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Chichester Harbour – Pilsey Sands Provisional RMP Assessment

Cefas Document Control

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Fishery

An application was received for the extension of the current shellfish hygiene classification of wild clams (*Tapes* spp.) and cockles (*Cerasoderma edule*) to the south of Thorney Island in Chichester Harbour and within an existing native oyster (*Ostrea edulis*) production area. The requested classification area is bounded by lines drawn from 50°48.439'N 00°55.293'W to 50°47.517'N 00°56.210'W to 50°47.664'N 00°54.648'W to 50°48.195'N 00°54.931'W and mean high water.

Harvesting is to be undertaken by hand-picking from wild beds on the intertidal shore and the application identified this would occur year-round. However, according to the Chichester sanitary survey report, the Southern IFCA imposed a closed season for cockles from February to April inclusive (Cefas, 2013). There was no closed season for clams. All gathering of wild stocks must be undertaken between 08:00 hrs and 16:00 hrs. We recommend this be confirmed with the IFCA. The annual harvested yield is estimated to be between 2 and 4 tonnes. The IFCAs may close any wild fishery at any time for reasons of stock preservation. Minimum landing sizes apply to Manila clams (35mm), hard clams (63mm), palourdes (40mm) 23 and cockles (23.8mm) within the Southern IFCA district, but none are specified within the Sussex IFCA district. Clam dredging is not allowed anywhere within the harbour.

Sources of Faecal Contamination

Figure 1 shows the location of potentially significant sources of contamination to the application area, including all sewage discharges within 2 km of the application area and other significant discharges located within the catchment taken from the Environment Agency permit database (June 2015). Those discharges greater than 5 m³/day to watercourses within 10 km of the application area are listed in Table 1.

Table 1: Significant water company continuous sewage discharges of over 5 m³/day to watercourses within 10 km of the area requiring classification

Name	Dry weather flow m ³ /day	Treatment type	NGR	Receiving environment
Bosham STW	1,221	UV Disinfection	SU8088001940	Chichester Harbour Channel
Chichester WWTW	13,524	UV Disinfection	SU8387003750	Chichester Harbour Channel
Thornham WWTW	6,565	Biological Filtration	SU7582004730	Chichester Harbour Via Little Deep

