



COMMUNITY LEADERSHIP OVERVIEW AND SCRUTINY COMMITTEE

AGENDA

DATE:	Tuesday, 28 January 2025
TIME:	7.30 pm
VENUE:	Town Hall, Station Road, Clacton-on-Sea, CO15 1SE

MEMBERSHIP:

Councillor Steady (Chairman)
Councillor Barrett (Vice-Chairman)
Councillor Davidson
Councillor Doyle

Councillor Ferguson
Councillor Griffiths
Councillor Oxley
Councillor Platt

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DATE OF PUBLICATION: Monday, 20 January 2025

AGENDA

1 Apologies for Absence and Substitutions

Councillors are invited to declare any Disclosable Pecuniary Interests, Other Registerable Interests of Non-Registerable Interests, and the nature of it, in relation to any item on the agenda.

2 Declarations of Interest

Councillors are invited to declare any Disclosable Pecuniary Interests or Personal Interest, and the nature of it, in relation to any item on the agenda.

3 Questions on Notice pursuant to Council Procedure Rule 38

Subject to providing two working days' notice, a Member of the Committee may ask the Chairman of the Committee a question on any matter in relation to which the Council has powers or duties which affect the Tendring District **and** which falls within the terms of reference of the Committee.

4 Review of the Work Programme (Pages 5 - 32)

To present to the Committee a draft detailed Work Programme 2024/25, to consider the detail and ordering of the Work Programme.

5 Report of the Corporate Director of Operations and Delivery - Consideration and Development of a Crime and Disorder Reduction Strategy 2025-2028 (Pages 33 - 56)

The Committee is invited to consider the report which is intended to support the enquiry into the emerging Council Crime and Disorder Strategy. Relevant representatives of partner agencies have been invited to attend the meeting for the purposes of this enquiry.

6 Report of the Assistant Director of Housing and Environment - Water Quality in the Tendring District (Pages 57 - 258)

As set out in the Committee's approved Work Programme, this Committee's meeting is to undertake (at this meeting) an enquiry into water quality. This report is intended to support this enquiry. In addition relevant invitees will be present to assist the Committee's enquiry.

Date of the Next Scheduled Meeting

The next scheduled meeting of the Community Leadership Overview and Scrutiny Committee is to be held in the Town Hall, Station Road, Clacton-on-Sea, CO15 1SE at 7.30 pm on Tuesday, 15 April 2025.

Information for Visitors

FIRE EVACUATION PROCEDURE

There is no alarm test scheduled for this meeting. In the event of an alarm sounding, please calmly make your way out of any of the fire exits in the hall and follow the exit signs out of the building.

Please heed the instructions given by any member of staff and they will assist you in leaving the building and direct you to the assembly point.

Please do not re-enter the building until you are advised it is safe to do so by the relevant member of staff.

Your calmness and assistance is greatly appreciated.

COMMUNITY LEADERSHIP OVERVIEW AND SCRUTINY COMMITTEE

28 JANUARY 2025

REPORT OF HEAD OF DEMOCRATIC SERVICES AND ELECTIONS

A.1 WORK PROGRAMMING – INCLUDING MONITORING OF PREVIOUS RECOMMENDATIONS AND SUMMARY OF FORTHCOMING DECISIONS

(Report prepared by Bethany Jones)

PURPOSE OF THE REPORT

The report provides the Committee with an update on its approved Work Programme for 2024/25 (including progress with enquiries set out in its Work Programme), feedback to the Committee on the decisions in respect of previous recommendations from the Committee in respects of enquiries undertaken and a list of forthcoming decisions for which public notice has been given.

INVITEES

None.

BACKGROUND

The Council commissioned the Centre for Governance and Scrutiny (CfGS) to undertake an ‘Overview & Scrutiny Development Review’ in 2021 as a way of further improving that function at the Council. Two relevant recommendations arising from that review were:

“Further strengthening the annual process for developing work programmes for each O&S committee - Engaging Members, Officers, partners and the public to prioritise the topics for review. This could include a selection criteria to identify appropriate topics for the work programme. Currently the work programme is also the last item on the agenda at O&S meetings, we would recommend bringing it to the beginning, so it can be given greater priority and benefit from more considered discussion, rather than being subject to the inevitable end of meeting fatigue.

Reviewing how the recommendations are made and how impact is measured – This could include putting the ‘recommendations monitoring report’ at the beginning of agendas to orientate O&S towards outcomes-focused meetings, alongside an emphasis on finding strong recommendations from questioning to present to Cabinet (or partners) as improvement or challenge proposals.”

The inclusion of the matters set out in the “purpose of this report” section above seeks to further re-enforce the inter-relationship of the matters referred to. As such, it is designed to further support consideration of work programming of the Committee and contribute to addressing progress with the Corporate Plan.

DETAILED INFORMATION

WORK PROGRAMME 2024/25

The detailed matters relating to the following matters are set out in the relevant Appendix identified:

- (1) Work Programme for 2024/25 approved by Full Council on 6 August 2024 – See Appendix A;
- (2) feedback to the Committee on the decisions in respect of previous recommendations from the Committee in respects of enquiries undertaken – See Appendix B; and
- (3) a list of forthcoming decisions for which notice has been given since publication of the agenda for the Committee’s last meeting – See Appendix C

In considering work programming matters, the Committee is further reminded of the other recommendations from the CfGS review undertaken in 2021:

“Considering greater use of task and finish groups – *This more informal type of O&S can allow improved cross-party working and detailed investigation of a single issue focussed on producing substantive recommendations.*

Improved agenda planning and management - *Committees should focus on one or two substantive items per agenda to allow for cross-cutting themes to be properly identified and explored, and different insights brought to bear on critical issues.*

Considering how to engage the public in the work of O&S - *This could include O&S going on more site visits in the community, inviting the public to offer ideas for work programmes, and greater use of social media channels for resident input and communicating the progress and impact of scrutiny work.*

A clearer focus on democratic accountability - *Scrutiny of Cabinet Members should form a key part of the work programme, providing an opportunity to hold the Leader and portfolio holders to account for delivery of the corporate plan and any other issues O&S feel is important.”*

The Community Leadership Overview and Scrutiny Committee is one of two overview and scrutiny committees established by the Council to specifically focus on the following areas of Council work (as detailed in Article 6.02(i) of the Council’s Constitution):

“To perform the role of Overview and Scrutiny and its functions in relation to

- *Community Leadership developing the external focus of overview and scrutiny on “district-wide” issues’ (and where appropriate sub regional, regional and national issues), in particular through collaborative work with local partner authorities, providers, stakeholders and members of the public.*
- *Approval of discrete researched and evidenced reviews on the effectiveness of partnership operating in the area with particular focus on:*
 - *Community Safety*
 - *Health and Well-being*
 - *Economy, Skills and Educational Attainment*
- *Community engagement, development and empowerment*
- *Economic Development, Regeneration and Freeport East*

- *Leisure and Tourism (except matters relating to budgets)*
- *Planning & Building Control and Strategic Planning (including the Local Plan)*
- *Emergency Planning*
- *To scrutinize/review the outcomes and implications for the Council of its financial support to community organisations and also from its receipt and use of funds received from local partner organisations.*

The Community Leadership Overview & Scrutiny Committee will also act as the Council's designated "crime and disorder committee" for the purposes of Section 19 of the Police and Justice Act 2006 and will have the power –

- (a) to review or scrutinise decisions made, or other action taken, in connection with the discharge by the responsible authorities[*] of their crime and disorder function;*
- (b) to make reports or recommendations to the local authority with respect to the discharge of those functions.*

**- "The responsible authorities" means the bodies and persons who are responsible authorities within the meaning given by section 5 of the Crime and Disorder Act 1998 (c.37) (authorities responsible for crime and disorder strategies) in relation to the local authority's area.*

In fulfilling that function the Community Leadership Overview & Scrutiny Committee will have the power (whether by virtue of section 9F(3) or 21(2) of the Local Government Act 2000 or regulations made under section 9JA(2) or 32(3) of that Act or otherwise) to make a report or recommendation to the local authority with respect to any matter which is a local crime and disorder matter in relation to a member of the authority.

The crime and disorder committee shall meet to review or scrutinise decisions made, or other action taken, in connection with the discharge by the responsible authorities of their crime and disorder function as the committee considers appropriate but no less than once in every twelve month period."

The Constitution provides for the two overview and scrutiny committees to submit a work programme to full Council for approval. Rule 7 of the Overview and Scrutiny Procedure Rules sets out the position as follows:

"Each Overview and Scrutiny Committee will submit a work programme for the year ahead and a review of the previous year's activities to the full Council for approval. In addition it will be responsible for co-ordinating and prioritising its work programme on an ongoing basis.

In preparing, co-ordinating and prioritising its programme, each Overview and Scrutiny Committee will take into account:-

- *The General Role and Principles of undertaking its functions, as set out in Part 2 Article 6;*
- *the planned work on the preparation of elements of the Budget and Policy Framework;*

- *provision for budget scrutiny and scrutiny of the Treasury Management Strategy, as appropriate;*
- *the need for statutory timetables to be met;*
- *the expressed wishes of the members of the committee;*
- *requests from the Cabinet to carry out reviews and/or suggestions from the liaison meetings held under the Cabinet Overview & Scrutiny Protocol; and*
- *requests from Members and/or Group Leaders in accordance with Rule 8.”*

In considering the Work Programme of enquiries, the Committee must have regard to the Corporate Plan 2024-28 and the themes of that Corporate Plan are:

- Pride in our area and services to residents
- Raising aspirations and creating opportunities
- Championing our local environment
- Working with partners to improve quality of life
- Promoting our heritage offer, attracting visitors and encouraging them to stay longer
- Financial Sustainability and openness

It should also be noted that the Committee held an informal meeting on Thursday 9 January 2025, during which the attendees received a very informative presentation from Dr Emily Murray of the Centre for Coastal Communities of the University of Essex.

During the discussion of this report, it would be possible to receive an update of the work of the Task & Finish Groups established by the Committee, namely:

- Crime and Disorder (Familial Violence/Abuse)
- Joint working with Parish and Town Councils; and
- Youth Provision for School Age Children outside of school

RECOMMENDATION(S)

- a) That the Committee considers and notes the progress with enquiries set out in its Work Programme 2024/25, plus any feedback to the Committee on the decisions in respect of previous recommendations and the list of forthcoming decisions; and**
- b) That an update of the work of the Committee’s Task and Finish Groups referred to in the “Detailed Information” section of this report be formally received.**

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COMMUNITY LEADERSHIP OVERVIEW AND SCRUTINY COMMITTEE FOR ENQUIRIES TO BE UNDERTAKEN IN 2024/25

Item	Date of Enquiry	Relevant Corporate Plan Theme/Annual Cabinet Priority	Information to be provided in advance	Those to be invited to attend	Articulated value of undertaking the review
<p>To examine evidence around water quality in the District – including sea water, freshwater courses and drinking water.</p>	<p>At a Committee Meeting on 28 Jan 2025 [i.e. This meeting]</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Championing our local environment <input type="checkbox"/> Pride in our area and services to residents <input type="checkbox"/> Working with Partners to improve quality of life <input type="checkbox"/> Promoting our heritage offer, attracting visitors and encouraging them to stay longer 	<p>Water quality data over previous 5 years for sea water, fresh water and drinking water.</p> <p>Activities already planned to improve water quality over the next 5 years by organisations responsible for that water quality.</p> <p>The recent article the Portfolio Holder from Kings Lynn and West Norfolk Council on the role of District Councils in championing water quality in coastal areas would be submitted to the enquiry.</p> <p>Case of material from an earlier study by the Council into coastal water quality that should be referenced to the enquiry.</p>	<p>Water and wastewater services in the District.</p> <p>Environmental Agency</p> <p>Maritime Marine Organisation</p> <p>Harwich haven Port Authority</p> <p>Brightlingsea Harbour Commissioners</p> <p>Surfers Against Sewage</p> <p>Portfolio Holder, Environment</p> <p>Corporate Director, Operations and Delivery</p>	<p>To establish information on water quality in different settings and measures to improve water quality with a view to consider the appropriateness of that measure.</p>

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				LGA's special interest group on coastal matters.	
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As a consequence of the actions outlined to the Cabinet meeting on 15 November 2024 by the Portfolio Holder for Partnerships, the consideration of the emerging Community Safety Strategy for the Council was added to the work programme of this Committee with the agreement of the Chairman (on 3 December 2024):

“At its meeting on 21st October 2024, Cabinet formally received and noted the Monitoring Officer’s report issued under Section 5A of the Local Government and Housing Act 1989 in respect of the position in relation to this Council’s historic omission regarding the formulation and implementation of a Crime and Disorder Strategy for the Council, as required under Sections 5 and of the Crime and Disorder Act 1998.

I am providing an update as per recommendation (c) of that report, namely the proposed actions and timescales to resolve the historical omission to approve the Crime and Disorder Reduction Strategy at Full Council.

The timescale to address the above issue is as follows:-

November 2024 – To carry out a strategic assessment and to produce a draft assessment document.

December 2024 – To produce a draft Crime and Disorder Reduction Strategy.

January 2025 – To submit a draft report and Strategy to the Council’s Management Team for its review.

February 2025 – The final Crime and Disorder Reduction report and Strategy to be submitted to Cabinet for its consideration.

March 2025 – The Crime and Disorder Reduction Strategy to be submitted to Full Council for its approval and formal adoption.

I would like to reassure Members that the Crime and Disorder Reduction Strategy will, in future, go to Full Council for approval. I would also like to assure Members that the failure to do so previously has not prevented the work we carry out with our partners from being progressed.

In addition to the statutory partners of Tendring District Council, Essex Police, Essex Fire & Rescue Service, the Probation Service and the North East Essex Integrated Care Board, the Community Safety Partnership also includes Community Voluntary Services Tendring and Citizens’ Advice Tendring together with a number of other agencies.

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This Partnership has delivered a number of projects, and if you bear with me, I will give some examples.

CARA (Centre for Action on Rape and Abuse) – is a support service for victims and survivors of sexual violence and child sexual abuse. In 2023, 365 referrals from Tendring residents were received which included 58 young people aged 13 to 17 and 20 under the age of 12. CARA’s services to clients include an ISVA (Independent Sexual Violence Advisor) who supports them through the criminal justice system and provides advocacy and emotional support. Our CSP funding, in line with Safer Essex, supported 200 therapy sessions.

Essex Police – Operation Esplanade

Operation Esplanade is a joint operation with Police and TDC Officers undertaking patrols in the peak summer holiday period, with the aim of tackling ASB and street drinking in Clacton Town Centre.

In 2023, (the then Operation Gingerbread), Essex Police and TDC completed 250 hours of dedicated foot patrols in Clacton Town Centre and during this time the PSPO powers were used over 40 times along with several arrests. 25 incidents of disorderly behaviour were attended to and 10 intelligence reports were made in relation to illegal drugs.

In 2024 (as Operation Esplanade), there have been over 200 hours of dedicated foot patrols in Clacton Town Centre at peak times every Friday, Saturday and Sunday. Powers under the PSPO have been used over 44 times during this period. This involved dispersing street drinkers, removing their alcohol and dealing with low level ASB incidents.

10 arrests were made in relation to public disorder and shoplifting.

20 Police intelligence reports were submitted and 12 stop and searches were undertaken.

During these periods over the last two years there has been a 65% reduction in ASB incidents reported in Clacton Town Centre.

Ask for Angela

This initiative aims to support individuals in ‘Night Time Economy’ venues who feel that they are being harassed, followed or receiving unwanted attention, by providing a safe phrase to use i.e. “Ask for Angela” that informs the venue that they would like help/support.

This is achieved by providing training to Night Time Economy venues to ensure that they understand what appropriate assistance is when someone feels like they are being harassed and they “Ask for Angela”. Training has been provided to all pubs and clubs in Clacton on how to respond appropriately if someone “Asks for Angela” ensuring that the venue’s staff will then be able to assist the individual and take them out the situation and to help them leave the establishment safely.

I look forward to bringing our Crime and Disorder Reduction Strategy to Full Council next year.”

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UNDERWAY

<p>Crime and Disorder (Familial Violence/Abuse) –</p> <p>To look at all types of familial violence, elder abuse and FGM.</p> <p>What support mechanisms exist locally? Looking at funding for voluntary sector organisations working in this area. What support is there for victims/survivors.</p>	<p>Through a Task and Finish Group</p>	<p><input type="checkbox"/> Working with Partners to improve quality of life</p>	<p>Levels of recorded violence against Women + Girls (and violence of children against parents etc) for Tendring over a 5-year period.</p> <p>Measures being taken by public authorities to address/reduce/eliminate violence and tackle behaviours by perpetrators. What services are available locally by voluntary sector arrangements for victims of violence.</p>	<p>Insp, Wendy Byrne, Essex Police.</p> <p>Portfolio Holder, Partnerships</p> <p>Assistant Director Partnerships Community Safety and Safeguarding Manager.</p> <p>PFCC Essex</p> <p>Representatives of organisations who provide support to victims of violence.</p>	<p>To shine a light on unacceptable behaviours within families and the benefit this created for so many families. It will also look at prevention and support measures to consider strengthening these where possible.</p>
<p>To examine joint working with Parish & Town Councils in the District and opportunities and for the mutually</p>	<p>Through a Task and Finish Group</p>	<p><input type="checkbox"/> Pride in our area and services to residents</p> <p><input type="checkbox"/> Working with Partners to</p>	<p>Details of existing area of joint working between the District Council and Town and Parish Councils in the District.</p>	<p>Chief Executive</p> <p>Assistant Director, Partnerships</p>	<p>To develop options for the Cabinet/Council to develop collaborative working</p>

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<p>beneficial collaboration to enhance that joint working.</p>		<p>improve quality of life</p>	<p>Examples of joint working elsewhere in the nation that may be beneficial to consider</p> <p>Oxfordshire Councils Charter (which sets out an accord on joint working between all Councils in that County) would be an item of information to be submitted to the enquiry (and an invitation would be sent to the Officers to address the enquiry).</p>	<p>The Chair/Secretary TDALC</p> <p>Representatives from the National Association of Local Councils</p> <p>Appropriate Officers/Portfolio Holders for areas of further joint work.</p> <p>Essex Association of Local Councils</p>	<p>opportunities that are mutually beneficial.</p>
<p>To examine the extent of Youth Provision of School age Children outside of that school/education and the opportunity for that provision to be adjusted/supported with improvements for mental health and reduced prosperity anti-social behaviour.</p>	<p>Through a Task and Finish Group</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Championing our local environment <input type="checkbox"/> Pride in our area and services to residents <input type="checkbox"/> Working with Partners to improve quality of life <input type="checkbox"/> Raising aspirations and 	<p>The extent of Youth Provision outside of state education for school age children.</p> <p>The extent of demand for such out of School Activities.</p> <p>The opportunity for groups/individuals</p>	<p>Portfolio Holder, Partnerships</p> <p>Essex Conty Councils Portfolio Holder for Children's Services and Early years</p> <p>Assistant Director, Partnerships</p>	<p>To explore further the benefit for young people of out of school organised activities and events and provision around this age group.</p>

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		<p>creating opportunities</p>		<p>Essex County Councils Executive Director, Children, Families and Education</p> <p>Representatives of Voluntary Youth Provision in the District.</p>	
<p>To examine evidence around water quality in the District – including sea water, freshwater courses and drinking water.</p>	<p>At a Committee Meeting on 28 Jan 2025</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Championing our local environment <input type="checkbox"/> Pride in our area and services to residents <input type="checkbox"/> Working with Partners to improve quality of life <input type="checkbox"/> Promoting our heritage offer, attracting visitors and encouraging them to stay longer 	<p>Water quality data over previous 5 years for sea water, fresh water and drinking water.</p> <p>Activities already planned to improve water quality over the next 5 years by organisations responsible for that water quality.</p> <p>The recent article the Portfolio Holder from Kings Lynn and West Norfolk Council on the role of District Councils in championing water quality in coastal areas would be submitted to the enquiry.</p>	<p>Water and wastewater services in the District.</p> <p>Environmental Agency</p> <p>Maritime Marine Organisation</p> <p>Harwich haven Port Authority</p> <p>Brightlingsea Harbour Commissioners</p> <p>Surfers Against Sewage</p>	<p>To establish information on water quality in different settings and measures to improve water quality with a view to consider the appropriateness of that measure.</p>

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			<p>Case of material from an earlier study by the Council into coastal water quality that should be referenced to the enquiry.</p>	<p>Portfolio Holder, Environment</p> <p>Corporate Director, Operations and Delivery</p> <p>LGA's special interest group on coastal matters.</p>	
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COMPLETED					
<p>To Consider Grant Funding by the Council and Others and its Appropriateness Given the Needs of the District.</p> <p>The enquiry would look at funding streams, processes, the implications of subsidy control, the accessibility of grants funding, the time formal streams of funding had, the extent to which the funded one off or ongoing work, a gap analysis of funding, and the value of funding outcomes.</p>	<p>At a meeting of the Committee in January 2025</p>	<p><input type="checkbox"/> Financial sustainability and openness</p>	<p>The outcome of the complete review of the grant funding commissioned by Cabinet in 2023 and the progress with that review.</p>	<p>Leader of the Council</p> <p>Portfolio Holder, Partnerships</p> <p>Assistant Director Finance and IT</p> <p>Assistant Director Partnerships</p> <p>Representatives of voluntary organisations in the District.</p>	<p>To consider the Councils approach to grants, the relationship between other grant funding organisations. The extent to which gaps in funding have been identified and addressed.</p>

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<p>Coastal Communities Unit</p> <p>To consider the work of the Coastal Communities Unit (CCU) and how this may help shape public policy.</p>	<p>At a Committee meeting to be determined.</p> <p>[It had been hoped to achieve this on 17 July 2024, but this was not possible].</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Championing our local environment <input type="checkbox"/> Pride in our area and services to residents. <input type="checkbox"/> Working with Partners to improve quality of life. <input type="checkbox"/> Raising aspirations and creating opportunities. 	<p>The impetus behind the creation of the CCU and its intended working and research to be undertaken.</p>	<p>Dr Emily Murray, Director of the CCU at the University of Essex</p>	<p>To be able to make recommendations around actions and activities that may have a beneficial impact on health inequalities locally.</p>
<p>NHS Dentistry off agenda briefing paper</p>	<p>For September 2024</p>	<p>See below</p>	<p>To update the Committee on the position of the Integrated Care Board's progress with its action plan to improve dentistry provision.</p>	<p>Assistant Director (Partnerships)</p>	<p>To give the Committee an update so as to help it develop its enquiry, set for 15 April 2025.</p>
<p>Improving Access to NHS Dentistry for Residents in Tendring and Specifically Those Who Should Have</p>	<p>At Committee on 15 Apr 2025</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Working with Partners to improve quality of life 	<p>The number of dentists in the area now compared with 5-10 years ago, reasons for growth/decline. Public versus private.</p>	<p>Lizzie Mapplebeck, Associate Director of Strategic Change, Suffolk</p>	<p>To look at the provision of NHS dental provision in the District since the local Integrated care Board took</p>

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<p>Such Access Free of Charge.</p> <p>(a) Under 18s and under 19s in full time education</p> <p>(b) Those on Income Support, Income-based Jobseeker's Allowance and Income related Employment and Support Allowance</p> <p>(c) Those below the income threshold and in receipt of child tax credits, working tax credit (including a disability element)</p> <p>(d) Pregnant women and those who have had a baby in the last 12 months</p>	<p>□ Raising aspirations and creating opportunities</p>	<p>Legislative changes over the last 10 years that affected the service the NHS was obliged to provide, if any.</p> <p>Costs for procedures both public and private, waiting times.</p> <p>How many people are without a dentist in the district?</p> <p>How does Tendring sit against the rest of the UK in relation to the above questions?</p> <p>What steps are being taken to improve things?</p> <p>What sort of numbers are we now been seen by NHS Dentistry compared with previously?</p> <p>How many fast-tracked patients have there been?</p> <p>Evidence/stats/figures to show if service is stabilising.</p>	<p>and North East Essex Integrated Care Board</p> <p>Greg Brown, Senior Performance Improvement Manager, Suffolk and North East Essex Integrated Care Board</p> <p>Professor Nick Barker, Oracle Dental Group The Portfolio Holder for Partnerships</p> <p>Assistant Director (Partnerships)</p>	<p>responsibility for its commissioning and consider how the significant adverse health implications from poor dental health and gum disease in respect of:</p> <ul style="list-style-type: none"> • Respiratory infections • Diabetic complications • Cardiovascular problems • Kidney disease • Rheumatoid Arthritis <p>And thereby seek to ensure that the steps being taken by commissioners of NHS dentistry are seeking to mitigate against such issues.</p>
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<p>(e) Those in receipt of a war Pension/Armed Forces Compensation scheme payments</p>			<p>Visit to Essex University with post visit meeting, but prior to the meeting in April</p>		
<p>To Consider the New District Wide Sports and Activity Strategy and its Related Action Plan and the Extent to Which this Address the Needs of the District.</p>	<p>At Committee meeting on 15 Oct 2024</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Pride in our area and services to residents <input type="checkbox"/> Working with Partners to improve quality of life <input type="checkbox"/> Raising aspirations and creating opportunities <input type="checkbox"/> Financial sustainability and openness 	<p>Data over a 5 year period on the extent to which residents are inactive, moderately active and very active and the different provisions to support activity among those different sectors of the Community.</p>	<p>The Portfolio Holder for Sports and Leisure</p> <p>Corporate Director, Place and Economy</p> <p>Representatives of organised sports operations in the area.</p> <p>Representatives from Active Essex.</p>	<p>To consider the extent to which the District wide Strategy achieves the following, from national strategy published on 30 August 2023 of:</p> <ol style="list-style-type: none"> 1. Being ambitious to making the area more active 2. Making sport and physical activity more inclusive and welcoming for also that everyone can have confidence that there is a place in sport for them. 3. Moving towards a more

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					<p>sustainable sector that is more financially resilient and robust. As well as not inadvertently damaging existing opportunities for physical activity.</p>
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COMMUNITY LEADERSHIP OVERVIEW AND SCRUTINY COMMITTEE

28 JANUARY 2025

RECOMMENDATIONS MONITORING REPORT

Recommendation(s) Including Date of Meeting and Minute Number	Actions Taken and Outcome	Completed, follow-up work required or added to Work Programme
<p><u>This Committees meeting on 15 October 2025</u></p> <p><u>REPORT OF THE DIRECTOR OF PLACE AND ECONOMY: SPORT AND ACTIVITY STRATEGY FOR TENDRING</u></p> <p>Recommended to Cabinet that –</p> <p>(a) that the following actions that had been included within the Sport England submission be pursued:-</p> <p>(i) to support an expanding population in the west of Tendring (Garden Community Project) the scope should be broadened from identifying new sports</p>	<p>At Cabinet on 20 December 2024 (minute 94 refers) it considered the recommendations submitted to it by the Community Leadership Overview & Scrutiny Committee following that Committee’s scrutiny on 15 October 2024.</p> <p>Cabinet had before it the following written response of the Portfolio Holder for Leisure and Public Realm:-</p> <p>“Thank you to the committee for your consideration of the Sport and Activity Strategy and the comprehensive list of recommendations. The action plan included with the strategy was developed following evaluation of the evidence base and a comprehensive consultation process. Together with Officers, I am now in the process of prioritising those actions to deliver the best outcomes for local people, within the resources we have at our disposal. The strategy has a</p>	

<p>facilities to identifying new opportunities for creating active environments;</p> <p>(ii) to ensure that appropriate contributions towards sport are consistently secured. Furthermore, the scope of contributions should be extended to cover capital projects that would support the delivery of physical activity priorities;</p> <p>(iii) encourage the application of Active Design principles into new developments to help ensure that opportunities for encouraging physical activity are maximised in practice; and</p> <p>(iv) that new/refurbished buildings that the Council funds have fully considered environmental sustainability.</p> <p>(b) that the following actions should also be undertaken:-</p> <p>(i) showcase activities fairs being held at centres across the District in 2025 to allow clubs and organisations to offer to the public</p>	<p>strong consideration of population expansion in the west of the district and how the Council can work with developers to improve activity levels across the district together with quality of life for local people. The Council will continue to work with partners to drive forward improvements and we will reflect on the positive contribution and comments from Sport England.</p> <p>The Council is already working with local leaders in the district, to consider future Playzone projects in additional locations, if and when external funding becomes available. In addition to this, through the agreed action plan, the development of an evidence based pipeline of capital projects will be compiled for future consideration. It should be noted however that projects will need to be demand led and importantly, align with Council priorities. Once the pipeline is adopted, suitable projects can subsequently be considered for external funding opportunities, as and when they become available and obviously subject to our own internal resources. I am also pleased that the delivery plan aligns with the Committee’s recommendation to consider environmental sustainability within our facilities.</p> <p>Following the wide ranging consultation process which took place prior to the strategy adoption, it is clear that a platform which can be used by local people to identify the range of sport and</p>	
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<p>opportunities to be involved in sport/be active;</p> <p>(ii) an Activities Council/Committee to be created and meet to help encourage further dialogue between sports activities providers;</p> <p>(iii) creation of sports/activities promotion videos that the public can access to encourage involvement in those activities/access information on activities locally; and</p> <p>(iv) develop proposals for more play zones including on sites in the west of the District to then be implemented as and when funding becomes available.</p>	<p>activity services on offer around the district was a key priority. This is likely to be a key focus for delivering the strategy and the committee’s various recommendations for wider marketing and promotional activities align closely with the adopted action plan and the points suggested, will be considered together with a range of further measures, through the development of an annually reviewed marketing plan.</p> <p>Following recruitment of the Community Sport and Activity Manager, the action plan will form the basis of their project task list and together with Officers and partners I will constantly review the effectiveness of our delivery plan and the outcomes achieved. The recommendations from the committee are consistent with the adopted plan and will be considered for effectiveness and availability of resources, following the recruitment of the Community Sport and Activity Manager.”</p> <p>At the meeting the Leisure & Public Realm Portfolio Holder made the additional oral response:-</p> <p>“I welcome this report and the opportunity that I was given to discuss the Sport and Activity Strategy at the scrutiny committee on the 15th October.</p>	
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The strategy has effectively been 'live' for three months and I would like to give some updates on its impact, some related developments and future aspirations for our residents across the District.

The specification for the post of Community Sport and Activity Manager has been agreed and this post will be a priority for recruitment in the New Year.

I have always said that the Strategy was an organic working document that would be part of an overall approach to engaging with residents around sport, activity, health and wellbeing. It is a statement of intent to outside bodies and national organisations that has already been used to successfully influence bids for funding.

News from Active Essex management only this week:-

'I am delighted to share exciting news that Sport England have approved our 'deepening' funding submission to extend our successful LDP work (retitled Place Partnerships) for another three years. The total amount of funding approved is £4,998,842.

The grant allocates approximately £1million to each place: Basildon, Colchester and Tendring, as well as £2million to fund Active Essex to

	<p>support the work and undertake further system change across the County. The funding will commence in April 2025 and be completed in March 2028.'</p> <p>This will fund work with Active Essex to deliver elements of the Strategy's action plan across the District.</p> <p>We have also submitted a bid for £1.3million to replace old oil boilers at Clacton Leisure Centre and take further action in line with our Climate Action Plan.</p> <p>The proposal for a free to use cycle zone and a number of play zones across the District are well advanced with results expected by the end of March 2025. Officers have had discussions with English Athletics and British Cycling and Sport England have been very complimentary about the Strategy, and its influence with national organisations.</p> <p>There is no doubt that the Strategy played a key role in convincing funders that we have ambition and capacity to deliver our action plan.</p> <p>There will be a District Sports and Activity Conference in May 2025 which will bring together all bodies, groups and organisations in one place to share good practice and take forward the</p>	
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APPENDIX B

	<p>Strategy through an events programme over the summer months.</p> <p>On a wider scale the feasibility work with consultants and partners regarding an Active Wellbeing Centre for the District is also progressing positively and only yesterday we conducted a fact-finding visit to a newly opened Sports Centre and HUB at Mildenhall.</p> <p>Overall, we have shown that our Strategy has laid really solid foundations for improving opportunity for residents of all ages to engage in healthier lifestyles and improve their quality of life.</p> <p>I welcome the endorsement of the scrutiny committee and thank them for their positive comments.”</p> <p>RESOLVED that the recommendations made by the Community Leadership Overview & Scrutiny Committee be noted and that the responses, both written and oral, of the Portfolio Holder responsible for Leisure & Public Realm thereto be endorsed.</p>	
<p><u>This Committees meeting on 14 January 2025</u></p> <p><u>SCRUTINY COMMITTEE IN RESPECT OF GRANT FUNDING ENQUIRY</u></p>	<p>Cabinet will hear the recommendations of the Grant Funding Enquiry on 31 January 2025.</p>	

<p>Recommended to Cabinet that:</p> <ul style="list-style-type: none">(1) Welcomes the report on Grant Funding from/through the Council and the statements and responses from the Portfolio Holder and Officers to the Committee and further welcomes the flowchart and checklist adopted internally to identify when matters can follow an 'open call' grant arrangement and when a 'procurement; (2) Records its thanks to all those who contributed to the enquiry into Grant Funding by/through the Council including written submissions from Headway Essex and Inclusion Ventures and the attendance by representatives from Jaywick Sands Community Forum, Ketchup Clothes and from Clacton Art Centre and their insight into the processes and value of grant opportunities for community activities; (3) urges Cabinet to seriously consider the following recommended actions:<ul style="list-style-type: none">(a) the establishment of an Oversight Group of Members (such as a Portfolio Holder		
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<p>Working Party) for grant schemes across the Council to promote learning between schemes;</p> <p>(b) that at least some form of gap analysis of services/activity provided by community/voluntary groups be undertaken to inform future policies, even if a full analysis would be too large a project to be achieved, and that the opportunities to ‘flex’ grant giving to maximise the range of organisations receiving financial support in the District across the years;</p> <p>(c) Further standardised processes for different grant giving arrangements to help deliver best practice across those separate grant giving arrangements (eg around the length of time between opening invitations for applications and the closing date, common and plain language to explain the processes (that could also be made available on the internet), details of other grants received, the time between closure of application and</p>		
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<p>determination/notification of outcomes, and the post grant-giving monitoring arrangements);</p> <p>(d) Adopt a consistent 'you said, we did' opportunity for organisations applying for grant funding to feed back on their experiences;</p> <p>(e) Look at organising an open day for community/voluntary groups in conjunction with other grant funding organisations (and CVST) to disseminate information on those grant schemes and help to break down barriers to access grant funding for these community/voluntary groups;</p> <p>(4) Request that the Chairman of the Committee and the Portfolio Holder meet to consider the recommendations above and to encourage a positive response to them from Cabinet; and</p> <p>(5) Note that there are proposals for Local Government Reorganisation (LGR) in Great Essex and that we are awaiting confirmation from Government to whether these will</p>		
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APPENDIX B

<p>proceed and over what timetable. On the basis that Government does approve the principle of LGR in Greater Essex, the Committee record that it would wish to undertake an enquiry into the implications of LGR on areas within its responsibility (including grant funding) in the work programme for 2025/26 and that this enquiry would look at possible areas where the transition to a new unitary structure could be supported.</p>		
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Recommendations monitoring for those recommendations from earlier meetings of the Committee have been previously reported to the Committee and, as such, are not repeated here as there is no further update to be provided on them.

A.1 APPENDIX B

Community Leadership Overview and Scrutiny Committee – 28 January 2025

OVERVIEW AND SCRUTINY PROCEDURE RULE 13 – SCRUTINY OF PROPOSED DECISIONS

(Prepared by Bethany Jones)

The below forthcoming decisions are those published and currently 'live' on the Council's corporate business schedule.

In presenting the following, the Committee's attention is drawn to the agenda item notes in respect of Overview and Scrutiny Procedure Rule 13.

DESCRIPTION OF DECISION	KEY DECISION – YES/NO	DECISION MAKER	Decision Due Date
New Car Park at Orwell Place, Dovercourt – Post Project Review	YES	Cabinet	21/02/2025
Completion of the workspace at Sunspot, Jaywick Sands Workspace – Post Project Review	NO	Cabinet	21/02/2025
Health & Wellbeing Strategy - Adoption	YES	Cabinet	21/02/2025
Long Term Plan for Towns: Clacton Vision and Investment Plan	YES	Cabinet	21/02/2025

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**COMMUNITY LEADERSHIP OVERVIEW AND SCRUTINY COMMITTEE
(ACTING IN ITS CAPACITY AS THE COUNCIL'S DULY DESIGNATED STATUTORY CRIME
AND DISORDER COMMITTEE)**

28TH JANUARY 2025

REPORT OF CORPORATE DIRECTOR – OPERATIONS AND DELIVERY

**A.1 CONSIDERATION AND DEVELOPMENT OF A CRIME AND DISORDER
REDUCTION STRATEGY 2025 - 2028**

PURPOSE OF THE REPORT

To provide the Committee with the latest position in respect of a proposed new Crime and Disorder Reduction Strategy and to invite the Committee's input into the development of the strategy.

SCOPE - THE AIMS AND OBJECTIVES OF THE REPORT

To ensure that there is an opportunity for the Council's designated Crime and Disorder Committee to consider the proposed Crime and Disorder Reduction Strategy and provide feedback on that draft strategy having heard from some of the key partners working with the Council through the Community Safety Partnership.

INVITEES

The following parties will be in attendance to respond to the questions raised by the committee.

Tim R Clarke – Assistant Director Housing and Environment

Councillor Gina Placey – Joint Chair of the Community Safety Partnership Board

Councillor Peter Kotz – Joint Chair of the Community Safety Partnership Board

Chief Inspector Ella Latham – Essex Police District Commander for Tendring

Inspector Aaron Homatopolous – Essex Police – CPT and partnership Inspector

Other partners invited as part of the statutory Community Safety Partnership:

David Messam – National Probation Service

Quentin Sage / Karl Amoss - Essex County Fire and Rescue Service

BACKGROUND

As set out in Article 6 of the Council's Constitution, the Community Leadership Overview & Scrutiny Committee will act as the Council's designated "crime and disorder committee" for the purposes of Section 19 of the Police and Justice Act 2006 and will have the power –

(a) to review or scrutinise decisions made, or other action taken, in connection with the discharge by the responsible authorities[*] of their crime and disorder function;

(b) to make reports or recommendations to the local authority with respect to the discharge of those functions.

* *“The responsible authorities” means the bodies and persons who are responsible authorities within the meaning given by section 5 of the Crime and Disorder Act 1998 (c.37) (authorities responsible for crime and disorder strategies) in relation to the local authority’s area.*

In fulfilling that function the Community Leadership Overview & Scrutiny Committee will have the power (whether by virtue of section 9F(2) or 21(2) of the Local Government Act 2000 or regulations made under section 9JA(2) or 32(3) of that Act or otherwise) to make a report or recommendation to the local authority with respect to any matter which is a local crime and disorder matter in relation to a member of the authority.

In accordance with the Council’s Constitution and The Crime and Disorder Act 1998, as amended by section 97 and 98 of the Police Reform Act 2002, there is a requirement on Community Safety Partnerships (CSP) to develop a Crime and Disorder Reduction Strategy

The strategy was ratified by the Community Safety Partnership Strategic Board on 9 January 2025. The strategy will be presented to Cabinet on 21st February 2025.

In presenting the strategy to Cabinet we are seeking the recommendation that Cabinet considers and agrees to adopt the Crime and Disorder Reduction Strategy 2025 – 2028; and delegates authority to the Corporate Director for Operations and Delivery to make future updates or amendments to the Strategy in consultation with the Portfolio Holder responsible for Partnerships.

The strategy will go to the Full Council meeting at the end of March for adoption by the Council.

RELEVANT CORPORATE PLAN THEME/ANNUAL CABINET PRIORITY

This strategy contributes to a number of Corporate Plan 2024-28 themes:

- Pride in our area and services to residents
- Raising aspirations and creating opportunities
- Working with partners to improve quality of life

DESIRED OUTCOME OF THE CONSIDERATION OF THIS ITEM

To enable committee members to raise any questions they have in relation to the strategy and have the opportunity to input into its development.

DETAILED INFORMATION

This report presents the Crime and Disorder Reduction Strategy 2025 – 2028 for discussion by the committee. The strategy set outs the overarching framework for the Council and its partners in the Community Safety Partnership (CSP) to reduce crime and disorder by formalising the work that will be undertaken with the CSP and the Council's Community Safety Team over the next three years.

It sets out our priorities for reducing crime and disorder and Anti-Social Behaviour (ASB), whilst protecting vulnerable people across Tendring over the next three years.

Through working together, the CSP has achieved many successes in reducing crime and disorder and ASB, protecting those who are vulnerable and making Tendring safe and secure for residents, businesses and visitors.

We are proud of these achievements. In order to build upon previous work and to understand the challenges that arise we will work with partners to address the challenges to ensure a safer Tendring for our residents.

The strategy is based upon a wide range of data and information, from public consultation to crime and disorder information that are brought together in our annual Strategic Assessment. Through the assessment we have identified four key themes within the strategy that feed into the CSP priorities. We recognise that the challenges facing our children, young adults and families that have evolved and continue to do so. For example, criminal gangs are targeting children to move drugs in and out of towns and other areas, including in Tendring. This is a national issue, but we need to be aware of criminal gangs, and to be able to spot the signs that our children may be being targeted.

1. Tackling violence against women and girls is at the forefront of the CSP's agenda and reflects the Government's priority in tackling this issue, following the tragic deaths of Sarah Everard, Balvinder Gahir, Bibaa Henry, Nicole Smallman and Julia James, and an increase in reports of domestic abuse.
2. Our ambition is to increase support for victims and survivors, increase the number of perpetrators brought to justice and reduce the prevalence of violence against women and girls.
3. We will work in partnership across the CSP & Health and Wellbeing Board and with our partners and communities to achieve progress on our priorities during the lifetime of this strategy and seek to bring about real change for residents and visitors to Tendring.
4. The CSP brings the opportunity for organisations and groups to come together to improve crime and disorder and ASB in Tendring and create an environment where people and communities can flourish, the CSP remains committed to making Tendring safe.

Community Safety Partnerships are statutory bodies which exist in all local authority areas. They were established by the Crime and Disorder Act 1998 with the aim of creating "*An alliance of organisations which generates strategies and policies, implement actions and interventions concerning crime and disorder within their partnership area*".

Whilst their responsibilities have developed over time, they remain statutorily responsible for identifying local community safety priorities through the production of an annual strategic assessment which as a minimum must cover:

- Crime and disorder by local area (including anti-social behaviour and other behaviour adversely affecting the local environment) and,
- The misuse of drugs, alcohol and other substances.

There are also statutory requirements for CSPs regarding sharing information and engaging and consulting with the community about their priorities, and monitoring progress in achieving them. Each CSP is required to develop a plan setting out how Crime and ASB will be tackled in their area.

There are five responsible authorities that make up a CSP:

the local authority

Police

The local fire and rescue service

Probation Service

The local health service.

The Crime and Disorder Act 1998, as amended by section 97 and 98 of the Police Reform Act 2002, places a requirement on Community Safety Partnerships (CSP) to develop a Crime and Disorder Reduction Strategy. This document sets out how crime, anti-social behaviour and the fear of crime will be reduced and resolved.

The Crime and Disorder Reduction Strategy 2025 – 2028 sets out the vision of the Council and how it aims to work together, with the Community Safety Partnership, to deliver community safety outcomes for the residents of the district and to achieve compliance with the Crime and Disorder Act 1998.

This strategy supports the work of the partnership in understanding the patterns and trends relating to crime and disorder, anti-social behaviour and community safety issues in the district, enabling it to respond to its strategic priorities, ensuring focus and the appropriate allocation of resources to tackle the crime and anti-social behaviour having the most impact on our residents, visitors and businesses.

Collaborating with our partners is crucial in delivering our aims and this strategy sets out the range of responsibilities and governance by which we will ensure effective delivery.

Whilst this strategy outlines the priorities for the coming three years and it's not envisaged for these to vary significantly during this time, as mentioned earlier in the report, the partnership will undertake an annual strategic assessment, looking at data, patterns and trends to provide assurance that the strategy remains focused on the key issues and remains fit for purpose.

It is an ambitious strategy that confronts difficult issues that cannot be resolved by any single agency, including serious violence and knife crime, drugs and gangs, domestic abuse, the criminal exploitation of young children, young people and vulnerable adults, modern slavery and hate crime and the impact of these on our local communities, town centres and businesses.

The strategy highlights the partnerships ambitions for the 3 years, it uses reported crime and ASB data, residents survey data, and other data from the strategic assessment to ascertain what the priorities should be in the forthcoming year. The strategy also outlines how the partnership will tackle / deliver against its priorities and target resources effectively to address the issues (priorities).

The findings of the strategic assessment have informed the decision to select the CSP Priorities for Tending which will be:

1. Tackling ASB and the root causes of ASB
2. High Harm Violence (with a focus on Violence Against Women and Girls (VAWG) and Domestic Abuse)
3. Drug and knife enabled Serious Violence (Gangs and County Lines)
4. Emerging threats and Trends (i.e.: Shoplifting, Vehicle Crime, Arson & Criminal Damage)

There are no financial implications associated with the adoption of this strategy as the strategy formalises existing arrangements which are currently fully funded via the Police Fire and Crime Commissioner Annual Grant.

In line with the Public Sector Equality Duty, within this strategy the Council has due regard to the need to eliminate discrimination, harassment, victimisation, to advance equality of opportunity and foster good relations between those who share a protected characteristic and those who do not.

An effective strategy and partnership plan can contribute to a better quality of life for our communities and can act as a deterrent to anti-social behaviour.

People living in poverty are more likely to experience domestic abuse and domestic abuse may lead to poverty with this reducing the ability to escape a situation of abuse. Poverty also increases the likelihood of various mental health conditions. An effective Crime and Disorder Reduction Strategy aims to improve both the safety and wellbeing of our residents, through the Tending Community Safety Health and Wellbeing Board.

RECOMMENDATION

That the Committee determines whether it has any comments or recommendations it wishes to put forward the relevant Portfolio Holder or Cabinet.

PREVIOUS RELEVANT DECISIONS

The Strategic Assessment and Strategy have been agreed by the Council's Senior Management Team, the Portfolio Holder for Partnerships and the Community Safety Partnership Strategic Board.

APPENDICES

1. Strategic Assessment 2025 (RESTRICTED) not for publication
2. Crime and Disorder Strategy 2025 - 2028

REPORT CONTACT OFFICER(S)

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Crime and Disorder Reduction Strategy 2025 - 2028



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Foreword

Tendring District Council in collaboration with the Community Safety Partnership (CSP) is pleased to present our Crime and Disorder Reduction Strategy for 2025 – 2028. It sets out our priorities for reducing crime and disorder and Anti-Social Behaviour (ASB), whilst protecting vulnerable people across Tendring over the coming three years.

Through working together, the CSP has achieved many successes in reducing crime, disorder and ASB, protecting those who are vulnerable and making Tendring safe and secure for residents, businesses and visitors. We are proud of these achievements but know that more needs to be done to make Tendring safer.

As a CSP, we recognise that the challenges facing our children, young adults and families have evolved and continue to do so. For example, criminal gangs are targeting children to move drugs in and out of towns and other areas, including in Tendring. This is a national issue, but we need to be aware of criminal gangs, and to be able to spot the signs that our children may be being targeted.

Tackling violence against women and girls is a top priority for the Central Government. This follows the tragic deaths of Sarah Everard, Balvinder Gahir, Bibaa Henry, Nicole Smallman and Julia James, and an increase in reports of domestic abuse. Tackling violence against women and girls is also forefront of the CSP's agenda. Our ambition is to increase support for victims and survivors, increase the number of perpetrators brought to justice and reduce the prevalence of violence against women and girls.

We will work in partnership across the CSP & Health and Wellbeing Board and with our partners and communities to achieve progress on our priorities during the lifetime of this strategy and seek to bring about real change for residents and visitors to Tendring. The Council and the CSP bring the opportunity for organisations and groups to come together to tackle crime and disorder and ASB in Tendring and create an environment where people and communities can flourish, the CSP remains committed to making Tendring safe.



Councillor Gina Placey

Cabinet Member for Partnerships at Tendring District Council.

Chair of Tendring Community Safety and Health and Wellbeing Board.



Introduction

The Crime and Disorder Reduction Strategy 2025 – 2028 sets out the vision of Tendring District Council and the Community Safety Partnership and how it aims to work with others, to deliver community safety outcomes for the residents of the District.

This strategy supports the work of the partnership in understanding the patterns and trends relating to crime and disorder, anti-social behaviour and community safety issues in the District, enabling it to respond to its strategic priorities, ensuring focus and the appropriate allocation of resources to tackle the crime and anti-social behaviour having the most impact on our residents, visitors and businesses.

Collaborating with our partners is crucial in delivering our aims and this strategy sets out the range of responsibilities and governance by which we will ensure effective delivery.

Whilst this strategy outlines the priorities for the coming three years and it is not envisaged for these to vary significantly during this time, the partnership will undertake an annual strategic assessment, looking at data, patterns and trends to provide assurance that the strategy remains focused on the key issues and fit for purpose.

It is an ambitious strategy that confronts difficult issues that cannot be resolved by any single agency, including serious violence and knife crime, drugs and gangs, domestic abuse, the criminal exploitation of young children, young people and vulnerable adults, modern slavery and hate crime and the impact of these on our local communities, town centres and businesses.



The Tendring District

Tendring forms part of the North Local Policing Area (LPA). This area also includes Maldon, Braintree, Uttlesford, Colchester and Chelmsford.

The Tendring District has many geographic, demographic and economic characteristics that make it distinctive from other areas.

Tendring enjoys over 36 miles of coastline, award-winning sandy beaches, numerous coastal towns providing everything from the traditional pleasures of the seaside to maritime heritage, a variety of beautiful and picturesque villages and one of the busiest harbours in Europe. Our coastal geography is our greatest asset but also presents us with difficult and expensive management issues.

A large majority of people living in Tendring consider it a good place to live, which is reflected in the number of individuals who have decided to retire to the area. A very high proportion of our residents are over the age of 65. Overall population is growing rapidly and is predicted to grow from 146,000 in 2009 to 170,000 by 2026.

The Tendring District has the highest percentage of residents aged 65 and over in Essex (29.5%), 9% higher than the Essex average (20.5%). The proportion of Children and Young People aged 0-15 (16.5%) and 16-64 years olds (53.9%) are lower than the Essex average (18.9%, and 60.6%). This is also the lowest percentage of 16 to 64-year olds (working age) in the county.

The population count at the 2021 Census was 148,300.

The largest town in the Tendring district is Clacton-on-Sea, with a population of over 53,000.

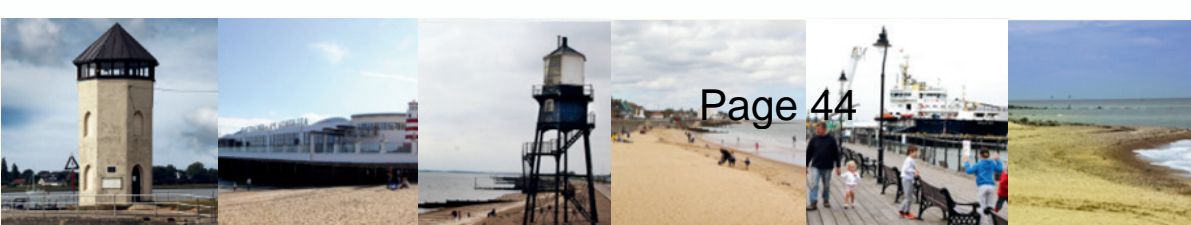


Tendring Community Safety Partnership

The partnership is chaired by Councillor Gina Placey (Tendring District Council), working together with Essex Police, Essex County Council, the Probation Service, Essex County Fire and Rescue Service, North East Essex Integrated Care System, the NHS and Public Health are required by Crime and Disorder Act 1998 to formulate a strategy to reduce crime and disorder, combat substance misuse and reduce re-offending in the local area, and to put in place a partnership plan for the area.

The partnership works with a range of other agencies, housing providers and voluntary sector organisations with a common interest in promoting community safety and within other partnership arrangements to influence and shape services and resources in the District.

This strategy and the aims, ambitions and priorities contained within will be used to form a delivery plan which is reviewed annually to ensure the partnership responds to any emerging trends and risks to combat the perception, threat and consequences of crime and anti-social behaviour and the impact of these on our residents.



Purpose And Aims

This Crime and Disorder Reduction Strategy is the strategy of Tendring District Council and the Tendring Community Safety Partnership, it sets out our ambitions for the partnership and the district and our strategic priorities. It details the outcomes we wish to achieve, the approach we will take to deliver them and resources. It outlines the range of responsibilities and priorities and is an important tool to help focus our effort and resources on the right things.

Structure And Governance

The structure and governance arrangements are designed to offer a strong approach to partnership working, providing opportunities for agencies to work together to focus on established strategic priorities, outcomes and deliverables:



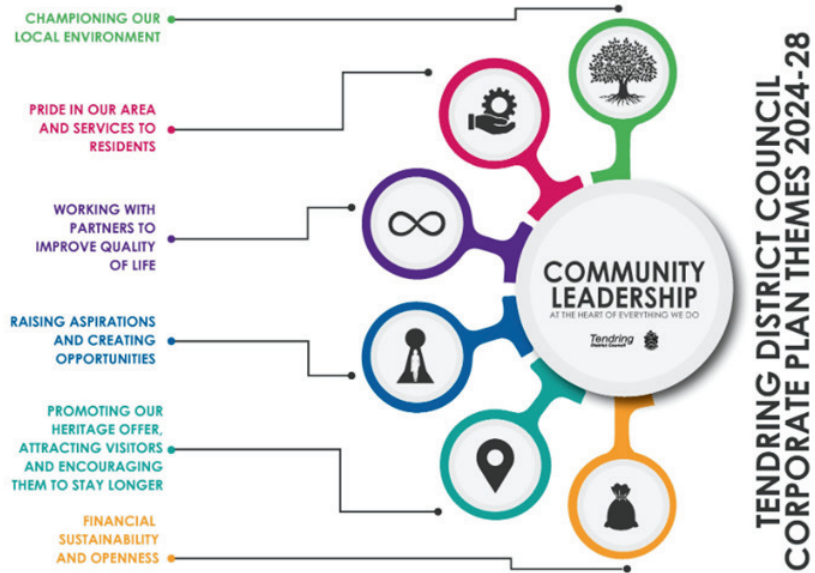
Community Safety Partnership Ambitions

People – We want Tendring to be a place where people feel safe, where local communities are aware of abuse, harm and exploitation and are confident to raise their concerns with local agencies, preventing themselves and others becoming victims of crime.

Place – We want Tendring to offer a high quality of life for all residents through attractive, liveable, accessible and safe neighbourhoods and towns and will work together to protect geographical locations where crime and anti-social behaviour occurs, using all available tools and powers to create community reassurance and reduce the fear of crime. This strategy aligns the key themes and ambitions of the District’s ‘Our Vision’ Corporate Plan 2024 – 2028 and those of the Essex Police Fire and Crime Commissioner.



“Listening to and delivering for our residents and businesses”



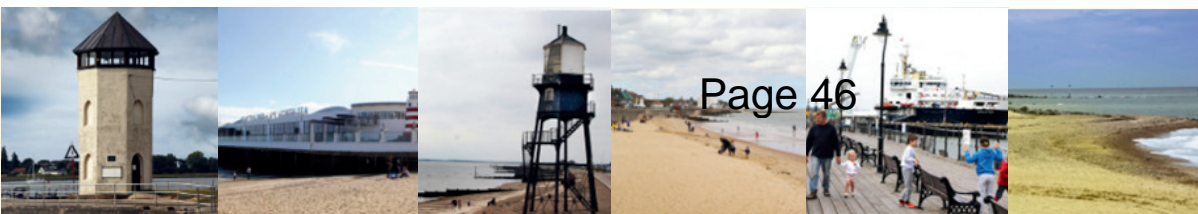
The strategy also aligns to the Changing Futures Strategy (Essex County Council Strategy), which focuses on supporting adults in contact with the criminal justice system, as well as homelessness, mental ill-health and substance misuse issues.

We will focus our efforts and resources on four strategic priorities for community safety. These priorities are based upon the annual strategic assessment of crime and disorder issues across the District and reflect outcomes from public consultation and legislative requirements and the alignment of the strategy with other agencies priorities.

The CSP’s priorities are as follows:

- Tackling ASB and the root causes of ASB
- High Harm Violence (with a focus on Violence Against Women and Girls and Domestic Abuse)
- Drug and knife enabled Serious Violence (Gangs and County Lines)
- Emerging threats and Trends such as Shoplifting, Vehicle Crime, Arson & Criminal Damage

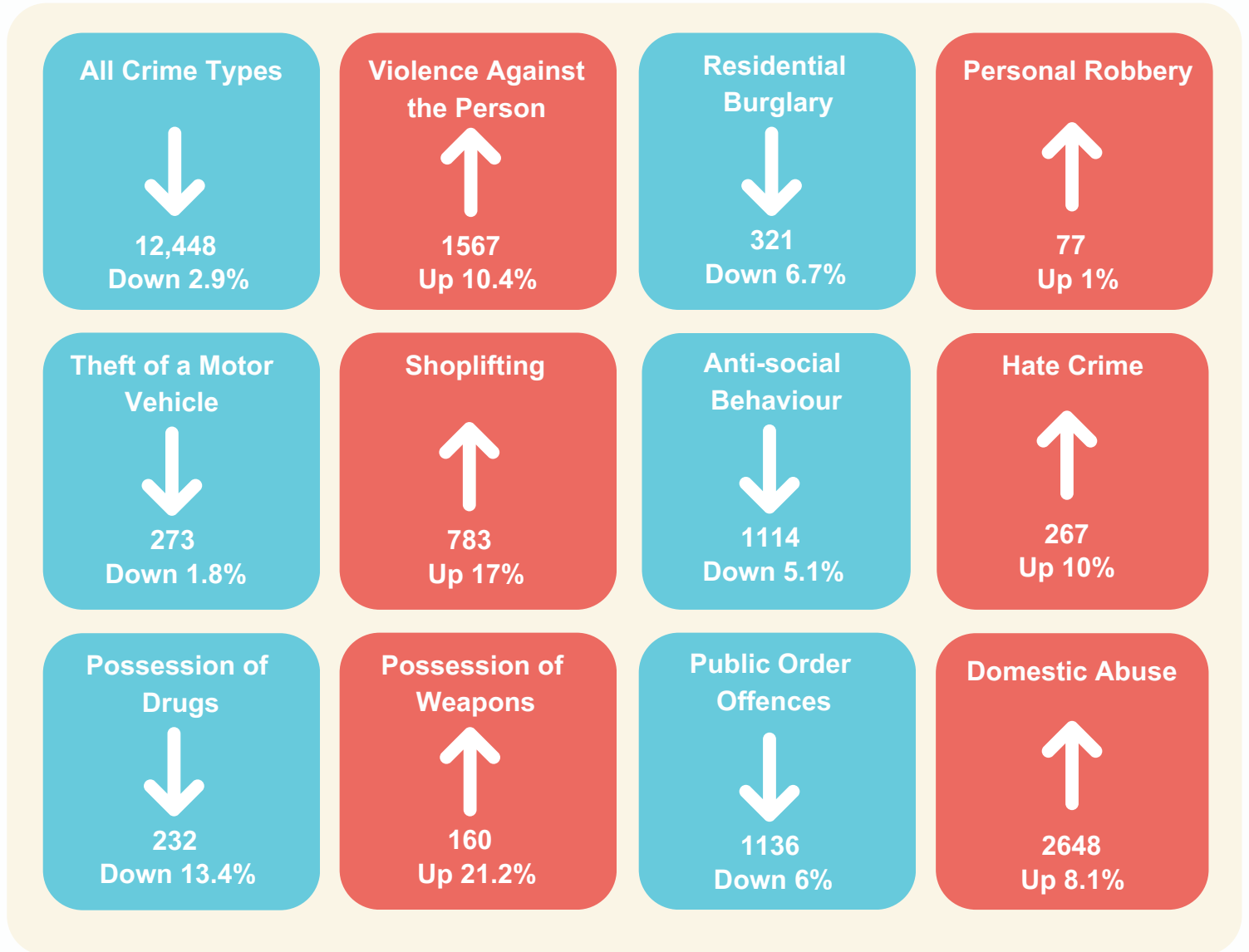
The partnership considers that focusing its efforts on these priorities will be the most effective use of resources.



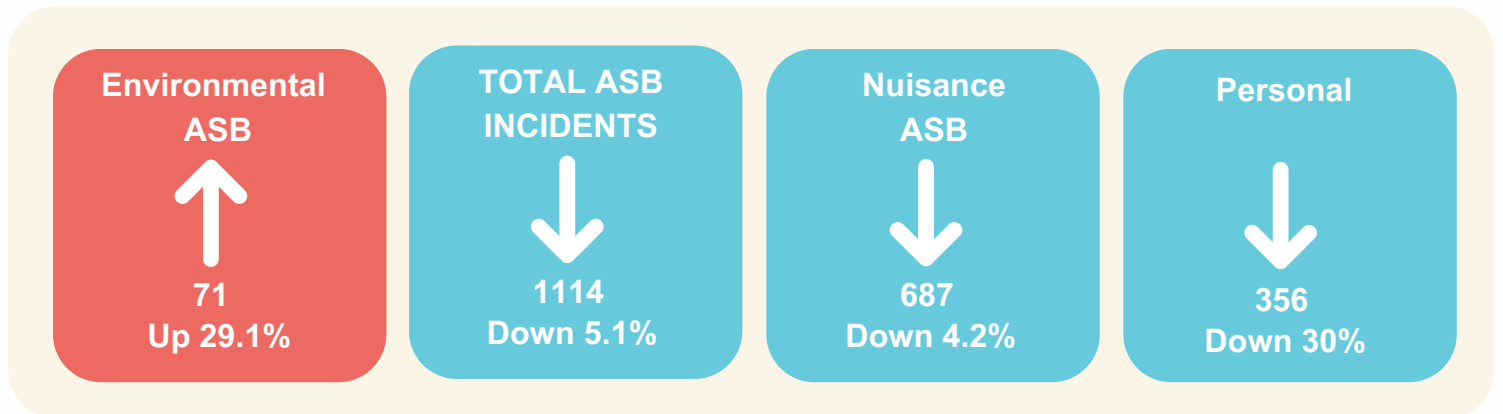
Reported Crime

Essex Police Reported Crime Data

Tendring District Between October 2023 – September 2024



Reported ASB



What Did Our Residents Say

In 2024 residents in the Tendring District said that:



87%

Feel safe in their local area during the day



55%

Feel safe in their local area after dark



56%

Feel that we are dealing with crime and antisocial behaviour in the district

CSP Priorities 2025

Tackling ASB and the root causes of ASB

High Harm Violence (with a focus on VAWG and Domestic Abuse)

Drug and knife enabled Serious Violence (Gangs and County Lines)

Emerging threats and Trends (ie: Shoplifting, Vehicle Crime, Arson & Criminal Damage)

What Success looks like



- Increase in perpetrators of drug related crimes being brought to justice
- Increase of people in drug and alcohol treatment services
- Increase in delivery of violence prevention programmes in schools
- Increase confidence in reporting

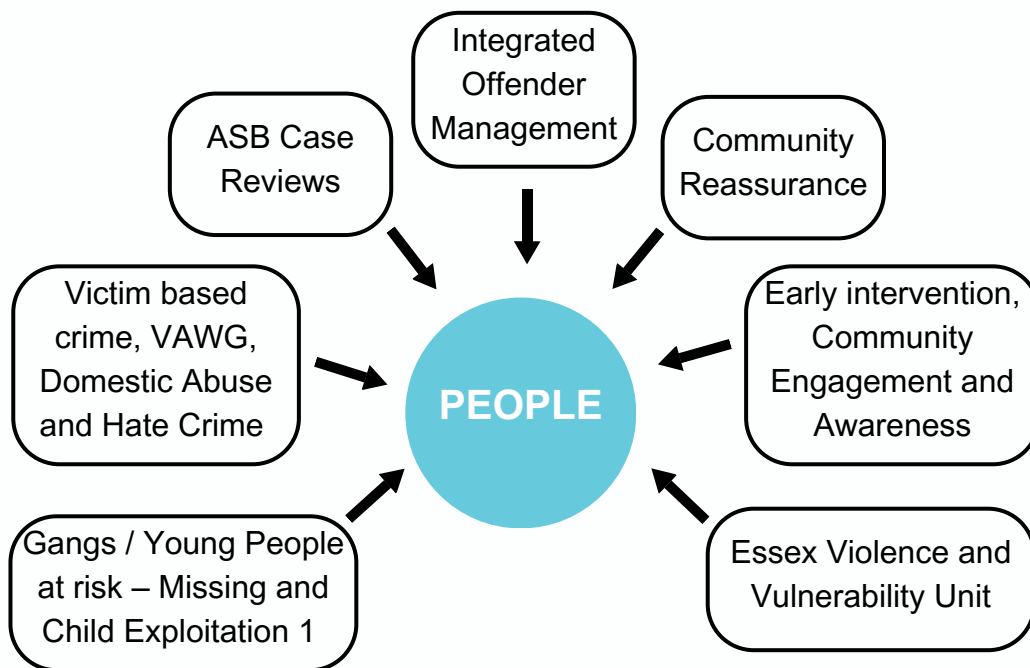


- Reduction in ASB
- Reduction in knife crime
- Reduction in violence with injury
- Reduction in repeat domestic abuse incidents (victim and perpetrator measures)
- Reduction in hate crime incidents
- Reductions in the proportion of people reporting they feel unsafe at night, in particular young people.

