Sanitary Survey - Review

Brixham – 2024

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A sanitary survey relevant to the bivalve mollusc beds in Brixham was undertaken in 2015 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). A subsequent sanitary survey was undertaken in 2022 in accordance with retained EU Law Regulation (EU) 2019/627. These assessments 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, Torbay Council. The report is publicly available via the Carcinus Ltd. website.

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Contents

1 Introduction 8
1.1 Background 8
1.2 Brixham Review 8
1.3 Assumptions and limitations 9
2 Shellfisheries 11
2.1 Description of Shellfishery 11
2.1.1 Mussels 11
2.1.2 Other species 11
2.2 Classification History 12
3 Pollution sources 14
3.1 Human Population 14
3.2 Sewage 16
3.3 Agricultural Sources 19
3.4 Wildlife 22
3.5 Boats and Marinas 25
3.6 Other Sources of Contamination 26
4 Hydrodynamics/Water Circulation 27
5 Rainfall 27
6 Microbial Monitoring Results 29
6.1 Official Control Monitoring 29
6.1.1 Summary Statistics and geographical variation 29
6.1.2 Overall temporal pattern in results 33
6.1.3 Seasonal patterns of results 33
6.2 Action States 35
6.3 Bathing Water Quality Monitoring 35
7 Conclusion and overall assessment 36
8 Recommendations 38
8.1 Mussels 38
9 General Information 38
9.1 Location Reference 38
9.2 Shellfishery 39

9.3 Local Enforcement Authority(s) 39
9.4 Sampling Plan 40
10 References 41
Appendices 42
Appendix I. Event Duration Monitoring Summary for 2023 43
Appendix II. Sanitary Survey Report 2015 45
Appendix III. Classification Zone Assessment 2022 46
About Carcinus Ltd 47
Contact Us 47
Environmental Consultancy 47
Ecological and Geophysical Surveys 47
Our Vision 47

List of figures

Figure 1.1 Location of the Brixham BMPA and catchment considered within this review. Inset map shows position of the Brixham BMPA within the south coast of England. 10
Figure 2.1 Current Classification Zones and associated Representative Monitoring Points in the Brixham BMPA. S- A/B: Seasonal A/B Classification. See Table 2.1 for details of Class A vs Class B period. 13
Figure 3.1 Human population density (persons per square kilometre) in Census Output Areas within the vicinity of the Tor Bay catchment at the 2011 and 2021 Censuses. 14
Figure 3.2 Staying visitor, day visitor and total visitor numbers in Torbay 2005 – 2020 (South West Tourism Alliance, 2020) 16
Figure 3.3 Location of all consented discharges in the vicinity of the Brixham BMPA. Details of consented discharges are shown in Table 3.1. 17
Figure 3.4 Land cover in the vicinity of the Brixham BMPA in 2012 and 2018. 22
Figure 3.5 Temporal trend in waterbird counts from Tor Bay. Data from the Wetland Bird Survey (Austin et al., 2024). Black line indicates total number of birds. 24
Figure 3.6 Locations of boats, marinas and other boating activities in the vicinity of the Brixham BMPA. 25
Figure 5.1 Mean daily rainfall per months at the Brixham (#363148) monitoring station for the period (A) 2011 – 2015 and (B) 2015 - 2024. 28
Figure 6.1 Mean E. coli results from Official Control monitoring at bivalve RMPs in the Brixham BMPA. 30
Figure 6.2 Box and violin plots of E. coli monitoring at mussel RMPs in the Brixham BMPA. Central line indicates median value, box indicates lower-upper quartile range and whisker indicates minimum/maximum values, excluding outliers (points >1.5 x the interquartile range). 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. 32
Figure 6.3 Timeseries of E. coli monitoring at mussel RMPs sampled in the Brixham BMPA since 2015. 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. 33
Figure 6.4 Box and violin plots of E. coli levels per season at mussel RMPs sampled within the Brixham BMPA. Horizontal lines indicate classification thresholds at 230, 4,600 and 46,000 MPN/100 g respectively. 34
Figure 6.5 Location and 2023 Classification of EC Bathing Waters within Tor Bay. 36

List of tables

Table 2.1 Summary of all Classification Zones within the Brixham BMPA. 12
Table 3.1 Details of continuous discharges in the vicinity of the Brixham BMPA. 18
Table 3.2 Number of spilling hours per year for different types of intermittent discharges within the vicinity of the Brixham BMPA (data provided by EA during initial consultation). .18

Table 3.3 Livestock data for the WFD River Waterbody Catchments presented in Figure 1.1 based on the 2016 and 2021 Livestock Censuses. 20
Table 5.1 Summary statistics for rainfall preceding and following the 2015 Sanitary Survey. 27
Table 6.1 Summary statistics from Official Control monitoring at bivalve RMPs in the Brixham BMPA. 31
Table 9.1 Proposed sampling plan for the Brixham BMPA. Suggested changes are given in **bold red** type. 40

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 previous sanitary surveys were 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 Brixham Review

This report reviews information and makes recommendations for a revised sampling plan for existing mussel (*Mytilus* spp.) classification zones in the Brixham BMPA (Figure 1.1). This review explores any changes to the main microbiological contamination sources that have taken place since previous sanitary surveys were 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 May and June 2024. 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 July and August 2024. 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 assessments originally conducted in 2015 (Cefas, 2015) and 2022 (Carcinus Ltd., 2022) (the latter in relation to establishment of the Torquay mussel zone in the north) and sampling plans as necessary. This report should read in conjunction with these previous surveys.

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.

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 the end of May 2024;
- 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 hub[1], with no additional verification of the data undertaken. Results up to and including May 2024 have been used within this study. Any subsequent samples have not been included.

[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/.

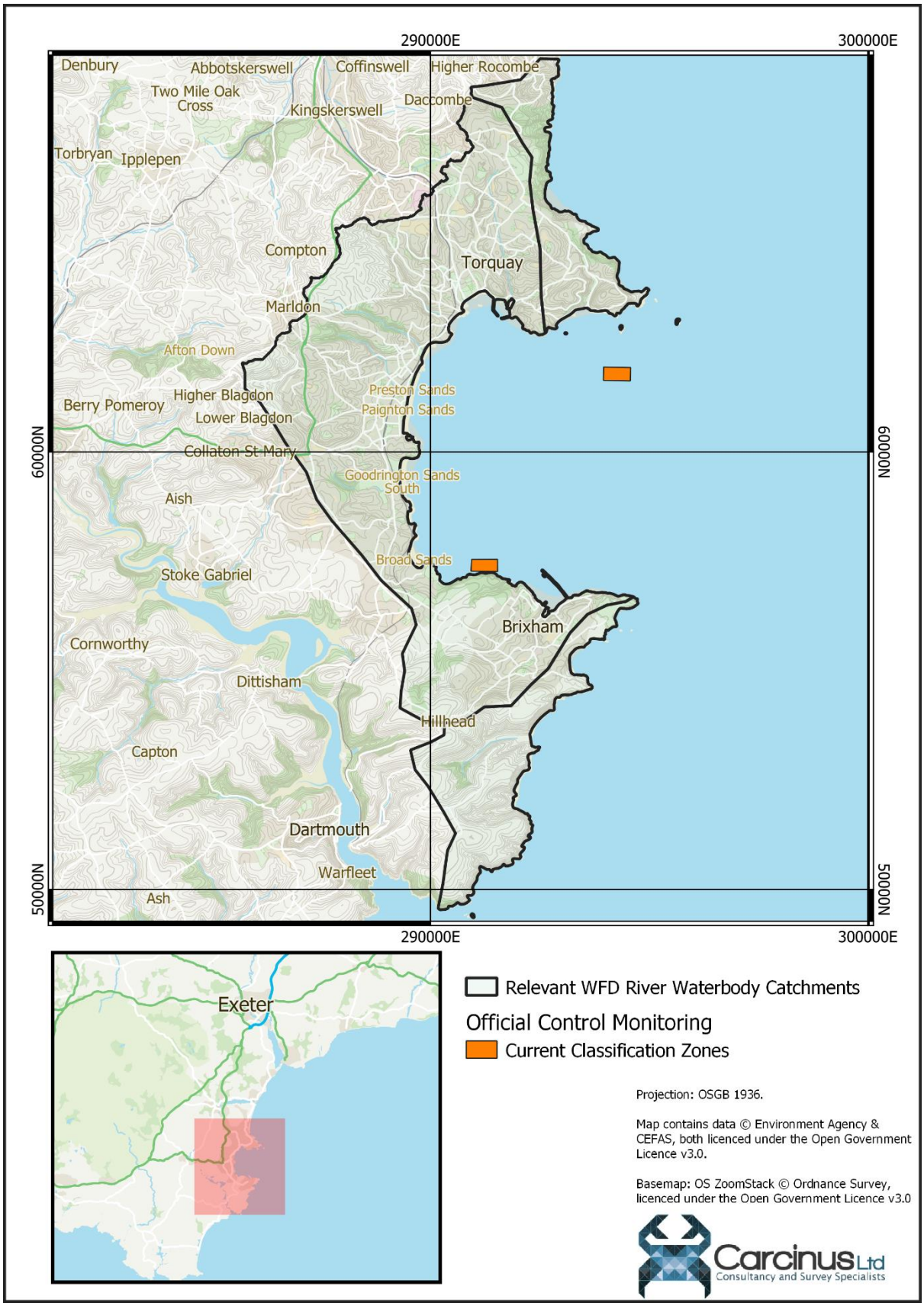

Figure 1.1 Location of the Brixham BMPA and catchment considered within this review. Inset map shows position of the Brixham BMPA within the south coast of England.

2 Shellfisheries

2.1 Description of Shellfishery

The Brixham BMPA (Cefas Site Reference: M082) is situated within Tor Bay, a large embayment on the south coast of Devon, England (Figure 1.1). The closest BMPAs are that of Dartmouth (~5 km southwest to the centre of Tor Bay, M028) and Teignmouth (~12 km north, M027). The boundaries of the Brixham BMPA are taken to be the waters within Tor Bay, westward of a line drawn between Hope's Nose (50°27'49"N, 003°28'53"W) and Berry Head (50°23'59"N, 003°29'00"W).

The Local Enforcement Authority (LEA) for food hygiene Official Control purposes (including sampling) is Torbay Council. Please note, 'Torbay' generally refers to the borough in South Devon that is administered by the unitary authority of Torbay Council, whilst 'Tor Bay' is the embayment on the South East Coast. This is the approach the authors of this review have adopted within this report, although in some sources cited the two terms are used interchangeably. The 2015 Sanitary Survey primarily considered the Classification Zones on the southern side of Tor Bay. The report describes that the fishery was a well-established rope mussel farm. The 2022 Sanitary Survey primarily considered an application for a new Classification Zone on the north side of Tor Bay. Both sites are leased from the Crown Estate. All shellfish production within the Brixham BMPA is of cultured shellfish. Although no consultation response has been received from the Devon and Severn Inshore Fisheries and Conservation Authority (D&S IFCA), the D&S IFCA Byelaw Booklet (Devon and Severn IFCA, 2024a) does not indicate any byelaws that apply to the harvest of shellfish within Tor Bay. The 2015 Sanitary Survey describes that marketable size for mussels is 50-60 mm. A summary of the fishery is provided in the subsequent paragraphs.