Data from Environment Agency

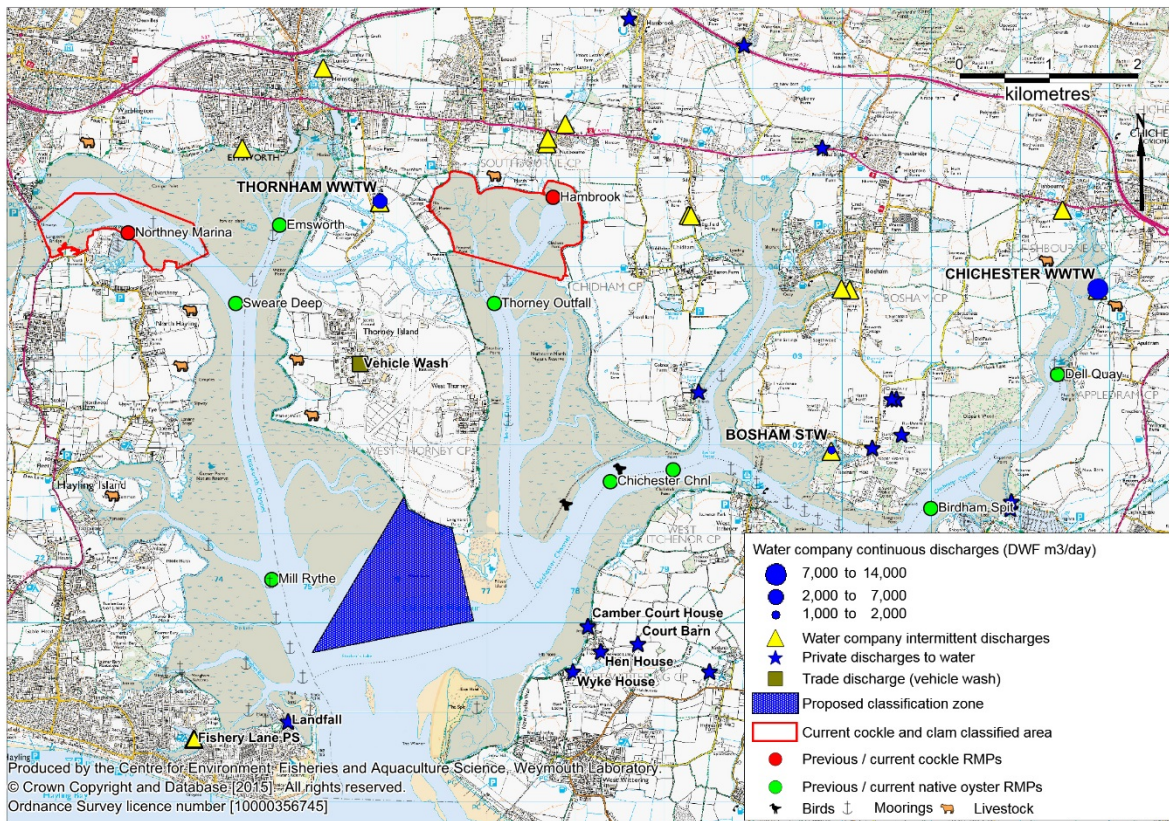


Figure 1: Potential sources of contamination to the application area

There are no water company owned continuous discharges within 2 km of the application area. However, there are relatively large water company continuous discharges upstream to Thorney and Chichester Channels to the east of the application area. Secondary treated effluent from Thornham WWTW discharges to the head of Thorney Channel, and the UV disinfected effluents from Chichester WWTW and Bosham STW discharge to the Chichester Channel. These inputs, along with smaller private discharges in the vicinity will contribute to the overall level of faecal contamination reaching the application area during ebb tides. To the west of the application area, the Emsworth Channel brings upstream sources of pollution from further up catchment, and also transports faecal material from land run-off. Historical bacterial monitoring indicates higher concentrations at upstream ends of the channels in Chichester Harbour due to greater numbers of pollution sources. There are 5 private sewage discharges and one trade discharge within 2 km of the applications area. These are all small and as such will make minor contributions to water quality locally.

There is one water company owned intermittent discharge within 2 km of the application area. Fishery Lane PS is located on Hayling Island approximately 1.7 km to the south west of the

application area. No event duration data was available for this discharge, but it should be noted that storm overflows discharge untreated sewage when in operation. There are also several intermittent discharges within the Chichester Harbour catchment as a whole. These will likely contribute to the overall level of faecal contamination that enters the harbour following heavy rainfall. The storm overflow associated with Chichester WWTW receives UV disinfection which would reduce the microbiological load it delivers to Chichester Channel.

The application area itself largely consists of intertidal sandflats and mudflats. The land use surrounding Thorney Island consists of a mix of urban and arable crops, with some pasture land, including on the eastern shore of Hayling Island and on Thorney Island. During the shoreline survey, undertaken in 2013, livestock were observed in several places including the northern end of Hayling Island and Thorney Island (Cefas, 2013). There are small watercourses draining these pasture areas which may transport contamination of livestock origin into the harbour following periods of rainfall and be of intermittent significance in the locality of the application area.

Pilsey Island is a Natural England Local Nature Reserve and an RSPB reserve, and is an important site for passage of migrating birds and for wintering waders in the area. Contamination from birds will be diffuse, but concentrated around Pilsey Island, adjacent to Pilsey Sands.

