EC Regulation 854/2004

CLASSIFICATION OF BIVALVE MOLLUSC PRODUCTION AREAS IN ENGLAND AND WALES

ADDENDUM TO SANITARY SURVEY REPORT

Portland Harbour - Dorset
West Shore Palourdes

2011

Cover photo: looking north-east across the Palourde beds at Wyke.

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STATEMENT OF USE: This report presents a sanitary assessment of identified beds of Palourdes (*Tapes decussatus*) in Portland Harbour. Its primary purpose is to demonstrate compliance with the requirements for classification of bivalve production areas, laid down in EC Regulation 854/2004 of the European Parliament and of the Council. The Centre for Environment, Fisheries and Aquaculture Science (Cefas) undertook this work on behalf of the Food Standards Agency (FSA).

DISSEMINATION: Food Standards Agency, Weymouth Port Health Authority, Environment Agency.

RECOMMENDED BIBLIOGRAPHIC REFERENCE: Cefas, 2011. Sanitary Survey of Portland Harbour (Dorset). 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 Regulation (EC) No 854/2004.

CONTENTS

1. INTRODUCTION

1.1 LEGISLATIVE REQUIREMENT

In order to protect public health, under EC Regulation 854/2004[1], shellfish harvesting and relaying areas are classified on the basis of monitoring of levels of faecal indicator organisms (*Escherichia coli* in the EU) in shellfish. As part of these regulations, a sanitary survey is required to determine a representative microbiological monitoring programme which is suitably protective of public health.

Portland Harbour has been subject to two sanitary surveys in recent years (Cefas, 2008 and Cefas, 2009). The current sanitary survey was prompted by an application to harvest palourde clams within Portland Harbour, and provides a sanitary assessment and sampling plan for this species within two areas on the western shore of the harbour. The assessment is based on the previous sanitary surveys of the harbour and is intended to be an addendum to these sanitary survey reports, incorporating details of the new fishery, and updating other information where appropriate. In this case a further shoreline survey was not undertaken as it was thoroughly surveyed in 2007 and 2008 under both wet and dry conditions.

1.2 GENERAL DESCRIPTION OF AREA

Portland Harbour is located on the South Dorset coast, between the town of Weymouth to the north and the Isle of Portland to the south. The harbour is a semi-artificial deep-water tidal basin, enclosed by man-made breakwaters and protected from the prevailing southwesterly winds by Chesil Beach. Tidal exchange is restricted to three ship channels through the breakwaters and a channel at Ferrybridge that links the harbour to the Fleet, a large saline lagoon. Formerly an important naval base, the harbour now supports a commercial port (Portland Port). The harbour is very popular for a range of water-based recreational activities including angling, sailing, diving, power boating, sail boarding and kite surfing.

[1] EC Regulation 854/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific rules for the organization of official controls on products of animal origin intended for human consumption.

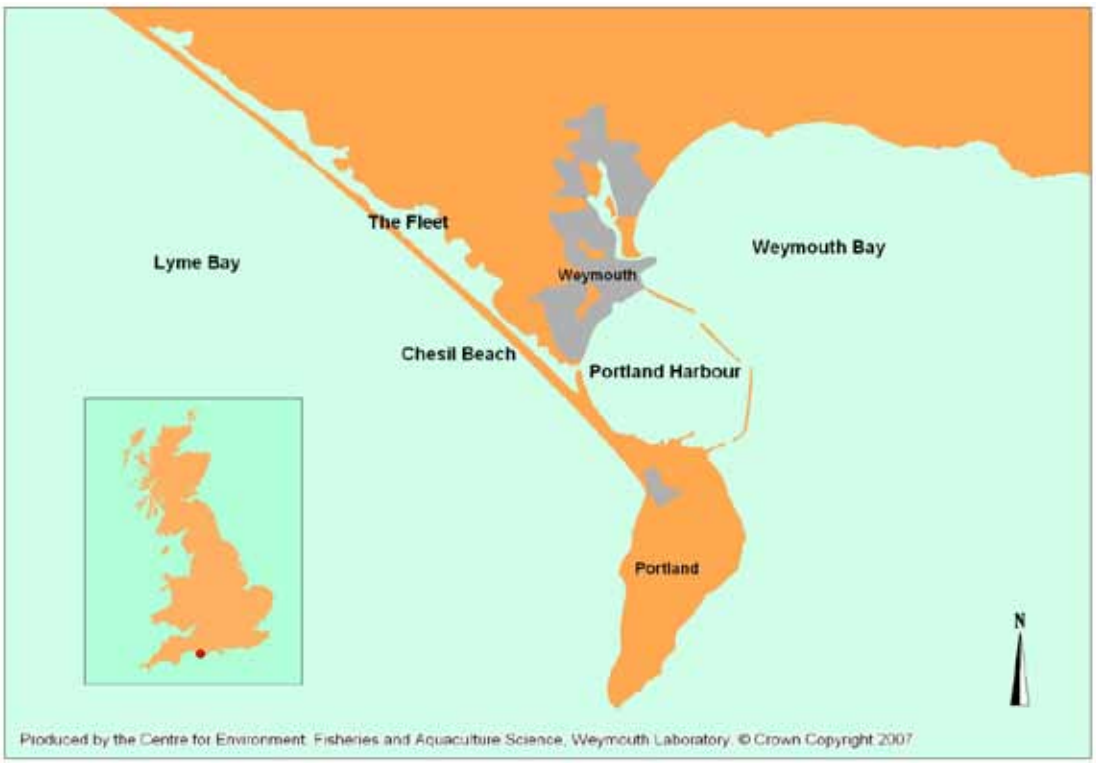

Figure 1.1: Location map of Portland Harbour

The harbour covers an area of approximately 10km^2 and has a maximum depth of 16m below chart datum (LAT). The tidal range in the harbour is relatively small and varies from 0.6 to 2.0m on mean neap and spring tides respectively. The temperature regime and sheltered nature of the harbour accounts for the presence of several marine species beyond the typical northern limits of their range and provides good growing conditions for shellfish.

