

Sanitary Survey - Review

Walton Backwaters – 2023



Document No. – *J0591/23/08/15*

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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.

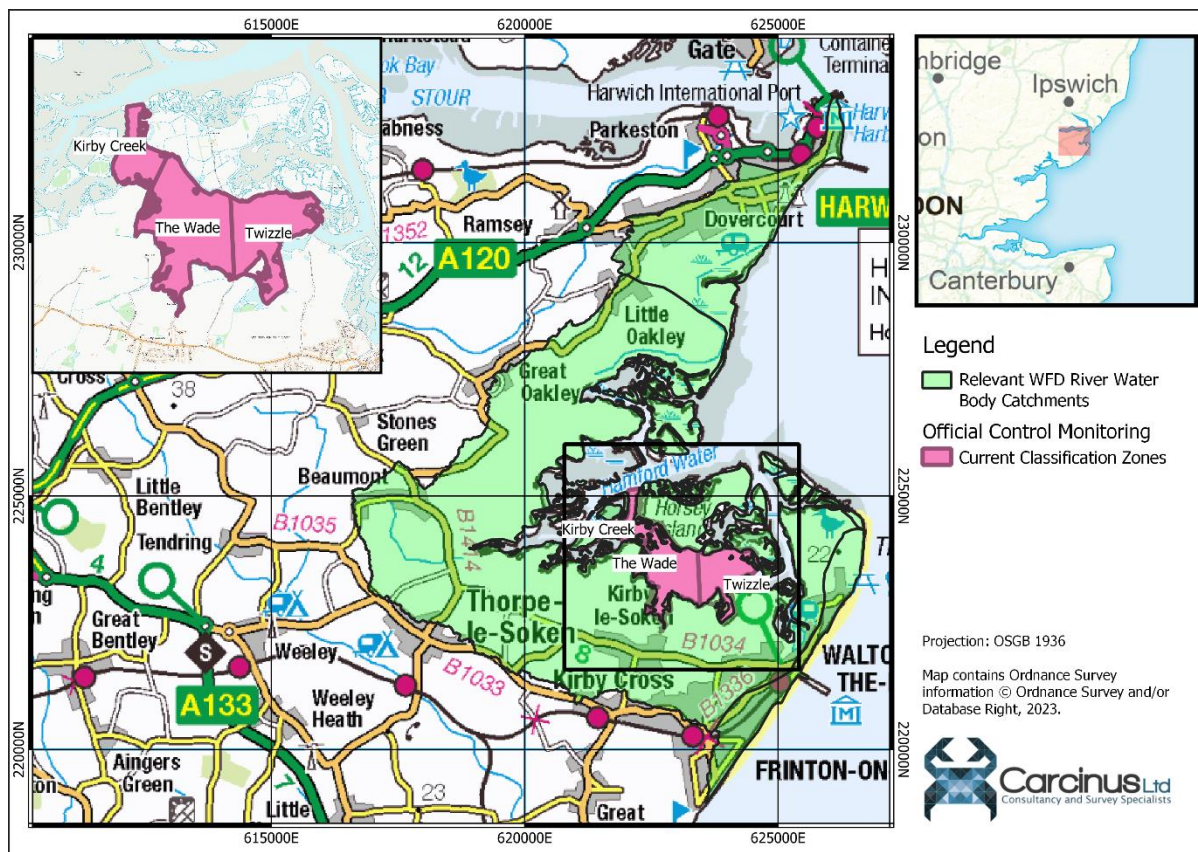


Figure 1.1 Location of the Walton Backwaters in eastern England. Inset map shows the locations of the Classification Zones within the BTPA.

