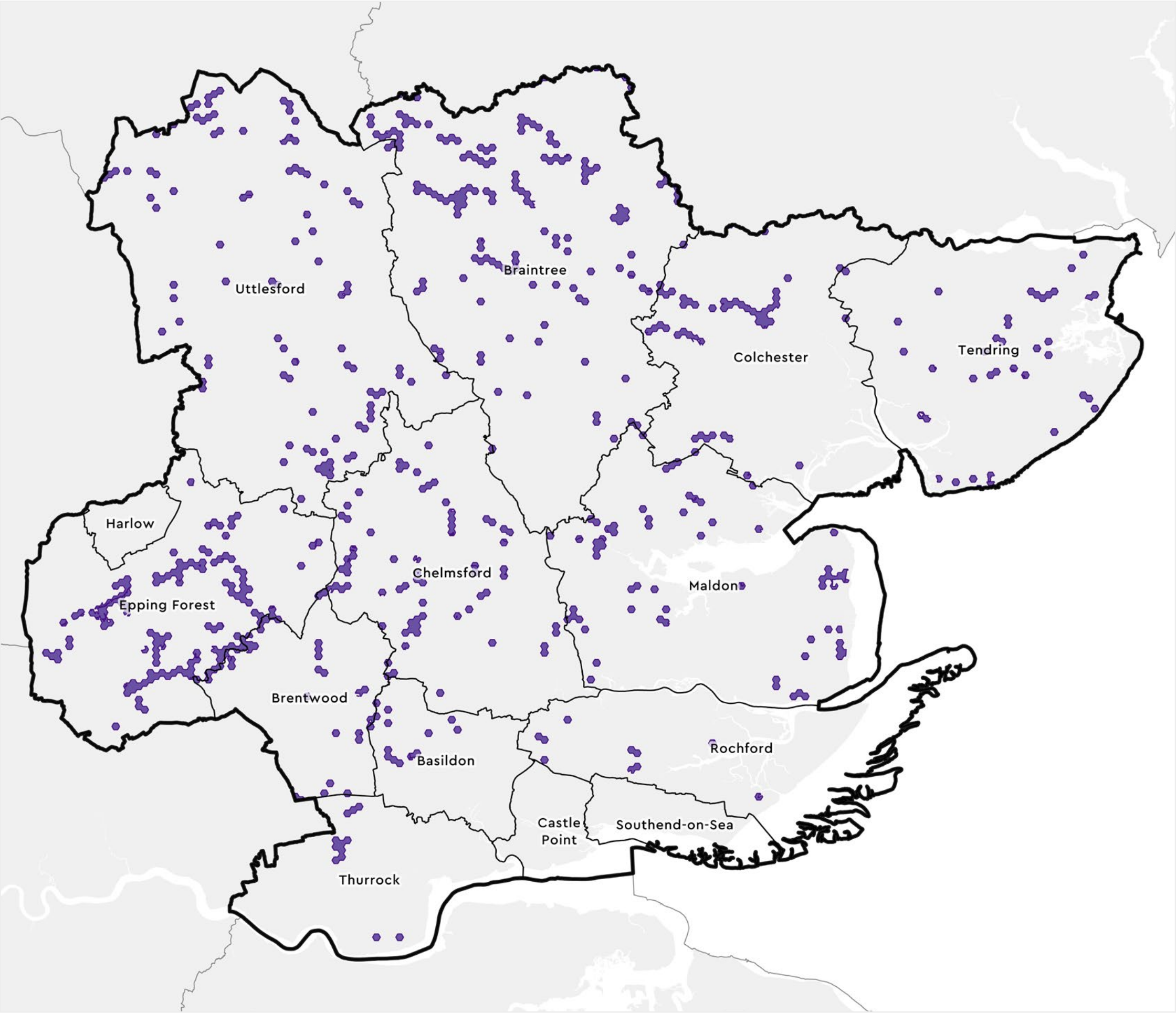


Map 11:
Areas that could become
of particular importance
– ‘all’ freshwater river
habitat creation
opportunities

All freshwater river habitat creation opportunities presented as a generalised 0.25km² hexagonal grid and categorised by the ‘value’ (quality) of opportunity. Darker shades represent ‘higher value’ (greater quality) opportunities for freshwater river habitat creation. APIBs not removed.