2. SHELLFISHERY

2.1 SPECIES, LOCATION AND EXTENT

Portland Harbour is currently classified B for the harvest of Pacific oysters and mussels within the zones shown in Figure 2.1, which also shows the two geographically distinct areas from which the classification of palourde clams (*Tapes decussatus*) has been requested, one lying off Wyke (0.13 km^2) and the other off Hamm Beach (0.10km^2). There is also a several order within the harbour, where scallops were formerly cultured, and the culture of Pacific and native oysters is planned, but it is not currently classified for any of these species. The projected annual production of palourdes from these areas as indicated on the application form is around 800kg. Since the application was made, a preliminary B classification was issued for palourde clams within the zone shown in Figure 2.1, as mussels and scallops historically have consistently shown class B (bordering on class A) compliance within Portland Harbour.

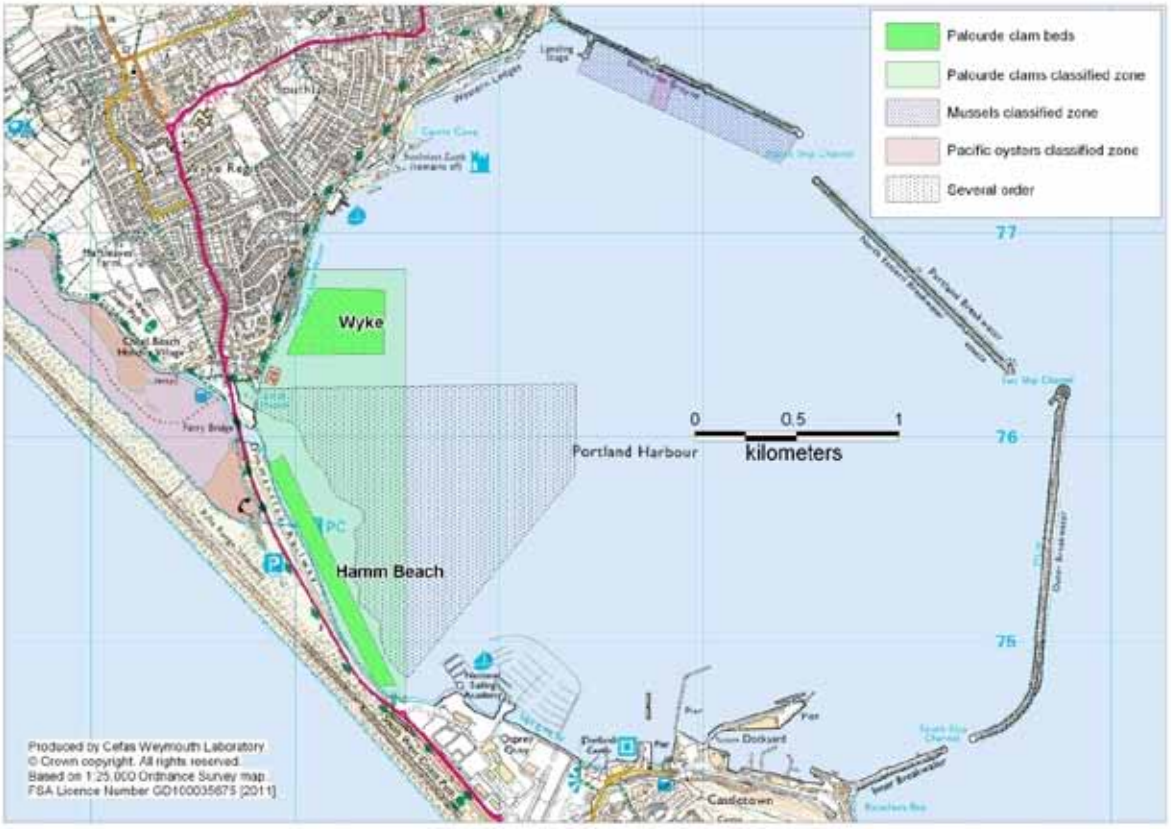

Figure 2.1. Palourde beds in Portland Harbour

Typical habitats for this species are the lower shore and shallow sublittoral zones, in sand, muddy gravel, or clay substrates, where they bury themselves to a depth of about 15cm, possibly deeper. Therefore it is likely that this species has a wider distribution throughout the area. A second application to harvest palourde and Manila clams within the Fleet has been recently received (July 2011), but this will be considered separately as the previous sanitary surveys upon which this addendum is based did not investigate the Fleet in detail. Palourde clams can tolerate

temperatures from 5-27°C, and their preferred salinity is from 25-35ppt (Laing and Child, 1996), so they may occur throughout the shallower areas of Portland Harbour.

2.2 GROWING METHODS AND HARVESTING TECHNIQUES

The palourde clam stocks are wild, and are hand gathered by divers/snorkelers.

2.3 SEASONALITY OF HARVEST, CONSERVATION CONTROLS AND DEVELOPMENT POTENTIAL

The LEA applicant indicated that the fishery is only operated in the months of June to September inclusive, although it is possible that palourdes may be gathered at any time of the year as there is no closed season for this species. Sampling is only normally possible during the season in which the fishery is in operation, and a seasonal classification would suffice. No conservation controls apply to this species when harvested by hand.

3. OVERALL ASSESSMENT

AIM

This section presents an overall assessment of sources of contamination, their likely impact on the proposed palourde fishery in the harbour, reviews any changes to impacting pollution sources since the previous sanitary surveys, and considers patterns in levels of contamination observed in water and shellfish samples taken in the area under various programmes. It is summarised from selected information presented in the recent Portland Harbour sanitary survey reports (Cefas, 2008 & 2009), which contain more detailed information on climate, sources of contamination, bacteriological sampling results, hydrodynamics etc, and supplemented with new information as appropriate. Its main purpose is to inform the sampling plan for the microbiological monitoring and classification of palourdes within Portland Harbour, and the main features of significance discussed in this section are shown in Figure 3.1.

SHELLFISHERY

The area for which classification has been requested includes two beds of palourdes, one which lies off Wyke and one off Hamm Beach. The LEA specifically requested that only one monitoring point (RMP) that is representative of contamination in both beds is identified due to resource considerations. The areas identified may only represent a small part of the area in which this species may occur within Portland Harbour, but it has been confirmed by the LEA that the harvesters are only interested in exploiting the two areas indicated on the application.