2.1.1 Mussels

The only species of commercial interest relevant to this review are cultured mussels. There are two Classification Zones, *Brixham* (monitored by the Fishcombe Cove RMP B082B and referred to as such in this report) on the southern side of Tor Bay (classified continually since 1997) and *Torquay Mussels* (monitored by the Torquay Mussels RMP B082C) on the northern side of Tor Bay (~1.2 km from shore) (classified since 2022, following the Sanitary Survey in that year). During consultation, the LEA advised the mussel growing sites within Tor Bay are in a transition period with limited and intermittent harvesting. Continued classification is required as it is the harvester's intention to expand mussel harvesting activity in the near future. There are currently no plans for any changes from current classified areas of production. The estimated output from the fishery is anticipated to be 2-4 tonnes per week during harvesting periods, which would occur year round except for a gap in late spring / early summer to allow for natural spawning periods.

2.1.2 Other species

During initial consultations, the LEA stated that King scallops *Pecten maximus* are also harvested from an aquaculture site within Tor Bay, but these are enforced under the

exemption for *Pectinidae* harvested from outside classified areas[2], and so are beyond the scope of this review. There are also plans to set up a seaweed farm within Tor Bay (Devon and Severn IFCA, 2024b), but that is also outside the scope of this review.

2.2 Classification History

The 2015 Sanitary Survey recommended the creation of one Classification Zone (CZ) for mussels. The 2022 Sanitary Survey recommended an additional mussel Classification Zone in the north of the bay. Both CZs hold active classifications. The location and classification status of all active CZs, along with RMPs sampled in the area since 2015, are presented in Table 2.1 and Figure 2.1.

Table 2.1 Summary of all Classification Zones within the Brixham BMPA.

Classification Zone	Species	Current Classification (as of May 2024)	RMP
Fishcombe Cove	Mussels	Seasonal A/B (Class A 01 June – 31 December, reverting to Class B at all other times)	Fishcombe Cove SW Corner – B082B
Torquay Mussels	Mussels	B	Torquay Mussels NW – B082C

[2] As provided by Article 11 of assimilated law 2019/624 concerning specific rules for the performance of official controls on the production of meat and for production and relaying areas of live bivalve molluscs in accordance with Regulation (EU) 2017/625 of the European Parliament and of the Council.

Figure 2.1 Current Classification Zones and associated Representative Monitoring Points in the Brixham BMPA. S- A/B: Seasonal A/B Classification. See Table 2.1 for details of Class A vs Class B period.

3 Pollution sources

3.1 Human Population

The 2015 Sanitary Survey cites population data based on the 2011 Census of the United Kingdom. No population data is presented in the 2022 assessment. Results from the 2021 Census were compared to 2011 to analyse the changes in human population within the Tor Bay catchment and surrounding Census Output Areas. Figure 3.1 shows the human population density (persons per square kilometre) in Census Output Areas in the vicinity of the Brixham BMPA at the 2011 and 2021 Censuses.

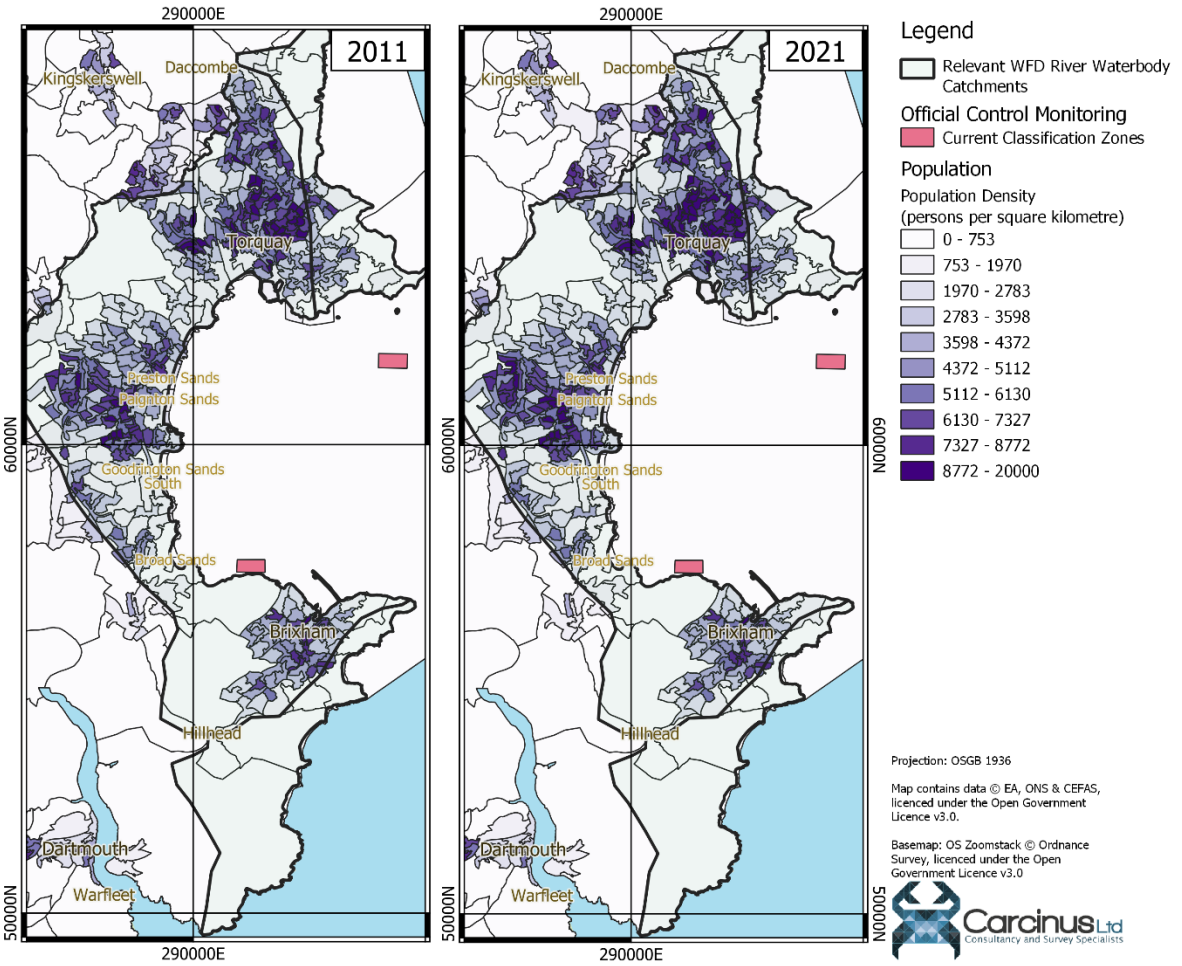

Figure 3.1 Human population density (persons per square kilometre) in Census Output Areas within the vicinity of the Tor Bay catchment at the 2011 and 2021 Censuses.

Figure 3.1 shows that the area is relatively urban, with population densities of >5,000 people per square kilometre in several areas. There are three main population centres within the River Waterbody Catchments that have connectivity to Tor Bay. Torquay is on the northern side of Tor Bay, Paignton in the middle and Brixham on the southern side of Tor Bay. Census data indicates that the population densities within these conurbations increased slightly between 2011 and 2021, which will have resulted in additional loading to the wastewater treatment network and may have increased both the input to the sewerage

network and levels of surface run off. The total estimated population within the Tor Bay catchment and surrounding areas increased from 147,594 in 2011 to 157,421 in 2021, an increase of 6.65%.

During initial consultations, the LEA stated that there has been a general increase in human population across the region with new build housing estates in Torquay, Paignton and Brixham. The Torbay Council local plan (covering the period 2012 – 2030) has identified land for the delivery of 8,900 new homes over the period, and since 2016 the Council has delivered an average of 339 new homes per year (Torbay Council, 2023). New homes and an increase in human population may place additional loading to the wastewater treatment network, changes to which are discussed in the next section. As part of the planning process however, developers are required to assess the impact of new housing on the wastewater treatment network[3]. During initial consultation, both the LEA and EA indicated that all new development is occurring set back from the coast. At secondary consultation, the EA shared information regarding the assessments for the impact of new housing on the wastewater treatment network in the Brixham catchment. The EA stated that the no deterioration policy[4] under the Water Framework Directive (WFD) applies across the board. This policy requires the implementation of improvement schemes where data shows a real-world deterioration in the environment. It also applies to future modelled deteriorations based on population growth. Improvement schemes are identified and added to the WINEP (water industry national environment programme) for agreement and delivery by water quality regulators, as appropriate. The 'no deterioration' policy means that new housing developments should not cause an increase in *E. coli* concentrations within shellfish flesh. Overall, no amendment to the sampling plan is required to account for new housing developments, as the distribution of urban fabric adjacent to the coast is unchanged, with all new housing development set back from the coast.

Tor Bay receives more than 4 million visitors per year. The data presented in Figure 3.2 indicate there was a marked increase in tourism numbers between 2011 and 2012, but that between 2012 and 2019 the numbers of tourists were relatively stable. A significant decline in the numbers of tourist visits occurred in 2020 with the Covid-19 Pandemic. No data post-2020 was available to the authors of this review. Tourism is usually seasonal with more visitors likely in the summer months. The peak population in the catchment is likely to occur between June – September and will result in increased loading to the wastewater treatment network.

[3] https://commonslibrary.parliament.uk/sewerage-connections-for-new-housing-developments-in-england/
[4] https://www.wfduk.org/sites/default/files/Media/Setting%20objectives%20in%20the%20water%20environment/Prevent%20deterioration%20of%20status_Draft_010506.pdf

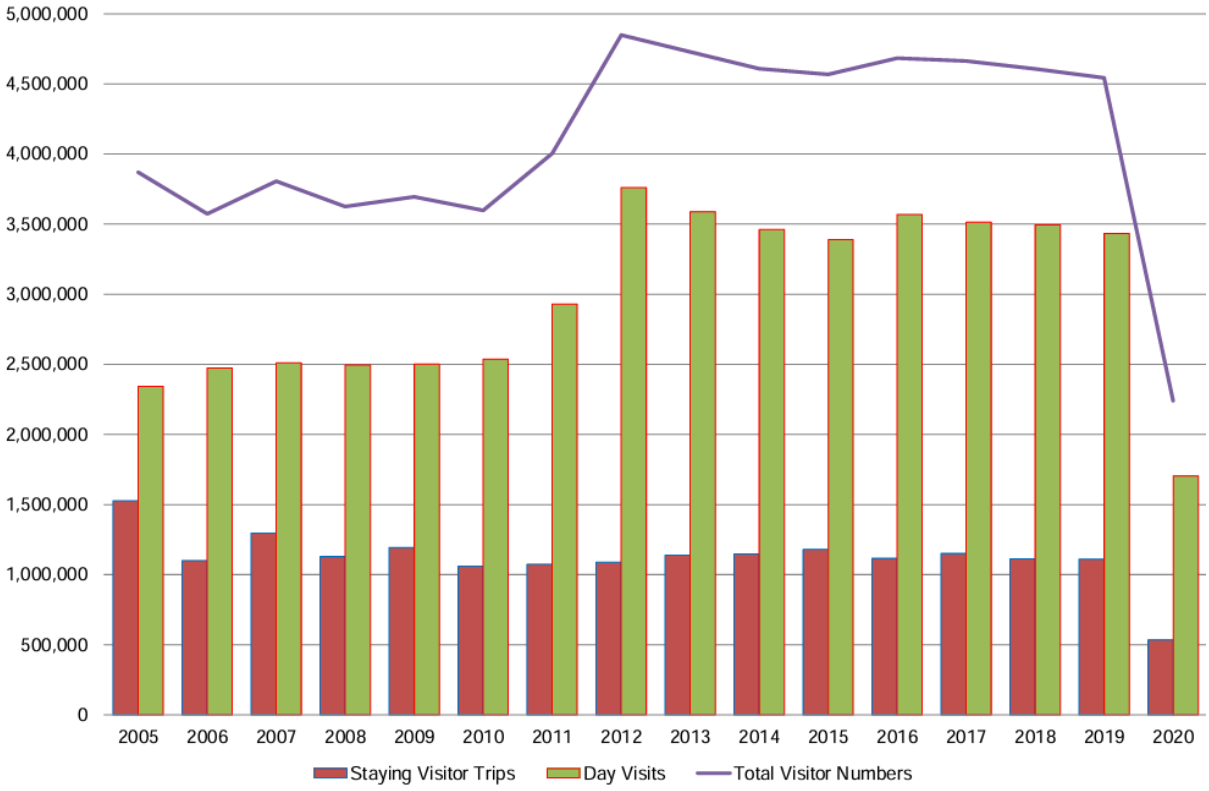

Figure 3.2 Staying visitor, day visitor and total visitor numbers in Torbay 2005 – 2020 (South West Tourism Alliance, 2020)