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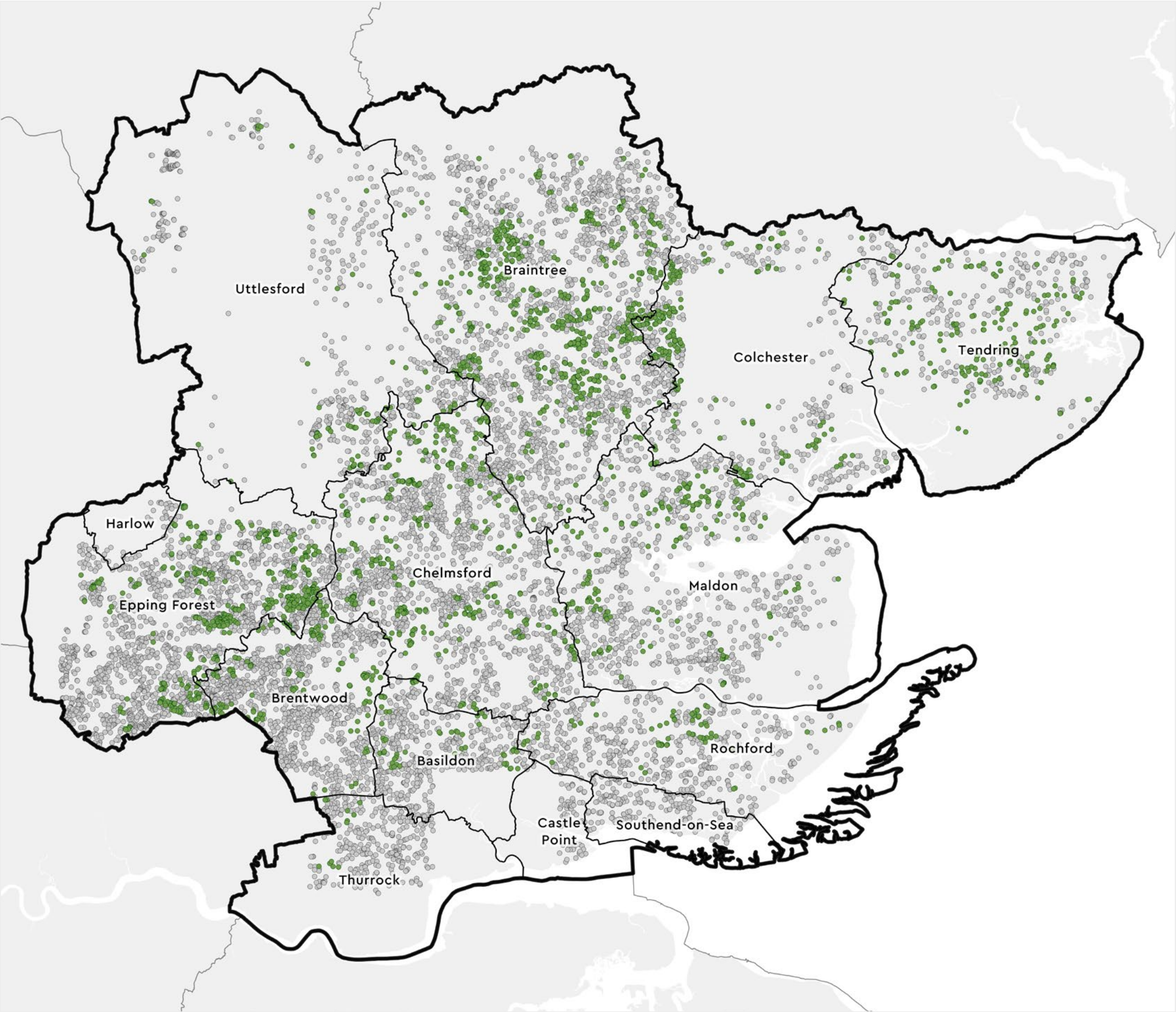
Map 12:
Areas that could
become of particular
importance –
‘strategic’ freshwater
river habitat creation
opportunities

‘Strategic’ freshwater river habitat creation opportunities defined as the ‘top’ (greatest quality) 15% of ‘all’ freshwater river habitat creation opportunities, covering 4% of the Greater Essex LNRS region in total. APIBs removed.