As a result of the collection method, assistance from the harvesters will probably be required for the collection of samples of this species. The period in which they operate is limited to the months of June to September inclusive, although they may be able to gather samples outside of this period on request.

There are no suitable surrogate species which could be easily sampled in this area and that would adequately indicate levels of contamination within palourdes.

Bagged palourdes may not survive prolonged periods outside of their usual habitat, and may uptake contamination to different levels compared to those living within the substrate. Also, it is uncertain whether bagged shellfish would be left unmolested here given the numbers of walkers and windsurfers along these shores. Therefore, it is concluded that any sampling should be of naturally occurring palourdes gathered by harvesters, under the supervision of the LEA officer.

Since this application was made a preliminary B classification has been awarded on the basis of previous monitoring results for mussels and scallops within the western half of Portland Harbour between 2002 and 2007 and ongoing mussel sampling results from the farms by the breakwaters (Cefas, 2009, Table 6.1). Nevertheless, some sampling of palourdes should be undertaken during the season in which the fishery is in operation to maintain this classification. The classification protocols indicate a minimum of 10 samples per year are required in order for a classification to be awarded, and for seasonal classifications these should be taken at regular intervals throughout the period for which the fishery is classified and the two months before the season opens.

POLLUTION SOURCES

FRESHWATER INPUTS

No rivers discharge to Portland Harbour. Three small surface water outfalls were recorded during a shoreline survey of the Wyke Regis area. These were observed to discharge relatively small volumes of moderately contaminated (4,950 to 7,450 *E. coli* cfu/100ml) runoff during wet weather. Although minor, and only discharging intermittently, they are in relatively close proximity to the clam bed by the Wyke shore, and at times there may be a small localised 'hotspot' of contamination in their vicinity, and this should be considered when assigning the location of the RMPs.

Several small surface water outfalls were also observed within the Portland Port area, but none of these were flowing at the time of the shoreline survey of this area, which was undertaken in dry weather conditions (23/01/2008) but they were not checked under wet conditions. It is likely that there are also small surface water outfalls draining the areas of hard standing at the new sailing academy at Osprey Quay. Their impacts on the clam beds are anticipated to be minor, and the southern end of the clam bed at Hamm Beach will be most vulnerable to these.

There are several freshwater inputs to the Fleet, the catchment area of which is predominantly agricultural. Any contamination from these would be carried into Portland Harbour as the tide ebbs.

HUMAN POPULATION

The town of Weymouth borders the north western shore of Portland Harbour. The town of Fortuneswell lies behind Portland Port, on the southern shore of the harbour, so the adjacent land is relatively densely populated. Weymouth and Portland District had a resident population of ~64,000 at the time of last census (2001). Significant population increases occur in the area during the summer months due to influxes of tourists.

SEWAGE DISCHARGES

Sewage from Weymouth and Portland is treated at Weymouth sewage treatment works (STW) and biologically treated effluent is discharged to Chesil Cove in Lyme Bay from an outfall 1.3km off Chesil Beach. Consequently, there are no significant continuous sewage discharges directly into Portland Harbour. There are a number of intermittent sewage discharges (combined sewer overflows (CSOs) and sewage pumping stations (SPSs)) that discharge directly in the harbour in the event of a storm or emergency spill. Of those listed in the previous Portland Harbour sanitary survey report, three of the four overflow discharges at Portland Port are no longer in use (Merchants North and South CSO's and Castletown CSO).

Table 1. Number of spill events from intermittent discharges to Portland Harbour by quarter, 2009 (new data from Wessex Water, received 2011)

		Number of spills recorded in 2009			
Discharge name	**Location**	**Q1**	**Q2**	**Q3**	**Q4**
Castle Cove SPS	SY 6765 7755	0	1	2	2
Hillcrest Road SPS	SY 6729 7721	0	0	0	0
Doncaster Road CSO	SY 6713 7701	2	0	1	0
Ferrybridge SPS	SY 6659 7623	0	0	0	0
Victoria Square SPS*	SY 6850 7450	4	0	3	9

Spill duration for these events was only recorded to the nearest 12 hours. All these spill events lasted for less than 12 hours, apart from two from Victoria Square SPS in quarter 4, one of which lasted <24 hours and one of which lasted <36 hours. Therefore it is concluded that impacts from intermittent discharges are likely to be of most significance within the port area, although occasional spills occur at Castle Cove and Doncaster Road. The total number of spills (16) recorded for Victoria Square SPS is of potential concern when viewed against the Environment Agency design standard for discharges where improvements are required to the microbial quality of shellfish waters. The standard states that the frequency of significant independent (>50m^3) spills should be limited to 10 per annum on average (over 10 years) (Environment Agency, 2003).

There are several small continuous sewage discharges to the Fleet but due to their size and distance from the harbour they are unlikely to represent a significant source of bacterial contamination of shellfisheries in the harbour, although they may have some impact within the Fleet.

AGRICULTURE

There is no farmland immediately adjacent to Portland Harbour. The Fleet and has an agricultural catchment and diffuse faecal inputs from farm animals (predominantly sheep and cattle) and slurry spreading may impact on bacterial water quality in this water body. It is unlikely however that farm animals represent a major source of bacterial contamination of shellfisheries within Portland Harbour, although they will add to background levels of contamination within the Fleet.

BOATS

Portland Harbour is a commercial port offering access for vessels of up to 20m draft in the outer harbour (Weymouth Bay outside of the breakwaters) and up to 12m draft in the inner harbour. The port typically has over 300 commercial vessel calls (i.e. vessels over 50m length over all) per year. In addition, there are around 84 registered fishing boats operating from Weymouth and Portland, although the majority of these boats are based in Weymouth Harbour.

Portland Harbour and the immediate area are a very popular sailing venue for visiting and resident yachts. A 600-berth marina has been recently constructed at Osprey Quay, where sewage pumpout facilities are available. Seasonal (April to October) small boat moorings are located off Castle Cove, just to the north of the clam beds off Wyke, and at Osprey Quay, just to the east of the southern end of the clam beds at Hamm Beach. There is a therefore a risk of bacterial contamination in the harbour from the discharge of sea toilets, despite the existence of a byelaw prohibiting the discharge of any matter into the harbour. Numbers of yachts and cruisers in overnight occupation within the harbour will be much higher during the summer months.