Analysis of Census data shows that there has been a 6.65% increase in human population between 2011 and 2021, with increases in the population density of the three main conurbations in the catchment. The area continues to be a popular tourist destination, with up to 50% increases in population during summer months. At secondary consultation, the LEA stated that they did not have additional information for tourism, and stated they expect any recent published data to possibly be skewed by the Covid-19 pandemic. Data specifically relating to tourism in the area post 2020 was not available to the authors at the time of wrintg. Overall, the recommendations made in the 2015 Sanitary Survey Review to account for the impact of human populations remains valid i.e. CZs are likely to be impacted by surface run-off from urban areas and sewage discharges (Section 3.2).

3.2 Sewage

Details of all consented discharges in the vicinity of the Brixham BMPA were taken from the most recent update to the Environment Agency's national permit database at the time of writing (April 2024 Update). The locations of these discharges within the catchment and near the Classification Zones are shown in Figure 3.3.

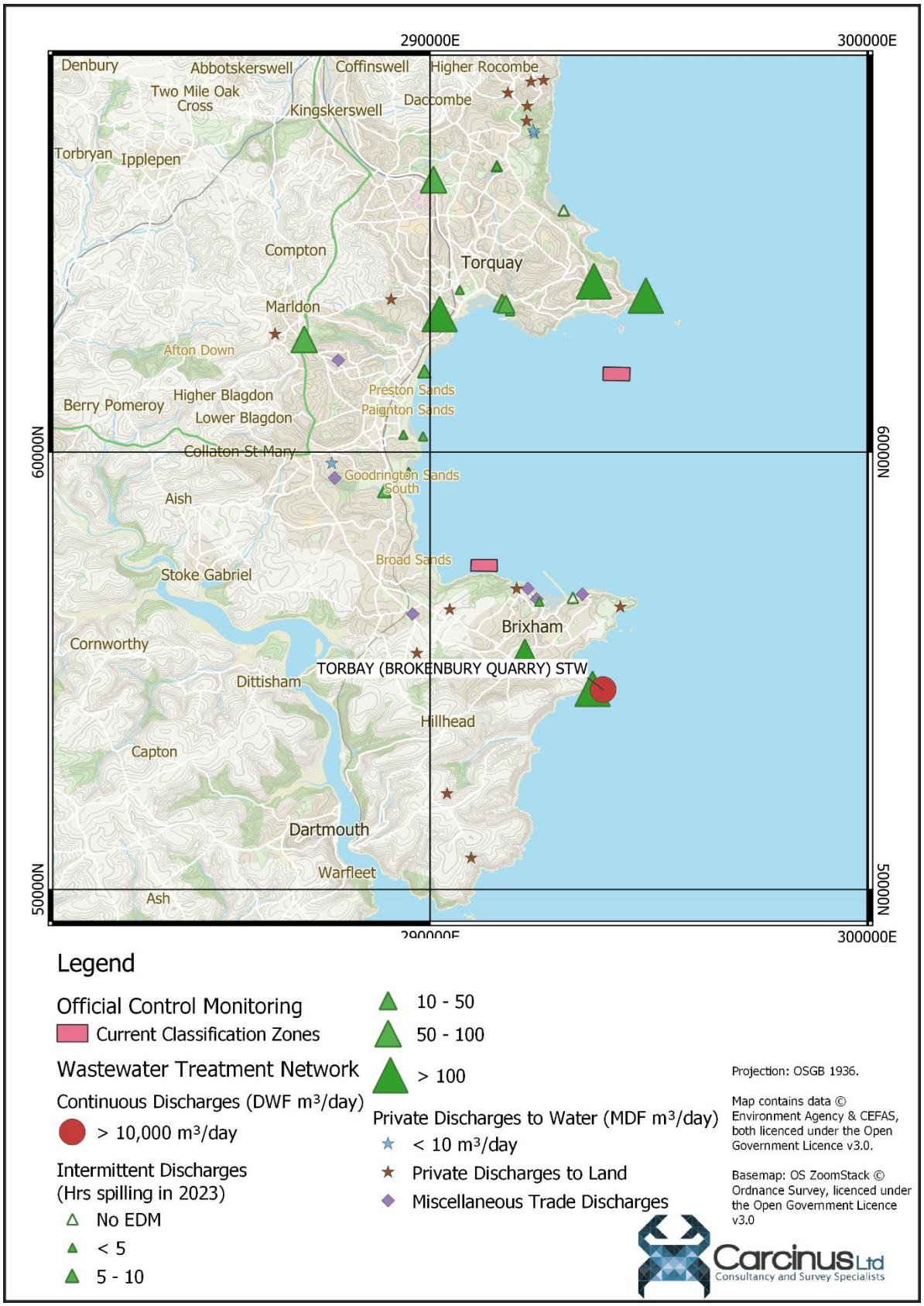

Figure 3.3 Location of all consented discharges in the vicinity of the Brixham BMPA. Details of consented discharges are shown in Table 3.1.

Table 3.1 Details of continuous discharges in the vicinity of the Brixham BMPA.

Discharge Name	Permit Number	Outlet NGR	Treatment Methodology	DWF (m^3/day)	Distance from CZ
Torbay (Brokenbury Quarry) STW	200976	SX 93960 54570	UV Disinfection	42,396	3.9 km

There is only one continuous discharge within the vicinity of the Brixham BMPA, Torbay (Brokenbury Quarry) Sewage Treatment Works (STW). It is located on the south side of Berry Head, and so is not actually within Tor Bay. The outfall of this discharge is 3.9 km from the *Fishcombe Cove* CZ and 7.2 km from the *Torquay Mussels* CZ. Whilst the consented Dry Weather Flow (DWF) from this discharge is high (>42,000 m^3/day), the consented volume is unchanged from the 2015 or 2022 Sanitary Surveys. Furthermore, the Treatment Works employs UV disinfection at this outfall. It is considered that the outfall will have little impact on the bacteriological health of the Brixham BMPA.

In addition to the continuous discharges, the 2015 and 2022 Sanitary Surveys identified several intermittent discharges within the vicinity of the Brixham BMPA. 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, 2022 and 2023 was published by the Environment Agency in March 2021, March 2022, March 2023 and March 2024 respectively (Environment Agency, 2024). A summary of the EDM return for discharges in the vicinity of the Brixham BMPA is provided in Appendix I.

Table 3.2 presents a summary of the number of hours the various types of intermittent discharge that have spilled within the vicinity of the Brixham BMPA since 2019. The EA stated at initial consultation that the area is known for pump failures and high spill events. It has been designated as high priority due to lack of past investment from the water company. The immediate focus of improvements will be on spill reductions from these assets. During AMP8 (2025-2030), this is likely to take the form of increased flows to sewage treatment works (STWs) (where wastewater can be treated rather than released untreated from emergency overflows) and increased storm storage at various assets.

Table 3.2 Number of spilling hours per year for different types of intermittent discharges within the vicinity of the Brixham BMPA (data provided by EA during initial consultation).

Year	Number of spilling hours per year (x: no flow monitoring)		
	Storm Overflows	Emergency Overflows	Combined Storm Overflows
2019	X	x	432.5
2020	X	x	435
2021	X	x	178

Year	Number of spilling hours per year (x: no flow monitoring) Storm Overflows	Emergency Overflows	Combined Storm Overflows
2022	X	0	500
2023	X	3	110.5

There is a higher density of intermittent discharges on the northern side of the BMPA than the southern. The following text describes the spilling activity from the discharges most likely to impact the BMPA. The closest intermittent discharge to the *Fishcombe Cove* CZ is the Oxen Cove PS (1.5 km south east of the CZ). This discharge spilled twice for 0.37 hrs in 2023 (compared to a long term average of 33.9 times per year). The closest intermittent discharge to the *Torquay Mussels* CZ is the Isham Valley PS (1.8 km north), although the Beacon Hill SO, Fleet Walk No. 1 & No. 2 CSOs, Isham Road CSO, Ilsham Marine Drive CSO, Kings Drive CSO and Old Mill Road SO are all within 4 km. The Ilsham Valley PS spilled 140 times in 2023 (compared to a long-term average of 104 times). During initial consultation the EA stated that this asset is known to have recurring issues and has had enforcement served on it in the past. It will be a focus for the new water industry transformation team. It is recommended that intermittent discharges in the north of Tor Bay are considered within an updated sampling plan.

In addition to the water company owned infrastructure, there are 13 privately owned discharges within the vicinity of the BMPA. During initial consultation, the EA stated that there at least five septic tanks within the area, although all have consented discharge volumes of less than 5 m^3/day. Limited details of these private discharges can be provided due to data protection requirements, but generally the bacteriological impact is considered by the authors of this review to be less than the intermittent discharges in the area.

There is one continuous discharge in the vicinity of the Brixham BMPA (Torbay (Brokenbury Quarry) STW), and neither the consented discharge volume or treatment methodology has changed since the 2015 or 2022 Sanitary Surveys were published. There are a number of highly active intermittent discharges within the vicinity of the BMPA, particularly on the northern side of Tor Bay near the *Torquay mussels* CZ. Whilst improvements to these assets are planned for AMP8 (2025-2030), consideration should be given to them in any updated sampling plan.

3.3 Agricultural Sources

The 2015 Sanitary Survey cites livestock data for the Tor Bay catchment based on 2013 Livestock Census data. 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 of Environment, Food and Rural Affairs (DEFRA) for livestock populations within the catchment presented in Figure 1.1 for 2016 and 2021 based on the June Survey of Agriculture and

Horticulture[5]. The data could not be broken down into the various sub catchments to prevent disclosure of information about individual holdings. Table 3.3 provides a summary of the changes in livestock population within the catchment. The table also includes the livestock data provided in the 2015 Sanitary Survey but the catchments used to derive the data are slightly different. This report has queried data sources using the relevant WFD River Waterbody Catchments (Figure 1.1) and the boundary is slightly different to that presented in Figure 1.1, p7 of the 2015 Sanitary Survey. The consequence of this is that populations reported in the 2015 survey are slightly lower, although as the size difference is small differences are expected to be minimal.

Table 3.3 Livestock data for the WFD River Waterbody Catchments presented in Figure 1.1 based on the 2016 and 2021 Livestock Censuses.