Boating is widespread within Chichester Harbour, with several moorings, marinas and yacht clubs located throughout. To the east there is the Chichester Yacht Basin discharge located in the Chichester Channel. There are several potential sources of diffuse faecal contamination from boats in the vicinity of the application area, with numerous moorings immediately to the west in Emsworth Channel, and several sailing clubs locally at Hayling Island and Emsworth. Occasional discharges are likely from larger boats, but the timings and locations of these discharges will be unpredictable.

Classification and monitoring history

The classification history for cockles, native oysters and clams in Chichester Harbour is shown in Table 1.

Table 2: Classification history of the area from 2005 to present

Bed name	Species	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Prinstead	Cockles	-	-	-	-	-	-	-	-	C	C	C
Birdham Spit	Native oysters	B	B	C	C	B	B	B	B	-	-	-
Chichester Channel	Native oysters	B-LT	B-LT	B-LT	B-LT	B-LT	B-LT	B-LT	B-LT	-	-	-
Cobnor	Native oysters	-	-	-	-	-	-	-	-	B-LT	B-LT	B-LT
Dell Quay	Native oysters	-	-	-	-	-	-	-	-	C	C	C
Emsworth Channel	Native oysters	-	-	-	-	-	-	-	-	B-LT	B-LT	B-LT
Mill Rythe	Native oysters	B-LT	B-LT	B-LT	B-LT	B-LT	B-LT	B-LT	B-LT	-	-	-
Swear Deep	Native oysters	B-LT	B-LT	B-LT	B-LT	B-LT	B-LT	B-LT	B-LT	-	-	-
Thorney	Native oysters	B-LT	B	C	C	C	B	B	B	B	B-LT	B
Prinstead	<i>Tapes spp.</i>	-	-	-	-	-	-	-	-	C	C	C

The proposed harvesting area lies within the existing Emsworth Channel production area for native oysters, which has maintained a long-term B classification since its inception in 2013. Prior to 2013, the production area in which the proposed harvesting area lies was called Mill Rythe, which also maintained a long-term B classification. Since 2013, Prinstead (for both Cockles and *Tapes spp.*) and Dell Quay (for native oysters) have been classified as C. These areas are towards the top of Thorney Channel and Chichester Channel respectively.

Table 2 shows the summary statistics for the shellfish flesh monitoring results for Chichester Harbour for the last 10 years, and Figure 1 shows the locations of the sampling sites.

Table 3: Summary statistics for *E. coli* monitoring results (MPN/100g) by RMP – 2005 to 2015

Sampling Site	Species	No.	Date of first sample	Date of last sample	Geometric mean	Min.	Max.	% over 230	% over 4,600	% over 46,000
Northney Marina	Cockle	21	17/06/14	01/10/15	830.9	130	35,000	90.5	4.8	0.0
Hambrook	Cockle	16	10/07/14	30/09/15	1,292.8	78	7,900	93.8	12.5	0.0
Emsworth	N.oyster	21	03/02/14	13/10/15	693.0	78	35,000	76.2	14.3	0.0
Mill Rythe	Native oyster	95	10/10/05	19/11/13	269.4	<20	5,400	49.5	2.1	0.0

Results from native oysters are not directly comparable to those obtained from cockles and clams due to the differences in the uptake and retention of contaminants, between the species. Therefore, the native oyster results should only be considered indicative of the general water quality in the area. These summary statistics show that the levels of *E. coli* found in shellfish flesh are generally higher towards the top of the channels, where there are a larger number of contamination sources draining into the harbour. Results over the past year at Emsworth were higher than observed over the course of eight years at Mill Rhythe, with the peak result much higher. However, it is not clear whether this is due to changes either in monitoring point or environmental conditions, or whether it merely within normal variation for the area.

Chemical contaminants

There is a military base located on Thorney Island. Depending on its current use and its surface run-off arrangements, it may be a potential source of chemical contamination. No other obviously significant sources of chemical contamination have been identified.