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

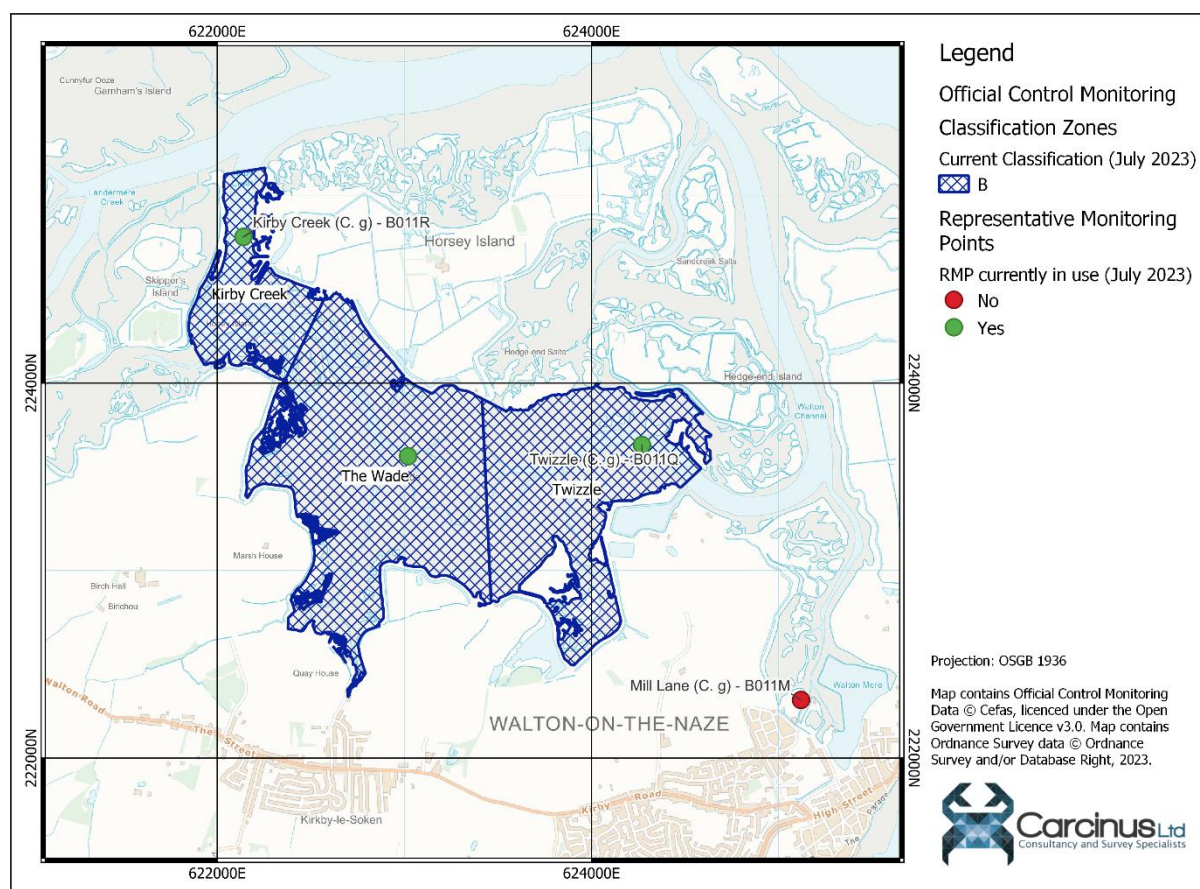


Figure 2.1 Current Classification Zones and associated Representative Monitoring Points in the Walton Backwaters BMPA.

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.

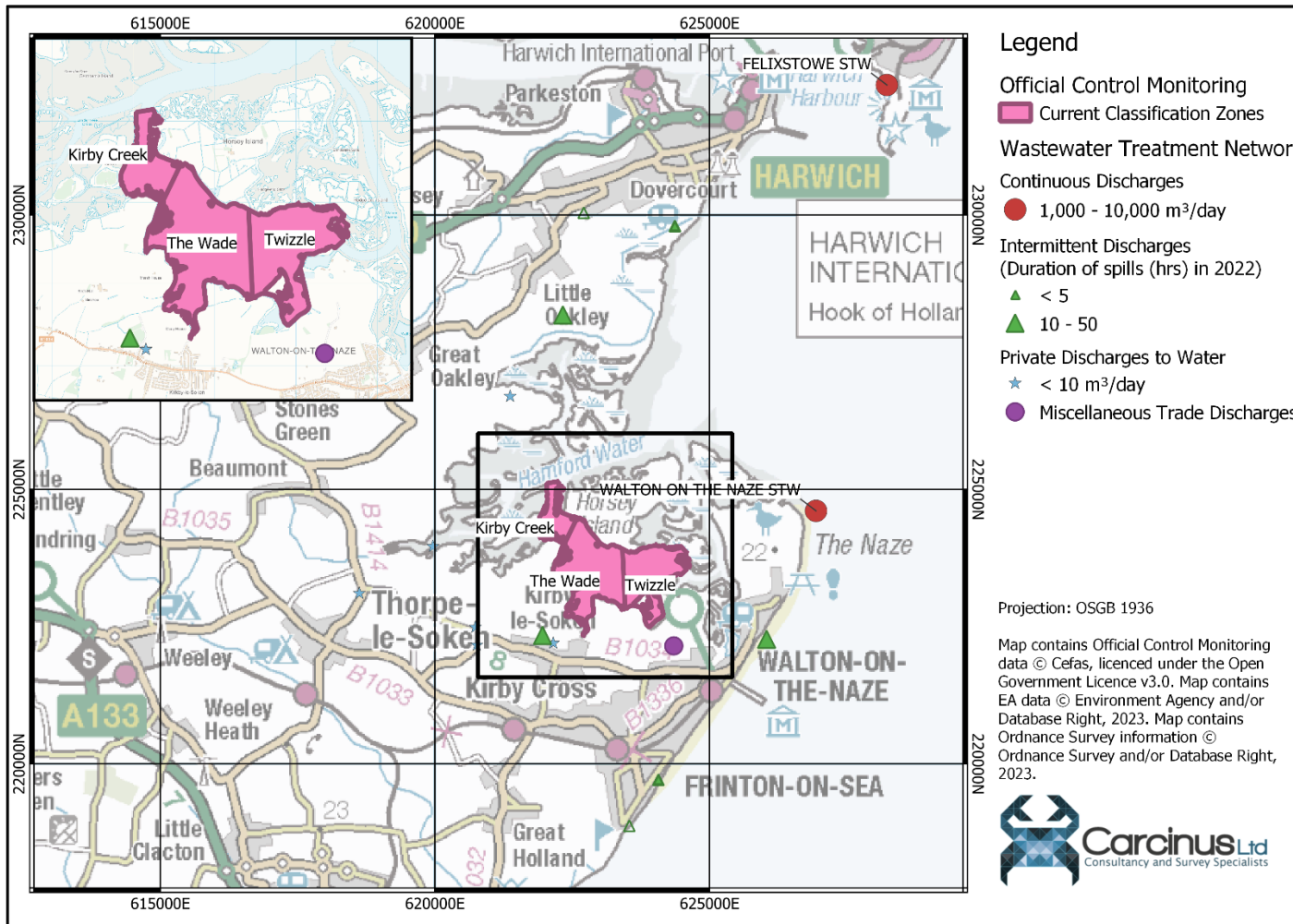


Figure 3.2 Locations of all consented discharges in the vicinity of the Walton Backwaters BMPA. Details of continuous discharges are provided in Table 3.1.