Livestock type	2013*	2016	2021
Cattle	1,190	1,130	682
Pigs	#	#	#
Sheep	1,196	3,000	3,375
Poultry	#	#	#
Total	2,386	4,130	4,057

* Data taken from the 2015 Sanitary Survey, although the precise catchment used to derive the livestock data may be slightly different.
# Data have been suppressed to prevent disclosure of information about individual holdings

The data presented in Table 3.3 show that the livestock population of the relevant WFD River Water Body catchments are relatively small, reflecting the urban nature of much of the catchment. Cattle populations have fallen from 2013 – 2021, whereas sheep populations have increased. It should be noted that the June Survey of Agriculture and Horticulture presents a snapshot of population sizes at one point in a year, but the actual numbers will vary throughout the year. Highest numbers of animals will occur in spring, following the birthing season, and the lowest in autumn and winter when animals are sent to market.

The principal route of contamination of coastal waters by livestock is surface runoff carrying faecal matter. The land cover of the Brixham BMPA catchment in 2012 and 2018 (most recently available data) is shown in Figure 3.4. The maps show that the majority of land immediately adjacent to the coast is urban or suburban, reflecting the high population densities shown in Figure 3.1. The maps show that the extent of the urban conurbations has increased slightly, although the increase has been on the landward side of the conurbation as the developed areas already extend right to the coast.

[5] 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.

There is more agricultural (arable and pastural) land behind the urban centres, and so some runoff may reach the waters of the Brixham BMPA via small rivers in the area. Arable farmland can also represent a risk to the bacteriological health of a shellfishery, particularly where slurry is applied to fields. During initial consultation, the EA confirmed that there are no local management practices or byelaws in place relating to the usage of slurry. However, 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. The overall level of contamination from agricultural sources to the Brixham production area will be low, given that run-off entering rivers further up the catchment has a lower risk of carrying contamination to the CZs because the increased distance will result in dilution and *E. coli* die-off. It may, however, contribute to background levels of contamination in the CZs, particularly following significant rainfall events.

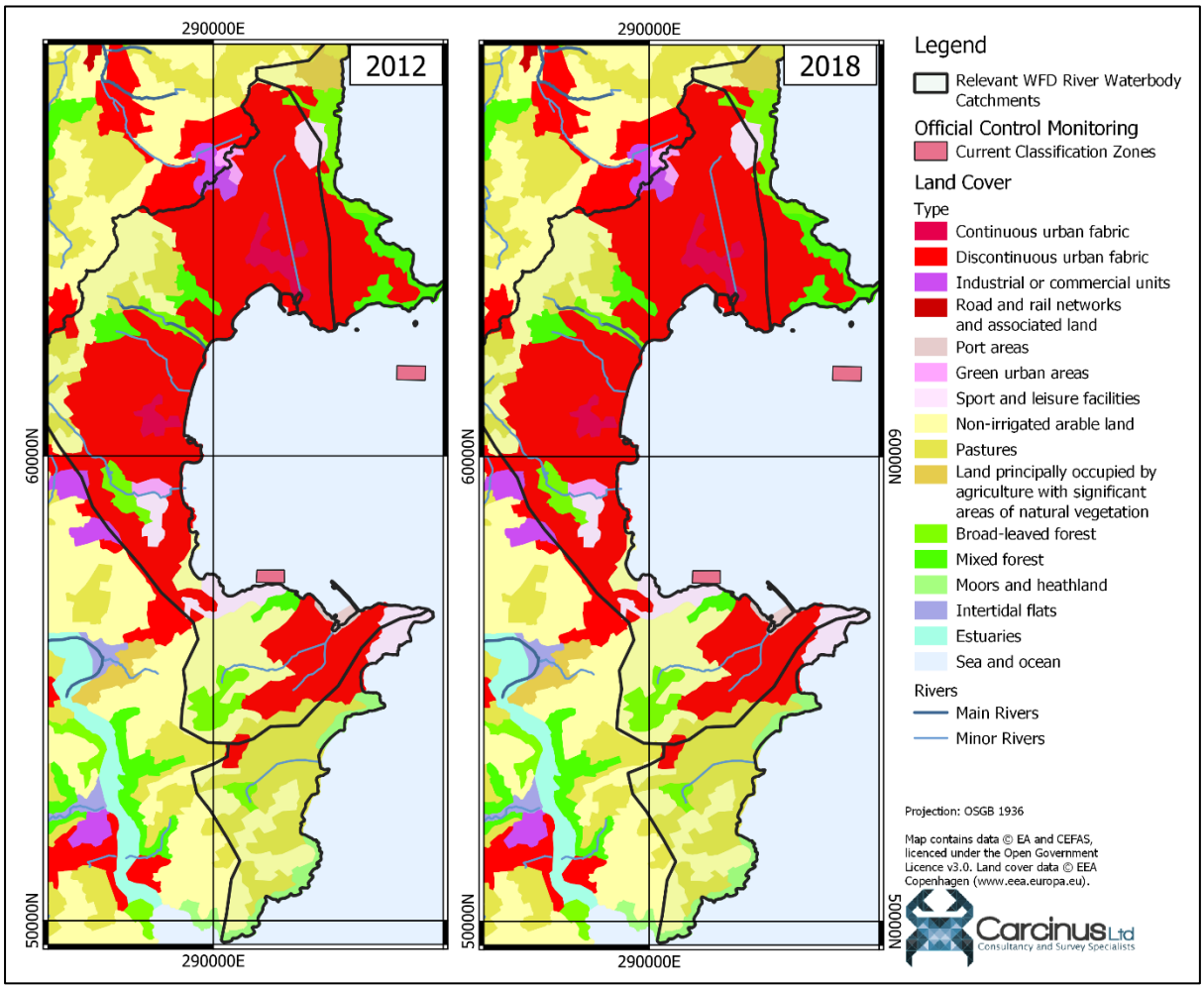

Figure 3.4 Land cover in the vicinity of the Brixham BMPA in 2012 and 2018.

Overall, contamination from livestock is likely to be minimal as there are no areas of farmland immediately adjacent to the shore. However, run-off from rivers further up the catchment will impact background contamination levels in the CZs.

3.4 Wildlife

Overwintering and wading birds often represent a potentially significant source of microbiological contamination to shellfish production areas because avian species frequently forage (and therefore defecate) directly on areas of shellfish. Figure 3.5 shows the temporal trend in total overwintering waterbird counts from the winter of 2010/2011 – 2022/2023 (the most recent for which data are available). No counts were recorded between 2012 and 2017.

The population of water birds within Torbay is generally small, with waders generally forming the largest group in terms of population size (although >1,000 gulls were recorded in the winter of 2022/2023). In the five winters to 2022/2023 an average of 500 waterbirds were recorded within Tor Bay (Austin *et al.*, 2024). The average count in the five winters to 2014/2015 was 175. No nationally significant populations are recorded within Tor Bay. The

largest aggregations of waterbirds, and therefore the highest risk of contamination due to defecation, is in the winter months. However, the overall risk of this source of contamination is considered to be minimal in comparison to other sources of contamination, such as urban run-off.

Marine mammals such as seals may also contribute some contamination, particularly when foraging in the area. However, the area is not considered to be a significant habitat for this group and so any contamination will be occasional and minimal and does not need to be taken into consideration in the placement of RMPs for this BMPA.

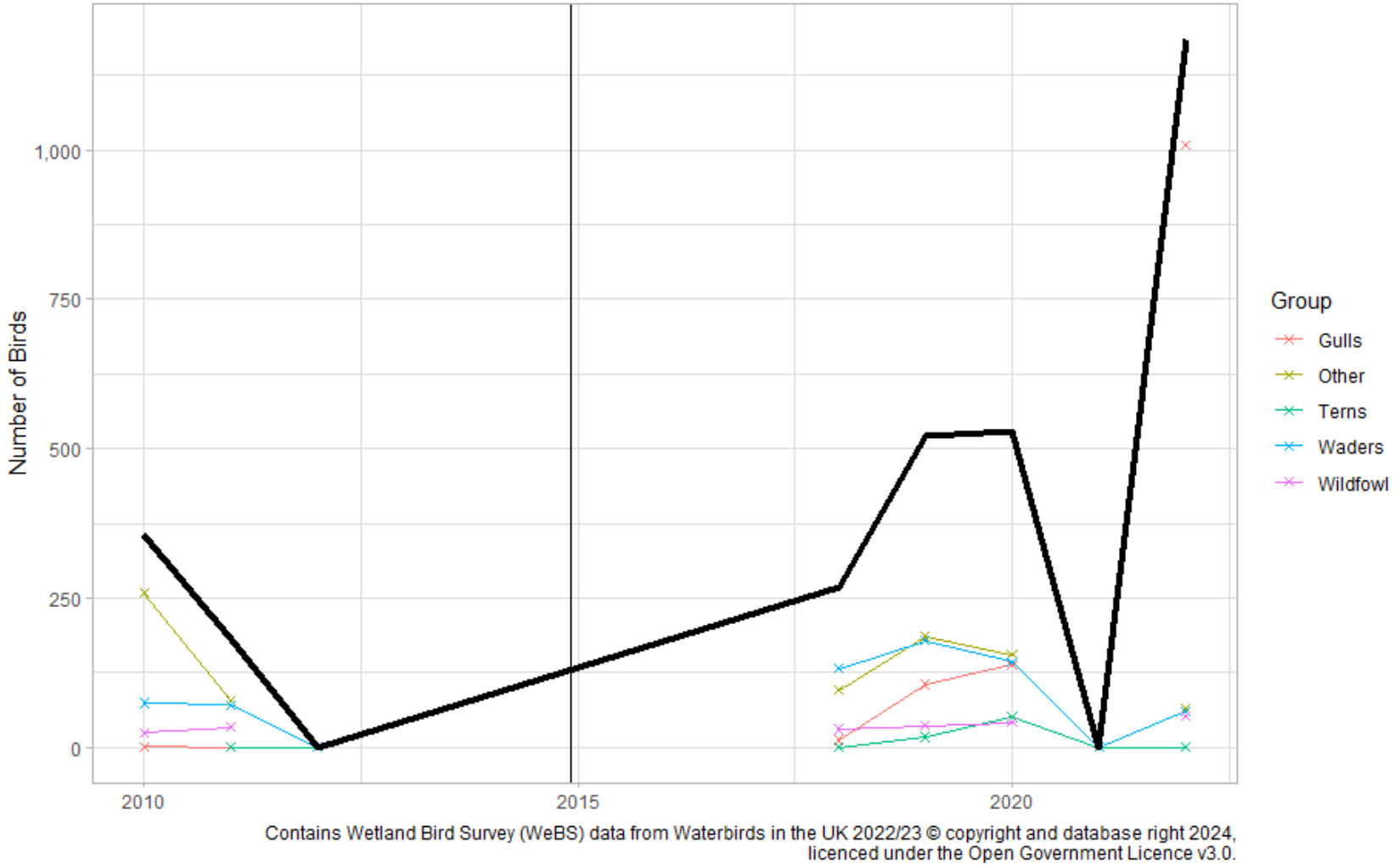

Figure 3.5 Temporal trend in waterbird counts from Tor Bay. Data from the Wetland Bird Survey (Austin et al.*, 2024). Black line indicates total number of birds.*

3.5 Boats and Marinas

The discharge of sewage from boats is a potentially significant source of contamination to the Brixham 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 2015 and 2022 Sanitary Surveys. Their geographical positions are shown in Figure 3.6.