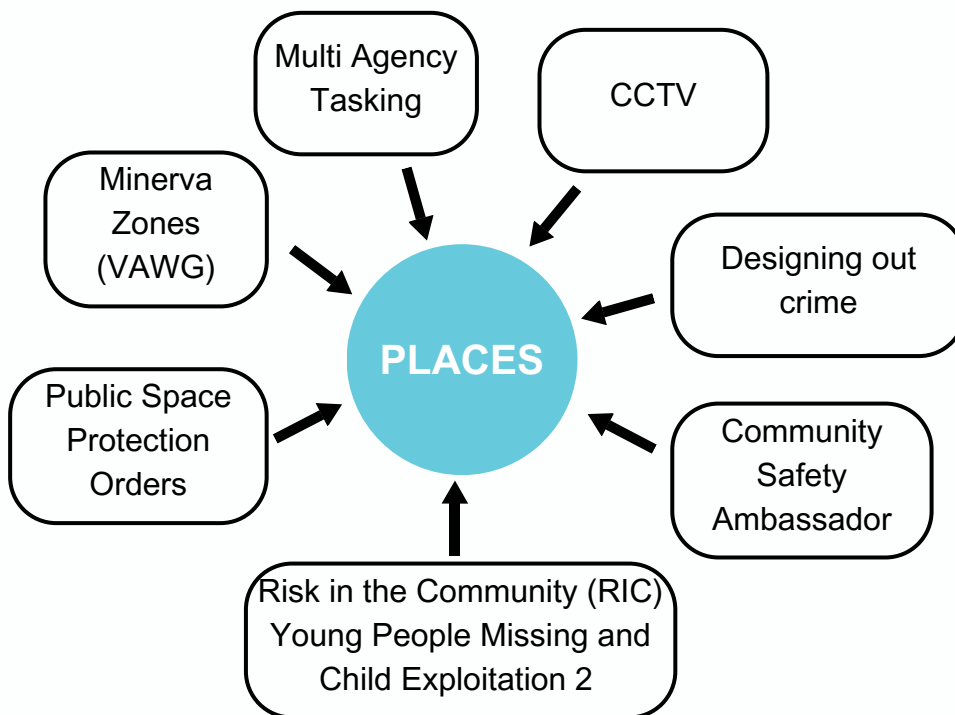


Delivery

The partnership will adopt range of approaches to focus efforts on protecting people and safeguarding them from abuse, exploitation and harm, particularly young people who are at risk of becoming involved in gangs and drug related crime and those who are victims of domestic abuse, hate crime and VAWG.



The partnership will work together to improve know hotspots locations and will provide partners to share information on areas of concern in respect of known and perceived risk in the community.





Priority One

Tackling ASB and the root causes of ASB (Including Hate Crime)

This priority will tackle anti-social issues across the district as well as targeting resources on those areas that are highlighted as hot-spots through the levels of ASB reported, or through noted increases. Our aim will be to reduce ASB, investigate the root cause of the behaviour and improve the confidence of residents and provide reassurance. This priority will also tackle Hate Crime across the District, our aim is to improve resident's knowledge of what a hate crime is, Improve access to reporting centres/ambassadors, provide confidence and reassurance to victims and communities.

What we will tackle:

We will take a joint problem solving approach in respect of those crimes that affect our residents and businesses the most including:



Anti-Social Behaviour - Managing the volume, problematic areas across the district. Utilising established operational models where appropriate (Op Dial, Op GRIP), investigating the root causes of anti-social behaviour.



Clacton on Sea Public Space Protection Order (PSPO) - Enforcing the PSPO in relation to prohibited activities.



Shoplifting - Working with Shopsafe and Essex Police Business Crime Team to provide a system to connect retailers and licensed premises with security, local police and CCTV control. Using the latest Smart Radio and a secure information sharing app 'alert!' we enable businesses to share incidents instantly as a group to promote safer spaces for customers and staff alike.



Hate Crime - To protect residents and visitors from hate crime, ensuring victims and communities are aware of what hate crime is, and where and how it can be reported.

How we will do it:

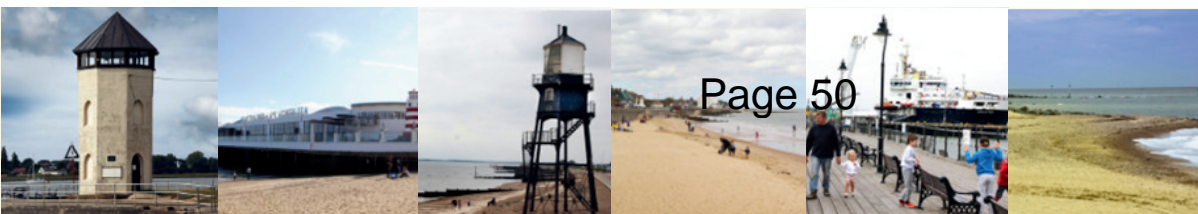


Work in Partnership - Partners will work collaboratively to identify, assess and tackle high volume / high harm issues through a co-ordinated approach utilising crime prevention activities towards the people and places that experience high volume ASB or contribute most to the problem. Approaches and referrals can be coordinated through Fortnightly Tasking and / or Problem Solving Group.

Victims will have clear ways to report and be kept informed of their case, have access to support and be given the opportunity to choose restorative approaches to tackling ASB.



ASB Case Reviews (Community Trigger) - All partners will be encouraged to empower victims of ASB by informing them about their entitlement to start a ASB Case Review and provide a cohesive response.





Intelligence Led Action - Through use of data analytical tools and partnership groups (such as Tasking or Problem Solving) to track and respond to local ASB trends in real time and provide local input to develop appropriate responses to concerns across the district. This can include development of intelligence packages to assist with targeting of resources and evaluating the success of initiatives.



Legislation - Through appropriate use of the powers within various Acts and guidance from the Home Office ASB principles, to ensure that all available remedies are considered including the use of Dispersal Orders, Community Protection Warnings, Community Protection Notices, ASB Case Reviews, Criminal Behaviour Orders, Public Space Protection Orders, Closure Orders and Injunctions, taking a balanced approach involving support from partner agencies and enforcement where necessary.



CCTV - Through ensuring the effective use of public space CCTV on targeted areas as determined by intelligence. Using Body Worn Video footage to aid prosecution where appropriate.



Intelligence and Evidence - Understand the profile of hate crime offenders, what works to address causes and impact on victims and communities. Work with Safer Essex and Essex Strategic Hate Crime Board to identify any learning and areas of development.



Education and Communication - Engage with primary and secondary schools offering hate crime educational resources through Essex County Fire and Rescue Service and Essex Police Joint Education Team.

Develop and promote partnership hate crime awareness materials and campaigns. Promote hate crime referrals to Restorative Justice Hub.



Training and Support - Develop and promote Hate Crime (HCA's) Ambassadors and Hate Incident Reporting Centres across the District (HIRC's).





Priority Two

High Harm (Emphasis on Domestic Abuse and VAWG)

Tendring Community Safety Partnership recognises that a significant number of men and boys also experience violent and abusive crimes that are captured within the cross-government Violence against Women and Girls Strategy. The CSP is committed to preventing all forms of gender based violence and addressing it wherever and however it occurs

What we will tackle:

We will take a joint problem solving approach to better protect those experiencing violent and abusive crimes.



Prepare - Intelligence between agencies is shared appropriately and effectively.



Prevent - Raise awareness through partnership campaigns, provide education to children and young people



Pursue - Use tools and powers (ASB Legislation) to keep women safe in public places. Work with partners to provide perpetrator interventions and work towards effective prosecutions.



Protect - For anyone in the district to have access to the right support services, to help them to be safe, feel safe and free from violence and abuse.

How we will do it:



Work in Partnership - Partners will work collaboratively to identify, assess and tackle high volume / high harm issues through a co-ordinated approach utilising crime prevention activities towards the people and places that experience feeling unsafe or contribute most to the problem. Approaches and referrals can be coordinated through Fortnightly Tasking and / or Problem Solving Group.



Prevention - Increase knowledge and understanding across communities and partners through training, events and campaigns. Promote Safer Streets to Tendring residents. Use evidence-based education and interventions that promote healthy relationships.



Support Victims and Survivors - Develop a joined up approach with all domestic abuse services working together to provide clear referral pathways. Support victims through Multi Agency Risk Assessment Conferencing (MARAC) and by implementing any learning points from Domestic Abuse Related Death Reviews (DARDR's)



Legislation - To ensure that perpetrators of violence against women and girls / domestic abuse are held accountable according to the law and are provided with assistance to change their abusive behaviour in order to prevent them causing harm or violence to their current, past or future partners. Reducing re-offending rates of high harm offenders.





Priority Three

Drug and Knife Enabled Serious Violence

Drug and Knife Enabled Serious Violence

This priority is aimed to work with Tendring Community Safety partners in establishing a Knife Crime Matrix to help prevent and deter individuals and groups from committing acts of serious violence and carrying/using knives. Knife crime is defined as an offence where a knife/blade is used or threatened.

What we will tackle:

We will take a joint problem-solving approach in respect of tackling knife crime and serious violence across the district.



Provide Support and opportunities - Work with partners / voluntary sector organisations to ensure people are supported and safeguarded through provision of education, training and diversionary activities.



Stakeholder Engagement and Collaboration - Build upon current relationships with stakeholders and communities to ensure a co-ordinated response to knife crime and drug related violence (such as Gangs & County Lines).



Public Spaces - Create the feeling of safety within outdoor public spaces by improving the local environment.

How we will do it:



Work in Partnership - Partners will work collaboratively to identify, assess and tackle knife and drug enabled crime. Develop a multi agency knife crime matrix, outlining how partners are going to address knife crime across the district.



Intelligence Led Approach - Use strategic intelligence data, local drug market data, county line analysis, ASB data and any relevant data from partners relating to knife crime and serious violence.

Under the Serious Violence Duty, collaborate and work with the Serious Violence Unit to tackle issues in the local area (Tendring), using the Strategic Needs Assessment.

Use all available resources and tools to target problematic areas and high risk offenders, including a targeted approach to misuse of substances and alcohol. Ensure enforcement of the Public Space Protection Order.





Young Persons - Putting communities and young people at the heart of change and develop immediate and long-term solutions, ensuring a multi-agency response to those at risk of or involved in violence.

Ensure that young people feel supported and motivated through the provision of training, education or diversionary activities. Raise awareness of the various support and intervention services that are available to those in need, in particular for individuals who have been identified as being at risk of offending or re-offending, or those who may be vulnerable to criminal exploitation (such as County Lines).

Recognise the need for workstreams to be aligned and connected to looked after children, missing persons, children in need and public health/mental health plans and campaigns. Attend MACE meetings to ensure a consistent approach to dealing with the signs and symptoms of exploitation of all kinds.

How will we know we are on track:

The Community Safety & Health and Wellbeing Board will monitor performance against each priority at a strategic level at its quarterly meetings.

Tackling ASB and the root causes of ASB (Incl Hate Crime)

- Update in relation to this priority at the quarterly Community Safety & Health and Wellbeing Board.
- The Community Safety Team will lead on effective monitoring and reporting of ASB service delivery at the six weekly Council's Operational Enforcement Group (OEG).
- The Community Safety Team will also report on-going issues and report exceptions (if required making a multi-agency referral) to the six weekly Problem Solving Meeting.
- Set up a performance framework for this theme, data will be monitored to identify trends, emerging themes and effectiveness of initiatives.
- Hate Crime statistics will be monitored by the Independent Advisory Group (IAG).
- Gather data from the Council's Hate Crime Ambassadors and the two Council HIRC's and report to the Problem Solving Meeting, referrals into Restorative Justice Hub if required.

High Harm Violence (Emphasis on Domestic Abuse and VAWG)

- Update in relation to this priority at the quarterly Community Safety & Health and Wellbeing Board.
- The Community Safety Team will lead on effective monitoring and reporting of activities and initiatives relating to VAWG and Domestic Abuse
- Set up a performance framework for this theme, data will be monitored to identify trends, emerging themes and effectiveness of initiatives.
- Engage with Southend, Essex and Thurrock Domestic Abuse Board (SETDAB), attend relevant meetings to ensure all partners are aware of County-wide training, initiatives and campaigns.
- Engage with VAWG Steering Group and Safer Essex to ensure Tendring has access to the most recent data and opportunities being discussed at these high level county wide meetings.



Drug and Knife Enabled Serious Violence

- Update in relation to this priority at the quarterly Community Safety & Health and Wellbeing Board.
- The Community Safety Team will lead on effective monitoring and reporting of activities and initiatives relating to drug and knife enabled violence.
- Set up a performance framework for this theme, data will be monitored to identify trends, emerging themes and effectiveness of initiatives.

Finance and Resources:

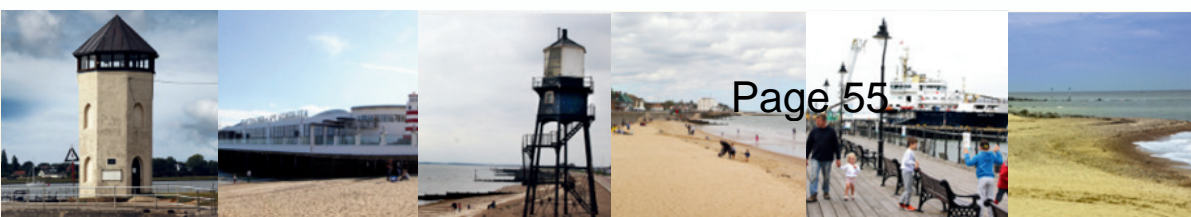
The Essex Police, Fire and Crime Commissioner is responsible for the funding of community safety services and so provides an annual Community Safety Grant to Tendring Community Safety Partnership, which must be utilised to deliver activity aligning to local priorities.

The partnership will continue to identify and access additional funding streams to improve community safety and enhance opportunities to increase the range of projects and initiatives being delivered.

The Council provides a community safety hub for key partners to work from. This collaborative space provides a secure environment for the Council, Police, Probation and other partners to enable sharing of information more effectively, whilst enabling a case management style approach for more complex cases to be discussed.

Supporting Strategies And Plans

Strategies	Priority 1	Priority 2	Priority 3
Tendring Council Corporate Strategy 2024 - 2028	✓	✓	✓
Essex County Fire and Rescue Strategy 2024 - 2028	✓	✓	✓
Essex Police Crime Prevention Strategy 2021 - 2025	✓	✓	✓
Essex Rural Crime Strategy 2023 - 2026	✓	✓	✓
Essex Police VAWG Strategy and Delivery Plan		✓	
Essex Strategic Hate Crime Prevention Plan 2021 – 2025 (due to be refreshed)	✓		
Essex Serious Violence Strategy		✓	✓
Essex Joint Health and Wellbeing Strategy	✓	✓	✓
Tendring Health & Wellbeing Strategy	✓	✓	✓
SET Domestic Abuse Strategy 2021 - 2025		✓	
SET Reducing Re-offending Strategy	✓	✓	✓
Tendring ASB Strategy 2024 – 2025	✓		
Tendring Prevent Strategy 2024 – 2025			✓





COMMUNITY LEADERSHIP OVERVIEW & SCRUTINY COMMITTEE

28th JANUARY 2025

REPORT OF ASSISTANT DIRECTOR OF HOUSING & ENVIRONMENT

A.1 WATER QUALITY IN THE TENDRING DISTRICT

(Report prepared by *Grant Fenton-Jones*)

PURPOSE OF THE REPORT

To examine evidence around water quality in the District – including sea water, freshwater courses and drinking water.

INVITEES

Contact was made with the following organisations:

Environmental Agency

Maritime Marine Organisation

Harwich Haven Port Authority

Brightlingsea Harbour Commissioners

Surfers Against Sewage

Internal Services within Tendring District Council, inc Leisure, Assets, Emergency Planning and Environmental Health

Discussion with the Portfolio Holder for Environment – Cllr Adrian Smith (*in attendance*)

The above organisations will not be in attendance but have provided specific data that can be viewed within the body of this report, and where appropriate, in the attached Appendices at the end of this report.

No response was received from Surfers Against Sewage or the Maritime Marine Organisation. The Harwich Haven Port Authority do not have responsibility for monitoring Water Quality, so therefore, no data was provided by them.

BACKGROUND

The purpose of this report is to provide statistical evidence and data with regard to the quality of Seawater, Freshwater Courses and Drinking Water within the district of Tendring.

The data collated has been obtained via the above external organisations, along with further information on water quality and data around Private Water Supplies and Oyster

beds provided by the Council's Environmental Health Service. It is proposed that The Community Leadership Overview & Scrutiny Committee scrutinise the evidence and data presented as part of this report and make recommendations to the Portfolio Holder for Environment and for formal Cabinet to discuss.

DETAILED INFORMATION

The Community Leadership Overview & Scrutiny Committee will scrutinise the evidence and data provided as part of this report regarding water quality in different settings, and look at the measures that have been implemented within the district with a view to consider the appropriateness of those measures.

Water quality is of paramount importance in any setting but especially so in districts or boroughs that are seaside tourist destinations like Tendring. It is important those councils aim for continuous improvement with regard to their bathing waters. Therefore, scrutinising evidence and data around the aforementioned areas supports the following themes from the Council's Corporate Plan 2024-28 and annual Cabinet highlight priorities:

- **Championing our local environment**
- **Pride in our area and services to residents**
- **Working with Partners to improve quality of life**
- **Promoting our heritage offer, attracting visitors and encouraging them to stay longer**

Bathing Water (Sea Water) - Environment Agency

A lot of specific data can be accessed via the **Water Quality Archive** which provides data on water quality measurements carried out by the Environment Agency. Samples are taken from sampling points round the country, including: agricultural, coastal, estuary, rivers, lakes, ponds, canals, sewage discharges, trade discharges, pollution investigation points and waste sites. Samples are then analysed by laboratories to measure aspects of the water quality or the environment at the sampling point. The archive provides data on these measurements and samples dating from the year 2000. It contains 58 million measurements on nearly 4 million samples from 58 thousand sampling points. Currently, the data does not include all groundwater data nor externally supplied data.

Specific scientific data regarding the quality of bathing water in the Tendring District can be found using the following link provided by The Environment Agency: (Open Water). [Open WIMS data](#)

Information and data regarding bathing water quality in the district for the past five years has been arranged by area and is contained within **Appendix A** at the end of this report.

Anglian Water

The Environment Agency are responsible for water quality, which includes both rivers and seas, however, Anglian Water (AW) work closely with them regarding bathing water quality. Information about bathing waters can be found on Defra's data services platform – <https://environment.data.gov.uk/bwq/profiles/>

Clacton and Walton regained excellent classification, but there is some further information below regarding the bathing waters at Manningtree and Holland-on-Sea that received a disappointing classification this year:

Manningtree Beach

Anglian Water is disappointed with the “**Sufficient**” classification at Manningtree Beach this year. Their assets in the area were not active at or before the times when elevated results were recorded this year, but they will do more work to investigate the causes of these elevations. Anglian Water have proposed an investigation into potential impacts from their infrastructure and the wider environment in their business plan for 2025-30, which is currently with Ofwat for approval.

Although they know the result is not related to their assets, they recognise that they have an important role to play in supporting tourism and residents’ enjoyment of our region’s coastline, and they are committed to working with other agencies to ensure all our region’s bathing spots have the best possible water quality.

Cold WaterSwimming – Mermaids

Mermaids are a group spearheading a campaign, SWiM (Safe Water in Manningtree), to improve water quality, with a goal to stop pollution entering waterways and the group’s precious swimming areas. ‘The problem is that there is no way of identifying where the pollution is coming from. There are three combined sewer overflows (CSOs), which are upstream from the swim location, and the Manningtree Water Recycling Centre is nearby.

Only one of these is monitored by Anglian Water, and monitoring only began in April 2022. As well as the CSOs, there is a pipe that releases treated effluent from the Water Recycling Centre, which should be safe to swim in. The CSOs should only be used as an emergency release if there has been lots of rain but the Environment Agency has said that water companies are discharging far too much. There could be an issue with not enough storage space; another problem may be an increase in houses using the system.’ or future new builds to meet government targets.

The group is working with Surfers Against Sewage and led a protest day in April 2022 to highlight the problem. It inspired the group to start focusing on what it could do to find out the state of the water at Manningtree beach – part of an Area of Outstanding Natural Beauty (the Stour) and how to improve it.

Through the campaign the group are applying for bathing water designation off Manningtree beach. If the designation is secured, the Environment Agency will have to test the water on a weekly basis during the bathing season from May to September. If they find high levels of harmful bacteria, E coli and intestinal enterococci, they will have to find the source and whatever organisation is polluting the water will have a legal obligation to clear it up. It will mean swimmers will be taking their morning dip in cleaner water and it will protect the area for the next generation.’

Despite more than 400 coastal locations around the UK that have been given bathing water designation, only a handful of rivers are included. ‘It is important to know what they’re doing and if they’re doing it correctly. The local sailors are now involved, as well as the kayakers and paddleboarders.

Holland (dropped from excellent to good)

It is disappointing to see that Holland has lost its 'Excellent' status this year. Despite only experiencing one elevated result over the past twelve months, this bathing water has been impacted by an unusually high result in 2023 that was not linked to Anglian Water infrastructure. Although this result is not related to AW assets, they recognise that they have an important role to play in supporting tourism and residents' enjoyment of our region's coastline, and they are committed to working with other agencies to ensure all our region's bathing spots have the best possible water quality.

A breakdown of the above two locations ratings can be found in **Appendix A** at the end of this report.

Emergency or Storm Overflows

The majority of sewers in England are "combined sewers" and carry both sewage and surface water from roofs and drains. A storm overflow operates during heavy rainfall when the sewerage system becomes overwhelmed by the amount of surface water. The overflow prevents sewage from backing up pipes and flooding properties and gardens. An emergency overflow will only operate infrequently, for example due to pump failure or blockage in the sewerage system.

Between 1988 and 2000 large parts of the sewage infrastructure were significantly upgraded. There remains a storm and emergency discharge near the north east end of the Clacton beach, known as the Gunfleet outfall, which may operate during periods of extreme rainfall. This bathing water is included in the Surfers Against Sewage "Safer Seas Service". This service can alert you to Combined Storm Sewer Overflow discharges via a phone App and in addition, it includes the Environment Agency Pollution Risk Forecast warnings where they are available. Further details of the service can be found at - <http://www.sas.org.uk/safer-seas-service/>

Anglian Water have now received final determination from Ofwat. Over the coming weeks they will be reviewing the feedback in detail and continuing discussions with Ofwat as necessary. However, they have provided some information on their proposed investment within the Tendring District – Between 2025 and 2030 they are proposing to invest £70.4 million across the district.

Below are proposed figures to improve River and Bathing water quality are:

- Over £19 million to reduce spills from Brightlingsea LWR Park storm overflow
- Over £17 million to disinfect final effluent from the Manningtree Water Recycling Centre to protect the bathing water in the River Stour estuary from bacteria
- Spill reduction schemes also planned at Jaywick Water Recycling Centre, Frinton Upper Second Avenue, Brightlingsea Lower Park Road, Brightlingsea Spring Road and Brightlingsea Station Road.

They are unable to confirm this proposed investment until they have finished reviewing Ofwat's feedback. They have agreed to provide an update in early 2025.

Anglian Water are in the process of doing a lot of upgrades to sewage treatment works within Tendring with additional treatment for the removal of phosphorus.

In addition, Anglian Water are looking to install a new very large attenuation tank underneath the grass overflow car park TDC own to the rear of Bath House Meadow/Walton Leisure Centre. TDC staff are working closely to support this and one of the benefits is that it should improve the sea water quality off the coast in Walton and Frinton. Current timeframe is around 12 months for construction which will begin towards the end of 2025/early 2026. Anglian Water are currently still in the design phase of this project.

Housing Demand

A further area that needs to be taken into consideration is that of Housing supply and the impact it may have in the future.

To ensure we meet with Government targets for building new homes, it is imperative that Anglian Water's show a willingness to grant Discharge Consents. This is necessary and is a significant factor in achieving the required growth in housing supply.

Anglian Water – Support to TDC

From an emergency planning perspective Anglian Water provides support as a Cat 2 Responder under the CCA, both through the Local Resilience Forums, and to individual agencies to help plan for and respond to incidents related to Water and Water Recycling services, or events that may cause effects on these.

Should a flooding event occur, they help identify if this was caused by a sewage asset and can respond to asset issues by undertaking activities such as tanking. They also take actions to mitigate the effects of flooding on the sewage system where possible. Where sewage systems are inundated with significant flooding (such as tidal issues), they will ensure the sewage system is recovered once the flooding has subsided to manageable levels. During those events they work with the Local Authority and are part of the ERF flood response.

For drinking water events, these can broadly be split into two groups, Water Quality Events and No Water Events.

Should the drinking water fail water quality tests, water companies will generally issue a Boil Notice to the customers in question. Depending on the area and duration of the event, vulnerable customers may be provided with an alternative supply at this time.

For No Water events, the Security and Emergency Measures Direction (SEMD 2022) and relevant Emergency Planning Guidance states that Water Companies should provide an alternative supply to domestic customers at a rate of 10 liters per head per day, raising to 20 Liters per Head per Day after 5 days. Water Companies also operate a robust Mutual Aid system should a large scale alternative supplies response be required.

In both cases, water companies will give due consideration to larger vulnerable institutes in the affected areas such as Hospitals and Prisons, and will work with Local Authorities and Local Resilience Forums to support the communities affected by such events.

Anglian Water has strong links to the District and County Emergency planning so are available to help and advise during flooding events (and planning for such events).

Brightlingsea Harbour Commisioners (BHC)

BHC do not gather data on water quality as a matter of course, however they do a great deal of work with others that do. The harbours water quality is measured by the EA <https://environment.data.gov.uk/bwq/profiles/profile.html?site=ukh3311-11700> and the data is available in **Appendix A**.

Over the years they have completed many projects regarding Oysters, where they have monitored water quality.

More recently they have considered the impact of Scrubbing the hulls of yachts/boats on the water quality. Essex university is carrying out some research which is attached as **Appendix F**. It is hoped that evidential outcomes will shape future policy.

Harwich Haven Port Authority

Harwich Haven Authority do not undertake any monitoring of water quality, and therefore, they were unable to provide any data to form part of this report.

Surfers Against Sewage

There has been no response from Surfers against Sewage following a request for data they hold and any campaigns they are currently promoting. Data on their website only covers 2023 and updates for 2024 are not available.

Held data highlights that there are no rivers or bathing waters within Tendring that feature in the top 20 worst performance nationwide.

There was a 63% difference between the worst and best performing water companies in 2023, with South West Water crowned as the worst and Anglian Water as the best for average spills per asset. Future spills forecasting of what average spills per asset might look like in 2030 and 2035 have been completed, and can be found at **Appendix B**.

The data shows that if present levels of spills continue, there will be an exponential increase for some water companies, whilst others will improve. This will create a wider disparity and difference in spills by the water companies. The data shows Anglian Water will be the cleanest by some fair stretch.

Private Water Supplies

Tendring District Council (Environmental Health) are the regulators of Private Water Supplies (PWS) within the district. The Environmental Protection team are responsible for monitoring and sampling PWS under The Private Water Supplies (England) (Amendment) Regulations 2018.

<https://environment.data.gov.uk/water-quality/view/landing>. (Ground Water)

Private Water supplies are properties that are not connected to mains water (not billed by Affinity Water) and their drinking water is from a borehole, well or spring.

Within Tendring there are a total of 141 properties on a Private Water Supply. They are broken down as follows:

- 10 x Regulation 9 supplies (commercial supplies)
- 43 x Regulation 10 shared supplies
- 88 x Regulation 10 single supplies

PWS within the district are risk assessed and sampled by Officers from the Environmental Protection team. Risk assessments and sampling is routinely completed by Officers in line with the relevant legislation, to ensure that drinking water is safe and wholesome. Officers ensure that the appropriate treatment, maintenance and mitigation is undertaken at each supply to ensure the drinking water is safe. The quality of the water and type of treatment required will be dependent on the supply type.

A well is more likely to be contaminated with microbiology parameters (E.coli) and a borehole is likely to be contaminated with metals. The water quality will also be influenced by the local geology, surrounding area, land use, localised contamination, fertilisers and pesticides use, and much more.

If drinking water is found to be unsafe or unwholesome formal enforcement action can be taken by the Council, by serving enforcement notices under section 18 or 80 of The Water Industry Act 1991. The notices may require the resident to install treatment, clean water storage tanks or connect to a mains supply.

This year only one exceedance was found and this was a test sample to determine the quality of the water – no formal enforcement action was taken as the supply is served by a main water supply and the owners requested sampling from a well at their property.

The sampling and monitoring routine is dependent on the supply type and set out in legislation:

- Regulation 10 single supplies: Only risk assessed and sampled at the resident's request
- Regulation 10 shared supplies: Risk assessed every five years and supplied every five years.
- Regulation 9 commercial suppliers: Risk assessed every five years and supplied at least once a year.
- Regulation 10 supplies are sampled for Enterococci; Escherichia coli (E. coli), Conductivity, Hydrogen ion (pH value), Turbidity, (plus other parameters determined by the risk assessment or at the request of the resident)
- Regulation 9 are sampled for Ammonium, Coliform bacteria, Colony counts, Conductivity, E. coli, Hydrogen ion (pH), Odour, Taste, Turbidity, Boron, Chloride, Clostridium perfringens (including spores), Chromium, Colour, Conductivity, Copper, Enterococci, Iron, Lead, Manganese, Nickel, Nitrate, Nitrite, Sodium and Sulphate. (plus other parameters determined by the risk assessment)

The legislation changed in January 2024 and the Council are now also responsible for risk assessing and sampling all Regulation 8 supplies. This is where mains water is further distributed, and a resident receives mains water indirectly by a third party. This includes some caravan's parks and mobile home sites (protected sites). This is change of legislation has significantly increased the Environmental Protection's team statutory workload.

Currently, the Environmental Protection team are reviewing the potential Regulation 8 supplies within Tendring alongside the water authority. The Environmental Protection team will look to start undertaking risk assessments and sampling next year. Regulation 8 supplies are considered low risk due to the water supply being a mains supply. Sampling and risk assessment will be undertaken on a priority and risk basis.

Mains Drinking Water

Affinity Water (AFW) release yearly data reports for particular zones within Tendring and the current data is attached at Appendix B at the end of this report. Generally, the water quality within Tendring is good, albeit hard which can fluctuate across the district.

The attached data sheet (**Appendix C**) highlights that there are no “remarkable results” that are a cause for concern. Environmental Health (Environmental Protection Team) continue to work closely with AFW in relation to “Water Quality Exceedance” notifications concerning dwellings within the area.

Below is a link to the AFW website that provides a break down of data for the year and an overview of the district. (<https://www.affinitywater.co.uk/water-quality/quality-in-your-area>)

Currently, there is a tier 2 exceedance of Polyfluoroalkyl Substances (PFAS) within the mains drinking water in Tendring. There is a lot of legislation change around abstraction of drinking water from ground sources, and the drinking water in Tendring currently comes from two boreholes in Dedham, but Affinity Water are looking to abstract more water from Ardleigh Reservoir. Affinity Water keep us updated on any exceedance or issues with the main drinking water network in Tendring.

What are PFAS and what is PFAS testing?

Per- and polyfluoroalkyl substances (PFAS) are a set of manufactured substances that have been used since the 1940s in various industrial and consumer products like nonstick cookware, stain repellent clothing, food contact materials, detergents and other cleaning products, as well as firefighting foams. Their industrial utility is due to their strong carbon-fluorine bond, and as a result these PFAS compounds were thought to be very inert and stable. Unfortunately, that also means that they do not break down in the environment and can stick around for decades. Therefore, PFAS have become pervasive and present throughout ecosystems and our daily lives. PFAS testing methods, like EPA methods for chemical analysis of water and wastes, are needed for quantification and screening of PFAS in the environment, for example, for water and soil quality.

Affinity Water have plans for continual improvement and will continue to replace old and defective pipes and fittings as necessary across the Tendring district.

Oyster Bed Water Quality

Officers from the Food & Safety Team are responsible for the sampling of Oysters and the associated water to ensure any shellfish on sale for public consumption is fit and safe to eat. Below is a breakdown of what Environmental Health staff complete as apart of their shellfish sampling program:

- Classification of 3 oyster beds, all are situated in the Walton Backwaters.

- 2 sets of samples are taken per month. 1 set goes to the Centre for Environment, Fisheries and Aquaculture Science (CEFAS) and a further sample goes to the Food Standards Agency (FSA).
- CEFAS samples are sent in one oyster sample bag and are tested for biotoxins. This sample is from the Twizzle.
- There is also a water sample which is tested for Phytoplankton taken from the site. Water tests are taken from 1st April to 30th September fortnightly.
- FSA samples - 1 sample taken from each bed (Twizzle, Kirby Creek and The Wade) monthly for classification purposes. We must take at least 8-10 samples to ensure they do not lose their classification.
- The harvesters have to sign an agreement to say they agree to collect the sample, give us the time, date, location of exactly where the sample has been collected from including a photograph. They then provide us this information when back onshore.
- Each batch of oysters going to market, or to be sold have to have a Shellfish Record Document (SRD). One is kept by the harvester, one goes with the shellfish being sold and the other goes to the Local Authority (TDC) where we keep hold of it. This is for traceability of that particular shellfish batch.
- We currently have an ongoing application for the waters in Brightlingsea to be reclassified. We are waiting on further direction from the FSA regarding further steps we may need to take.

Water samples taken from Walton back waters for the past two years have indicated no failings. We collect these every 2 weeks in the summer, and once a month in winter. They are taken by Titchmarsh Marina which is near the backwater beds that are fished. These are submitted to CEFAS and they will only let us know if there are high readings, or they are above allowed parameters.

Sanitary Reviews for the Colne (2021) and the Walton Backwaters (2023) are included at **Appendix D**.

Emergency Planning (EPS)

Coastal Pollution is one of the risks the Emergency Planning team consider.

Risk Assessment

The National Security Risk Assessment has maritime pollution as one of its considered risks. This risk also appears on the Essex Resilience Forum (ERF) Community Risk Register, and again on the TDC Emergency Planning Risk Register.

Plans

Along with our Generic Emergency Plan, TDC has a Coastal Pollution Plan (currently under review, following a review of the ERF Strategic and Tactical Coastal Pollution Plan review).

Liaison

Part of EPS' work is our very close liaison with the Maritime and Coastguard Agency (MCA) Counter Pollution and Salvage Team (CP&S) and our Local Ports and Harbour Authorities.

TDC is a member of the Haven Oil Working Group (HOWG), a multi-agency group whose membership includes the ports and harbours within the Harwich Haven area and up to Ipswich, MCA, Emergency Services, Local Authorities and others. The group meets 6 monthly and provides an opportunity to share learning from incidents, participating in training and exercising events and much more.

Tiers

Coastal pollution is scaled in 3 levels:

- Tier 1 : Small spill local response
- Tier 2: Larger spill may require regional response
- Tier 3: Major spill requires national resources

Training and Exercising

TDC's Emergency Planning team approx. every 3 years host the MCA Beach Supervisors course. This is a two day event aimed at the operational (BRONZE) response to an incident. The members of the Emergency Planning team have also attended the MCA four day strategic local authority course and hope to bid for this to be hosted in Essex in the near future.

TDC also participate in Local Port and Harbour three yearly Tier 2 responses or Incident Management Exercise (IME) exercises. Under the International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), Ports and Harbours are required to have Oil Spill Response Plans. These are audited by the MCA and must be exercised every three years.

Response arrangements

Notification of a coastal pollution incident should be received by the Emergency Planning team 24/7, from one or more of the following:

- A member of HOWG in the form of a Pollution Report (POLREP)
- MCA in the form of POLREP
- Essex County Council, forwarding an MCA POLREP
- Picked up on social media by TDC PR and Communications Team

TDC's Preparations Include

- Tier 1 : Small spill local response – liaison with MCA and Environment Agency(EA) and others, Engineering services trained as Beach Supervisors – Generic response for TDC strategic, tactical and operational personnel
- Tier 2: Larger spill may require regional response – Tier 2 Oil spill response Contract with Adler and Allen – liaison with MCA and Environment Agency(EA), Food Standards Agency (FSA) Centre for Environment, Fisheries and Aquaculture Science (CEFAS), UK Health Security Agency (UKHSA) and others - Engineering services trained as Beach Supervisors – Generic response for TDC strategic, tactical and operational personnel
- Tier 3: Major spill requires national resources - Unlikely TDC would be the lead organisation - Tier 2 Oil spill response contract with Adler and Allen – liaison with MCA, EA, FSA, CEFAS, UKHSA and others - Engineering services trained as

Beach Supervisors – Generic response for TDC strategic, tactical and operational personnel

- Recovery – This may last for months, maybe even years, depending on the scale, location and type of pollution. A robust monitoring strategy would be implemented, which may be multi-agency.

Responses to Incidents

TDC has a Generic Emergency Plan, which details the structure of our response to emergencies – our Command and Control (strategic, tactical, operational).

On notification of an incident our 24/7 Duty Officer will inform a strategic officer who will decide the course of action TDC needs to take. This is cascaded to a tactical officer or team (depending on the scale of the incident) who co-ordinates the deployment of our Operational resources (Liaison Officer to scene / activation of Rest Centre for example). The Operational element is a Liaison Officer who attends the scene, liaising with partners there ie emergency services and feeds back to the TDC tactical and strategic groups. Operational may also be those TDC personnel running a rest centre.

In the last 6 months (up to and including 20 Jan 25) the Emergency Planning team has responded to incidents involving :

- Severe Weather incidents (16 incidents)
- Flood Alerts (10 incidents)
- Fires (2 incidents)
- Pollution reports – maritime (1 incident)
- Human health (1 incident)
- National issues (3 incidents)

During each of these our command and control structure will have been activated to greater and lesser extents, depending on the nature and scale of the incident.

TDC Emergency Planning Team also has very close relationship with Anglian Waters Emergency Planning Team and Affinity Waters Emergency Planning Team. This enables excellent two way liaison for those organisations to provide an early notification of a problem or potential problem and also for TDC to report a problem or request advice / information.

RECOMMENDATION

That the Committee determines whether it has any comments or recommendations it wishes to put forward to the relevant Portfolio Holder or Cabinet.

Appendix A - Quality of Bathing Waters in Tendring

Brightlingsea

2024 Bathing Water Profile for Brightlingsea

No pollution incidents reported.



The most recent classification is **Excellent**, based on samples taken from 2021 through to 2024.

Fifteen samples taken between 1st May 24 – 30th September 2024 (Most recent 99 days ago)

Previous 5 years have achieved the same classification

Pollution Risk Forecast – None

Visible Pollution – No sewage, tar, minor litter at 44% of visits

Sewage Impact - Brightlingsea Sewage Treatment Works discharges to the Colne estuary 2.5 km to the north and does not impact upon bathing water quality. Brightlingsea and Colchester Sewage Treatment Works had further upgrades in 2013 when disinfection was added. This was put in place to protect Shellfish waters but also protects the quality of the bathing water.

Seaweed (macroalgae) - For the four year (2020-2023) assessment period where data is available, seaweed (macroalgae) was assessed as being sufficient to be objectionable for 81% of visits, with 17% of visits noting the presence of seaweed (macroalgae). This bathing water does not have a history of large amounts of seaweed (macro algae). However groynes and rocks, platforms or other fixed objects may develop a covering of seaweed which can be slippery.

Phytoplankton (microscopic algae) - For the four year (2020-2023) assessment period where data is available, phytoplankton (microscopic algae) was not noted at this site. Phytoplankton (microscopic algae) naturally increase in number at certain times of the year. This process is known as a phytoplankton bloom. This bathing water does not have a history of phytoplankton blooms. The risks to human health from contact, ingestion or inhalation with marine algae that currently occur in UK coastal waters are considered to be low. However, some individuals may be more sensitive and display some reactions. A common marine algae found in UK coastal waters is Phaeocystis, which is often mistaken for sewage as it forms foam and a brown scum, but it is non-toxic.

2024 Bathing Water Profile for Manningtree Beach, Stour Estuary

No pollution incidents reported.



Sufficient bathing
water quality



The most recent classification is **Sufficient**, based on samples taken from 2024 .

Water Samples taken weekly between May 1st 2024 and Sep 30th 2024 (most recent 87 days ago)

Pollution Risk Forecast - There are no active pollution risk forecasts made at this bathing water. However any bathing water has the potential to be affected by a pollution incident and if this occurs a pollution risk warning with associated advice against bathing will be issued on this website.

Visible Pollution - Environment Agency samplers make observations of litter present on the beach at every visit, this includes assessments of sewage debris, litter and tar.

Sewage Impact - Discharges from sewage treatment works have improved substantially in England since the 1980s. Manningtree (Lawford) sewage treatment works outfall is less than 1km upstream of the bathing water. There are a number of other sewage treatment works in the upstream catchment.

Seaweed (macroalgae) and phytoplankton (microscopic algae) - are a natural part of the marine and freshwater environment. Below we note whether these have been recorded in quantities sufficient to be a nuisance

2024 Bathing Water Profile for Clacton Beach Martello Tower

No pollution incidents reported.



The most recent classification is **Good**, based on samples taken from 2021 through to 2024.

Water Samples taken weekly between May 1st 2024 and Sep 30th 2024 (most recent 90 days ago)

Previous 5 years have achieved the same classification

Pollution Risk Forecast - This bathing water is subject to short term pollution procedures. The Environment Agency makes a daily pollution risk forecast at this site based on the effects of rain, tide, wind and seasonality on bathing water quality. These factors affect the levels of bacteria that get washed into the sea from livestock, sewage and urban drainage via rivers and streams and how they disperse. When these factors combine to make short term pollution likely we issue a pollution risk warning on the website and the beach manager will display a sign advising against bathing at the bathing water. After a short term pollution event, levels of bacteria typically return to normal after a day or so but it's possible to have several warning days in a row. In 2023, 8 pollution risk warnings were issued for this bathing water. All bathing waters have the potential to be affected by a pollution incident and if this occurs a pollution risk warning will be issued with associated advice against bathing on the website.

Visible pollution - Environment Agency samplers make observations of litter present on the beach at every visit, this includes assessments of sewage debris, litter and tar. At Clacton Beach Martello Tower for the four year (2020-2023) assessment period where data is available, sewage debris was not noted at this site. Litter was assessed as being sufficient to be objectionable for 3% of visits, with 75% of visits noting the presence of litter. Tarry residue was not noted at this site.

Previously, the bathing waters on the Tendring Peninsula were heavily influenced by a number of sea outfalls. Improved treatment is now in place at the long sea outfall at Holland-on-Sea and the outfall off Jaywick. Most of the storm overflows have also been eliminated. This has resulted in a significant improvement in water quality under normal conditions. Between 1988 and 2000 the town's sewage infrastructure was significantly upgraded as was the treatment works at both Holland-on-Sea and Jaywick. There were a number of storm overflows that operated via short sea outfalls along the coast. A large tunnel was constructed under the promenade between Clacton Pier and Holland Sewage Treatment Works. Most of the storm overflows on the sewer network now are directed to the tunnel rather than to the sea.

Sewage Treatment Works Outfalls

Discharges from sewage treatment works have improved substantially in England since the 1980s.

The Sewage Treatment Works serving the Clacton area discharge a considerable distance from the beach and do not affect bathing water compliance.

Emergency or Storm Overflows - The majority of sewers in England are "combined sewers" and carry both sewage and surface water from roofs and drains. A storm overflow operates during heavy rainfall when the sewerage system becomes overwhelmed by the amount of surface water. The overflow prevents sewage from backing up pipes and flooding properties and gardens. An emergency overflow will only operate infrequently, for example due to pump failure or blockage in the sewerage system.

Recently improvements have been made to storm overflows at from West Road pumping station. Pumps have been upgraded, the capacity of the rising main has been increased and further improvements are being considered.

Seaweed (macroalgae) - For the four year (2020-2023) assessment period where data is available, seaweed (macroalgae) was assessed as being sufficient to be objectionable for 3% of visits, with 85% of visits noting the presence of seaweed (macroalgae). This bathing water does not have a history of large amounts of seaweed (macro algae). However groynes and rocks, platforms or other fixed objects may develop a covering of seaweed which can be slippery.

Phytoplankton (microscopic algae) - For the four year (2020-2023) assessment period where data is available, phytoplankton (microscopic algae) was not assessed as being sufficient to be objectionable, but was observed as being present on 2% of visits. Phytoplankton (microscopic algae) naturally increase in number at certain times of the year. This process is known as a phytoplankton bloom. This bathing water does not have a history of phytoplankton blooms. The risks to human health from contact, ingestion or inhalation with marine algae that currently occur in UK coastal waters are considered to be low. However, some individuals may be more sensitive and display some reactions. A common marine algae found in UK coastal waters is *Phaeocystis*, which is often mistaken for sewage as it forms foam and a brown scum, but it is non-toxic.

2024 Bathing Water Profile for Walton

Essex, England

No pollution incidents reported.



Excellent bathing
water quality



The most recent classification is **Excellent**, based on samples taken from 2021 through to 2024. Water Samples taken weekly between May 1st 2024 and Sep 30th 2024 (most recent 90 days ago)

Previous 5 years have achieved the same classification

Pollution Risk Forecasts - In 2023, 7 pollution risk warnings were issued for this bathing water. All bathing waters have the potential to be affected by a pollution incident and if this occurs a pollution risk warning will be issued with associated advice against bathing on this website.

Visible pollution - Environment Agency samplers make observations of litter present on the beach at every visit, this includes assessments of sewage debris, litter and tar. At Walton for the four year (2020-2023) assessment period where data is available, sewage debris was not noted at this site. Litter was not assessed as being sufficient to be objectionable, but was observed as being present on 27% of visits. Tarry residue was not noted at this site.

Sewage Impact - Anglian Water is working with the Environment Agency to help identify improvements in their sewage infrastructure in and around Walton. The sewage from the town is pumped from a pumping station in the town to the nearby sewage works for treatment and discharge. Improvements to the sewage treatment works and storm and surface water outfalls in the area have been undertaken at Walton and Frinton. Anglian Water have modelled the sewage system and a number of sea outfalls in Walton to assess their impact on bathing water quality.

Sewage Treatment Works Outfalls - Discharges from sewage treatment works have improved substantially in England since the 1980s. Walton Sewage Treatment Works discharges to the sea 4 km to the north of the town. In 2005, a reed bed was installed at the works to reduce the number of bacteria entering the sea from the works. Assessments carried out by Anglian Water show that this Works should not significantly affect the quality of the bathing water at Walton.

Algae - Seaweed (macroalgae) and phytoplankton (microscopic algae) are a natural part of the marine and freshwater environment.

Seaweed (macroalgae) - For the four year (2020-2023) assessment period where data is available, seaweed (macroalgae) was assessed as being sufficient to be objectionable for 8% of visits, with 68% of visits noting the presence of seaweed (macroalgae). Whilst seaweed (macroalgae) is regularly recorded as present, it is not observed in large quantities on the beach and in the bathing water.

Phytoplankton (microscopic algae) - For the four year (2020-2023) assessment period where data is available, phytoplankton (microscopic algae) was not assessed as being sufficient to be objectionable, but was observed as being present on 2% of visits. Phytoplankton (microscopic algae) naturally increase in number at certain times of the year. This process is known as a phytoplankton bloom. This bathing water does not have a history of phytoplankton blooms. The risks to human health from contact, ingestion or inhalation with marine algae that currently occur in UK coastal waters are considered to be low. However, some individuals may be more sensitive and display some reactions. A common marine algae found in UK coastal waters is *Phaeocystis*, which is often mistaken for sewage as it forms foam and a brown scum, but it is non-toxic.

2024 Bathing Water Profile for Clacton

Essex, England

No pollution incidents reported.



Excellent bathing water quality



The most recent classification is **Excellent**, based on samples taken from 2021 through to 2024.

The most recent classification is **Excellent**, based on samples taken from 2021 through to 2024. Water Samples taken weekly between May 1st 2024 and Sep 30th 2024 (most recent 91 days ago)

Previous 5 years have achieved the same classification

Pollution Risk Forecasts - In 2023, 3 pollution risk warnings were issued for this bathing water. All bathing waters have the potential to be affected by a pollution incident and if this occurs a pollution risk warning will be issued with associated advice against bathing on this website.

Visible Pollution - Environment Agency samplers make observations of litter present on the beach at every visit, this includes assessments of sewage debris, litter and tar. At Clacton for the four year (2020-2023) assessment period where data is available, sewage debris was not assessed as being sufficient to be objectionable, but was observed as being present on 2% of visits. Litter was not assessed as being sufficient to be objectionable, but was observed as being present on 73% of visits. Tarry residue was not noted at this site.

Sewage Impact - Anglian Water, has worked with the Environment Agency over a long period to help make improvements to their sewerage infrastructure in and around Clacton. This has contributed towards improvements in bathing water quality at this beach. Previously, the bathing waters on the Tendring Peninsula were heavily influenced by a number of sea outfalls. Improved treatment is now in place at the long sea outfall at Holland-on-Sea, and most of the storm overflows have been eliminated. This has resulted in a significant improvement in water quality under normal conditions. Between 1988 and 2000 significant parts of the sewage infrastructure was upgraded and the treatment works at Holland-on-Sea was improved. There were a number of storm overflows with sea outfalls along the coast. A large tunnel was constructed under the promenade between Clacton Pier and Holland Sewage Treatment Works and most of the storm overflows now go to this tunnel rather than to the sea.

Sewage Treatment Works Outfalls - Discharges from sewage treatment works have improved substantially in England since the 1980s. The Sewage Treatment Works serving the Clacton catchment discharges to the North Sea via a 1 km long sea outfall from north east of Holland on Sea. This outfall does not affect bathing water compliance at this beach.

Algae - Seaweed (macroalgae) and phytoplankton (microscopic algae) are a natural part of the marine and freshwater environment. Below we note whether these have been recorded in quantities sufficient to be a nuisance.

Seaweed (macroalgae) - For the four year (2020-2023) assessment period where data is available, seaweed (macroalgae) was not assessed as being sufficient to be objectionable, but was observed as being present on 82% of visits. This bathing water does not have a history of large amounts of seaweed (macro algae). However groynes and rocks, platforms or other fixed objects may develop a covering of seaweed which can be slippery.

Phytoplankton (microscopic algae) - For the four year (2020-2023) assessment period where data is available, phytoplankton (microscopic algae) was not assessed as being sufficient to be objectionable, but was observed as being present on 2% of visits. Phytoplankton (microscopic algae) naturally increase in number at certain times of the year. This process is known as a phytoplankton bloom. This bathing water does not have a history of phytoplankton blooms. The risks to human health from contact, ingestion or inhalation with marine algae that currently occur in UK coastal waters are considered to be low. However, some individuals may be more sensitive and display some reactions. A common marine algae found in UK coastal waters is *Phaeocystis*, which is often mistaken for sewage as it forms foam and a brown scum, but it is non-toxic.

2024 Bathing Water Profile for Dovercourt

Essex, England

No pollution incidents reported.



Excellent bathing water quality



The most recent classification is **Excellent**, based on samples taken from 2021 through to 2024.

The most recent classification is **Excellent**, based on samples taken from 2021 through to 2024.

Water Samples taken weekly between May 1st 2024 and Sep 30th 2024 (most recent 100 days ago)

Previous 5 years have achieved the same classification

Pollution Risk Forecasts - There are no active pollution risk forecasts made at this bathing water. However any bathing water has the potential to be affected by a pollution incident and if this occurs a pollution risk warning with associated advice against bathing will be issued on this website.

Visible Pollution - Environment Agency samplers make observations of litter present on the beach at every visit, this includes assessments of sewage debris, litter and tar. At Dovercourt for the four year (2020-2023) assessment period where data is available, sewage debris was not noted at this site. Litter was not assessed as being sufficient to be objectionable, but was observed as being present on 25% of visits. Tarry residue was not noted at this site.

Pollution Management - It is the Environment Agency role to drive improvement of water quality at bathing waters that are at risk of failing higher standards. It is natural for water to run off the land to the sea. Water quality at a bathing water is dependent upon the type and area of land (the catchment) draining to the water and the activities undertaken in that catchment.

Sewage Impact - A new sewage treatment works was built at Harwich in 1997 to protect bathing water quality. Improvements have been carried out to storm, emergency and surface water outfalls in the area. Low Road pumping station storm overflow which discharged to Harwich beach was also improved in 1998. Harwich Guard sewage outfall was diverted to the new sewage works in 1997.

Sewage Treatment Works Outfalls

Discharges from sewage treatment works have improved substantially in England since the 1980s. A new sewage treatment plant, which discharges to the Stour Estuary at Parkeston, was built at Harwich in 1997. This sewage treatment works does not affect bathing water compliance.

Algae - Seaweed (macroalgae) and phytoplankton (microscopic algae) are a natural part of the marine and freshwater environment. Below we note whether these have been recorded in quantities sufficient to be a nuisance.

Seaweed (macroalgae) - For the four year (2020-2023) assessment period where data is available, seaweed (macroalgae) was not assessed as being sufficient to be objectionable, but was observed as being present on 85% of visits. This bathing water does not have a history of large amounts of seaweed (macro algae). However groynes and rocks, platforms or other fixed objects may develop a covering of seaweed which can be slippery.

Phytoplankton (microscopic algae) - For the four year (2020-2023) assessment period where data is available, phytoplankton (microscopic algae) was not noted at this site. Phytoplankton (microscopic algae) naturally increase in number at certain times of the year. This process is known as a phytoplankton bloom. This bathing water does not have a history of phytoplankton blooms. The risks to human health from contact, ingestion or inhalation with marine algae that currently occur in UK coastal waters are considered to be low. However, some individuals may be more sensitive and display some reactions. A common marine algae found in UK coastal waters is *Phaeocystis*, which is often mistaken for sewage as it forms foam and a brown scum, but it is non-toxic.

024 Bathing Water Profile for Frinton

Essex, England

No pollution incidents reported.



Excellent bathing
water quality



The most recent classification is **Excellent**, based on samples taken from 2021 through to 2024.

Water Samples taken 10 times between May 1st 2024 and Sep 30th 2024 (most recent 99 days ago)

Previous 5 years have achieved the same classification

Pollution Risk Forecasts - In 2023, 2 pollution risk warnings were issued for this bathing water. All bathing waters have the potential to be affected by a pollution incident and if this occurs a pollution risk warning will be issued with associated advice against bathing on this website.

Visible Pollution - Environment Agency samplers make observations of litter present on the beach at every visit, this includes assessments of sewage debris, litter and tar. At Frinton for the four year (2020-2023) assessment period where data is available, sewage debris was not noted at this site. Litter was not assessed as being sufficient to be objectionable, but was observed as being present on 25% of visits. Tarry residue was not noted at this site.

Pollution Management - It is the Environment Agency role to drive improvement of water quality at bathing waters that are at risk of failing higher standards. It is natural for water to run off the land to the sea. Water quality at a bathing water is dependent upon the type and area of land (the catchment) draining to the water and the activities undertaken in that catchment.

History - Anglian Water has worked with the Environment Agency over a long period to help make improvements to their sewerage infrastructure in and around Frinton. This has contributed towards improvements in bathing water quality. Walton Sewage Treatment Works was upgraded by Anglian Water in 2005 to protect bathing water quality. Improvements to sewage works and storm and surface water outfalls in the area have been undertaken at Walton and Frinton. Anglian Water have assessed the impact of the sewage system in Frinton and Walton and the long and short sea outfalls have on bathing water quality. These studies indicate these outfalls do not significantly affect the quality of the Bathing Waters at Frinton. An improvement scheme has been included in Anglian Water's next investment programme (2020-2025)

Sewage Treatment Works Outfalls - Discharges from sewage treatment works have improved substantially in England since the 1980s. Clacton (Holland Haven) Sewage Treatment Works discharges via a 1 km long sea outfall to the sea 4 km to the southwest of Frinton beach. A reed bed was added at Walton Sewage Treatment Works in 2005, to reduce the numbers of bacteria entering the sea. These sewage treatment works do not affect the compliance of the bathing water.

Emergency or Storm Overflows - Two sewer discharges, one either side of the bathing water, may operate when heavy rainfall overwhelms the sewerage system and could cause a temporary reduction in bathing water quality. Improvements to sewage works have been carried out at Walton and Frinton to improve storm and surface water outfalls in the area. Prior to March 2025 Anglian Water propose to increase the storm tank capacity at the Walton sewage pumping station to reduce the frequency of a storm discharge to the sea.

Algae - Seaweed (macroalgae) and phytoplankton (microscopic algae) are a natural part of the marine and freshwater environment. Below we note whether these have been recorded in quantities sufficient to be a nuisance.

Seaweed (macroalgae) - For the four year (2020-2023) assessment period where data is available, seaweed (macroalgae) was assessed as being sufficient to be objectionable for 3% of visits, with 81% of visits noting the presence of seaweed (macroalgae). This bathing water does not have a history of large amounts of seaweed (macro algae). However groyne and rocks, platforms or other fixed objects may develop a covering of seaweed which can be slippery.

Phytoplankton (microscopic algae) - This bathing water does not have a history of phytoplankton blooms. The risks to human health from contact, ingestion or inhalation with marine algae that currently occur in UK coastal waters are considered to be low. However, some individuals may be more sensitive and display some reactions. A common marine algae found in UK coastal waters is *Phaeocystis*, which is often mistaken for sewage as it forms foam and a brown scum, but it is non-toxic.

2024 Bathing Water Profile for Holland

Essex, England

No pollution incidents reported.



**Good bathing
water quality**



The most recent classification is **Good**, based on samples taken from 2021 through to 2024.

Water Samples taken weekly between May 1st 2024 and Sep 30th 2024 (most recent 90 days ago)

Previous 5 years have achieved the same classification

Pollution Risk Forecasts- In 2023, 3 pollution risk warnings were issued for this bathing water. All bathing waters have the potential to be affected by a pollution incident and if this occurs a pollution risk warning will be issued with associated advice against bathing on this website.

Visible Pollution - Environment Agency samplers make observations of litter present on the beach at every visit, this includes assessments of sewage debris, litter and tar. At Holland for the four year (2020-2023) assessment period where data is available, sewage debris was not assessed as being sufficient to be objectionable, but was observed as being present on 2% of visits. Litter was not assessed as being sufficient to be objectionable, but was observed as being present on 15% of visits. Tarry residue was not noted at this site.

Pollution management - It is the Environment Agency role to drive improvement of water quality at bathing waters that are at risk of failing higher standards. It is natural for water to run off the land to the sea. Water quality at a bathing water is dependent upon the type and area of land (the catchment) draining to the water and the activities undertaken in that catchment.

History - No specific investigations have been required at this beach but it has benefited from studies at Clacton and Frinton/Walton. Clacton (Holland Haven) Sewage Treatment Works was upgraded by Anglian Water in 2001 which helped to protect bathing water quality.

Sewage treatment works outfalls - Discharges from sewage treatment works have improved substantially in England since the 1980s. Clacton discharges to the North Sea via a 1 km long sea outfall next to the beach. However, this discharge does not affect bathing water compliance at Holland.

Emergency or Storm Overflows - There is a short storm and emergency sewer outfall to south west of the beach which may operate in exceptionally heavy rainfall or under emergency conditions. This bathing water is included in the Surfers Against Sewage "Safer Seas Service". This service can alert you to Combined Storm Sewer Overflow discharges via a phone App and in addition, it includes the Environment Agency Pollution Risk Forecast warnings where they are available.

Algae - Seaweed (macroalgae) and phytoplankton (microscopic algae) are a natural part of the marine and freshwater environment.

Seaweed (macroalgae) - For the four year (2020-2023) assessment period where data is available, seaweed (macroalgae) was assessed as being sufficient to be objectionable for 2% of visits, with 82% of visits noting the presence of seaweed (macroalgae). This bathing water does not have a history of large amounts of seaweed (macroalgae). However groynes and rocks, platforms or other fixed objects may develop a covering of seaweed which can be slippery.

Phytoplankton (microscopic algae) - For the four year (2020-2023) assessment period where data is available, phytoplankton (microscopic algae) was not assessed as being sufficient to be objectionable, but was observed as being present on 2% of visits. Phytoplankton (microscopic algae) naturally increase in number at certain times of the year. This process is known as a phytoplankton bloom. This bathing water does not have a history of phytoplankton blooms. The risks to human health from contact, ingestion or inhalation with marine algae that currently occur in UK coastal waters are considered to be low. However, some individuals may be more sensitive and display some reactions. A common marine algae found in UK coastal waters is *Phaeocystis*, which is often mistaken for sewage as it forms foam and a brown scum, but it is non-toxic.

2024 Bathing Water Profile for Jaywick

Essex, England

No pollution incidents reported.



**Good bathing
water quality**



The most recent classification is **Good**, based on samples taken from 2021 through to 2024.

Water Samples taken weekly between May 1st 2024 and Sep 30th 2024 (most recent 91days ago)

Previous 5 years have achieved the same classification

Pollution Risk Forecasts - There are no active pollution risk forecasts made at this bathing water. However any bathing water has the potential to be affected by a pollution incident and if this occurs a pollution risk warning with associated advice against bathing will be issued on this website.

Visible pollution - Environment Agency samplers make observations of litter present on the beach at every visit, this includes assessments of sewage debris, litter and tar. At Jaywick for the four year (2020-2023) assessment period where data is available, sewage debris was not assessed as being sufficient to be objectionable, but was observed as being present on 2% of visits. Litter was not assessed as being sufficient to be objectionable, but was observed as being present on 81% of visits. Tarry residue was not noted at this site.

Pollution Management - It is the Environment Agency role to drive improvement of water quality at bathing waters that are at risk of failing higher standards. It is natural for water to run off the land to the sea. Water quality at a bathing water is dependent upon the type and area of land (the catchment) draining to the water and the activities undertaken in that catchment.

The treatment works at Jaywick was improved in 2001 and this has helped protect bathing water quality An Anglian Water improvement scheme will be completed by March 2022.

Sewage treatment works outfalls - Discharges from sewage treatment works have improved substantially in England since the 1980s. Jaywick Sewage Treatment Works discharges to the North Sea via a 500m outfall off the Martello Tower.

Emergency or Storm Overflows - This bathing water is included in the Surfers Against Sewage "Safer Seas Service". This service can alert you to Combined Storm Sewer Overflow discharges via a phone App and in addition, it includes the Environment Agency Pollution Risk Forecast warnings where they are available.

Algae - Seaweed (macroalgae) and phytoplankton (microscopic algae) are a natural part of the marine and freshwater environment.

Seaweed (macroalgae) - For the four year (2020-2023) assessment period where data is available, seaweed (macroalgae) was not assessed as being sufficient to be objectionable, but was observed as being present on 90% of visits. This bathing water does not have a history of large amounts of seaweed (macro algae). However groynes and rocks, platforms or other fixed objects may develop a covering of seaweed which can be slippery.

Phytoplankton (microscopic algae) - For the four year (2020-2023) assessment period where data is available, phytoplankton (microscopic algae) was not assessed as being sufficient to be objectionable, but was observed as being present on 2% of visits. Phytoplankton (microscopic algae) naturally increase in number at certain times of the year. This process is known as a phytoplankton bloom. This bathing water does not have a history of phytoplankton blooms. The risks to human health from contact, ingestion or inhalation with marine algae that currently occur in UK coastal waters are considered to be low. However, some individuals may be more sensitive and display some reactions. A common marine algae found in UK coastal waters is *Phaeocystis*, which is often mistaken for sewage as it forms foam and a brown scum, but it is non-toxic.