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.

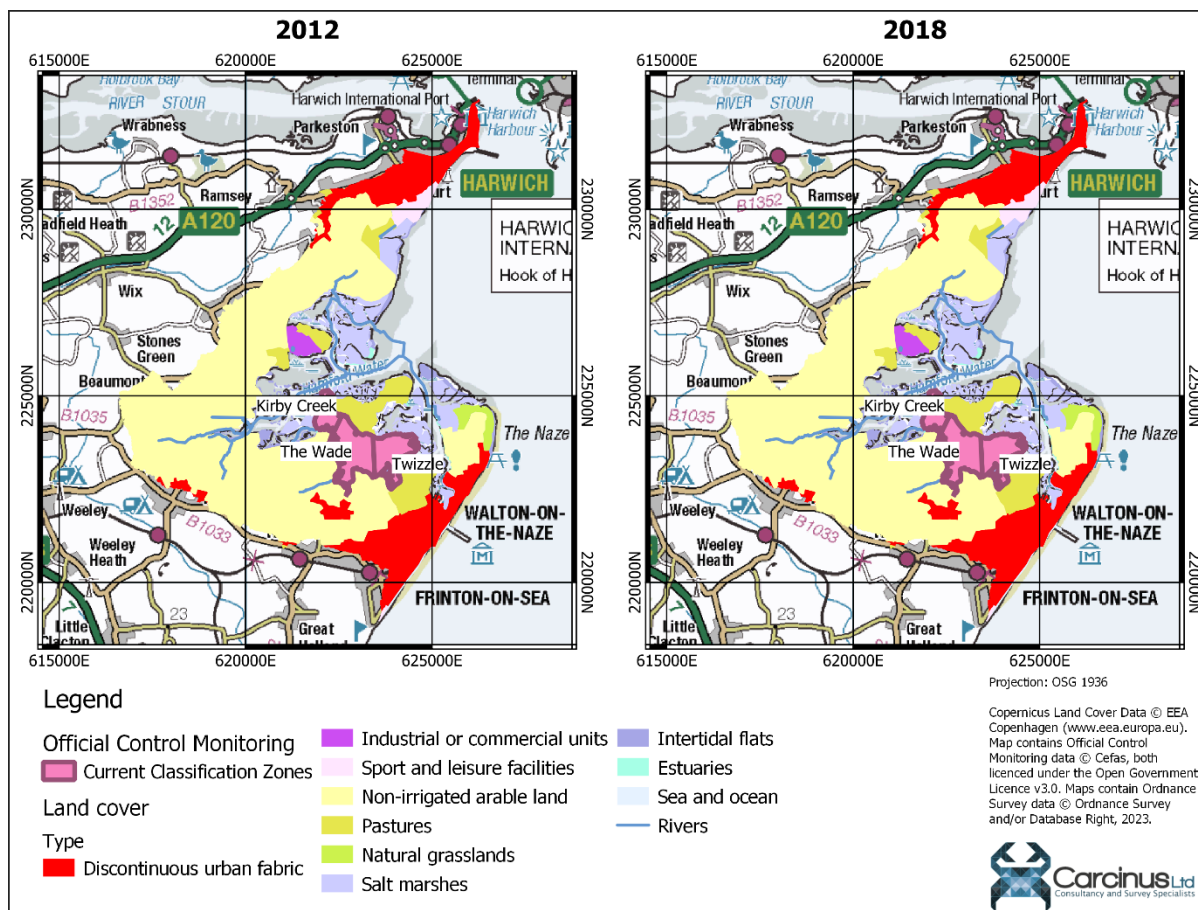


Figure 3.3 Land cover change between 2012 and 2018 for the Walton Backwaters catchment.

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.