Portland Harbour will be hosting the sailing events for the Olympic Games in 2012, and there may be a temporary increase in pollution risk during these events due to the large number of visitors expected. The LEA should consider increased sampling frequency during this period on a precautionary basis if harvesting of clams should continue through this period.

WILDLIFE

Bird species commonly observed throughout the year in Portland Harbour and its vicinity include cormorants and various species of gulls. Maximum counts of herring and black-headed gulls in the harbour in 2005 were 2,500 and 1,070 respectively. The harbour is of limited value to breeding birds due to a lack of suitable nesting sites, although a few pairs of seabirds breed on the northeastern breakwater. Small numbers of wildfowl overwinter in the harbor. The Fleet lagoon supports much larger numbers of wintering wildfowl, with numbers peaking at over 10,000 during December, and could be a source of faecal contamination of shellfisheries in the harbour in the winter months. It can therefore be concluded that birds represent a relatively minor source of diffuse contamination directly to the harbor, but more significant impacts may potentially arise from birds overwintering in the Fleet.

DOMESTIC ANIMALS

Dogs are exercised along the shore of Portland Harbour between Castle Cove and Chesil Beach Visitor Centre and dog faeces are a potential source of diffuse contamination to the area, possibly slightly more so at the clam beds off Wyke.

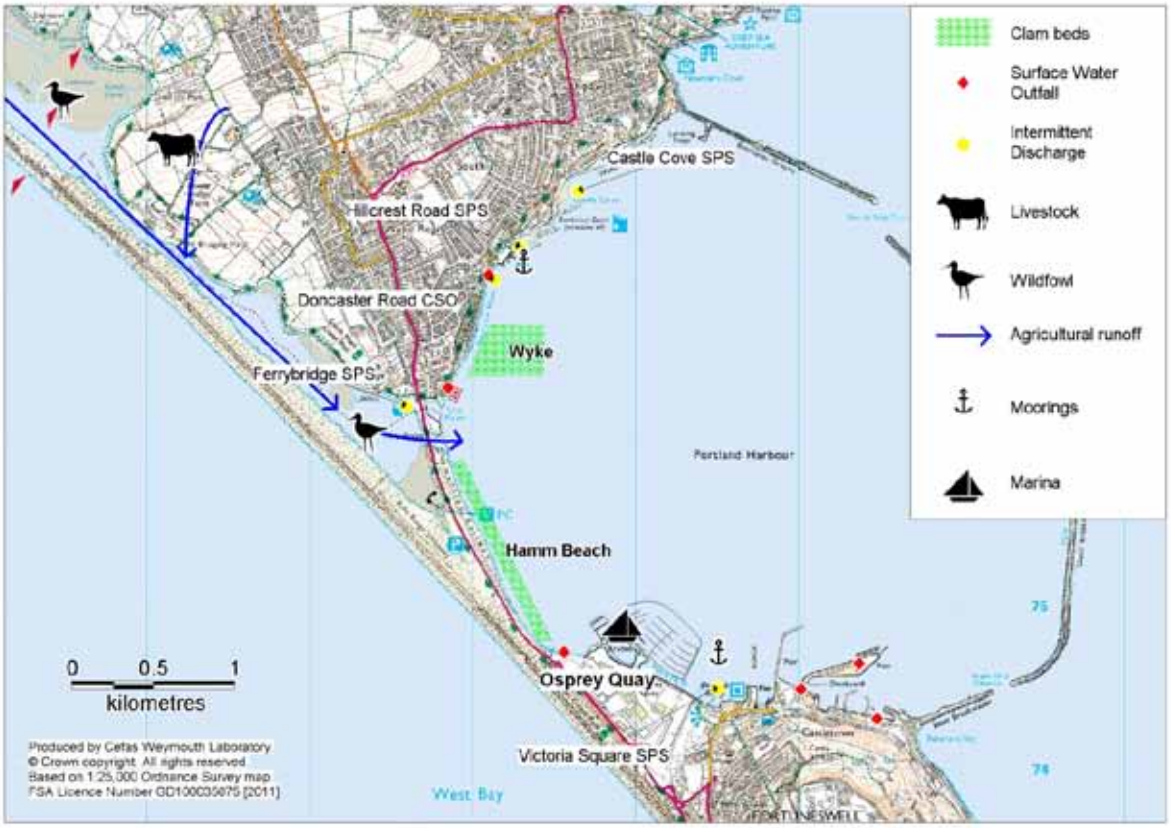

Figure 3.1 Potential sources of microbial contamination to clam beds in Portland Harbour

METEOROLOGY

Winds in the harbour are predominantly in a west or south westerly direction and the strongest winds nearly always blow from these directions. Rainfall is highest on average from October to December so rainfall related bacterial inputs are expected to be highest during this period.

HYDRODYNAMICS

Tidal flows within the harbour are predominantly anticlockwise, although there are clockwise flows just north of the port and several back-eddies. Strongest currents are observed in the ship channels and at the entrance to the Fleet. Away from these areas current speeds are generally less than 0.2m s^{-1}, and are slower still in the vicinity of the two clam beds (generally less than 0.05m s^{-1}). On a flood tide, water is conveyed in a south westerly direction along the shore at the Wyke bed, and in a north westerly direction along the shore at the Hamm Beach bed, with the reverse occurring on the ebb tide. Therefore, the bed at Hamm beach may be exposed to contamination originating from sources at Osprey Quay on the flood tide, and to contamination originating from within the Fleet on the ebb tide.