Appendix B – Surfers against Sewage Spills Forecasting (Based on Spills per Asset)

Water Company	2030	2035
Anglian Water	16.5	11.6
Dwr Cymru	49.65	60
Northumbrian Water	47.49	59.22
Severn Water	23.27	20.69
South West Water	69.87	85.37
Southern Water	72.86	101.11
Thames Water	27.25	25.43
United Utilities	59.68	68.18
Wessex Water	74.53	103.51
Yorkshire Water	48.25	55.2

Appendix C – Drinking Water Quality in Tendring 2024

(The data includes all samples collected for drinking water compliance purposes, for all water quality zones within Tendring (4 Supply Zones) for the period 2020 to date)

Parameter	Units	Number of Samples	Minimum Result	Mean Value	Maximum Result
1_2-Dichloroethane	ug/l	154	0.00	0.00	0.00
2_4_D	ug/l	79	0.00	0.00	0.00
3 day plate count 22C	count/ml	714	0.00	5.05	430.00
Alpha Radioactivity	Bq/l	16	0.00	0.00	0.05
Aluminium as Al	ug/l	304	0.00	1.53	100.00
Ammonium as NH4	mg/l	220	0.00	0.00	0.00
Antimony as Sb	ug/l	154	0.31	0.43	0.55
Arsenic as As	ug/l	154	0.00	0.04	0.35
Atrazine	ug/l	160	0.00	0.00	0.00
Benzene	ug/l	154	0.00	0.00	0.00
Benzo (a) Pyrene	ug/l	161	0.00	0.00	0.00
Beta Radioactivity	Bq/l	16	0.15	0.20	0.28
Boron as B	mg/l	154	0.00	0.02	0.17
Bromate as BrO3	ug/l	154	0.00	0.72	3.20
Cadmium as Cd	ug/l	154	0.00	0.00	0.00
Carbetamide	ug/l	82	0.00	0.00	0.00
Chloride as Cl	mg/l	148	68.00	78.70	120.00
Chromium as Cr	ug/l	154	0.00	0.00	0.33
Clopyralid	ug/l	79	0.00	0.01	0.06
Clostridium perfringens	cfu/100ml	373	0.00	0.00	0.00
Colour	mg/l Pt/Co	721	0.00	0.02	4.60
Copper as Cu	mg/l	154	0.00	0.10	1.18
Desethyl Atrazine	ug/l	160	0.00	0.00	0.00
E coli	cfu/100ml	2021	0.00	0.00	0.00
Electrical Conductivity @ 20 deg C	uS/cm	714	561.00	755.81	889.00
Enterococci	cfu/100ml	153	0.00	0.00	0.00
Fluoride as F	mg/l	154	0.00	0.50	0.73
Glyphosate	ug/l	78	0.00	0.00	0.01
Hydrogen Ion	pH value	714	6.90	7.20	7.60
Iron as Fe	ug/l	303	0.00	1.18	54.50
Lead as Pb	ug/l	154	0.00	0.39	6.02
Manganese as Mn	ug/l	303	0.00	0.12	3.07
Mecoprop	ug/l	79	0.00	0.00	0.00
Mercury as Hg	ug/l	154	0.00	0.00	0.00
Metaldehyde	ug/l	77	0.00	0.00	0.04
Metazachlor	ug/l	82	0.00	0.00	0.00
Nickel as Ni	ug/l	154	0.00	4.84	9.79
Nitrate as NO3	mg/l	148	0.00	7.82	33.30
Nitrite as NO2	mg/l	148	0.00	0.00	0.00

Nitrite Nitrate Formula	mg/l	148	0.00	0.00	0.00
Propyzamide	ug/l	82	0.00	0.00	0.00
Quantitative Odour	Diln No.	720	0.00	0.00	0.00
Quantitative Taste	Diln No.	719	0.00	0.00	0.00
Selenium as Se	ug/l	154	0.00	1.41	3.11
Simazine	ug/l	82	0.00	0.00	0.00
Sodium as Na	mg/l	154	36.80	47.42	89.60
Sulphate as SO4	mg/l	148	72.00	86.25	113.00
Sum of Tri & Tetrachloroethene	ug/l	154	0.00	0.01	1.61
Tetrachloromethane	ug/l	154	0.00	0.00	0.00
Total Chlorine	mg/l	2023	0.03	0.20	1.50
Total coliforms	cfu/100ml	2021	0.00	0.00	1.00
Total Cyanide as CN	ug/l	90	0.00	0.00	0.00
Total Organic Carbon	mg/l	154	0.90	1.93	4.90
Total Pesticide	ug/l	153	0.00	0.00	0.06
Total Polycyclic Aromatic Hydrocarbons	ug/l	154	0.00	0.00	0.00
Total Trihalomethanes	ug/l	154	0.00	27.72	63.10
Turbidity	NTU	714	0.00	0.09	0.49

Any samples which don't meet the regulatory limits are fully investigated, with corrective actions put in place and are reported to the DWI.

µg - micrograms or one part per billion = one drop in an Olympic sized swimming pool. mg - milligrams or one part per million = one drop in 100 litres

**Appendix D – Sanitary Reviews for the Colne (2021) and the
Walton Backwaters (2023)**

Appendix E – Tendring District Council (Water Cycle Study-2017)

**Appendix F – Brightlingsea Harbour Commissioners (BHC) -
Managing the Environmental Impact of Antifouling Biocides in
Recreational Marinas**



Food
Standards
Agency



Carcinus Ltd
Consultancy and Survey Specialists

Sanitary Survey - Review

Colne – 2021



Document No. – *J0591/21/01/15*

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Carcinus Ltd – Document Control Sheet

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Initial Consultation

Consultee	Date of consultation	Date of response
Colchester Borough Council	27 November 2020	24 December 2020
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Colchester Borough Council	18 February 2021	14 April 2021
Tendring District Council	18 February 2021	14 April 2021
Anglian Water	18 February 2021	18 March 2021

A sanitary survey relevant to the bivalve mollusc beds in Colne was undertaken in 2013 under EC Regulation 854/2004 (now superseded by retained EU Law Regulation (EC) 2019/627). This provided appropriate hygiene classification zoning and monitoring plan based on the best available information with detailed supporting evidence. In line with regulatory and EU guidance the Food Standards Agency undertake targeted sanitary survey reviews to ensure public health protection measures continue to be appropriate. This report provides a review of information and recommendations for a revised sampling plan if required. Carcinus Ltd. (Carcinus) undertook this work on behalf of the FSA. Carcinus Ltd accepts no liability for any costs, losses or liabilities arising from the reliance upon or use of the contents of this report other than by its client.

Dissemination

Food Standards Agency, Colchester City Council; Tendring District Council. The report is publicly available via the Carcinus Ltd. website.

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1 Introduction

1.1 Background

In line with the EU Good Practice Guide (European Commission, 2017) and Article 58 of retained EU Law Regulation (EC) 2019/627, Carcinus is contracted to undertake reviews of sanitary surveys on behalf of the Food Standards Agency. The FSA undertake targeted sanitary survey reviews to ensure public health protection measures continue to be appropriate.

The report considers changes to bacterial contamination sources (primarily from faecal origin) and the associated loads of the faecal indicator organism *Escherichia coli* (*E. coli*) that may have taken place since the original sanitary survey was undertaken. It does not assess chemical contamination, or the risks associated with biotoxins. The assessment also determines the necessity and extent of a shoreline survey based on complexity and risk. The desktop assessment is completed through analysis and interpretation of publicly available information, in addition to consultation with stakeholders.

1.2 Colne Review

This report reviews information and makes recommendations for a revised sampling plan for existing cockle (*Cerastoderma edule*), hard clam (*Mercenaria mercenaria*), *Tapes* spp., native oyster (*Ostrea edulis*) and Pacific oyster (*Crassostrea gigas*) classification zones in the Colne Estuary (Figure 1.1). This review explores any changes to the main microbiological contamination sources that have taken place since the original sanitary survey was conducted. Data for this review was gathered through a desk-based study and consultation with stakeholders.

An **initial consultation** with Local Authorities (LAs) and the Environment Agency (EA) responsible for the production area was undertaken in December 2020. This supporting local intelligence is valuable to assist with the review and was incorporated in the assessment process.

Following production of a draft report, a wider **external second round of consultation** with LAs and Local Action Group (LAG) members was undertaken in March and April 2021. It is recognised that dissemination and inclusion of a wider stakeholder group, including local industry, is essential to sense-check findings and strengthen available evidence. The draft report is reviewed taking into account the feedback received.

The review updates the assessment originally conducted in 2013 and sampling plan as necessary and the report should read in conjunction with the previous survey.

Specifically, this review considers:

- (a) Changes to the shellfishery (if any);
- (b) Changes in microbiological monitoring results;
- (c) Changes in sources of pollution impacting the production area or new evidence relating to the actual or potential impact of sources;
- (d) Changes in land use of the area; and
- (e) Change in environmental conditions;

Sections 2 - 6 detail the changes that have occurred to the shellfishery, environmental conditions and pollution sources within the catchment since the publication of the original sanitary survey. A summary of the changes is presented in section 7 and recommendations for an updated sampling plan are described in section 8.

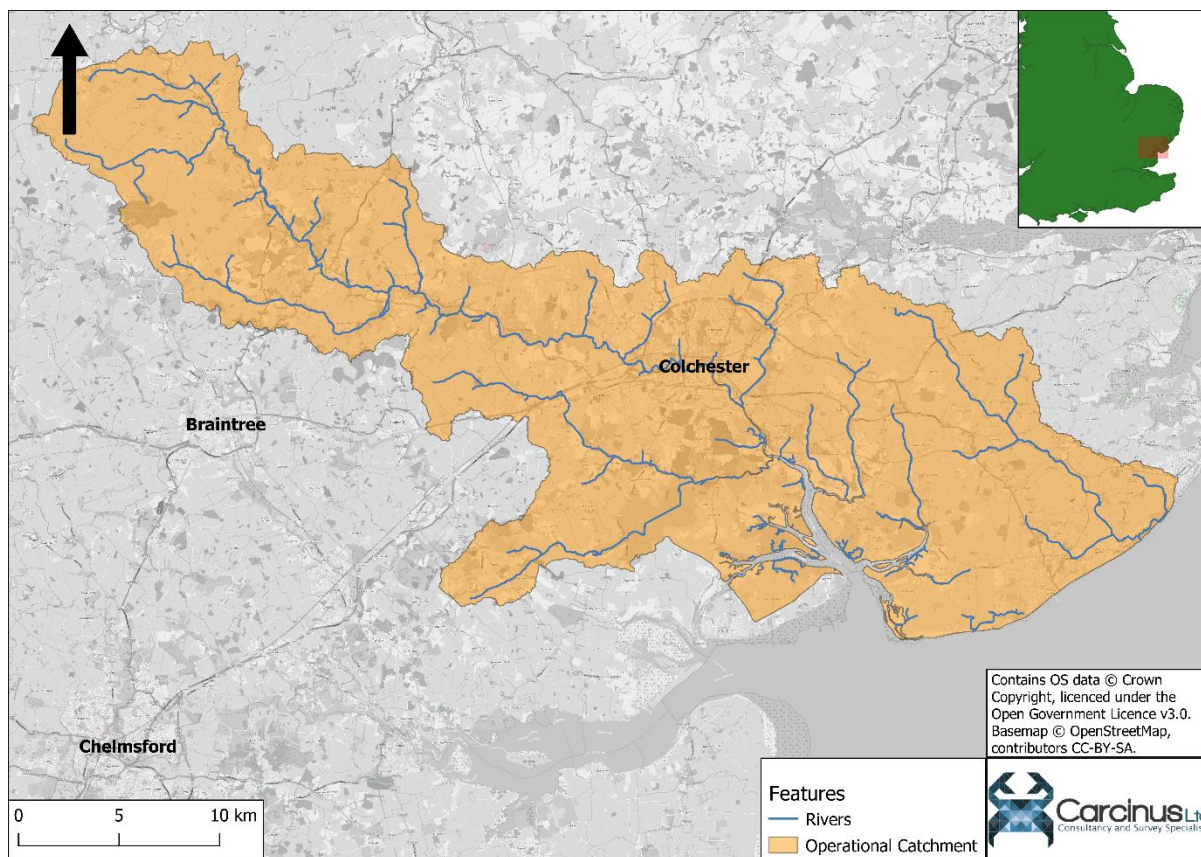


Figure 1.1 Location of the Colne Estuary.

1.3 Assumptions and limitations

This desktop assessment is subject to certain limitations and has been made based on several assumptions, namely:

- Accuracy of local intelligence provided by the Local Authorities and Environment Agency
- The findings of this report are based on information and data sources up to and including December 2020;
- Only information that may impact on the microbial contamination was considered for this review; and
- Official Control monitoring data have been taken directly from the Cefas data hub¹, with no additional verification of the data undertaken. Results up to and including December 2020 have been used within this study. Any subsequent samples have not been included.

¹ Cefas shellfish bacteriological monitoring data hub. Available at: <https://www.cefes.co.uk/data-and-publications/shellfish-classification-and-microbiological-monitoring/england-and-wales/>.

2 Shellfisheries

2.1 Description of Shellfishery

Harvesting of shellfish within the Colne BMPA is under the jurisdiction of Kent & Essex Inshore Fisheries and Conservation Authority (KEIFCA) and is subject to the Area A Byelaws (KEIFCA, 2021). These byelaws set out the rights and restrictions that apply to fishermen wanting to utilise the fishing waters and applies to the entire area considered in this review. Under the byelaw, limits on harvesting mean that no more than 13.6 m³ of mussels or cockles can be harvested within a 24 hour period. Additionally, fishermen dredging for shellfish may not operate a dredge that has an opening that exceeds 2 m when fishing for mussels, 85 cm for scallops or 4 m for oysters. The byelaws also impose minimum landing sizes; no more than 10% (by weight) of landed mussels should be able to pass through a space 18 mm width and no native oysters that fit through a circular ring 7 cm diameter may be removed, though this restriction does not apply to Pacific oysters. Furthermore, the KEIFCA reserves the right to close a fishery where the bed *“is so severely depleted as to require temporary closure in order to ensure recovery, or any bed or part of a bed contains mainly immature shellfish which in the interest of the protection and development of the fishery ought not to be disturbed for the time being, or any bed of transplanted shellfish ought not to be fished until it has become established...”*. Colchester council leases the rights to much of the fishery within the Colne estuary to Colchester Oyster Fishery Ltd, which has held the rights since 1964 (Colchester Oyster Fishery, 2021). This lease covers virtually the entire BMPA, apart from the waters in Brightlingsea Creek and Point Clear Bay.

The Colne BMPA is located adjacent to two other BMPAs; West Mersea and Blackwater to the south. The BMPA covers the entire estuary, from the coast at Lee-Over-Sands at the mouth of the estuary, up the River Colne to Fingringhoe Wick Nature Reserve, and includes the creeks that drain to the main river; Geedon Creek, Pyefleet Channel and Brightlingsea Creek. The fishery involves both wild and cultured stocks of the harvested species.

Consultation with the LA did not indicate changes to harvesting methods for any of the harvested species. As such, it is assumed that these remain unchanged from the original sanitary survey.

The original sanitary survey, conducted in 2013, gave recommendations for the creation of eight Classification Zones (CZs) in the BMPA. These were *Main Channel Inner, Main Channel Central, Main Channel Outer, Geedon Creek, Pyefleet Creek, Brightlingsea Creek Inner, Brightlingsea Creek Outer* and *Point Clear Bay* for the various species to be classified. *Main Channel Inner* (for hard and manila clams) and *Point Clear Bay* do not possess active classifications. *Pyefleet Creek* has been renamed *Pyefleet Channel*, although the boundaries remain the same. The following paragraphs describe the current classification zones for each of the currently harvested species.

2.1.1 Pacific oyster

There are currently five CZs for Pacific oyster harvesting in the BMPA. These are *Brightlingsea Creek Inner, Brightlingsea Creek Outer, Main Channel Central, Main Channel*

Outer and Pyefleet Channel. Geedon Creek was closed in October 2020 due to access restrictions caused by MOD closure of the creek. No other changes to the commercial fishery of this species since the original sanitary survey were reported during consultation with the Local Authority.

The Local Authority indicated that 22,400 Kg of Pacific oysters were landed from the *Main Channel Central* and *Pyefleet Creek* zones in 2020, with a further 6,103 kg from the *Brightlingsea Creek CZ*. The landings from other CZs classified for this species are unknown.

2.1.2 Native oyster

The original sanitary survey describes that native oysters primarily occur in the subtidal areas of the BMPA, but with relatively low stock levels. No updated stock maps are available, but it is assumed that the distributions remain relatively similar. There are currently three CZs for native oyster harvesting; *Main Channel Central*, *Main Channel Outer* and *Pyefleet Channel*. The *Geedon Creek CZ* was closed in October 2020 due to access restrictions. No other changes to the commercial fishery of this species since the original sanitary survey were reported during consultation with the Local Authority.

The Local Authority indicated that a total of 250 kg of native oysters were landed from the *Brightlingsea Creek CZ* in 2020. The landings from other zones are unknown.

2.1.3 Hard clams

At the time of the original sanitary survey, industry indicated that the main area of interest for harvesting hard clams was the subtidal area between Batemans Tower and the number 19 buoy. There was also industry interest in harvesting this species from Brightlingsea Creek, and consequently four CZs; *Main Channel Inner*, *Main Channel Central*, *Brightlingsea Creek Inner* and *Brightlingsea Creek Outer* were recommended. *Main Channel Inner* was never classified, although both CZs in Brightlingsea Creek and *Main Channel Central* are still active.

The Local Authority indicated that 21,786 Kg hard clams were landed from the *Main Channel Central* zone in 2020. The landings from other zones are unknown.

2.1.4 Cockles

The original sanitary survey gave recommendations for a single CZ, *Pyefleet Creek* for harvesting of cockles. This CZ has been renamed *Pyefleet Channel*, and is currently active, although is currently classified using mussel samples (Figure 2.1). *Geedon Creek* was classified for the harvesting of this species in 2014, 2015 & 2019, but was declassified in October 2020 due to access restrictions to the creek.

2.1.5 *Tapes* spp.

At the time of the original sanitary survey, Manila clams (*Tapes* spp.) were not subject to commercial harvesting but were occasionally found in dredge catches. The survey recommended classification of the hard clam zones for this species, although currently only the *Main Channel Central* zone has an active classification.

2.2 Classification History

The original sanitary survey recommended the creation of four CZs for hard clams, seven for Pacific oysters, four for native oysters, one each for cockles and mussels and two for manila clams (19 in total). There are currently only 13 CZs in the BMPA with active classifications; *Main Channel Inner* was declassified in 2014 and *Geedon Creek* was declassified in October 2020.

The location of all active CZs in the Colne BMPA are shown in Figure 2.1. The vast majority of CZs hold Class LT-B classifications, with the cockle *Pyefleet Channel* CZ holding a Class C classification and the *Tapes* spp. *Main Channel Central* CZ holding a Class B classification.

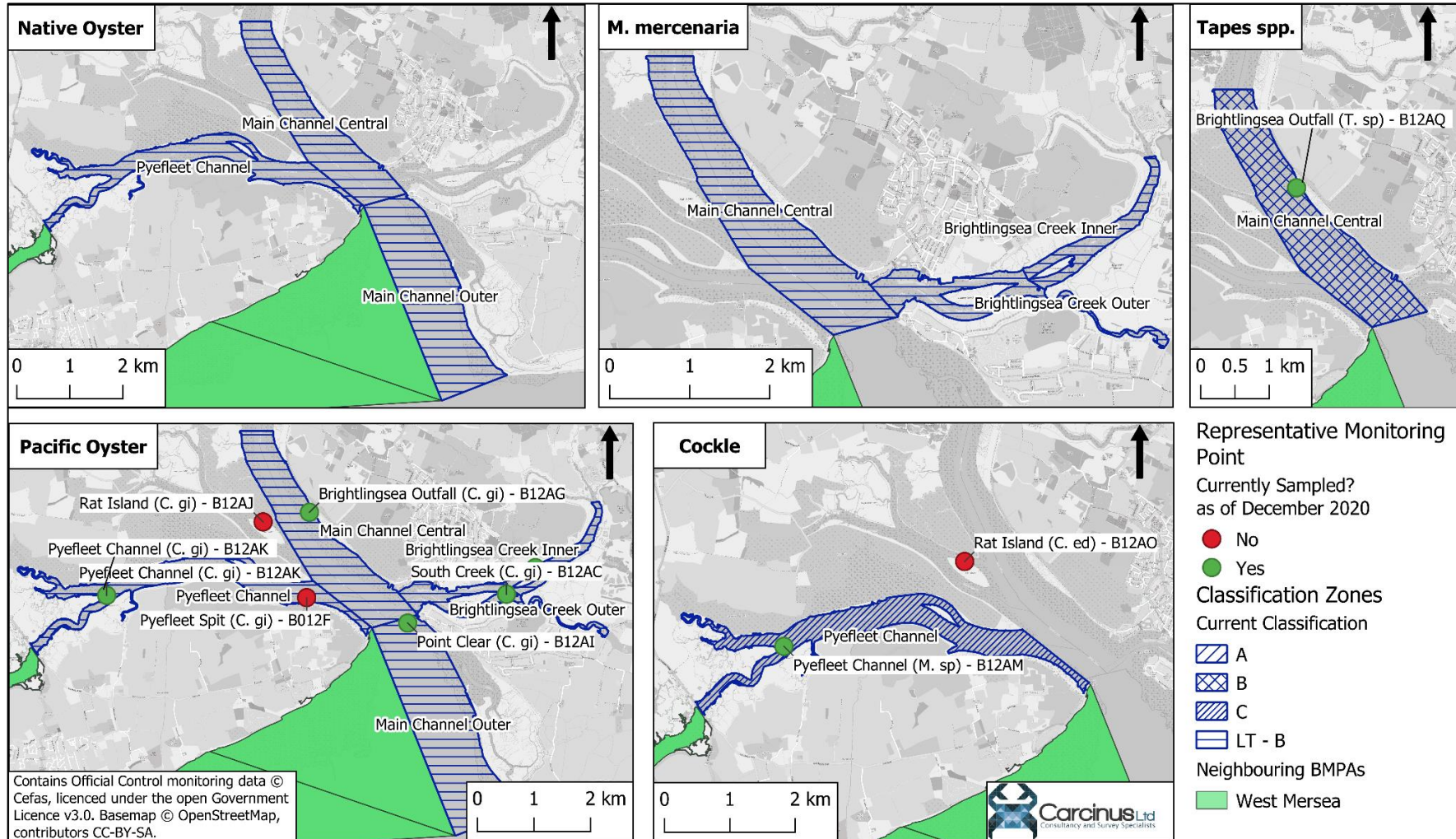


Figure 2.1 Current Classification Zones and associated Representative Main Monitoring Points (RMPs) for the species harvested in the Colne BMPA.



3 Pollution sources

3.1 Human Population

The original sanitary survey cites population data from the 2001 Census of the United Kingdom. Since the publication of that document, the data from the subsequent full Census of 2011 has been made available, and so this data has been compared to that of the 2001 census to give an indication of the changes in human population within the catchment. These censuses have been used as no further population data are freely available. Changes in human population densities in census Super Output Areas (lower layer) and total population within wards wholly or partially contained within the Colne catchment between the 2001 and 2011 censuses are shown in Figure 3.1 and Figure 3.2.

In general, population density has increased across the entire catchment, with nearly two thirds of wards showing an increase in population size. Population densities remain low, at an average of only 14.8 people per hectare and much of the catchment having population densities of < 6 people per hectare. The main population centres remain around Colchester and Clacton-on-Sea, with some small towns in the upper catchment. A detailed breakdown of population change for individual wards is shown in Appendix I.

At the 2001 census, the total resident population within wards wholly or partially contained within the Colne catchment was 327,914. By the 2011 census, this had increased to 348,041 people, an increase of 6.14%. The population data for the 2011 census was collected two years before the original sanitary survey was published and so could be considered more relevant to that document. The next full census of the United Kingdom is scheduled to take place in the 2021 and the UK government estimates that the national population will increase by approximately 6.6% between 2011 and 2021 (Office for National Statistics, 2018). An increase of this proportion would see the approximate population residing within the Colne catchment increase to 371,012 people. The potential for urban runoff remains highest from the city of Colchester at the head of the Colne estuary. Impacts from sewage will depend on the specific locations and nature of discharges, changes to which are discussed in Section 3.2. Consultation with the LA did not indicate that any additional significant housing developments had either occurred, were underway or planned. However, without upgrades to the wastewater treatment network (WWTW), an increase in population would almost certainly lead to an increase in the loading to the WWTW and would therefore potentially cause increased bacterial loading to coastal waters.

The original sanitary survey describes that the area sees a significant increase in its population during summer months due to its popularity as a tourist destination. Whilst no recent tourism statistics are available, it is expected that tourist numbers will have remained similar or increased slightly. The peak tourism season is during the summer months, and so it is expected that the loading to the wastewater treatment network will also peak during this time.

Whilst there is no recently available population data for the catchment, it is likely that the population will have increased by a small proportion since the last sanitary survey. However, the distribution of main population centres within the catchment has not changed, and as such the recommendations for RMP location are still valid.

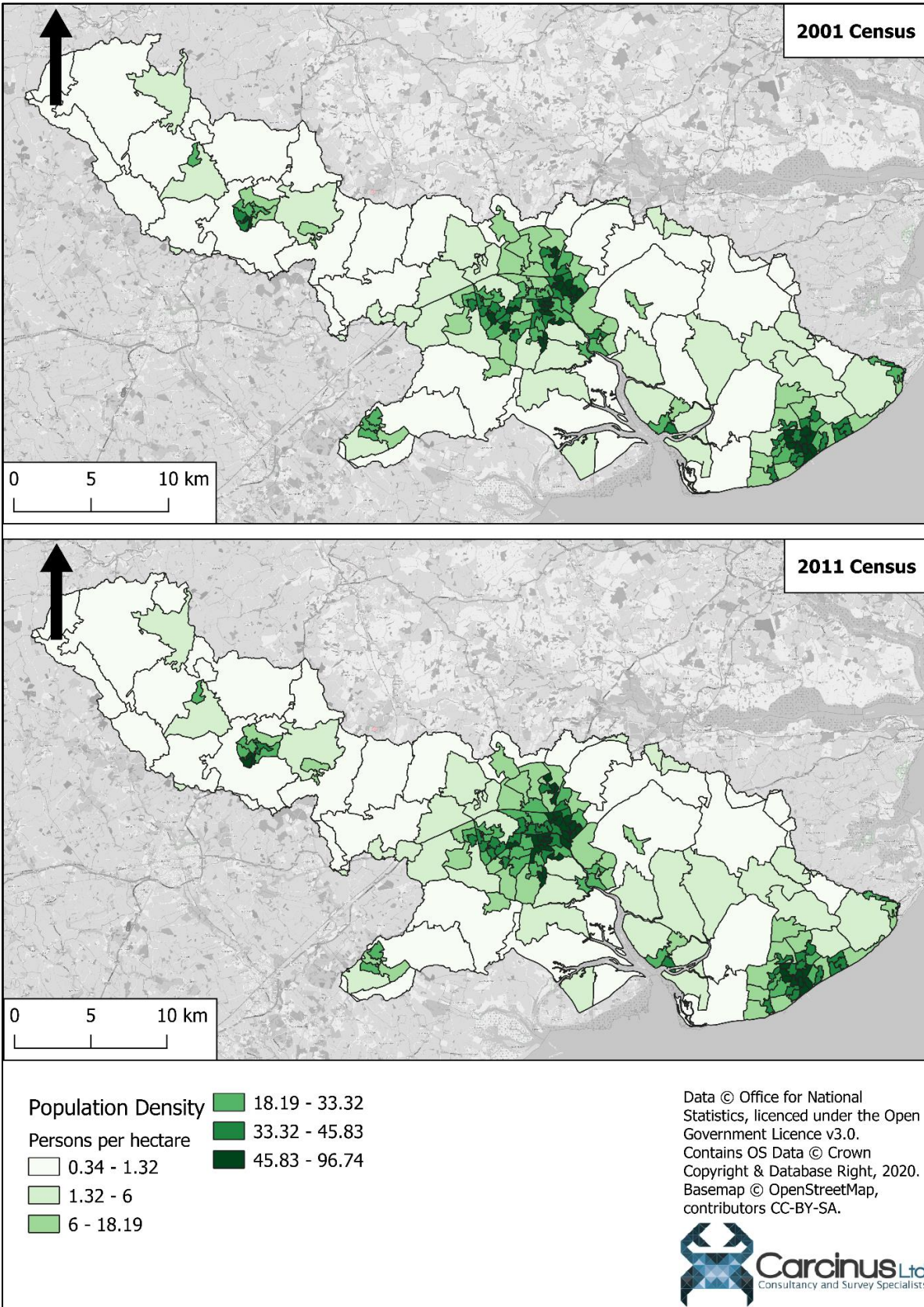


Figure 3.1 Human population density in 2001 and 2011 census Super Output Areas (lower layer) that intersect the Colne catchment.

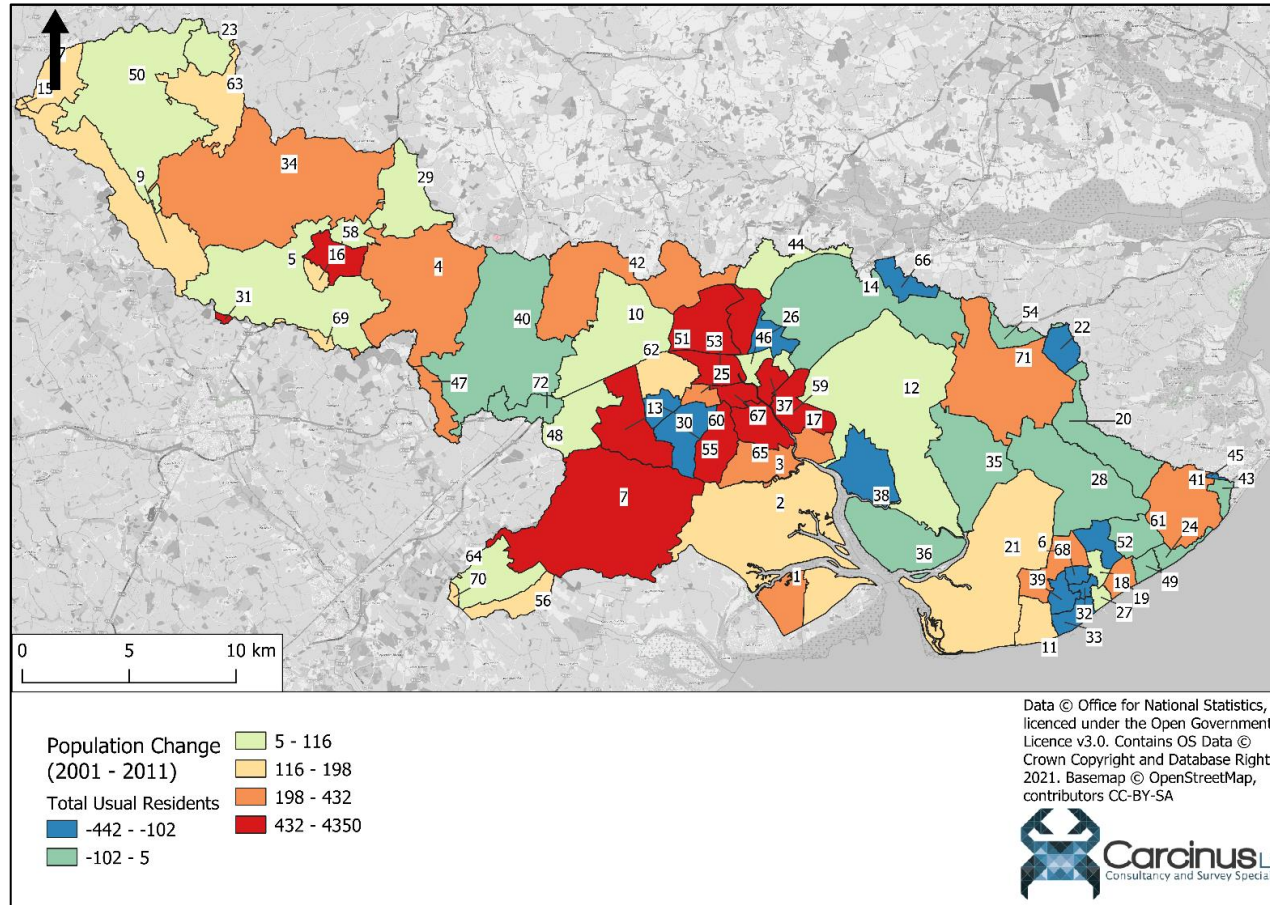


Figure 3.2 Population change between the 2001 and 2011 censuses for Wards and Electoral divisions (based on 2011 boundaries) that are within or partially within the Colne hydrological catchment (wards have been clipped to the boundary of the hydrological catchment). 2001 Census data have been transposed to 2011 wards using the UK Data Service's GeoConvert tool (UK Data Service, 2020) to facilitate comparison. Numbers within wards are identifiers that can be used in combination with Appendix I to provide more detail.



3.2 Sewage

Details of all consented discharges in the Colne catchment were taken from the most recent update to the EA's national permit database at the time of writing (November 2020). The locations of these discharges are shown in Figure 3.3. Specific information about continuous discharges is presented in Table 3.1.

The original sanitary survey identified a total of 28 continuous discharges within the Colne catchment (p44, Figure II.1; p46, Table II.1). The majority of the sewage discharges (in terms of volume) had outfalls upstream of the shellfishery, either farther up the main estuary or to watercourses draining upstream of the classification zones. The area was undergoing some upgrades to the WWTW at the time of the original sanitary survey, with Brightlingsea and Colchester Sewage Treatment Works (STWs) being fitted with UV disinfection March 2013. The consented discharge database queried for this review indicates that both new treatment works are now operational. At the time of the original sanitary survey, the most significant discharges in terms of the risk posed to the BMPA were the Brightlingsea, St Osyth and Jaywick STWs, due to their proximity to classification zones. Brightlingsea and St Osyth STWs are still active, although the consented DWF of Brightlingsea STW has decreased from 2726 m³/day to 2160 m³/day. Three discharges were identified during this review that were not included in the original sanitary survey (Table 3.1), although all are unlikely to have a significant influence on the BMPA, either due to the distance from the shellfishery (Clacton WRC) or the low volume of discharge (Little Bentley STW and Tendring Green Water Recycling Centre). Consultation with the LAs and EA did not indicate any further changes to the continuous discharges within the catchment.

Table 3.1 Details of all continuous discharges in the Colne catchment. Those discharges not listed in the original sanitary survey are highlighted in yellow.

ID	Sewage Works	NGR	Treatment	DWF (m ³ /day)
1	BIRCH WATER RECYCLING CENTRE	TL9390019300	TERTIARY BIOLOGICAL	300
2	BOXMILL LANE STW	TL8090031100	UNSPECIFIED	24
3	BRIGHTLINGSEA STW	TM0635017600	UV DISINFECTION	2160
4	CLACTON (HOLLAND HAVEN) WRC	TM2226016500	ACTIVATED SLUDGE	10546
5	COLCHESTER WATER RECYCLING CENTRE	TM0225023610	UV DISINFECTION	29284
6	COPFORD WATER RECYCLING CCENTRE	TL9330023400	CHEMICAL - PHOSPHATE STRIPPING	1650
7	CORNISH HALL END STW	TL6870036600	UNSPECIFIED	Unspecified
8	EARLS COLNE WATER RECYCLING CENTRE	TL8644029220	REEDBED	934

ID	Sewage Works	NGR	Treatment	DWF (m ³ /day)
9	EIGHT ASH GREEN STW	TL9300027150	BIOLOGICAL FILTRATION	650
10	FINGRINGHOE STW	TM040102108 0	BIOLOGICAL FILTRATION	367
11	GOSFIELD STW	TL7826028980	TERTIARY BIOLOGICAL	290
12	GREAT BROMLEY WRC	TM082802587 0	ACTIVATED SLUDGE	365
13	GREAT TEY STW	TL8910025500	BIOLOGICAL FILTRATION	142
14	GREENSTEAD GREEN STW	TL8263027600	BIOLOGICAL FILTRATION	48
15	GT.MAPLESTEAD STW	TL8100033650	BIOLOGICAL FILTRATION	Unspecified
16	HALSTEAD (LANGLEY) WRC	TL8368029670	CHEMICAL - PHOSPHATE STRIPPING	2900
17	HIGH STREET GREEN STW	TL7643034980	UNSPECIFIED	Unspecified
18	JAYWICK STW	TM137451218 8	BIOLOGICAL FILTRATION	Unspecified
19	LAYER DE-LA-HAYE STW	TL9872120511	CHEMICAL – PHOSPHATE STRIPPING	380
20	LITTLE BENTLEY STW	TM125202529 0	BIOLOGICAL FILTRATION	27
21	PEBMARSH WATER RECYCLING CENTRE	TL8537032890	BIOLOGICAL FILTRATION	120
22	RIDGEWELL STW	TL7545039530	BIOLOGICAL FILTRATION	102
23	SIBLE HEDINGHAM STW	TL7934032970	TERTIARY BIOLOGICAL	1700
24	ST OSYTH STW	TM103801326 0	BIOLOGICAL FILTRATION	1600
25	ST OSYTH STW	TM104201323 0	BIOLOGICAL FILTRATION	1600
26	STAMBOURNE STW	TL7235038740	BIOLOGICAL FILTRATION	70
27	TENDRING GREEN WATER RECYCLING CENT	TM142872586 7	PACKAGE TREATMENT PLANT	9
28	THORRINGTON WATER RECYCLING CENTRE	TM079602053 0	ACTIVATED SLUDGE	2400
29	TOPPESFIELD STW	TL7406036540	BIOLOGICAL FILTRATION	80

ID	Sewage Works	NGR	Treatment	DWF (m³/day)
30	WEST BERGHOLT STW	TL9596026570	BIOLOGICAL FILTRATION	1430

In addition to the continuous discharges, the original sanitary survey identified a total of 37 intermittent discharges within ~ 2km of the estuary. Intermittent discharges comprise Combined Storm Overflows (CSOs), storm tank overflows and pumping station emergency overflows, and can contribute significant levels of bacteriological contamination due to the frequent lack of significant treatment. Only 2 of the intermittent discharges active at the time of the original sanitary are no longer active, both of which are in the town of Brightlingsea. No additional intermittent discharges within a similar distance of the estuary were identified. No spill event monitoring was available to either the authors of the original sanitary survey or this review. However, as patterns of rainfall have remained similar (see Section 5), the frequencies of spill events are predicted to have remained similar. As such, the impact on bacterial loading as a result of spills is not expected to have increased, particularly as consultation with the LA and EA did not indicate any upgrades to the wastewater treatment network.

Finally, the original sanitary survey identified eight private discharges with consented discharges of > 10 m³/day in the vicinity of the estuary, although concluded that the overall impact of these was relatively low. Whilst the actual identities and locations of private discharges have changed since the original sanitary survey, the at-risk areas and overall level of contamination is similar.

The most at-risk areas to contamination from this source of pollution remain those CZs closest to the head of the estuary, given the probability of a higher level of background contamination, and those CZs near to Brightlingsea. Areas of individual CZs closest to shore are likely to receive the greatest faecal loading, although as the likely extent of this loading is not expected to have increased, the recommendations made in the original sanitary survey to capture this source of pollution remain valid.

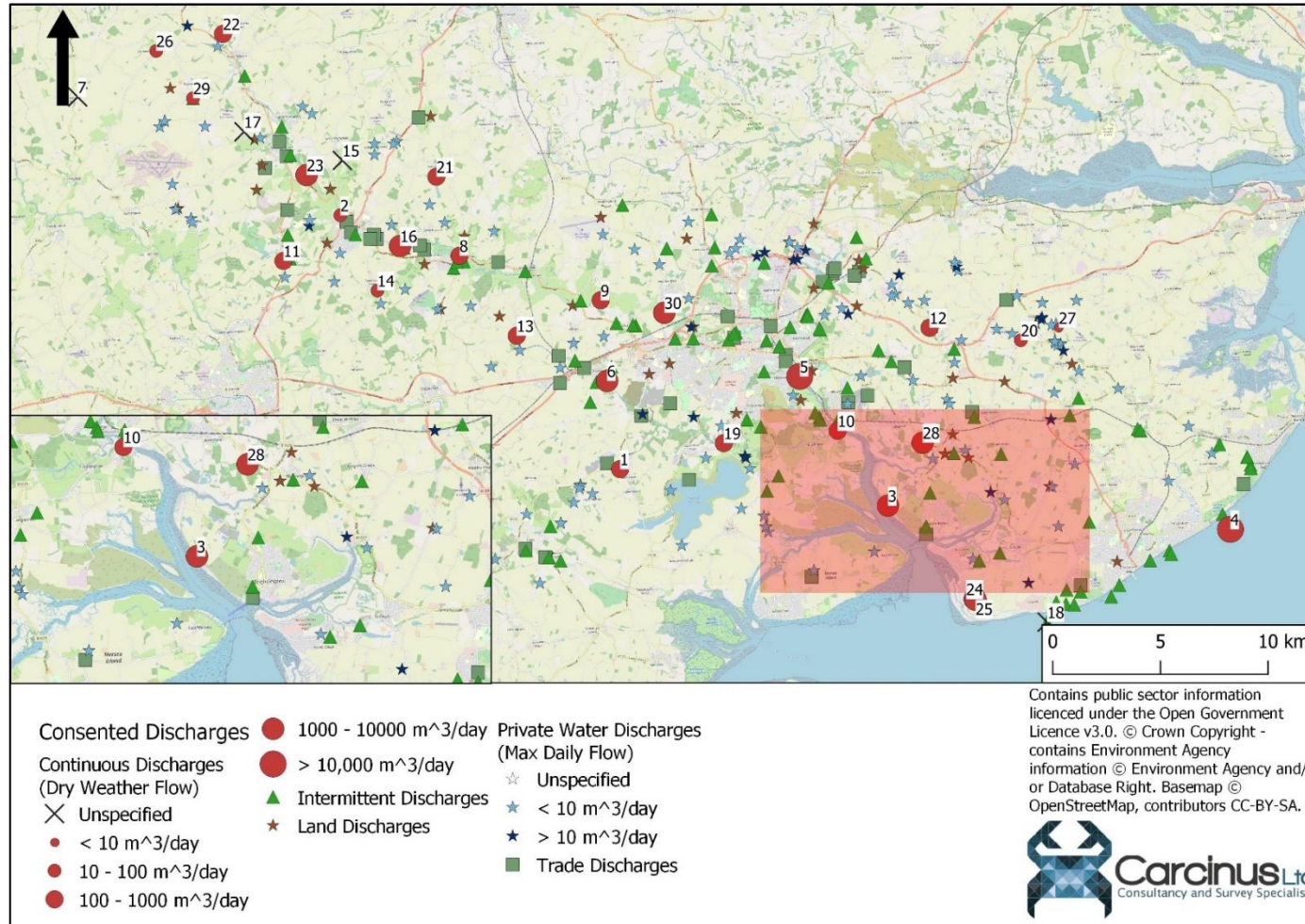


Figure 3.3 Locations of all consented discharges in the Colne catchment. Labels refer to continuous discharges, details of which can be found in Table 3.1.



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3.3 Agricultural Sources

The original sanitary survey provides livestock population data based on the 2010 agricultural census. Updated data at the same spatial scale were not freely available at to the authors of this review, however livestock data for the Local Authority Districts that fall within or partially within the Blackwater catchment were available for 2013 and 2016 (DEFRA, 2018). As only a small proportion of some of the districts falls within the catchment, the livestock data have been adjusted to reflect the % of each district that falls within the catchment. This assumes that livestock are distributed uniformly throughout the district and, therefore, some inaccuracies may be present. Aggregate adjusted livestock population change data are shown in Figure 3.4 and Table 3.2.

Overall, livestock populations increased by 31.48% between 2013 and 2016, though within this figure are significant differences between both districts and species. The Colchester and Tendring districts saw increases in total population of 66.73% and 77.95% respectively, whereas the Braintree district saw a decrease of 23.34%. Overall, poultry showed the largest increase (35.25%) and remains the dominant species in terms of population size, whereas the population of pigs decreased by 26.71%. The average livestock density in the catchment is 9.1 animals per hectare.

The principal route of contamination of coastal waters by livestock is surface run-off carrying faecal matter to coastal waters. Based on 2018 land cover data, only a relatively small proportion of the catchment is covered by pasture (Figure 3.4), although there are some areas, particularly around Brightlingsea and south of Rowhedge, where pasture sits directly adjacent to the estuary. Whilst the overall effect of this form of contamination is likely to be relatively minor, point source impacts may occur following high rainfall events, particularly following a prolonged dry period. These pasture locations have not changed since the original sanitary survey. The livestock population within the catchment will also vary throughout the year, with highest numbers occurring during Spring and lowest numbers when animals are sent to market in Autumn and winter.

Despite the fact that livestock populations have increased since the original sanitary survey, livestock densities are still relatively low and the probable routes of contamination remain unchanged. As such, the recommendations made in the original sanitary survey to capture this source of pollution remain valid.

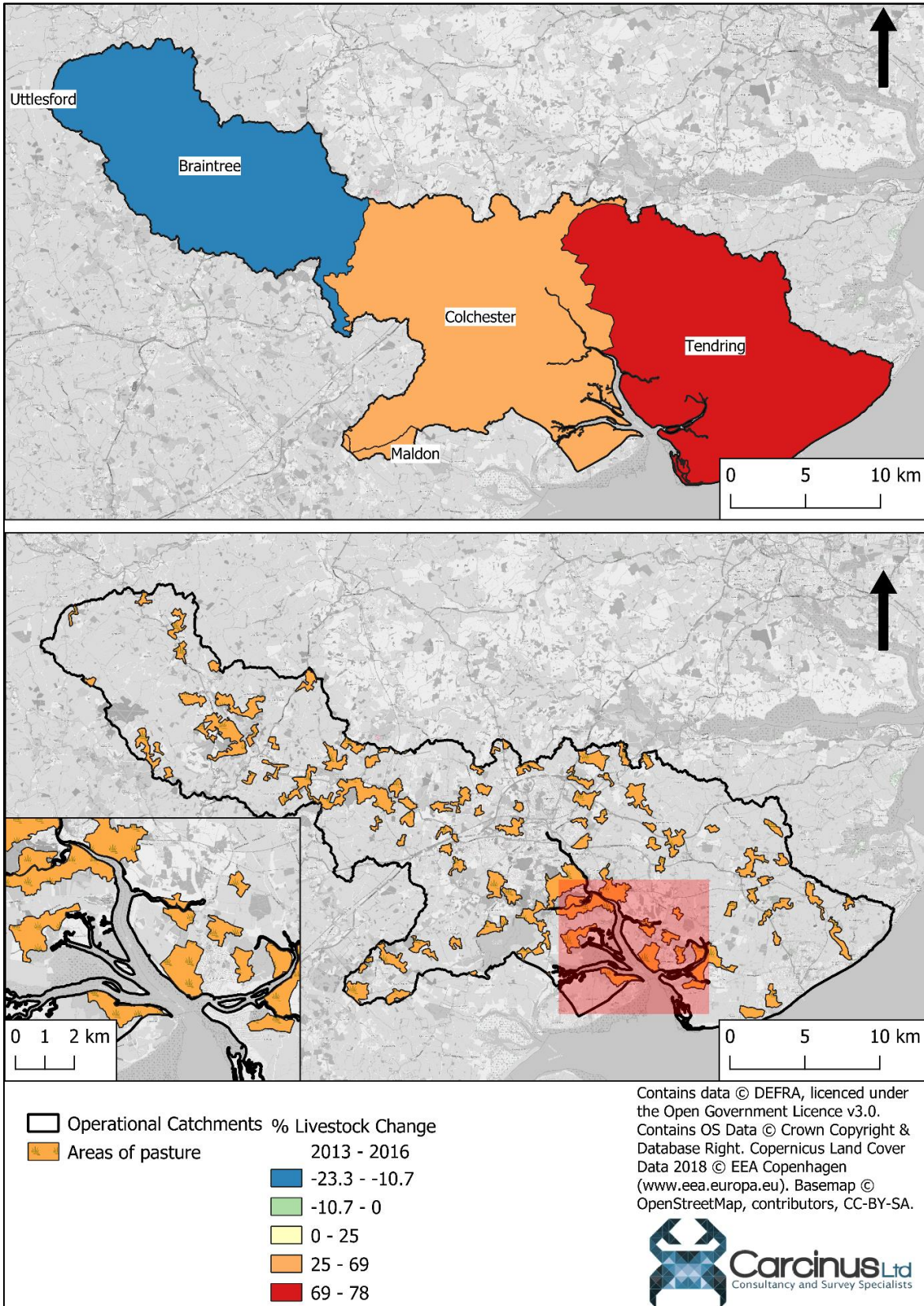


Figure 3.4 Livestock population change between 2013 and 2016 for Local Authority Districts and areas of pasture within the Colne Catchment.

Table 3.2 Livestock data for the Colne catchment between 2013 and 2016.

Local Authority District	Total LA Area (Ha)	Area LA within Catchment (Ha)	Proportion LA within Catchment	Proportion of Catchment Area	Population (Adjusted)											
					Cattle			Sheep			Pigs			Poultry		
					2013	2016	% Diff	2013	2016	% Diff	2013	2016	% Diff	2013	2016	% Diff
Braintree	61,170.80	18,525.38	30.28%	28.76%	1,648	1,439	-12.70%	2,250	2,078	-7.66%	3,489	2,758	-20.96%	145,497	110,925	-23.76%
Colchester	34,677.32	23,153.02	66.77%	35.94%	2,060	1,933	-6.18%	6,929	6,546	-5.54%	3,619	1,775	-50.95%	101,284	179,642	77.36%
Maldon	42,804.92	394.57	0.92%	0.61%	40	37	-6.98%	66	62	-6.77%	30	80	171.90%	6,168	8,221	33.29%
Tendring	36,617.03	22,320.69	60.96%	34.65%	2,106	2,506	18.96%	3,023	2,752	-8.96%	3,636	3,283	-9.72%	84,978	158,278	86.26%

Local Authority District	Total LA Area (Ha)	Area LA within Catchment (Ha)	Proportion LA within Catchment	Proportion of Catchment Area	Population (Adjusted)											
					Cattle			Sheep			Pigs			Poultry		
					2013	2016	% Diff	2013	2016	% Diff	2013	2016	% Diff	2013	2016	% Diff
Utterston	64,118.29	20.44	0.03%	0.03%	1	1	-4.09%	2	2	-1.36%	2	2	-3.56%	45	41	-8.01%
TOTAL	239,388.35	64,414.10	26.91%	100.00%	5,856	5,916	1.03%	12,270	11,439	-6.78%	10,776	7,898	-26.71%	337,972	457,107	35.25%



3.4 Wildlife

The Colne estuary falls within a variety of statutory and non-statutory designated area for nature conservation, reflecting the variety of habitats and wildlife that the estuary supports. These include Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and National Nature Reserves (NNRs). These designations are in part due to a significant number of overwintering waterbirds. The original sanitary survey reports that in the five winters to 2010/2011, an average of 22,562 waterbirds utilised the Colne estuary (Holt *et al.*, 2011). In the five winters to 2018/2019, this had increased to 23,313 birds, an increase of 3.3%. Additionally, the Blackwater estuary and Dengie flats to the south are home to a further internationally significant population of waterbirds.

Wading birds forage for food directly on intertidal shellfish beds, which leads to direct faecal contamination of that area of shellfish bed. However, the precise distribution of the birds will vary both throughout the winter and year-on-year, as it is driven by the distributions of their prey. This makes it challenging to accurately define an RMP to reliably capture this source of pollution.

In addition to the populations of waterbirds, significant numbers of grey and harbour seals use the area around the BMPA. The most recent population estimate puts the number of grey seals at 3,243 and the number of harbour seals at 932 (Cox *et al.*, 2020). This number has increased by > 180% since 2013. However, these species show wide foraging ranges and as such any contamination is likely to be spatially and temporally variable, and as such will have limited impact on the overall level of bacteriological contamination experienced by the BMPA.

Despite the fact that bird and marine mammal populations have increased significantly since the original sanitary survey was conducted, it remains challenging to accurately account for this source of pollution in any updated sampling plan. No other wildlife species are likely to represent a significant source of contamination and as such the recommendations for RMP location made in the original sanitary survey are still valid.

3.5 Boats and Marinas

The discharge of sewage from boats is a potential significant source of bacterial contamination of shellfisheries within the North Kent Coast BMPA. Boating activities within the area have been derived through analysis of satellite imagery and various internet sources and compared to that described in the original sanitary survey. Their geographical distributions are presented in Figure 3.5.

There are several water-sports, sailing and yacht clubs distributed throughout the estuary, however most of the vessels operating from these locations will be too small to have on-board facilities and therefore are very unlikely to make any overboard discharges. The original sanitary survey reported that Brightlingsea Harbour had up to 500 berths available for larger recreational vessels. No updated statistics are available, but it is anticipated the

number has remained similar. Vessels large enough to contain onboard toilets are liable to make occasional overboard discharges, particularly when transiting through the main navigational routes of the estuary or when moored overnight. Peak activity levels are likely to remain in the summer months, and the associated risk of contamination is therefore also highest at these times.

There is some commercial shipping activity within the Colne, several companies operating an aggregates transport industry in the Colne. In addition, the waters around the BMPA are home to a fishing fleet of about 35 vessels, most < 10 m total length (UK Government, 2020). There have been no changes to the legislation governing overboard discharges from vessels, with restrictions placed on commercial vessels against overboard discharges within three nautical miles of land and guidance given to pleasure craft users to follow the same advice (RYA, 2020).

The main areas at risk of contamination from overboard discharges have not changed significantly, and consultation with the LA did not indicate a significant increase in the extent of shipping activity. The original sanitary survey was not able to make concrete recommendations about RMP locations to capture this source of pollution due to the lack of specific data. The same is true for this review, and as such this source of contamination does not carry any additional weighting for consideration in any updated sampling plan.



Figure 3.5 Locations of moorings, marinas and other boating activities near the Colne BMPA.

3.6 Other Sources of Contamination

Urban fabric within the catchment remains centred around the city of Colchester, at the head of the Colne estuary. There are some smaller towns further away from the estuary, such as Halstead and Tiptree. Settlements near to waterbodies represent a potential source of diffuse pollution via utility misconnections and dog fouling. The geographical extent of urban settlements within the catchment have not increased significantly since the original sanitary survey (despite new housing developments), and therefore the risk that these settlements pose remains broadly similar.

Several coastal paths run along the shoreline of the estuary, and whilst it is unlikely to represent a significant source of pollution, some impact of dog fouling may be present in the nearshore zone. There is no evidence that the use of these paths or the extent of the pollution has changed since the original sanitary survey.

No evidence of significant changes to these sources of contamination exists. Therefore, it can be assumed that the RMP location recommendations made in the original sanitary survey will still capture the influence of these sources.

4 Hydrodynamics/Water Circulation

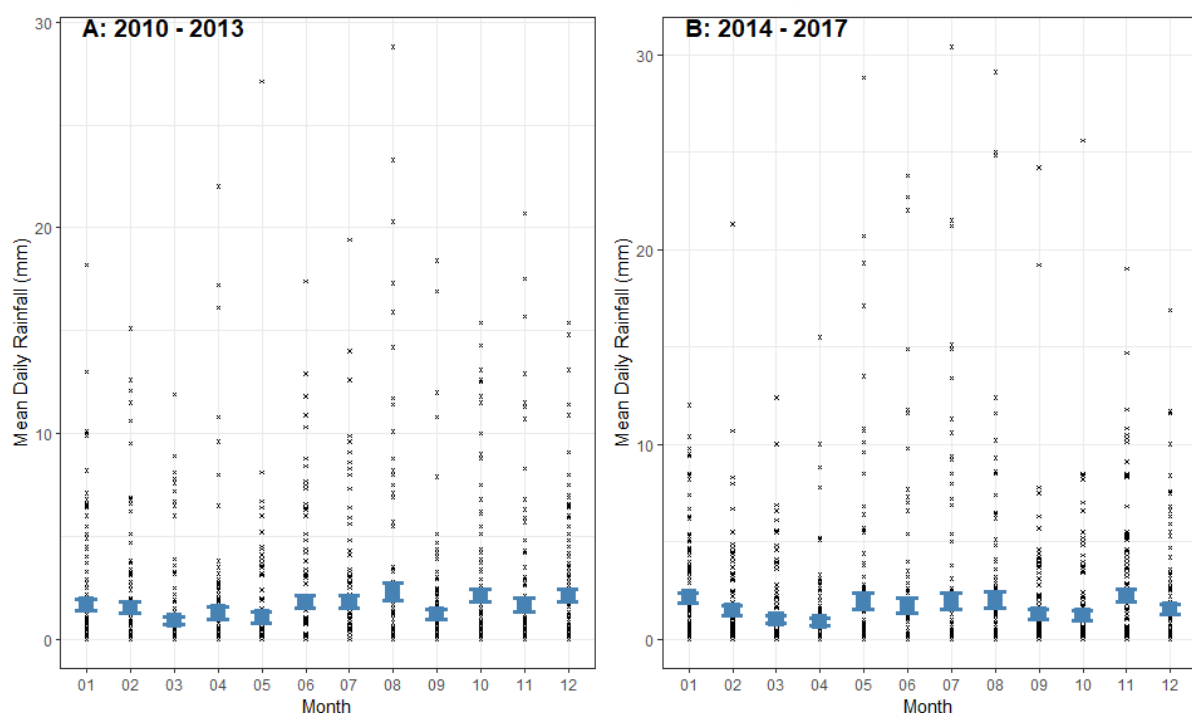
The bathymetry presented in the original sanitary survey (p63, Figure IX.1) is based on data gathered in the 1980's. It is unlikely that significant changes to the bathymetry have occurred, and the hydrographic description contained in the original sanitary survey likely remains valid. Tidal currents are likely to remain the dominating force of water circulation in the estuary, and will generally carry water north up the River Colne on flooding tides before ebbing south. Shoreline sources will therefore impact both the up- and downstream areas of their locations.

Given that the hydrodynamic circulation in the BMPA is considered unlikely to have changed significantly since the original sanitary survey, the recommendations made in that document to capture circulating pollution remain valid.

5 Rainfall

Rainfall data for the Colne at Lexden weather station (NGR: TL962261) from 2010 – 2013 (pre sanitary survey) and 2014 – 2017 (post sanitary survey) were used to determine whether any changes in rainfall patterns had occurred since the original sanitary survey. Figure 5.1 shows the average daily rainfall totals for each month at the Langford monitoring station. Whilst rainfall has decreased slightly since the publication of the original sanitary survey, two sample t-tests indicated that there was no significant difference ($p = 0.391$) between the mean daily rainfall per month between the 2010 – 2013 and 2014 – 2017 periods. Table 5.1 summarises the rainfall at the Lexden monitoring station for the two periods.

Rainfall leads to increased faecal loading through two factors; elevated levels of surface runoff and spill events from intermittent discharges. However, as the rainfall patterns have remained consistent across the two time periods, significantly increased bacterial loading due to these factors are unlikely and as such RMP recommendations made in the original sanitary survey to capture the influence of runoff and spill events remain valid.



Catchment Daily Rainfall from the UK National River Flow Archive
Station 37004 - Colne at Lexden (NGR: TL962261)

Figure 5.1 Mean daily rainfall (mm) per month for the Colne at Lexden monitoring station (NGR: TL962261) for the period (A) 2010 – 2013 and (B) 2014 – 2017.

Table 5.1 Summary statistics for rainfall before and after the original sanitary survey.

Period	Mean Annual Rainfall (mm)	% Dry Days	% Days >10 mm	% Days > 20 mm
2010 - 2013	595.23	46.00	22.31	13.83
2014 - 2017	590.88	41.96	22.31	14.44

6 Microbial Monitoring Results

6.1 Summary Statistics and geographical variation

There is a total of 10 RMPs that have been sampled within the Colne BMPA since the original sanitary survey. Seven of these are for Pacific oyster (*Crassostrea gigas*) and one each is for mussel (*Mytilus edulis*), cockle (*Cerastoderma edule*) and *Tapes* spp. Only one RMP (Pyefleet Spit (B012F)) was sampled prior to the original sanitary survey. Sampling at a further 7 RMPs began in the first half of 2013, immediately following the publication of the original sanitary survey. Cockle sampling at Rat Island (B12AO) began in July 2014 and sampling at Brightlingsea Outfall (B12AQ) began in December 2018. Sampling at the two RMPs in Geedon Creek (Rat Island (B12AJ & B12AO)) was suspended in September 2020, due to access restrictions. Summary statistics for all RMPs are presented in Table 6.1, and the

geometric mean results of Official Control monitoring for all RMPs sampled since the original sanitary survey are presented in Figure 6.1. All data have been taken directly from the Cefas datahub¹ and have been taken at face value.

Table 6.1 Summary statistics of *E. coli* (MPN/100 g) from RMPs sampled from 2003 onwards (data cut off at December 2020).

Site (Species)	NGR	Species	No.	First Sample	Last Sample	Geometric Mean	<i>E. coli</i> MPN/100 g				
							Min Value	Max Value	% > 230	% > 4,600	% > 46,000
Pyefleet Spit (C. gi) - B012F	TM06201600	Pacific Oyster	102	23/01/2003	10/07/2018	177.76	18	1700	24.51	0	0
South Creek (C. gi) - B12AC	TM09741606	Pacific Oyster	82	09/04/2013	16/12/2020	715.80	18	13000	47.56	2.44	0
Flag Creek (C. gi) - B12AD	TM10251653	Pacific Oyster	82	09/04/2013	16/12/2020	581.57	18	7900	51.22	2.44	0
Brightlingsea Outfall (C. gi) - B12AG	TM06251751	Pacific Oyster	83	01/08/2013	25/11/2020	565.71	18	7900	46.99	2.41	0
Point Clear (C. gi) - B12AI	TM07991555	Pacific Oyster	83	04/06/2013	25/11/2020	282.34	18	2200	26.51	0	0
Rat Island (C. gi) - B12AJ	TM05431734	Pacific Oyster	77	01/08/2013	15/09/2020	1074.30	18	13000	53.25	5.19	0
Pyefleet Channel (C. gi) - B12AK	TM02661604	Pacific Oyster	85	02/07/2013	25/11/2020	740.35	18	16000	23.53	4.71	0
Pyefleet Channel (M. sp) - B12AM	TM02661604	Mussel	40	01/08/2013	25/11/2020	639.03	18	5400	35	7.50	0
Rat Island (C. ed) - B12AO	TM05431734	Cockle	37	14/07/2014	15/09/2020	2673.24	18	35000	64.86	10.81	0

Site (Species)	NGR	Species	No.	First Sample	Last Sample	Geometric Mean	<i>E. coli</i> MPN/100 g				
							Min Value	Max Value	% > 230	% > 4,600	% > 46,000
Brightlingsea Outfall (T. sp) - B12AQ	TM06251751	<i>Tapes</i> spp.	21	04/12/2018	25/11/2020	1190.71	20	3300	61.90	0	0

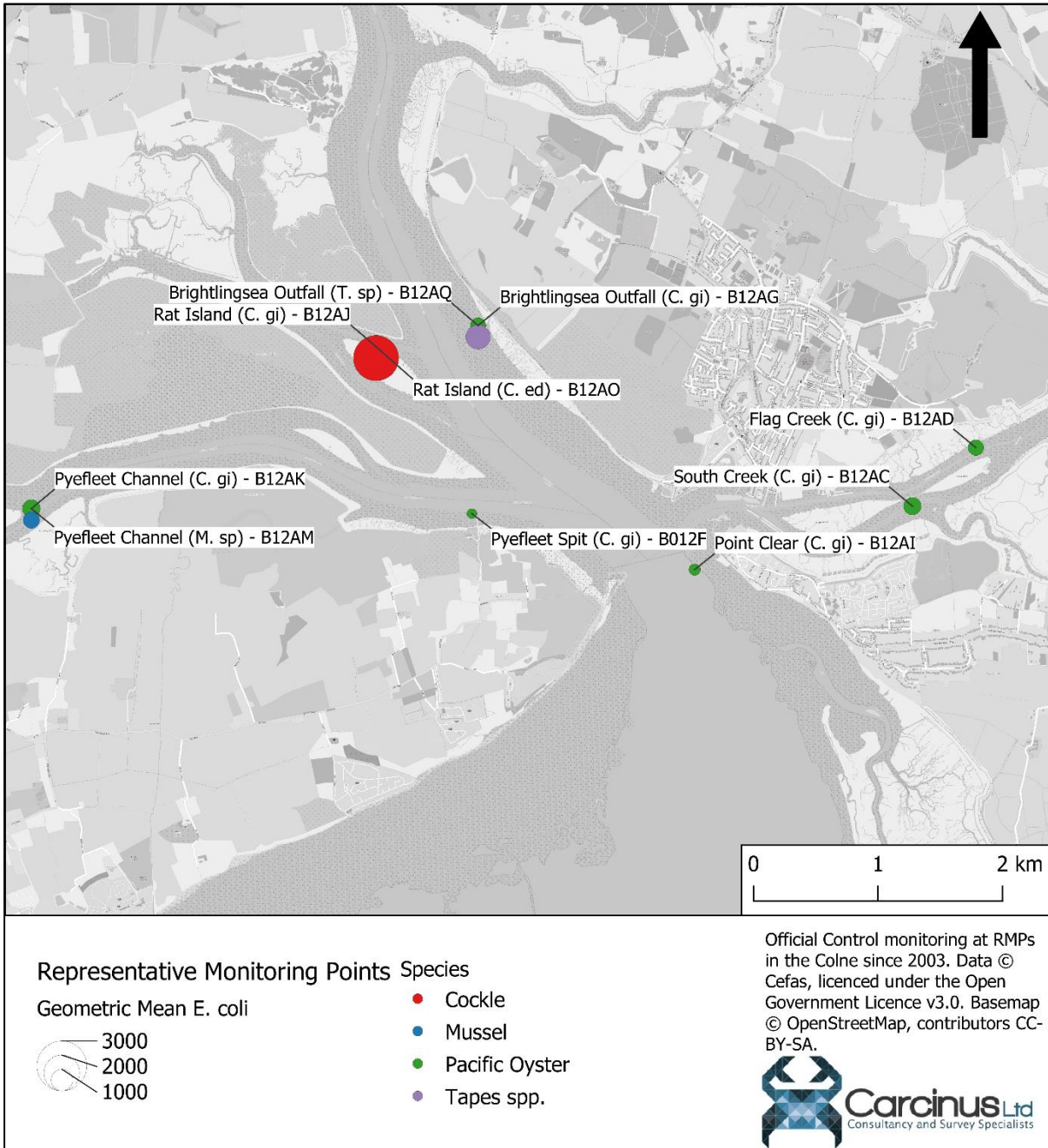


Figure 6.1 Geometric mean *E. coli* results from Official Control monitoring at bivalve RMPs within the Colne BMPA.