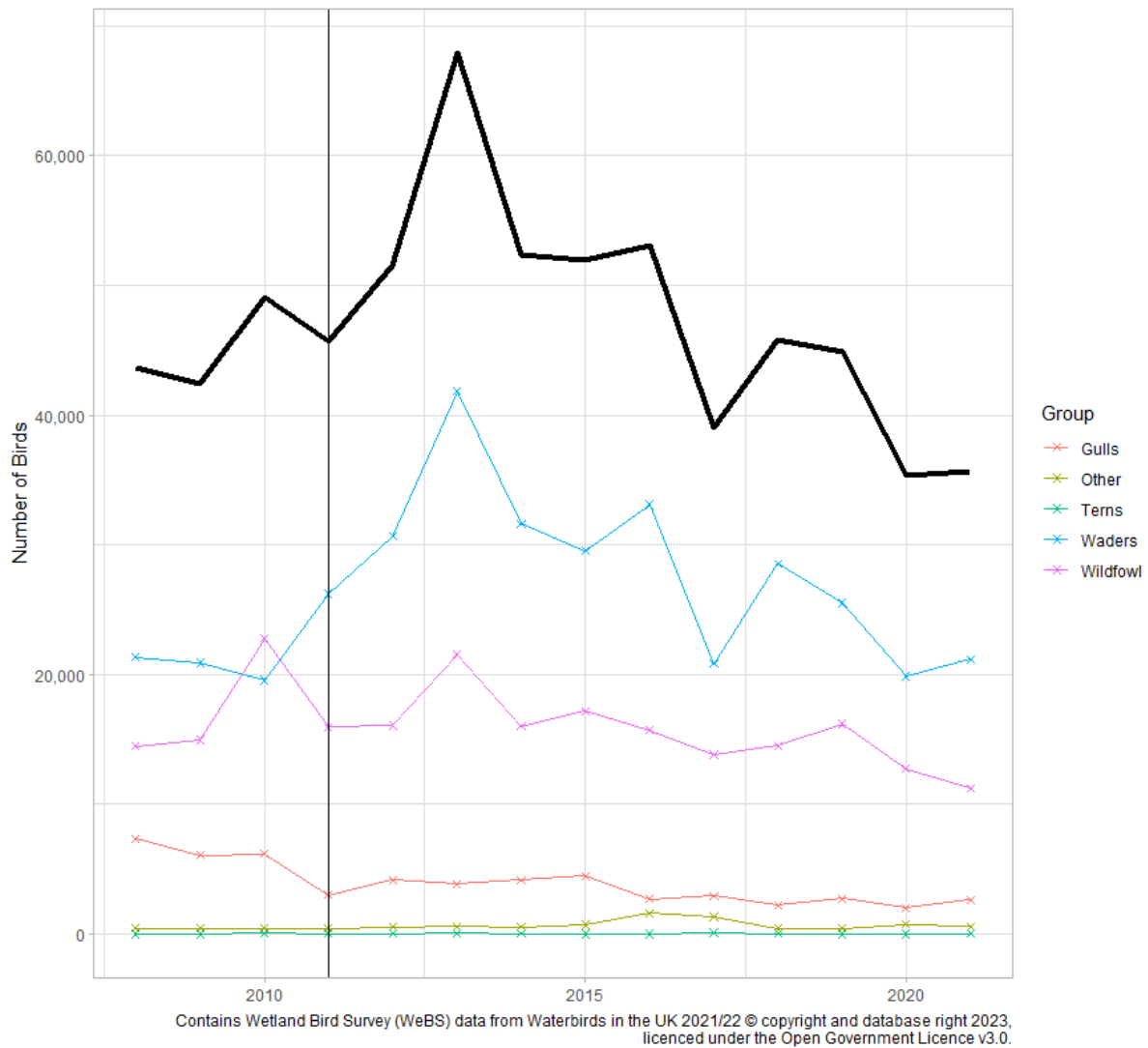


Figure 3.4 Temporal trend in waterbird counts from Hamford Water. Data from the Wetland Bird Survey (Austin et al., 2023). Solid black line is the total of all groups combined.

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.