Tracer modelling studies indicate that any contamination originating from the Osprey Quay area (including those within the new marina structure) was particularly slow to disperse, remaining in close proximity from its release point then gradually dispersing over the clam bed at Hamm Beach and through the port area over 6 tides, predominantly impacting towards its southern end. Contamination from within

Portland Port, such as that originating from the Victoria Square CSO is gradually flushed out of the harbour without impacting on either clam bed. Since this study was carried out, the new marina at Osprey Quay has been constructed, and the breakwater walls surrounding this are likely to provide further barriers to water flow from the port area to Hamm Beach. Sources along the Wyke shoreline, such as the intermittent discharges at Sandsfoot and Castle Cove are predicted to impact along this shore where the Wyke clam bed is located, and towards the Fleet entrance. The main flow of contamination originating from within the Fleet is predicted to move past Hamm beach clam beds offshore of them during the ebb tide, then gradually disperse, although it is likely that some will pass closer towards the shore as the tide ebbs and so may impact slightly on either clam bed. Any spills from the Ferrybridge intermittent discharge are more likely to impact on the Wyke beds as this discharge is to the north shore of the Fleet.

The modelling results were derived from flows during spring tides. Tidal range during spring tides is about 2.0m and the tidal range during neap tides is only 0.6m, so tidal flows will be much weaker during neap tides, further increasing the importance of more local sources of contamination.

Given the relatively weak tidal flows within most parts of the harbour, wind driven currents are likely to significantly modify the circulation pattern at times. Winds in the harbour are predominantly westerly or south westerly, and the strongest winds nearly always blow from these directions. The Hamm Beach and Wyke shores are afforded some shelter from winds of this direction by the surrounding land. Winds will create surface flows in the same direction, although the current profile lower in the water column is difficult to predict. Therefore, it may be expected that contamination from the intermittent discharges at Wyke and moorings at Sandsfoot would usually be advected away from the clam bed here reducing their importance in windy conditions. Prevailing winds would also tend to advect sources at Osprey Quay away from the clam bed at Hamm Beach, although they would most likely still impact on the southern end of this bed.

SUMMARY OF EXISTING MICROBIOLOGICAL DATA

Several conclusions of relevance to the palourde fishery can be drawn from the previous analyses carried out on microbiological sampling results from Portland Harbour. Despite a hygiene classification history dating back to 1992 for several species, classifications within the harbour and the Fleet have always been B or better. This suggests that levels of contamination in the harbour are unlikely to be sufficiently high to result in a C classification for the palourde fishery, although it must be noted that palourdes have never been classified within Portland Harbour and different species accumulate *E. coli* to different levels (Younger & Reese, 2011). Within the shellfish classification monitoring programme, results were highest on average for Pacific oysters taken from within the Fleet, suggesting levels of contamination within this water body are slightly higher than in Portland Harbour. No significant increase in levels of contamination was found at any site during the summer, suggesting that any increased inputs from yachts during these periods do not have a major effect.

An analysis of surface water samples taken about 1km north of Osprey Quay for the purpose of monitoring the microbial quality of the Shellfish Water suggest that this development has not had a marked effect on water quality in the vicinity, although this was based on only five samples (Cefas, 2009, section 6.3).

OVERALL CONCLUSIONS RELATING TO THE SAMPLING PLAN

There are two discrete palourdes beds, which are subject to slightly different contaminating influences. Given the relatively slow water circulation and shallow depths at both beds, local sources are likely to be of most significance in each case, and may potentially cause noticeable hotspots of contamination in their vicinity.

Since the previous sanitary surveys, Wessex Water have advised that three of the four overflow discharges at Portland Port are no longer in use. Aside from this, little has changed in terms of contamination sources. The main potential sources of contamination to the Wyke bed are the intermittent sewage discharges and the yacht moorings to the north, and contamination from wildfowl and livestock from the Fleet to the south. There are also small intermittent surface water discharges to the shore just to the north and south of this bed. Therefore, contamination sources impacting on this bed are generally relatively minor and/or unpredictable, but there is the potential for more severe impacts in the event of significant spills from the intermittent discharges. A representative monitoring point (RMP) set at the inshore northern corner of this bed would be best placed to capture contamination from the intermittent discharges.

The main potential sources impacting at Hamm Beach are contamination from wildfowl and livestock from the Fleet to the north, and surface runoff and yacht moorings and the marina at Osprey Quay to the south. Intermittent discharges in the port area are not expected to impact at Hamm Beach due to circulation patterns. Therefore, contamination sources impacting on this bed are generally relatively minor and/or unpredictable, and lie to either end of the bed.

It is therefore concluded that the greatest potential for significant impacts is at the Wyke bed, in the event of a significant spill from the nearby intermittent discharges. If only one RMP is to represent both beds, it should be located in the north west corner of the Wyke bed to reflect this. The southern end of the Hamm Beach bed is subject to inputs from Osprey Quay and so should ideally be monitored separately from the Wyke bed via an RMP at its southern end, should resources permit.

4. RECOMMENDATIONS

4.1 RMPs should be set at the north west corner of the Wyke bed, and at the south east corner of the Hamm Beach bed. Should resources dictate that only one RMP has to represent both these two beds, it should be set at the former.

4.2 If both RMPs are monitored, and following parallel monitoring on at least 10 sampling occasions the results are similar, the Wyke RMP should be used to classify both beds. If there is a consistent difference between the two, but the results would nevertheless suggest the same classification, the more contaminated one should be used. If the results would lead to the two beds receiving different classifications,

they should continue to be monitored separately, and the classification zone split accordingly.

4.3 As the fishery only operates from June to September it is recommended that sampling is undertaken at regular intervals throughout the season and if possible the two months before it opens, on 10 occasions at least 1 week apart. This, together with other classification monitoring data from the area will be sufficient to issue a seasonal classification.

4.4 A 100m tolerance should be set around RMPs for this species to ensure there is sufficient stock available for repeated sampling.

4.5 Classification zone boundaries should be set to include both clam beds within one continuous zone, and to exclude the moorings and intermittent discharges at Wyke and the marina at Osprey Quay.