Mean *E. coli* levels are generally low across all RMPs, with every RMP having a mean value of less than the middle threshold of 4,600 MPN/100 g (Table 6.1), and only three RMPs returning a mean result of > 1000 MPN/100 g. No RMPs have returned results greater than 46,000 MPN/100 g. There appears to be a general trend of decreasing *E. coli* levels as you move down the estuary into more saltwater-dominated areas. The highest *E. coli* levels were found near to Rat Island within Geedon Creek, though the CZ to which these RMPs refer are currently declassified. It is not clear what may have caused this pattern as no

consented discharges are nearby. There does not appear to be clear differences between species, although in the case of Brightlingsea Outfall and Rat Island, results from Pacific oyster samples (B12AG & B12AJ respectively) were lower than the other species monitored there (B12AQ & B12AO respectively).

Figure 6.2 and Figure 6.3 present boxplots of *E. coli* monitoring results for RMPs sampled for Pacific oyster (Figure 6.2), cockle, mussel and *Tapes* spp. (all Figure 6.3). One-way analysis of variance (ANOVA) tests indicated that results from Rat Island (B12AJ) were significantly greater than Point Clear (B12AI) ($p = 0.029$) and Pyefleet Spit (B012F) ($p = 0.0039$). It is not clear from the contamination sources identified through this review what has caused elevated results at Rat Island (B12AJ). No other significant differences between Pacific oyster RMPs were identified. The level of variation (interquartile range) of Pacific oyster RMPs was broadly similar (Figure 6.2).

No ANOVA tests were performed on the RMPs for other species as only one RMP existed for each one, and it is not appropriate to compare across species given the different rates of *E. coli* uptake. Results from the cockle RMP indicated greater variation at this location (Figure 6.3)

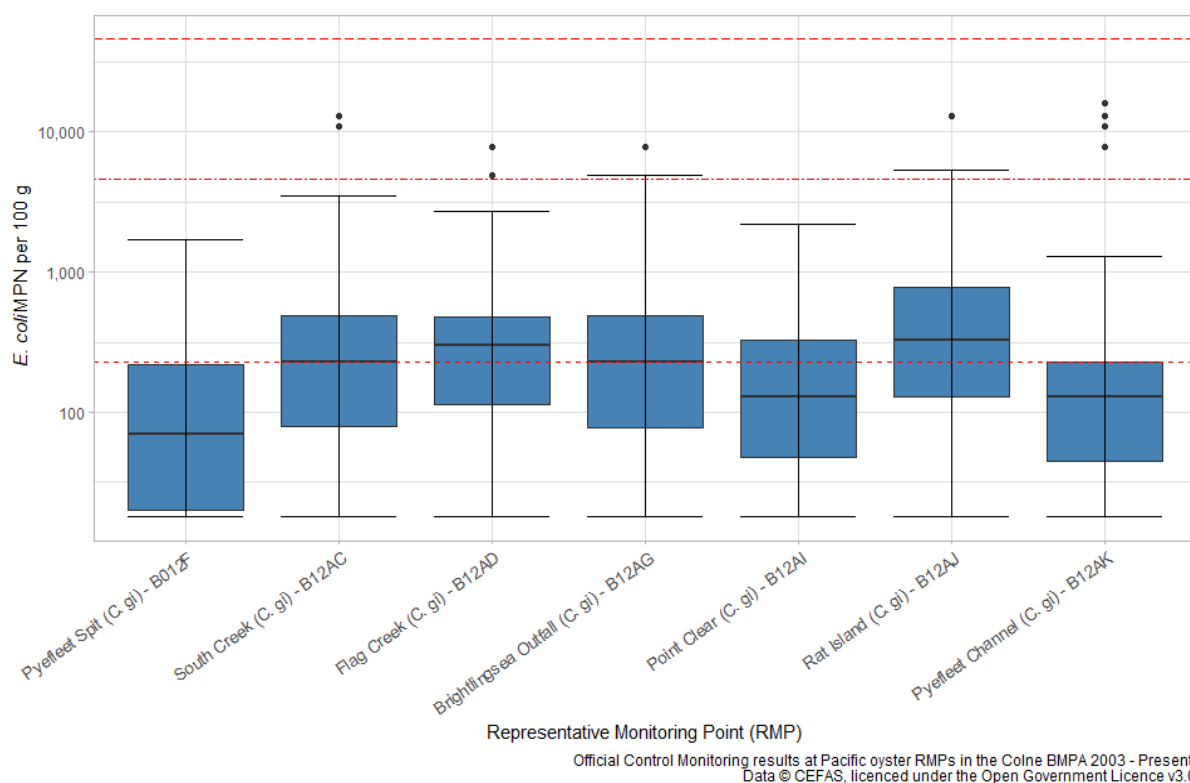
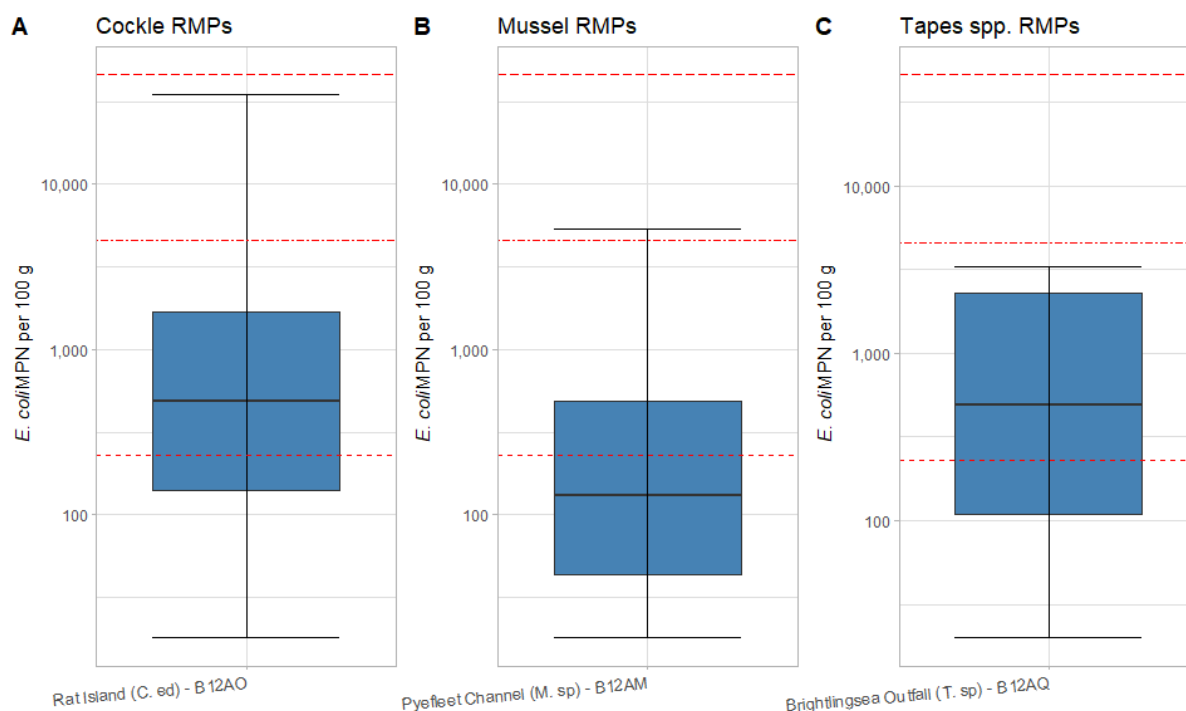


Figure 6.2 Boxplots of *E. coli* levels at Pacific oyster RMPs sampled within the Colne BMPA 2003-Present. Central line indicates median value, box indicates lower – upper quartile range and whisker indicates minimum/maximum value excluding outliers (points $>1.5 \times$ interquartile range).



Official Control Monitoring results at RMPs in the Colne BMPA 2013 - Present
Data © CEFAS, licenced under the Open Government Licence v3.0

Figure 6.3 Boxplots of *E. coli* levels at (A) cockle, (B) mussel and (C) *Tapes* spp. RMPs sampled within the Colne BMPA 2013-Present. Central line indicates median value, box indicates lower – upper quartile range and whisker indicates minimum/maximum value excluding outliers (points $>1.5 \times$ interquartile range).

6.2 Overall temporal pattern in results

The overall temporal pattern in shellfish flesh monitoring results for Pacific oyster RMPs is shown in Figure 6.4. Figure 6.5 presents the overall temporal pattern for the other three species sampled within the BMPA.

The loess models fitted to the *E. coli* monitoring results from Pacific oyster RMPs indicate that *E. coli* levels have been broadly stable, remaining around the lower threshold of 230 MPN/100 g (Figure 6.4). In recent years, most of the RMPs show a trend of increasing *E. coli* results. There is no clear separation of the trend lines with respect to the RMP's geographical location.

The trend of *E. coli* results at Rat Island (B12AO) shows a gradual decline, from around the middle threshold of 4,600 MPN/100 g, to below the lower threshold of 230 MPN/100 g (Figure 6.5 A). Results from Pyefleet Channel (B12AM) decreased between 2013 and 2019, but have shown a slight increase in the past 12-18 months (Figure 6.5 B). Since monitoring began in August 2018, *E. coli* results from Brightlingsea Outfall (B12AQ) have shown a gradual increase. No definitive evidence of the cause of any trend for either species is available, although as *E. coli* levels are not reaching dangerous levels (i.e. $\sim 46,000$ MPN/100 g), no specific investigation is warranted at this point in time.

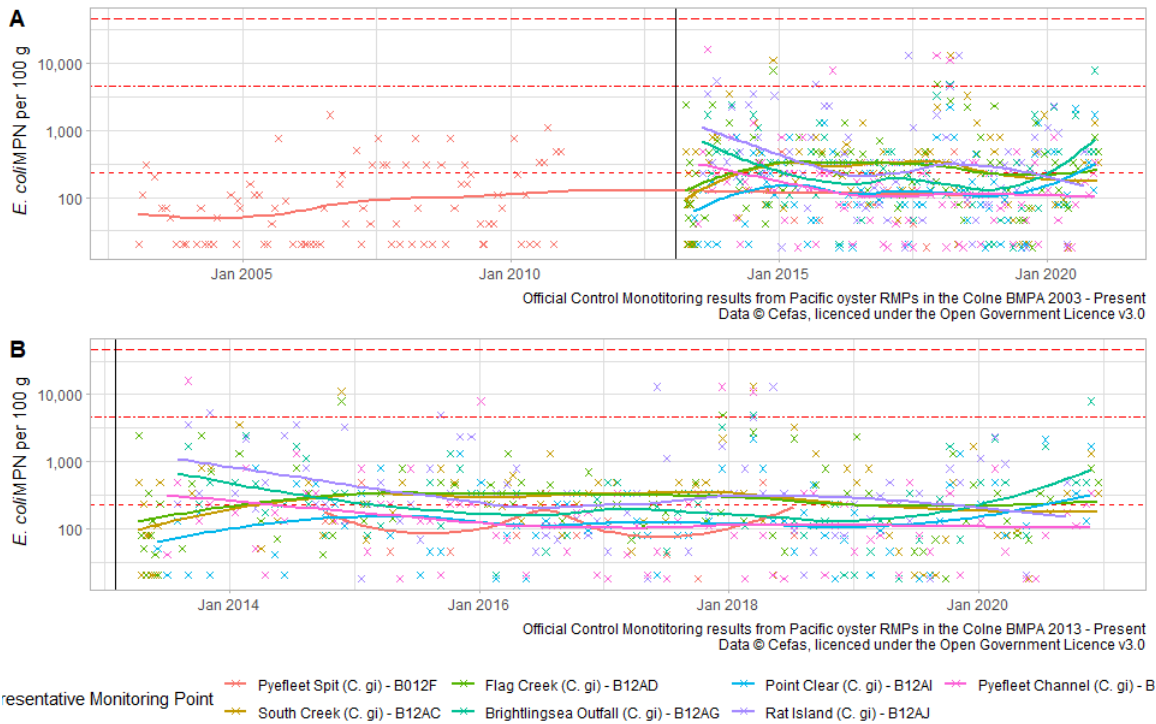


Figure 6.4 Timeseries of *E. coli* levels at Pacific oyster RMPs sampled within the Colne BMPA (A) 2003 – Present and (B) 2013 - Present. Scatter plots are overlaid with loess model fitted to data.

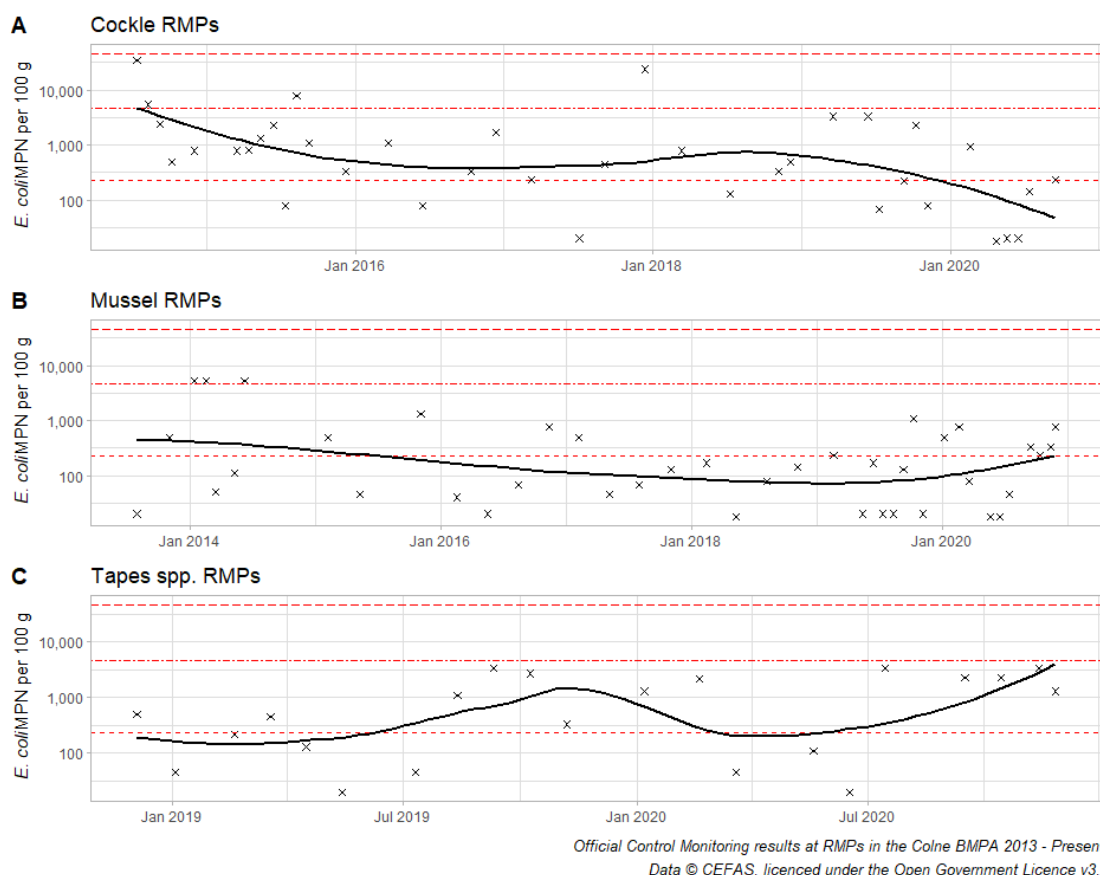


Figure 6.5 Timeseries of *E. coli* levels at (A) cockle, (B) mussel and (C) *Tapes* spp. RMPs sampled within the Colne BMPA 2013-Present. Scatter plots are overlaid with loess model fitted to data.

6.3 Seasonal patterns of results

The seasonal patterns of *E. coli* levels at the various RMPs within the Colne BMPA were investigated and are presented in Figure 6.6 (Pacific oyster) and Figure 6.7 (cockle, mussel and *Tapes* spp.). The data for each year were averaged into the four seasons, with Winter comprising data from January – March, Spring from April – June, Summer from July – September and Autumn from October – December. Two-way ANOVA testing was used to look for significant differences in the data, using both season and RMP as independent factors (i.e. pooling the database across RMP and season respectively), as well as the interaction between them (i.e. exploring seasonal differences within a given RMP). Significance has been taken at the 0.05 level.

Despite some apparent differences in monitoring results per season (i.e. at South Creek (B12AC) (Figure 6.6)), two-way ANOVA tests did not indicate any significant differences in seasonal levels of *E. coli* when data were pooled or within RMP for any of the four sampled species ($p > 0.5$), indicating that seasonal classifications are not appropriate for any of the active CZs.

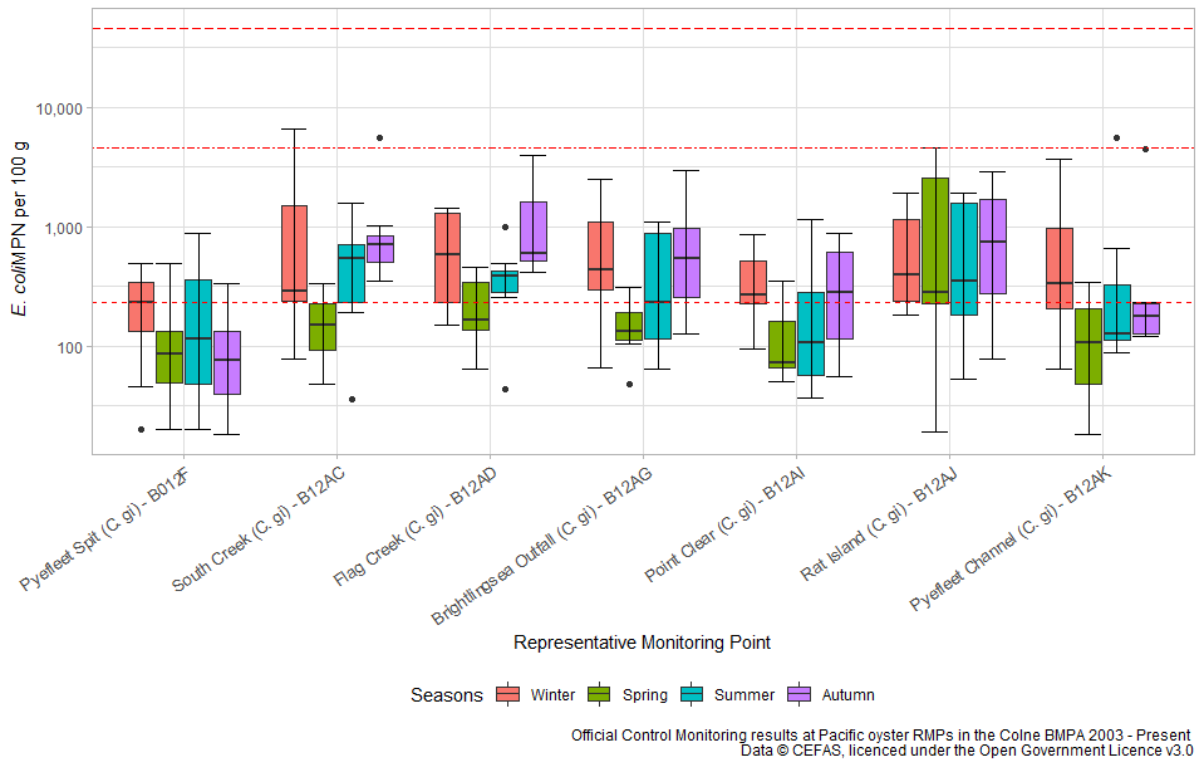


Figure 6.6 Boxplots of *E. coli* levels per season at Pacific oyster RMPs sampled within the Colne BMAP 2003 - present.

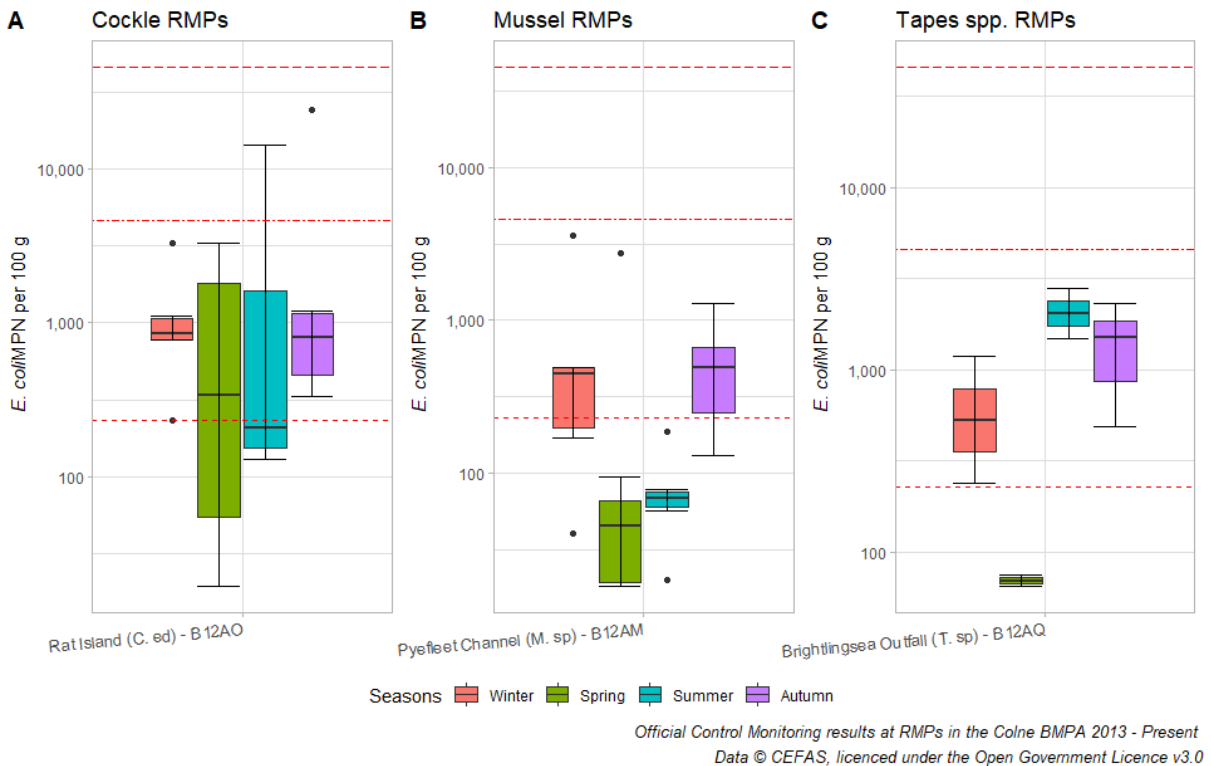


Figure 6.7 Boxplots of *E. coli* levels per season at (A) cockle, (B) mussel and (C) *Tapes* spp. RMPs sampled within the Colne BMAP 2013-Present.

7 Conclusion and overall assessment

The vast majority of the estuary is currently classified for shellfish harvesting, and there is a total of 13 CZs in the estuary, 5 for Pacific oyster, 3 each for native oyster and hard clams, and 1 each for cockles and *Tapes* spp. *Geedon Creek* was classified for cockle and Pacific oyster harvesting until October 2020, when it was declassified due to access restrictions. The dominant fishery by weight is the Pacific oyster fishery, followed by native oyster and other species.

The total population in Electoral Wards contained within or partially within the Colne catchment increased by 6.14% between the 2001 and 2011 censuses (the most recent for which data are available). This population increase has been fairly consistent across the catchment, with two thirds of wards showing a population increase. However, population density across the catchment remains low, at 14.8 persons per hectare. Consultation with the Local Authority did not indicate that any significant housing developments have occurred since the original sanitary survey was conducted, although any increase in population without upgrades to the wastewater treatment network would result in an increase in faecal loading to the estuary. Tourism is a key part of the economy in the region, and population numbers increase significantly during summer months which will further increase the load on the sewerage network.

Consultation with both the LA and EA did not indicate any significant upgrades to the wastewater treatment network within the Colne. Two of the intermittent discharges near to the estuary identified in the original sanitary survey to be most likely to contribute contamination are no longer active. No spill event monitoring data has been available for comparison. It is assumed that the increase in loading caused by increasing population has been captured in the overheads of the consented discharge volumes. As such, the loading experienced by the estuary is not predicted to have changed significantly.

The number of livestock living in Local Authority Districts wholly or partially contained within the Blackwater catchment increased by 31.48% between 2013 and 2016 (the most recent for which data are available), though within this are significant differences both within LAD and species. Livestock densities have remained low relative to other areas of the country, at 9.1 animals per hectare. Run off areas of pasture are located immediately adjacent to the estuary, particularly following significant rainfall events, may constitute a significant point source of bacteriological contamination. However, the overall risk from this source of contamination remains low.

The BMPA is situated within or near several internationally designated areas for wildlife conservation, including important populations of wading and overwintering birds. The 5-year average count of overwintering birds to 2018-2019 has increased 3.3% compared to the 5 winters to 2010. However, the precise distributions of these species are directly related to the distributions of their prey, and as such it is difficult to define the areas most at risk of pollution from avian faeces.

The Colne hosts a small but active commercial shipping operation, with aggregates moved around the wider Thames estuary to and from the estuary. In addition, a small fishing fleet of ~35 vessels utilise the waters around the estuary. No changes to permitted discharges from commercial or recreational vessels have occurred since the original sanitary survey. As such, occasional overboard discharges by recreational vessels may still occur, with the highest risk time of year during summer months.

A total of 10 RMPs have been sampled within the Colne BMPA since the original sanitary survey was published, of which only one was sampled prior. There appears to be a slight trend of decreasing *E. coli* levels as you move into more saltwater dominated areas, suggesting that most pollution arises from up-estuary sources. Relative to other BMPAs around the country, mean *E. coli* levels are low. Only three RMPs have mean values of >1,000 MPN/100 g. Given the spatial trend, a general approach of selecting RMPs at the up-estuary end of CZs should be taken, unless other point sources are more specific to that location.

No statistically significant seasonal variation in *E. coli* levels was found at any of the RMPs, both within a given RMP and between RMPs of a certain species. Seasonal classifications are therefore not appropriate for RMPs in this BMPA.

Based on the information available, there do not appear to have been any significant changes to the sources of contamination to this BMPA since the original sanitary survey was published. The authors of this review have not identified any knowledge gaps that would justify a full shoreline survey.

Having reviewed the recommendations of the 2021 report and compared with the findings of the 2013 sanitary survey review for the Colne Estuary, the FSA are content that the level of risk posed by the findings is low and there have been minimal changes to the BMPA to warrant changing the location of RMPs, therefore does not warrant a further review of the existing shoreline assessment.

8 Recommendations

8.1 Pacific oyster

The original sanitary survey recommended the classification of seven classification zones for Pacific oyster harvesting. *Geedon Creek* was declassified in October 2020, and it is not clear whether *Point Clear Bay* was ever awarded a classification for this species.

Recommendations for the remaining CZs are given below. A summary of the sampling plan is given in Table 8.1.

Brightlingsea Creek Inner

This CZ covers an area of 47.24 Ha in the upper region of the Brightlingsea Creek. It meets the *Brightlingsea Creek Outer CZ* at the south-western point of Cindery Island. The

boundaries of this CZ match the Hard Clam CZ of the same name. The original sanitary survey initially recommended an RMP located in the upstream section of the zone (at TM 1134 1767), although at the time the LA advised that the closest available sampling location was at TM 1025 1653. The RMP was defined at this location (Flag Creek (B12AD)) and has been used since then. The LA advised at the time that no harvesting was taking place farther up the creek than this point. Consultation with the Local Authorities indicated that no stock exists farther up than this point. As such, we would recommend modifying the CZ boundaries to reflect the available stock (Figure 8.1), as the contamination in the zone will likely originate from upstream sources.

Brightlingsea Creek Outer

This CZ covers an 81.5 Ha area of the lower reaches of Brightlingsea Creek. It meets the *Brightlingsea Creek Inner CZ* at the south-western point of Cindery Island. The boundaries of this CZ match the Hard Clam CZ of the same name. The main contaminating influences remain an intermittent discharge at the head of St Osyth Creek, and the harbour at the mouth of Brightlingsea Creek. The RMP recommended in the original sanitary survey, at South Creek (B12AC), remains a compromise of the pollution sources and should be retained.

Main Channel Central

This CZ covers an area of 293.4 Ha in the main channel of the River Colne. The northern boundary of the CZ is a line drawn from TM 0503 1895 to TM 0561 1895 and the southern boundary meets the northern boundary of the *Main Channel Outer CZ*. The original sanitary survey recommended classifying this zone based on Pacific oyster samples from next to the Brightlingsea STW continuous discharge, and an RMP at this location (Brightlingsea Outfall (B12AG)) has been used since then. The Pacific oyster samples are used to classify the native oyster and hard clam CZs of the same name, although there is a separate RMP for *Tapes* spp. It is recommended that this RMP be retained as this outfall is still likely to be the dominating source of contamination to this CZ.

Main Channel Outer

This CZ is the most southerly of any in the Colne BMPA and covers an area of 417.8 Ha. The northern boundary of this CZ meets the *Main Channel Central CZ*. The western edge of this CZ meets the *Mersea Flats East CZ*, which is in the West Mersea BMPA. The original sanitary survey identified that the main contaminating influences to this zone originate from a combination of Brightlingsea Creek and the main river channel, and recommended an RMP by Point Clear, near the northern boundary of the CZ. This RMP (Point Clear (B12AI)) is still in use, although it is recommended that the RMP be moved ~700 m south-south-east, to better capture any contamination originating from Ray Creek

Pyefleet Channel

This CZ covers the entirety of Pyefleet creek, from its congruence with the main Colne channel, up to the Mersea Island causeway, where it meets the *Strood Channel CZ* in the West Mersea BMPA. There are few pollution sources to this zone, and it is currently

sampled from Pyefleet Channel (B12AK) RMP, which is located near to where the channel splits in two. It is recommended that this RMP be retained. This RMP just represents the Pacific and native oyster CZs, with a separate RMP for the cockle CZ of the same name.

8.2 Native oyster

The original sanitary survey recommended the creation of four CZs for native oyster harvesting in the Colne estuary. Three of these are still active, and the *Geedon Creek CZ* was declassified in October 2020. The remaining CZs; *Main Channel Central*, *Main Channel Outer* and *Pyefleet Channel*, share boundaries with the Pacific oyster CZs of the same name. They are all classified using Pacific oyster RMPs, recommendations for which are described in the previous section. It is recommended that this practice continue.

8.3 Hard clams

With the exception of *Main Channel Inner* (which was never awarded a classification), all the CZs for *M. mercenaria* harvesting in the Colne BMPA recommended in the original sanitary survey are still active. These are *Brightlingsea Creek Inner*, *Brightlingsea Creek Outer* and *Main Channel Central*, all of which share boundaries with the Pacific oyster CZs of the same name. They are all classified using Pacific oyster RMPs, recommendations for which are described in Section 8.1. It is recommended that this practice continue.

8.4 Cockles

The original sanitary survey recommended the creation of one CZ for cockle harvesting, *Pyefleet Creek* (since renamed *Pyefleet Channel*). *Geedon Creek* was also classified for this species, until its declassification in October 2020. Recommendations for the remaining CZ are given below and summarised in Table 8.1.

Pyefleet Channel

This CZ covers the same area as the oyster CZ of the same name. It was noted in the original sanitary survey that the preferred option would be to sample cockles directly as there was some concern of the representativeness of mussels for cockle classifications. However, since the original sanitary survey, this zone has been classified based on bagged samples of mussels from Pyefleet Channel (B12AM) RMP. If sufficient cockle stocks exist, it is recommended that cockles be used moving forwards, with a tolerance of 100 m. If not, it is recommended that the current RMP be retained. The RMP location does not need to change.

8.5 *Tapes* spp.

There were two classification zones for manilla clams recommended in the original sanitary survey, although currently only one holds an active classification. Recommendations for this zone are given below and summarised in Table 8.1.

Main Channel Central

The boundaries of this zone align with the oyster and hard clam CZ of the same name. The original sanitary survey recommended sampling of this species, from the same location, in addition to the Pacific oyster RMP. The RMP recommended in that document (*Brightlingsea*

Outfall (B12AQ)) is still in use, and it is recommended that this RMP be retained as the STW outfall represents the greatest risk of contamination to this zone.

8.6 General Information

8.6.1 Location Reference

Production Area	Colne
Cefas Main Site Reference	M012
Ordnance survey 1:25,000	Explorer 184
Admiralty Chart	1975

8.6.2 Shellfishery

Species	Culture Method	Seasonality of Harvest
P oysters (<i>Crassostrea gigas</i>)	Wild & Cultured	Year Round
N oysters (<i>Ostrea edulis</i>)	Wild & Cultured	September - April
Hard clams (<i>Mercenaria mercenaria</i>)	Wild	Year Round
Manila clams (<i>Tapes spp.</i>)	Wild	Year Round
Cockles (<i>Cerastoderma edule</i>)	Wild	Year Round

8.6.3 Local Enforcement Authority(s)

Name	Colchester Borough Council Rowan House, 33 Sheepen Road, Colchester, Essex CO3 3WG
Website	https://www.colchester.gov.uk/business/environmental-health/
Telephone number	01206 282581/2
E-mail address	customerservicecentre@colchester.gov.uk
Name	Tendring District Council Environment 88-90 Pier Avenue Clacton-on-Sea, Essex CO15 1TN
Website	https://www.tendringdc.gov.uk/environment
Telephone number	01255 686868
E-mail address	N/A

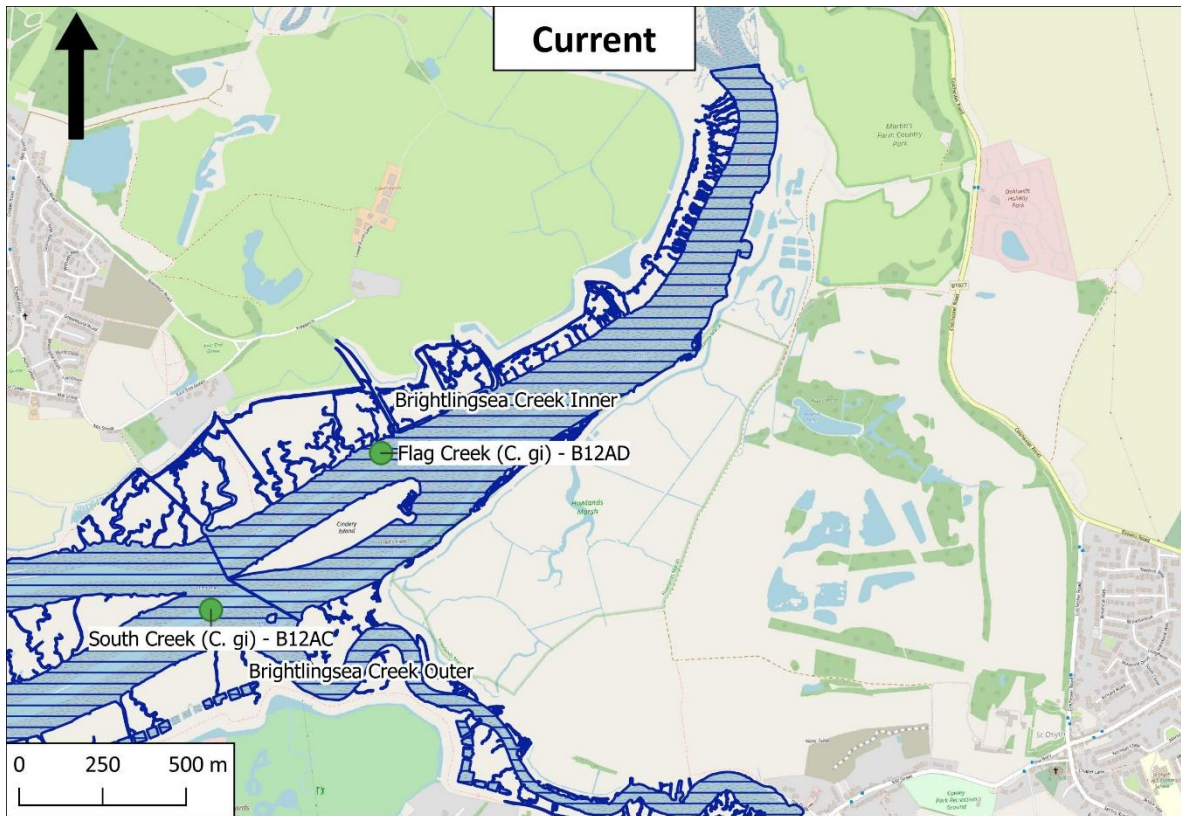


Figure 8.1 Proposed alterations to the Brightlingsea Creek Classification Zone.

Table 8.1 Proposed sampling plan for the Colne BMPA. Suggested changes are given in **bold red** type.

Classification Zone	RMP	RMP Name	NGR (OSGB 1936)	Lat/Long (WGS 1984)	Species Represented	Growing Method	Harvesting Technique	Sampling Method	Sampling Species	Tolerance	Frequency
Brightlingsea Creek Inner	B12AD	Flag Creek	TM 1025 1653	51°48.47'N, 01° 02.90'E	<i>C. gigas</i> ; <i>M. mercenaria</i>	Wild / culture	Dredge /Hand	Bagged	P. oyster	10 m	Monthly
Brightlingsea Creek Outer	B12AC	South Creek	TM 0974 1606	51° 48.23N, 01° 02.44E	<i>C. gigas</i> ; <i>M. mercenaria</i>	Wild / culture	Dredge /Hand	Bagged	P. oyster	10 m	Monthly
Main Channel Central	B12AG	Brightlingsea Outfall	TM 0625 1751	51° 49.09'N, 00° 59.46'E	<i>C. gigas</i> ; <i>O. edulis</i> ; <i>M. mercenaria</i>	Wild / culture	Dredge /Hand	Bagged	P. oyster	10 m	Monthly
	B12AQ				<i>Tapes spp.</i>	Wild / culture	Dredge /Hand	Bagged	<i>Tapes spp.</i>	10 m	Monthly
Main Channel Outer	TBC	Off Point Clear Bay	TM 0850 1511	51°47'45"N, 001°01'20"E	<i>C. gigas</i> ; <i>O. edulis</i> ;	Wild / culture	Dredge /Hand	Bagged	P. oyster	10 m	Monthly
Pyefleet Channel	B12AK	Pyefleet Channel	TM 0266 1604	51° 48.38'N, 00° 56.29'E	<i>C. gigas</i> ; <i>O. edulis</i>	Wild / culture	Dredge / Hand	Bagged	P. oyster	10 m	Monthly

<i>Classification Zone</i>	<i>RMP</i>	<i>RMP Name</i>	<i>NGR (OSGB 1936)</i>	<i>Lat/Long (WGS 1984)</i>	<i>Species Represented</i>	<i>Growing Method</i>	<i>Harvesting Technique</i>	<i>Sampling Method</i>	<i>Sampling Species</i>	<i>Tolerance</i>	<i>Frequency</i>
	B12AM / TBC				<i>C. edule</i>	Wild	Dredge	Bagged / Dredge/Hand rake	Mussel / Cockle	10 m / 100 m	Monthly



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Appendices

Appendix I. Population Breakdown

ID	Electoral Ward	Total Population				Population Density		
		2001 Census	2011 Census	Absolute Change	% Change	2001 Censu s	2011 Censu s	Absolute Change
1	West Mersea	6,925	7,183	258	3.73%	6.52	6.8	0.28
2	Pyefleet	2,435	2,596	161	6.61%	0.61	0.7	0.09
3	East Donyland	2,376	2,633	257	10.82%	4.49	5	0.51
4	The Three Colnes	4,848	5,241	393	8.11%	1.74	1.9	0.16
5	Gosfield and Greenstead Green	2,460	2,465	5	0.20%	0.75	0.8	0.05
6	Bockings Elm	4,337	4,549	212	4.89%	9.24	9.7	0.46
7	Birch and Winstree	4,846	5,651	805	16.61%	0.77	0.9	0.13
8	Highwoods	7,592	9,987	2,395	31.55%	22.39	29.5	7.110001
9	Three Fields	3,818	3,967	149	3.90%	0.59	0.6	0.01
10	West Bergholt and Eight Ash Green	5,044	5,074	30	0.59%	2.99	3	0.01
11	Golf Green	4,665	4,799	134	2.87%	14.09	14.5	0.41
12	Thorrington, Frating, Elmstead and Great Bromley	4,642	4,687	45	0.97%	1.17	1.2	0.03
13	Stanway	7,553	8,283	730	9.67%	8.29	9.1	0.81
14	Ardleigh and Little Bromley	2,370	2,311	-59	-2.49%	0.85	0.8	-0.05
15	The Sampfords	1,782	1,900	118	6.62%	0.35	0.4	0.05
16	Halstead Trinity	4,773	4,892	119	2.49%	42.3	43.3	1.000001
17	Wivenhoe Quay	4,989	5,402	413	8.28%	20.93	22.7	1.77
18	St Marys	4,968	5,018	50	1.01%	46.85	47.3	0.450002
19	St Pauls	4,552	4,751	199	4.37%	23.77	24.8	1.03

ID	Electoral Ward	Total Population				Population Density		
		2001 Census	2011 Census	Absolute Change	% Change	2001 Censu s	2011 Censu s	Absolute Change
20	Beaumont and Thorpe	2,399	2,300	-99	-4.13%	0.75	0.7	-0.05
21	St Osyth and Point Clear	4,119	4,277	158	3.84%	1.28	1.3	0.02
22	Great and Little Oakley	2,306	2,188	-118	-5.12%	1.26	1.2	-0.06
23	Stour Valley North	2,131	2,166	35	1.64%	0.33	0.3	-0.03
24	Haven	2,108	2,051	-57	-2.70%	14.45	14.1	-0.35
25	Christ Church	4,201	4,482	281	6.69%	29.82	31.8	1.98
26	St John's	5,194	4,807	-387	-7.45%	21.05	19.5	-1.55
27	Pier	4,810	4,836	26	0.54%	59.82	60.1	0.28
28	Little Clacton and Weeley	4,612	4,590	-22	-0.48%	2.71	2.7	-0.01
29	Stour Valley South	2,065	2,180	115	5.57%	0.5	0.5	0
30	Prettygate	7,730	7,396	-334	-4.32%	39.27	37.6	-1.67
31	Bocking North	4,215	4,728	513	12.17%	3.44	3.9	0.46
32	Alton Park	5,178	4,841	-337	-6.51%	72.08	67.4	-4.68
33	St James	4,334	4,200	-134	-3.09%	22.3	21.6	-0.7
34	Hedingham and Maplestead	6,207	6,550	343	5.53%	1.04	1.1	0.06
35	Great Bentley	2,259	2,253	-6	-0.27%	1.73	1.7	-0.03
36	Brightlingsea	8,146	8,076	-70	-0.86%	7.21	7.1	-0.11
37	St Andrew's	9,362	10,991	1,629	17.40%	49.61	58.2	8.589999
38	Alresford	2,125	2,009	-116	-5.46%	3.12	3	-0.12
39	Rush Green	4,979	4,787	-192	-3.86%	27.53	26.5	-1.03

ID	Electoral Ward	Total Population				Population Density		
		2001 Census	2011 Census	Absolute Change	% Change	2001 Censu s	2011 Censu s	Absolute Change
40	Great Tey	2,764	2,695	-69	-2.50%	0.75	0.7	-0.05
41	Holland and Kirby	4,519	4,724	205	4.54%	3.05	3.2	0.15
42	Fordham and Stour	5,113	5,332	219	4.28%	1.09	1.1	0.01
43	Frinton	4,089	4,002	-87	-2.13%	20.41	20	-0.41
44	Dedham and Langham	2,906	2,943	37	1.27%	1.29	1.3	0.01
45	Hamford	4,032	3,847	-185	-4.59%	29.96	28.6	-1.36
46	St Anne's	8,761	8,874	113	1.29%	39.79	40.3	0.509999
47	Coggeshall and North Feering	4,778	5,201	423	8.85%	1.61	1.8	0.19
48	Copford and West Stanway	1,876	1,915	39	2.08%	1.7	1.7	-4.8E-08
49	St Bartholomews	4,417	4,390	-27	-0.61%	33.96	33.8	-0.16
50	Upper Colne	2,121	2,145	24	1.13%	0.49	0.5	0.01
51	Mile End	6,215	10,565	4,350	69.99%	8.12	13.8	5.68
52	St Johns	4,799	4,662	-137	-2.85%	18.97	18.4	-0.57
53	Castle	7,032	9,996	2,964	42.15%	20.05	28.5	8.450001
54	Bradfield, Wrabness and Wix	2,229	2,233	4	0.18%	0.86	0.9	0.04
55	Shrub End	10,528	10,086	-442	-4.20%	19.09	18.3	-0.79
56	Tolleshunt D'Arcy	3,926	4,065	139	3.54%	0.83	0.9	0.07
57	Bumpstead	2,418	2,558	140	5.79%	0.79	0.8	0.01
58	Halstead St Andrew's	6,280	7,014	734	11.69%	15.91	17.8	1.89

ID	Electoral Ward	Total Population				Population Density		
		2001 Census	2011 Census	Absolute Change	% Change	2001 Censu s	2011 Censu s	Absolute Change
59	Wivenhoe Cross	4,146	4,623	477	11.51%	8.48	9.5	1.02
60	Berechurch	8,367	9,014	647	7.73%	16.91	18.2	1.29
61	Burrsville	2,109	2,027	-82	-3.89%	5.91	5.7	-0.21
62	Lexden	5,433	5,549	116	2.14%	11.88	12.1	0.22
63	Yeldham	2,041	2,175	134	6.57%	1.57	1.7	0.13
64	Tiptree	7,516	7,583	67	0.89%	9.02	9.1	0.08
65	Harbour	5,701	6,181	480	8.42%	13.2	14.3	1.1
66	Lawford	4,476	4,302	-174	-3.89%	4.07	3.9	-0.17
67	New Town	8,625	10,682	2,057	23.85%	48.59	60.2	11.61
68	Peter Bruff	4,693	4,436	-257	-5.48%	54.71	51.7	-3.01
69	Cressing and Stisted	2,155	2,311	156	7.24%	0.94	1	0.06
70	Great Totham	3,463	3,660	197	5.69%	1.14	1.2	0.06
71	Manningtree, Mistley, Little Bentley and Tendring	4,365	4,603	238	5.45%	1.51	1.6	0.09
72	Marks Tey	2,566	2,551	-15	-0.58%	4.21	4.2	-0.01
Total / (Average)		327,914	348,041	20,127	6.14%	(13.46)	(14.03)	(0.57)



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**CLASSIFICATION OF BIVALVE
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**SANITARY SURVEY REPORT
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Our clients operate in a range of industry sectors including civil engineering and construction, ports and harbours, new and existing nuclear power, renewable energy (including offshore wind, tidal energy and wave energy), public sector, government, NGOs, transport and water.

Our aim is to offer professional, high quality and robust solutions to our clients, using the latest techniques, innovation and recognised best practice.

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Environmental Consultancy

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Consultancy and Survey Specialists

Sanitary Survey - Review

Walton Backwaters – 2023



Document No. – *J0591/23/08/15*

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Carcinus Ltd – Document Control Sheet

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A sanitary survey relevant to the bivalve mollusc beds in Walton Backwaters was undertaken in 2011 in accordance with Regulation (EC) 854/2004 (which was replaced by retained EU Law Regulation (EU) 2017/625, with sanitary survey requirements now specified in retained EU Law Regulation (EU) 2019/627). This provided appropriate hygiene classification zoning and monitoring plan based on the best available information with detailed supporting evidence. In line with regulatory and EU guidance the Food Standards Agency undertake targeted sanitary survey reviews to ensure public health protection measures continue to be appropriate. This report provides a review of information and

recommendations for a revised sampling plan if required. Carcinus Ltd. (Carcinus) undertook this work on behalf of the FSA. Carcinus Ltd accepts no liability for any costs, losses or liabilities arising from the reliance upon or use of the contents of this report other than by its client.

Dissemination

Food Standards Agency, Tendring District Council. The report is publicly available via the Carcinus Ltd. website.

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1 Introduction

1.1 Background

The Food Standards Agency (FSA) is responsible for carrying out sanitary surveys in classified production and relay areas in accordance with Article 58 of retained (EU) Regulation 2019/627 and the EU Good Practice Guide (European Commission, 2021). In line with these requirements, sanitary surveys must be reviewed to ensure public health protection measures continue to be appropriate. Carcinus is contracted to undertake reviews on behalf of the FSA.

The report considers changes to bacterial contamination sources (primarily from faecal origin) and the associated loads of the faecal indicator organism *Escherichia coli* (*E. coli*) that may have taken place since the original sanitary survey was undertaken. It does not assess chemical contamination, or the risks associated with biotoxins. The assessment also determines the necessity and extent of a shoreline survey based on the outcome of the desktop report and identified risks. The desktop assessment is completed through analysis and interpretation of publicly available information, in addition to consultation with stakeholders.

1.2 Walton Backwaters Review

This report reviews information and makes recommendations for a revised sampling plan for existing Pacific oyster (*Crassostrea gigas*), native oyster (*Ostrea edulis*) and American hard clam (*Mercenaria mercenaria*) classification zones in the Walton Backwaters (Figure 1.1). This review explores any changes to the main microbiological contamination sources that have taken place since the original sanitary survey was conducted. Data for this review was gathered through a desk-based study and consultation with stakeholders.

An **initial consultation** with Local Authorities (LAs), Inshore Fisheries and Conservation Authorities (IFCAs) and the Environment Agency (EA) responsible for the production area was undertaken in July 2023. This supporting local intelligence is valuable to assist with the review and was incorporated in the assessment process.

Following production of a draft report, a wider **external second round of consultation** with responsible Local Enforcement Authorities (LEAs), Industry and other Local Action Group (LAG) members was undertaken in October and November 2023. Responses were received from the Environment Agency. It is recognised that dissemination and inclusion of a wider stakeholder group, including local industry, is essential to sense-check findings and strengthen available evidence. The draft report is reviewed taking into account the feedback received.

The review updates the assessment originally conducted in 2011 and sampling plan as necessary and the report should be read in conjunction with the previous survey.

Specifically, this review considers:

- (a) Changes to the shellfishery (if any);
- (b) Changes in microbiological monitoring results;

- (c) Changes in sources of pollution impacting the production area or new evidence relating to the actual or potential impact of sources;
- (d) Changes in land use of the area; and
- (e) Change in environmental conditions.

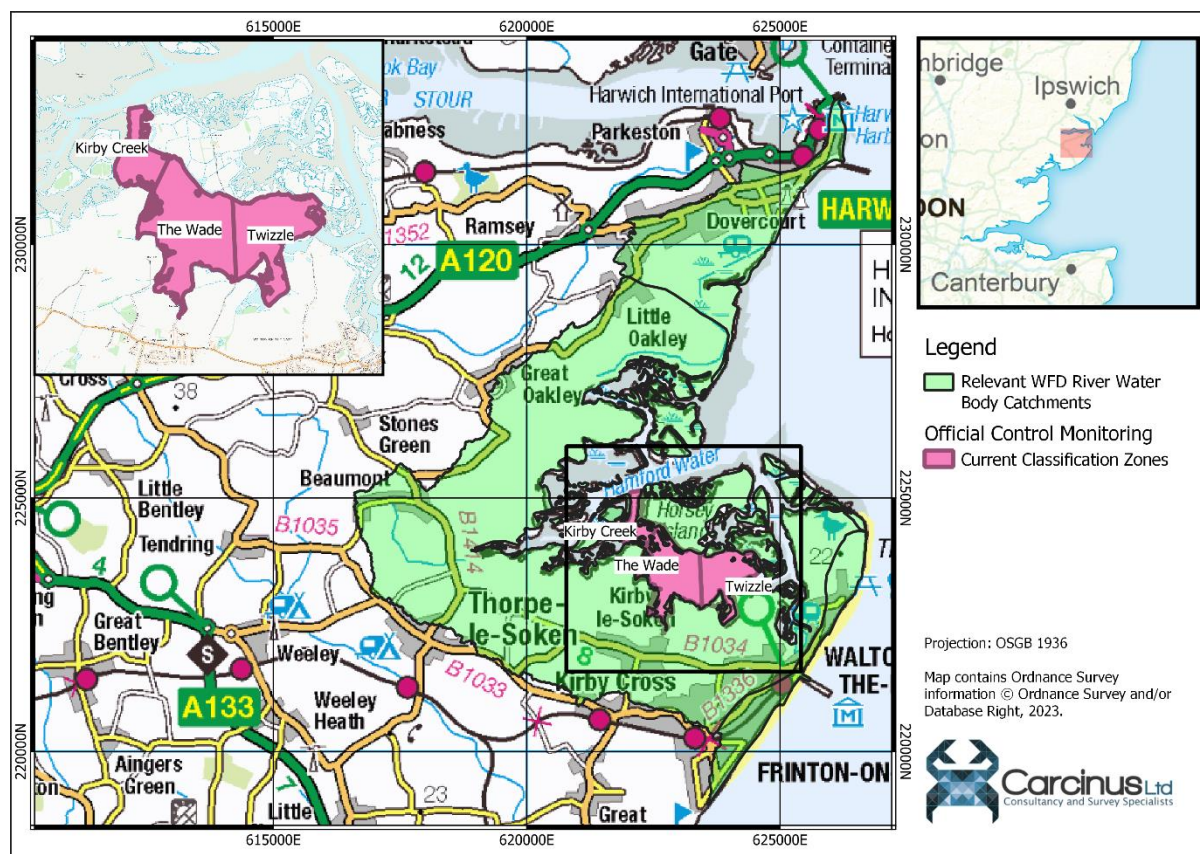


Figure 1.1 Location of the Walton Backwaters in eastern England. Inset map shows the locations of the Classification Zones within the BMPA.

Sections 2 - 6 detail the changes that have occurred to the shellfishery, environmental conditions and pollution sources within the catchment since the publication of the original sanitary survey. A summary of the changes is presented in section 7 and recommendations for an updated sampling plan are described in section 8.

1.3 Assumptions and limitations

This desktop assessment is subject to certain limitations and has been made based on several assumptions, namely:

- Accuracy of local intelligence provided by the Local Authorities and Environment Agency
- The findings of this report are based on information and data sources up to and including July 2023;
- Only information that may impact on the microbial contamination was considered for this review; and

- Official Control monitoring data have been accessed through a request to Cefas, with no additional verification of the data undertaken. The data are also available directly from the Cefas data hub¹. Results up to July 2023 have been used within this study. Any subsequent samples have not been included. -

2 Shellfisheries

2.1 Description of Shellfishery

The Walton Backwaters BMPA is contained within the tidal inlet of the same name on the Essex coast. It is also referred to as 'Hamford Water'. It consists of a network of tidal creeks, intertidal mud and sandflats and saltmarshes. The closest BMPA's are those of the river Deben (Cefas Reference: M010) 20 km north and the Colne (M012) 16 km south west.

The Local Enforcement Authority (LEA) responsible for this fishery for food hygiene Official Control purposes (including sampling) is Tendring District Council. The 2011 Sanitary Survey describes that the Horsey Island Fishery Order had been in force since 1963, and was due to expire on 31 May 2023. During initial consultations the LEA advised that the harvester is pursuing an application for a Several Order for shellfish harvesting in the area. At the time of writing (November 2023), the current status of this application is unknown. Should this application be granted, the fishery would in effect become a private fishery in terms of harvesting and development controls. The entire BMPA is within the boundary of the Kent and Essex Inshore Fisheries and Conservation Authority (KEIFCA), and (until such time as the fishery comes under the jurisdiction of a Several Order) is subject to its Area A byelaws². Byelaws specific to the various species harvested are discussed in the paragraphs below, but KEIFCA reserve the right to implement a closure of bivalve mollusc beds for the purpose of fishery management and control of exploitation.

The 2011 Sanitary Survey made recommendations for the creation of Classification Zones for Pacific oysters, native oysters and manila clams (*Tapes* spp.). All Classification Zones within the Walton Backwaters BMPA were declassified between 2016 and 2023. An application for classification of Pacific oysters, native oysters and American hard clams (*M. mercenaria*) was submitted in late 2022 and sampling commenced in January 2023, with classification awarded in May 2023. The maps presented in the 2011 Sanitary Survey suggest that the shellfish beds cover only a small part of each classification zone. We have received no information to suggest that these areas have changed since the 2011 Sanitary Survey was published.

A summary of the fishery for each species is summarised in the sections below.

¹ Cefas shellfish bacteriological monitoring data hub. Available at: <https://www.cefas.co.uk/data-and-publications/shellfish-classification-and-microbiological-monitoring/england-and-wales/>.

² Kent and Essex IFCA 'Area A' byelaws. Available at: <https://www.kentandessex-ifca.gov.uk/i-want-to-find-out-about/regulations/keifca-byelaws/byelaws-a>.

2.1.1 Native oysters

The 2011 Sanitary Survey describes that the fishery for native oysters involves laying half grown Solent oysters on existing oyster beds for harvest once they have reached marketable size. No information has been provided to suggest that the operations have changed from this process when harvesting restarted in May 2023.

KEIFCA impose byelaws on the harvest of native oyster that set maximum dredge widths of 4 m and minimum landing sizes of 7.0 cm. The byelaws are without prejudice to any historic right of Several Fishery.

The current output of this fishery is unknown.

2.1.2 Pacific oysters

The 2011 Sanitary Survey describes that the Pacific oyster fishery involves the harvest of wild and farmed oysters. No information has been provided to suggest that current operations have changed from this process.

No KEIFCA byelaws apply to the harvest of Pacific oysters specifically (although the generic shellfish byelaws described previously do apply).

The current output of this fishery is unknown.

2.1.3 American hard clams

An active fishery for this species was not described in the 2011 Sanitary Survey. No information about the nature of this fishery was made available to the authors of this review during initial consultation.

No KEIFCA byelaws apply to the harvest of American hard clams specifically (although the generic shellfish byelaws described previously do apply).

The current output of this fishery is unknown.

2.1.4 Other Species

During initial consultations, the LEA indicated that there was industry desire for classification of both cockles (*Cerastoderma edule*) and manila clams (*Tapes* spp.) within the Walton Backwaters BMPA, the latter as a bycatch species from existing dredging operations. During initial consultations, KEIFCA also stated that harvesting of cockles would require a cockle permit from KEIFCA, and harvest of both species would be subject to minimum landing sizes. Subsequent consultation with the LEA and members of the shell fishing industry indicated that there was no interest in formal classification for this species moving forward.

2.2 Classification History

The 2011 Sanitary Survey recommended the creation of three Classification Zones within the Walton Backwaters BMPA, forming one large contiguous zone in the southern part. All three CZs are classified for Pacific and native oysters as well as American hard clams, but have only been classified since May 2023. The location and classification status of all active

CZs, along with all RMPs sampled in the area since 2010, are presented in Table 2.1 and Figure 2.1.

Table 2.1 Summary of all currently active Classification Zones in the Walton Backwaters BMPA.

Classification Zone	Species	Current Classification (as of June 2023)
Twizzle	Pacific oysters	B
	Native oysters	B
	American Hard Clams	B
Kirby Creek	Pacific oysters	B
	Native oysters	B
	American Hard Clams	B
The Wade	Pacific oysters	B
	Native oysters	B
	American Hard Clams	B

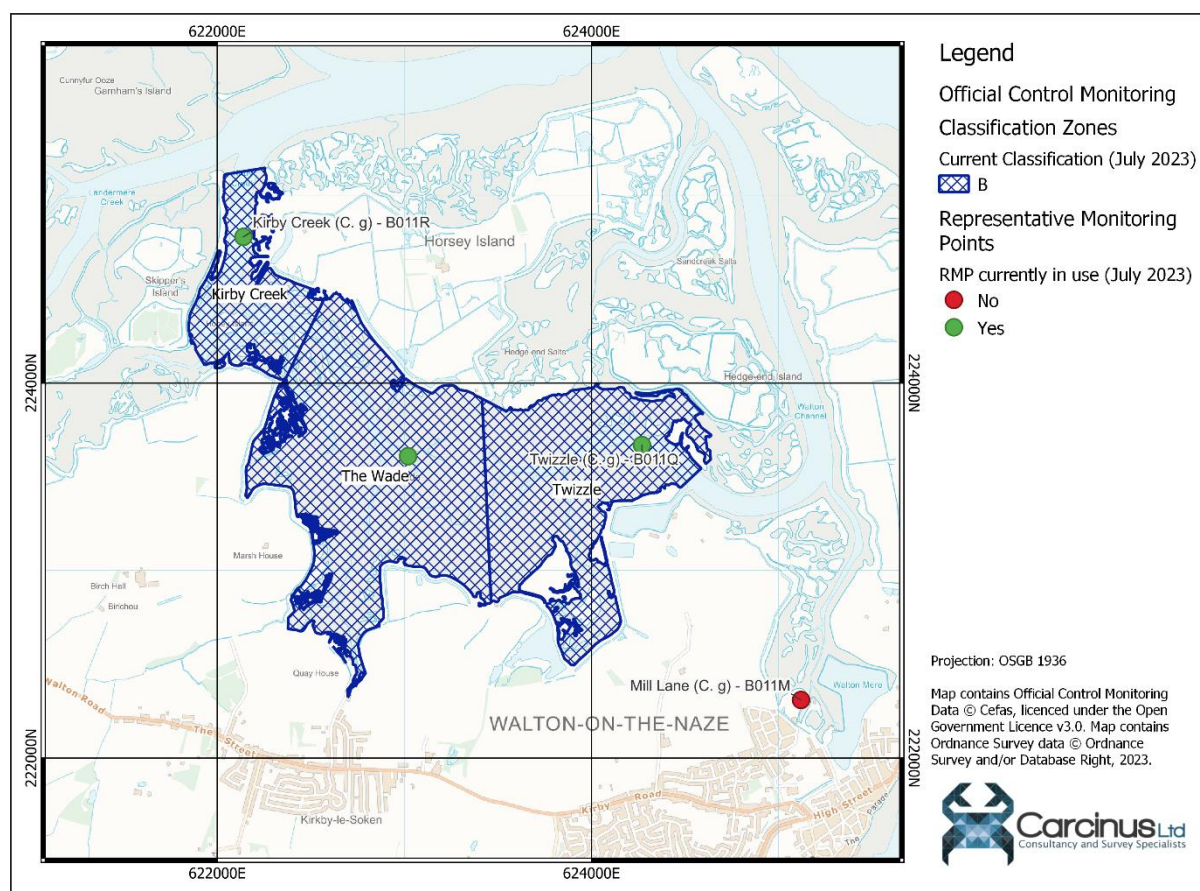


Figure 2.1 Current Classification Zones and associated Representative Monitoring Points in the Walton Backwaters BMPA.