Key

Strategic Opportunities

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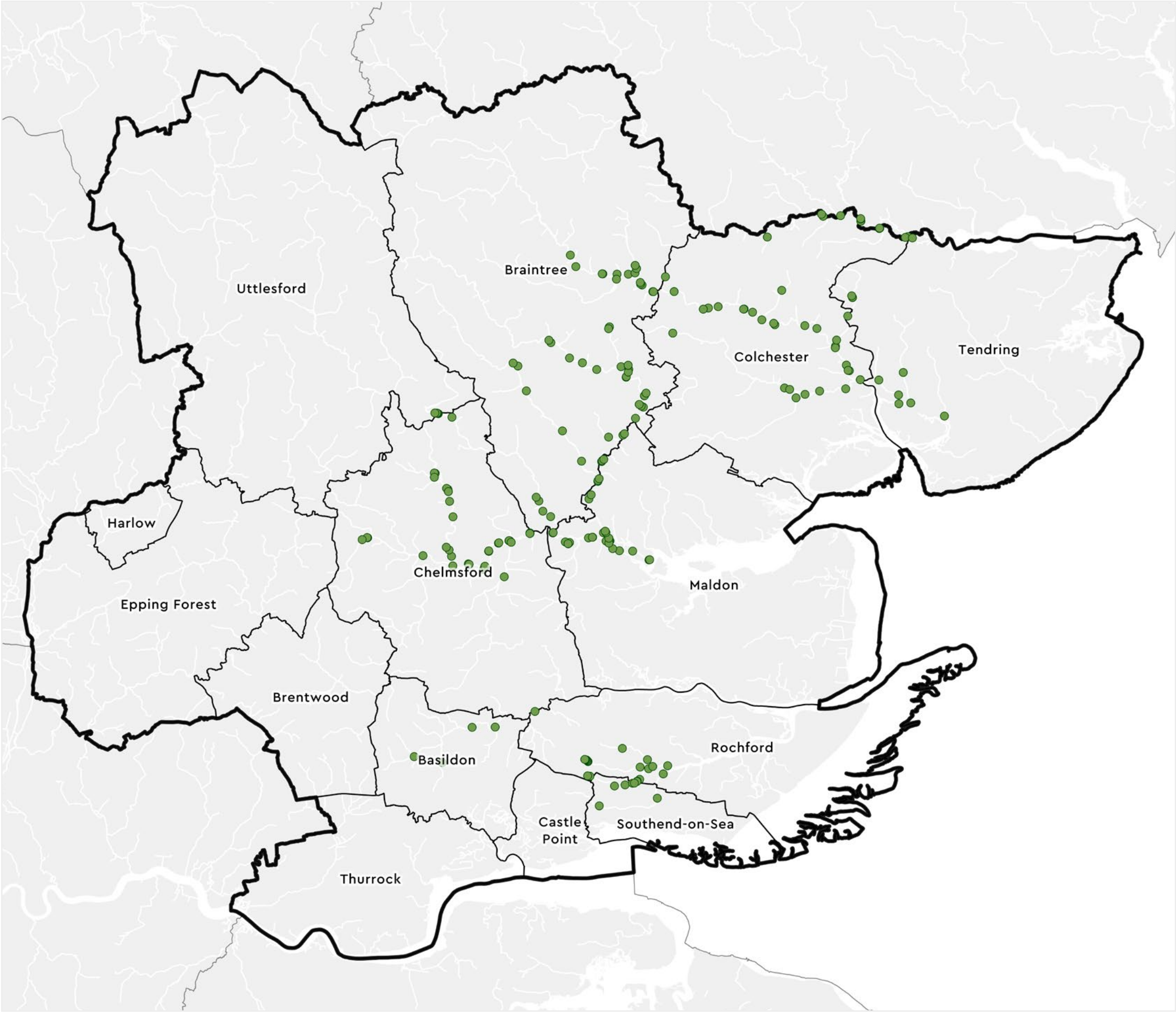
Map 13:
Priority ghost pond
restoration/recreation
opportunities

Ghost ponds categorised as priority for restoration/recreation based on whether a ghost pond is considered as in poor quality or lost, and which also intersects with the ‘strategic’ freshwater standing water creation opportunities put forward in this strategy. A count of 2,408 priority ghost ponds in total. Ghost pond data incomplete.