4.6 No changes to the monitoring of the existing classified species are recommended.

5. SAMPLING PLAN

GENERAL INFORMATION

Location Reference

Production Area	Portland Harbour
Cefas Main Site Reference	M025
Cefas Area Reference	FDR 2799
Ordnance survey 1:25,000 map Admiralty Chart	Explorer OL 15 (Purbeck & South Dorset) Admiralty 2268 (Portland Harbour)

Shellfishery

Species	Culture	Seasonality of harvest
Palourdes (*Tapes deccusatus*)	Wild	June-September
Scallops (*Pecten maximus*)	Bed culture	Predominantly winter
Pacific oysters (*Crassostrea gigas*)	Lantern nets/bed frames	Year round
Native oysters (*Ostrea edulis*)	Bed frames	Year Round

Local Enforcement Authority

Name	Weymouth Port Health Authority Council Offices North Quay Weymouth Dorset DT4 8TA
Environmental Health Officer	Nigel Emery / Chris Robertson
Telephone number (	01305 838430
E-mail Š	envhealth@weymouth.gov.uk

REQUIREMENT FOR REVIEW

The need for this sampling plan to be reviewed will be assessed by the competent authority within six years or in light of any obvious known changes in sources of pollution of human (e.g. improvements in sewage treatment works) or animal origin likely to be a source of contamination for the bivalve mollusc production area.

Table 5.1 Number and location of new representative monitoring points (RMPs) and frequency of sampling for Portland Harbour

RMP	RMP name	NGR	Latitude & Longitude (WGS84)	Species	Growing method	Harvesting technique	Sampling method	Tolerance	Frequency	Comments
B25AF	Wyke	SY 6710 7673	50° 35.36'N 02° 27.97' W	Palourdes	Wild	Hand (snorkeler)	Hand	100m	10 samples to be taken at least 1 week apart during the months of April, May, June, July, August and September	New species in Portland Harbour. If only one RMP is to be used this one should be used. If both are used, and results are similar this one should be used for monthly monitoring. If results are significantly different but would result in the same classification, then the more contaminated of the two should be used. If the results would lead to the two beds receiving different classifications, they should continue to be monitored separately, and the classification zone split accordingly.
B25AG	Hamm Beach	SY 6749 7478	50° 34.31'N 02° 27.63' W	Palourdes	Wild	Hand (snorkeler)	Hand	100m	10 samples to be taken at least 1 week apart during the months of April, May, June, July, August and September	See above.

Table 5.2 Details of currently active RMPs within Portland Harbour

RMP	RMP name	NGR	Latitude & Longitude (WGS84)	Species	Growing method	Harvesting technique	Sampling method	Tolerance	Frequency	Comments
B25AB	Lyme Bay Shellfish	SY 6875 7778	50° 35.93' N 02° 26.57' W	Pacific oysters	Lantern net	Hand	Hand	Not stated	Monthly	
B25AA	Lyme Bay Shellfish Co (Portland Harbour)	SY 6931 7746	50° 35.76 N 02° 26.10' W	Mussels	Rope grown	Hand	Hand	Not stated	Monthly	
B25AE	North Eastern Breakwater (M)	SY 6994 7680	50° 35.41' N 02° 25.56' W	Mussels	Rope grown	Hand	Hand	Not stated	Monthly	
B025T	Scallop Bed, Several Order (Sc)	SY 6806 7625	50° 35.106' N 02° 27.151' W	Scallops	Bed culture	Hand	Hand (diver)	Not stated	Monthly	Only sampled occasionally, not currently classified

Table 5.2 Details of recommended representative monitoring points (RMPs) for Portland Harbour (from Cefas, 2009)

RMP	RMP name	NGR	Latitude & Longitude (WGS84)	Species	Growing method	Harvesting technique	Sampling method	Tolerance	Frequency	Comments
B25?	Bincleaves Groyne (C.g)	SY 6879 7775	50° 35.920' N 02° 26.540' W	Pacific oysters	Lantern net	Hand from boat	Hand	10m	Monthly	Monitoring to stop on cessation of commercial harvesting here
B25?	Bincleaves Groyne (M)	SY 6856 7781	50° 35.920' N 02° 26.540' W	Mussels	Rope grown	Hand from boat	Hand	10m	Monthly	As above
B025J	Harbour South East 3 Ropes (M)	SY 7050 7490	50° 34.386' N 02° 25.077' W	Mussels	Rope grown	Hand from boat	Hand	10m	Monthly	
B025T	Scallop Bed Several Order (Sc)	SY 6806 7625	50° 35.106' N 02° 27.151' W	Scallops	Bed culture	None at present	Hand (diver)	100m	Monthly	Not currently classified but still sampled occasionally.
B025?	North Eastern Breakwater (M)	SY 6997 7672	50° 35.366' N 02° 25.535' W	Mussels	Rope grown	Hand from boat	Hand	10m	Monthly	
B025?	North Eastern Breakwater (C.g)	SY 6997 7672	50° 35.366' N 02° 25.535' W	Pacific oysters	Lantern net	Hand from boat	Hand	10m	Monthly	
B025AC	Several Order (O.ed)[1]	SY 6756 7563	50° 34.770' N 02° 27.572' W	Native oysters	Bed frame	Hand from boat	Hand	10m	Monthly	RMP location to be reviewed if further bed frames are deployed
B025?	Several Order (C.g)[1]	SY 6756 7563	50° 34.770' N 02° 27.572' W	Pacific oysters	Bed frame	Hand from boat	Hand	10m	Monthly	Preliminary monitoring required if this species is cultivated

None of these RMPs are listed as currently active on the Shellfish Hygiene (SHS) database, apart from B025T, which is only sampled occasionally and is not currently classified for scallops. Some of the fisheries represented are not commercially active at present, (South east 3 ropes, Several order oysters, North eastern breakwater oysters) and in the case of Lyme Bay Shellfish/Bincleaves Groyne and North Eastern Breakwater mussels the recommended relocation of the RMPs was not applied as the ropes have since been removed from this point.