3 Pollution sources

3.1 Human Population

The 2011 Sanitary Survey cites population data for the catchment based on the 2001 Census of the United Kingdom. The 2011 Census is more representative of the distribution of human population in the catchment at the time of the original Sanitary Survey, and so the results of that Census have been compared to that of the 2021 Census to give an indication of population trends across the catchment between those two surveys. Human population density within Census Output Areas in the Walton Backwaters catchment at the 2011 and 2021 Censuses are shown in Figure 3.1.

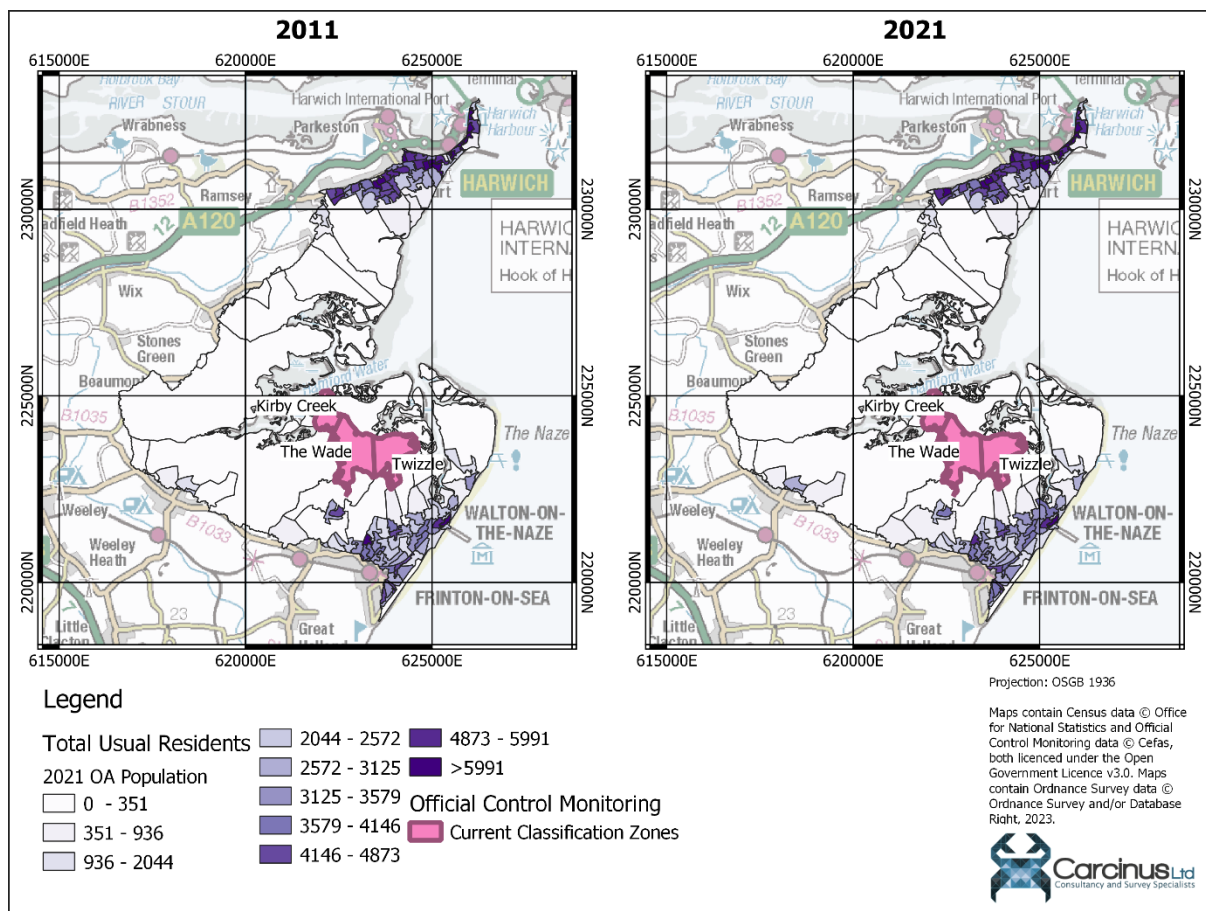


Figure 3.1 Human Population Density in Census Output Areas wholly or partially contained in the Walton Backwaters catchment in 2011 and 2021.

At the 2011 Census, the total estimated population of the Walton Backwaters catchment was 37,732. At the 2021 Census, this had increased to 40,043, an increase of 6.12%. The majority of the catchment is very rural, with population densities of fewer than 500 people per square kilometre. The two main urban areas of the catchment are Harwich in the north of the catchment and Frinton-on-Sea/Walton-on-the-Naze in the south of the catchment. Harwich is considered very unlikely to contribute any contamination via urban runoff to the BMPA as there is limited pathway for connectivity. Some impact from Frinton-on-Sea/Walton-on-the-Naze may occur via Sole Creek and the Twizzle although this is likely to

be minor. During initial consultation, the authors of this review were advised of a new housing development at Wheater's Meadow, NGR: TM 2496 2221. This development will involve the construction of 53 new properties, and is expected to be completed in 2024 (Flagship Group, 2022). New housing developments are required to incorporate a plan for wastewater treatment (e.g., connecting to existing networks) in their planning submission, and so whilst some additional loading to the treatment network may occur, the direct impact of this development is expected to be minor.

The 2011 Sanitary Survey identified that the catchment was likely to see a fluctuation in population levels because of tourism. Between 2019 and 2021, Essex received an average of more than 38 million visitors each year with more than 1 million overnight stays (Destination Research, 2021). The Naze itself receives approximately 200,000 visitors each year (Naze Protection Society, 2023). There may be some increased loading to the wastewater treatment network expected in summer months, but no information has been received to suggest that the existing wastewater treatment network is insufficient to handle this increase. Full details of the changes to the wastewater treatment network are discussed in the next section.

Analysis of changes to Census data for the catchment suggests that the area continues to be very rural, with generally low risks of contamination from urban sources. The 2021 Shellfish Water Action Plan for the Walton Backwaters area assesses the contribution of urban diffuse contamination to be 'low'. The findings of this desktop assessment would support that conclusion. Any contamination is likely to be greatest from the town of Walton-on-the-Naze via Sole Creek and the Twizzle. Overall, the recommendations made in the 2011 Sanitary Survey to account for the impact of human populations remains valid.

3.2 Sewage

Details of all consented discharges in the vicinity of the Walton Backwaters BMPA were taken from the most recent update to the Environment Agency's national permit database at the time of writing (July 2023). The locations of these discharges within the catchment and near the Classification Zones are shown in Figure 3.2.

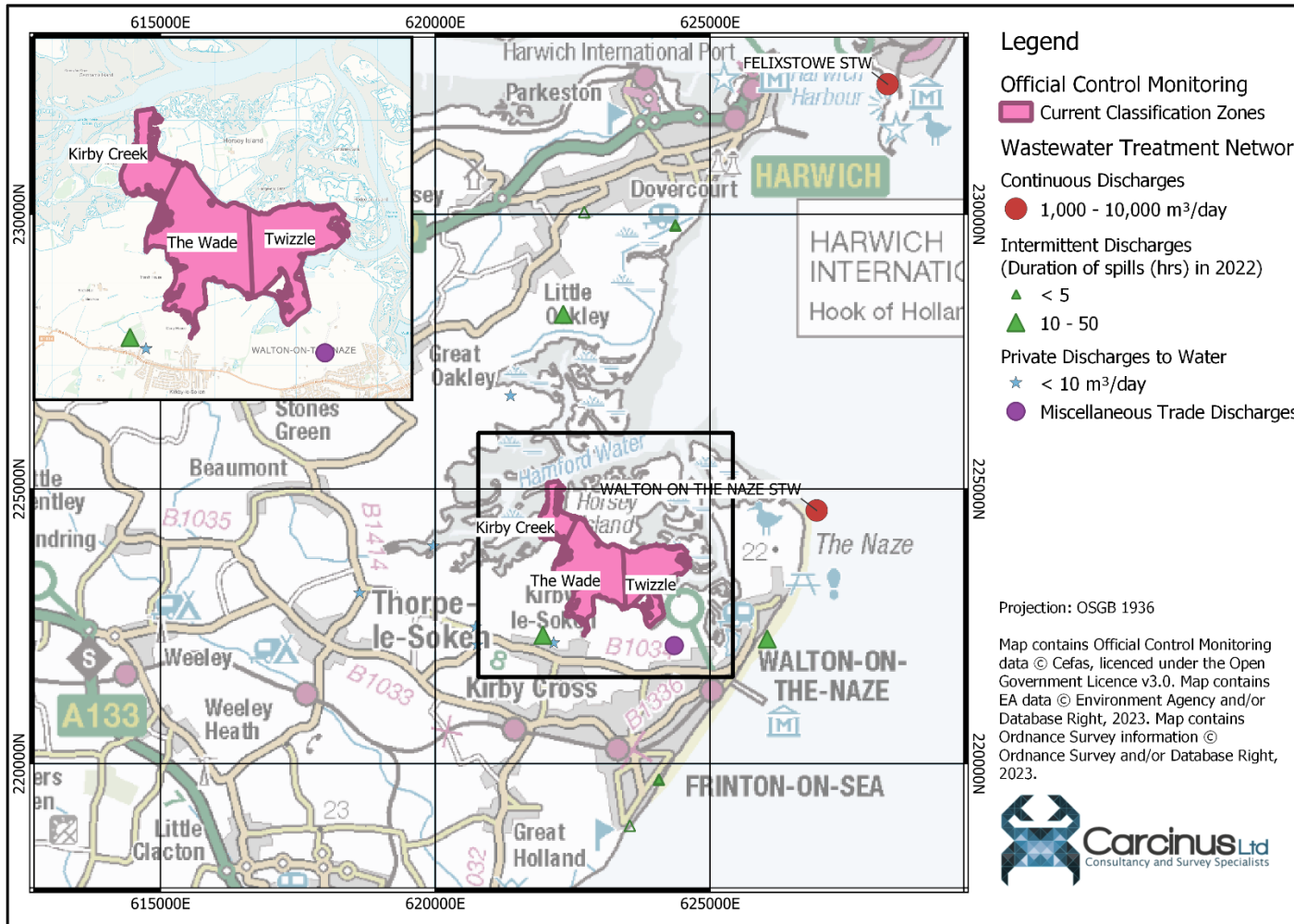


Figure 3.2 Locations of all consented discharges in the vicinity of the Walton Backwaters BMPA. Details of continuous discharges are provided in Table 3.1.

Table 3.1 Details of all continuous discharges in the vicinity of the Walton Backwaters BMPA.

Discharge Name	Permit Number	Receiving Water	Outlet NGR	Treatment Description	Dry Weather Flow (m ³ /day)	Distance from nearest CZ (km)
WALTON ON THE NAZE STW	AW2TSE35766	Pennyhole Bay	TM 26940 24610	TERTIARY BIOLOGICAL	6,364	2.4
FELIXSTOWE STW	ASETS12143	tidal River Orwell	TM 28230 32370	ACTIVATED SLUDGE	9,229	9.1

Figure 3.2 illustrates that the water company owned sewerage infrastructure in the vicinity of the Walton Backwaters BMPA is relatively sparse, reflecting the small population of the area. There are only two continuous discharges, Walton on the Naze Sewage Treatment Works (STW), 2.4 km from the BMPA, and Felixtowe STW, 9.1 km from the BMPA. The treatment methodology and consented discharge volume from the Walton on the Naze STW are unchanged from that described in the 2011 Sanitary Survey, but that document does not provide details of the Felixstowe STW. The Environment Agency stated during initial consultations that they consider there to be no water company owned continuous sewage treatment discharges with the potential to impact the bacteriological health of the BMPA. The findings of this desk-based assessment support that conclusion, as there is very limited pathway for connectivity between the two outfalls in the area and the CZs of the BMPA.

In addition to the water company owned continuous discharges, the 2011 Sanitary Survey identified a total of eight intermittent discharges. Intermittent discharges comprise Combined Storm Overflows (CSOs), Storm Tank Overflows (STOs), Pumping Station Emergency Overflows (PSs), and Sewer Pumping Stations (SPSs). During AMP6 and AMP7, Event Duration Monitoring (EDM) was installed at several of the discharges within the catchment. Summary data for 2020, 2021 and 2022 was published by the Environment Agency in March 2021, March 2022 and March 2023 respectively (Environment Agency, 2023). Only one of these intermittent discharges is likely to have an effect on the bacteriological health of the BMPA, as all others either discharge sufficiently far from the BMPA that any contamination would have experienced significant dilution/die off before reaching the BMPA, or discharge to a location with no hydraulic connectivity with the BMPA. A summary of the EDM return for 2020 – 2022 for the Kirby Main Maltings PS is provided in Table 3.2. This outfall is approximately 500 m from *The Wade* CZ.

Table 3.2 Event Duration Monitoring Summary for the Kirby Main Maltings PS.

Year	No. Spills (12 – 24 hr counting method)	Total duration of spills (hrs)
01/2009 – 03/2010*	8	71.92
2020	No Data	No Data
2021	19	90.97
2022	7	11.6

** Reported in the 2011 Sanitary Survey*

When intermittent discharges are actively discharging, the contamination caused is often high as generally the discharge is not treated (which is the case for the Kirby Main Maltings PS). The Environment Agency stated during initial consultation that they do not want to rule out impact of this outfall on the shellfishery. Consideration should therefore be given to its presence in any updated sampling plan. The Environment Agency also stated that there have been overflows from Mill Lane SPS, Walton on the Naze in 2019, 2020 and 2022. The site does not have a formal overflow, and sewage has surcharged from covers when pumps stopped. The EA stated that Anglian Water have made improvements to alarms to increase

the speed of response and educated staff on use of a valve which can be used to isolate foul flows from the new development prior to the SPS. The most recent incident from this site was on 28 November 2022, where there was an issue with one of the pumps. A series of improvements were made to the site from November to March 2023, and there have been no issues since then. This discharge is not included on the EA's consented discharge database that has been queried to produce Figure 3.2 and the precise location is not known, but is thought to be around TM 25121 22183, near the Walton and Frinton Yacht Club (see Figure 3.5), approximately 2 km from the *Twizzle* CZ.

In addition to the water company owned infrastructure, there continue to be a few small private discharges in the vicinity of the Walton Backwaters BMPA. Limited details of these discharges can be provided due to data protection requirements, but the assessment of the impact from these discharges is considered to be small compared to other sources of contamination discussed elsewhere in this report.

Overall, the wastewater treatment network of the Walton Backwaters area continues to be relatively sparse, reflecting the small population size. The overall impact of this source of contamination continues to be small. No updates to the sampling plan are necessary, as the recommendations made in the 2011 sanitary survey to account for the impact of this source of pollution remain valid.

3.3 Agricultural Sources

The 2011 Sanitary Survey cites livestock population data for the Walton Backwaters area based on the 2009 Livestock Census. To provide an indication of changes in the livestock population of the catchment, a data request was made to the Farming Statistics Office for the Department for Environment, Food and Rural Affairs (DEFRA) for livestock populations within the catchment presented in Figure 1.1 for 2010 and 2021 based on the June Survey of Agriculture and Horticulture³. The authors of this review were advised that there were fewer than five agricultural holdings within the catchment provided, and so no livestock population data could be provided to prevent disclosure of information about individual holdings.

The principal route of contamination of coastal waters by livestock is surface runoff carrying faecal matter. The change in land cover of the Walton Backwaters catchment between 2012 and 2018 is shown in Figure 3.3. This figure confirms the conclusions of Section 3.1 that the catchment is very rural with the overwhelming majority of land reserved for either pastoral or arable farming. All the Classification Zones in the BMPA are surrounded by either arable or pasture farmland. Whilst whatever population of livestock is there is likely to be small, there may be some risk from agricultural pollution, particularly during periods of heavy rainfall. Pasture areas adjacent to shorelines can represent the greatest contamination risk.

³ June Survey of Agriculture and Horticulture. Further information available at: <https://www.gov.uk/guidance/structure-of-the-agricultural-industry-survey-notes-and-guidance#june-survey-of-agriculture-and-horticulture-in-england>.

This is due to run-off from the land travelling less distance before reaching the CZs, resulting in less dilution and *E. coli* die off. Run-off from rivers further up the catchment will have a lower risk of contamination to the CZs, because the increased distance will result in further dilution and greater *E. coli* die off. During initial consultations, the Environment Agency confirmed that there have been some category 3 (minor) or 4 (no impact) pollutions within 5km of the BMPA in recent years, but none of these were a concern for the shellfishery due to the small scale of the releases and the distance from the shellfishery.

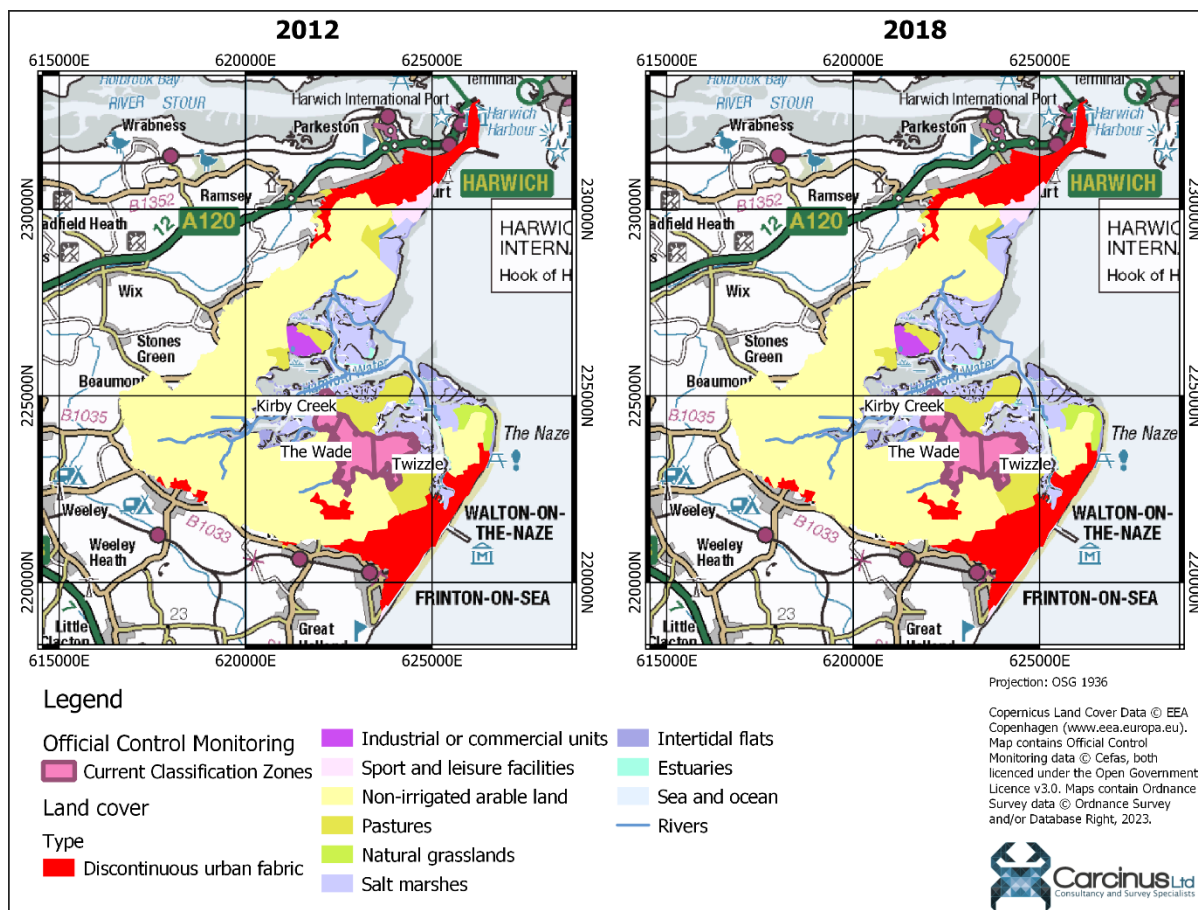


Figure 3.3 Land cover change between 2012 and 2018 for the Walton Backwaters catchment.

Areas of arable farmland near to Classification Zones can also represent a potential contamination risk, particularly where slurry is applied to fields. The spreading of slurry to fields is controlled under the Reduction and Prevention of Agricultural Diffuse Pollution (England) Regulations 2018, known as the Farming Rules for Water, which came into force in April 2018. This legislation lays out a set of rules that require good farming practice, so that farmers manage their land both to avoid water pollution and benefit their business. Rules include requiring farmers to judge when it is best to apply fertilisers, where to store manures and how to avoid pollution from soil erosion. Furthermore, silage and slurry storage for agricultural purposes is subject to The Water Resources (Silage, Slurry and Agricultural Fuel Oil) (England) Regulations 2010 (SSAFO). All farmers must comply with the

SSAFO regulations when building new slurry stores, or substantially altering (e.g., enlarging) existing ones. All stores must be built at least 10 m from any watercourse, including field drains or ditches, and be built or altered to last for at least 20 years with proper maintenance. During initial consultations, the Environment Agency confirmed that there are no local byelaws relating to the usage of slurry in the area, beyond the national legislation described above. The area is within a designated Nitrate Vulnerable Zone, and so farms in this area have additional rules and restrictions, such as closed periods for spreading slurry over winter and a requirement for a minimum of 5 months slurry storage. During Secondary Consultation, the EA confirmed that there had been no reports of pollution arising from land spreading activities within 5 km of Walton Backwaters.

Whilst the livestock population of the catchment is likely to be relatively small, bacteriological contamination from agriculture (both arable farmland and livestock) is a potentially significant source of contamination to the Walton Backwaters BMPA, particularly following significant rainfall events. However, the areas of farmland have not changed since the 2011 Sanitary Survey was published. No update to the sampling is necessary on this basis.

3.4 Wildlife

The 2011 Sanitary Survey describes that the Walton Backwaters contain a variety of habitats, including saltmarshes and intertidal mud and sand flats. The land cover maps presented in Figure 3.3 suggest that extensive areas of these habitats remain. These habitats that support a significant diversity of wildlife, including waterbirds. Overwintering and wading birds often represent a potentially significant source of microbiological contamination to shellfisheries because avian species frequently forage (and therefore defecate) directly on intertidal shellfish beds.

The Wetland Bird Survey (WeBS) provides waterbird count data for Hamford Water (the alternative name of the Walton Backwaters). Figure 3.4 shows the temporal trend in total overwintering waterbird counts from the winter of 2008/2009 – 2021/2022 (the most recent for which data are available) from within Hamford Water. It indicates that the waders are the dominant group in this estuary in terms of population size, followed by wildfowl, but suggests that populations are decreasing. In the five winters to 2010/2011 the average total count of waterbirds (including gulls and terns) was 46,133. In the five winters to 2021/2022 this average total count had fallen to 39,182 (Austin *et al.*, 2023), a decrease of more than 15%. The area does however still contain the fifth highest population of waterbirds of any WeBS surveyed area in Essex, and contains internationally significant populations of Brent Goose as well as nationally significant populations of several others.

Both the 2011 Sanitary Survey and the Shellfish Water Action Plan for the Walton Backwaters have identified contamination from waterbirds as being a potentially significant source of contamination to the shellfishery. That conclusion is supported by the findings of this desk top assessment. The largest aggregations of waterbirds, and therefore the highest risk of contamination, will occur in winter months. The distribution of waterbirds within the

estuary will be driven by the aggregations of their foraging resource, which will shift from year to year. Consequently, it is challenging to define RMPs which reliably capture this source of pollution. This situation has not changed since the original sanitary survey was published.

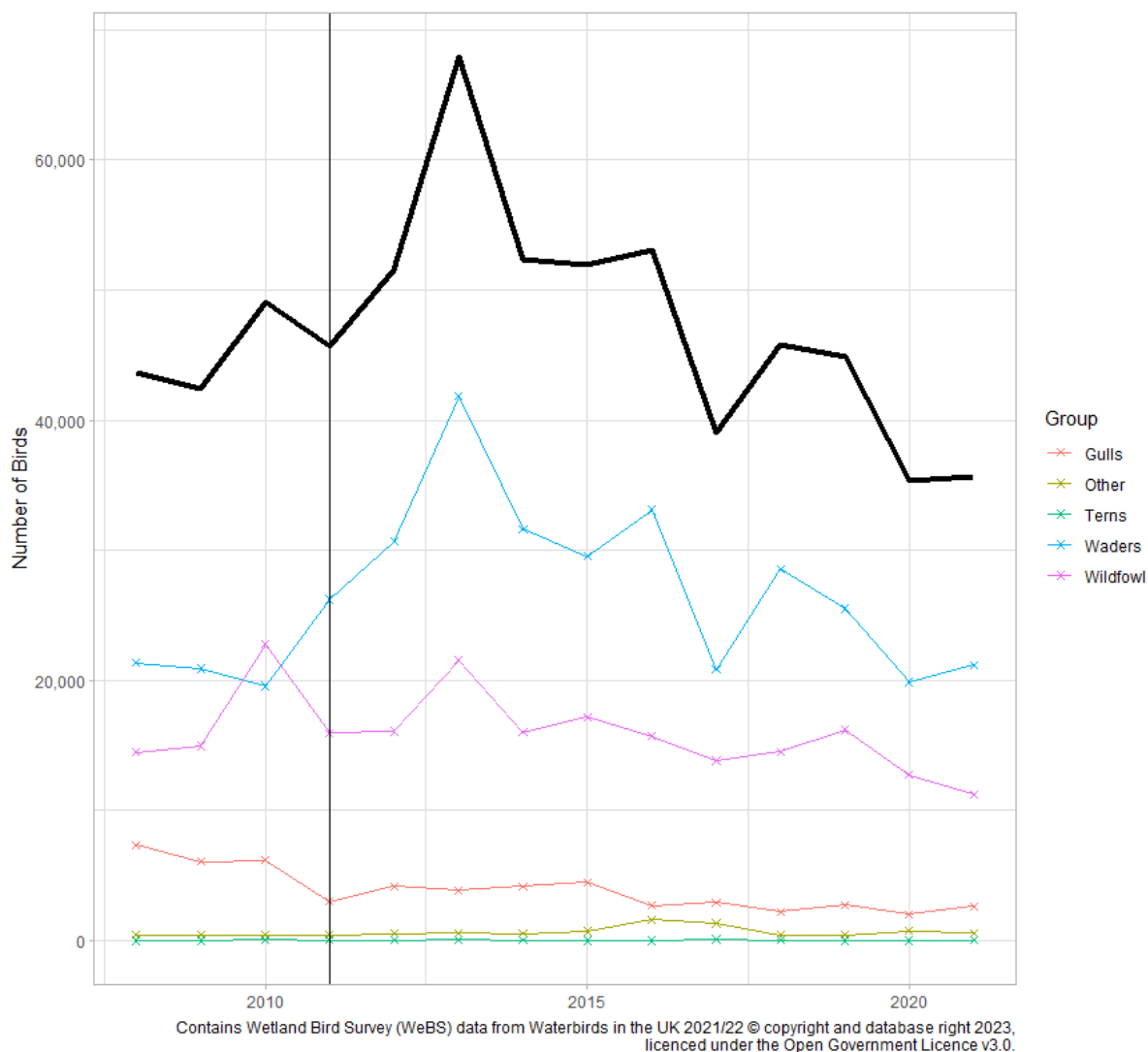


Figure 3.4 Temporal trend in waterbird counts from Hamford Water. Data from the Wetland Bird Survey (Austin et al., 2023). Solid black line is the total of all groups combined.

The 2011 Sanitary Survey does not comment on the presence of seals within the Walton Backwaters, other than to state that seal spotting tours are a source of tourism in the area. The populations within the Thames estuary and the estuaries of the Essex coast are increasing (Cox *et al.*, 2020), and so it is likely that animals will visit the estuary from time to time when foraging. Seals are frequently observed in the area hauled out on the mudflats at low water, and are likely to use the area for foraging from time to time. The impacts are

however likely to be relatively minor and are spatially unpredictable, which is challenging to account for in the sampling plan. No update to the sampling plan is necessary on this basis.

The Shellfish Action Plan for this waterbody classifies Animal/Bird contamination as being of 'medium' contribution to overall levels of contamination in the shellfishery. Waterbird populations are the main wildlife group likely to contribute significant amounts of bacteriological contamination to the BMPA, although it remains challenging to account for the pollution from wildlife in any updated sampling plan, due to the spatial and temporal variability of the pollution source. Some minor impacts from seals may occur, but again it is not possible to reliably account for this in any updated sampling plan.

3.5 Boats and Marinas

The discharge of sewage from boats is a potentially significant source of contamination to the shellfish beds within the Walton Backwaters BMPA. Boating activities in the area have been derived through analysis of satellite imagery and various internet sources, and compared to that described in the 2011 Sanitary Survey. Their geographical positions are presented in Figure 3.5.

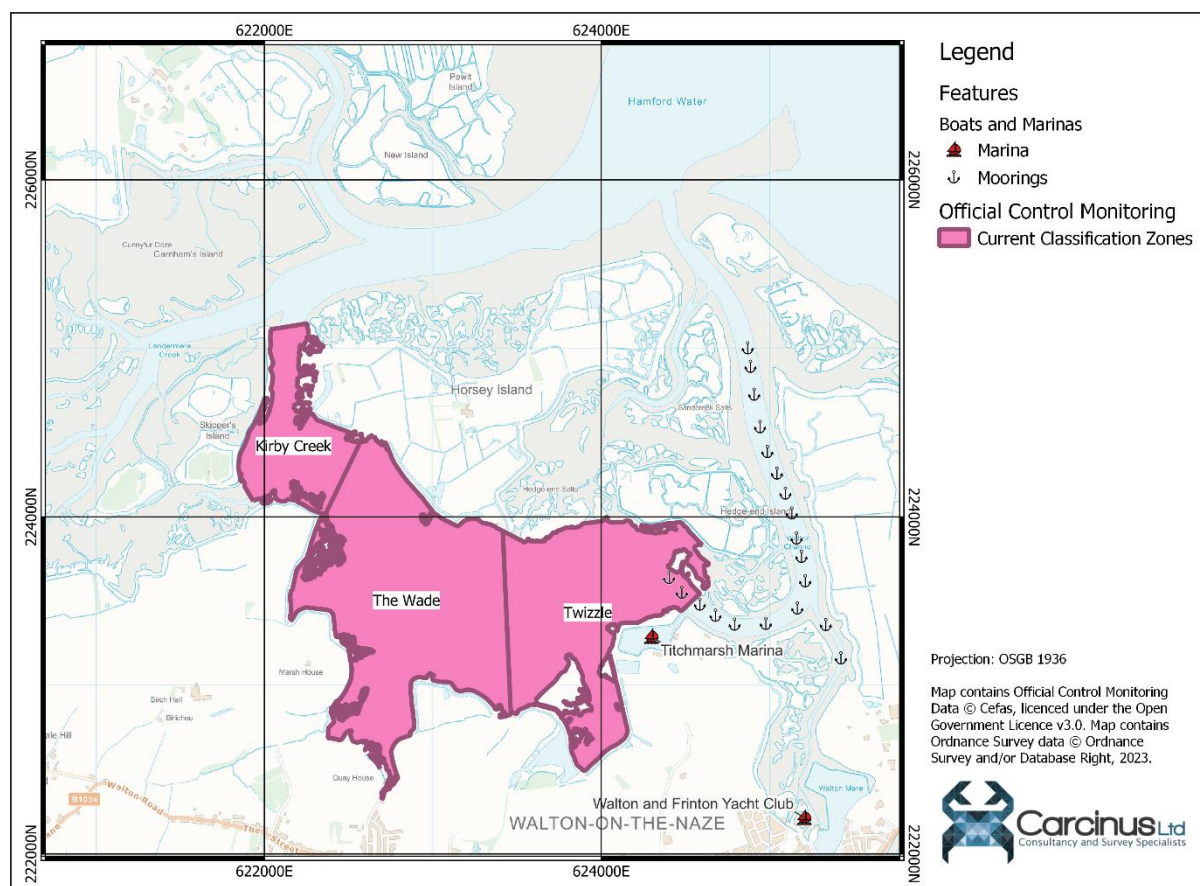


Figure 3.5 Locations of boats, marinas and other boating activities in the vicinity of the Walton Backwaters BMPA.

There is considered to be no significant merchant shipping traffic within the Walton Backwaters, and no contamination from this source is expected.

A single fishing vessel under 10 m lists Walton on the Naze as its home port (gov.uk, 2023). No significant contamination from this source is expected.

The 2011 Sanitary Survey describes that swinging moorings are present throughout the Walton Channel and within the Twizzle, as well as two marinas in the form of Titchmarsh Marina and the Walton Yacht Basin (marked on the map in Figure 3.5 as Walton and Frinton Yacht Club). Both of these marinas are still present, and the capacity is as described in the 2011 Sanitary Survey, with space for over 400 vessels. There are no pump out facilities at either of the marinas in the vicinity of the Walton Backwaters BMPA, and so pleasure craft of a sufficient size to contain on board toilets may make overboard discharges from time to time, particularly when moving through the main navigational channels or moored overnight. The risk of this source of contamination is highest in the summer months, as vessel numbers in the area will be at its highest.

Comparison with the situation described in the 2011 Sanitary Survey suggests that overall, the level of recreational boating activity in the area remains similar, and there is a chance that the main navigational channels and areas of moorings will receive some contamination, particularly in the summer. However, the recommendations made in the 2011 report remain valid as the areas at risk have not changed.

3.6 Other Sources of Contamination

Utility misconnections are when foul water pipes are wrongly connected and enter surface waters without treatment, potentially putting raw sewage directly into watercourses via surface water drains. The Shellfish Water Action Plan for this area states that an investigation into the surface water sewerage system in Kirby le Soken (near *The Wade CZ*) identified that there were a small number of misconnections that could have been affecting water quality. The Shellfish Water Action Plan provided by the EA states that the homeowners have been notified but no further action has been taken or is planned. During initial consultations, the EA stated that during walkovers in August 2023 at the surface outfall downstream of these homes at Quay Lane, no sewerage debris or excessive algal growth (which would be indicative of sewage contamination) was observed, so no current impacts are expected.

There are footpaths adjacent to the Walton Backwaters, and dog walking is likely to take place. Areas of saltmarsh will reduce the level of dog walking in these areas. Overall, the risk of this source of contamination is considered to be like that described in the 2011 Sanitary Survey and no update to the sampling plan is required on this basis.

4 Hydrodynamics/Water Circulation

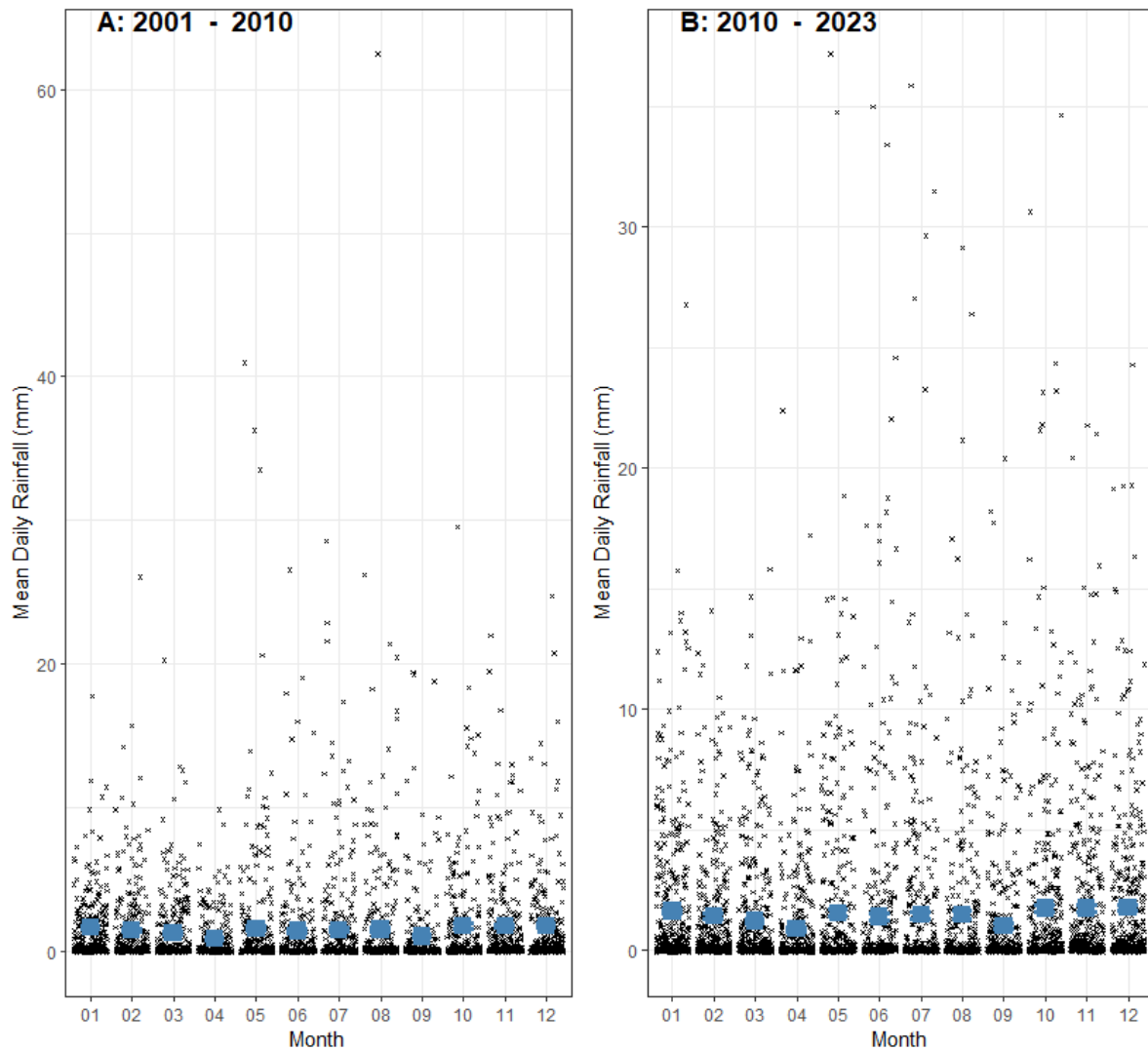
The 2011 Sanitary Survey describes that the Walton Backwaters are a shallow tidal inlet of which the majority dries at low water springs. The shellfishery is centred around the area south and west of Horsey Island. Analysis of freely available nautical chart data suggests that water depths and subtidal channel locations are unchanged from the situation described in the 2011 Sanitary Survey.

The only freshwater inputs in the area are small streams at Kirby le Soken and Baumont at Quay Farm, and tidal circulation will be the dominant force controlling water movement in the BMPA. The area is ebb dominant (the ebb tide is longer and slower than the flood), meaning that contamination from upstream sources may be particularly relevant to the overall bacteriological health of the BMPA. Contaminants are likely to be more persistent in less-flushed areas of the BMPA, such as those south of Horsey Island (within *The Wade CZ*), as full tidal flushing occurs less frequently.

5 Rainfall

A complete record of rainfall data from the Great Oakley rain gauge at NGR: TM 21052 27115 (ID: 227182) was downloaded from the Environment Agency's hydrology data explorer⁴. This station was chosen as it is the closest monitoring station to the Walton Backwaters BMPA, 3.8 km north west of the closest CZ. The data were subdivided into 2001 – 2010 (pre-sanitary survey) and 2010 – 2023 (post-sanitary survey) and processed in R (R Core Team, 2021). These data were used to determine whether any changes in rainfall patterns had occurred since the original sanitary surveys were published. The rainfall levels per month are shown in Figure 5.1 and the data are summarised in Table 5.1.

⁴ Environment Agency's Hydrology Data Explorer. Available at: <https://environment.data.gov.uk/hydrology/explore#/landing>.



Archive Daily Rainfall from the Great Oakley (#227182) at NGR TM 21052 27115
Data accessed from the Environment Agency's Hydrology Data Explorer, licenced under the Open Government Licence v3.0.

Figure 5.1 Mean daily rainfall per month at the Great Oakley (NGR: TM 21052 27115) for the period (A) 2001 – 2010 and (B) 2010 – 2023.

Table 5.1 Summary statistics for the period preceding and following the 2011 Sanitary Survey.

Period	Mean Annual Rainfall	Percentage Dry Days	Percentage Days Exceeding 10 mm	Percentage Days Exceeding 20 mm
2001 - 2010	476.5	52.747	19.203	11.648
2010 - 2023	498.386	51.646	21.598	14.025

The data show that the annual rainfall levels in the catchment have increased by over 20 mm per year, with the percentage of dry days decreasing and the percentage of days with heavy (>10 mm/day) rainfall increasing. However, more than half of the days had no

rainfall at all, suggesting that the area is notably 'drier' than other areas of the country. Two sample t-tests indicated that there was no significant difference ($p > 0.05$) in the mean daily rainfall per month for the 2001 – 2010 and 2010 – 2023 periods.

Rainfall leads to increased faecal loading through two factors: elevated levels of surface runoff and increased spill events from intermittent discharges, particularly during periods of heavy rain. Rainfall levels during both periods were greatest in winter months (November – February), and so levels of runoff etc. would be expected to be greatest during this time. However, as the rainfall patterns have remained (statistically) similar across the two time periods, significantly altered bacterial loading due to these factors is unlikely and as such RMP recommendations made in the original sanitary survey to capture the influence of runoff and spill events remain valid.

6 Microbial Monitoring Results

6.1 Official Control Monitoring

6.1.1 Summary Statistics and geographical variation

Mean Official Control Monitoring results for *E. coli* concentrations at RMPs sampled in the Walton Backwaters BMPA since 2010 are presented spatially in Figure 6.1 and summary statistics are presented in Table 6.1. This data was obtained through a request to Cefas, but is freely available on the datahub¹. As discussed previously in this report, no monitoring was undertaken at any of the RMPs between 2015 and 2023, but the data presented in Table 6.1 and Figure 6.1 has been aggregated. Where appropriate in the subsequent sections, the data has been subdivided into monitoring data pre-declassification (2010 - 2015) and post application for reclassification (2023 – present).

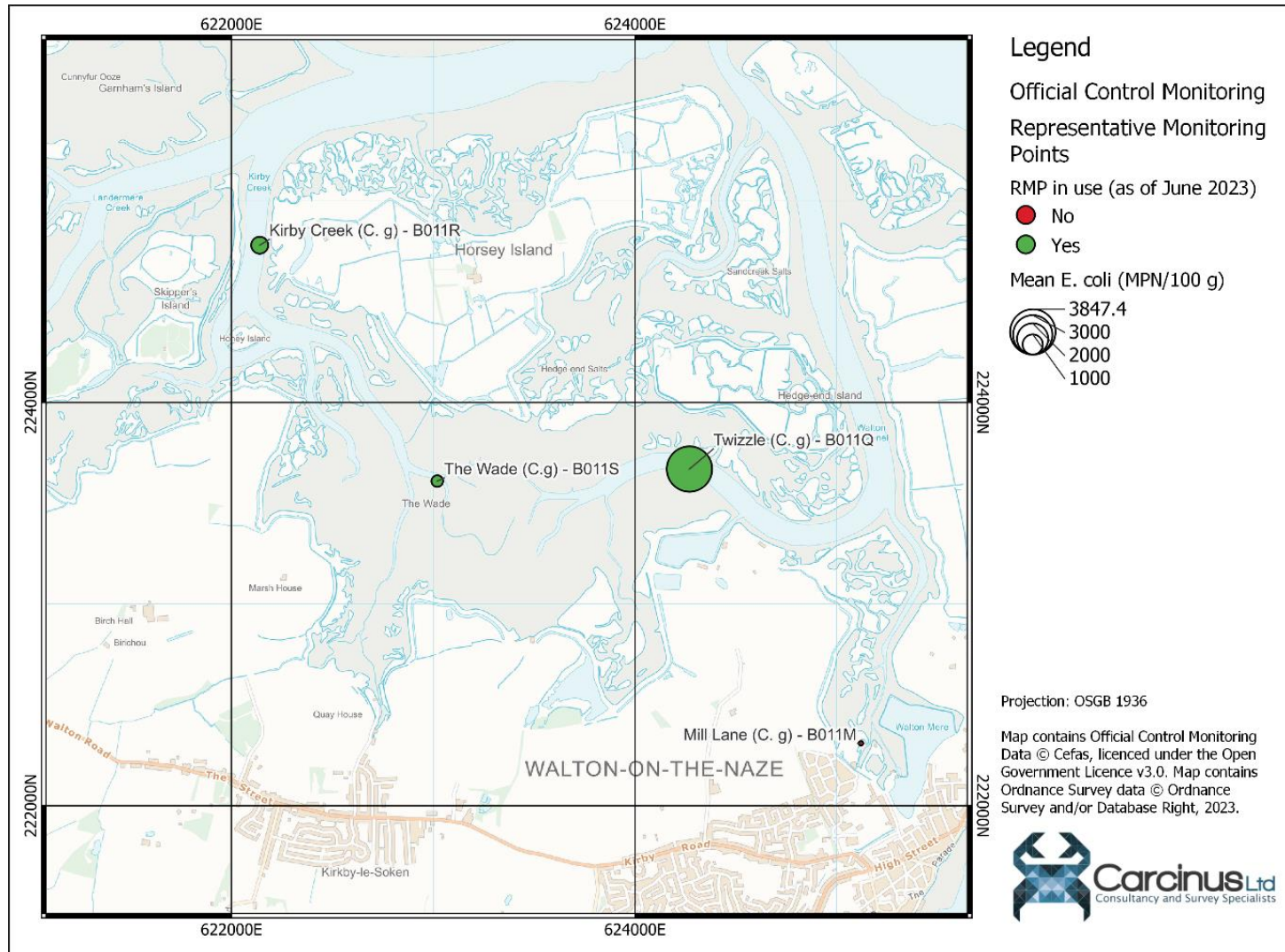


Figure 6.1 Mean E. coli results from Official Control Monitoring at bivalve RMPs in the Walton Backwaters BMPA.

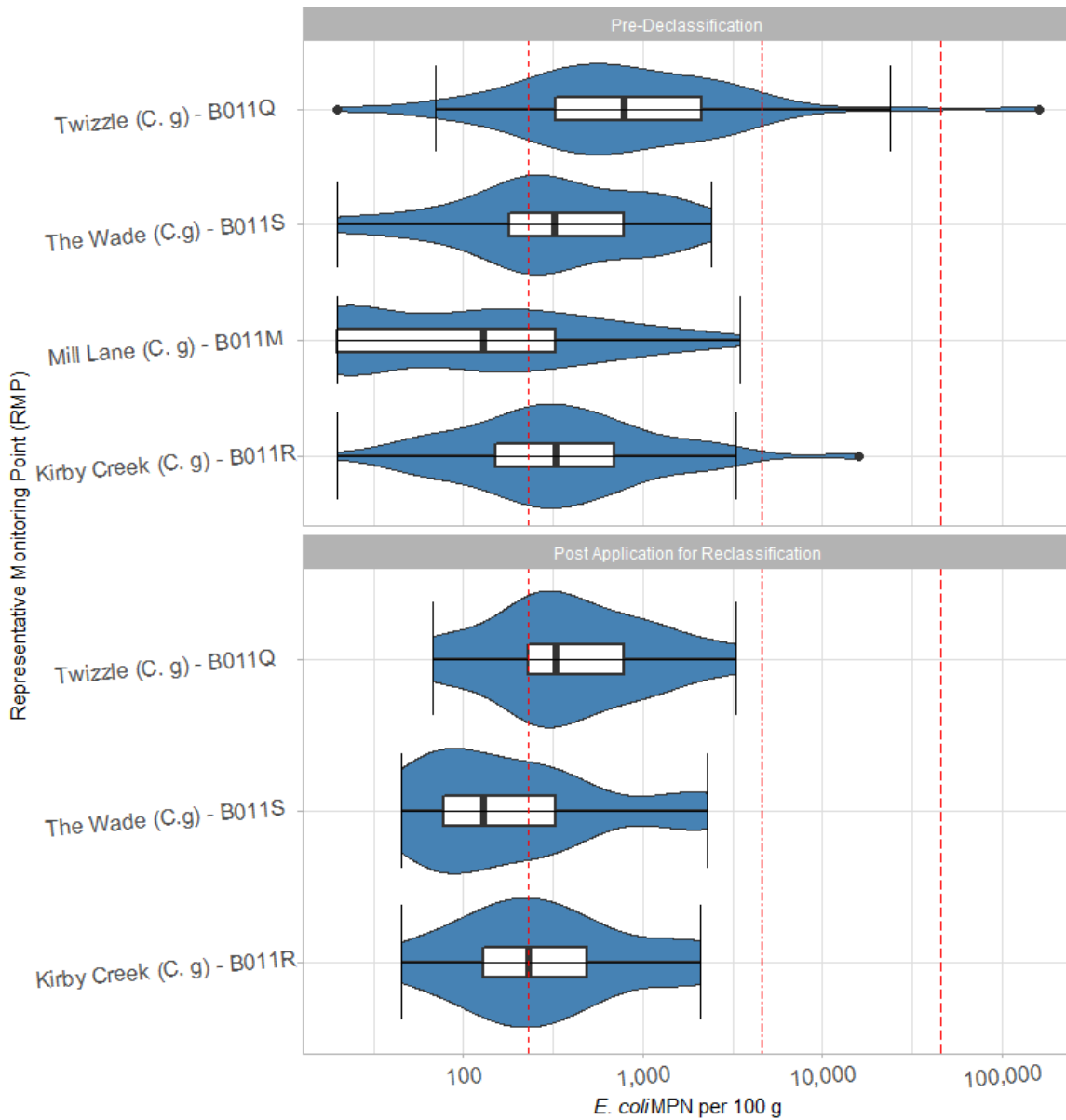
Table 6.1 Summary statistics of Official Control Monitoring at bivalve RMPs in the Walton Backwaters BMPA.

RMP (Species)	NGR	No. Samples	First Sample	Last Sample	Mean	Min Value	Max Value	% > 230	% > 4,600	% > 46,000
Kirby Creek (C. g) - B011R	TM22142478	65	19/01/2010	21/06/2023	785.8615	20	16000	53.85	1.54	0.00
Mill Lane (C. g) - B011M	TM25122231	52	19/01/2010	14/10/2015	350.5769	20	3500	30.77	0.00	0.00
The Wade (C.g) - B011S	TM23022361	31	15/06/2010	21/06/2023	512.8065	20	2400	48.39	0.00	0.00
Twizzle (C. g) - B011Q	TM24272367	65	19/01/2010	21/06/2023	3847.4	20	160000	80.00	6.15	1.54

A total of four RMPs have been sampled in the Walton Backwaters BMPA since 2010. The only RMP not to have sampling recommenced following the application for reclassification was Mill Lane B011M. To date, 13 samples have been collected at the three RMPs currently in use within this BMPA since January 2023. Only two RMPs have ever returned a result above 4,600 *E. coli* MPN/100 g and only one (Twizzle B011Q) has ever returned a result above 46,000 *E. coli* MPN/100 g. When considered spatially, the RMPs farther upstream and closer to the settlements in the south of the catchment have returned higher monitoring results.

Figure 6.2 presents box and violin plots of *E. coli* monitoring at RMPs within the Walton Creek BMPA, subdivided into data from 2010 – 2015 (pre declassification) and 2023 – present (post application for reclassification). One-way analyses of variance (ANOVA) tests were performed on the data to investigate the statistical significance of any differences between the monitoring results from the RMPs. Significance was taken at the 0.05 level. All statistical analysis described in this section was undertaken in R (R Core Team, 2021).

Figure 6.2 indicates that the monitoring results from the four RMPs sampled pre-declassification returned broadly similar results. The lowest median result was returned at Mill Lane (B011M) and the highest at Twizzle (B011Q). In the sampling conducted from January 2023 – Present, the lowest median result was returned at The Wade (B011S) and the highest still at Twizzle (B011Q). The median results for Twizzle (B011Q) and Kirby Creek are above the 230 *E. coli* MPN/100 g threshold but are well below the Class B (4,600 *E. coli* MPN/100 g) threshold. The data suggest that monitoring results are lower since sampling recommenced, although only 13 samples have been collected to date. There is no significant difference in the monitoring results from any of the RMPs, or between the two different time periods.

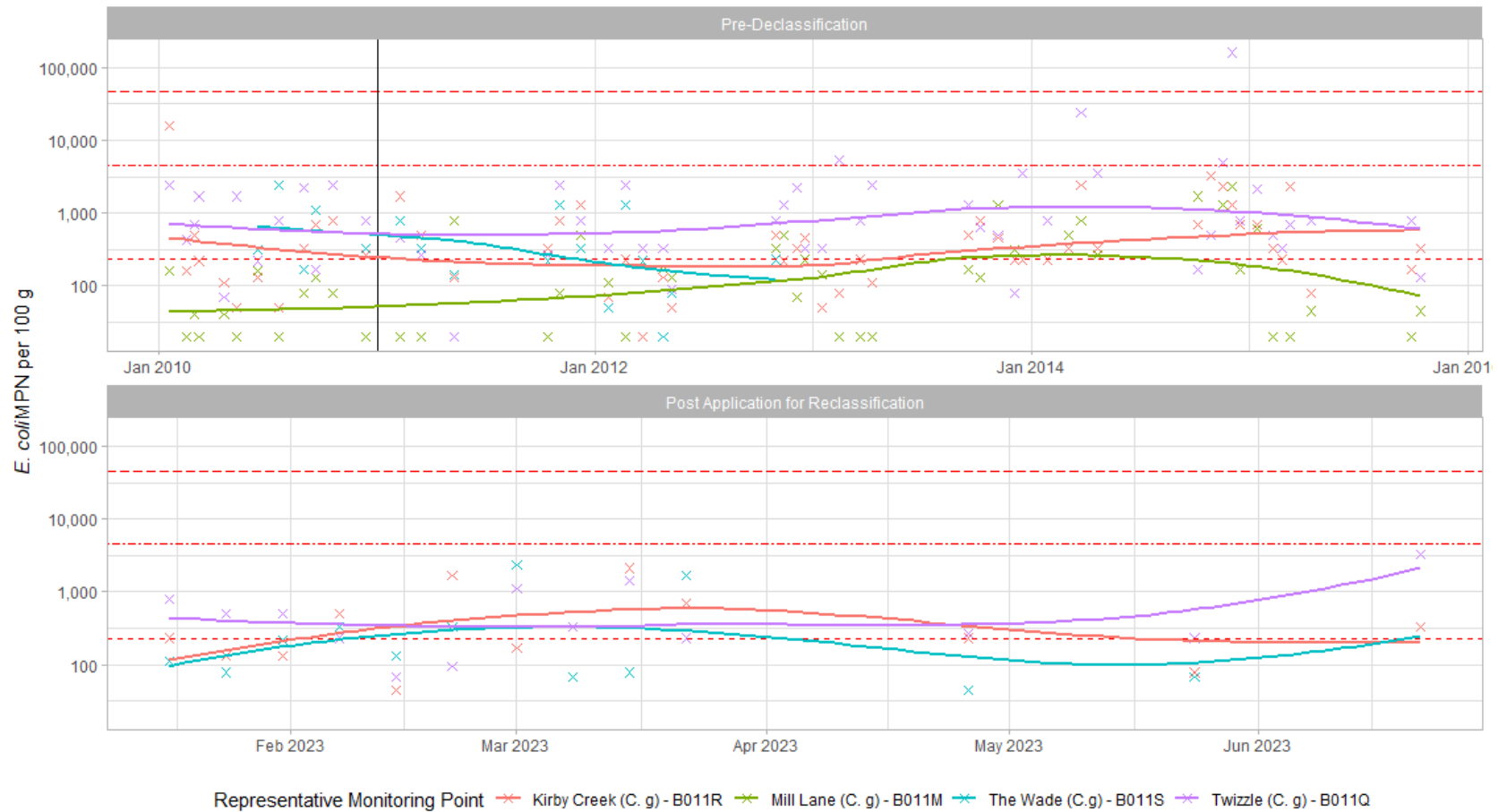


Official Control Monitoring results at Pacific oyster RMPs in the Walton Backwaters BMPA
Data © Cefas, Licenced under the Open Government Licence v3.0

Figure 6.2 Box and violin plots of *E. coli* monitoring at bivalve RMPs in the Walton Backwaters BMPA. Data have been subdivided into pre-declassification and post application for reclassification. Central line indicates median value, box indicates lower-upper quartile range and whisker indicates minimum/maximum values, excluding outliers. Boxplots are overlaid on the distribution of the monitoring data. Horizontal dashed lines indicate classification thresholds at 230, 4,600 and 46,000 *E. coli* MPN/100 g.

6.1.2 Overall temporal pattern in results

The overall temporal pattern in shellfish flesh monitoring results within the Walton Backwaters BMPA, subdivided into data from 2010 – 2015 (pre declassification) and 2023 – present (post application for reclassification), is shown in Figure 6.3.



Official Control Monitoring results at Pacific oyster RMPs in the Walton Backwaters BMPA
 Data © Cefas, Licenced under the Open Government Licence v3.0

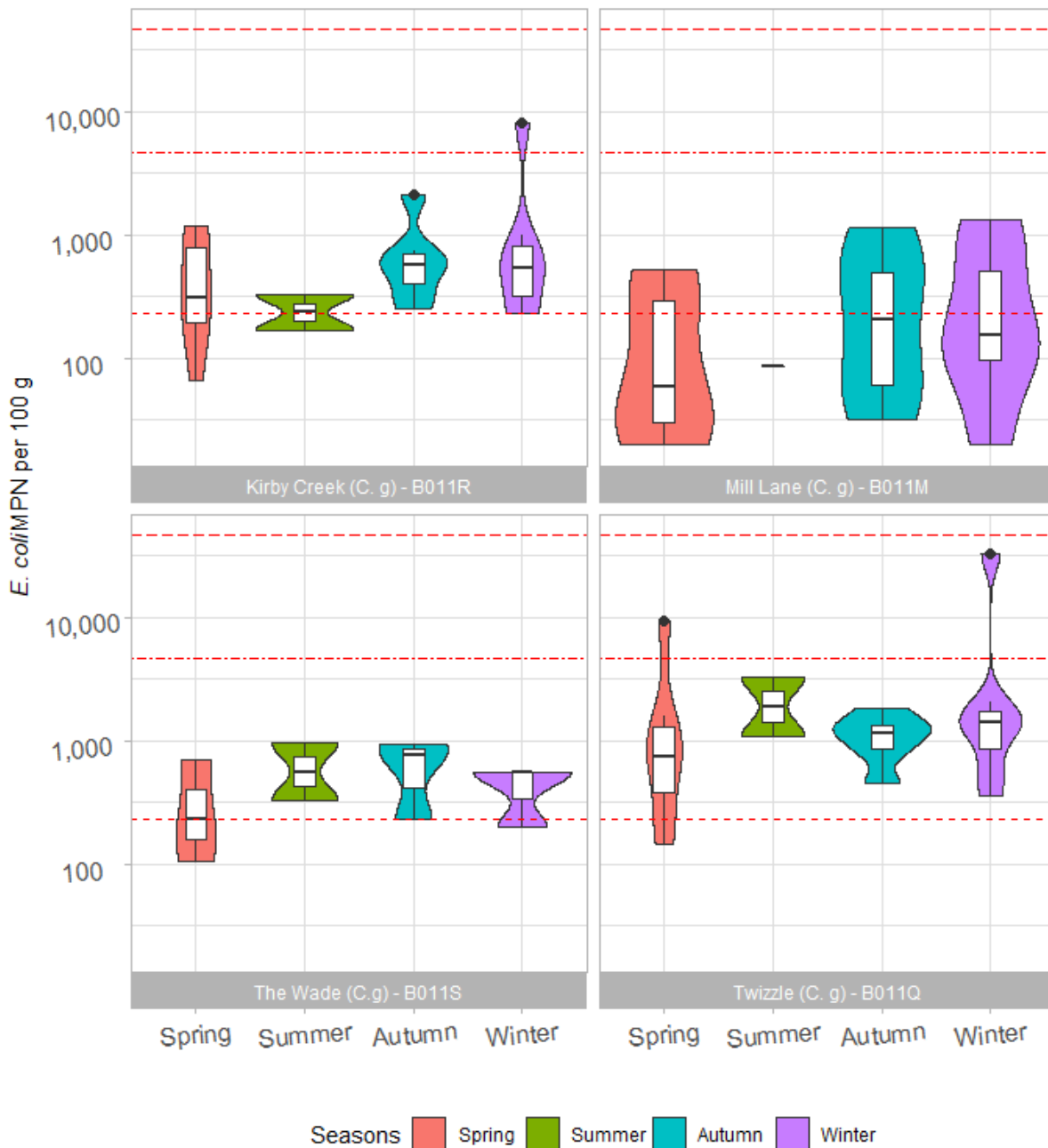
Figure 6.3 Timeseries of *E. coli* levels at Pacific oyster RMPs sampled in the Walton Backwaters BMPA since 2010. Data have been subdivided into pre-declassification and post application for reclassification. Scatter plots are overlaid with a loess model fitted to the data. Horizontal lines indicate classification thresholds at 230, 4,600 and 46,000 *E. coli* MPN/100 g respectively.

The monitoring data presented in Figure 6.3 indicates that between 2010 and 2015 the monitoring results from the Twizzle (B011Q) were consistently higher than the other RMPs monitored, but that generally monitoring results were stable, with the loess trend line falling at or slightly above the 230 *E. coli* MPN/100 g threshold. It is difficult to draw firm conclusions from the monitoring data post the application for reclassification as only 13 samples have been collected, although the trend lines are still falling around the 230 *E. coli* MPN/100 g threshold.

6.1.3 Seasonal patterns of results

Seasonal patterns of *E. coli* levels at RMPs in the Walton Backwaters BMPA were investigated and are shown in Figure 6.4. The data for each year were averaged into the four seasons, with, spring from March – May, summer from June – August, autumn from September – November and winter comprising data from December – February the following year. Two-way ANOVA testing was used to look for significant differences in the data, using both season and RMP (if there is more than one RMP for a given species) as independent factors (i.e., pooling the data across season and RMP respectively), as well as the interaction between them (i.e., exploring seasonal differences within the results for a given RMP). Significance was taken at the 0.05 level. As there is less than one year of data post the application for reclassification, the data from the entire period (2010 – present) has been pooled for this analysis.

The data suggest that there are no significant differences within the monitoring data, either when data from all RMPs is pooled together or when they are considered independently.



Official Control Monitoring results at Pacific oyster RMPs in the Walton Backwaters BMPA
Data © Cefas, Licenced under the Open Government Licence v3.0

Figure 6.4 Box and violin plots of *E. coli* levels per season at Pacific oyster RMPs sampled within the Walton Backwaters BMPA since 2010. Horizontal lines indicate classification thresholds at 230, 4,600 and 46,000 *E. coli* MPN/100 g.

6.2 Bathing Water Quality Monitoring

The status of EC bathing waters near to and within the BMPA is also of relevance to this review. There are no bathing water quality monitoring points within the Walton Backwaters themselves, the closest bathing water quality monitoring points are at Walton and Harwich,

both of which are on the Essex coast. Both monitoring points are currently classified as 'excellent', and the monitoring point at Walton was last classified as 'good' in 2018.

It should be noted that bathing water sampling only occurs during the summer period (May to September inclusive) and therefore may not represent the potential for increased faecal loading during winter months. However, bathing water quality results do provide an indication of water quality in the area during the bathing water season are good.

6.3 Action States

Since the publication of the 2011 Sanitary Survey, the following action states have been triggered within the Walton Backwaters BMPA.