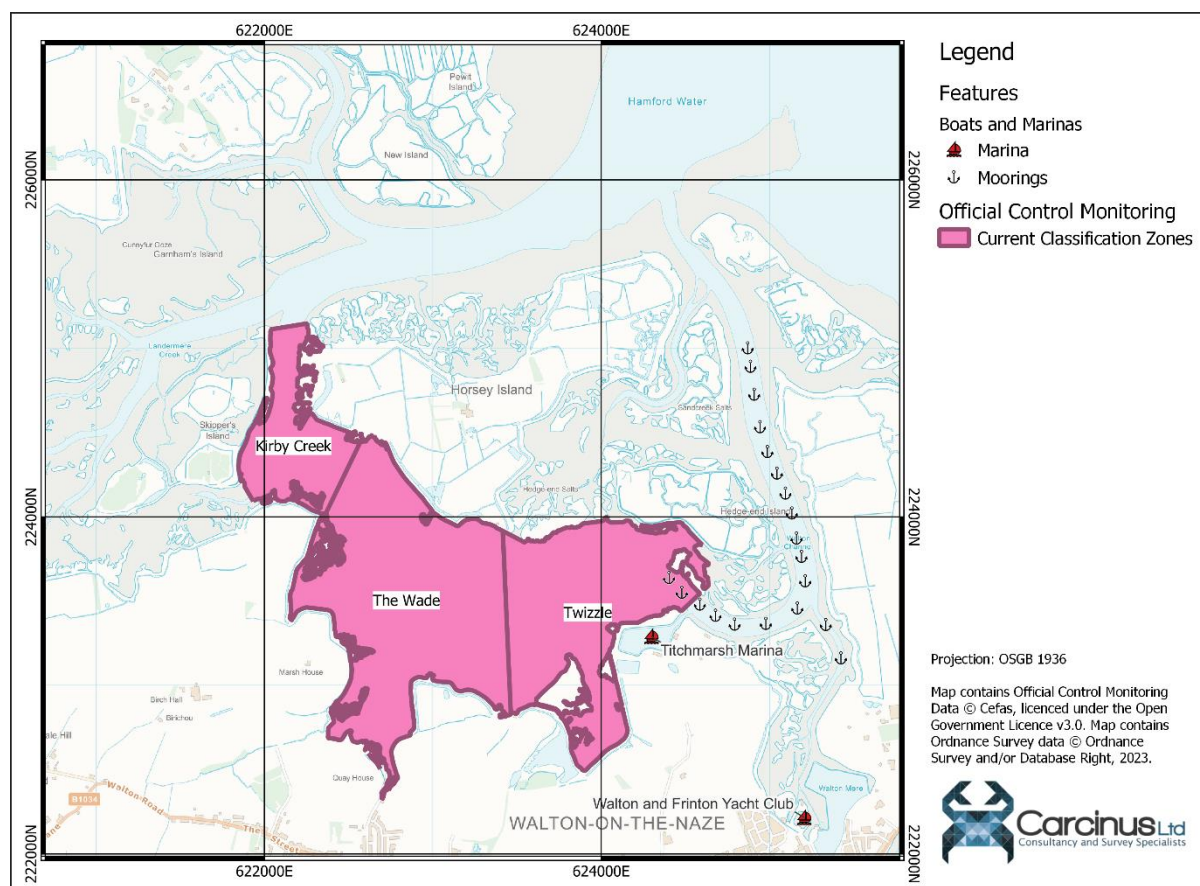


Figure 3.5 Locations of boats, marinas and other boating activities in the vicinity of the Walton Backwaters BMPA.

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

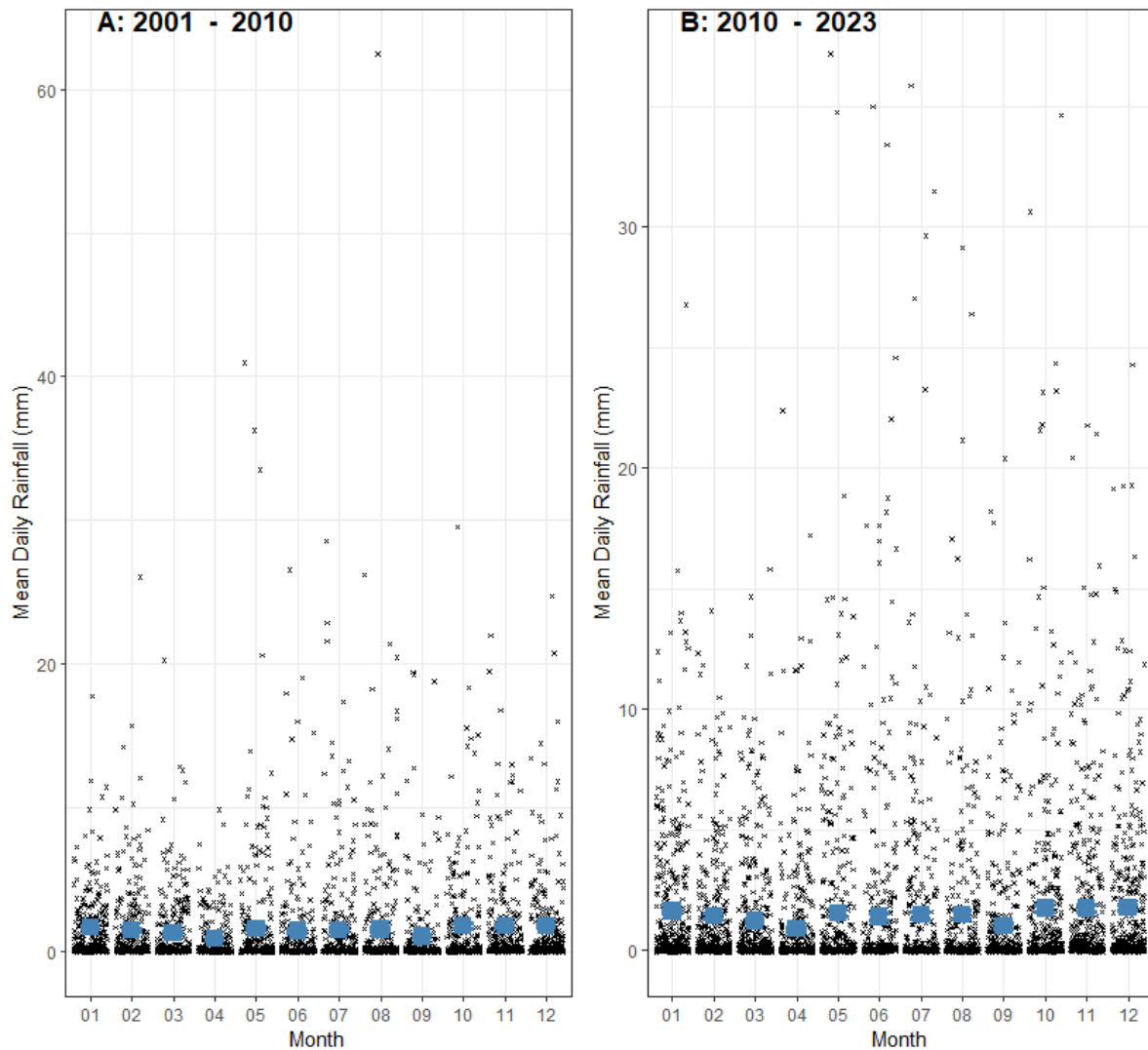
The 2011 Sanitary Survey describes that the Walton Backwaters are a shallow tidal inlet of which the majority dries at low water springs. The shellfishery is centred around the area south and west of Horsey Island. Analysis of freely available nautical chart data suggests that water depths and subtidal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