Key

- Priority Ghost Pond Restoration/ Recreation Opportunity
- Non-Priority Ghost Pond Restoration/ Recreation Opportunity

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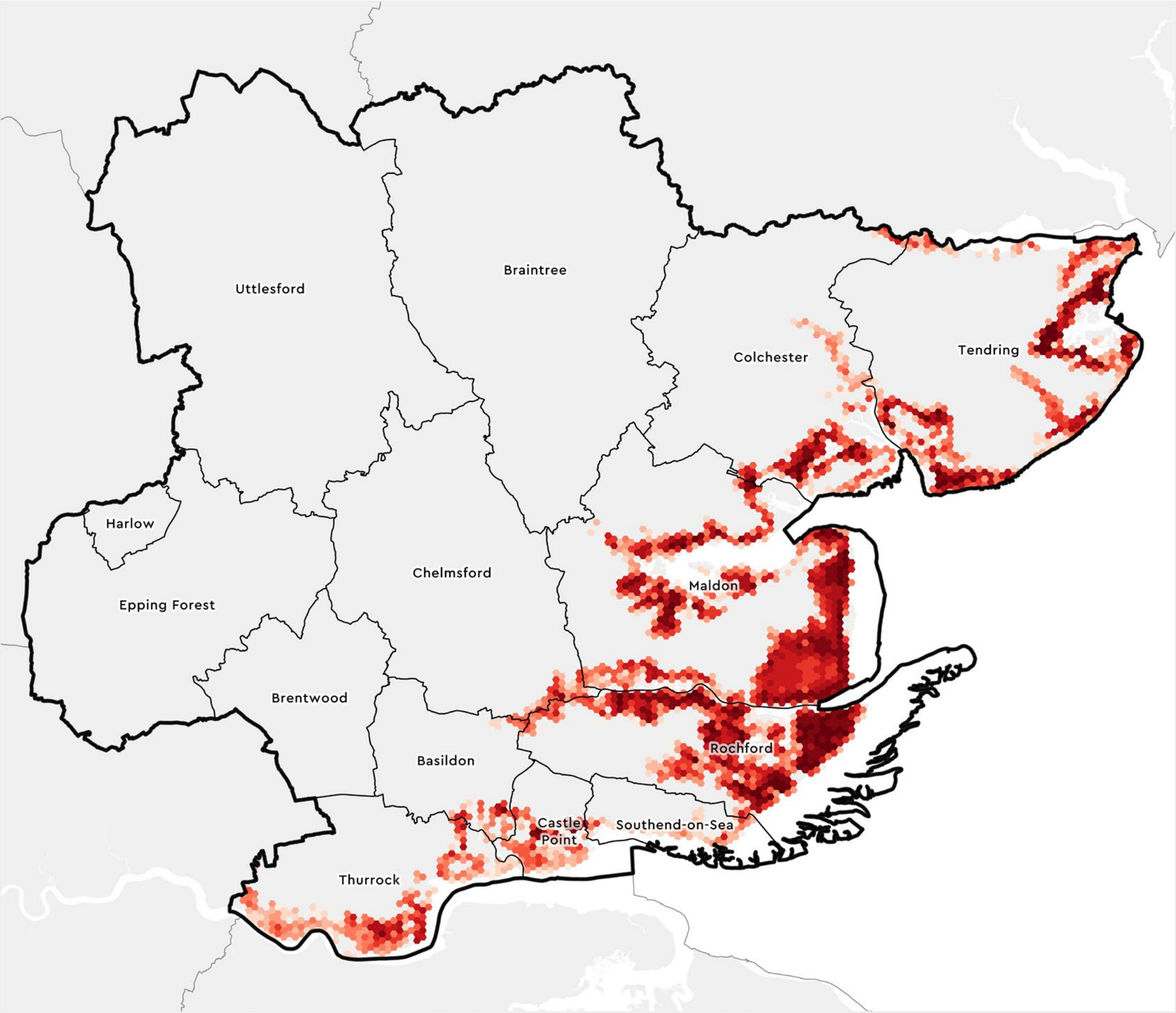
Map 14:
River obstruction
clearance opportunities

River obstructions clearance opportunities where clearance will aid overall fish migration. A count of 218 river obstruction clearance opportunities in total.