- On 25 March 2014, a result of 24,000 *E. coli* MPN/100 g was recorded at the Twizzle (B011Q) RMP. No other high results recorded in the area on that date. No action state or subsequent monthly samples were collected. The preceding days were reported to be very dry and action state investigations did not find any evidence to waive the result.
- On 02 December 2014, a result of 160,000 *E. coli* MPN/100 g was recorded at the Twizzle (B011Q) RMP. No other high results recorded in the area on that date. No action state sampling was undertaken, but the subsequent sample, collected on 16 December 2014, returned a result of 780 *E. coli* MPN/100 g. The LEA stated at the time that the shellfish bed was not commercially active and stock was being retained only for sampling purposes. Action state investigations did not find any evidence to waive the result.

7 Conclusion and overall assessment

The Walton Backwaters is a tidal inlet on the Essex Coast. The closest BMPAs are those of the river Deben (Cefas Reference: M010) 20 km north and the Colne (M012) 16 km southwest. The shellfishery within the BMPA was declassified between 2016 and 2023, but three Classification Zones recommended in the 2011 Sanitary Survey were reclassified in May 2023. The species classified have changed; the 2011 Sanitary Survey describes that the active shellfishery was for Pacific oysters, native oysters and *Tapes* spp. clams. The currently classified species are Pacific oysters, native oysters and *M. mercenaria* clams. During initial consultations, it was indicated that there may be industry desire to classify the area for both cockles and *Tapes* spp, although subsequent discussions indicated that no formal classification was requested at the time of writing (November 2023).

The results of the 2021 Census were compared to that of the 2011 Census to give an indication of changes in human population in the catchment. At the 2021 Census, the total estimated population of the catchment was 40,043, an increase of 6.12% on the 2011 Census result. Walton-on-the-Naze/Frinton-on-Sea (and the surrounding hamlets) represent the only urban centres with the potential to impact the bacteriological health of the BMPA. The area is likely to receive some seasonal influx of tourists, but no information has been

received to date to suggest that the existing sewerage network is insufficient to handle this increase.

The wastewater treatment network in the area is sparse (reflecting the small population), with no continuous water company discharges in the Walton Backwaters themselves, and only one intermittent discharge (Kirby Main Maltings SPS) having the potential to impact the BMPA. This discharge spilled seven times for 11.6 hrs in 2022, although the Environment Agency do not consider it a significant source of pollution in the catchment. No upgrades or improvements to the existing wastewater treatment network are planned.

No livestock data could be provided by Defra to prevent disclosure of information about individual farms, as there are fewer than five holdings in the catchment. Land cover data does show that most of the land surrounding the estuary is agricultural, both arable and pasture. There have been occasional pollution incidents from agricultural sources since 2011, and this is considered to be one of the more significant causes of microbiological contamination within the Walton Backwaters BMPA. All three CZs are likely to be impacted as all are surrounded by areas of arable farmland.

Waterbird counts for the Walton Backwaters (surveyed as Hamford Water) suggest that there are internationally significant aggregations of waterbirds throughout the area. These are likely to represent one of the more significant causes of microbiological contamination within the Walton Backwaters BMPA, particularly in winter months. It remains hard to reliably account for this source of pollution however as the aggregations of birds will shift from year to year based on the distributions of their prey.

There is considered to be no impact from merchant shipping as there are no commercial ports within Walton Backwaters. There is a small fishing fleet that operates out of Walton-on-the-Naze, but the main pollution risk from boating activities will continue to come from pleasure craft. There are no marinas in the area, but there are several patches of moorings. Comparison with the situation described in the 2011 Sanitary Survey suggests that overall, the level of recreational boating activity in the area remains high, and there is a chance that the main navigational channels and areas of moorings will receive some contamination, particularly in the summer. However, the recommendations made in the 2011 report remain valid as the areas at risk have not changed.

There has been an eight year gap between the collection of monitoring results pre-declassification of the CZs in 2015 and following the application for reclassification in 2023, and so generally the two sets of monitoring data have been considered separately. No significant differences were found between any of the datasets considered, either when considered seasonally or the two time periods were contrasted.

Based on the information available, there do not appear be any significant knowledge gaps that would justify a shoreline survey. There have been no notable changes to sources of pollution since the 2011 Sanitary Survey was published.

Having reviewed and compared the findings of the desk-based study with the original sanitary survey in 2014, the FSA is content that a shoreline assessment is not required.

8 Recommendations

Recommendations for the various classification zones within the Walton Backwaters BMPA are summarised in the paragraphs below and in Table 9.1.

8.1 Pacific oyster

8.1.1.1 Kirby Creek

This is the smallest CZ within the Walton Backwaters BMPA, covering an area of 0.386 km². It is situated between Horsey Island and Skippers Island. The 2011 Sanitary Survey recommended placing the RMP for this CZ at Landing Place TM 2214 2478, to capture contamination from Landermere Creek and the main channel of Hamford Water. This CZ will be affected by contamination sources originating from both the outer part of the inlet (the main Hamford Water channel) and the inner reaches of Kirby Creek. The current RMP position continues to be representative of the main contamination sources affecting the CZ and should be retained moving forward.

8.1.1.2 The Wade

This forms the middle part of the large contiguous classified area within the Walton Backwaters, covering an area of 1.39 km² between the *Kirby Creek* and *Twizzle* CZs. Maps presented in the 2011 Sanitary Survey suggest that the shellfish beds within this Classification Zone are restricted to the subtidal drainage channels, and that report recommended placing the RMP at the eastern end of the bed (at TM 2302 2361) to capture contamination from Kirby-le-Soken and Kirby Quay Creek. These areas continue to represent the main contamination sources affecting the CZ, and provided that the shellfish beds do not extend farther up the drainage than the current RMP position of TM 2302 2361 should be retained. The RMP should be placed as far up the drainage channel as shellfish stock exists.

8.1.1.3 Twizzle

This is the CZ that is farthest east within the Walton Backwaters BMPA, covering an area of 0.938 km². As with *The Wade* CZ, the maps presented in the 2011 Sanitary Survey suggest that the shellfish beds within this Classification Zone are restricted to the subtidal drainage channel. That report recommended placing the RMP at the eastern end of the shellfish bed (at TM 2427 2367) to capture contamination delivered to the area from Walton Channel and Sole Creek via the Twizzle channel. These areas continue to represent the main contamination sources affecting the CZ, and provided that the shellfish beds do not extend farther up the drainage than the current RMP position of TM 2427 2367 should be retained. The RMP should be placed as far up the drainage channel as near to the confluence of the Twizzle, Walton and Sole Creek channels as shellfish stock exists.

8.2 Native oyster

All three Classification Zones for Pacific oyster are also classified for native oyster. A Cefas report into the use of indicator species in BMPAs in the UK found that native oysters and Pacific oysters accumulate *E. coli* to a similar extent (Cefas, 2014). As such, it is recommended that all three native oyster CZs continue to be classified based on Pacific oyster samples.

8.3 American Hard Clams

All three Classification Zones for Pacific oyster are also classified for American hard clams. A Cefas report into the use of indicator species in BMPAs in the UK found that Pacific oysters accumulate *E. coli* to a greater extent than American hard clams (Cefas, 2014). As such, it is recommended that all three American hard clams CZs continue to be classified based on Pacific oyster samples. However, it is possible that should separate American hard clam RMPs be established, the Classification Status of the American hard clam CZs may improve. We seek clarification from the LEA whether they wish for this change to be reflected in the sampling plan.

9 General Information

9.1 Location Reference

Production Area	Walton Backwaters
Cefas Main Site Reference	M011
Ordnance survey 1:25,000	OS Explorer 184
Admiralty Chart	Admiralty 1408 & Imray C28

9.2 Shellfishery

Species	Culture Method	Seasonality of Harvest
Native oyster (<i>Ostrea edulis</i>)	Wild & Cultured	Year Round
Pacific oyster (<i>Crassostrea gigas</i>)	Wild & Cultured	Year Round
American hard clams (<i>Mercenaria mercenaria</i>)	Wild	Year Round

9.3 Local Enforcement Authority(s)

Name	Environmental Health Commercial Team Tendring District Council Pier Avenue Clacton on Sea Essex
Website	www.tendringdc.gov.uk
Telephone number	01255 68 67 68
E-mail address	fhsadmin@tendringdc.gov.uk

9.4 Sampling Plan

Table 9.1 Proposed sampling plan for the Walton Backwaters BMPA. Suggested changes are given in **bold red** type.

Classification Zone	RMP	RMP Name	NGR (OSGB 1936)	Lat / Lon (WGS 1984)	Species Represented	Harvesting Technique	Sampling Method	Sampling Species	Tolerance	Frequency
Kirby Creek (P oysters; N oysters; American hard clams)	B011R	Kirby Creek	TM 2214 2478	51°52.64" N, 01°13.55" E	<i>C. gigas</i> ; <i>O. edulis</i> ; <i>M. mercenaria</i>	Dredge	Dredge	<i>C. gigas</i>	100 m	Monthly
The Wade (P oysters; N oysters; American hard clams)	B011S	The Wade	TM 2302 2361	51°51.99" N, 01°14.63" E	<i>C. gigas</i> ; <i>O. edulis</i> ; <i>M. mercenaria</i>	Dredge	Dredge	<i>C. gigas</i>	100 m	Monthly
Twizzle (P oysters; N oysters; American hard clams)	B011Q	Twizzle	TM 2427 2367	51°51.99" N, 01°15.36" E	<i>C. gigas</i> ; <i>O. edulis</i> ; <i>M. mercenaria</i>	Dredge	Dredge	<i>C. gigas</i>	100 m	Monthly

10 References

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11 Appendices



EC Regulation 854/2004

**CLASSIFICATION OF BIVALVE
MOLLUSC PRODUCTION AREAS IN
ENGLAND AND WALES**

SANITARY SURVEY REPORT

Walton Backwaters (Essex)



2011

Follow hyperlink in image to view full report.

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Carcinus was established in 2016 by its directors after over 30 years combined experience of working within the marine and freshwater environment sector. From our base in Southampton, we provide environmental consultancy advice and support as well as ecological, topographic and hydrographic survey services to clients throughout the UK and overseas.

Our clients operate in a range of industry sectors including civil engineering and construction, ports and harbours, new and existing nuclear power, renewable energy (including offshore wind, tidal energy and wave energy), public sector, government, NGOs, transport and water.

Our aim is to offer professional, high quality and robust solutions to our clients, using the latest techniques, innovation and recognised best practice.

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Tendring District Council Water Cycle Study

Final Report

Tendring District Council

September 2017

Quality information

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List of Acronyms

AMP	Asset Management Plan
AW	Affinity Water
AWS	Anglian Water Services
BGS	British Geological Society
BOD	Biochemical Oxygen Demand
BREEAM	Building Research Establishment Environmental Assessment Method
CAMS	Catchment Abstraction Management Strategy
CBA	Cost Benefit Analysis
CIL	Community Infrastructure Levy
CIRIA	Construction Industry Research and Information Association
CLG	Communities and Local Government
DEFRA	Department for Environment, Food and Rural Affairs
DWF	Dry Weather Flow
EA	Environment Agency
EFI	Environmental Flow Indicator
GI	Green Infrastructure
GWR	Greywater Recycling
HA	Highways Agency
l/h/d	Litres/head/day (a water consumption measurement)
LCT	Limits of Conventional Treatment
LFE	Low Flow Enterprise (low flow model)
LLFA	Lead Local Flood Authority
LNR	Local Nature Reserve
LPA	Local Planning Authority
MI	Mega Litre (a million litres)
NE	Natural England
NPPF	National Planning Policy Framework
OAHN	Objectively Assessed Housing Need
OFWAT	The Water Services Regulation Authority (formerly the Office of Water Services)
ONS	Office for National Statistics
OR	Occupancy Rate
P	Phosphorous
Q95	The river flow exceeded 95% of the time
RAG	Red/Amber/Green Assessment
RBMP	River Basin Management Plan
RoC	Review of Consents (under the Habitats Directive)
RQP	River Quality Planning (tool)
RWH	Rainwater Harvesting
S106	Section 106 (Town and Country Planning Act 1990)
SAC	Special Area for Conservation
SFRA	Strategic Flood Risk Assessment
SPA	Special Protection Area
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest
SUDS	Sustainable Drainage Systems
SWMP	Surface Water Management Plan
TDC	Tendring District Council
UKTAG	United Kingdom Technical Advisory Group (to the WFD)
UKWIR	United Kingdom Water Industry Research group
UWWTD	Urban Wastewater Treatment Directive
WCS	Water Cycle Study
WFD	Water Framework Directive
WN	Water Neutrality
WRC	Water Recycling Centre
WRMP	Water Resource Management Plan
WRMU	Water Resource Management Unit (in relation to CAMS)
WRZ	Water Resource Zone (in relation to a water company's WRMP)
WSI	Water Services Infrastructure

Non-Technical Summary

Tendring District Council is expected to experience significant growth, particularly in relation to domestic redevelopment, over the period 2017 to 2033. This growth represents a challenge in ensuring that both the water environment and water services infrastructure has the capacity to sustain this level of growth and development proposed.

This Tendring District Council Water Cycle Study (WCS) forms an important part of the evidence base that will help Tendring District Council determine the most appropriate options for development within the district (with respect to water infrastructure and the water environment) to be identified in the Council's New Local Plan (2013 to 2033).

Planned future development throughout the Tendring District has been assessed with regards to water supply capacity, wastewater capacity and environmental capacity. Any water quality issues, associated water infrastructure upgrades, and potential constraints have subsequently been identified and reported. This WCS then provides information at a level suitable to demonstrate that there are workable solutions to key constraints to deliver future development for all development sites (committed and allocations), including recommendations on the policy required to deliver it.

Wastewater Strategy

Wastewater Treatment

The WCS identifies that in total, out of the 14 Water Recycling Centres (WRCs) in the Tendring District, 12 will serve the proposed future development across the District within. Table 1 below provides an indication of the WRCs which have available capacity and those that are likely to require changes to permits that control discharge and potentially infrastructure upgrades.

Table 1. WRC summary

WRC	Summary
Brightlingsea – Church Rd	Flow and treatment capacity for all proposed growth with some flow capacity for further growth.
Clacton -Holland Haven	Treatment process upgrades will be required from 2024 using conventional treatment technologies to meet river quality targets. Permit setting recommended for BOD ¹ .
Colchester	Treatment process upgrades will be required from 2033 using conventional treatment technologies to meet river quality targets. Permit setting recommended for BOD.
Great Bromley	Flow and treatment capacity for all proposed growth with some flow capacity for further growth.
Harwich and Dovercourt	Flow and treatment capacity for all proposed growth with some flow capacity for further growth.
Jaywick	Treatment process upgrades will be required from 2025 using conventional treatment technologies to meet river quality targets. Permit setting recommended for BOD.
Little Bentley Tendring Rd	No growth is allocated.
Manningtree	Treatment process upgrades will be required from 2019 using conventional treatment technologies to meet river quality targets. Permit setting recommended for BOD.
St Osyth	Flow and treatment capacity for all proposed growth with some flow capacity for further growth.
Tendring Green	No growth is allocated.
Thorrington	Flow and treatment capacity for all proposed growth with some flow capacity for further growth.
Walton on the Naze	Flow and treatment capacity for all proposed growth with some flow capacity for further growth.
Wix	Flow and treatment capacity for all proposed growth with some flow capacity for further growth.

¹ Biochemical Oxygen Demand (BOD) is defined as the amount of oxygen needed for the biochemical oxidation of the organic matter to carbon dioxide in 5 days. BOD is an indicator for the mass concentration of biodegradable organic compounds.

WRC

Summary

Wrabness – Wheatsheaf Close	Treatment process upgrades will be required using conventional treatment technologies to meet river quality targets. Permit setting recommended for BOD. Permit setting may be required for ammonia and phosphate.
-----------------------------	--

Five WRCs (Clacton-Holland Have, Colchester, Jaywick New, Manningtree and Wrabness-Wheatsheaf Close) do not have sufficient capacity to accept all future development proposed within the plan period. Therefore solutions are required in order to accommodate the growth to ensure that the increased wastewater flow discharged does not impact on the current quality of the receiving watercourses, their associated ecological sites and also to ensure that the watercourses can still meet with legislative requirements.

Out of the abovementioned five WRCs, the first four discharge to coastal/transitional waterbodies, and only Wrabness-Wheatsheaf Close discharges to a fluvial water body.

The Load Standstill assessments for BOD show that improvements to Clacton-Holland Haven, Colchester, Jaywick New and Manningtree WRCs are possible using conventional wastewater treatment technologies currently available, demonstrating that an engineering solution is feasible and hence treatment capacity should not be seen as a barrier to growth.

The Wrabness-Wheatsheaf Close WRC is a small WRC, which serves a small catchment area, and the necessary datasets to implement the wastewater assessment were not available at the time of preparing the WCS. Based on high level assumptions and the calculated future dry weather flow at this WRC, it has been concluded that improvements to this WRC are possible using wastewater treatment technologies currently available. Due to the lack of data for this WRC and the receiving water environment, further assessments may be required to understand the impact of growth on the water quality permits for this WRC. This would need to be scoped and undertaken in consultation with the Environment Agency and Anglian Water.

The phasing of developments draining to the five WRCs will need to be discussed between Tendring District Council and Anglian Water to ensure no development occurs before the necessary upgrades are in place, and development is phased in line with Anglian Water's asset management plans. Development would need to be phased and potentially delayed until Anglian Water has accounted for the new development.

The WCS has concluded feasible solutions are possible to ensure environmental conditions and legislative objectives are met. However, this WCS recommends that Tendring District Council, the Environment Agency, and Anglian Water should work together to determine when solutions will implemented and hence conclude when and how much development can be accommodated across the study area in the early phases of the Local Plan delivery period.

To ensure that the planned level of development within the plan period does not result in a negative impact upon wildlife both inside and outside of designated sites, it is recommended that policy is included within the Local Plan to ensure that these matters are addressed at a strategic level.

Water Supply Strategy

Based on the growth assessed, the WCS has concluded that, allowing for the planned resource management of Affinity Water's supply areas in the District, the water supply companies would have adequate water supply to cater for growth over the plan period.

The WCS has identified that the Water Resource Zone will be in surplus at Dry Year Critical Period 2040 and therefore, no water resources assessment is required for the period 2015-2040.

Nevertheless, the WCS has set out ways in which demand for water as a result of development can be minimised without incurring excessive costs or resulting in unacceptable increases in energy use. In addition, the assessment has considered how far development in the District can be moved towards achieving a theoretical 'water neutral' position i.e. that there is no net increase in water demand between the current use and after development use across the plan period. A pathway for achieving neutrality as far as practicable has been set out, including advice on:

- what measures need to be taken technologically to deliver more water efficient development;

- what local policies need to be developed to set the framework for reduced water use through development control;
- how measures to achieve reduced water use in existing and new development can be funded; and
- where parties with a shared interest in reducing water demand need to work together to provide education and awareness initiatives to local communities to ensure that people and business in the District understand the importance of using water wisely.

Three water neutrality scenarios have been proposed and assessed to demonstrate what is required to achieve different levels of neutrality in the District. The assessment concluded that measures should be taken to deliver the first step on the neutrality pathway; the following initial measures are therefore suggested by the WCS:

- Ensure all housing is water efficient, with new housing development meets the mandatory national standard as set out in the Building Regulations;
- Carry out a programme of retrofitting and water audits of existing dwellings and non-domestic buildings. Aim to move towards delivery of 5% of the existing housing stock, with easy fit water saving devices; and,
- Establish a programme of water efficiency promotion and consumer education, with the aim of behavioural change with regards to water use.

Overall Impact of Development

The site assessments have highlighted some localised constraints with the water supply and wastewater network which need to be resolved and agreed between the relevant developer and water company (either Anglian Water or Affinity Water).

Overall, the water cycle study concludes there are no constraints with respect to water service infrastructure and the water environment to deliver the Local Plan development, on the basis that strategic water resource options and wastewater solutions are developed in advance of development coming forward.

1. Introduction

1.1 Background

The District of Tendring is located in the County of Essex. The District has experienced significant growth in the past decade, and is expected to experience a significant increase in housing requirement and economic growth over the period to 2033.

Tendring District Council is currently preparing a new Local Plan which will supersede the current Local Plan and will set out the Council's strategy for future development and growth to 2033 and beyond. The Draft Local Plan identifies 1,374 housing completions between 2013/14 and 2016/17. A further 10,627 homes are planned between 2017 and 2033.

This Water Cycle Study (WCS) forms an important part of the evidence base for the new Local Plan that will help to ensure that development does not have a detrimental impact on the water environment within the District. The WCS will also help to guide the development towards the most appropriate locations (with respect to water infrastructure and the water environment) to be identified in the new Local Plan.

The objective of the WCS is to identify any constraints on planned housing growth that may be imposed by the water cycle. The WCS then identifies how these can be resolved i.e. by ensuring that appropriate Water Services Infrastructure (WSI) can be provided to support the proposed development.

1.2 WCS History

A Stage 1 (2008) and Stage 2 (2009) WCS were prepared for the Haven Gateway sub-region (HGSR), which comprised of the Local Authorities of Tendring, Colchester, Ipswich, part of Suffolk Coastal and part of Babergh. These studies considered a Local Plan period to 2021.

This report considers the previous WCS outputs as part of a revised baseline and re-considers the impact of growth up to 2033 to support the new Local Plan.

1.3 Study Governance

This WCS has been carried out with the guidance of the Steering Group established at the project inception meeting held on 3rd July 2017 comprising the following organisations:

- Tendring District Council;
- Anglian Water Services; and
- Environment Agency.

Affinity Water were unable to attend the inception meeting, however they have been consulted during the preparation of this report.

1.4 WCS Scope

This WCS provides information at a level suitable to ensure that there are deliverable Water Services Infrastructure (WSI) solutions to support growth for the preferred development allocations, including the policy required to deliver it.

The outcome is the development of a water cycle strategy for the District which informs the Council's new Local Plan, sustainability appraisals and appropriate assessments specific to the water environment and WSI issues.

The following sets out the key objectives of the WCS:

- provide a strategy for wastewater treatment across the District which determines if solutions to wastewater treatment are required and if required, whether those solutions are viable in terms of balancing environmental capacity with cost;

- describe how the wastewater treatment strategy might impact phasing of development;
- determine whether any Habitats Directive designated ecological sites have the potential to be impacted by the wastewater treatment strategy via a screening process;
- determine whether additional water resources, beyond those already planned by Affinity Water and Anglian Water are required to support growth;
- determine upgrades required to water supply infrastructure relative to potential options for growth through collaboration with Affinity Water and Anglian Water;
- consider whether growth can be delivered and achieve a 'neutral water use' condition;
- determine impact of infrastructure and mitigation provision on housing delivery phasing; and
- provide policy recommendations.

1.5 Key Assumptions and Conditions

1.5.1 Water Company Coverage

Two water companies operate within the District; Anglian Water is the wastewater undertaker for the entire District and Affinity Water supplies the majority of potable water to the District.

For the water supply assessment, the published measured household consumption for Affinity Water's Water Resource Zone 8 (WRZ8) of 133 litres per head per day (l/h/d) has been applied², as published in Affinity Water's Water Resources Management Plan (WRMP). This consumption has been assumed across the whole District. It is acknowledged that the 133 l/h/d assumption exceeds the current Building Regulations requirement of 125l/h/d for all new homes. However, analysis by water companies has shown that even when homes are built to a standard of 125l/h/d, the average household use increases over time due to various factors. The 125l/h/d requirement is an aspirational target only and Affinity Water is required under their remit to the industry regulator OFWAT, to plan for the expected actual use.

For the wastewater assessments, a different assumption was made on the likely consumption of water per new household going forward in the plan period. A starting assumption of 174l/h/d (litres per head per day)³ was provided by Affinity Water to calculate wastewater demand per person. In addition, to account for infiltration of surface water, groundwater and misconnections to the sewer network in the future, an additional proportion of 'unaccounted for' flows has been included in the calculations. An additional flow of 43l/h/d⁴ has therefore been added to the starting assumption of 174l/h/d, giving a final wastewater demand of 217 l/h/d.

It is therefore important that conclusions made on infrastructure capacity within this study are consistent with Anglian Water and Affinity Water planning strategies. This represents a precautionary approach and the assessments are based on a 'worst case scenario' for water consumption in the District.

1.5.2 Household Occupancy Rate

The latest Office for National Statistics (ONS) population projections⁵ and household projections⁶ have been used to determine the occupancy rate of each household coming forward in the plan period, and have been provided in Table 2 below.

² Based on the Dry Year Annual Average (DYAA) Per Capita Consumption (PCC)

³ Based on the Dry Year Critical Period (DYCP) Per Capita Consumption (PCC)

⁴ As provided by Anglian Water

⁵ Table: Household projections stage 1: household populations. Available at:

<https://www.gov.uk/government/statistical-data-sets/2014-based-household-projections-detailed-data-for-modelling-and-analytical-purposes>

⁶ Table: Household projections stage 1- households. Available at: <https://www.gov.uk/government/statistical-data-sets/2014-based-household-projections-detailed-data-for-modelling-and-analytical-purposes>

Table 2. Calculation of Occupancy Rate

Projection for 2033	
Population	156,143
Number of households	74,779
Calculated Occupancy Rate (people per household)	2.09

1.5.3 Wastewater Treatment

As a wastewater treatment provider, Anglian Water are required to use the best available techniques (defined by the Environment Agency as the best techniques for preventing or minimising emissions and impacts on the environment) to ensure emission limit values stipulated within each Water Recycling Centre (WRC)⁷ permit conditions are met.

Through application of the best available technologies in terms of wastewater treatment, the reliable limits of conventional treatment (LCT) have been determined for the key parameters of Biochemical Oxygen Demand (BOD)⁸, ammonia and phosphate, and are provided in Table 3.

Table 3. Reliable limits of conventional treatment technology for wastewater

Water Quality Parameter	LCT
Ammonia	1.0 mg/l 95 percentile limit ⁹
BOD	5.0 mg/l 95 percentile limit ⁹
Phosphate	0.5 mg/l annual average ¹⁰

1.6 Report Structure

The first stage of the WCS process is set out in Section 3 of this document and outlines the total proposed number of dwellings which will need to be catered for in terms of water supply and wastewater treatment. Understanding the level of growth and where it might be located informs the second stage of the study (reported in Section 4), assessing the current wastewater treatment facilities in regards to both capacity and compliance with legislation and environmental permits. The results of the assessment will identify the WRCs which are at capacity or have remaining capacity. The wider, supporting environment has also been considered, including local ecology.

In parallel to the wastewater assessment, Section 5 outlines water resource planning targets, discusses current and proposed water efficient measures and introduces the concept of water neutrality.

The report also covers the proposed major development sites (defined as having more than 10 dwellings) in more detail (Section 6), assessing each site by identifying local receptors such as watercourses, outlining current and future flood risks (inclusive of surface water and groundwater flood risks) and assessing the current wastewater network capacity.

Ultimately, recommendations have been made as part of the WCS (Section 7) in regards to wastewater, water supply, surface water management and flood risk, ecology and stakeholder liaison.

⁷ Anglian Water Services refer to their Wastewater Treatment facilities as Water Recycling Centres

⁸ Amount of oxygen needed for the biochemical oxidation of the organic matter to carbon dioxide in 5 days. BOD is an indicator for the mass concentration of biodegradable organic compounds

⁹ Considered within the water industry to be the current LCT using best available techniques

¹⁰ Environment Agency (2015) Updated River Basin Management Plans Supporting Information: Pressure Narrative: Phosphorus and freshwater eutrophication

2. Study Drivers

There are two key overarching drivers shaping the direction of the WCS as a whole:

- a. Delivering sustainable water management – ensure that provision of WSI and mitigation is sustainable and contributes to the overall delivery of sustainable growth and development and that the Local Plan meets with the requirements of the National Planning Policy Framework (NPPF) with respect to water; and
- b. Water Framework Directive (WFD) compliance – to ensure that growth, through abstraction of water for supply and discharge of treated wastewater, does not prevent waterbodies within the District (and more widely) from achieving the standards required of them as set out in the WFD River Basin Management Plans (RBMPs).

A full list of the key legislative drivers shaping the study is detailed in a summary table in Appendix A for reference. However, it is important to note that the key driver for this study is WFD compliance.

Other relevant studies that have a bearing on the provision of WSI for development include, but are not limited to, key documents including the Tendring District Council SFRA Update (Place Services, 2017), Affinity Water’s WRMP and the Environment Agency’s latest Anglian River Basin Management Plan (RBMP) (2015).

2.1 OFWAT Price Review

The price review is a financial review process governed by the Water Services Regulatory Authority (Ofwat) - the water industry’s economic regulator. Ofwat determines the limits that water companies can increase or decrease the prices charged to customers over consecutive five year periods.

Figure 1 summarises the timescale in the build up towards the next price review. The price limits for the next period (2020 to 2025) will be set at the end of 2019 to take effect on 1st April 2020 and is referred to as Price Review 19 (PR19). Each water company will submit a Business Plan (BP) for the next period which will be assessed by Ofwat, before being agreed. Price limit periods are referred to as AMP (Asset Management Plan) periods, with the current AMP period being referred to as AMP6.

Figure 1. Proposed timescales for PR19 (Water 2020) programme¹¹



As the wastewater undertaker for the District, Anglian Water has a general duty under Section 94 of the Water Industry Act 1991 to provide effectual drainage which includes providing additional capacity as and when required to accommodate planned development. However this legal requirement must also be balanced with the price controls as set by the regulatory body Ofwat which ensure Affinity Water has sufficient funds to finance its functions, and at the same time protect consumers’ interests. The price controls affect the bills that customers pay and the sewerage services consumers receive, and ultimately ensure wastewater assets are managed and delivered efficiently.

¹¹ Water 2020: Regulatory framework for wholesale markets and the 2019 price review (December 2015)

Consequently, to avoid potential inefficient investment, Anglian Water generally do not provide additional infrastructure to accommodate growth until there is certainty that development is due to come forward.

2.2 Water Framework Directive

The environmental objectives of the WFD, as published in the Environment Agency's RBMPs and relevant to this WCS are:

- to prevent deterioration of the status of surface waters and groundwater,
- to achieve objectives and standards for protected areas, and
- 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, or creating and adopting plans that could affect the quality of the water environment. The Environment Agency publish the status and objectives of each surface water body on the Catchment Data Explorer¹², and describe the status of each water body as detailed in Table 4.

Table 4. Description of status in the WFD

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 water body. 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.

Source: Environment Agency RBMPs

¹² <http://environment.data.gov.uk/catchment-planning/>

3. Proposed Growth

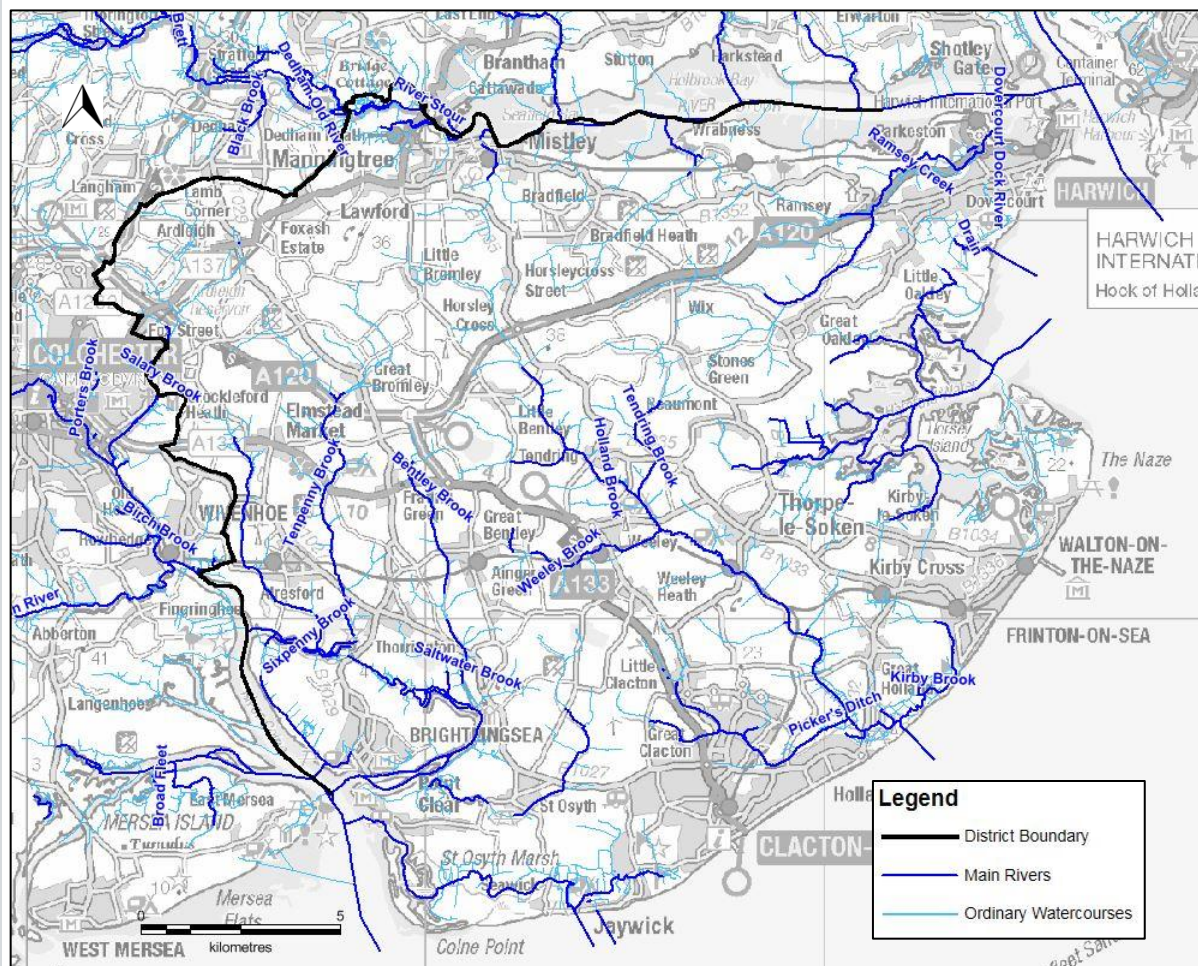
3.1 Preferred Growth Strategy

The purpose of the WCS is to assess the potential impact of increased development upon the water environment and WSI across the District. The increased development is to accommodate the minimum housing requirement for the Council. This level of projected growth has required the Council to revise their spatial approach of future expected development up to 2033. These growth figures therefore form the basis for the WCS and are described in detail in section 3.2.

The administrative area of Tendring District Council covers the urban areas of Clacton-on-Sea, Walton, Brightlingsea, Harwich and Manningtree. Significant villages in the District include St Osyth and Great Bentley.

Figure 2 illustrates Tendring District Councils administrative boundary, main towns, and villages in relation to key watercourses within the District which inform an important part of the WCS baseline.

Figure 2. Tendring District boundary including location of key watercourses



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3.2 Housing

The Draft Local Plan identified 10,627 dwellings within the Plan Period (2017 to 2033). The net dwellings completions to date are 1,374 (between 2013 and 2017).

The WCS incorporates the following development types including;

- Large Sites with Planning Consents (with/without signed S106 Agreements);
- Small Sites with Planning Consents;
- Strategic Allocations - Mixed Use (SAMU Policies);
- Strategic Allocations – Housing (SAH Policies);
- Medium Sized Allocations (MSA Policies) and
- The Tendring Colchester Borders Garden Community (covering the number of houses expected to be delivered within the Local Plan period i.e. to 2033)¹³.

Table 5 below provides an overview of the number of dwellings to be built within the plan period and, therefore, assessed as part of the WCS.

Table 5. Tendring District Council Housing Commitments and Allocations

Type of Site	No. Dwellings
Net Dwelling Completions 2013-2017	1,374
Large Sites with Planning Consents (with/without signed S106 Agreements)	4,779
Small Sites with Planning Consents (with Trend Based Completions)	1,399
Strategic Allocations - Mixed Use (SAMU Policies)	2,230
Strategic Allocations – Housing (SAH Policies)	464
Medium Sized Allocations (MSA Policies)	505
Tendring Colchester Borders Garden Community	1,250
Totals	12,001

3.3 Employment

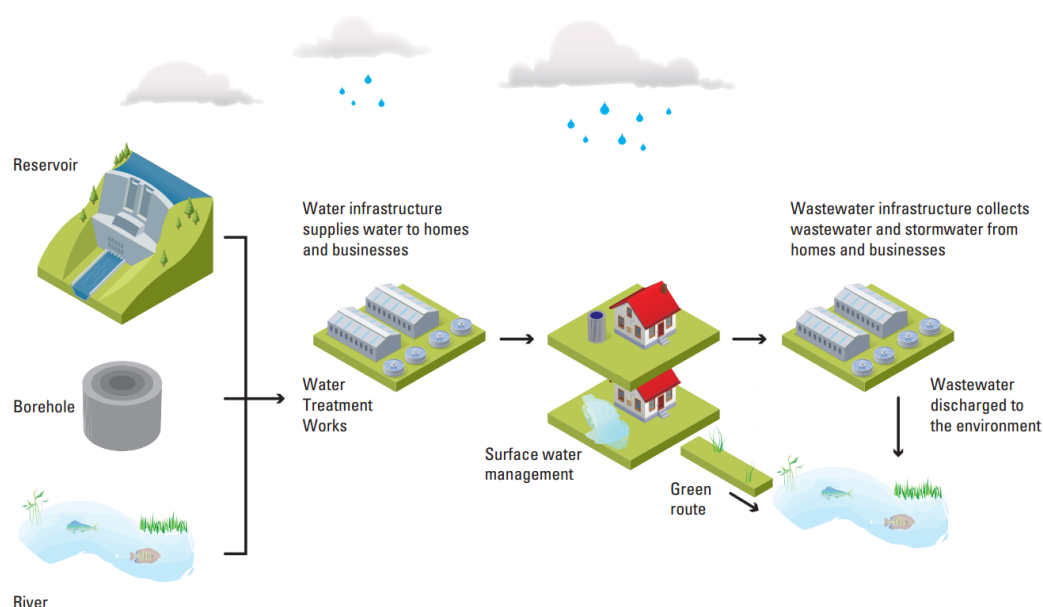
The WCS also takes account of the projected increase in employment across the District up to 2033; a total of approximately 9,700 new jobs (606 jobs per year). A percentage of the projected employment growth has been assigned to each of the proposed employment sites, based on the size (hectare) of each site (i.e. the larger the site, the greater the proportion of full time employment jobs allocated).

¹³ Garden Communities will have growth 40+ years in excess of the local plan period and this growth is being considered in a separate Integrated Water Management Strategy (IWMS) being developed for the Garden Communities.

4. Wastewater Treatment

4.1 Wastewater in the District

Figure 3. The water environment and infrastructure components¹⁴



A broad overview of the water cycle and the role of water and wastewater infrastructure within the cycle is illustrated in Figure 3. Wastewater is generally produced following the use of potable water in homes, businesses, industrial processes and in certain areas can include surface water runoff.

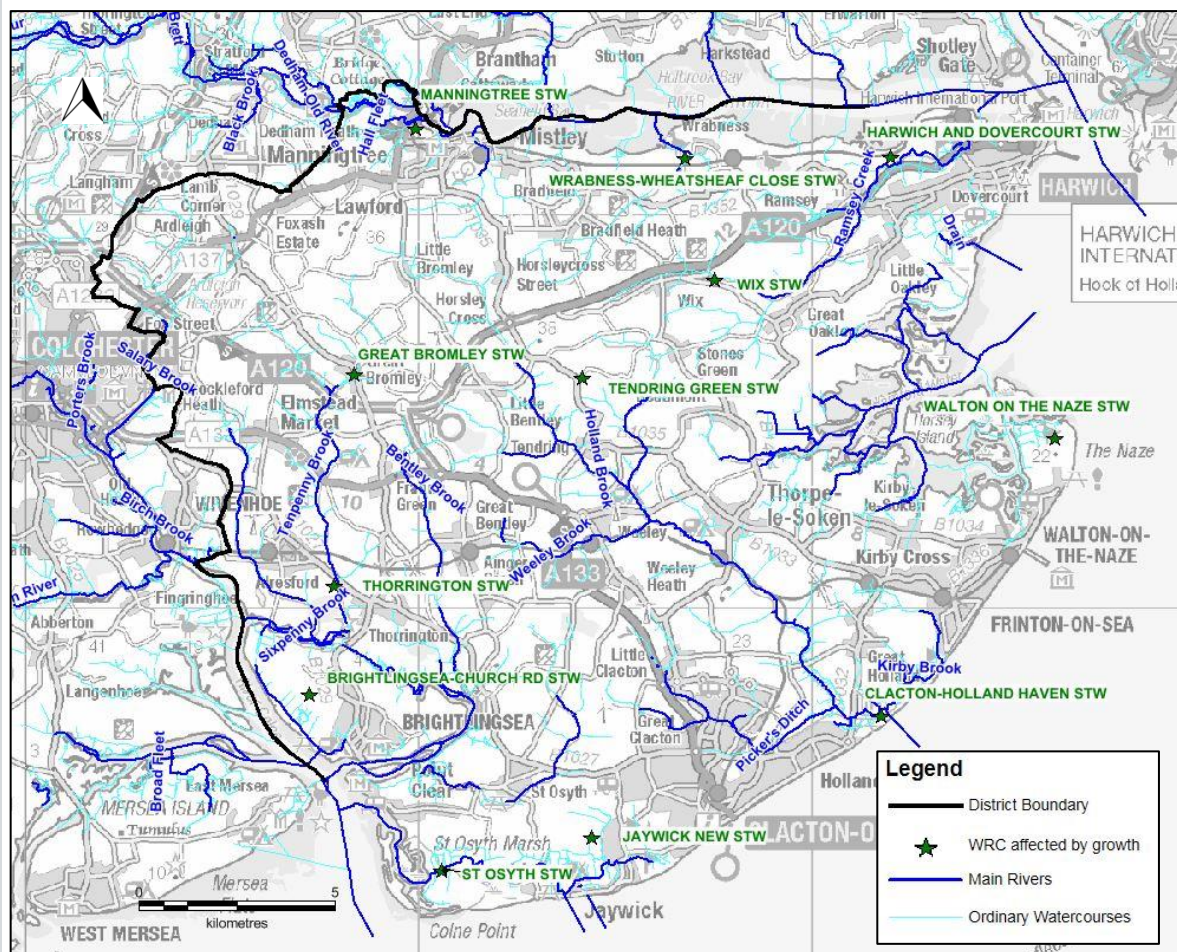
Wastewater treatment in the District is provided via water recycling centres (WRCs) operated and maintained by Anglian Water, ultimately discharging treated wastewater to a nearby water body (river, estuary or the sea). Each of the WRCs is connected to a network of wastewater pipes (the sewerage system) which collects wastewater generated by homes and businesses to the WRC; this is defined as the WRCs 'catchment'.

Wastewater from the District is treated at 14 WRCs. The following 12 WRC catchments are expected to receive additional wastewater as a result of growth and their location. The WRC locations are illustrated in Figure 4:

- Brightlingsea-Church Road
- Clacton-Holland Haven,
- Colchester,
- Great Bromley,
- Harwich and Dovercourt,
- Jaywick,
- Manningtree,
- St Osyth,
- Thorrington,
- Walton On The Naze,
- Wix,
- Wrabness-Wheatsheaf Close.

¹⁴ Adapted from the Sustainable Urban Drainage Scottish Working Party's Water Assessment and Drainage Assessment Guide (2017)

Figure 4. Location of WRC's affected by Local Plan development



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4.2 Management of WRC Discharges

All WRCs are issued with a permit to discharge by the Environment Agency, which sets out conditions on the maximum volume of treated wastewater that it can discharge and also limits on the quality of the treated discharge. These limits are set in order to protect the water quality and ecology of the receiving water body. They also dictate how much wastewater each WRC can accept, as well as the type of treatment processes and technology required at the WRCs to achieve the quality permit limits.

The flow element of the discharge permit determines an approximation of the maximum number of properties that can be connected to a WRC catchment. When discharge permits are issued, they are generally set with a flow 'headroom', which acknowledges that allowance needs to be made for future development and the additional wastewater generated. This allowance is referred to as 'permitted headroom'. The quality conditions applied to the discharge permit are derived to ensure that the water quality of the receiving water body is not adversely affected, up to the maximum permitted flow of the discharge permit.

For the purposes of this WCS, the assumption is applied that the permitted headroom is usable¹⁵ and would not affect downstream water quality. This headroom therefore determines how many additional properties can be connected to the WRC catchment before Anglian Water would need to apply for a new or revised discharge permit (and hence how many properties can connect without significant changes to the treatment infrastructure).

¹⁵ In some cases, there is a hydraulic restriction on flow within a WRC which would limit full use of the maximum permitted headroom.

When a new or revised discharge permit is required, an assessment needs to be undertaken to determine what new quality conditions would need to be applied to the discharge. If the quality conditions remain unchanged, the increased flow of wastewater received at the WRC would result in an increase in the pollutant load¹⁶ of some substances being discharged to the receiving water body. This may have the effect of deteriorating water quality and hence in most cases, an increase in permitted discharge flow results in more stringent (or tighter) conditions on the quality of the discharge.

The requirement to provide a higher standard of treatment may result in an increase in the intensity of treatment processes at a WRC, which may also require improvements or upgrades to be made to the WRC to allow the new conditions to be met. In some cases, it may be possible that the quality conditions required to protect water quality and ecology are not achievable with conventional treatment processes and as a result, this WCS assumes that a new solution would be required in this situation to allow growth to proceed.

The primary legislative driver which determines the quality conditions of any new permit to discharge are the WFD and the Habitats Directive (HD) as described in the following subsections.

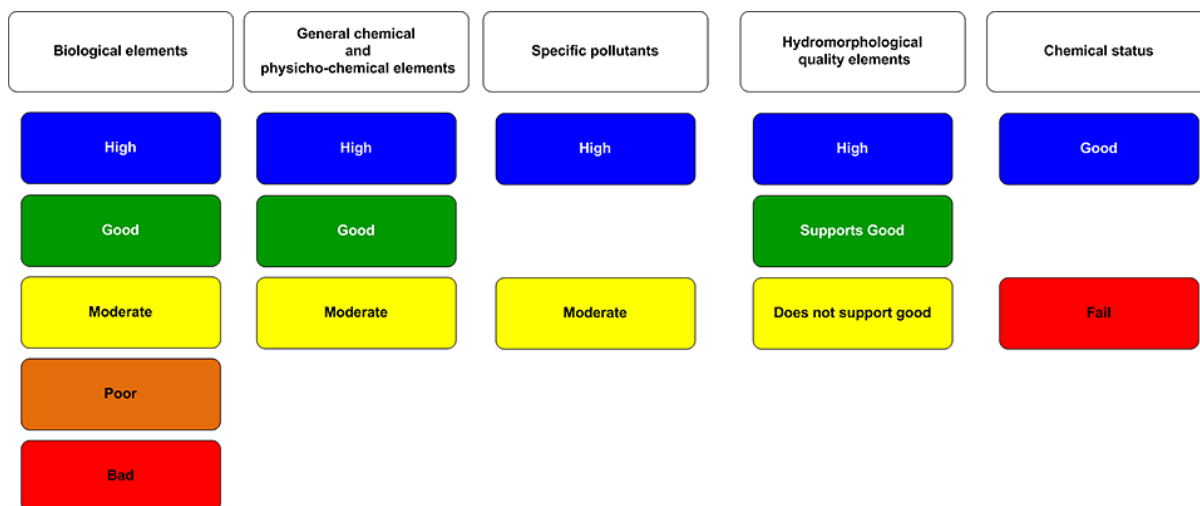
4.3 WFD Compliance

The definition of a surface water body's overall WFD 'status' is a complex assessment that combines standards for chemical quality and hydromorphology (habitat and flow conditions), with the ecological requirements of an individual water body catchment. A water body's 'overall status' 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. The following is an example of the classification hierarchy and Figure 5 illustrates the classifications applied within the hierarchy;

Overall water body status or potential

- Ecological or Chemical status (e.g. ecological)
 - Component (e.g. biological quality elements)
 - Element (e.g. fish)

Figure 5. WFD status classifications used for surface water elements



The two key aspects of the WFD relevant to the wastewater assessment in this WCS are the policy requirements that:

- Development must not cause a deterioration in WFD status of a water body¹⁷; and

¹⁶ Concentration is a measure of the amount of a pollutant in a defined volume of water, and load is the amount of a substance discharged during a defined period of time.

¹⁷ i.e. a reduction High Status to Good Status as a result of a discharge would not be acceptable, even though the overall target of good status as required under the WFD is still maintained

- Development must not prevent a water body from achieving its future target status (usually at least Good status).

It is not acceptable to allow a deterioration from High status to Good status, even though the overall target of Good status as required under the WFD is still maintained, this would still represent a deterioration. In addition, if a water body's overall status is less than Good as a result of another element, it is not acceptable to justify a deterioration in another element because the status of a water body is already less than Good.

Where permitted headroom at a WRC would be exceeded by proposed growth, a water quality modelling assessment has been undertaken to determine the quality conditions that would need to be applied to the a new or revised discharge permit to ensure the two policy requirements of the WFD are met. The modelling process (assumptions and modelling tools) is described in detail in Appendix B.

4.4 Habitats Directive

The Habitats Directive and the associated UK Habitats Regulations has designated some sites as areas that require protection in order to maintain or enhance the rare ecological species or habitat associated with them. A retrospective review process has been on-going since the translation of the Habitats Directive into the UK Habitats Regulations called the Review of Consents (RoC). The RoC process requires the Environment Agency to consider the impact of the abstraction licences and discharge permit it has previously issued on sites which became protected (and hence designated) under the Habitats Regulations.

If the RoC process identifies that an existing licence or permit cannot be ruled out as having an impact on a designated site, then the Environment Agency are required to either revoke or alter the licence or permit. As a result of this process, restrictions on some discharge permits have been introduced to ensure that any identified impact on downstream sites is mitigated. Although the Habitats Directive does not directly stipulate conditions on discharge, the Habitats Regulations can, by the requirement to ensure no detrimental impact on designated sites, require restrictions on discharges to (or abstractions) from water dependent habitats that could be impacted by anthropogenic manipulation of the water environment.

Where permitted headroom at a WRC would be exceeded by proposed levels of growth, a Habitats Regulations assessment exercise has been undertaken in this WCS to ensure that Habitats Directive sites which are hydrologically linked to watercourses receiving wastewater flows from growth would not be adversely affected. The scope of this assessment also includes non-Habitats Directive sites such as nationally designated Sites of Special Scientific Interest (SSSI). This assessment is reported in Section 4.8 of this chapter (Ecological Appraisal).

4.5 Wastewater Assessment Overview

4.5.1 Approach

An increase in residential and employment growth will have a corresponding increase in the volume and flow of wastewater generated within the District and hence it is essential to consider:

- **Infrastructure Capacity:** defined in this WCS as the ability of the wastewater infrastructure to collect, transfer and treat wastewater from homes and business.
 - What new infrastructure is required to provide for the additional wastewater treatment?
 - Is there sufficient treatment capacity within existing wastewater infrastructure treatment facilities (WRCs)?
- **Environmental Capacity:** defined in this WCS as the water quality needed in receiving waterbodies to protect the aquatic environment and its wildlife. This is ultimately based on water quality targets required to protect wildlife.
 - Can the waterbodies receiving the WRC discharge cope with the additional flow without affecting water quality?

There are therefore two elements to the assessment of existing capacity (and any solutions required) with respect to wastewater treatment.

4.5.2 Methodology

A stepped assessment approach has been developed for the WCS to determine the impact of the proposed growth on infrastructure capacity and the environmental capacity of the receiving watercourse. The assessment steps are outlined below.

In order to complete the following steps, the following assessment techniques were developed (details of the procedures can be found in Appendix B);

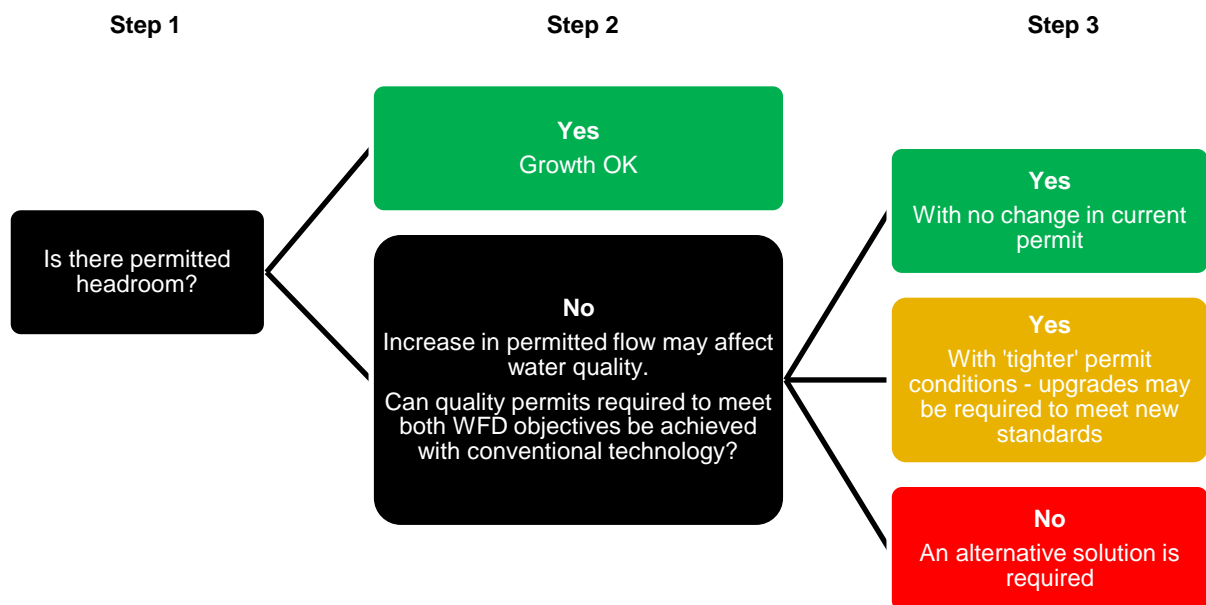
- A flow headroom calculation spreadsheet was developed; and,
- A water quality assessment procedure was agreed with the Environment Agency.

4.5.3 Assessment Results

The results for each WRC are presented in a Red/Amber/Green (RAG) Assessment for ease of planning reference. The RAG code refers broadly to the following categories and the process is set out in Figure 6. RAG Assessment process diagram for infrastructure capacity

- **Green** – WFD objectives will not be adversely affected. Growth can be accepted with no significant changes to the WRC infrastructure or permit required.
- **Amber** – in order to meet WFD objectives, changes to the discharge permit are required, and upgrades may be required to WRC infrastructure which may have phasing implications;
- **Red** - in order to meet WFD objectives changes to the discharge permit are required which are beyond the limits of what can be achieved with conventional treatment. An alternative solution needs to be sought.

Figure 6. RAG Assessment process diagram for infrastructure capacity



4.6 Water Recycling Centre Headroom Assessment

The assessment results are presented in this section and have been reported in the following order;

- Firstly, further detail on WRC catchments where growth can be accepted within the current permitted flow headroom, reported together in Section 4.6.1;
- Secondly, further detail on those WRCs requiring a new discharge permit and hence a water quality assessment have been undertaken and reported in Section 4.6.2 and 4.7.

4.6.1 WRC with Permitted Headroom

The volume of wastewater, measured as Dry Weather Flow (DWF)¹⁸, which would be generated from the proposed housing and employment growth over the plan period within each WRC catchment has been calculated and compared to the treatment capacity at each WRC. DWF is a measure of the flow to a WRC which excludes direct surface water inputs from rainfall¹⁹.

Table 6 details the WRCs where existing permitted headroom is sufficient to accommodate all of the proposed growth. Whilst AWS may need to review biological treatment processes to accommodate additional flow, no change new discharge permit is required and it is assumed that no significant wastewater treatment infrastructure upgrades are required to deliver the proposed growth in these locations.

Growth in these WRC catchments would not compromise either of the WFD objectives and, hence, there is no barrier to delivering the proposed growth. These WRCs are assessed as Green in the RAG assessment and, therefore, do not require any further assessment.

Table 6 also provides an approximation of the number of additional dwellings that could be connected before the flow condition of the discharge permit would be exceeded.

Table 6. WRC with permitted headroom capacity

Water Recycling Centre	Current DWF Permit (m ³ /d)	Current Capacity	Headroom		Quantity of DWF post growth (2033) (m ³ /d)	Headroom post growth (2033)	Assessment
		Current DWF (m ³ /d)	Calculated Headroom (m ³ /d)	of proposed dwellings		Headroom Capacity (m ³ /d)	Approximate Residual housing capacity
Brightlingsea-Church Rd	2160	1619	541	174	1,698	462	1,000
Great Bromley	365	204	161	73	237	128	300
Harwich and Dovercourt	6782	5251	1,531	966	5,759	1,023	2,300
St Osyth	1600	1325	275	278	1,451	149	300
Thorrington	2400	1598	802	669	1,915	485	1,100
Walton On the Naze	6364	4490	1,874	1,009	4,947	1,417	3,100
Wix	160	126	34	10	131	29	<100

4.6.2

¹⁸ Until recently, Dry Weather Flow (DWF) was defined as “the average daily flow to the treatment works during seven consecutive days without rain (excluding a period which includes public holidays) following seven days during which the rainfall did not exceed 0.25 millimetres on any one day”. A viable alternative definition of DWF has been established, based on use of the 20th percentile of daily flows, using 2006 guidelines of UK Water Industry Research

¹⁹ It should be noted that the current DWF of each WRCs is calculated as the Q80 (20th percentile) of the provided measured flows of each WRC.

4.6.3 WRC without Permitted Headroom

The calculations of flow headroom capacity found that five WRCs would not have sufficient headroom once all the growth within the WRC catchment is accounted for as detailed in Table 7. These WRCs would exceed their maximum permitted DWF under their existing discharge permits. Additional headroom can be made available through an application by Anglian Water for a new or revised discharge permit from the Environment Agency.

Table 7. WRC without permitted headroom capacity

Water Recycling Centre	Current DWF Permit (m ³ /d)	Current Capacity		Headroom		Headroom post growth (2033)		Assessment
		Current DWF (m ³ /d)	Calculated Headroom (m ³ /d)	Quantity of proposed dwellings	DWF post growth (2033) (m ³ /d)	Headroom Capacity (m ³ /d)	Residual housing capacity	
Clacton-Holland Haven	10546	10009	537	2,619	11,236	-690	-1,523	
Colchester	29284	24817	4,467	15,597	31,906	-2,622	-5,800	
Jaywick New	5000	4812	188	856	5,200	-200	-441	
Manningtree	2999	2857	142	1,147	3,385	-386	-852	
Wrabness-Wheatsheaf Close	6.53	5.224	1	18	13	-7	-15	

The growth assigned to Colchester WRC includes growth allocated from Colchester Borough in addition to the growth allocated from Tendring District. The number of dwellings allocated for the plan period from growth within Colchester Borough (shown in Colchester WCS²⁰) is 14,188. This includes 1,650 dwellings from the Tendring-Colchester Border Garden community – Colchester area. The number of dwellings allocated to Colchester WRC from Tendring District is 1,409, including 1,250 dwelling from the Tendring – Colchester Border Garden community – Tendring area.

It should be noted that no current DWF flow datasets were available for the Wrabness-Wheatsheaf Close WRC. Correspondence with Anglian Water indicated that as this is a small WRC with a current DWF permit of approximately 7 m³/d, measurements are not recorded (Anglian Water's threshold for measurement recordings is 50m³/d). Therefore, it was assumed that the current DWF for this WRC is 80% of its current DWF permit, which is the average ratio of current DWF over current DWF permit of the WRCs in the District.

The following report sub-sections provide a summary of phasing implications for each WRC catchment, demonstrating the year in which available headroom would be utilised based on the outline phasing of growth in the developing Local Plan. Up to the point at which headroom is utilised, there would be no significant implications for proposed development sites, however beyond this point, water quality impacts of a revised permit need to be considered, and a water quality assessment process has been undertaken. A summary of the results of the water quality assessment are provided in Section 4.7, with detailed results provided in Appendix B.

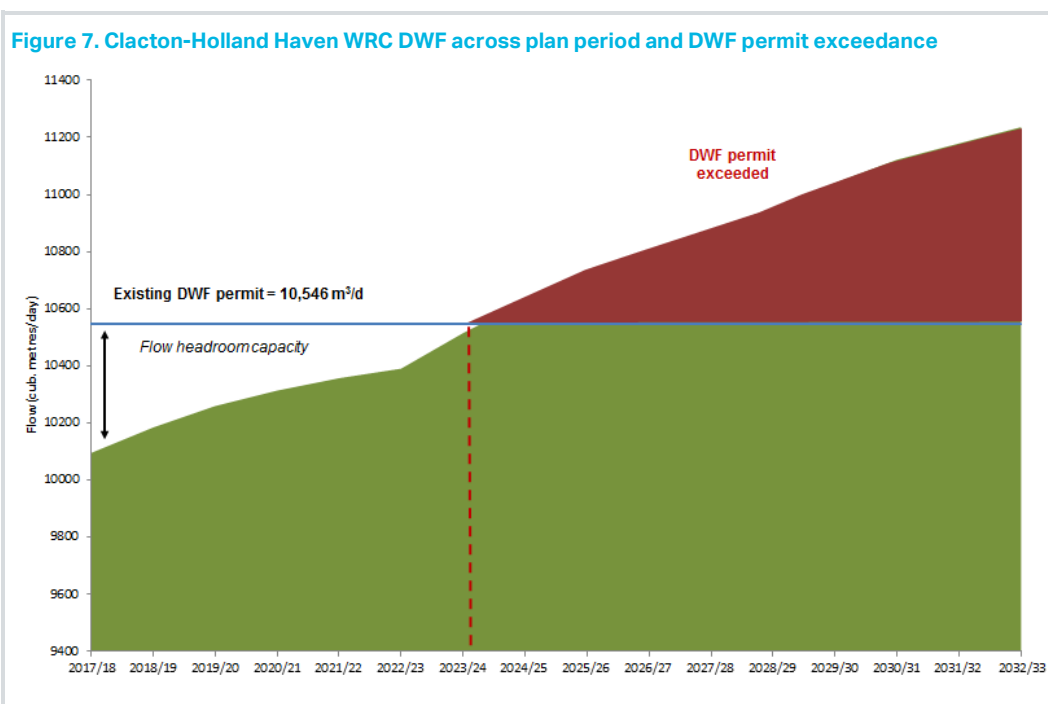
4.6.3.1 Clacton-Holland Haven WRC

The headroom assessment has demonstrated that Clacton Holland-Haven WRC currently has flow headroom available in its existing discharge permit and can accept development of 1185 dwellings²¹, after which the discharge permit will be exceeded. Based on the latest housing trajectory provided by Tendring District Council, the existing discharge permit will be exceeded in 2024 as shown in Table 7.

²⁰ AECOM (2016) Colchester Borough Council Water Cycle Study

²¹ Calculated based on key assumptions

Unless additional flow headroom can be made available at the WRC to accept development beyond 1,185 dwellings, further development connecting to the WRC would result in the existing discharge permit being exceeded, and by a total volume of 690 m³/d (equivalent to approximately 1,520 dwellings) by the end of the plan period as shown in Table 7.