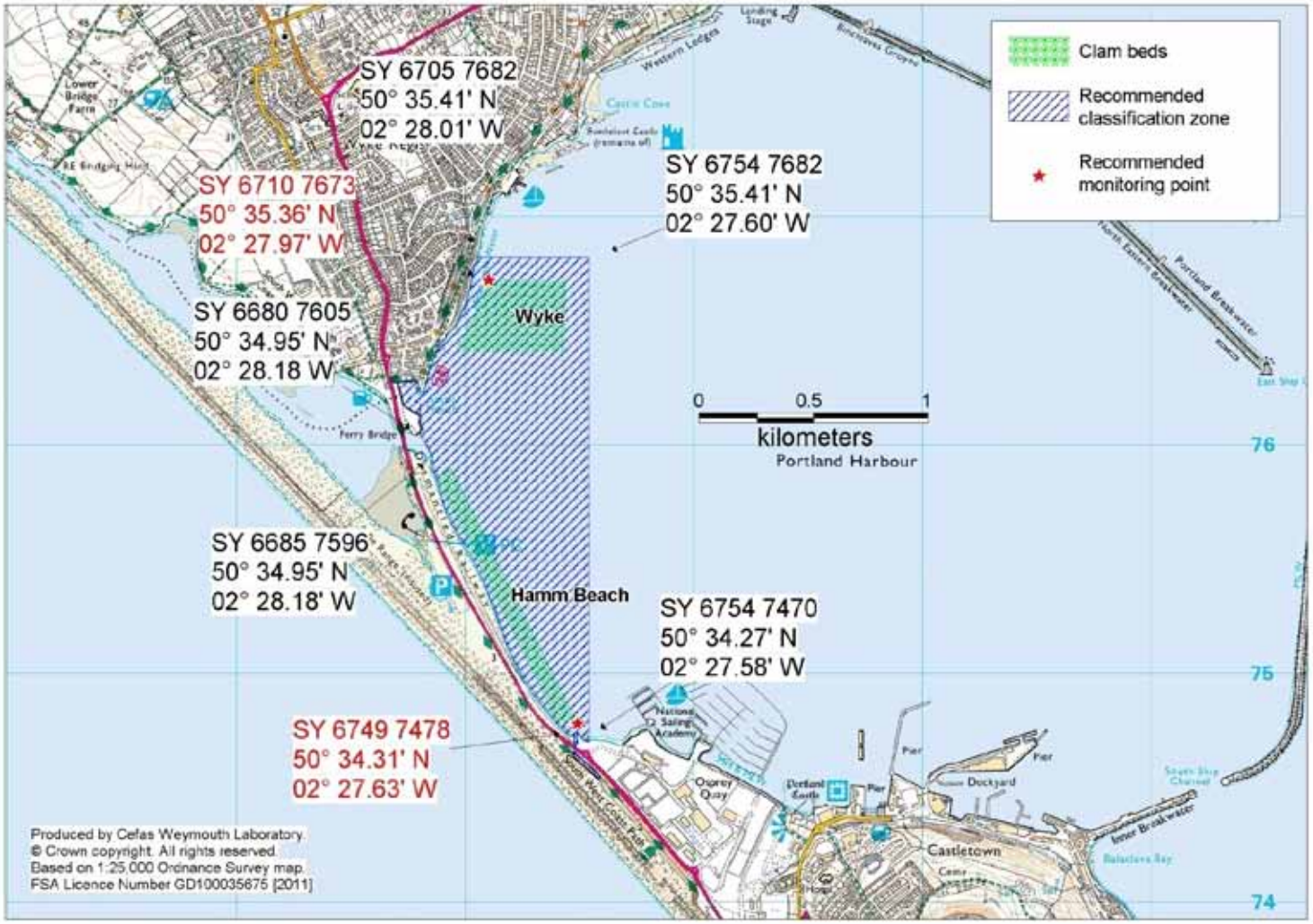

Figure 5.1 Classification monitoring recommendations (palourdes)