Key

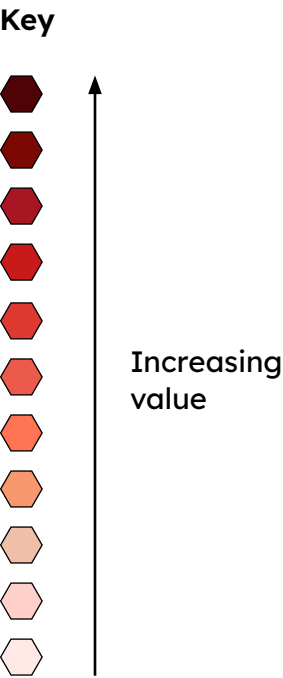
River Obstruction Clearance Opportunity

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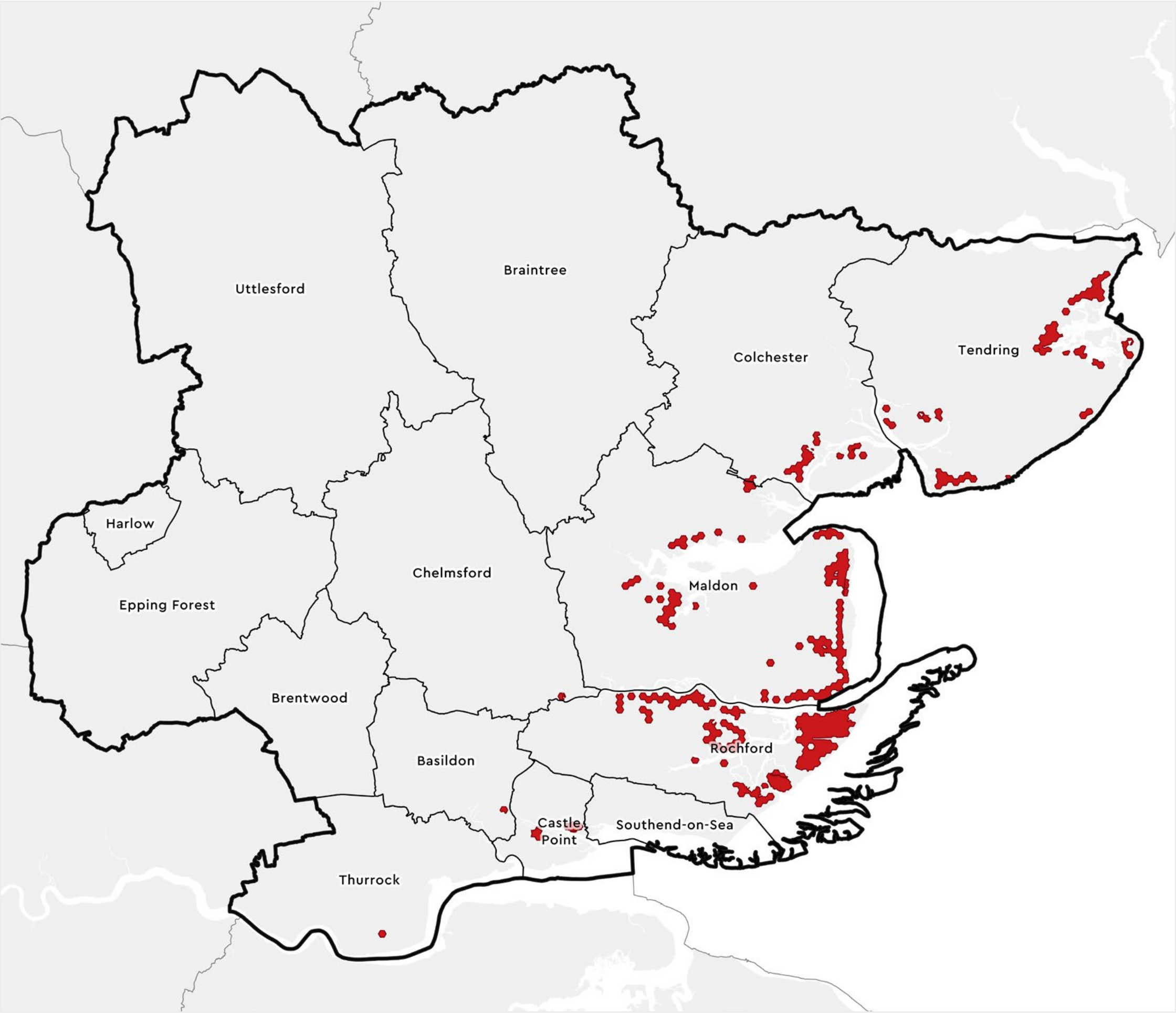


Map 15:
Areas that could become of particular importance – ‘all’ coastal habitat creation opportunities

All coastal habitat creation opportunities presented as a generalised 0.25km² hexagonal grid and categorised by the ‘value’ (quality) of opportunity. Darker shades represent ‘higher value’ (greater quality) opportunities for coastal habitat creation. APIBs not removed.