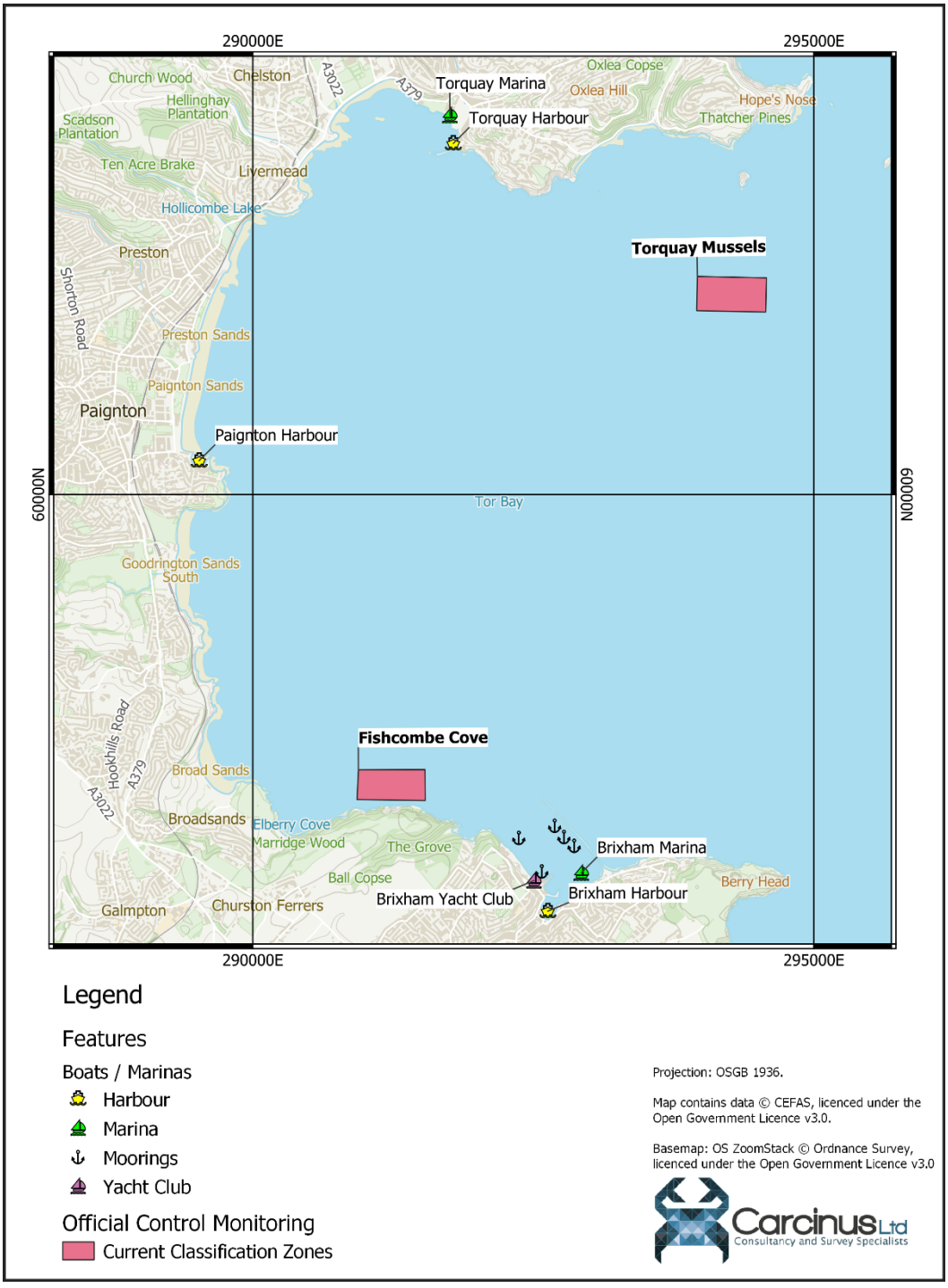

Figure 3.6 Locations of boats, marinas and other boating activities in the vicinity of the Brixham BMPA.

Brixham Harbour, on the southern side of Tor Bay, is one of the most significant fishing ports in England and Wales. In June 2024, 69 vessels <10 m and 62 vessels >10 m listed Brixham, Paignton and Torquay as their home port (gov.uk, 2024) (with >90% of these registered to Brixham). This is a slight reduction on the numbers listed in January 2022 and November 2014. Many of the vessels will be landing their catch to Brixham, but the majority of the fishing effort from these vessels (and therefore where the main risk of contamination occurs as this is where the boats spend most of their time) will be outside of Tor Bay and so will not cause significant levels of bacteriological contamination to the Brixham BMPA.

There are no commercial/merchant shipping ports within Tor Bay and so no merchant shipping is likely to enter the waters of the bay. Furthermore, these vessels are prohibited from making overboard discharges within 3 nautical miles of land, so even if they are present on occasion, no contamination would be expected.

The main marinas in the area for recreational craft are at Brixham and Torquay. Brixham Marina has 485 moorings and Torquay Marina has 440. This is the same as described in the 2015 and 2022 Sanitary Surveys. Neither marina has pump out facilities (the closest are at Plymouth, ~50 km west of Tor Bay. Satellite imagery suggests there are some areas of moorings inside the Brixham breakwater (but outside the main marina). Recreational vessels of a sufficient size to contain onboard toilets may make overboard discharges from time to time, particularly when moored outside of the marina or moving throughout the Bay. The *Fishcombe Cove* CZ is close to Brixham harbour and so may be exposed to some contamination, particularly in summer months when the numbers of vessels in the area will be at its highest. It is however impossible to accurately predict the timing or volumes of any contamination and so this contamination source cannot be reliably captured with an RMP. This situation is the same as described in both the 2015 and 2022 Sanitary Surveys.

No significant changes to the extent of boating activity within Tor Bay have occurred since the 2015 and 2022 Sanitary Surveys were published, and no update to the sampling plan is necessary on this basis.

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. During initial consultations, the EA stated that there have been no issues with misconnections within the catchment.

There is likely to be a minor impact associated with dog fouling along coastal paths and beaches, but this is not expected to be a significant source of contamination.

4 Hydrodynamics/Water Circulation

The Brixham BMPA is situated within Tor Bay, an embayment covering approximately 33 km². The CZs are located at the northern and southern end of the embayment, although the *Torquay mussels* CZ is located farther out (nearer the English Channel) (1.2 km from shore) than the *Fishcombe Cove* CZ. Both CZs are in entirely subtidal areas in ca. 10 m and 6 m of water, respectively.

There are no significant freshwater inputs to the bay and so tidal streams will be the dominating force of water circulation within Tor Bay. Outside of Tor Bay, tidal streams flood in a southward direction and ebb in a northward direction, roughly parallel with the coast. There are no studies modelling the tidal patterns within Tor Bay, although the 2015 Sanitary Survey notes that the tides run gently in an easterly direction for the majority of the tidal cycle, meaning that contamination sources to the north and west of each CZ will be of greater significance than those from the south and west.

5 Rainfall

A complete record of the rainfall data from the Brixham (#363148) monitoring station at NGR 91743 54994 was downloaded from the Environment Agency's hydrology data explorer[6]. This station was chosen as it is the closest monitoring station to the BMPA with records spanning dates preceding the publication of the 2015 Sanitary Survey Review. There is an additional station at Torbay Compton but data are only available from 2021 – Present. This monitoring station is approximately 1.7 km south of the *Fishcombe Cove* CZ and 6.5 km from the *Torquay Mussels* CZ. The data were subdivided into 2011 - 2015 (pre-sanitary survey) and 2015 – 2024 (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 data are summarised in and the rainfall levels per month are shown in Figure 5.1.

Table 5.1 Summary statistics for rainfall preceding and following the 2015 Sanitary Survey.

Period	Mean Annual Rainfall	Percentage Dry Days	Percentage Days Exceeding 10 mm	Percentage Days Exceeding 20 mm
2011 – 2015	822.76	44.952	31.891	18.429
2015 – 2024	1045.9	46.222	30.195	18.506

[6] Environment Agency's Hydrology Data Explorer. Available at: https://environment.data.gov.uk/hydrology/explore#/landing.

Archive Daily Rainfall from the Brixham (#363148) at NGR SX 91743 54994
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 months at the Brixham (#363148) monitoring station for the period (A) 2011 – 2015 and (B) 2015 - 2024.

The data show that annual rainfall within the vicinity of the Brixham BMPA is 200 mm greater on average each year between 2015-2024, than in 2011-2015. However, the percentage of dry days has increased slightly. Paired two-sample T-Tests indicated that there was no significant difference in the mean rainfall level per month between the two monitoring periods ($p = 0.69$). The wettest months continue to be October – February.

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 and number of spills would be expected to be greatest during this time. During initial consultation, the EA provided data suggesting that the area is receiving well over its long-term average of rainfall, coupled with driest months (generally occurring during Spring and Summer) on record. In 2023, the Teign and Torbay hydrological

catchments received 127% of their long term average rainfall level (of 1,173.75 mm p/a[7]). This will significantly contribute to urban and agricultural runoff as well as increasing bacterial levels in all freshwater inputs. Heavy rain after extended dry periods causes additional run off as the ground is too hard to absorb any rainfall so additional water runs off. Additional consideration should be given to contamination sources that increase with heavy rainfall, most notably for this review surface runoff and releases from intermittent discharges.

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 Brixham BMPA since 2015 are presented spatially in Figure 6.1 and summary statistics are presented in Table 6.1. No monitoring data earlier than 2015 was available to the authors of this review; only monitoring data freely available for download from the Cefas datahub has been used in this section. No additional verification of the data has been undertaken.

The datahub provides Official Control monitoring data for a total of two RMPs, both of which are sampled for mussels. Fishcombe SW Corner B082B, has been sampled since December 2015 (following the recommendations of the 2015 Sanitary Survey) and Torquay Mussels NW (B082C) has been samples since April 2022 (following the recommendations of the 2022 Sanitary Survey). Both RMPs are currently active. Neither RMP has recorded a value above 46,000 E. coli MPN/100 g but both have returned results above 4,600 MPN/100 g. The Fishcombe Cove SW B082B RMP has returned a higher maximum result than the Torquay Mussels NW B082C RMP. This result of 35,000 MPN/100 g triggered an Action State event in October 2019 (for more detail see Section 6.2), before sampling commenced at the Torquay Mussels NW B082C RMP. Limited inference can therefore be drawn from this single result. More detailed comparison of the monitoring data from each RMP is presented in subsequent paragraphs.

[7] Long Term Average (LTA) rainfall for the Teign and Torbay hydrological catchment is calculated over a wider area than the rainfall data recorded at the Brixham monitoring station which explains why the LTA is higher for the catchment than the average annual rainfall recorded over either the 2011 – 2014 or 2015 – Present periods.