Water circulation

The proposed harvesting area lies on the Pilsey Sands sandflat between the main Chichester Channel to the east and the Emsworth Channel to the west. During the ebb tide, the majority of the water from both channels moves southward carrying contamination from the wider catchment. Both channels flow past Pilsey Sands and converge at the south western corner of the sand flats before flowing through the opening of Chichester Harbour which is approximately 1 km from the proposed harvesting area. Conversely, on the flood tide, water moves northward into the harbour from the Solent.

Pilsey Sands is relatively sheltered from the flow from Chichester Channel by Pilsey Island, which forms a barrier at the east of the sand flats. It is therefore likely that the majority of the water that passes over Pilsey Sands during an ebb tide originates from Emsworth Channel and during the flood tide from the Solent.

Recommendations regarding provisional RMP and production area

Provisional production area

It is recommended that the provisional production area (classification zone) is the area within lines drawn from 50°48.439'N 00°55.293'W to 50°47.517'N 00°56.210'W to 50°47.664'N 00°54.648'W to 50°48.195'N 00°54.931'W and extending to mean high water springs.

Provisional RMP

The most significant local sources of contamination for the application area are likely to be from the Emsworth Channel given that water movement around Pilsey Island reduces the impact from the Chichester Channel. During an ebb tide, inputs from the Emsworth Channel will be of most significance, with lesser contributions from the Chichester Channel. During a flood tide, water will move northwards over the Pilsey Sands area, bringing contamination from the south and west, including any inputs from boats locally, the intermittent discharge at Hayling Island and the small watercourses also on Hayling Island. Surface water outfalls draining the southern shore of Thorney Island identified during the shoreline survey for the sanitary survey in 2013 (Cefas, 2013) will also discharge along channels across the flats. Therefore, in order to best reflect all these sources, it is recommended that the RMP be located at the southwest corner of the application area, nearest Emsworth Channel.

The following sampling criteria should apply at clam/cockle RMPs:

- *C. edulis* may be sampled to represent cockles and *Tapes* spp. The species sampled should be of a market size.
- If only clams (*Tapes* spp.) are to be harvested then *Tapes* spp. may be sampled instead of *C. edulis*.
- Alternatively after a period of sampling both species in parallel, and review of the data by Cefas/FSA, *Tapes* spp. may also be deemed representative of both cockles and the aforementioned clam species in these locations.
- Sampling should be via hand digging, and a tolerance of 100m applies to allow repeated sampling of wild stocks.
- The sampling frequency should be monthly and on a year round basis. If a more rapid classification is required in the first instance, a provisional classification can be awarded on the basis of 10 samples taken not less than one week apart.
- Should the LEA determine that employing a local gatherer to collect samples will be the best practical option, the LEA should consult with the FSA to ensure that all the appropriate requirements can be met. Should such a strategy be pursued, the LEA should contact the FSA to propose gatherer supplied samples. Proposals must comply

with the official control sampling protocols, ensure adequate training and supervision is provided, and be documented accordingly.

Table 4: Provisional Sampling Plan

Production Area	Chichester
pRMP name	Pilsey Sands
NGR	SZ 75133 99732
Latitude	50°47.538'N
Longitude	00°56.124'W
Species	Wild clams (<i>Tapes</i> spp.) and cockles (<i>Cerasoderma edule</i>)
Collection Method	Hand
Sampling tolerance	100 m
Sampling frequency	Monthly sampling
Provisional production area boundary	Area bounded by lines drawn from 50°48.439'N 00°55.293'W to 50°47.517'N 00°56.210'W to 50°47.664'N 00°54.648'W to 50°48.195'N 00°54.931'W and mean high water springs.