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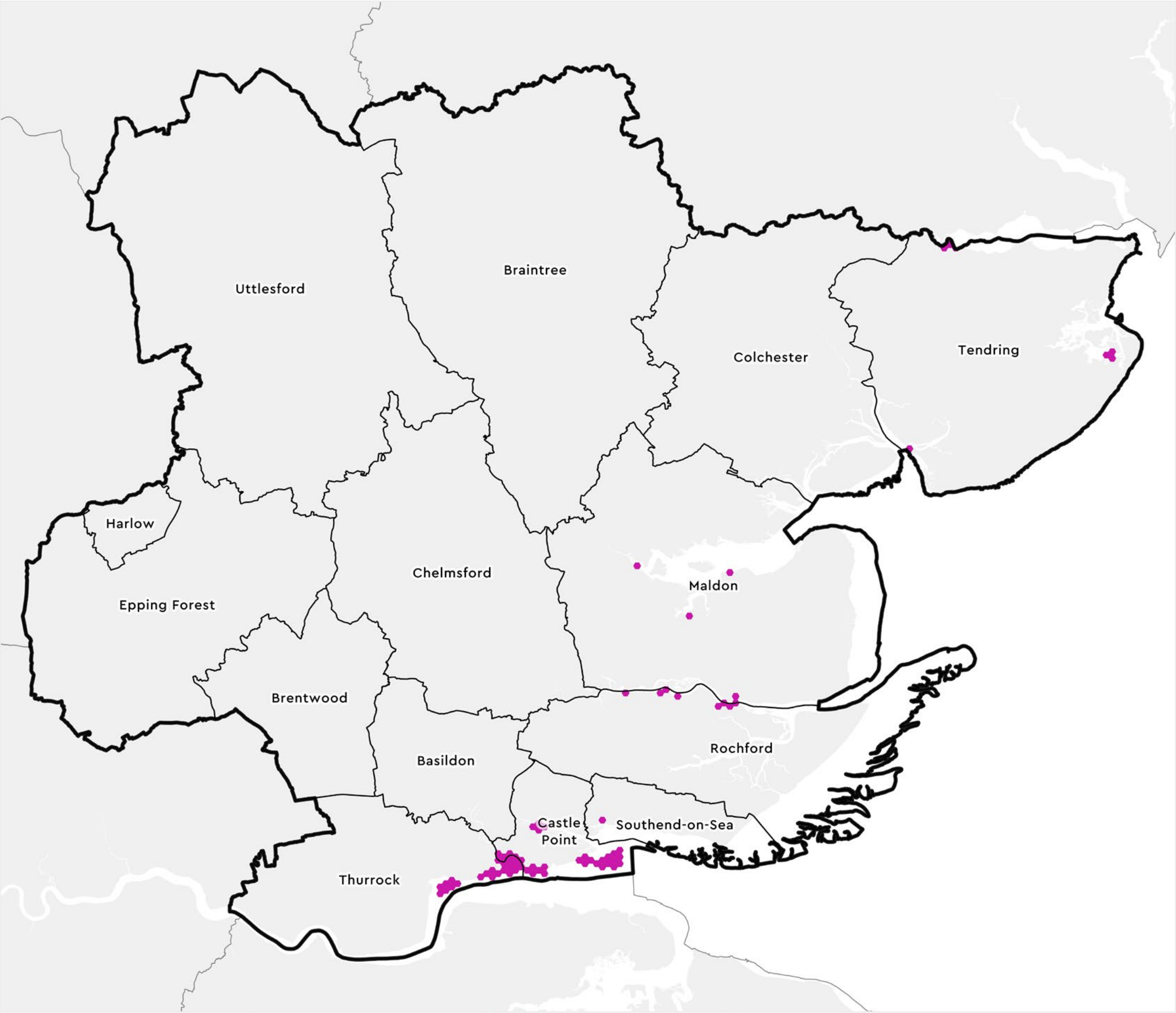
Map 16:
Areas that could become of particular importance – ‘strategic’ coastal habitat creation opportunities

‘Strategic’ coastal habitat creation opportunities defined as the ‘top’ (greatest quality) 15% of ‘all’ coastal habitat creation opportunities, covering 1.8% of the Greater Essex LNRS region in total. APIBs removed.