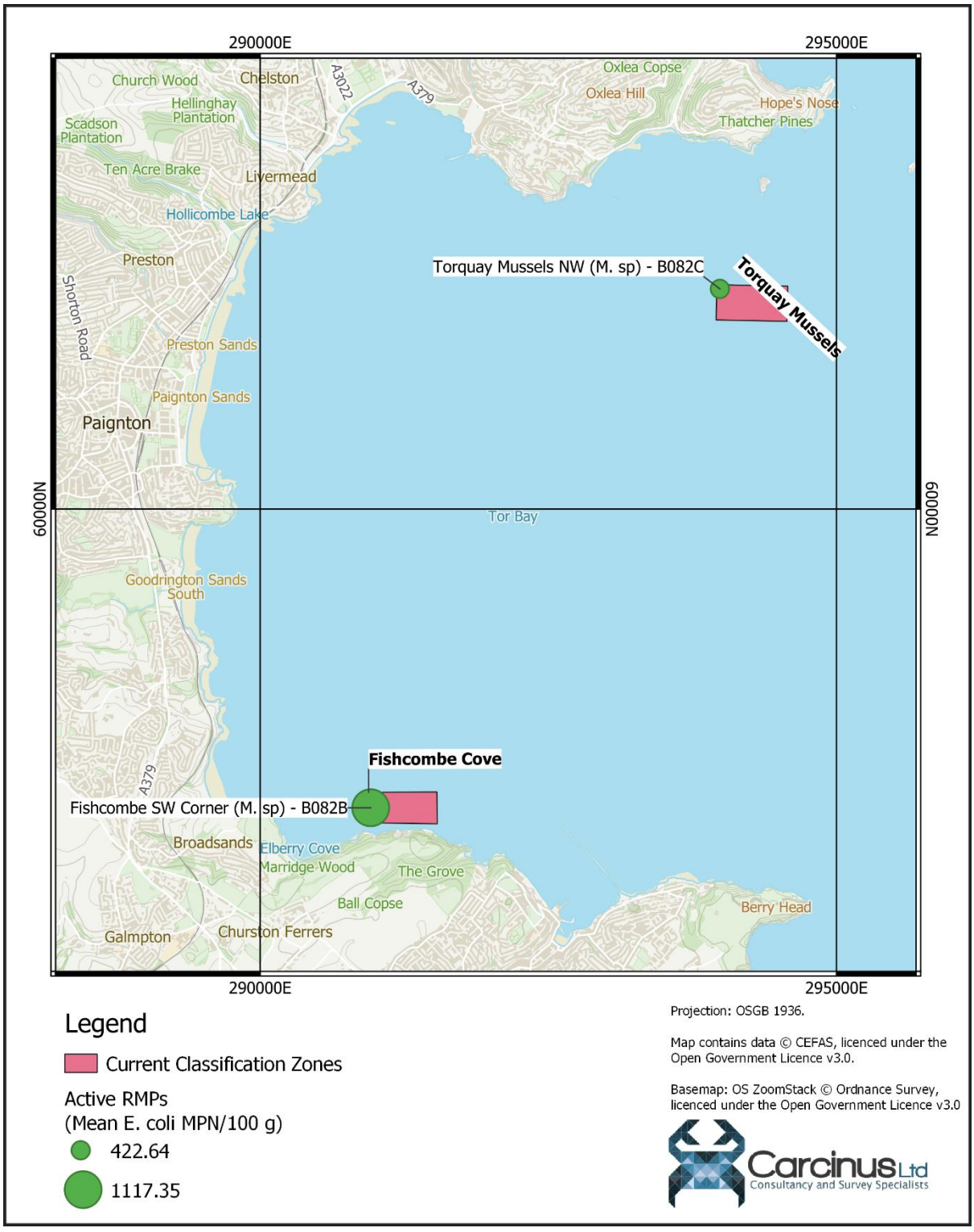

Figure 6.1 Mean E. coli results from Official Control monitoring at bivalve RMPs in the Brixham BMPA.

Table 6.1 Summary statistics from Official Control monitoring at bivalve RMPs in the Brixham BMPA.

RMP (Species)	NGR	Species	No.	First Sample	Last Sample	Mean	Median	Min Value	Max Value	% > 230	% > 4,600	% > 46,000
Fishcombe SW Corner (M. sp) - B082B	SX 9096 5741	Mussels	100	02/12/2015	20/05/2024	1117.35	120	18	35000	27.0	3.0	0.0
Torquay Mussels NW (M. sp) - B082C	SX 9399 6191	Mussels	33	25/04/2022	20/05/2024	422.64	20	18	7900	15.2	3.0	0.0

Figure 6.2 presents a box and violin plot of *E. coli* monitoring at RMPs within the Brixham BMPA. 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 two RMPs. Significance was taken at the 0.05 level[8]. All statistical analysis described in this section was undertaken in R (R Core Team, 2021).

The median value at the Torquay Mussels NW B082C RMP is lower than that of the Fishcombe Cove SW Corner B082B RMP, and the variability in the data is also smaller. However ANOVA tests carried out on this monitoring data suggested that the differences were not significantly different (p = 0.43).

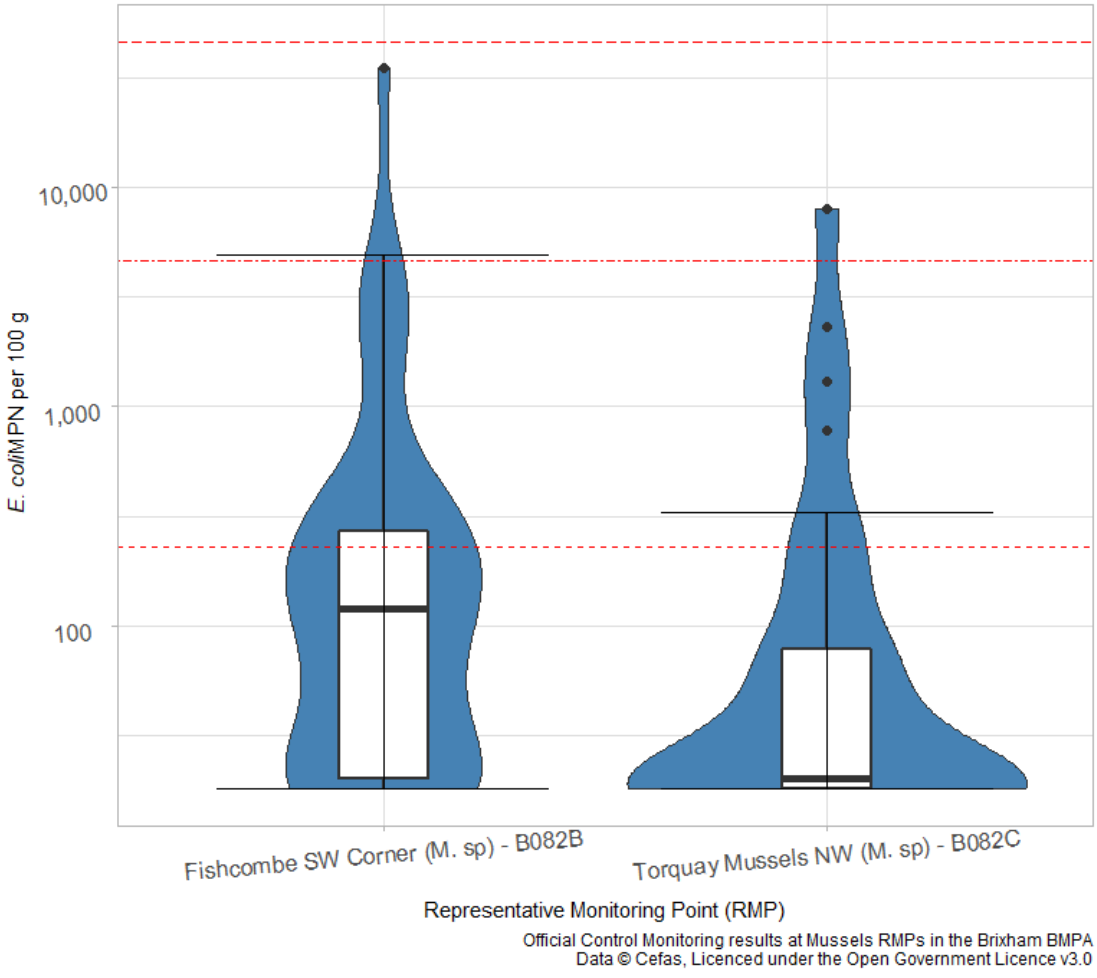

Figure 6.2 Box and violin plots of E. coli monitoring at mussel RMPs in the Brixham BMPA. Central line indicates median value, box indicates lower-upper quartile range and whisker indicates minimum/maximum values, excluding outliers (points >1.5 x the interquartile

[8] A p-value of <0.05 means that there is a greater than 95% probability that the observed differences between the groups didn't occur by chance.

range). 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 Brixham BMPA are shown for mussels in Figure 6.3.

The monitoring data show that the long term trend in monitoring data from the Fishcombe SW Corner RMP is relatively stable, with the loess model falling below the 230 MPN/100 g threshold for the entire duration of sampling. The loess model from the Torquay Mussels NW RMP falls below that of the Fishcombe SW Corner RMP, although this RMP has only been sampled for approximately two years compared with approximately ten years' monitoring in the case of Fishcombe SW Corner. Occasional results above the 4,600 MPN/100 g class B limit have occurred at both RMPs throughout the timeseries.

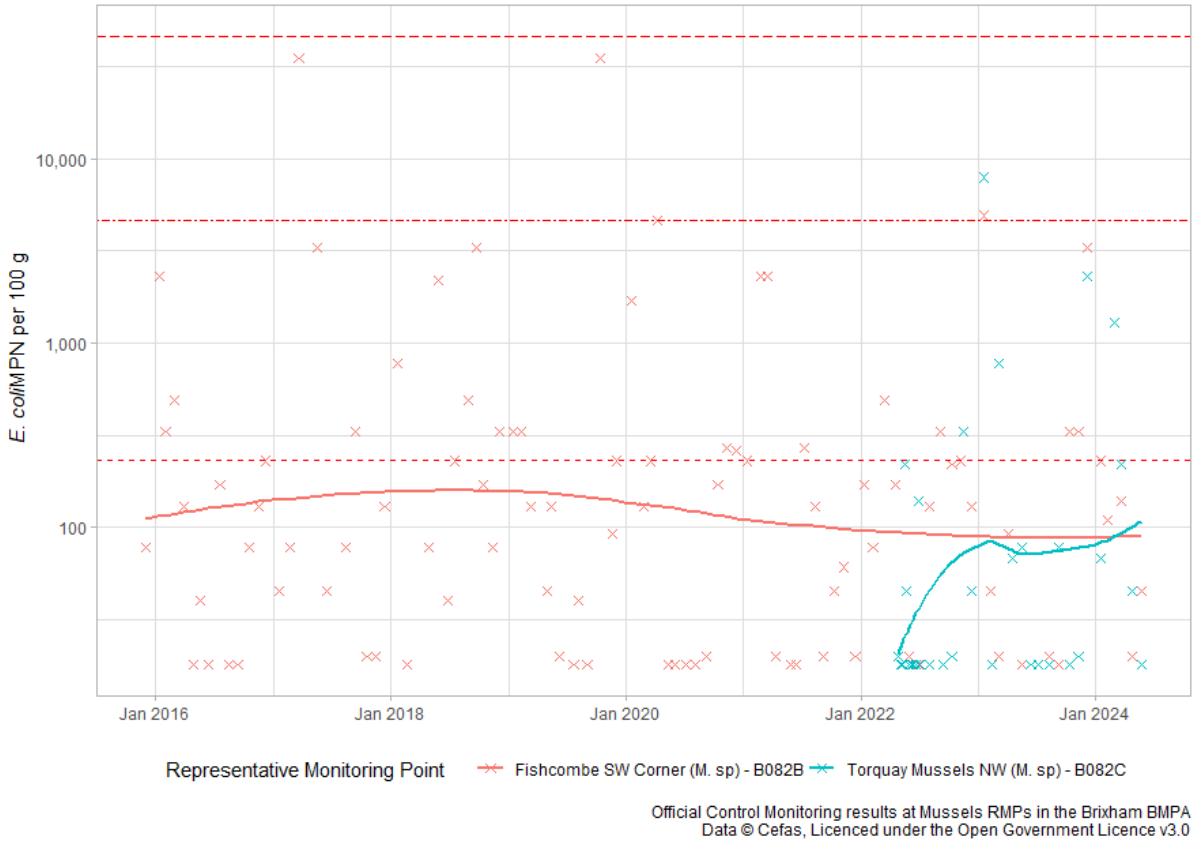

Figure 6.3 Timeseries of E. coli monitoring at mussel RMPs sampled in the Brixham BMPA since 2015. Scatter plots are overlaid with a loess model fitted to the data. Horizontal lines indicate classification thresholds at 230, 4,600 and 46,000 E. coli MPN/100 g.