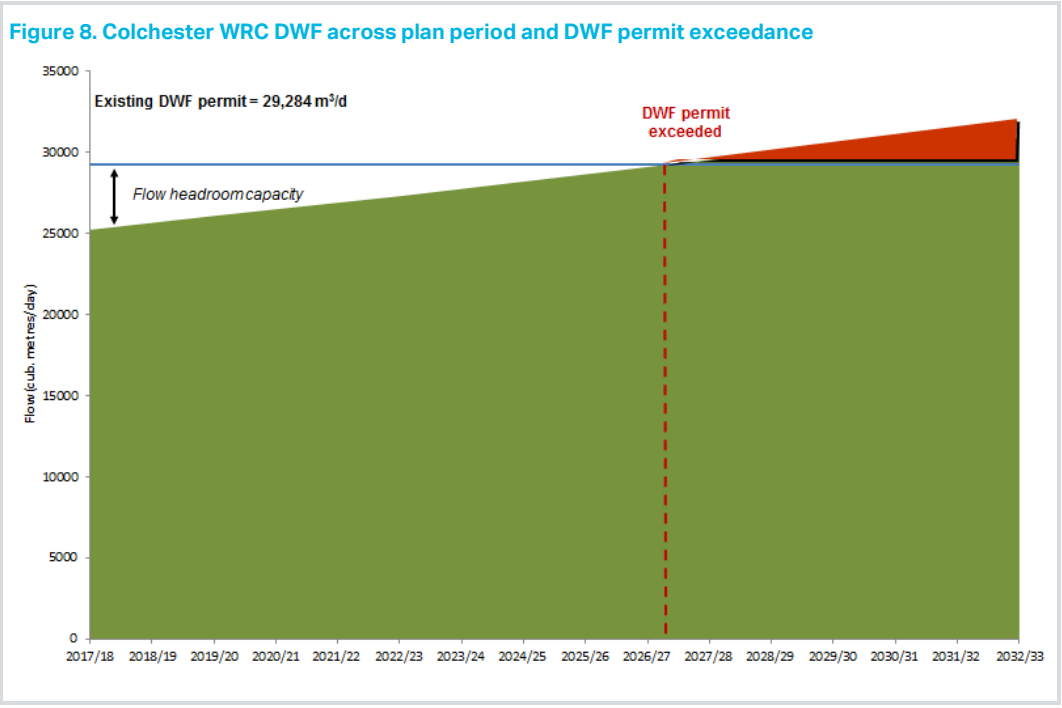


4.6.3.2 Colchester WRC

The headroom assessment has demonstrated that Colchester WRC currently has sufficient flow headroom in its existing discharge permit and can accept development of approximately 9,860 dwellings²², after which the discharge permit will be exceeded. Based on the latest housing trajectory provided by Tendring District Council, the existing discharge permit will be exceeded in 2027 as shown in Table 7.

Unless additional flow headroom can be made available at the WRC to accept development beyond 9,860 dwellings, further development connecting to the WRC would result in the existing discharge permit being exceeded, and by a total volume of 2,622 m³/d (equivalent to approximately 5,800 dwellings) by the end of the plan period as shown in Table 7.

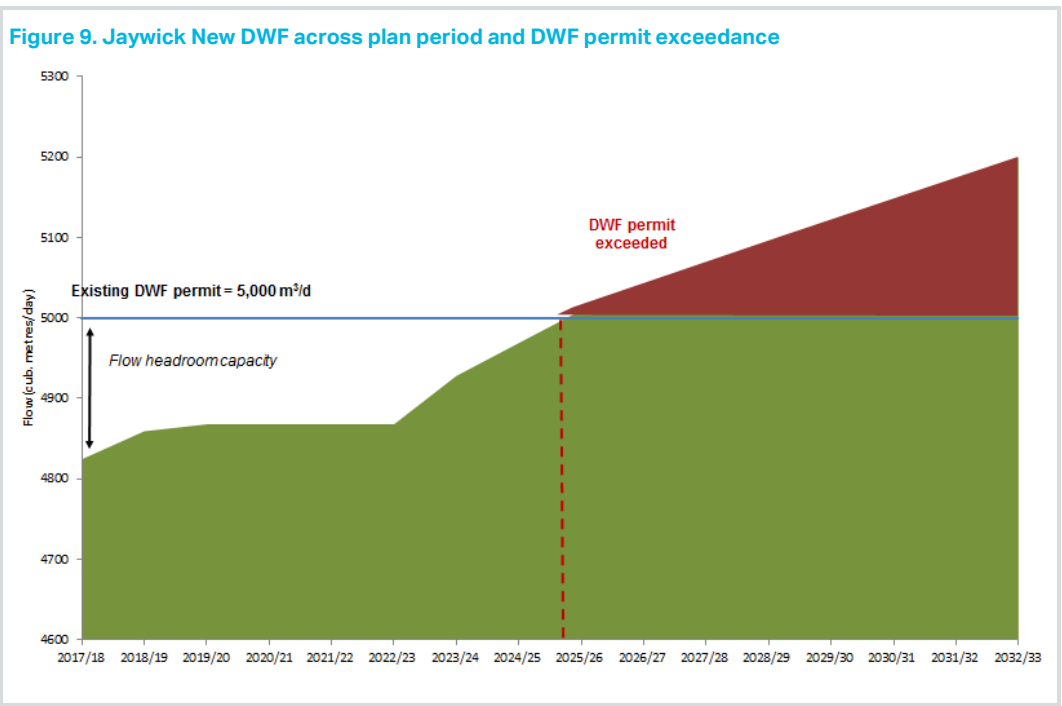
²² Calculated based on key assumptions



4.6.3.3 Jaywick New WRC

The headroom assessment has demonstrated that Jaywick New WRC currently has sufficient flow headroom in its existing discharge permit and can accept development of 415 dwellings²¹, after which the discharge permit will be exceeded. Based on the latest housing trajectory provided by Tendring District Council, the existing discharge permit will be exceeded in 2025 as shown in Figure 9. Jaywick New DWF across plan period and DWF permit exceedance

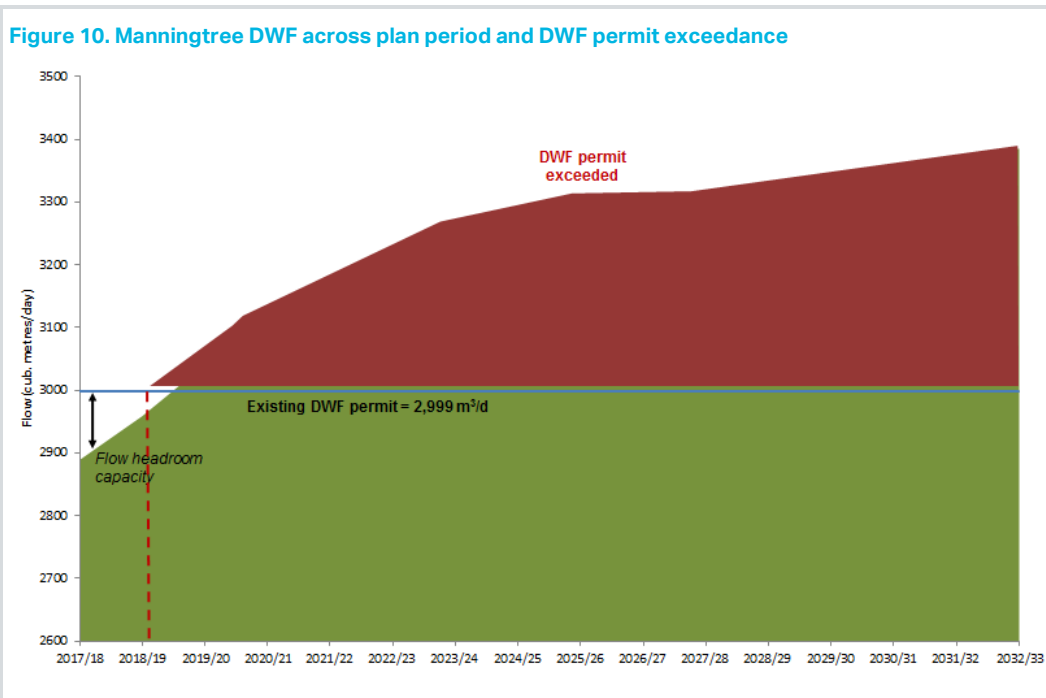
Unless additional flow headroom can be made available at the WRC to accept development beyond 415 dwellings, further development connecting to the WRC would result in the existing discharge permit being exceeded, and by a total volume of 200 m³/d (equivalent to approximately 440 dwellings) by the end of the plan period as shown in Table 7.



4.6.3.4 Manningtree WRC

The headroom assessment has demonstrated that Manningtree WRC currently has flow headroom available in its existing discharge permit and can accept development of 313 dwellings²¹, after which the discharge permit will be exceeded. Based on the latest housing trajectory provided by Tendring District Council, the existing discharge permit will be exceeded in 2019 as shown in Figure 10. Manningtree DWF across plan period and DWF permit exceedance

Unless additional flow headroom can be made available at the WRC to accept development beyond 313 dwellings, further development connecting to the WRC would result in the existing discharge permit being exceeded, and by a total volume of 386 m³/d (equivalent to approximately 850 dwellings) by the end of the plan period as shown in Table 7.



4.7 Water Quality Assessment

For the WRCs which have been identified as having insufficient permitted flow headroom to accept all the proposed growth within their catchments, four (Clacton-Holland Haven, Colchester, Jaywick New and Manningtree) discharge directly into coastal or transitional environments and one WRC (Wrabness-Wheatsheaf Close) discharges to a freshwater inland water body.

Regarding the WRCs that discharge to coastal or transitional waterbodies, load standstill calculations have been used to determine the future permit conditions for BOD. This approach follows Environment Agency's guidelines and best practice. Conventional permits for Ammonia and Phosphate for coastal waterbodies have not been set by the Environment Agency.

The Wrabness-Wheatsheaf Close WRC discharges to the Wrabness Brook (fluvial watercourse), just upstream of the confluence with the tidal River Stour. Ammonia, BOD and Phosphate permits are not available for this WRC as it is only a small WRC, therefore the application of a statistical based water quality modelling tool was not possible.

Based on the current DWF permit and the calculated future DWF at Wrabness-Wheatsheaf WRC, it is assumed that any permitted quality limits for Ammonia, Phosphate and BOD would need to be either put in place or tightened within the Limits of Conventional Treatment. This assumption has been based on the fact that the future DWF is almost double its current permit; however it is still relatively low.

As an example, based on our previous assumptions and a further assumption that an existing BOD permit at Wrabness-Wheatsheaf Close WRC is set at 30mg/l, then using a high level Load Standstill BOD assessment, the quality permit required for BOD at the Wrabness-Wheatsheaf Close WRC would be 12.1 mg/l. This confirms that if a permit was in place, it would require tightening in order to incorporate the development.

A summary of the results and where infrastructure upgrades may be required are included in the following subsections for each of the WRCs where water quality assessment was undertaken (except for Wrabness-Wheatsheaf Close WRC). A summary of the Load Standstill calculations are provided in Table 8.

Table 8. Summary of BOD Load Standstill calculations for WRCs discharging to coastal or transitional waterbodies

	Clacton-Holland Haven WRC	Colchester WRC	Jaywick New WRC	Manningtree WRC
	North Sea	River Colne (Saline Estuary)	North Sea	Wignall Brook Stour Estuary
Current BOD Limit of Conventional Treatment (mg/l)	5	5	5	5
Current DWF Permit (m ³ /day)	10,546	29,284	5,000	2,999
Current DWF (m ³ /day)	10,009	24,817	4,812	2,857
Permit limits (95% percentile)	100	35	100	50
Permit exceeded?	No	No	No	No

Discharge Permit required

Future DWF (m ³ /day)	11,236	31,906	5,200	3,385
Effluent Quality permit required for BOD	89.1	27.2	92.5	42.2
Result - Will Growth prevent WFD "No deterioration status" from being achieved?	No. But permit needs tightening	No. But permit needs tightening	No. But permit needs tightening	No. But permit needs tightening

Key to "Effluent Quality Required"

Green value - no change to current permit required

Amber value - permit tightening required, but within limits of conventionally applied treatment processes

Red value - not achievable within limits of conventionally applied treatment processes

4.7.1 Clacton-Holland Haven, Colchester, Jaywick New and Manningtree WRCs

As demonstrated in Table 8, the results for the assessment of the four tidal discharges indicate that to accept and treat all of the additional wastewater flow expected from the developments by the end of the plan period, process upgrades at the WRCs are likely to be required at some point before the end of plan period, when based on growth projections permitted headroom would be exceeded as follows:

- For Clacton-Holland Haven WRC (which discharges to the North Sea, classified by the Environment Agency as Controlled Sea), upgrades will be required at 2024;
- For Colchester WRC (which discharges to the River Colne, classified by the Environment Agency as Saline Estuary), upgrades will be required in 2027;
- For Jaywick New WRC (which discharges to the North Sea, classified by the Environment Agency as Controlled Sea), upgrades will be required in 2025 and

- For Manningtree WRC (which discharges to Wignall Brook Estuary, classified by the Environment Agency as Freshwater Estuary), upgrades will be required in 2019.

The exact technical specifications of the upgrades should be determined by Anglian Water for the relevant asset planning period, for the revised quality conditions for BOD. To achieve these tighter permit conditions, current conventional treatment technologies would be sufficient (i.e. the quality conditions are within LCT) but would need to be implemented by Anglian Water at some point in the future. This demonstrates that a technical solution is feasible for BOD.

4.8 Ecological Appraisal

There are 11 statutory and three non-statutory designated sites that have been identified as potentially being connected to WRCs within the Tendring District that are expected to exceed existing consents as a result of planned future growth. These are as follows:

- Colne Estuary (Mid-Essex coast phase 2) SPA and Ramsar site
- Colne Estuary SSSI
- Essex Estuaries SAC
- Holland Haven Marshes SSSI
- Hopping Bridge Marsh Local Wildlife Site
- Jaywick Marshes Local Wildlife Site
- Languard Common SSSI
- Orwell Estuary SSSI
- Stour Estuary SSSI
- Stour and Orwell Estuaries SPA and Ramsar site
- Upper Colne Marshes SSSI
- Wrabness Depot and Marsh Local Wildlife Site

Any other designated sites not listed are remote from watercourses that WRCs are discharging to or are designated for their non-ecological features. The details of the ecological designation of the statutory sites are included in Appendix D and illustrated in Figure 11.

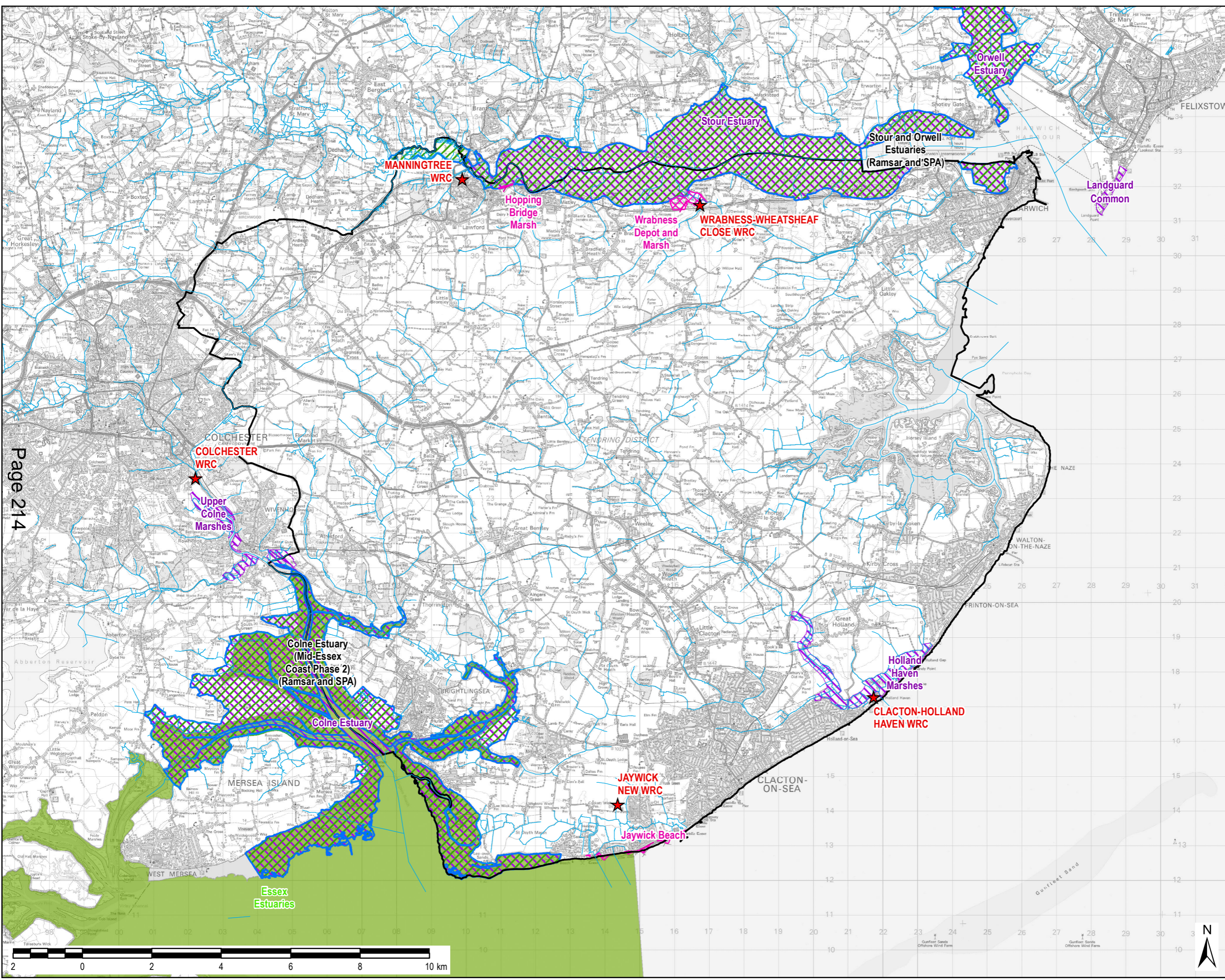
There are five WRCs that have been identified to exceed their discharge capacity as a result of planned future growth and thus need to be assessed. These are as follows:

- Clacton-Holland Haven WRC
- Colchester WRC
- Jaywick New WRC
- Manningtree WRC
- Wrabness-Wheatsheaf Close WRC

Clacton-Holland Haven, Colchester, Jaywick New, and Manningtree WRCs discharge directly into saline environments, and Wrabness-Wheatsheaf Close WRC discharges into a freshwater watercourse just upstream of the confluence with the saline River Stour estuary.

4.8.1 Impact on Designated Sites

Table 9 lists the wildlife sites that have potential to interact with the WRC unable to accommodate expected levels of future growth within existing discharge consents. Table 9 also details the distances from the designated wildlife sites from the WRC discharge points.



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LEGEND

- Tendring District Boundary
- Watercourse
- WRC
- Local Wildlife Site
- Ramsar
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Site of Special Scientific Interest (SSSI)

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File Name: I:\5004 - Information Systems\60545872 - Tendring - WCS\02 - Maps\Figure 11 - Wildlife Sites and Designated Sites.mxd

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Purpose of Issue **FINAL**

Client **TENDRING DISTRICT COUNCIL**

Project Title **TENDRING DISTRICT COUNCIL WATER CYCLE STUDY.**

Drawing Title **WILDLIFE SITES THAT INTERACT WITH WRCs WITHIN TENDRING DISTRICT THAT WILL REQUIRE AN INCREASE TO THEIR DISCHARGE CONSENTS**

Drawn CN	Checked JW	Approved HH	Date 29/09/2017
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Drawing Number **FIGURE 11** Rev

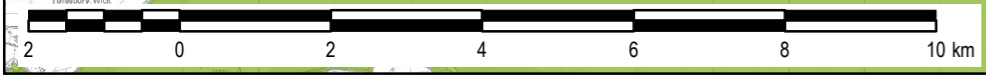


Table 9. The distances of statutory and non-statutory wildlife sites from the WRC that cannot accommodate the planned levels of future growth within existing discharge consents.

Water Recycling Centre (RWC)	Wildlife Site	Comments
Clacton-Holland Haven WRC	Holland Haven Marshes SSSI (TM212179)	Discharges via Holland Haven Marshes
	Essex Estuaries SAC (UK0013690 – TM103048)	8.6km downstream of discharge point
Discharges into the North Sea		
Colchester WRC	Upper Colne Marshes SSSI (1004936 – TM027225)	1km downstream of discharge point
	Colne Estuary SSSI (TM062161)	3.8km downstream of discharge point
	Colne Estuary (Mid-Essex coast phase 2) Ramsar site (UK11015 – TM058134)	3.8km downstream of discharge point
	Colne Estuary (Mid-Essex coast phase 2) SPA (UK9009243 – TM058134)	3.8km downstream of discharge point
	Essex Estuaries SAC (UK0013690 – TM045001)	3.8km downstream of discharge point
Discharges into the River Colne (saline estuary)		
Jaywick New WRC	Jaywick Marshes Local Wildlife Site	Discharges via Jaywick Marshes
	Essex Estuaries SAC (UK0013690 – TM103048)	2.1km downstream of discharge point
	Colne Estuary (Mid-Essex coast phase 2) Ramsar site (UK11015 – TM058134)	3.1km downstream of discharge point
	Colne Estuary SSSI (TM062161)	3.1km downstream of discharge point
	Colne Estuary (Mid-Essex coast phase 2) SPA (UK9009243 – TM058134)	3.1km downstream of discharge point
Discharges into the North Sea		
Manningtree WRC	Stour and Orwell Estuaries Ramsar site (UK11067 – TM172335)	0.5km downstream of the discharge point
	Stour Estuary SSSI (1064495 – TM173327)	0.5km downstream of the discharge point
	Stour and Orwell Estuaries SPA (UK9009121 – TM172335)	0.5km downstream of the discharge point
	Hopping Bridge Marsh Local Wildlife Site	1.6km downstream of discharge point
	Wrabness Depot and Marsh Local Wildlife Site	7.5km downstream of discharge point
	Orwell Estuary SSSI (1009588 – TM251345)	16.9km downstream of discharge point
	Languard Common SSSI (1009295 – TM282313)	20.5km downstream of discharge point
Discharges into the Wignall Brook of the River Stour (saline estuary)		
Wrabness-Wheatsheaf Close WRC	Wrabness Depot and Marsh Local Wildlife Site	Discharges directly into Wrabness Marsh
	Stour and Orwell Estuaries Ramsar site (UK11067 – TM172335)	0.5km downstream of the discharge point
	Stour Estuary SSSI (1064495 – TM173327)	0.5km downstream of the discharge point
	Stour and Orwell Estuaries SPA (UK9009121 – TM172335)	0.5km downstream of the discharge point
	Orwell Estuary SSSI (1009588 – TM251345)	11.3km downstream of discharge point
	Languard Common SSSI (1009295 – TM282313)	15km downstream of discharge point
Discharges into the Wrabness Brook before joining the River Stour (saline estuary)		

4.8.1.1 Clacton-Holland Haven WRC

This WRC discharges directly into the North Sea at Holland Haven Marshes SSSI which is formed around the Holland Brook. Its saltmarshes rely on occasional flooding from the North Sea towards the downstream end of the site. Following this, 8.6km downstream is the Essex Estuaries SAC.

This WRC currently has a Dry Weather Flow (DWF) of 10,009 m³/day and is not currently exceeding its DWF permit (10,546 m³/day). Future development modelling predicts a DWF of 11,236 m³/day. Whilst this will cause the Biochemical Oxygen Demand (BOD) to be in exceedance of consented limits this will not prevent the WFD target of 'No Deterioration' in status from being achieved, provided permit tightening is undertaken. The level of permit tightening required can be achieved within the limits of conventionally applied treatment processes.

Elevated BOD levels can result in low oxygen levels. The resulting anoxic conditions can cause mortality in plants and animals. However, due to the nutrient buffering nature of saltmarsh and with permit tightening, the BOD levels should have minimal deterioration to the water quality of Holland-Haven Marshes SSSI and associated ecology.

The Essex Estuaries SAC is a dynamic saline environment. It is influenced by wave action, tides and wind derived mixing. As a result, water is regularly replaced and the turbidity of the water column is relatively high. These conditions, combined with the distance (8.6km downstream from the discharge point) means that BOD levels from the WRC at Clacton-Holland Haven will both be diluted and flushed away regularly. The dynamic estuarine conditions of the Essex Estuaries SAC mean that it is less susceptible to excessive macro-algal summer growth and winter persistence. This is of contrast to the warmer, clearer and calmer waters of the south coast such as in the Solent where waters are more sensitive to increased BOD levels.

4.8.1.2 Colchester WRC

The Colchester WRC discharges directly into the River Colne Estuary. Following the watercourse, the discharge flows past the Upper Colne Marshes SSSI (1km downstream of the discharge point). After this the discharged water continues into the Colne Estuary SSSI, the Colne Estuary (Mid-Essex coast phase 2) SPA and Ramsar site, and the Essex Estuaries SAC (all located 3.8km downstream of the discharge point). After this, water is discharged into the North Sea.

Currently the DWF for this WRC is 24,817 m³/day and is not exceeding its DWF permit (29,284 m³/day). Modelling for the planned levels of development predicts a DWF of 29,341 m³/day which will result in an exceedance of consented flows. Whilst this will result in an increase in BOD, the levels will not prevent the WFD 'No Deterioration Status' from being achieved, provided consents are tightened. The level of tightening required can be achieved within limits of conventionally applied treatment processes.

The conditions in the Colne Estuary are similar to that of the Essex Estuaries designated sites discussed in Section 4.8.1.1. The estuary is a dynamic tidal environment influenced by wave action, tidal and wind derived mixing. This means that water is replenished and effluent continually diluted. Relatively high turbidity and wave action means that macro-algal growth throughout the summer is minimal with less winter persistence. As the area is important for winter birds this means that invertebrates within the mudflats and sand flats remain accessible for grazing. Although the Upper Colne Marshes SSSI is relatively near to the point of discharge (1km), it is deemed that there will be minimal deterioration in water quality due to the conditions already described. As such, the remaining designated areas that are further downstream (the Colne Estuary designated wildlife sites and Essex Estuaries SAC) will also experience minimal deterioration to their water quality.

4.8.1.3 Jaywick New WRC

This WRC discharges into a series of drains before flowing into the North Sea at the Essex Estuaries SAC 2.1 km downstream from the discharge point. Following this the discharged water flows into the Colne Estuary (Mid-Essex coast phase 2) SPA and Ramsar site, and the Colne Estuary SSSI which are a further 3.1 km downstream of the point of discharge. These sites are important for their wintering birds and open expanses of mudflats and sandflats. It should be noted that the point at which the discharge flows into North Sea is on the upstream edge of the designated sites. At this point the sites are in the open sea as opposed to the shelter of an estuary. Consequently any discharge will be diluted and displaced with tidal currents and wave action.

The current DWF of this WRC is 4,812 m³/day with a DWF permit of 5,000 m³/day. Modelling for the planned level of development predicts a DWF of 5,200 m³/day which is in exceedance of consented flows. This increase in water discharge will not prevent the WFD status of 'No Deterioration Status' from being achieved provided that the permit is tightened. Sufficient consent tightening can be achieved within limits of conventionally applied treatment processes.

As previously stated in sections 4.8.1.1 and 4.8.1.2 with the discharge being directly in the open North Sea, dilution, displacement and relatively high turbid conditions will hinder any BOD levels from having negative effects on the ecology of the designated sites.

4.8.1.4 Manningtree WRC

This WRC discharges into the tidal Wignall Brook of the River Stour Estuary where it flows into the Stour and Orwell Estuaries SPA and Ramsar site, and the Stour Estuary SSSI (all of which are 0.5km downstream of discharge point). These sites are typical estuarine environments, with open mudflats, turbid water and saltmarsh on the upper shoreline. Due to the nature of the North Sea environment, highly mixed water columns limit the amount of light entering the water column. This in turn reduces the growth macro-algae (*Ulva* spp. and *Enteromorpha* spp.). Where the growth of these species is uncontrolled, they can smother sediments, which may reduce oxygen and limit accessibility for grazing birds. With additional BOD levels from WRC this could have adverse effects to the flora and fauna within the designated areas.

At Manningtree WRC the current DWF is 2,857 m³/day of which is below the current DWF permit of 2,999 m³/day. Modelling of planned development predicts a future DWF of 3,385 m³/day, which is in exceedance of consented flows. As such the permit needs to be tightened to ensure that BOD levels from the proposed future growth will not prevent the WFD 'No Deterioration Status' from being achieved. Permit tightening required can be achieved within the limits of conventionally applied treatment processes. Therefore, this assessment suggests that future BOD levels will not have a negative impact to the ecology of the designated sites that are immediately downstream of the point of discharge (the Stour and Orwell Estuaries SPA and Ramsar site, and the Stour Estuary SSSI).

The remaining designated sites (Orwell Estuary SSSI and Languard Common SSSI) are deemed to be far enough downstream (16.9 and 20.9km respectively) that any relatively high levels of BOD will not have a negative impact due to being diluted and dispersed from tidal waters entering the estuary.

4.8.1.5 Wrabness-Wheatsheaf Close WRC

This WRC discharges into the freshwater Wrabness Brook, just upstream of the confluence into the saline estuary environments of the tidal River Stour at Wrabness Depot and Marsh Local Wildlife Site. Approximately 0.5 km downstream from the discharge point, discharged water flows into the Stour and Orwell Estuaries SPA and Ramsar site and the Sour Estuary SSSI.

For this assessment, Wrabness-Wheatsheaf Close WRC was not included in the RQP assessment as its flow is too small to measure (i.e. less than 50m³/day). Notwithstanding this, deterioration in BOD can result in anoxic conditions, and ultimately lead to the death of flora and fauna. The wildlife sites discussed above and identified in Table 9 are typical estuarine environments, with open mudflats, turbid water and saltmarsh on the upper shoreline. Due to the highly dynamic nature of the estuarine conditions and the associated tidal, wave action, and wind derived mixing, water is regularly replaced and the turbidity of the water column is relatively high which means that water is replenished and BOD levels continually diluted and are unlikely to be adversely impacted upon wildlife sites and their associated features.

It has been concluded that permits of the WRC need to be tightened. This can be achieved within the limits of conventionally applied treatment processes.

4.8.2 Impacts on Ecology outside Designated Sites

This Water Cycle Study has focused on the potential impacts that the identified WRCs will have on the ecology of designated wildlife sites. However, it does not highlight any impacts to the wider ecology within the Tendring District. A WCS is limited in its scope for an exhaustive discussion.

It should be noted that whilst impacts to designated ecological sites have been identified, there are a range of other UK and Essex BAP species/habitats or protected/notable species/habitats that may be affected by discharge from WRCs. These may well have a presence within the Tendring District, and are listed as follows (habitats listed are all in the Essex BAP):

- Water vole (protected through Wildlife & Countryside Act 1981 and a UK BAP species)
- Grass snake (partially protected through Wildlife & Countryside Act 1981)
- Common toad (UK BAP species)
- Great crested newt (legally protected through Conservation of Habitats & Species Regulations 2010, Wildlife & Countryside Act 1981 and a UK BAP species)
- Birds such as bittern, kingfisher (protected through Wildlife & Countryside Act 1981 and a UK BAP species), lapwing and snipe; and
- Otter (legally protected through Conservation of Habitats & Species Regulations 2010, Wildlife & Countryside Act 1981 and a UK/ Essex BAP species)
- Floodplain and coastal grazing marsh
- Reedbeds
- Coastal saltmarsh
- Rivers & streams

To identify the impacts that changes to discharge flows may have on the more general ecology of Tendring District would require more detailed species surveys of each watercourse. Additionally, it would be necessary to utilise detailed flow and quality data/modelling of which have not been available in this study for the majority of watercourses.

This study has not provided the impacts that phosphate and ammonia may have to the designated wildlife sites. These nutrients can have adverse impacts to the ecology by increasing algal growth. This in turn may reduce oxygen levels that may harm plants and animals. This study has also identified that the majority of the designated sites impacted are marine environments and thus are limited by nitrate. However, in freshwater environments, phosphate is the limiting nutrient. Manningtree WRC was identified to flow into the Wignall Brook, where increase phosphate may cause eutrophic conditions. Precautionary measures should therefore be considered in the developments.

4.8.3 Ecological Opportunities Associated with Proposed Development Locations

It is recommended that policy is implemented within the Local Plan to ensure that developments do not result in any negative impacts to species and habitats inside and outside of designated wildlife sites. It may therefore be necessary for new infrastructure or phased infrastructure to be implemented to ensure water quality remains within the waterbodies' WFD status and within consent levels. A further recommendation is that any ecological risks resulting from proposed water cycle changes are considered within the relevant flood risk and surface water management proposals. These opportunities and the reduction of identified risks can be incorporated into the detailed design of the developments and local green infrastructure plans.

4.9 Wastewater Summary

Five WRCs are shown to exceed their volumetric permits and have undergone water quality modelling. Four WRCs (Clacton-Holland Haven, Colchester, Jaywick New and Manningtree) discharge directly into coastal or transitional environments and one WRC (Wrabness-Wheatsheaf Close) discharges to a freshwater inland water body. The results demonstrate that there is environmental capacity for the proposed options for growth as long as permit changes and any required upgrades are undertaken.

AWS is responsible for any upgrade at these WRCs and the exact nature of these upgrades will be identified by AWS and funded through their business plan and Price Review process with Ofwat. The necessary improvements may include options such as removal or surface water flows, optimisation of the works, or treatment process upgrades and will depend on individual circumstances, how development is built out and other environmental drivers

Therefore, from a WFD perspective there is capacity to accept growth and comply with current WFD targets based on the limits achievable with current technology. However, environmental capacity should be considered to be ultimately limited on the basis that limitations on current treatment technologies are preventing the optimal target of future good status from being achieved. The capability and performance of treatment technologies are likely to improve over time, and hence capacity for additional wastewater flow would need to be reconsidered in the context of achieving good status up to the end of the plan period and beyond.

Table 10 provides a summary of the RAG assessment of the WRCs within the District which have been assessed as not having sufficient headroom to accommodate growth.

Table 10. Wastewater treatment works assessment summary

WRC	Watercourse	Is Headroom available for anticipated growth?	Is a revised quality condition for BOD required?	Ensure no deterioration in status for BOD?	Overall RAG
Clacton - Holland Haven	North Sea	Headroom only up to 537 dwellings	Yes	Yes	Changes or upgrades to the WRC are likely to be required from 2024 using conventional treatment technologies to meet river quality targets. Permit setting recommended for BOD.
Colchester	River Colne (Saline Estuary)	Headroom only up to 4,467 dwellings	Yes	Yes	Changes or upgrades to the WRC are likely to be required from 2033 using conventional treatment technologies to meet river quality targets. Permit setting recommended for BOD.
Jaywick	North Sea	Headroom only up to 188 dwellings	Yes	Yes	Changes or upgrades to the WRC are likely to be required from 2025 using conventional treatment technologies to meet river quality targets. Permit setting recommended for BOD.
Manningtree	Wignall Brook Stour Estuary	Headroom only up to 142 dwellings	Yes	Yes	Changes or upgrades to the WRC are likely to be required from 2019 using conventional treatment technologies to meet river quality targets. Permit setting recommended for BOD.
Wrabness – Wheatsheaf Close		Headroom only up to 1 dwelling	Yes	Yes	Changes or upgrades to the WRC are likely to be required using conventional treatment technologies to meet river quality targets. Permit setting recommended for BOD. Permit setting may be required for ammonia and phosphate.

5. Water Supply Strategy

5.1 Introduction

Water supply for the study area is provided by Affinity Water. An assessment of the existing environmental baseline with respect to locally available resources in the aquifers and the main river systems has been completed. The assessment has been based on the Environment Agency's Essex Catchment Abstraction Licensing Strategy²³.

This study has also used Affinity Water's 2014 WRMP²⁴ to determine available water supply against predicted demand and has considered how water efficiency can be further promoted and delivered for new homes beyond that which is planned for delivery in Affinity Water's WRMP.

5.2 Abstraction Licensing Strategies

The Environment Agency manages water resources at the local level through the use of abstraction licensing strategies (ALS). Within the ALS, the Environment Agency's assessment of the availability of water resources is based on a classification system that gives a resource availability status which indicates:

- The relative balance between the environmental requirements for water and how much is licensed for abstraction;
- Whether water is available for further abstraction; and,
- Areas where abstraction needs to be reduced.

The categories of resource availability status are shown in Table 11. The classification is based on an assessment of a river system's ecological sensitivity to abstraction-related flow reduction. This classification can then be used to assess the potential for additional water resource abstractions.

Table 11. Water resource availability status categories

Indicative Availability Status	Resource License Availability
Water available for licensing	There is more water than required to meet the needs of the environment. New licences 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 licences 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 licence 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 (as required by the Water Framework Directive (Note: we are currently investigating water bodies that are not supporting GES / GEP). No further consumptive licences will be granted. Water may be available if you can buy (known as licence trading) the amount equivalent to recently abstracted from an existing licence holder.

The classification for each of the Water Resource Management Units (WRMU) in the District has been summarised for surface waterbodies in Table 12.

²³ Environment Agency Essex abstraction licensing strategy (2017)
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/636594/ALS_2017_Essex.pdf

²⁴ Affinity Water Final Water Resources Management Plan (2014)
<https://stakeholder.affinitywater.co.uk/docs/FINAL-WRMP-Jun-2014.pdf>

Table 12. Resource availability classification

River – WRMU	Surface Water (flow exceedance scenarios)			
	Q30	Q50	Q70	Q95
AP10 Salary Brook				
AP12 Sixpenny Brook				
AP13 Tenpenny Brook				
AP14 Holland Brook				

Salary Brook, Sixpenny Brook and Tenpenny Brook are defined as having no water available for licensing during the very low flow period (Q95). Salary Brook and Sixpenny Brook are defined as having restricted water available for licensing during the low flow period (Q70). Also, Holland Brook is defined as having restricted water available for licensing during the Q50 - Q70 period. Furthermore, all the surface waterbodies have potential for local abstractions during periods of high flows (Q30) and Salary Brook, Sixpenny Brook and Tenpenny Brook have potential for local abstractions during periods of medium flows (Q50) as well.

This analysis indicates that there is limited potential for local abstraction to support major site development at a local level during very low and low flows; however, there is potential for local abstractions at the abovementioned waterbodies during high and medium flows. This may be beneficial to supplying water resources.

5.3 Water Resource Planning

Water companies have a statutory duty to undertake medium to long term planning of water resources in order 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 WRMPs on a 5 yearly cycle.

WRMPs are a key document for a WCS as they set out how future demand for water from growth within a water company's supply area will be met, taking into account the need to for the environment to be protected. As part of the statutory approval process, the plans must be approved by both the Environment Agency and Natural England (as well as other regulators) and hence the outcomes of the plans can be used directly to inform whether growth levels being assessed within a WCS can be supplied with a sustainable source of water supply.

Water companies manage available water resources within key zones, called Water Resource Zones (WRZ). These zones share the same raw resources for supply and are interconnected by supply pipes, treatment works and pumping stations. As such the customers within these zones share the same available 'surplus of supply' of water when it is freely available; but also share the same risk of supply when water is not as freely available during dry periods (i.e. deficit of supply). For current WRMPs, Water companies have undertaken resource modelling to calculate if there is likely to be a surplus of available water or a deficit in each WRZ by 2040, once additional demand from growth and other factors such as climate change are taken into account.

5.4 Water Resource Planning in the District

In reviewing Affinity Water's Final 2014 WRMP and through liaison with Affinity Water it has been established that the growth figures assessed for this WCS study are catered for in the 2033 prediction of supply and demand deficits in the relevant WRZs under average conditions. Therefore, the WRMP can be used directly in the WCS assessment to determine available solutions for supplying the proposed growth with potable water supplies.

5.5 Demand for Water

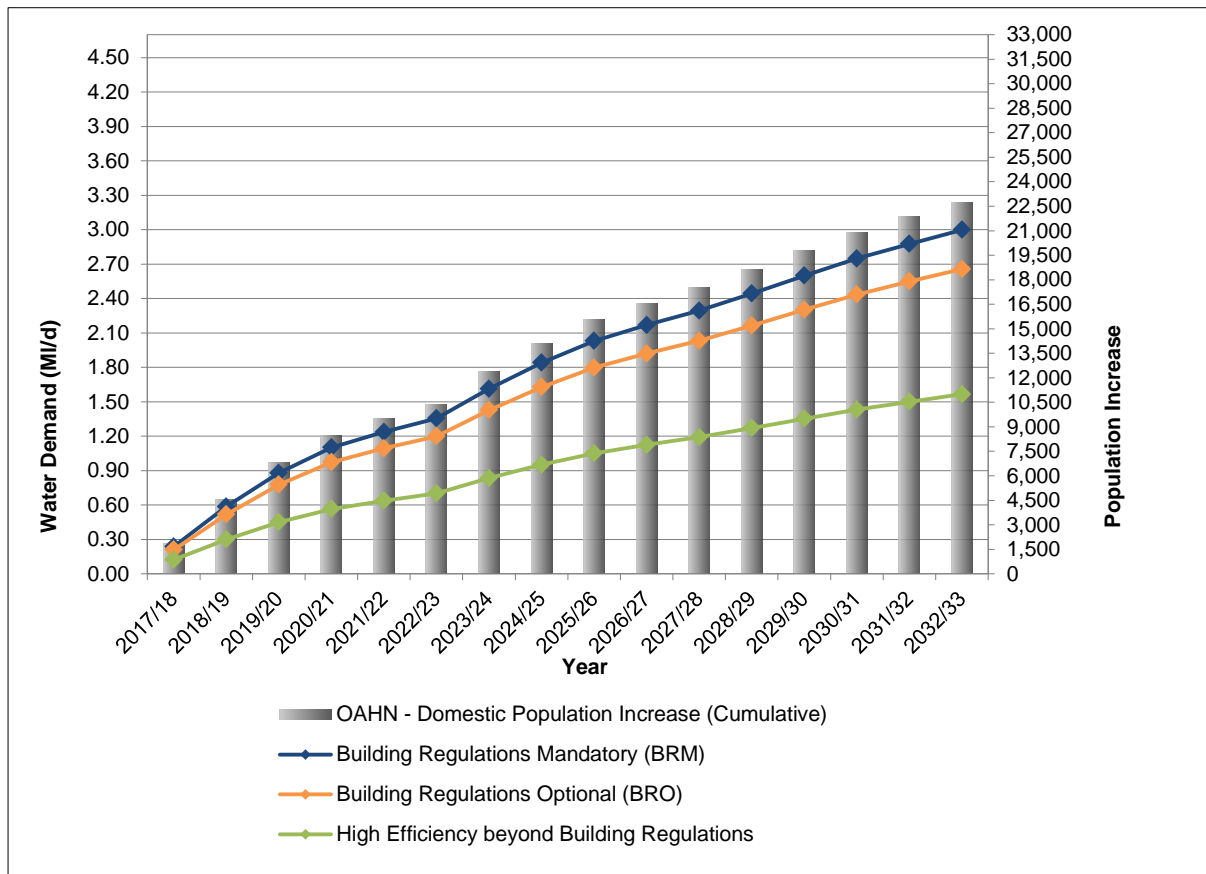
Likely increases in demand in the District have been calculated using three different water demand projections (compared to the Business As Usual Projection) based on different rates of water use for new homes that could be implemented through potential future policy.

The projections were derived as follows:

- **Projection 1** – Business as Usual. Existing homes would use 133 l/h/d, this reflects the consumption used currently by Affinity Water;
- **Projection 2** – Building Regulations Mandatory requirements. New homes would conform to (and not use more than) Part G of the Building Regulations requirement of 125 l/h/d;
- **Projection 3** - Building Regulations Optional requirements. Only applies where a condition that the new home should meet the optional requirement is imposed as part of the process of granting planning permission. Where it applies, new homes would conform to (and not use more than) Part G of the Building Regulations optional requirement of 110 l/h/d;
- **Projection 4** – High Efficiency beyond Building Regulations. New homes would include both greywater recycling and rainwater harvesting reducing water use to a minimum of 62 l/h/d.

Using these projections, the increase in demand for water could range between 1.57 and 3.18 MI/d by 2033. The projections are shown in Figure 12.

Figure 12. Range of water demands across plan period in Tendring depending on efficiency levels of new homes



5.6 Planned Water Availability Summary

The final 2015 WRMP for Affinity Water has been used to summarise water availability to meet the projected demand for the Tendring study area covering the planning period to 2040. The Tendring District is located in Affinity Water’s Water Resource Zone 8 (WRZ8).

5.6.1 Water Resource Zone 8

The Affinity Water WRZ8 is usually supplied entirely by groundwater sources, however it can also import water from Ardleigh Reservoir jointly owned with Anglian Water. This source of water is governed by the Ardleigh Reservoir Order of 1967. The Deployable Output of this source has been reduced due to water treatment

constraints. As joint owners, Affinity Water is entitled to 50% of the output but, under a short-term agreement, it is currently taking 30% of the total output, allowing Anglian Water to take 70% under a ten-year rolling Bulk Reservation Agreement that Affinity Water signed in 2010. The annual average and peak capacity that Anglian Water can receive from Affinity Water is 8.1 MI/d.

Affinity Water predicts that, with these sources of supply, and even with the estimated increase in demand from growth, WRZ8 will be in surplus (1-10 MI/d) at DYCP 2040²⁵ and therefore, no water resources assessment is required for the period 2015-2040. It can therefore be concluded that the growth proposed to 2033 can be adequately served by the existing groundwater sources and import of water from Ardleigh Reservoir.

5.6.2 Climate Change and Availability of Water

It is predicted that climate change will reduce water availability in the study area over time. Rainfall patterns are predicted to change to less frequent, but more extreme, rainfall events. Affinity Water has recognised the risk climate change poses to the three crucial areas of their business, abstraction, treatment and distribution of water. Customers expect Affinity Water to provide a continuous supply of water, but the resilience of the supply systems have the potential to be affected by the impact of climate change with severe weather-related events, such as flooding. In planning for future water resources availability, Affinity Water has accounted for the impacts of climate change within their supply-demand forecasts as follows.

5.6.2.1 Impact on Supplies

Affinity Water has undertaken analysis of the impacts of climate change on the future availability of their water resources on both their groundwater and surface water sources. It was concluded that, there would be no impact on the water available in the surface water reservoir. It was also found that groundwater sources in the area are not considered to be sensitive to climate change due to groundwater levels being significantly higher than borehole pump levels in the confined chalk aquifer. Nominal allowances, as used for the previous Affinity Water WRMP, of 1% reduction in output have been made for Affinity Water's chalk sources.

5.6.2.2 Impact on Demand

The main impact of climate change on demand is related to periods of extremely hot and dry weather that will increase the peak demand for water. Affinity Water has accounted for the impact on the peak demand and the longer duration effect of a dry year through forecasting the increased demand of water and accounting for it in their plans. Affinity Water has included a baseline level of the impact of climate change on demand in our demand forecast, and has accounted for the uncertainty of that forecast in their headroom assessment. The assessment of the small increase in demand as a result of climate change shows that the increase largely applies to garden watering, which has been verified by the micro-component study Affinity Water undertook in the summer of 2013, which is described in section 5.7.2.6 of the WRMP.

5.7 Water Neutrality

Although surplus water is available to meet the proposed demand, proposals for a Garden Community part located in the District means that in the longer term, there is a driver to consider more sustainable use of water and to attempt to limit the demand for water from new development through planning policy control.

The Environment Agency Water Stressed Areas classification²⁶, indicates that the Affinity Water (formerly Veolia Water East) WRZ8, where Tendring District is located, is classified as being under "Serious" water stress. The new methodology identifies areas of serious water stress where: (a) the current household demand for water is a high proportion of the current effective rainfall which is available to meet that demand; or (b) the future household demand for water is likely to be a high proportion of the effective rainfall available to meet that demand.

Therefore, under the Regulations, water companies in areas classified as seriously water stressed need to evaluate compulsory metering alongside other options when preparing water resource management plans

²⁵ Dry Year Critical Period projection for year 2040

²⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/244333/water-stressed-classification-2013.pdf

(WRMPs) and, as a result, Affinity Water should evaluate the abovementioned options. Further assessment is provided in the following sections.

Water neutrality is a concept whereby the total demand for water within a planning area after development has taken place is the same (or less) than it was before development took place²⁷. If this can be achieved, the overall balance for water demand is 'neutral', and there is considered to be no net increase in demand as a result of development. In order to achieve this, new development needs to be subject to planning policy which aims to ensure that where possible, houses and businesses are built to high standards of water efficiency through the use of water efficient fixtures and fittings, and in some cases rainwater harvesting and greywater recycling.

It is theoretically possible that neutrality can be achieved within a new development area, through the complete management of the water cycle within that development area. In addition to water demand being limited to a minimum, it requires:

- all wastewater to be treated and re-used for potable consumption rather than discharged to the environment;
- maximisation of rainwater harvesting (in some cases complete capture of rainfall falling within the development) for use in the home; and
- abstraction of local groundwater or river flow storage for treatment and potable supply.

Achieving 'total' water neutrality within a development remains an aspirational concept and is usually only considered for an eco-town or eco-village type development, due to the requirement for specific catchment conditions to supply raw water for treatment and significant capital expenditure. It also requires specialist operational input to maintain the systems such as wastewater re-use on a community scale.

For the majority of new development, in order for the water neutrality concept to work, the additional demand created by new development needs to be offset in part by reducing the demand from existing population and employment. Therefore, a 'planning area' needs to be considered where measures are taken to reduce existing or current water demand from the current housing and employment stock. The planning area in this case is considered to be the District as a whole.

5.7.1 Twin-Track Approach

Attainment of water neutrality requires a 'twin track' approach whereby water demand in new development is minimised as far as possible, whilst at the same time taking measures, such as retrofitting of water efficient devices on existing homes and business to reduce water use in existing development.

In order to reduce water consumption and manage demand for the limited water resources within the District, a number of measures and devices are available²⁸. Generally, these measures fall into two categories due to cost and space constraints, as those that should be installed in new developments and those which could be retrofitted. Appendix C provides more detail on the different types of device or system along with the range of efficiency savings they could lead to.

5.7.2 Achieving Total Neutrality – is it feasible?

When considering neutrality within an existing planning area, it is recognised by the Environment Agency²⁹ that achievement of total water neutrality (100%) for new development is often not possible, as the levels of water savings required in existing stock may not be possible for the level of growth proposed. A lower percentage of neutrality may therefore be a realistic target, for example 50% neutrality.

This WCS therefore considers three water neutrality targets and sets out a 'pathway' for how the most likely target (or level of neutrality) can be achieved. Appendix C discusses the pathway concept in more detail, and highlights the importance of developing local policy in the study area for delivering aspirations like water

²⁷ Water Neutrality is defined more fully in the Environment Agency report 'Towards water neutrality in the Thames Gateway' (2007)

²⁸ Source: Water Efficiency in the South East of England, Environment Agency, April 2007.

²⁹ Environment Agency (2009) Water Neutrality, an improved and expanded water management definition

neutrality as well as understanding the additional steps required beyond 'business as usual' required to achieve it.

5.7.3 Metering Assumptions

Installing water meters within existing residential properties is an important element of WRMPs to manage their customers' demand for water. Affinity Water's metering programme as described in the WRMP has been applied to the water neutrality scenarios (outlined in Section 5.5) and details the level of additional metering that could be undertaken.

The existing level of metering within the Affinity Water WRZ8 is 72% for household customers and 99% for non-household customers. Affinity Water currently has no targets for future meter penetration in WRZ8. However, correspondence with Affinity Water indicated that although currently there are no plans to drive greater meter penetration, the natural rate of rise should take the household metering proportion above 72% over time.

5.7.4 Water Neutrality Scenarios

5.7.4.1 Theoretical Scenario (Water Neutrality)

The scenario has been developed as a context to demonstrate what is required to achieve a neutral position in the District. In practice achieving 100% neutrality across the study area is unrealistic for two main reasons:

- Developers would be required to voluntarily provide homes where water use is reduced below Building Regulation Part G Optional Requirements, through incorporation of water re-use technologies in all major development to meet non-potable demands. Local Authorities are currently limited to setting policies with specific water efficiency targets which link to existing technical standards and without a policy to drive higher specification homes, developers are unlikely to deliver homes with lower water use designed in.
- A significant proportion of existing homes would need to be retrofitted with efficient fixtures and fittings which would require a significant funding pool and a specific project management resource to ensure the retrofitting programme is implemented.

The key assumptions for this scenario are:

- Meter installation should be undertaken into all existing residential properties where metering is technically feasible.
- All new homes would be built to deliver a water use of 62 litres per person per day, based on high specification fixtures and fittings⁴⁵, as well as rainwater harvesting and/or greywater recycling to meet non-potable demands generated by toilet flushing and washing machine use.
- Uptake of retrofitting water efficiency measures considered to be at the maximum achievable (24.7%) in the District.

To deliver, it would require:

- A significant funding pool and a specific joint partnership 'delivery plan' to deliver the extremely high percentage of retrofitting measures required;
- Strong local policy within the Local Plan to encourage restriction of water use in new homes beyond Building regulations; and
- All new development to include water recycling facilities across the District.

5.7.4.2 Optional requirements Scenario plus retrofit

This scenario considers the savings which could be made including a policy within the Local Plan to require developers to build houses to meet the optional standard for water efficiency (Building Regulation Part G Optional Requirements) in addition to a modest programme of additional retrofitting.

The key assumptions for this scenario are:

- All new homes would be built to deliver a water use of 110 litres per person per day (Building Regulation Part G Optional); and
- 5% of existing homes would be retrofitted with low flush cisterns, as well as aerated taps and shower heads.

The scenario has primarily been developed to demonstrate (and provide an evidence based for) the added benefit of adopting policy based on Building Regulation Part G Optional as well as undertaking a joint programme of retrofit.

5.7.4.3 Mandatory requirement Scenario plus retrofit

This scenario considers a more realistic scenario, and considers the savings which could be made based on developers building houses to meet the minimum expected technical requirements for water use (Building Regulation Part G Mandatory Requirements) in addition to a modest programme of additional retrofitting.

The key assumptions for this scenario are:

- All new homes would be built to deliver a water use of 125 litres per person per day (Building Regulation Part G Mandatory); and
- 5% of existing homes would be retrofitted with low flush cisterns, as well as aerated taps and shower heads.

5.7.5 Neutrality Scenario Assessment Results

To achieve total water neutrality, the demand post growth must be the same as, or less than existing demand. Based on estimates of population size, current demand in the District was calculated to be 17.87 MI/d.

For each neutrality option and neutrality scenario, an outline of the required water efficiency specification was developed for new houses, combined with an estimate of the savings that could be achieved through metering and further savings that could be achieved via retrofitting of water efficient fixtures and fittings in existing property. This has been undertaken utilising research undertaken by groups and organisations such as Waterwise, UKWIR³⁰, the Environment Agency and OFWAT to determine realistic and feasible efficiency savings as part of developer design of properties, and standards for non-residential properties (Appendix C). The results are provided in Table 13 which also includes the effect of just implementing Building Regulation Optional and Mandatory policy control without retrofit for context.

Table 13. Results of the Neutrality Scenario Assessment

Neutrality Scenario	New homes consumption rate (l/h/d)	% of existing properties to be retrofitted	Demand from Growth (MI/d)	Total demand post growth* (MI/d)	Total demand after retrofitting (MI/d)	% Neutrality Achieved
Mandatory requirements	125	0	3.00	20.87	20.87	0%
Optional requirements	110	0	2.66	20.53	20.53	11%
Mandatory requirements plus retrofit	125	5	3.00	20.87	20.81	2%
Optional requirements plus retrofit	110	5	2.66	20.53	20.47	13%
Theoretical Water Neutrality	62	100	1.57	19.44	17.87	100%

³⁰ UKWIR – The United Kingdom Water Industry Research group, attended and part funded by all major UK water companies

Table 12 indicates that to achieve water neutrality would require the implementation of unrealistic measures: all new development to minimise water demand through the use of extensive and expensive recycling technologies; all water companies to meet maximum water meter penetration in existing housing stock; and, a large funding pot to allow retrofit of 100% of existing housing stock with water efficient fixtures and fittings. Therefore, two more realistic water demand management scenarios have been tested.

- *Mandatory requirements scenario plus retrofit*
- *Optional requirements scenario plus retrofit*

The water neutrality analysis demonstrated that both the mandatory and optional requirement scenarios would reduce post development demand in 2033. The mandatory requirements scenario plus 5% retrofit would potentially deliver a post development demand reduction of 0.24ML/d (compared to the Business As Usual demand, which is 21.05 ML/d) whilst the optional requirement plus 5% retrofit would deliver a potential reduction of 0.58 ML/d (compared to the Business As Usual demand). The Optional requirements scenario plus 5% retrofit, which would achieve 13% neutrality, would require new homes to be designed to use water at rate of 110 l/h/d. However, as the neutrality proportion is still relatively low, it would be advisable to extend meter penetration or to increase the number of retrofitting properties.

5.7.6 Financial Cost Considerations

There are detailed financial and sustainability issues to consider in deciding on a policy for water neutrality. Whilst being water efficient is a key consideration of this study, reaching neutrality should not be at the expense of increasing energy use and potential increasing the carbon footprint of development.

Using the information compiled, the financial costs per neutrality scenario has been calculated and are included in Table 14. It should be noted that these are only estimated costs based on strategic level research into water efficiency implementation and cost.

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Table 14. Estimated Cost of Neutrality Scenarios

Neutrality Scenario	New Homes		Existing Properties				Costs Summary			
	No.	Efficiency cost	No. to be metered	Metering cost	Retrofit %	No. to retrofit	Retrofit cost	Developer	Non developer	Total
Optional requirements	10,627	£ 95,643	-	-	0%	0	-	£ 95,643		£ 95,643
Mandatory requirements plus retrofit	10,627	0	-	-	5%	3,217	£ 73,999	-	£ 73,999	£ 73,999
Optional requirements plus retrofit	10,627	£ 95,643	-	-	5%	3,217	£ 73,999	£ 95,643	£ 73,999	£ 169,642
Theoretical Water Neutrality	10,627	£ 43,538,819	-	-	100%	64,347	£ 1,956,353	£ 43,538,819	£ 1,956,353	£ 45,495,172

5.7.7 Preferred Strategy – Delivery Pathway

In order to set out a feasible route for how the proposed scenarios could be delivered, this study has considered delivery requirements for the 'optional requirement plus retrofit scenario'. This has been undertaken to allow Tendring District Council to consider the potential costs and benefits of developing a water use policy to require developers to build new homes to meet the Building Regulation Part G Optional water standards, and to consider working with water companies to develop further options for retrofitting existing properties with efficiency fixtures and fittings.

Table 14 summarises the delivery requirement and includes a high level assessment of the likely ease with which each element could be perused and delivered, along with recommendations on the likely responsible organisation that could take each option forward.

Table 15. Water efficiency and retrofit measures and recommended responsible organizations

Delivery requirements	Ease of adoption and delivery	Responsible stakeholder
Ensure planning applications for Major Development are compliant with the recommended policies on water use requirements	High Some officer training may be required, but policing of policy compliance would be a reasonably straightforward procedure. Examples for water efficiency policy guidance are available ³¹	Tendring District Council (LPA – Planning team)
Fitting water efficient devices in accordance with policy	High A significant library of information base is available on available water efficiency measures to meet a range of standards including online water calculators.	Developers and LPA (Building Control)
Provide guidance on the installation of water efficient devices through the planning application process	High Pre-application advice could be provided specific to water efficiency options and specific information made available on each LPA's website or on KCC's website	Tendring District Council (LPA)
Ensure continuing increases in the level of water meter penetration where the maximum possible is not already achieved	Medium This initiative should reflect commitments in current and future WRMPs	Affinity Water
<ul style="list-style-type: none"> Retrofit devices within council owned housing stock; and, Retrofit devices within privately owned housing stock 	<p>Low to Medium</p> <p>A significant funding pool and staff resource requirement would need to be identified to deliver feasibility studies and retrofit implementation.</p> <p>Water companies are embarking on retrofit as part of their response to meeting OFWAT's mandatory water efficiency targets. These programmes are funded out of operational expenditure. If a company has, or is forecasting, a supply-demand deficit over the planning period, water efficiency programmes can form part of a preferred option(s) set to overcome the deficit.</p> <p>These options are identified as part of the companies' WRMPs and will have to undergo a cost-benefit analysis but further analysis subsequent to this study could inform a greater investment in retrofitting measures as a means to offset demand from new property, particularly where funding could be supplemented through developer contributions (although this is considered unlikely)</p>	Affinity Water in partnership with Tendring's LPA – Affinity Water would need to fund this, but Tendring's LPA could consider providing a programme lead to identify suitable properties and manage the programme delivery
Promote water audits and set targets for the number of businesses that have water audits carried out.	Medium Allocate a specific individual or team within each of the local authorities to be responsible for promoting and	Tendring District Council (LPA)

³¹ <https://www.eastcambs.gov.uk/sites/default/files/FD.EVR23%20-%20Final.pdf>

Delivery requirements	Ease of adoption and delivery	Responsible stakeholder
	undertaking water audits (a relatively low cost option) and ensuring the targets are met. The same team or individual could also act as a community liaison for households (council and privately owned) and businesses where water efficient devices are to be retrofitted, to ensure the occupants of the affected properties understand the need and mechanisms for water efficiency.	
Educate and raise awareness of water efficiency ³²	High All stakeholders could use existing tools such as website information, pre-development application responses and public events to increase awareness and education regards the importance of water efficiency in Kent	All stakeholders

³² A major aim of an education and awareness programme, is to change peoples' attitude to water use and water saving and to make the general population understand that it is everybody's responsibility to reduce water use. Studies have shown that the water efficiencies in existing housing stock achieved by behavioural changes, such as turning off the tap while brushing teeth or reducing shower time, can be as important as the installation of water efficient devices

6. Major Development Site Assessment

6.1 Introduction

Following the assessment of wastewater treatment capacity and water resources, this section of the WCS addresses infrastructure capacity issues, flood risk, surface water management and SuDS suitability for each of the allocated sites within the Local Plan. The results are presented for each of the allocated sites in Appendix E.

6.2 Assessment Methodologies

6.2.1 Wastewater Network

The wastewater strategy to cater for growth requires an assessment of the capacity of the wastewater network (sewer system) to accept and transmit wastewater flows from the new development to the WRC for treatment.

The capacity of the existing sewer network is an important consideration for growth, as in some cases the existing system is already at, or over its design capacity. Further additions of wastewater from growth can result in sewer flooding in the system (affecting property or infrastructure) or can increase the frequency with which overflows to river systems occur, resulting in ecological impact and deterioration in water quality.

As the wastewater undertaker for the District, Anglian Water has a general duty under Section 94 of the Water Industry Act 1991 to provide effectual drainage which includes providing additional capacity, as and when required, to accommodate planned development. However this legal requirement must also be balanced with the price controls as set by the regulatory body OFWAT which ensure Anglian Water has sufficient funds to finance its functions, and at the same time protect consumers' interests. The price controls affect the bills that customers pay and the sewerage services consumers receive, and ultimately ensure wastewater assets are managed and delivered efficiently.

Consequently, to avoid potential inefficient investment, Anglian Water generally do not provide additional capacity until there is certainty that the development is due to commence. Where development proposals are likely to require additional capacity upgrades to accommodate new development flows, it is highly recommended that potential developers contact Anglian Water as early as possible to confirm flow rates and intended connection points. This will ensure the provision of additional capacity is planned into AWS's investment programme to ensure development is not delayed.

AWS have undertaken an internal assessment of the capacity of the foul sewer and surface water network system using local operational knowledge.

The results are presented for each of the Preferred Sites in Appendix E. A RAG assessment has been undertaken; a key indicating the coding applied by Anglian Water to each assessment is provided in Table 16.

Table 16. Key for wastewater network RAG assessment

Capacity available to serve the proposed growth	Infrastructure and/or treatment upgrades required to serve proposed growth or diversion of assets may be required	Major constraints to provision of infrastructure and/or treatment to serve proposed growth
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6.2.2 Water supply network capacity

In addition to available water resources, there is a requirement to consider whether there is the infrastructure capacity to move water to where the demand will increase.

Affinity Water has undertaken a high level assessment of the capacity of the water supply system using local operational knowledge. Affinity Water's comments have been presented for each of the Preferred Sites in

Appendix E. A RAG assessment has been applied to the comments; a key indicating the coding applied to each assessment is provided in Table 17.

Table 17. Key for water supply network RAG assessment

Capacity available to serve the proposed growth	Infrastructure and/or treatment upgrades required to serve proposed growth or diversion of assets may be required	Major constraints to the provision of infrastructure and/or treatment to serve proposed growth
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6.2.3 Flood Risk

6.2.3.1 Fluvial

The flood risk to each of the major development sites has been considered using the Environment Agency Flood Maps for Planning. The Flood Zone within each development area is located is provided. The Tendring Strategic Flood Risk Assessment (SFRA)³³ has also been used to help identify the risk of fluvial flooding at each development site.

6.2.3.2 Surface Water Flood Risk

Surface water flooding has been reviewed for each of the large development sites using the Risk of Flooding from Surface Water (RoFSW)³⁴ mapping produced by the Environment Agency. The Tendring SFRA has also been used to help identify the risk of flooding from surface water at each development site.

6.3 Impact of Garden Communities

The proposed Tendring-Colchester Border Garden Community represents a significant proportion of Tendring District Council's future growth during the plan period (1,250 dwellings by 2033). In addition, Colchester Borough Council's Local Plan proposes a future growth of 1,650 dwellings within the Tendring-Colchester Border Garden Community by 2033. The combined growth has been assessed within this WCS.