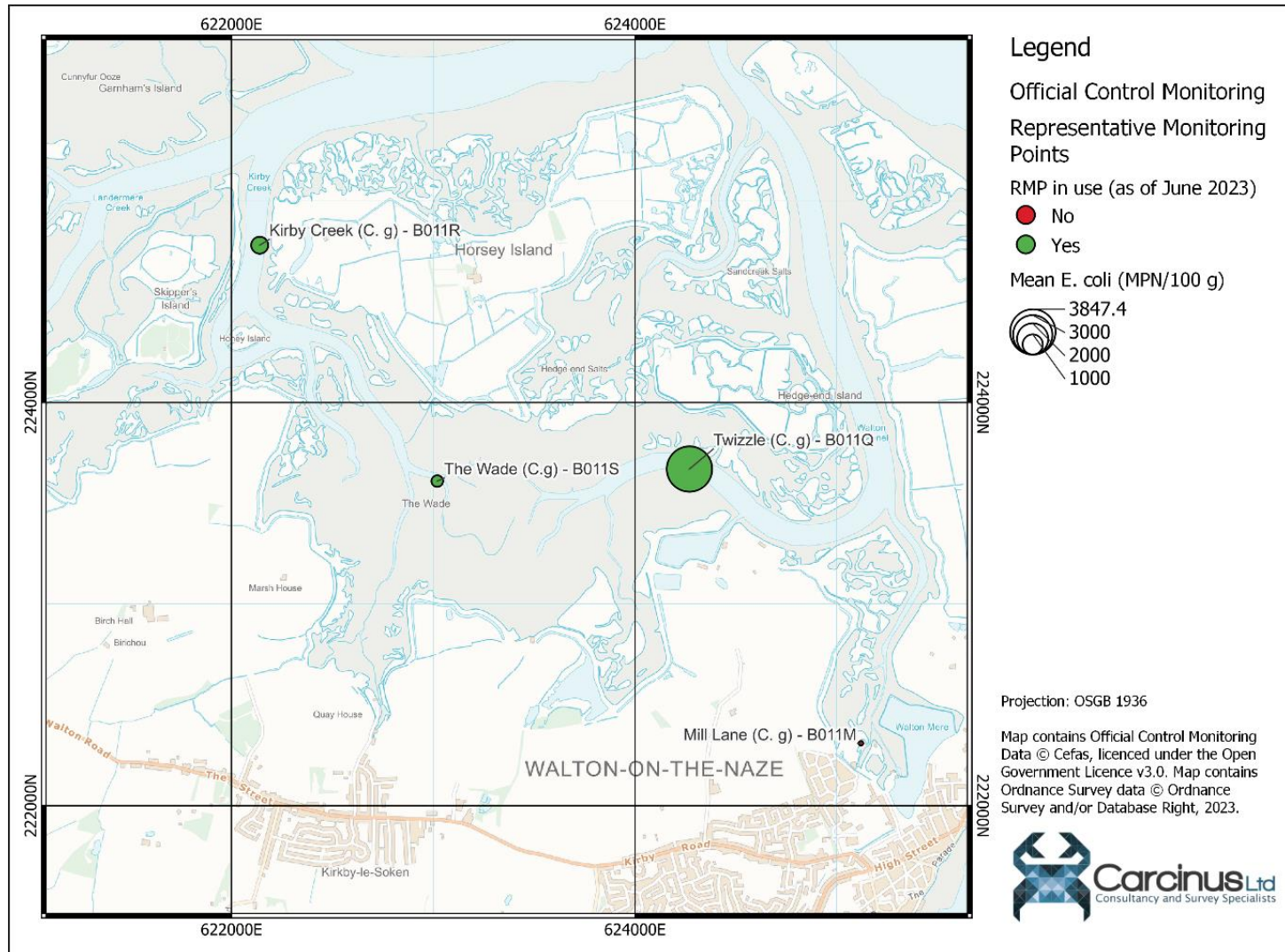


Figure 6.1 Mean E. coli results from Official Control Monitoring at bivalve RMPs in the Walton Backwaters BMPA.