6.1.3 Seasonal patterns of results

Seasonal patterns of *E. coli* flesh concentrations at RMPs in the Brixham BMPA were investigated and shown for mussels 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.

Monitoring results in summer appear to be lower than at other times of year (likely due to reduced rainfall levels in these months). However no significant differences ($p > 0.05$) in the monitoring data were observed, either when the data from each RMP was pooled or when each RMP was considered respectively.

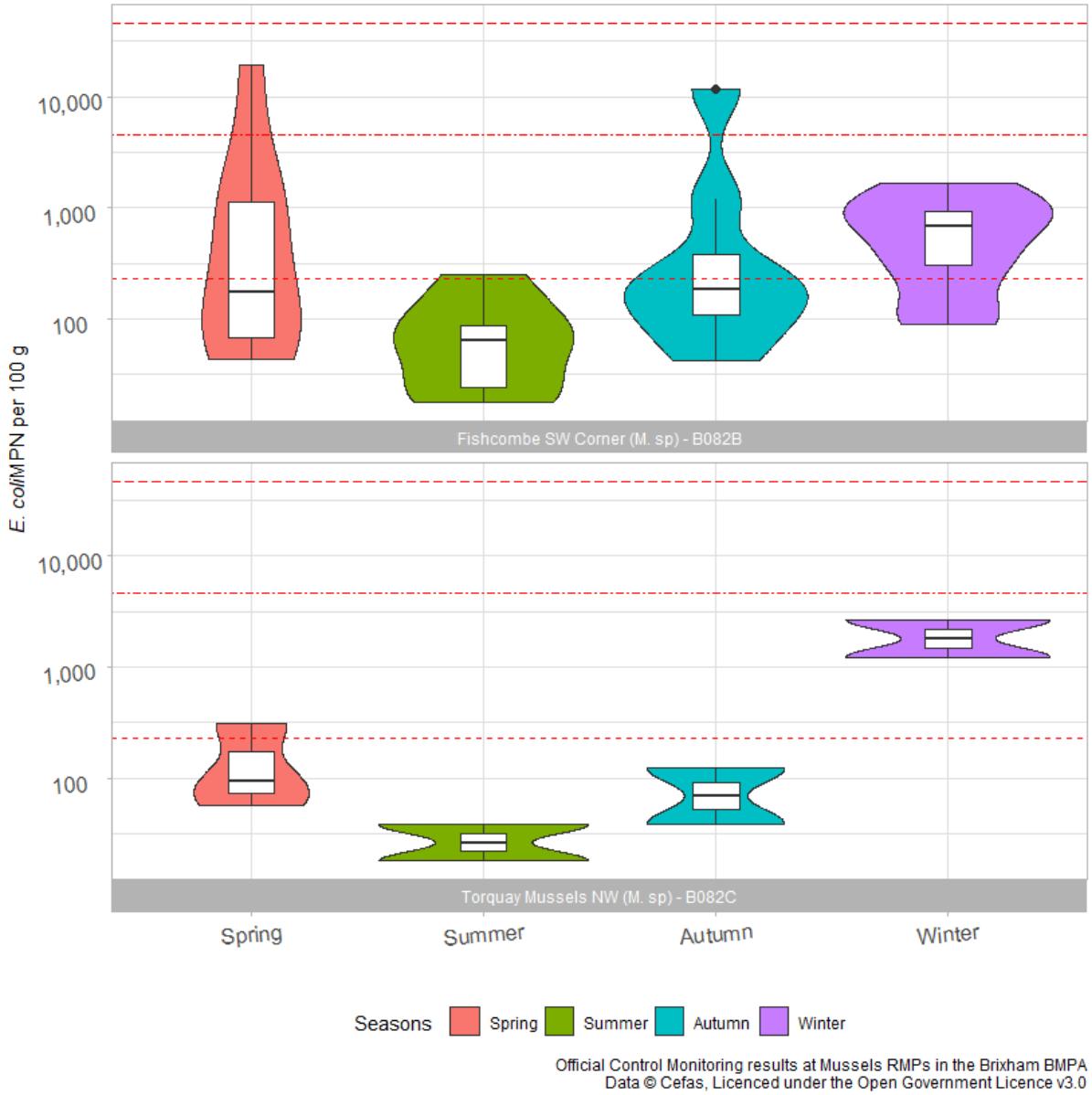

Figure 6.4 Box and violin plots of E. coli levels per season at mussel RMPs sampled within the Brixham BMPA. Horizontal lines indicate classification thresholds at 230, 4,600 and 46,000 MPN/100 g respectively.

6.2 Action States

Since the publication of the 2015 Sanitary Survey, the following Action States have been triggered within the Brixham BMPA:

- On 15 October 2019, a result of 35,000 *E. coli* MPN/100 g was recorded at the Fishcombe SW Corner (B082B) RMP. There were no other high results in the area. Action State sampling on 21 October and 28 October 2019 returned results of 45 *E. coli* MPN/100 g and 780 *E. coli* MPN/100 g respectively. No subsequent monthly sampling results were included in the Action State report. There were no grounds to waive the result in accordance with the required waiver criteria (a one-off pollution/rainfall event or failure of the sampling protocol).
- On 18 January 2023, a result of 7,900 *E. coli* MPN/100 g was recorded at the Torquay Mussels NW B082C RMP. A result of 4,900 MPN *E. coli* MPN/100 g was recorded at the Fishcombe SW Corner B082B RMP, which triggered a 'Cause for Concern Investigation' State. Action State sampling on 25 January, 31 January and 06 February 2023 returned results of 270, 45 and <18 *E. coli* MPN/100 g respectively. Subsequent monthly sampling returned results of <18 *E. coli* MPN/100 g on 13 February and 780 *E. coli* MPN/100 g on 06 March 2023. There were no grounds to waive the result in accordance with the required waiver criteria (as described above).
- The result of 780 *E. coli* MPN/100 g recorded at the Torquay Mussels NW B082C RMP on 06 March 2023 also triggered an Action State. The result from the Fishcombe SW Corner B082B RMP on the same date was 20 *E. coli* MPN/100 g. Action State sampling on 14 and 20 March 2023 returned results of <18 and 130 *E. coli* MPN/100 g respectively. Subsequent monthly sampling in April – August 2023 returned results ranging from <18 *E. coli* MPN/100 g to 78 *E. coli* MPN/100 g. There were no grounds to waive the result in accordance with the required waiver criteria (stated above).

The investigations that followed the above Action State events did not identify exceptional (above the 1-in-5 year threshold) rainfall or pollution incidents linked to water company assets (although there were periods of prolonged rainfall).

6.3 Bathing Water Quality Monitoring

The status of designated bathing waters is of relevance to this assessment. There are nine EC Bathing Waters within Tor Bay (Figure 6.5). The bathing waters closest to the CZs (Meadfoot & Beacon Cove in the north, Broadsands and Breakwater Beach in the south) were all classed as 'Excellent' in 2023. Hollicombe and Paignton Sands were classed as 'Good' and Goodrington as 'Sufficient'. The Bathing Waters within Tor Bay have generally been classed as Good or Excellent in recent years. It should be noted that bathing water sampling only occurs during the bathing water season, which falls within the summer period (May to September inclusive) and therefore may not represent the potential for increased faecal loading during winter months.

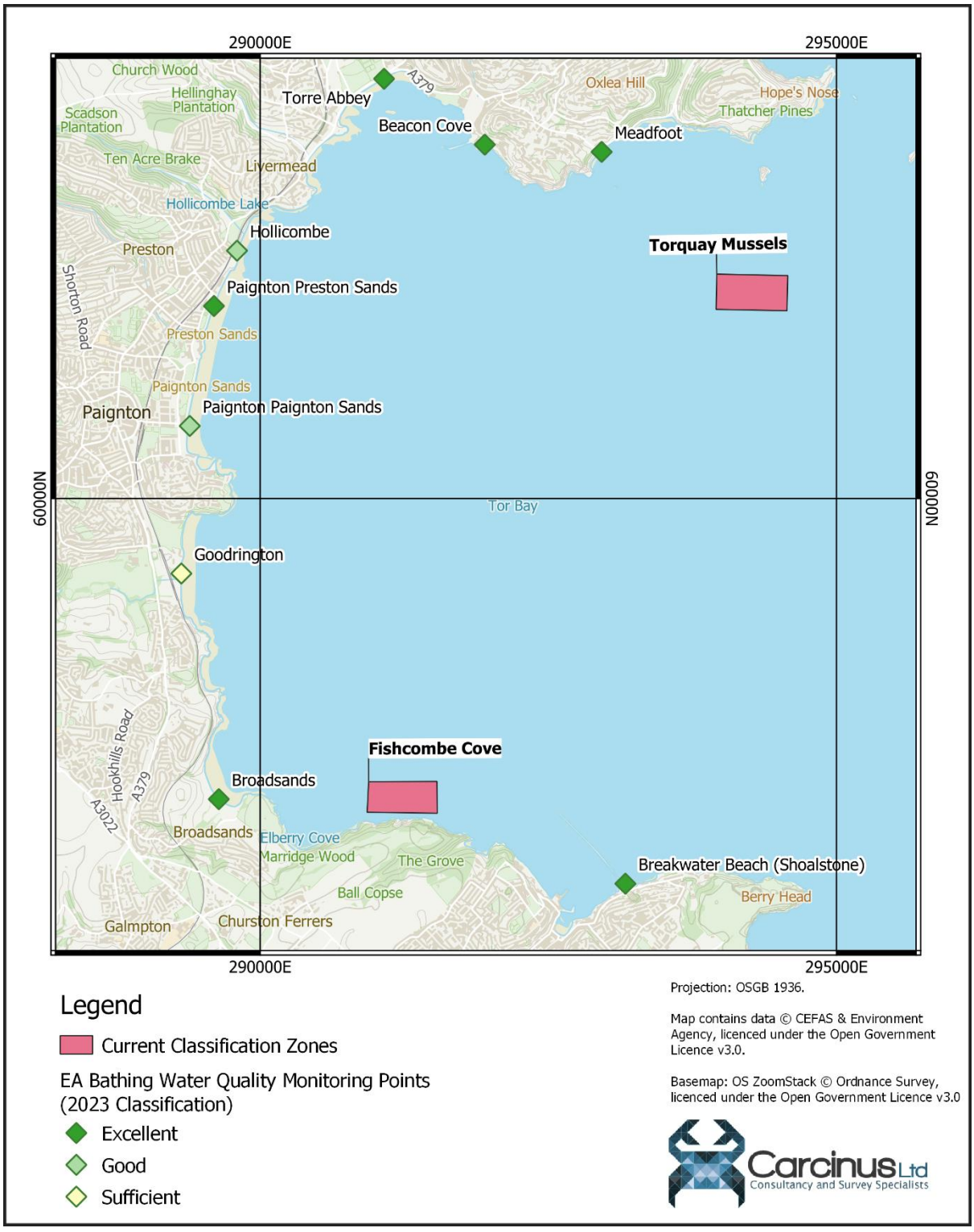

Figure 6.5 Location and 2023 Classification of EC Bathing Waters within Tor Bay.