(Lat/Long datum WGS84)

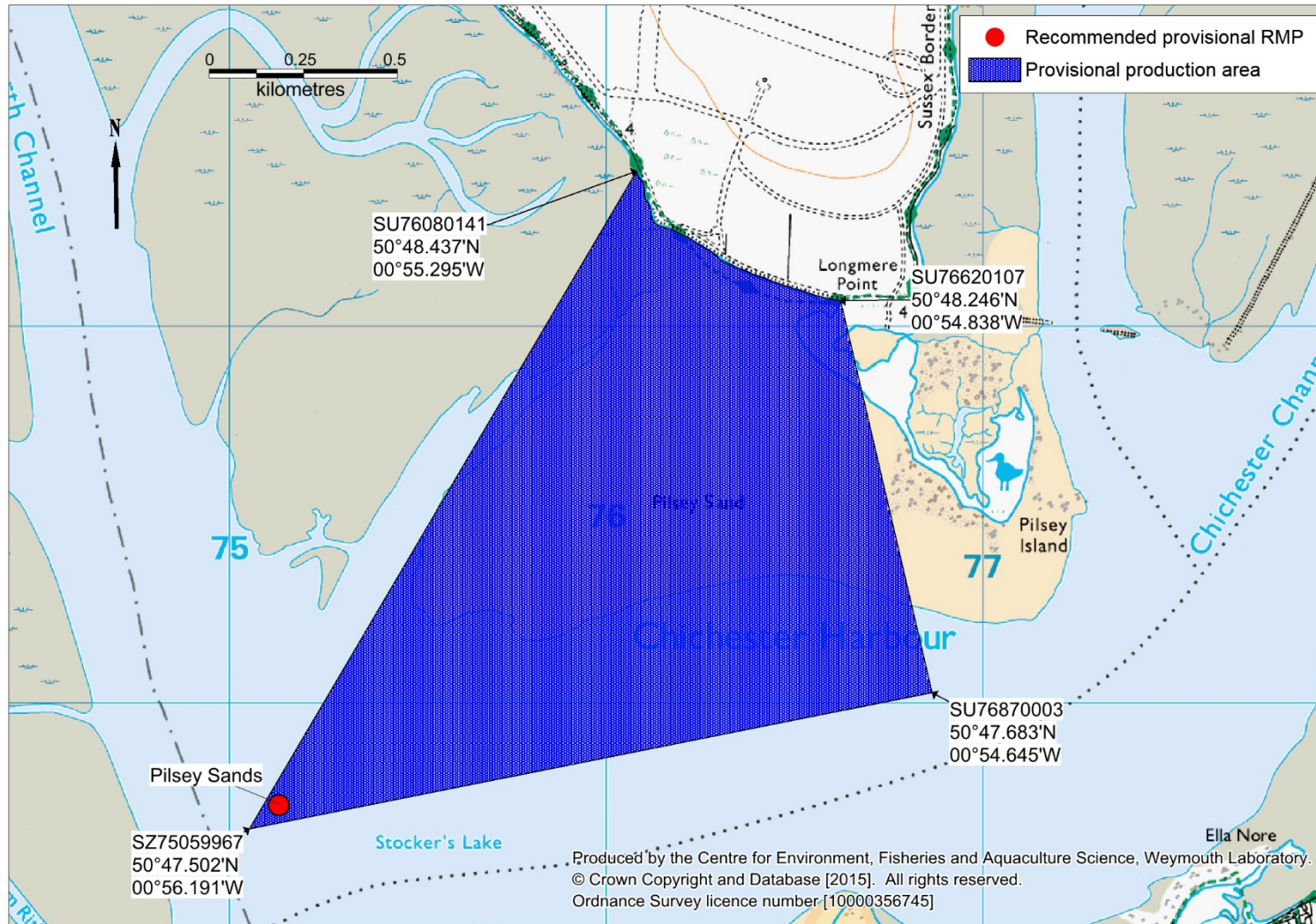


Figure 2: Recommended provisional production area RMP

References

Cefas, 2013. Sanitary survey of Chichester Harbour. Cefas report on behalf of the Food Standards Agency to demonstrate compliance with the requirements for classification of bivalve mollusc production areas in England and Wales under EC Regulation No. 854/2004.



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