Key

Strategic Opportunities

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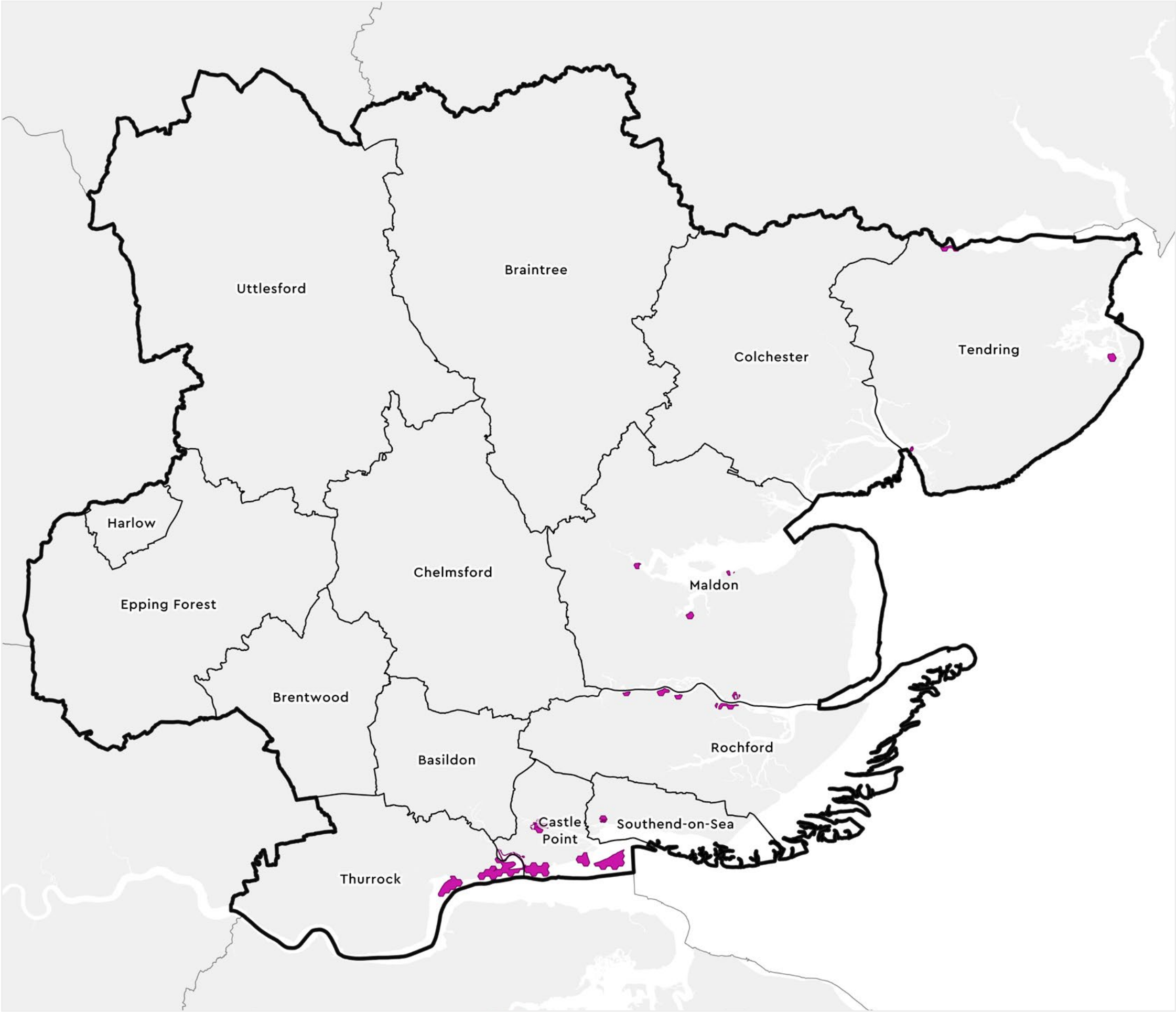
Map 17:
Areas that could become of particular importance – ‘all’ marine habitat creation opportunities

All marine habitat creation opportunities presented as a generalised 0.25km² hexagonal grid. APIBs not removed.