7 Conclusion and overall assessment

The Brixham BMPA is located within Tor Bay on the south coast of Devon, England. The BMPA is currently classified for mussel harvesting with two distinct aquaculture sites, one in the north of the bay and one in the south. During consultations, the LEA confirmed that

although current harvesting activity is "*sporadic and low volume,* continued classification of existing zones is required.

The results of the 2021 Census were compared to that of the 2011 Census to give an indication of changes in human population within the catchment since the publication of the 2015 Sanitary Survey. The data suggest that the human population increased by 6.65% between 2011 and 2021, with an increase in population density within the three main urban conurbations in the catchment, Torquay, Paignton and Brixham. Urban associated run-off is considered to be a potentially significant source of contamination within this catchment as the entire coastline of the BMPA is flanked by urban or suburban land cover. The area also experiences a 50% increase in population size during summer months due to tourism.

There are no significant continuous water company owned discharges within Tor Bay itself, the closest is Torbay (Brokenbury Quarry) STW, on the south side of Berry Head. This is a large discharge with a consented Dry Weather Flow of >42,000 m^3/day, although it employs UV disinfection. The outfall is located ~4 km from the nearest CZ *(Brixham, Fishcombe Cove)*. Intermittent discharges within Tor Bay are more likely to contribute contamination to the CZs, particularly the *Torquay Mussels* CZ in the north of the Bay. Consultation responses from the EA indicate that reducing the number of spills from intermittent discharges within Tor Bay is a priority for the upcoming AMP 8 period (2025 – 2030). When this is achieved, levels of bacteriological contamination within the BMPA may reduce. The presence of intermittent discharges near shellfish CZs should still be taken into consideration in any updated sampling plan.

Land cover maps show that much of the catchment is urban or suburban, with the only areas of farmland (arable and pastural) present behind the urban areas. Some agricultural run off may be carried into the BMPA via the watercourses in the area, although the level of contamination will be small in comparison to other sources of contamination, such as intermittent discharges.

Waterbird counts suggest that Tor Bay contains a relatively small population of waterbirds, but that the five-year average count has increased. Marine mammals may also contribute a small amount of diffuse contamination, but in general the impact from wildlife is expected to be minimal.

There is no merchant shipping activity within Tor Bay. The closest commercial port is at Plymouth so no impact from that source of pollution is expected. A significant fishing fleet operates out of Brixham, but the size of this fleet is similar to that described in the 2015 and 2022 Sanitary Surveys and the majority of this fishing effort will be outside of Tor Bay itself. There are approximately 900 berths for recreational vessels within Tor Bay (unchanged from the 2015 Sanitary Survey), as well as some areas of moorings near Brixham. There are no pump out facilities within Tor Bay and so some contamination from recreational vessels of a sufficient size to contain on board toilets may occur from time to time, particularly when moored overnight outside of the main marinas or when moving through the Bay. However, both aquaculture sites are marked on nautical charts so vessels will most likely navigate

around them to avoid being fouled. No changes to the sampling plan are required on this basis as the situation is unchanged from that described in the 2015 and 2022 Sanitary Surveys.

Monitoring data is available from a total of two RMPs within the Brixham BMPA. No significant differences were observed in the data, but there was a pattern of slightly lower results in summer than at other times of year. This suggests that contamination associated with winter months (November - February) (higher run-off and more spills from intermittent discharges caused by higher rainfall) dominate in this BMPA.

Based on the information available, there does not appear to be any significant knowledge gaps to indicate a shoreline survey would be of benefit.

8 Recommendations

8.1 Mussels

Brixham, Fishcombe Cove

This CZ covers an area of 0.16 km² and has been classified since the 2015 Sanitary Survey. That report identified that the main sources of contamination affecting this zone (run off and intermittent discharges) originates from the west due to patterns of tidal circulation within Tor Bay, and recommended placing an RMP at the inshore western end. There is no evidence to suggest that patterns of tidal circulation have changed, and so the existing RMP will continue to be representative of the main sources of contamination. The LEA confirmed at secondary consultation that the lease area boundaries have not changed since the 2015 Sanitary Survey was published. No change to the RMP is therefore required and the Fishcombe SW Corner B082B RMP should be used moving forward.

Torquay Mussels

This CZ covers an area of 0.18 km² and is located on the northern side of Tor Bay (1.2 km from shore), farther offshore than the *Fishcombe Cove* CZ. The 2022 Sanitary Survey recommended placing the RMP at the north-west corner of the CZ to capture contamination from shoreline sources, including the intermittent discharges just off Torquay. The main contamination sources affecting this zone are unchanged, and so it is recommended that the existing RMP be retained moving forward as it continues to be representative of the main sources of contamination (runoff and intermittent discharges).

9 General Information

9.1 Location Reference

Production Area	**Brixham**
Cefas Main Site Reference	M082
Ordnance survey 1:25,000	Explorer OL20
Admiralty Chart	26

9.2 Shellfishery

Species	Culture Method	Seasonality of Harvest
Mussels (*Mytilus* spp.)	Cultured	Year Round

9.3 Local Enforcement Authority(s)

Name	**Torbay Council – Community Safety** Town Hall Castle Circus Torquay Devon TQ1 3DR
Website	https://www.torbay.gov.uk
Telephone number	01803 208025
E-mail address	Food.safety@torbay.gov.uk

9.4 Sampling Plan

*Table 9.1 Proposed sampling plan for the Brixham 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
Fishcombe Cove	B082B	Fishcombe SW Corner	SX 9096 5741	50° 24.385'N 03° 32.148'W	Mussels	Winch/hand	Winch/hand	Mussels	10 m	Monthly
Torquay Mussels	B082C	Torquay Mussels NW Corner	SX 9399 6191	50° 26.85'N, 03° 29.67'W	Mussels	Winch/hand	Winch/hand	Mussels	10 m	Monthly

10 References

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Appendices

Appendix I. Event Duration Monitoring Summary for 2023

Site Name	Permit Reference	Storm Discharge Asset Type	Outlet Discharge NGR	Total Duration (hrs) all spills prior to processing through 12-24h count method	Counted spills using 12-24h count method	Long-term average spill count
BARTON HILL ROAD CSO	201940	SO on sewer network	SX 9008 6623	60.47	64	40.333
BEACH ROAD (MIDDLE)	201524	Storm discharge at pumping station	SX 9306 6553	Discharge no longer operational as an outfall		
BEACH ROAD (UPPER)	201525	Storm discharge at pumping station	SX 9306 6553	Discharge no longer operational as an outfall		
BEACH ROAD PSCSO/EO	201609	Storm discharge at pumping station	SX 9306 6553	Discharge no longer operational as an outfall		
BEACON HILL	200222	SO on sewer network	SX 9183 6322	3.97	21	14.25
BERRY HEAD ROAD CSO	202705	SO on sewer network	SX 9327 5667	0	0	4.75
BOLTON STREET CSO	201010	SO on sewer network	SX 9397 5458	118.03	71	58
CLENNON VALLEY PUMPING STATION	201396	SO on sewer network	SX 8939 6040	1.36	3	0.375
EDEN PARK CSO	202704	SO on sewer network	SX 9217 5532	110.54	37	17.25
FIRLANDS ROAD 1 CSO	201937	SO on sewer network	SX 9153 6654	0.57	1	2.333
FIRLANDS ROAD 2 CSO	201936	SO on sewer network	SX 9153 6654	0	0	0.8
FLEET WALK NO.1 CSO	200224	SO on sewer network	SX 9165 6341	32.76	22	17
FLEET WALK NO.2 CSO	200225	SO on sewer network	SX 9174 6338	31.55	23	19.375
ILSHAM MARINE DRIVE CSO	200227/CS/01	SO on sewer network	SX 9493 6358	0	0	2
ILSHAM ROAD CSO	200228	SO on sewer network	SX 9375 6391	0	0	0.5

Site Name	Permit Reference	Storm Discharge Asset Type	Outlet Discharge NGR	Total Duration (hrs) all spills prior to processing through 12-24h count method	Counted spills using 12-24h count method	Long-term average spill count
ILSHAM ROAD CSO	200223	Storm discharge at pumping station	SX 9039 6304	196.94	73	26
ILSHAM VALLEY PUMPING STATION	200977	Storm discharge at pumping station	SX 9494 6358	2003.87	140	104.625
KINGS DRIVE CSO	200229	SO on sewer network	SX 9068 6371	1.08	1	1.125
LITTLEGATE ROAD CSO	201011	SO on sewer network	SX 8893 6092	0.8	3	7
MARLDON (CHURSCOMBE CROSS) PS	201586	Storm discharge at pumping station	SX 8712 6258	73.57	40	19.5
OLD MILL ROAD	200230	SO on sewer network	SX 9022 6316	1468.31	111	62.375
OXEN COVE PUMPING STATION	200524	Storm discharge at pumping station	SX 9250 5658	0.37	2	33.875
PAIGNTON GREEN TANK PSCSO/EO	200240	SO on sewer network	SX 8984 6036	3.77	5	4.625
PRESTON GREEN ATTENUATION TANK	200239	Storm discharge at pumping station	SX 8987 6185	5.21	10	17.25
TORBAY (BROKENBURY) STW INLET PS/	201073	Storm discharge at pumping station	SX 8891 5912	8.03	9	4

Centre for Environment
Fisheries & Aquaculture
Science

www.cefas.defra.gov.uk

EC Regulation 854/2004

CLASSIFICATION OF BIVALVE MOLLUSC PRODUCTION AREAS IN ENGLAND AND WALES

SANITARY SURVEY REPORT

Brixham

January 2015

Sanitary Survey - Classification Zone

Torbay – 2022

Document No. – J0591/22/02/21

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About Carcinus Ltd

Carcinus Ltd is a leading provider of aquatic environmental consultancy and survey services in the UK.

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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Environmental Consultancy

Carcinus provides environmental consultancy services for both freshwater and marine environments. Our freshwater and marine environmental consultants provide services that include scoping studies, Environmental Impact Assessment (EIA) for ecological and human receptors, Habitats Regulations Appraisal (HRA), Water Framework Directive (WFD) assessments, project management, licensing and consent support, pre-dredge sediment assessments and options appraisal, stakeholder and regulator engagement, survey design and management and site selection and feasibility studies.

Ecological and Geophysical Surveys

Carcinus delivers ecology surveys in both marine and freshwater environments. Our staff are experienced in the design and implementation of ecological surveys, including marine subtidal and intertidal fish ecology and benthic ecology, freshwater fisheries, macro invertebrate sampling, macrophytes, marine mammals, birds, habitat mapping, River Habitat Surveys (RHS), phase 1 habitat surveys, catchment studies, water quality and sediment sampling and analysis, ichthyoplankton, zooplankton and phytoplankton.

In addition, we provide aerial, topographic, bathymetric and laser scan surveys for nearshore, coastal and riverine environments.

Our Vision

"*To be a dependable partner to our clients, providing robust and reliable environmental advice, services and support, enabling them to achieve project aims whilst taking due care of the sensitivity of the environment*"