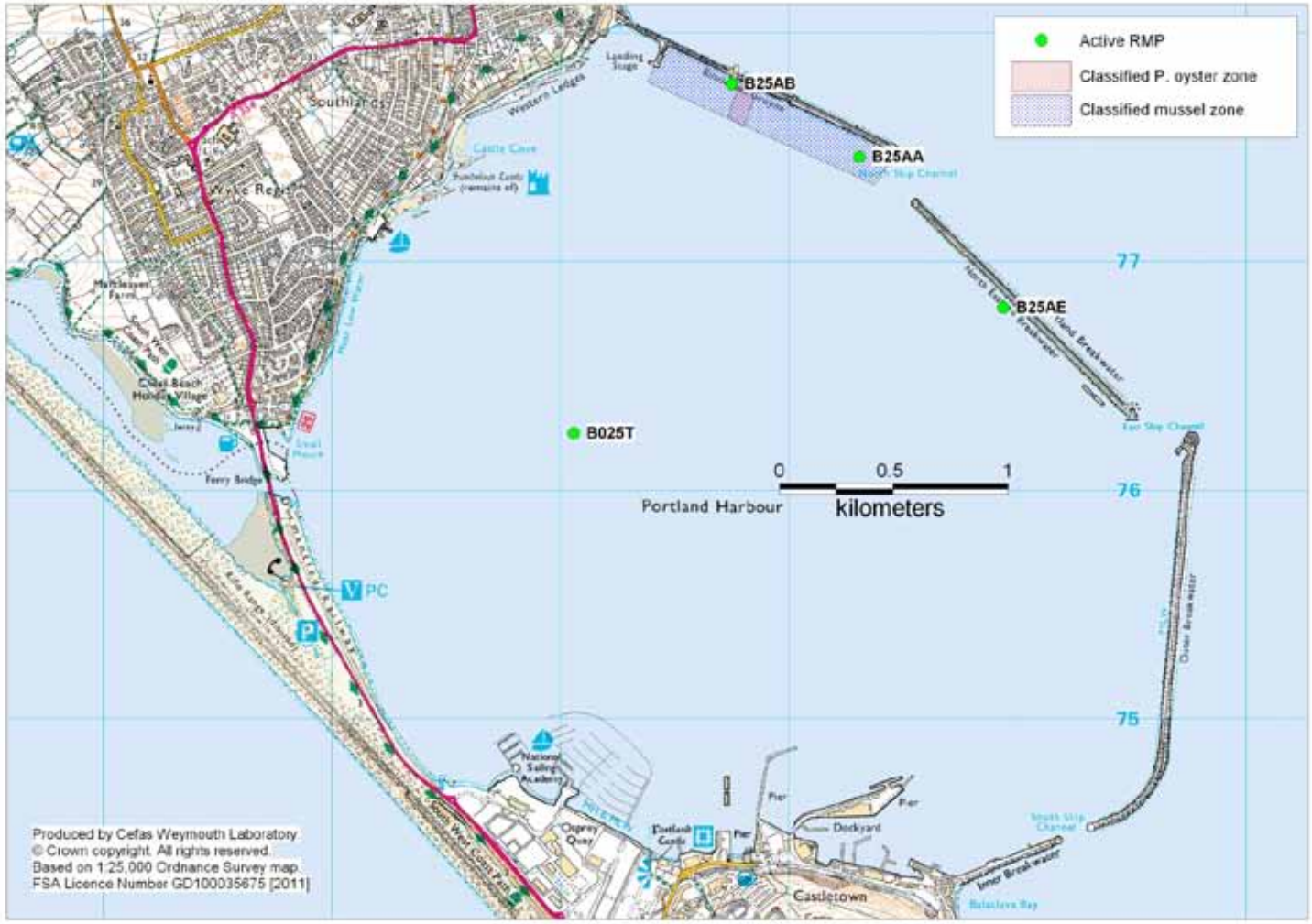

Figure 5.2 Current classification zones (all classified B) and RMPs for Pacific oysters, mussels and Scallops (mussels at north eastern breakwater and Scallops at Several order not currently classified)

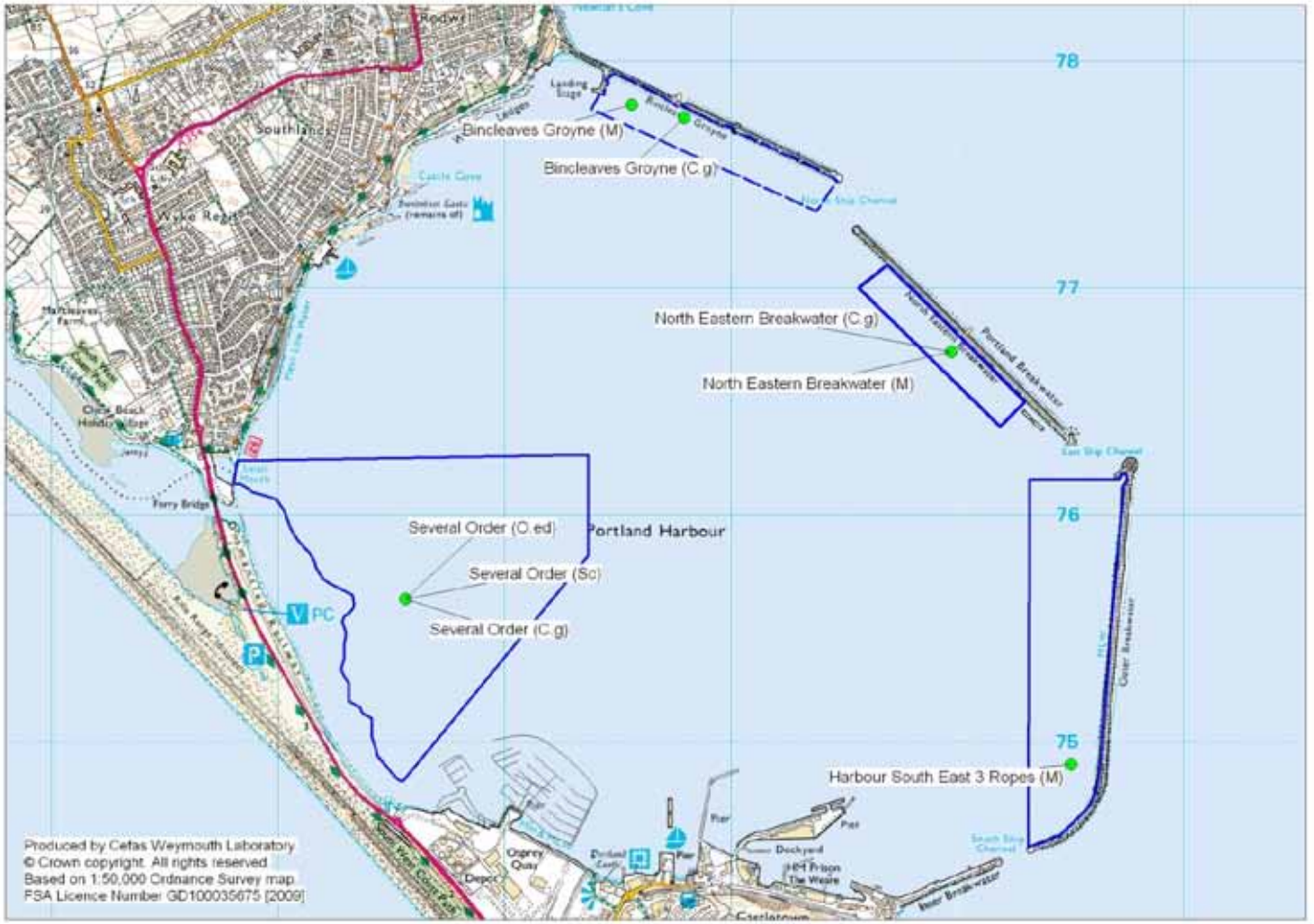

Figure 5.3 Recommended sampling plan for mussels, Pacific and native oysters, and scallops (from Cefas, 2009)

6. REFERENCES

Cefas, 2008. Sanitary Survey of Portland Harbour (Dorset). 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 Regulation (EC) No 854/2004.

Cefas, 2009. Sanitary Survey of Portland Harbour (Dorset). 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 Regulation (EC) No 854/2004.

Environment Agency, 2003. Water Quality Process Document Number 169_01. Water Quality Consenting Guidance. Consenting Discharges to achieve the Requirements of the Shellfish Waters Directive (Microbial Quality) V2

Laing, I. & Child, A.R., 1996. Comparative tolerance of small juvenile palourdes (*Tapes* L.) and Manila clams (*Tapes philippinarum* Adams & Reeve) to low temperature. J. Exp. Mar. Biol. Ecol. 195, 267-285.

Younger, A. & Reese, R.A.R., 2011. *E. coli* accumulation compared between mollusc species across harvesting sites in England and Wales. Cefas report to the FSA.

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