Key

 Opportunity

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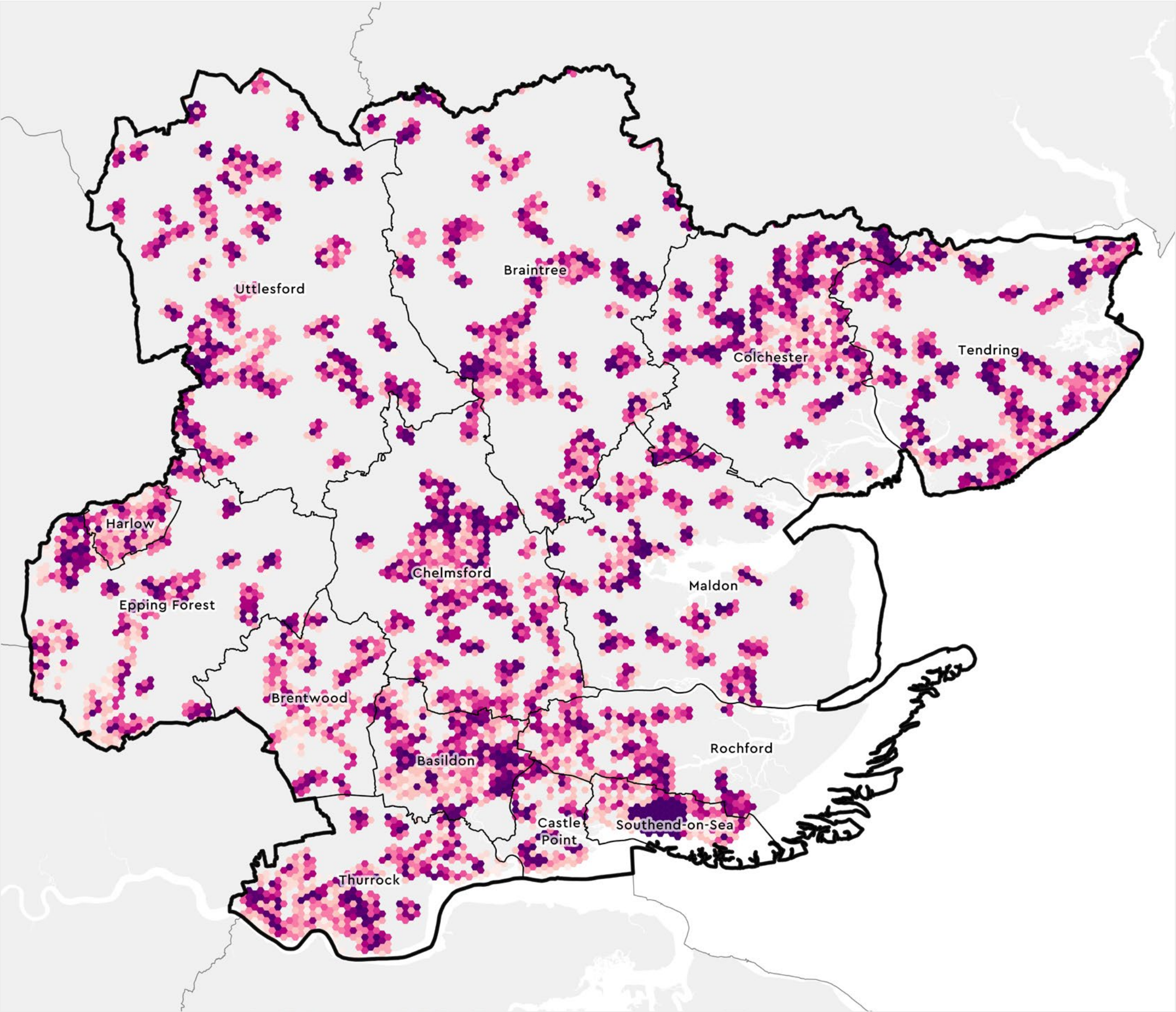
Map 18:
Areas that could become of particular importance – ‘strategic’ marine habitat creation opportunities

Strategic marine habitat creation opportunities defined as 100% of all marine habitat creation opportunities, covering 0.3% of the Greater Essex LNRS. APIBs removed.

Key

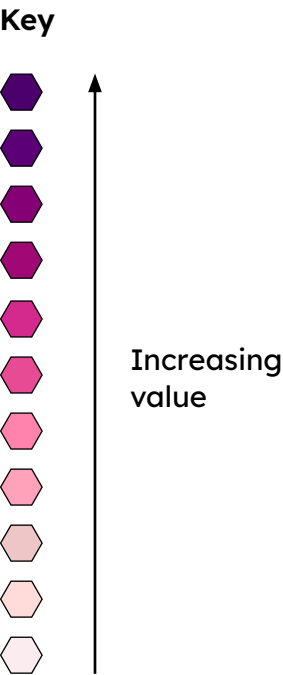
Strategic Opportunities

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Map 19:
Areas that could become of particular importance – ‘all’ urban habitat creation opportunities

All urban habitat creation opportunities presented as a generalised 0.25km² hexagonal grid and categorised by the ‘value’ (quality) of opportunity. Darker shades represent ‘higher value’ (greater quality) opportunities for urban habitat creation. APIBs not removed.



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