Colchester WRC does not have sufficient headroom under the current DWF permit to accept the additional wastewater flow from growth in the garden community proposed within the plan period, from both Tendring District and Colchester Borough. As indicated in Section 4.7.1, Colchester WRC would require a revised DWF permit and tightening of the permits quality conditions in order to accept the additional wastewater flow from growth in the Tendring-Colchester Border Garden Community proposed within the plan period.

The North Essex Garden Communities Integrated Water Management Strategy (IWMS)³⁵ identified the opportunities and constraints in terms of wastewater and water supply for each of the three proposed garden communities over the full development period, beyond 2033. It concluded that the preferred wastewater option for the Tendring-Colchester Border garden community would be to direct the growth to Colchester WRC. It also showed that no deterioration of WFD status is achievable within the current limits of conventional treatment by tightening the permit conditions for BOD and ammonia.

Further assessment will be required either as a Stage 2 to the IWMS or similar study work to consider each of the three garden communities in more detail, and identify and determine site specific water management measures which can serve to minimise demand for the strategic options as far as possible and set out how surface water and flood risk can be managed on site in an integrated way.

³³ Essex County Council Flood Services (June 2017), Tendring District Council Strategic Flood Risk Assessment Addendum

³⁴ Previously referred to as the updated Flood Map for Surface Water (uFMfSW)

³⁵ AECOM (2017), North Essex Garden Communities Integrated Water Management Strategy – Stage 1

7. Water Cycle Strategy Recommendations and Policy

The following policy recommendations are made and should be considered by Tendring District Council to ensure that the Tendring Local Plan considers potential limitations (and opportunities) presented by the water environment and water infrastructure on growth, and phasing of growth.

7.1 Policy Recommendations Overview

7.1.1 Wastewater

WW1 – Development in the Clacton-Holland Haven, Colchester, Jaywick New, Manningtree and Wrabness-Wheatsheaf Close WRC catchments

It is recommended that a policy is developed by Tendring District Council that requires all developers to provide evidence to them that they have consulted with Anglian Water regarding wastewater treatment capacity, and the outcome of this consultation, prior to development approval. The Council should consider the response from Anglian Water when deciding if the expected timeframe for the development site in question is appropriate.

WW2 – Development and the Sewerage Network

It is recommended that Major Development sites assessed by Anglian Water as part of the WCS as having limited foul sewerage network capacity (Amber or Red) should be subject to a pre-planning enquiry³⁶ with Anglian Water at an early stage, and if possible before submitting a planning application, to inform developers of the scale of any contribution required to strategic infrastructure, as well as AWS's asset management plans prior to planning permission being granted. Assessments made within this WCS consider each site in isolation and network capacity will change depending on when and where sites come forward.

WW3 – Treatment Capacity Review

It is recommended that Tendring District Council continues to update Anglian Water on future development phasing and changes to growth allocations to ensure that plans for WRC upgrades in response to permit change requirements or flow capacity constraints take account of the most up to date planning position, to ensure capacity has not been used up by other developments within a WRC catchment.

7.1.2 Water Supply

WS1 – Water Efficiency in new homes and buildings

In order to move towards a more 'water neutral position' and to enhance sustainability of development coming forward, a policy should be developed that ensures all housing is as water efficient as possible, and that new housing development should go beyond mandatory Building Regulations requirements, ideally to 110 l/h/d optional Building Regulations requirements. Non-domestic buildings should as a minimum reach 'Good' BREEAM status.

WS2 – Water Efficiency Retrofitting

In order to move towards a more 'water neutral position', a policy could be developed to carry out a programme of retrofitting and water audits of existing dwellings and non-domestic buildings with the aim to move towards delivery of 15% of the existing housing stock with easy fit water savings devices

WS3 – Water Efficiency Promotion

It is recommended that a policy be developed to establish a programme of water efficiency promotion and consumer education, with the aim of behavioural change with regards to water use to move towards the higher water neutrality scenarios.

³⁶ Pre-planning enquiries to Anglian Water can be made via the Anglian Water website: <http://www.anglianwater.co.uk/developers/pre-planning-service-.aspx>

7.1.3 Surface Water Management and Flood Risk

SWM1 – Sewer Separation

Developers should ensure foul and surface water from new development and redevelopment are kept separate where possible. Surface water should be discharged as high up the following hierarchy of drainage options as reasonably practicable, before a connection to the foul network is considered:

- into the ground (infiltration);
- to a surface waterbody;
- to a surface water sewer, highway drain, or another drainage system;
- to a combined sewer.

Where sites which are currently connected to combined sewers are redeveloped, the opportunity to disconnect surface water and highway drainage from combined sewers must be taken.

SWM2 – SuDS and Green Infrastructure

Developers should ensure linkage of SuDS to green infrastructure to provide environmental enhancement and amenity, social and recreational value. SuDS design should maximise opportunities to create amenity, enhance biodiversity, and contribute to a network of green (and blue) open space.

SWM3 – Water Quality Improvements

Developers should ensure, where possible, that discharges of surface water are designed to deliver water quality improvements in the receiving watercourse or aquifer where possible to help meet the objectives of the Water Framework Directive.

7.1.4 Ecology

ECO1 – Biodiversity Enhancement

It is recommended that Tendring District Council include a policy within its Local Plan which commits to seeking and securing (through planning permissions etc.) enhancements to aquatic biodiversity in the District through the use of SuDS (subject to appropriate project-level studies to confirm feasibility including environmental risk and discussion with relevant authorities).

7.2 Further Recommendations

7.2.1 Stakeholder Liaison

It is recommended that key partners in the WCS maintain regular consultation with each other as development proposals progress.

7.2.2 WCS Periodic Review

The WCS should remain a living document, and (ideally) be reviewed on a bi-annual basis as development progresses and changes are made to the various studies and plans that support it; these include:

- Five yearly reviews of Affinity Water's WRMP (the next full review is due in 2019, although interim reviews are undertaken annually);
- Periodic review 2019 (PR19) (Affinity Water's and Anglian Water's business plan for AMP7 – 2020 to 2025); and
- Updates to the RBMPs (next plan due in 2020).

Appendix A Policy and Legislative Drivers Shaping the WCS

Directive/Legislation/Guidance	Description
Birds Directive 2009/147/EC	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.
Eel Regulations 2009	Provides protection to the European eel during certain periods to prevent fishing and other detrimental impacts.
Environment Act 1995	Sets out the role and responsibility of the Environment Agency.
Environmental Protection Act 1990	Integrated Pollution Control (IPC) system for emissions to air, land and water.
Flood & Water Management Act 2010	<p>The Flood and Water Management Act 2010 is the outcome of a thorough review of the responsibilities of regulators, local authorities, water companies and other stakeholders in the management of flood risk and the water industry in the UK. The Pitt Review of the 2007 flood was a major driver in the forming of the legislation. Its key features relevant to this WCS are:</p> <ul style="list-style-type: none"> • To give the Environment Agency an overview of all flood and coastal erosion risk management and unitary and county councils the lead in managing the risk of all local floods. • To encourage the uptake of sustainable drainage systems by removing the automatic right to connect to sewers and providing for unitary and county councils to adopt SuDS for new developments and redevelopments. • To widen the list of uses of water that water companies can control during periods of water shortage, and enable Government to add to and remove uses from the list. • To enable water and sewerage companies to operate concessionary schemes for community groups on surface water drainage charges. • To make it easier for water and sewerage companies to develop and implement social tariffs where companies consider there is a good cause to do so, and in light of guidance that will be issued by the SoS 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.
Groundwater Directive 80/68/EEC	To protect groundwater against pollution by 'List 1 and 2' Dangerous Substances.
Habitats Directive 92/44/EEC and Conservation of Habitats & Species Regulations 2010	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 the Review of Consents (RoC) process 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.
Making Space for Water, 2004	Outlines the Government's strategy for the next 20 years to implement a more holistic approach to managing flood and coastal erosion risks in England. The policy aims to reduce the threat of flooding to people and property, and to deliver the greatest environmental, social and economic benefit.

National Planning Policy Framework	<p>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.</p> <p>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.</p>
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) 91/271/EEC	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.
Water Framework Directive (WFD) 2000/60/EC	<p>The WFD, for the first time, 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 grounds for derogation.</p> <p>The Environment Agency is the body responsible for the implementation of the WFD in the UK. The Environment Agency have been supported by UKTAG³⁷, an advisory body which has proposed water quality, ecology, water abstraction and river flow standards to be adopted in order to ensure that water bodies in the UK (including groundwater) meet the required status³⁸. Standards and water body classifications are published via River Management Plans (RBMP) the latest of which were completed in 2015.</p>
Natural Environment & Rural Communities Act 2006	Covering Duties of public bodies – recognises that biodiversity is core to sustainable communities and that Public bodies have a statutory duty that states that "every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity
Water Resources Act 1991	Protection of the quantity and quality of water resources and aquatic habitats. Parts have been amended by the Water Act 2003.
Wildlife & Countryside Act 1981 (as amended)	Legislation that provides for the protection and designation of SSSIs and specific protection for certain species of animal and plant among other provisions.

³⁷ 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.

³⁸ UK Environmental Standards and Conditions (Phase I) Final Report, April 2008, UK Technical Advisory Group on the Water Framework Directive.

Appendix B WRC Capacity Assessment results

B.1 Modelling assumptions and input data

Several key assumptions have been used in the water quality and permit modelling as follows:

- the wastewater generation per new household is based on an assumed 2033 Occupancy Rate (OR) of 2.09 people per house and an average consumption of 217 l/h/d ;
- WRC current flows were taken as the current measured dry weather flow (DWF) (Q80) as provided by EA. Future 2033 flows were calculated by adding the volume of additional wastewater generated by new dwellings (using a consumption value of 147l/h/d, as a projected to 2033 value at DYCP) and an additional allowance of 43l/h/d for an increase in infiltration) to the current permitted DWF value;
- WRC current discharge quality was taken as the current permitted limits for each water quality element.
- For the purposes of this study, the limits of conventionally applied treatment processes are considered to be:
 - 5mg/l for BOD;
 - 1mg/l for Ammoniacal-N; and
 - 0.5mg/l for Phosphate.

B.2 Headroom Assessment

The permitted flow headroom capacity within an existing permit is assumed to be usable, therefore the following steps have been 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 by applying the scoping criteria detailed in Table C-1.

Table C-1. Scoping criteria

Scoped In	Scoped Out
WRCs where flow headroom is exceeded as a result of growth	WRCs where flow headroom is not exceeded as a result of growth
WRCs which already exceed their flow permit and receive any additional flow from growth	WRCs which already exceed their flow permit but do not receive any additional flow from growth ³⁹

B.3 Water Quality Assessment

For those WRCs which are scoped in (headroom is exceeded), assessment has been undertaken to determine the new quality conditions required for each WRC discharge permit

Load Standstill calculations have been undertaken to identify the required future BOD quality permits with future effluent flow for coastal and estuarine waterbodies.

³⁹ If a WRC does not receive any growth, the assessment for the WRC is not within the scope of a WCS.

Appendix C Water Neutrality

Water Neutrality is defined in Section 5. This appendix provides supplementary information and guidance behind the processes followed.

C.1 Twin-Track Approach

Attainment of water neutrality requires a 'twin track' approach whereby water demand in new development is minimised as far as possible. At the same time measures are taken, such as retrofitting of water efficient devices on existing homes and business to reduce water use in existing development.

In order to reduce water consumption and manage demand for the limited water resources within the study area, a number of measures and devices are available⁴⁰, including:

- cistern displacement devices;
- flow regulation;
- greywater recycling;
- low or variable flush replacement toilets;
- low flow showers;
- metering;
- point of use water heaters;
- pressure control;
- rainwater harvesting;
- variable tariffs;
- low flows taps;
- water audits;
- water butts;
- water efficient garden irrigation; and,
- water efficiency promotion and education.

The varying costs and space and design constraints of the above mean that they can be divided into two categories, measures that should be installed for new developments and those which can be retrofitted into existing properties. For example, due to economies of scale, to install a rainwater harvesting system is more cost effective when carried out on a large scale and it is therefore often incorporated into new build schools, hotels or other similar buildings. Rainwater harvesting is less well advanced as part of domestic new builds, as the payback periods are longer for smaller systems and there are maintenance issues. To retrofit a rainwater harvesting system can have very high installation costs, which reduces the feasibility of it.

However, there are a number of the measures listed above that can be easily and cheaply installed into existing properties, particularly if part of a large campaign targeted at a number of properties. Examples of these include the fitting of dual-flush toilets and low flow showers heads to social housing stock, as was successfully carried out in Preston by Reigate and Banstead Council in conjunction with Sutton and East Surrey Water and Waterwise⁴¹.

C.2 The Pathway Concept

The term 'pathway' is used here as it is acknowledged that, to achieve any level of neutrality, a series of steps are required in order to go beyond the minimum starting point for water efficiency which is currently mandatory for new development under current and planned national planning policy and legislation.

There are no statutory requirements for new housing to have a low water use specification as previous government proposals to make different levels compulsory have been postponed pending government review. For non-domestic development, there is no statutory requirement to have a sustainability rating with the Building Research Establishment Environmental Assessment Method (BREEAM), only being mandatory where specified by a public body in England such as:

- Local Authorities incorporating environmental standards as part of supplementary planning guidance;

⁴⁰ Water Efficiency in the South East of England, Environment Agency, April 2007.

⁴¹ Preston Water Efficiency Report, Waterwise, March 2009, www.waterwise.org.uk

- NHS buildings for new buildings and refurbishments;
- Department for Children, Schools and Families for all projects valued at over £500K (primary schools) and £2million (secondary schools);
- The Homes and Communities Agency for all new developments involving their land; and,
- Office of Government Commerce for all new buildings.

Therefore, other than potential local policies delivered through a Local Plan, the only water efficiency requirements for new development are through the Building Regulations⁴² where new homes must be built to specification to restrict water use to 125l/h/d or 110l/h/d where the optional requirement applies. However, the key aim of the Localism Act is to decentralise power away from central government towards local authorities and the communities they serve. It therefore creates a stronger driver for local authorities to propose local policy to address specific local concerns.

In addition to the steps required in new local policy, the use of a pathway to describe the process of achieving water neutrality is also relevant to the other elements required to deliver it, as it describes the additional steps required beyond 'business as usual' that both developers and stakeholders with a role (or interest) in delivering water neutrality would need to take, for example:

- the steps required to deliver higher water efficiency levels on the ground (for the developers themselves); and,
- the partnership initiative that would be required beyond that normally undertaken by local authorities and water companies in order to minimise existing water use from the current housing and business stock.

Therefore, the pathway to neutrality requires a series of steps covering:

- technological inputs in terms of physically delivering water efficiency measures on the ground;
- local planning policies which go beyond national guidance; and,
- partnership initiatives and partnership working.

The following sections outline the types of water efficiency measures which have been considered in developing the technological pathway for the water neutrality target scenarios.

C.3 Improving Efficiency in Existing Development

Metering

The installation of water meters in existing housing stock has the potential to generate significant water use reductions because it gives customers a financial incentive to reduce their water consumption. Being on a meter also encourages the installation and use of other water saving products, by introducing a financial incentive and introducing a price signal against which the payback time of new water efficiency measures can be assessed. Metering typically results in a 5-10 per cent reduction from unmetered supply, which equates to water savings of approximately 50l per household per day, assuming an occupancy rate of 2.3⁴³ for existing properties.

In 2009, DEFRA instructed Anna Walker (the Chair of the Office of Rail Regulation) to carry out an independent review of charging for household water and sewerage services (the Walker view)⁴⁴. The typical savings in water bills of metered and unmetered households were compared by the Walker review, which gives an indication of the levels of water saving that can be expected (see Table C-1).

⁴² Part G of the Building Regulations

⁴³ 2.3 is used for existing properties and new properties. This figure was agreed with Anglian Water prior to the assessment

⁴⁴ Independent Walker Review of Charging and Metering for Water and Sewerage services, DEFRA, 2009, <http://www.defra.gov.uk/environment/quality/water/industry/walkerreview/>

Table C-1: Change in typical metered and unmetered household bills

2009-10 Metered	2009-10 Unmetered	2014-15 Metered	2014-15 Unmetered	% change Metered	% change Unmetered
348	470	336	533	-3	13

As mentioned in section 5.9.3, Affinity Water indicated that although currently there are no current plans to drive greater meter penetration, the natural rate of rise should take the household metering proportion above 72% over time.

Low or Variable Flush Toilets

Toilets use about 30 per cent of the total water used in a household⁴⁵. An old style single flush toilet can use up to 13 litres of water in one flush. New, more water-efficient dual-flush toilets can use as little as 2.6 litres⁴⁶ per flush. A study carried out in 2000 by Southern Water and the Environment Agency⁴⁷ on 33 domestic properties in Sussex showed that the average dual flush saving observed during the trial was 27 per cent, equivalent to a volumetric saving of around 2.6 litres per flush. The study suggested that replacing existing toilets with low or variable flush alternatives could reduce the volume of water used for toilet flushing by approximately 27 per cent on average.

Cistern Displacement Devices

These are simple devices which are placed in the toilet cistern by the user, which displace water and therefore reduce the volume that is used with each flush. This can be easily installed by the householder and are very cheap to produce and supply. Water companies and environmental organisations often provide these for free.

Depending on the type of devices used (these can vary from a custom made device, such bag filled with material that expands on contact with water, to a household brick) the water savings can be up to 3 litres per flush.

Low Flow Taps and Showers

Flow reducing aerating taps and shower heads restrict the flow of water without reducing water pressure. Thames Water estimates that an aerating shower head can cut water use by 60 per cent with no loss of performance⁴⁸.

Pressure Control

Reducing pressure within the water supply network can be an effective method of reducing the volume of water supplied to customers. However, many modern appliances, such as Combi boilers, point of use water heaters and electric showers require a minimum water pressure to function. Careful monitoring of pressure is therefore required to ensure that a minimum water pressure is maintained. For areas which already experience low pressure (such as those areas with properties that are included on a water company's DG2 Register) this is not suitable. Limited data is available on the water savings that can be achieved from this method.

Variable tariffs

Variable tariffs can provide different incentives to customers and distribute a water company's costs across customers in different ways.

The Walker review assessed variable tariffs for water, including:

- rising block tariff;
- a declining block tariff;
- a seasonal tariff; and,

⁴⁵ http://www.waterwise.org.uk/reducing_water_wastage_in_the_uk/house_and_garden/toilet_flushing.html

⁴⁶ <http://www.lecico.co.uk/>

⁴⁷ The Water Efficiency of Retrofit Dual Flush Toilets, Southern Water/Environment Agency, December 2000

⁴⁸ <http://www.thameswater.co.uk/cps/rde/xchg/corp/hs.xsl/9047.htm>

- time of day tariff.

A rising block tariff increases charges for each subsequent block of water used. This can raise the price of water to very high levels for customers whose water consumption is high, which gives a financial incentive to not to consume additional water (for discretionary use, for example) while still giving people access to low price water for essential use.

A declining block tariff decreases charges for each subsequent block of water used. This reflects the fact that the initial costs of supply are high, while additional supply has a marginal additional cost. This is designed to reduce bills for very high users and although it weakens incentives for them to reduce discretionary water use, in commercial tariffs it can reflect the economies of scale from bulk supplies.

A seasonal tariff reflects the additional costs of summer water supply and the fact that fixed costs are driven largely by the peak demand placed on the system, which is likely to be in the summer.

Time-of-day tariffs have a variable cost per unit supply according to the time of the day when the water is used; this requires smart meters. This type of charging reflects the cost of water supply and may reduce an individual household's bill; it may not reduce overall water use for a customer.

Water Efficient Appliances

Washing machines and dishwashers have become much more water efficient over the past twenty years; whereas an old washing machine may use up to 150 litres per cycle, modern efficient machines may use as little as 35 litres per cycle. An old dishwasher could use up to 50 litres per cycle, whereas modern models can use as little as 10 litres. However, this is partially offset by the increased frequency with which these are now used. It has been estimated⁴⁹ that dishwashers, together with the kitchen tap, account for about 8-14 per cent of water used in the home.

The Water Efficient Product Labelling Scheme provides information on the water efficiency of a product (such as washing machines) and allows the consumer to compare products and select the efficient product. The water savings from installation of water efficient appliances therefore vary, depending on the type of machine used.

Non-Domestic Properties

There is also the potential for considerable water savings in non-domestic properties; depending on the nature of the business water consumption may be high e.g. food processing businesses. Even in businesses where water use is not high, such as B1 Business or B8 Storage and Distribution, there is still the potential for water savings using the retrofitting measures listed above. Water audits are useful methods of identifying potential savings and implementation of measures and installation of water saving devices could be funded by the asset owner; this could be justified by significant financial savings which can be achieved through implementation of water efficient measures. Non-domestic buildings such as warehouses and large scale commercial (e.g. supermarkets) property have significant scope for rainwater harvesting on large roof areas.

Water Efficiency in New Development

The use of efficient fixtures and fittings as described in above also apply to the specification of water use in the building of new homes. The simplest way of demonstrating the reductions that use of efficient fixtures and fitting has in new builds is to consider what is required in terms of installation of the fixtures and fittings at different ranges of specification to ensure attainment of building regulation and building regulation optional water use requirements. Part G of The Building Regulations 2010 has been used to develop these figures. For 62l/h/d houses, The Building Regulations Water Efficiency Calculator has been used in association with the Department of Communities and Local Government – Housing Standard Review (September 2014). These are shown below in Table C-2.

⁴⁹ Water Efficiency Retrofitting: A Best Practice Guide, Waterwise, 2009, www.waterwise.org.uk

Table C-2: Summary of water savings borne by water efficiency fixtures and fittings

Component	133 l/h/d Standard Home	Building Regulations 125 l/h/d	Building Regulations Optional Target 110 l/h/d	62 l/h/d (water recycling)
Toilet flushing	22.8	18.7 b	12.3 d	12.3 d
Taps	24.9 a	22.7 a	20.5 a	15.3 a
Shower	42.3	39.8	31.8	23.9
Bath	18.5 c	18.5 c	17.0 f	14.5 h
Washing Machine	15.6	15.6	15.6	15.6
Dishwasher	4.1	4.1	4.1	4.1
Recycled water	-			-26.8 g
External Use	5	5	5	0
Total per head	133.2	124.4	106.3	63.9
Total per household	278.2	261.3	223.3	134.2

- a Combines kitchen sink and wash hand basin
- b 6/4 litre dual-flush toilet (f) recycled water
- c 185 litre bath
- d 4/2.6 litre dual flush toilet
- e Rainwater harvesting for external and toilet use
- f 170 litre bath
- g Rainwater/greywater harvesting for toilet, external and washing machine
- h 145 litre bath

Table C-2 highlights that in order for high and very high efficiencies to be achieved for water use of 62 l/h/d; water re-use technology (rainwater harvesting and/or greywater recycling) needs to be incorporated into the development.

In using the BRE Water Demand Calculator⁵⁰, the experience of AECOM BREEAM assessors is that it is theoretically possible to get close to 62l/h/d through the use of fixture and fittings, but that this requires extremely high specification efficiency devices which are unlikely to be acceptable to the user and will either affect the saleability of new homes or result in the immediate replacement of the fixtures and fittings upon habitation. This includes baths at capacity below 120 litres, and shower heads with aeration which reduces the pressure sensation of the user. For this reason, it is not considered practical to suggest that 62l/h/d or lower can be reached without some form of water recycling.

Rainwater Harvesting

Rainwater harvesting (RWH) is the capture and storage of rain water that lands on the roof of a property. This can have the dual advantage of both reducing the volume of water leaving a site, thereby reducing surface water management requirements and potential flooding issues, and be a direct source of water, thereby reducing the amount of water that needs to be supplied to a property from the mains water system.

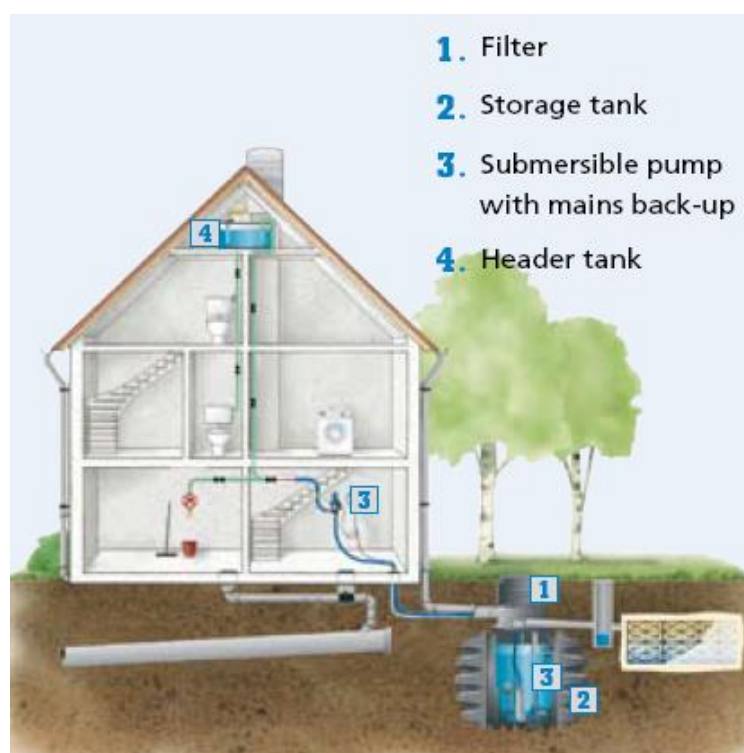
RWH systems typically consist of a collection area (usually a rooftop), a method of conveying the water to the storage tank (gutters, down spouts and pipes), a filtration and treatment system, a storage tank and a method of conveying the water from the storage container to the taps (pipes with pumped or gravity flow). A treatment

⁵⁰ <http://www.thewatercalculator.org.uk/faq.asp>

system may be included, depending on the rainwater quality desired and the source. Figure C-1 below gives a diagrammatic representation of a typical domestic system⁵¹.

The level to which the rainwater is treated depends on the source of the rainwater and the purpose for which it has been collected. Rainwater is usually first filtered to remove larger debris such as leaves and grit. A second stage may also be incorporated into the holding tank; some systems contain biological treatment within the holding tank, or flow calming devices on the inlet and outlets that will allow heavier particles to sink to the bottom, with lighter debris and oils floating to the surface of the water. A floating extraction system can then allow the clean rainwater to be extracted from between these two layers⁵².

Figure C-1: A typical domestic rainwater harvesting system



A recent sustainable water management strategy carried out for a proposed EcoTown development at Northstowe⁵³, approximately 10 km to the north west of Cambridge, calculated the size of rainwater storage that may be required for different occupant numbers, as shown below in Table C-3.

Table C-3: Rainwater Harvesting Systems Sizing

Number of occupants	Total water consumption	Roof area (m ²)	Required storage tank (m ³)	Potable water saving per head (l/d)	Water consumption with RWH (l/h/d)
1	110	13	0.44	15.4	94.6
1	110	10	0.44	12.1	97.9
1	110	25	0.88	30.8	79.2
1	110	50	1.32	57.2	52.8
2	220	25	0.88	15.4	94.6
2	220	50	1.76	30.8	79.2
3	330	25	1.32	9.9	100.1
3	330	50	1.32	19.8	90.2

⁵¹ Source: Aquality Intelligent Water management, www.aqua-lity.co.uk

⁵² Aquality Rainwater Harvesting brochure, 2008

⁵³ Sustainable water management strategy for Northstowe, WSP, December 2007

4	440	25	1.76	7.7	102.3
4	440	50	1.76	15.4	94.6

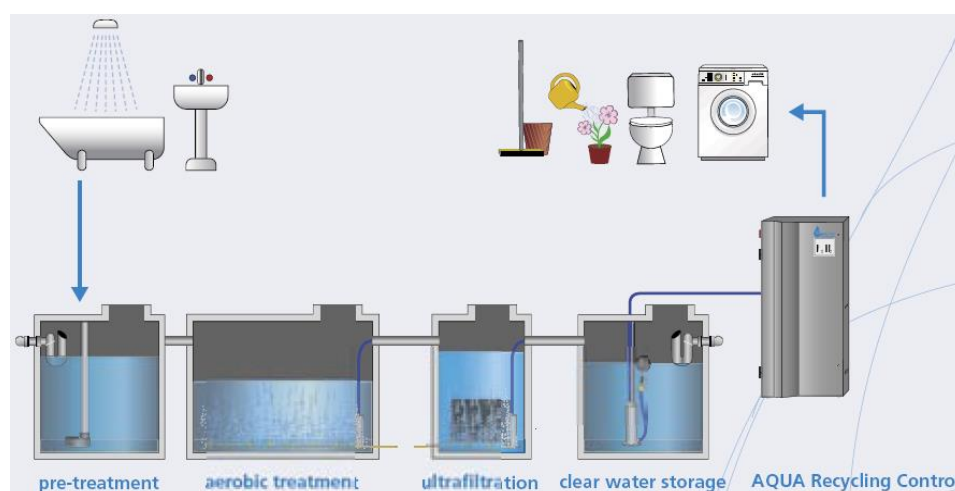
A family of four, with an assumed roof area of 50m³, could therefore expect to save 61.6 litres per day if a RWH system were installed.

Greywater Recycling

Greywater recycling (GWR) is the treatment and re-use of wastewater from shower, bath and sinks for use again within a property where potable quality water is not essential e.g. toilet flushing. Recycled greywater is not suitable for human consumption or for irrigating plants or crops that are intended for human consumption. The source of greywater should be selected by available volumes and pollution levels, which often rules out the use of kitchen and clothes washing waste water as these tend to be most highly polluted. However, in larger system virtually all non-toilet sources can be used, subject to appropriate treatment.

The storage volumes required for GWR are usually smaller than those required for rainwater harvesting as the supply of greywater is more reliable than rainfall. In domestic situations, greywater production often exceeds demand and a correctly designed system can therefore cope with high demand application and irregular use, such as garden irrigation. Figure C-2 below gives a diagrammatic representation of a typical domestic system⁵⁴.

Figure C-2: A typical domestic greywater recycling system



Combined rainwater harvesting and greywater recycling systems can be particularly effective, with the use of rainwater supplementing greywater flows at peak demand times (e.g. morning and evenings).

The Northstowe sustainable water management strategy calculated the volumes of water that could be made available from the use GWR. These were assessed against water demand calculated using the BRE Water Demand Calculator⁵⁵.

Table C-4 demonstrates the water savings that can be achieved by GWR. If the toilet and washing machine are connected to the GWR system a saving of 37 litres per person per day can be achieved.

Table C-4: Potential water savings from greywater recycling

Appliance	Demand with Efficiencies (l/h/day)	Potential Source	Greywater Required (l/h/day)	Out As	Greywater available (80% efficiency) (l/h/day)	Consumptions with GWR (l/h/day)
Toilet	15	Grey	15	Sewage	0	0
Wash hand basin	9	Potable	0	Grey	7	9

⁵⁴ Source: Aquality Intelligent Water management, www.aqua-lity.co.uk

⁵⁵ <http://www.thewatercalculator.org.uk/faq.asp>

Shower	23	Potable	0	Grey	18	23
Bath	15	Potable	0	Grey	12	15
Kitchen Sink	21	Potable	0	Sewage	0	21
Washing Machine	17	Grey	17	Sewage	0	0
Dishwasher	4	Potable	0	Sewage	0	4
TOTAL	103		31		37	72

The treatment requirements of the GWR system will vary, as water which is to be used for flushing the toilet does not need to be treated to the same standard as that which is to be used for the washing machine. The source of the greywater also greatly affects the type of treatment required. Greywater from a washing machine may contain suspended solids, organic matter, oils and grease, detergents (including nitrates and phosphates) and bleach. Greywater from a dishwasher could have a similar composition, although the proportion of fats, oils and grease is likely to be higher; similarly for wastewater from a kitchen sink. Wastewater from a bath or shower will contain suspended solids, organic matter (hair and skin), soap and detergents. All wastewater will contain bacteria, although the risk of infection from this is considered to be low⁵⁶.

Treatment systems for GWR are usually of the following four types:

- basic (e.g. coarse filtration and disinfection);
- chemical (e.g. flocculation);
- physical (e.g. sand filters or membrane filtration and reverse osmosis); and,
- biological (e.g. aerated filters or membrane bioreactors).

Table C-5 below gives further detail on the measures required in new builds and from retrofitting, including assumptions on the predicted uptake of retrofitting from the existing housing and commercial building use.

⁵⁶ Centre for the Built Environment, www.cbe.org.uk

Table C-5: Water Neutrality Scenarios – specific requirements for each scenario

WN Scenario	New development requirement			Retrofitting existing development	
	New development Water use target (l/h/d)	Water Efficient Fixtures and Fittings	Water Recycling technology	Metering Penetration assumption	Water Efficient Fixtures and Fittings
Building Regulations	125	<ul style="list-style-type: none"> - WC 6/4 litres dual flush or - 4.5 litres single flush - Shower 10 l/min - Bath 185 litres - Basin taps 6 l/min - Sink taps 8 l/min - Dishwasher 1.25 l/place setting - Washing machine 8.17 l/kilogram 	None	72%	None
Building Regulations retrofit +	125	<ul style="list-style-type: none"> - WC 6/4 litres dual flush or - 4.5 litres single flush - Shower 10 l/min - Bath 185 litres - Basin taps 6 l/min - Sink taps 8 l/min - Dishwasher 1.25 l/place setting - Washing machine 8.17 l/kilogram 	None	72%	5% take up across study area: <ul style="list-style-type: none"> - WC 6/4 litres dual flush - Shower 6 l/min - Basin taps 2 l/min - Sink taps 4 l/min
Building Regulations Optional Requirement	110	<ul style="list-style-type: none"> - WC 4/2.6 litres dual flush - Shower 8 l/min - Bath 170 litres - Basin taps 5 l/min - Sink taps 6 l/min - Dishwasher 1.25 l/place setting - Washing machine 8.17 l/kilogram 	None	72%	None
Building Regulations Optional Requirement Retrofit +	110	<ul style="list-style-type: none"> - WC 4/2.6 litres dual flush - Shower 8 l/min - Bath 170 litres - Basin taps 5 l/min - Sink taps 6 l/min - Dishwasher 1.25 l/place setting 	None	72%	5% take up across study area: <ul style="list-style-type: none"> - WC 6/4 litres dual flush - Shower 6 l/min - Basin taps 2 l/min - Sink taps 4 l/min

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Theoretical (Water Neutrality)	62	<ul style="list-style-type: none"> - Washing machine 8.17 l/kilogram - WC 4/2.6 litres dual flush; - Shower 6 l/min - Bath 145 litres - Basin taps 2 l/min - Sink taps 4 l/min - Dishwasher 1.25 l/place setting - Washing machine 8.17 l/kilogram 	Rainwater harvesting and Greywater recycling	72%	<p>132% take up across study area:</p> <ul style="list-style-type: none"> - WC 6/4 litres dual flush - Shower 6 l/min - Basin taps 2 l/min - Sink taps 4 l/min
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C.4 Financial Cost Considerations for Water Neutrality scenarios

The financial cost of delivering the technological requirements of each neutrality scenario have been calculated from available research and published documents.

New Build Costs

The Department for Communities and Local Government (DCLG) published the Housing Standards Review in September 2014. A cost impacts report⁵⁷ formed part of this publication, providing the costs of the proposed standards, including the proposed Building Regulations optional requirement water efficiency standard.

Costs for water efficiency in new property have been provided based on homes achieving different code levels under the CSH based on the cost analysis undertaken by DCLG and as set out in Table C-6.

Table C-6: Building Regulation Specification and costs

	1B Apartment	2B Apartment	2B Terrace	3B Semi- detached	4B Detached
Cost all dwellings (extra over usual industry practice)					
Water, Code Level 1	-	-	-	-	-
Water, Code Level 2	-	-	-	-	-
Water, Code Level 3	£6	£6	£6	£9	£9
Water, Code Level 4	£6	£6	£6	£9	£9
Water, Code Level 5	£900	£900	£2,201	£2,697	£2,697
Water, Code Level 6	£900	£900	£2,201	£2,697	£2,697
Alternative standards					
Rainwater only	£887	£887	£2,181	£2,674	£2,674

An additional cost was required for the 'very high' neutrality scenario that included for greywater recycling as well as rainwater harvesting and this is detailed in the following section.

Water Recycling

Research into the financial costs of installing and operating GWR systems gives a range of values, as show in Table C-7.

Table C-7: Costs of greywater recycling systems

Cost	Cost	Comments
Installation cost	£1,750	Cost of reaching Code Level 5/6 for water consumption in a 2-bed flat ⁵⁸
	£2,000	For a single dwelling ⁵⁹
	£800	Cost per house for a communal system ⁶⁰
	£2,650	Cost of reaching Code Level 3/4 for water consumption in a 3-bed semi-detached house ⁶¹
Operation	of £30 per annum ⁶²	

⁵⁷

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/353387/021c_Cost_Report_11th_Sept_2014_FI_NAL.pdf

⁵⁸ Code for Sustainable Homes: A Cost Review, Communities and Local Government, 2008

⁵⁹ http://www.water-efficient-buildings.org.uk/?page_id=1056

⁶⁰ http://www.water-efficient-buildings.org.uk/?page_id=1056

⁶¹ Code for Sustainable Homes: A Cost Review, Communities and Local Government, 2008

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Cost	Cost	Comments
GWR		
Replacement costs	£3,000 to replace	It is assumed a replacement system will be required every 25 years

There is less research and evidence relating to the cost of community scale systems compared to individual household systems, but it is thought that economies of scale will mean that larger scale systems will be cheaper to install than those for individual properties. As shown above, the Cost review of the Code for Sustainable Homes indicated that the cost of installing a GWR system in flats is less than the cost for a semi-detached house. Similarly, the Water Efficient Buildings website estimates the cost of installing a GWR system to be £2,000 for a single dwelling and £800 per property for a share of a communal system.

As it is not possible to determine how many of the outstanding housing developments in Colchester Borough will be of a size large enough to consider communal recycling facilities, an approximation has been made of an average per house cost (£1,400) using the cost of a single dwelling (at £2,000) and cost for communal (at £800). This has been used for the assessment of cost for a greywater system in a new property required for the 'very high' neutrality scenario.

Installing a Meter

The cost of installing a water meter has been assumed to be £500 per property. It is assumed that the replacement costs will be the same as the installation costs (£500), and that meters would need to be replaced every 15 years.

Retrofitting of Water Efficient Devices

Findings from the Environment Agency report Water Efficiency in the South East of England, costs have been used as a guide to potential costs of retrofitting of water efficient fixtures and fittings and are presented in Table C-8 below.

Table C-8: Water saving methods

Water Saving Method	Approximate per House (£)	Cost	Comments/Uncertainty
Variable flush retrofit toilets	£50 - £140		Low cost for 4-6 litre system and high cost for 2.6-4 litre system. Needs incentive to replace old toilets with low flush toilets.
Low flow shower head scheme	£15 - £50		Low cost for low spec shower head; high costs for high spec. Cannot be used with electric, power or low pressure gravity fed systems.
Aerating taps	£10 - £20		Low cost is med spec, high cost is high spec.

Toilet cistern displacement devices are often supplied free of charge by water companies and this is therefore also not considered to be an additional cost.

⁶² Environment Agency Publication - Science Report – SC070010, Greenhouse Gas Emissions of Water Supply and Demand Management Options, 2008

Appendix D Designated Site Background Detail

D.1 Stour and Orwell Estuaries Ramsar, SPA and Stour SSSI

The River Stour Estuary is located on the eastern Essex/Suffolk county boundary. It is a SSSI which is part of the Stour and Orwell Estuaries Wetland of International Importance under the Ramsar Convention. Additionally, it is part of the Stour and Orwell Estuaries Special Protected Area under the EEC Council Directive on the Conservation of Wild Birds (79/409/EEC).

Its reasons for designations are listed below:

- **Wintering and autumn passage for birds.** Thirteen species of wildfowl winter here and three species use the estuary for autumn passage.
- **Coastal saltmarsh of East England.** The Stour and Orwell estuaries have two of the three basic saltmarsh communities characteristic to the south-east and east of England (formerly grazed saltmarshes with *Puccinellia maritima* and *Aster tripolium* and ungrazed and lightly grazed saltmarshes dominated with *Atriplex portulacoides*).
- **Sheltered muddy shores (including estuarine muds).** This habitat offers key roosting and feeding areas for nationally and internationally important birds. Additionally, there is a nationally important community of intertidal lower shore mixed substrata.
- **Scare marine invertebrates.** The estuary contains two nationally scarce species listed in Schedule 5 of the Wildlife and Countryside Act 1981, (starlet sea anemone *Nematostella vectensis* and tentacle lagoon worm *Alkmaria romjini*).
- **Scarce vascular plant assemblages.** It exceeds the national threshold site-index value for scarce vascular plant assemblage of saltmarsh, mudflats and shingle (including *Limonium humile*, *Zostera noltii*, *Inula crithmoides*, *Verbascum pulverulentum*, *Parapholis incurve*, *Hordeum marinum*, *Carex divisa*, *Althaea officinalis*, *Lepidium latifolium* and *Sarcocornia perennis*).

D.2 Orwell Estuary SSSI

Situated north of the Stour Estuary, the Orwell is a long and relatively narrow estuary with mudflats and saltmarsh. Its designation is as follows:

- **Breeding and non-breeding birds.** It supports a nationally important breeding number of avocet (*Recurvirostra avosetta*). It is also important for its assemblages of breeding and non-breeding birds on open waters and margins with nine species of wintering waterfowl (including black-tailed godwit *Limosa limosa islandica*).
- **Vascular plant assemblages.** At least nine nationally scarce vascular plants are found at this site (including *Zostera noltii*, *Bupleurum tenuissimum*, *Inula crithmoides*, *Limonium humile*, *Suaeda vera*, *Sarcocornia perennis* and *Carex divisa*).
- **Intertidal mud habitats.** This large area of rich littoral sediments (sandy muds) supports a high richness of invertebrates tide swept algae, sponges, ascidians and red algae.

D.3 Langard Common SSSI

This is a sand and shingle spit on the northern side of the mouth of the Stour and Orwell Estuaries. It contains large populations of colonizing shingle plant species (*Crambe maritima*, *Lathyrus japonicas*, yellow-horned poppy, sea sandwort and sea campion).

Further inland the SSSI supports rare and local flora including *Medicago minima*, *Trifolium ornithopodioides*, *T. glomeratum*, *T. suffocatum*, *T. striatum*, *Poa bubosa* and *Lathyrus nissolia*. Additionally, there are wet areas which support marsh and saltmarsh species which provide cover for small bird and migrant species.

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D.4 Holland-Haven Marshes SSSI

This is an area of reclaimed estuarine saltmarsh and freshwater marsh situated between Holland-on-Sea and Frinton-on-Sea. It is divided by Holland Brook and its tributaries. The ditch network formed from the tributaries supports a number of nationally and locally scarce aquatic plant communities that are indicative of a freshwater to brackish water transition (including *Phalarus arundinacea*, *Sparganium erectum*, *Typha latifolia*, *Eleocharis palustris*, *Ranunculus sceleratus*, *Galium palustre*, *Polygonum hydropiper*, *Oenanthe fistulosa*, *Eleocharis uniglumis*, *Ceratophyllum demersum* and *C. submersum*).

The site also supports grassland which comprises of coastal and freshwater grazing marsh. The area dominated by grasses such as *Agrostis stolonifera*, *Cynosurus cristatus*, *Festuca rubra*, *Lolium perenne* and *Hordeum secalinum*. Where there is seasonal flooding and seawater intrusion, saltmarsh vegetation has developed with two nationally uncommon species (*Hordeum marinum* and *Puccinellia fasciculata*).

Also notifiable are the birds which use the area. Hen Harrier and short-eared owl hunt over the marshes in the winter. In areas that are flooded, waders and wildfowl are present (wigeon, teal, pintail, shoveler, pochard, ruff and snipe).

D.5 Essex Estuaries SAC

This is an undeveloped, coastal plain estuarine system with open coast mudflats and sandbanks. It is made up of the major estuaries of the Colne, Blackwater, Crouch and Roach rivers which make it an important area of extensive contiguous estuarine habitat.

The SAC has a wide range of sediment communities which are characteristic to marine and estuarine environments. On the lower reaches there are rich sponge communities on mixed, tide-swept substrates. The sublittoral areas are rich in invertebrate fauna which include the reef-building worm *Sabellaria spinulosa*, the brittlestar *Ophiothrix fragilis*, crustaceans and ascidians. There are also large areas of important saltmarsh. Essex Estuaries is designated as an SAC for the following:

- **Mudflats and sandflats not covered by seawater at low tide.** The large expanse of mudflats and sandflats are made up of a wide range of sediment communities. These play host to extensive growths of eelgrass (*Zostera* spp.) on the open coast. The area of Maplin Sands is particularly important due to its large beds of the nationally important dwarf eelgrass (*Zostera noltii*) and associated animal communities.
- **Salicornia and other annuals colonizing mud and sand.** The transition from varied intertidal mud and sandflats to upper saltmeadows plays host to glasswort (*Salicornia* spp.). Due to erosion, secondary pioneer communities are present on the seaward edge.
- **Spartina swards (*Spartinion maritimae*).** The Essex Estuaries SAC host the most extensive remaining stand of the native small cord-grass *Spartina maritima* in the UK and possibly in Europe. It can be found at Foulness Point and covers approximately 0.17ha.
- **Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*).** Essex Estuaries represents Atlantic salt meadows in south-east England. Golden samphire (*Inula crithmoides*) can be found on both the lower marsh and the drift-line.
- **Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*).** It is currently restricted by sea-walls, but management retreat schemes offer the prospect of future expansion of this habitat type. Sea-lavenders (*Limonium* spp.) and sea-heath (*Frankenia laevis*) occur at Colne Point.
- **Sandbanks which are slightly covered by sea water all the time.**

D.6 Colne Estuary (Mid-Essex coast phase 2) Ramsar, SPA and Colne Estuary SSSI

The SSSI is within an area that is proposed as a Wetland of International Importance under the Ramsar Convention and a Special Protection Area under the EEC Council Directive on the Conservation of Wild Birds. It is a relatively short and branching estuary with five tidal arms flowing in to the main channel.

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The estuary has a narrow intertidal zone with a composition of flats of fine silt and mud flat sediment communities that are indicative of south-east estuaries. The dominating fauna present include *Hydrobia ulvae*, *Macoma balthica*, *Scrobicularia plana*, *Hediste diversicolor* and *Nephtys hombergii*. Where the substratum becomes sandier, *Zostera noltii* and *Zostera marina* have been recorded.

At Geedon Saltings, Colne Point and the Strood, there are large saltmarsh colonies. It is dominated by saltmarsh-grass (*Puccinellia maritima*), sea purslane (*Halimione portulacoides*), annual sea-blite (*Sueda maritima*), glasswort (*Salicornia* spp.), sea aster (*Aster tripolium*) and cord grass (*Spartina* spp.). Where there are extensive salt pans, shorter swards of saltmarsh-grass can be found (including *Armeria maritima* and *Limonium vulgare*). There are also nationally uncommon species at the upper marsh such as golden samphire (*Inula crithmoide*) and shrubby sea-blite (*Sueda vera*). Additional nationally uncommon species found here are rock sea-lavender (*Limonium binervosum*) and sea heath (*Frankenia laevis*).

The saltmarsh and intertidal mud flats provide extensive feeding areas for internationally and nationally important numbers of brent geese black-tailed godwit, redshank, dunlin, sanderling, shelduck, goldeneye and ringed and grey plovers.

The shell, sand and shingle spits found throughout the estuary provide nesting habitats for little terns and ringed plover. Furthermore, the shingle ridges at Colne Point have been colonized by sea campion (*Silene maritima*), yellow horned-poppy (*Glaucium flavum*) and mosses and lichens. The sand-dunes above the shingle ridge at Colne Point form one of the few dune systems in Essex with characteristic species. Species present include marram grass (*Ammophila arenaria*), sand couch (*Elymus farctus*), sea holly (*Eryngium maritimum*) and sea sandwort (*Honkenya peploides*).

There are areas of unimproved neutral grassland on the seawalls, foldings and grazing marsh. This is made up of herb-rich and scattered scrub. Grasses present include sea couch (*Elymus pycnanthus*), couch (*Elymu repens*), creeping bent (*Agrostis stolonifera*), meadow barley (*Hordeum secalinum*), red fescue (*Festuca rubra*) and the nationally uncommon sea barley (*Hordeum marinum*). Anthills have provided additional habitat for plants such as lady's bedstraw (*Galium verum*). Furthermore, former saltmarsh creeks and ditches within the grazing marsh are dominated by water dock (*Rumex hydrolapathum*), grey club-rush (*Schoenoplectus tabernaemontani*), lesser pond-sedge (*Carex acutiformis*), divided sedge (*C. divisa*), common reed (*Phragmites australis*) and sea club-rush (*Scirpus maritimus*). These habitats all provide areas of cover, feeding and breeding for birds such as whinchats, bearded tits and pochard. There is also the presence of barn owls, short-eared owls and hen harriers.

The Langenhoe Marsh is the Essex site for aquatic invertebrates outside of the Thames Estuary. The ditches filled with sea club-rush host the nationally scarce and rare insects (including the mosquito *Aedes flavescens*, the meniscus midge *Dixella attica*, the rare water beetle *Graptodytes bilineatus* and the nationally rare scarce emerald damselfly *Lestes dryas*).

D.7 Upper Colne Marshes SSSI

This SSSI lies along both sides of the River Colne and Roman River to the south-east of Colchester. The habitats here consist of grazing marsh and associated ditch and open water habitats, tidal salt marshes, sea walls and a small area of intertidal mud. It is a designated SSSI as it supports an outstanding assemblage of nationally scarce plants and an unusual diversity of brackish ditch-types. Furthermore, there is interest in the terrestrial and aquatic invertebrates and breeding and wintering birds.

The grazing marshes and sea walls and unimproved neutral grassland with dominant grasses including creeping bent (*Agrostis stolonifera*), sea couch (*Elymus pycnanthus*), meadow barley (*Hordeum secalinum*), red fescue (*Festuca rubra*), the nationally scarce sea barley (*Hordeum marinum*) and the nationally scarce species stiff saltmarsh-grass (*Puccinellia rupestris*).

In the fresh water courses that run through the grazing marshes the dominant plants include common reed (*Phragmites australis*), reed canary-grass (*Phalaris arundinacea*), floating sweet-grass (*Glyceria fluitans*), hard rush (*Juncus inflexus*), jointed rush (*Juncus articulatus*), false fox-sedge (*Carex otrubae*) and hairy sedge (*Carex hirta*). In the water courses that are saline, sea club-rush (*Scirpus maritimus*) is dominant with a presence of the nationally scarce brackish water-crowfoot (*Ranunculus baudotii*). This site is one of the two best in North Essex for its range of brackish ditch-plant communities.

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The saltmarshes also make up the other major habitat type. The marshland is dominated by common saltmarsh-grass (*Puccinellia maritima*), sea aster (*Aster tripolium*) and common lavender (*Limonium vulgare*). Also present are the nationally uncommon lax-flowered sea-lavender (*Limonium humile*) and sea wormwood (*Artemisia maritima*). These saltmarshes are one of the few sites in Essex where there is a natural transition to a high marsh community. This community is dominated by common reed, sea club-rush and blackthorn (*Prunus spinosa*) which is apparent on a natural scrub community.

Invertebrate communities are also of interest in this complex of coastal habitats. The nationally scarce Roesel's bush-cricket (*Metrioptera roeselii*) can be found in abundance. Other uncommon invertebrates present include the ground beetle (*Pterostichus macer*). Dragonflies and damselflies can be found in the characteristic habitat of fresh and brackish water.

The breeding birds that can be found on the site include redshank (*Tringa tetanus*), lapwing (*Vanellus vanellus*), shelduck (*Tadorna tadorna*), reed bunting (*Emberiza schoeniclus*) and reed and sedge warblers (*Acrocephalus scirpaceus* and *A. schoenobaenus*). The site is also used by wintering waders and wildfowl on the undisturbed mudflats at the mouth of the Roman River. Predatory birds such as barn owls (*Tyto alba*) and kestrels (*Falco tinnunculus*) are also present.

Appendix E Allocated Site Assessments

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Site Reference	Site name	Site use	Dwelling in the proposed Plan period (2017-2033) from Local Plan	Site Area (ha)	Planning Status	Receiving WRC	Water Supply network (Affinity Water comments)	WRC Capacity (AWS RAG assessment)	Foul Sewerage Network Capacity (AWS RAG assessment)	Surface Water Network Capacity (AWS RAG assessment)	Receiving waterbody	SuDS types	Flood Zone (1, 2 3)	Surface water flood risk (High, Medium, Low, Very Low)
LP Allocation SAMU3	Oakwood Park	Mixed use	600	48.79	Allocated Site	Clacton-Holland Haven	Reinforcements would be required. The development is located in a critical area and the issue has already been confirmed by previous studies done for a similar application received a while ago.	Red	Amber	Red	North Sea	Opportunities for bespoke infiltration SuDS	1	1% low risk, 0.3% medium risk, 0.1% high risk
LP Allocation SAMU2	Hartley Gardens	Mixed use	600	114.5	Allocated Site	Clacton-Holland Haven	Potentially requires reinforcements. A dedicated study should be carried out to confirm.	Red	Amber	Red	North Sea	Opportunities for bespoke infiltration SuDS/Very significant constraints are indicated	1	15% Low risk, 6% Medium risk, 4% High risk
LP Allocation SAMU4	Rouses Farm	Mixed use	600	41.7	Allocated Site	Jaywick	Potentially requires reinforcements. A dedicated study should be carried out to confirm.	Red	Amber	Red	North Sea	Very significant constraints are indicated / Opportunities for bespoke infiltration SuDS	1	Low risk
LP Allocation MSA6	Waterworks Drive	Residential	90	2.19	Allocated Site	Jaywick	A dedicated study should be carried out to confirm that no local reinforcements are required	Anglian Water RAG assessment unavailable for this site			North Sea	Very significant constraints are indicated	1	Low risk
LP Allocation MSA5	Station Gateway	Residential	60	1.58	Allocated Site	Clacton-Holland Haven	A dedicated study should be carried out to confirm that no local reinforcements are required	Red	Amber	Red	North Sea	Opportunities for bespoke infiltration SuDS	1	8% low risk, 2% medium risk
LP Allocation MSA4	R/o 522-524 St. John's Road	Residential	43	1.23	Allocated Site	Jaywick	A dedicated study should be carried out to confirm that no local reinforcements are required	Amber	Amber	Red	North Sea	Very significant constraints are indicated	1	Low risk
LP Allocation MSA3	Orchard Works	Residential	20	0.38	Allocated Site	Clacton-Holland Haven	A dedicated study should be carried out to confirm that no local reinforcements are required	Amber	Amber	Red	North Sea	Very significant constraints are indicated	1	Low risk
LP Allocation MSA2	Cotswold Road	Residential	12	0.67	Allocated Site	Clacton-Holland Haven	A dedicated study should be carried out to confirm that no local reinforcements are required	Green	Amber	Red	North Sea	Very significant constraints are indicated	1	12% Low risk, 7% Medium Risk, 4% High risk
LP Allocation SAH2	Low Road	Residential	200	16.12	Allocated Site	Harwich and Dovercourt	A dedicated study should be carried out to confirm that no local reinforcements are required	Amber	Amber	Red	River Stour estuary	Opportunities for bespoke infiltration SuDS/ Highly compatible for infiltration SuDS	3	Low risk
LP Allocation MSA8	Harwich & Parkeston FC	Residential	89	0.57	Allocated Site	Harwich and Dovercourt	A dedicated study should be carried out to confirm that no local reinforcements are required	Amber	Amber	Red	River Stour estuary	Opportunities for bespoke infiltration SuDS	1	30% low risk, 15% medium risk, 30% high risk
LP Allocation SAH1	Greenfields Farm	Residential	164	7.3	Allocated Site	Harwich and Dovercourt	A dedicated study should be carried out to confirm that no local reinforcements are required	Amber	Amber	Red	River Stour estuary	Opportunities for bespoke infiltration SuDS	1	Low risk
LP Allocation MSA7	Land at Mayflower Primary	Residential	15	0.4	Allocated Site	Harwich and Dovercourt	A dedicated study should be carried out to confirm that no local reinforcements are required	Amber	Amber	Red	River Stour estuary	Opportunities for bespoke infiltration SuDS	1	Low risk
LP Allocation MSA12	The Farm, Kirby Road	Residential	47	2.1	Allocated Site	Walton On The Naze	A dedicated study should be carried out to confirm that no local reinforcements are required	Green	Amber	Red	Holland Brook	Opportunities for bespoke infiltration SuDS	2	10% low risk, 10% medium risk, 10% high risk

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Site Reference	Site name	Site use	Dwelling in the proposed Plan period (2017-2033) from Local Plan	Site Area (ha)	Planning Status	Receiving WRC	Water Supply network (Affinity Water comments)	WRC Capacity (AWS RAG assessment)	Foul Sewerage Network Capacity (AWS RAG assessment)	Surface Water Network Capacity (AWS RAG assessment)	Receiving waterbody	SuDS types	Flood Zone (1, 2 3)	Surface water flood risk (High, Medium, Low, Very Low)
LP Allocation MSA11	Station Yard/Avon Works	-	40	1.16	Allocated Site	Walton On The Naze	A dedicated study should be carried out to confirm that no local reinforcements are required	Anglian Water RAG assessment unavailable for this site			Holland Brook	N/A	1	Very Low risk
LP Allocation MSA10	Southcliffe Trailer Park	Residential	15	0.8	Allocated Site	Walton On The Naze	A dedicated study should be carried out to confirm that no local reinforcements are required	Green	Amber	Red	Holland Brook	Opportunities for bespoke infiltration SuDS	1	Very Low risk
LP Allocation MSA9	Old Town Hall Site	Mixed Use	15	0.14	Allocated Site	Walton On The Naze	A dedicated study should be carried out to confirm that no local reinforcements are required	Green	Amber	Red	Holland Brook	Opportunities for bespoke infiltration SuDS/Very significant constraints are indicated	3	5% high risk
LP Allocation SAMU1	EDME Maltings	-	150	2	Allocated Site	Manningtree	A dedicated study should be carried out to confirm that no local reinforcements are required	Anglian Water RAG assessment unavailable for this site			Wignall Brook Stour Estuary	Opportunities for bespoke infiltration SuDS	1	Very Low risk (<5% medium and high risk point flooding)
LP Allocation SAH3	Robinson Road Phase 2	Residential	100	4.48	Allocated Site	Brightlingsea-Church Road	A dedicated study should be carried out to confirm that no local reinforcements are required	Anglian Water RAG assessment unavailable for this site			River Colne estuary	Opportunities for bespoke infiltration	1	Very low risk
LP Allocation SP7	Colchester Borders Garden Community	Mixed Use	1250	N/A	Allocated Site	Colchester	A dedicated study should be carried out to confirm that no local reinforcements are required	Anglian Water RAG assessment unavailable for this site			River Colne estuary	Opportunities for bespoke infiltration / Highly compatible for infiltration SuDS / Very significant constraints are indicated	3	5% low risk, 1% medium risk, 0.4% high risk
LP Allocation MS14	Montana Roundabout	Residential	35	2.36	Allocated Site	Clacton-Holland Haven	A dedicated study should be carried out to confirm that no local reinforcements are required	Amber	Amber	Red	North Sea	Opportunities for bespoke infiltration SuDS	1	6% Low risk, 3% Medium risk, 2% High risk
LP Allocation SAMU5	R/o Council Offices	Mixed Use	280	18.54	Allocated Site	Clacton-Holland Haven	A dedicated study should be carried out to confirm that no local reinforcements are required	Anglian Water RAG assessment unavailable for this site			North Sea	Opportunities for bespoke infiltration SuDS	1	Low risk
LP Allocation MSA1	TDC Council Offices	Residential	24	0.81	Allocated Site	Clacton-Holland Haven	A dedicated study should be carried out to confirm that no local reinforcements are required	Amber	Amber	Red	North Sea	Opportunities for bespoke infiltration SuDS	1	Low risk
Employment Allocations 1	Mercedes Site	Employment	-	6	Allocated Site	Harwich and Dovercourt	A dedicated study should be carried out to confirm that no local reinforcements are required	Amber	Amber	Red	River Stour estuary	Opportunities for bespoke infiltration SuDS	3	10% low risk, 17% medium risk, 0.4% high risk
Employment Allocations 2	Carless	Employment	-	4.5	Allocated Site	Harwich and Dovercourt	A dedicated study should be carried out to confirm that no local reinforcements are required	Green	Amber	Red	River Stour estuary	Very significant constraints are indicated / Opportunities for bespoke infiltration SuDS	2	Very low risk
Employment Allocations 3	Stanton Euro Park	Employment	-	3	Allocated Site	Harwich and Dovercourt	A dedicated study should be carried out to confirm that no local reinforcements are required	Amber	Amber	Red	River Stour estuary	Very significant constraints are indicated	3	28% low risk, 10% medium risk, 2% high risk

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Site Reference	Site name	Site use	Dwelling in the proposed Plan period (2017-2033) from Local Plan	Site Area (ha)	Planning Status	Receiving WRC	Water Supply network (Affinity Water comments)	WRC Capacity (AWS RAG assessment)	Foul Sewerage Network Capacity (AWS RAG assessment)	Surface Water Network Capacity (AWS RAG assessment)	Receiving waterbody	SuDS types	Flood Zone (1, 2 3)	Surface water flood risk (High, Medium, Low, Very Low)
Employment Allocations 4	EDME Maltings	Employment	-	0.3	Allocated Site	Manningtree	A dedicated study should be carried out to confirm that no local reinforcements are required	Anglian Water RAG assessment unavailable for this site			Wignall Brook Stour Estuary	Opportunities for bespoke infiltration SuDS/Very significant constraints are indicated	3	5% low risk, 0.8% medium risk, 0.6% high risk
Employment Allocations 5	Lanswood Park	Employment	-	1.2	Allocated Site	Thorrington	A dedicated study should be carried out to confirm that no local reinforcements are required	Amber	Amber	Red	River Colne estuary	Opportunities for bespoke infiltration SuDS /Very significant constraints are indicated	1	5% low risk
Employment Allocations 6	Weeley	Employment	-	1	Allocated Site	Clacton-Holland Haven	A dedicated study should be carried out to confirm that no local reinforcements are required	Red	Amber	Red	North Sea	N/A	1	0.02% low risk
Employment Allocations 7	Land south of Long Road, Mistley	Employment	-	2	Allocated Site	Manningtree	A dedicated study should be carried out to confirm that no local reinforcements are required	Red	Amber	Red	Wignall Brook Stour Estuary	No site boundary available therefore site could not be assessed		
Employment Allocations 8	Land East of Pond Hall Farm, Harwich	Employment	-	4.8	Allocated Site	Harwich and Dovercourt	A dedicated study should be carried out to confirm that no local reinforcements are required	Anglian Water RAG assessment unavailable for this site			River Stour (transitional)	N/A	3	15% low risk, 5% medium risk, 5% high risk
Employment Allocations 9	Brook Park West, Clacton	Employment	-	4.8	Allocated Site	Clacton-Holland Haven	A dedicated study should be carried out to confirm that no local reinforcements are required	Anglian Water RAG assessment unavailable for this site			North Sea	No site boundary available therefore site could not be assessed		
Employment Allocations 10	Plough Road, Gt Bentley	Employment	-	2.7	Allocated Site	Thorrington	A dedicated study should be carried out to confirm that no local reinforcements are required	Anglian Water RAG assessment unavailable for this site			River Colne estuary	No site boundary available therefore site could not be assessed		
Employment Allocations 11	Sato UK, Harwich	Employment	-	1.2	Allocated Site	Harwich and Dovercourt	A dedicated study should be carried out to confirm that no local reinforcements are required	Anglian Water RAG assessment unavailable for this site			River Stour estuary	No site boundary available therefore site could not be assessed		
Employment Allocations 12	Land East of Park Road, Clacton CO15 1HQ	Employment	-	0.2	Allocated Site	Clacton-Holland Haven	A dedicated study should be carried out to confirm that no local reinforcements are required	Anglian Water RAG assessment unavailable for this site			North Sea	No site boundary available therefore site could not be assessed		
Employment Allocations 13	Homestead Caravan Park, Thorpe Road, Weeley CO16 9JN	Employment	-	0.92	Allocated Site	Clacton-Holland Haven	A dedicated study should be carried out to confirm that no local reinforcements are required	Anglian Water RAG assessment unavailable for this site			North Sea	No site boundary available therefore site could not be assessed		