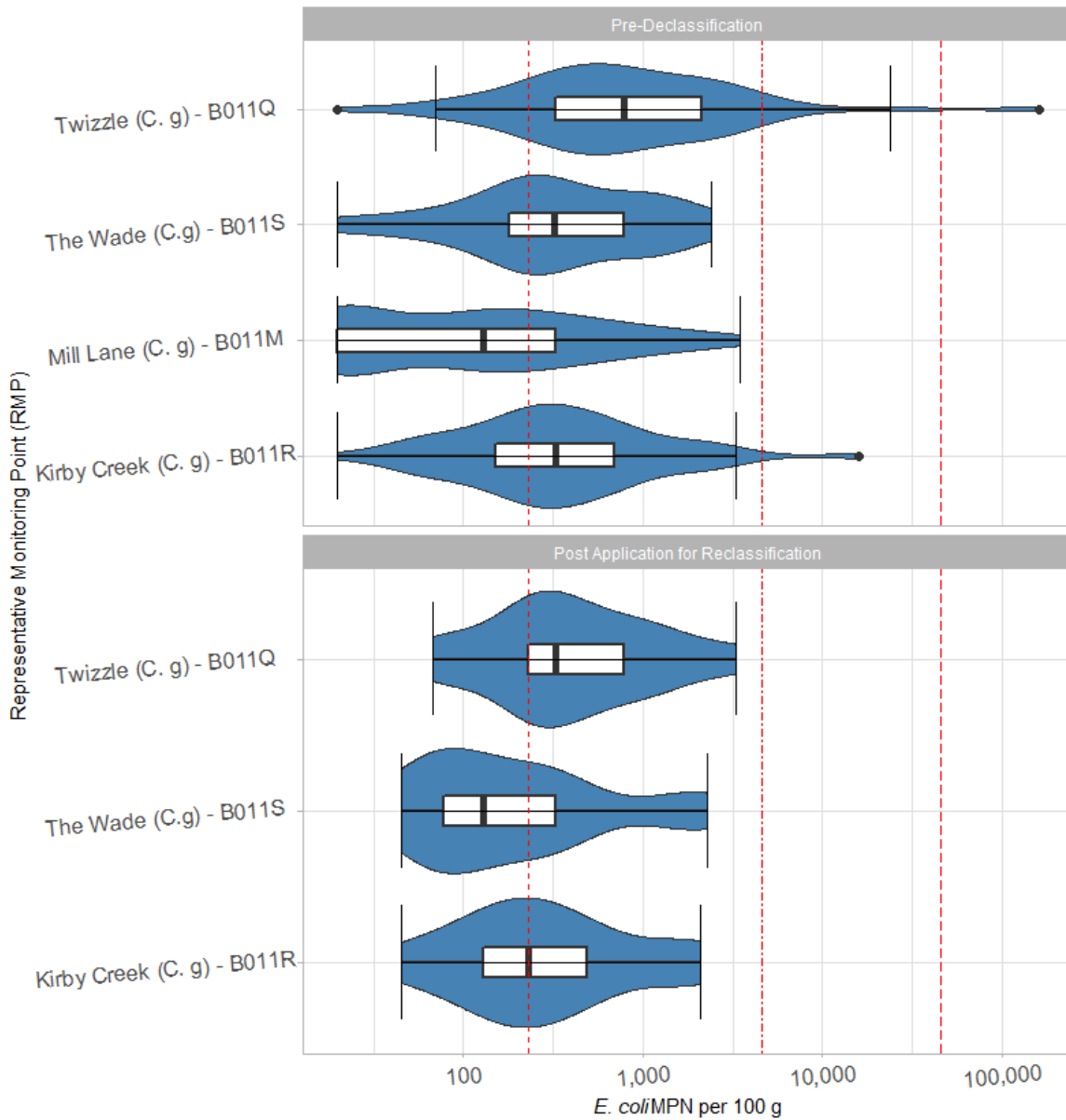
Table 6.1 Summary statistics of Official Control Monitoring at bivalve RMPs in the Walton Backwaters BMPA.

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.

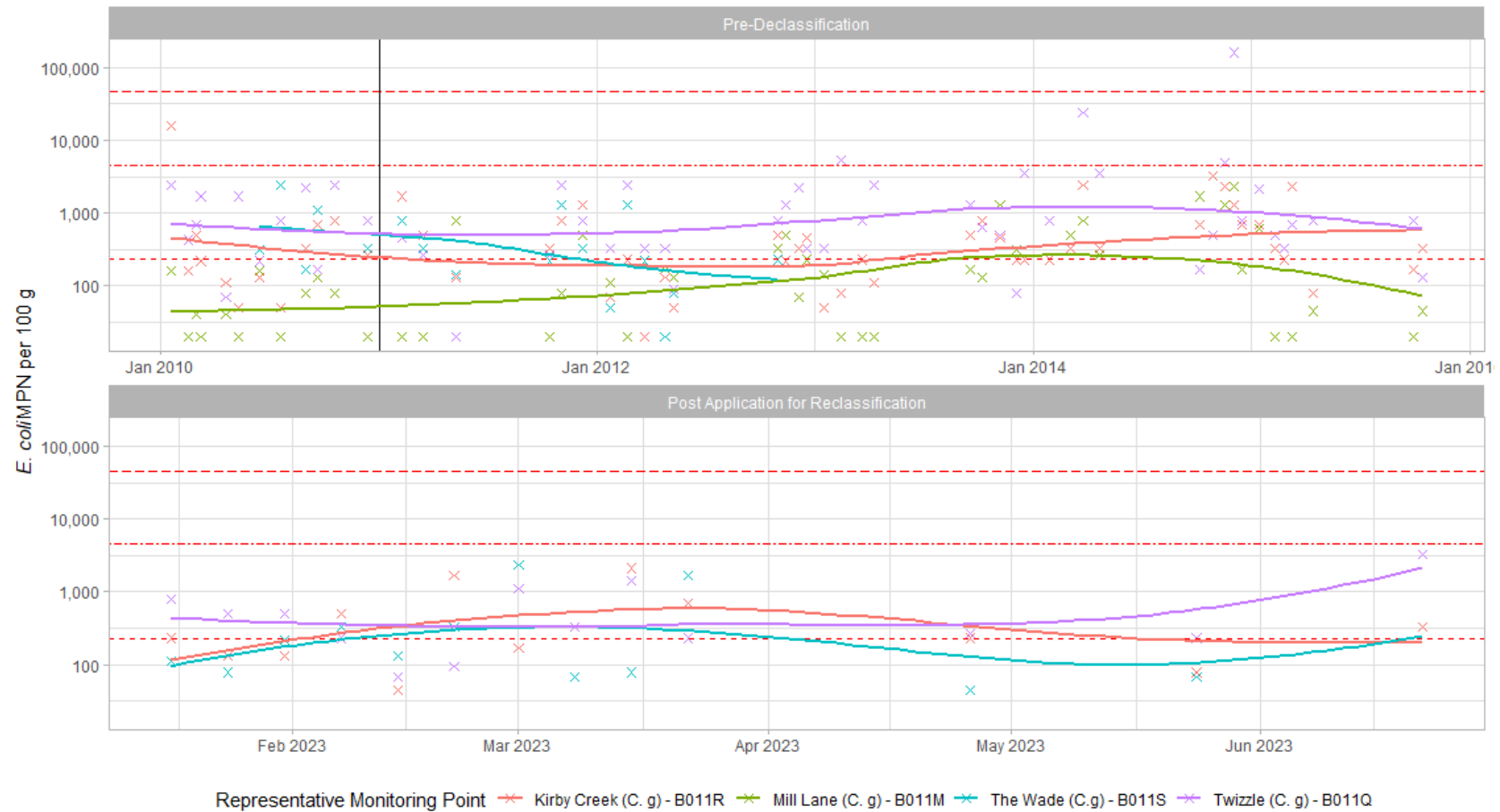


Official Control Monitoring results at Pacific oyster RMPs in the Walton Backwaters BMPA
Data © Cefas, Licenced under the Open Government Licence v3.0

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

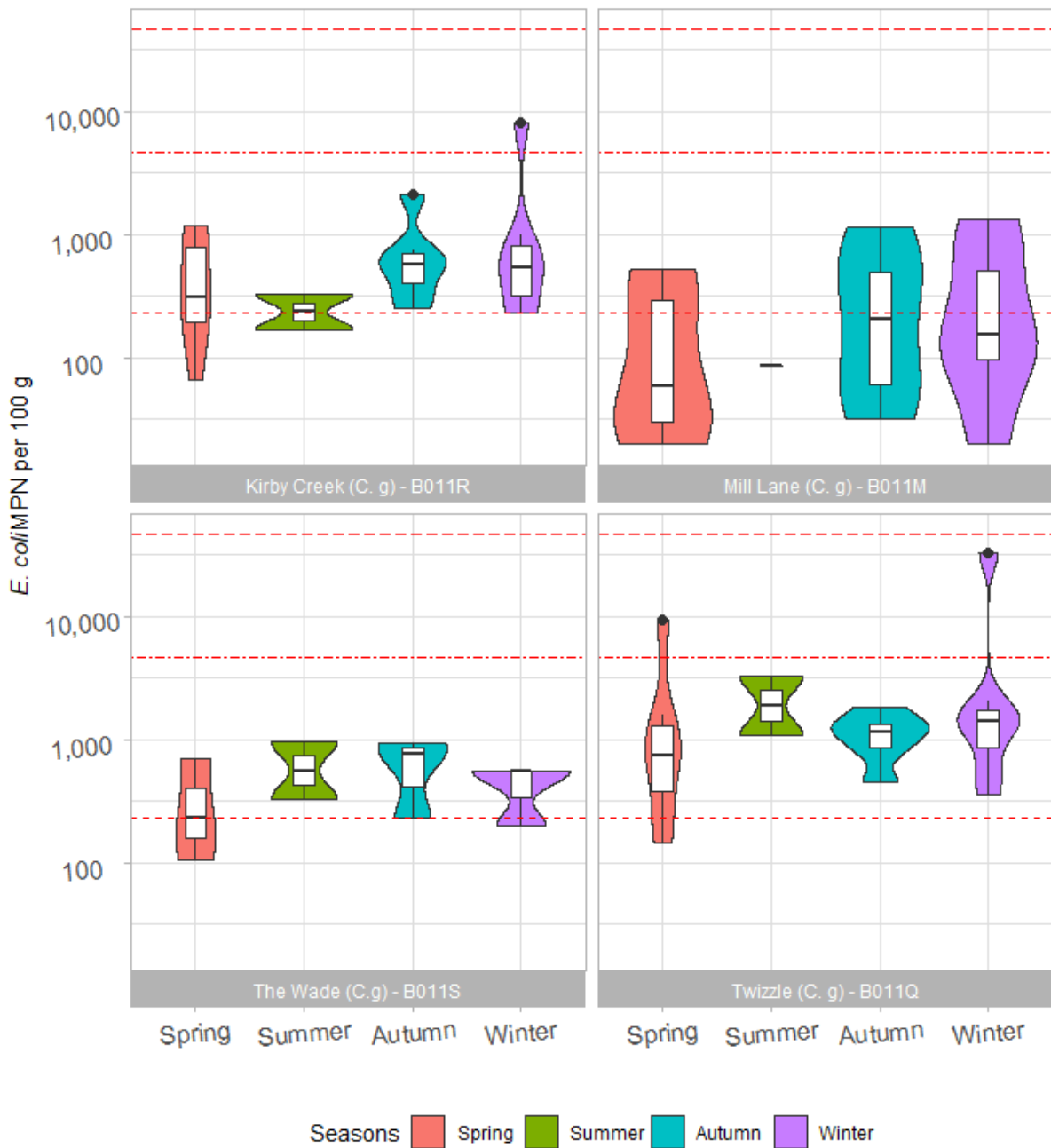
Figure 6.3 Timeseries of *E. coli* levels at Pacific oyster RMPs sampled in the Walton Backwaters BMPA since 2010. Data have been subdivided into pre-declassification and post application for reclassification. Scatter plots are overlaid with a loess model fitted to the data. Horizontal lines indicate 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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Appendix I. Shoreline Survey



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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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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