Centre for Environment Fisheries & Aquaculture Science

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Extension of the La Hurel Main Bed North and South Bivalve Mollusc Production Areas – Review of Sampling Plans

Michelle Price-Hayward
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Cefas Document Control

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Project Manager:	Michael Gubbins
Report compiled by:	Michelle Price-Hayward
Quality control by:	Andrew Younger
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Introduction

Cefas undertook a sanitary survey for the States of Jersey Department of the Environment in 2012 which included recommendations for the bivalve mollusc production area boundaries and associated representative monitoring points for St Clement's and Grouville Bays. In August 2015, the Department of the Environment (DoE) requested that Cefas review the recommendations of the sanitary survey relating to the La Hurel area in Grouville Bay, as it was proposed to approve a larger concession area at that location, with potential use for bivalve aquaculture in any part of the enlarged area. The species of interest were Pacific oysters (*C. gigas*) and (*M. edulis*).

The recommended RMPs arising from the 2015 assessment for the three La Hurel production areas are listed in Table 1. All three remain actively monitored, and the DoE has classified these areas as Class B from 1 April 2016 until 31 March 2017.

Table 1: Recommended monitoring points for the La Hurel area from the 2015 extension assessment

Production Area	Location (WGS84)	Species
La Hurel West/La Hurel Holding Bed (Areas 6 and 27)	49° 10'.35 N 2° 1'.49 W	*C. gigas* *M. edulis*
La Hurel Main Bed North (Area 24)	49° 10'.50 N 2° 1'.07 W	*C. gigas*
		M. edulis
La Hurel Main Bed South (Area 21)	49° 10'.02 N 2° 0.'83 W	*C. gigas*

Further to the recommendations from the 2015 assessment, it was determined that it was not possible to co-locate mussels and oysters at La Hurel Holding Bed and so two monitoring points have been maintained within this area: one for mussels at the location in Area 27 recommended in the 2015 assessment and a separate one for Pacific oysters in Area 6 at 49° 10'.2 N 2° 1'.39 W.

A further request was received from the Department of the Environment in November 2016 for additional extensions to the north and south of the Main Bed areas for the production of Pacific oysters. The extended area is shown in Figure 1 relative to the present classified production areas and representative monitoring points (RMPs).

This assessment takes into account:

- Information presented in the sanitary survey report and 2015 assessment
- Limited updated information provided by Department for Environment on the locations of contaminating sources to Grouville Bay
- The boundaries for the extended concession area
- *E. coli* monitoring results since January 2013

Conclusions of the 2012 sanitary survey

The conclusions of the 2012 sanitary survey are given in Appendix 1. With respect to the La Hurel area, the sanitary survey identified that there could be potential impact from sources located to the west of the area on the southern coast of the island, to the north of La Hurel in the vicinity of Gorey and from discharges from boats. Contamination from seabirds was also identified as a possible source. However, the principal impacts were likely to be from combined sewer overflows and surface water overflows located at the coast in the vicinity of the beds. These were considered likely to have a greater impact at the La Hurel Holding Bed than at either of the La Hurel Main Bed production areas, as the former was closer to the shore. Analysis of the historical *E. coli* data from the classification monitoring programmes showed a tendency for higher results in Grouville Bay than in St Clements Bay and, within Grouville Bay for higher results nearer to shore and also on the northern part of the La Hurel Main bed.

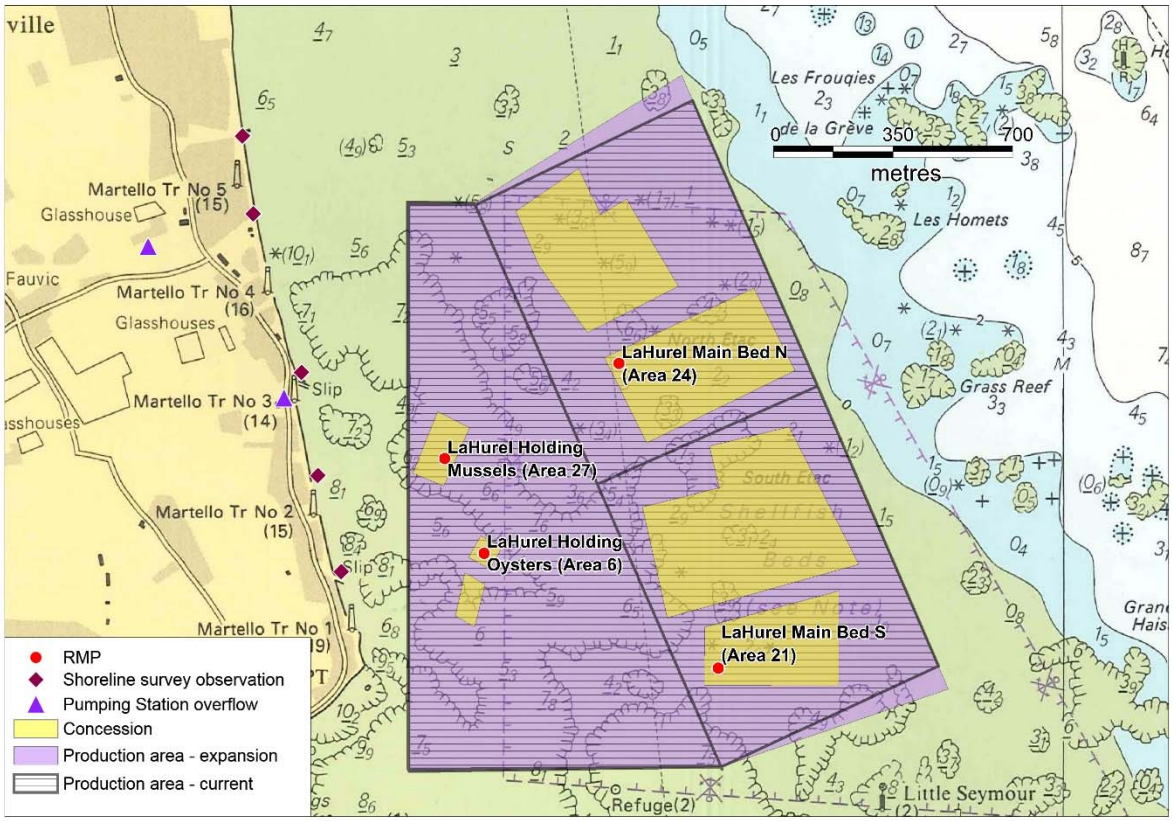

Figure 1. Location of the La Hurel Extension Area in relation to the production areas and RMPs recommended in the 2015 extension assessment

Analysis of *E. coli* data

States of Jersey Environment Department supplied the *E. coli* monitoring data for the La Hurel area RMPs for the period from January 2013 to October 2016 inclusive. For the purpose of comparison of results between production areas and species, a subset of the data was extracted which contained only the results where all of the production areas/species combinations for the La Hurel area had been sampled on the same date. This was done in order to reduce potential variability due to temporal effects. Descriptive statistics for the

resulting data are presented in Table 2 and presented by area and species in the boxplots in Figure 2.

The highest result overall was seen in Pacific oysters at Area 27, although the geometric mean for the mussels in that area remained higher than that for the Pacific oysters. The same pattern held true for La Hurel Main Bed North, where the highest individual result was in oysters whilst the geometric mean was higher in mussels. As observed in the 2015 assessment, a higher proportion of results exceeding 230 *E. coli*/100 g was seen in mussels than in Pacific oysters.

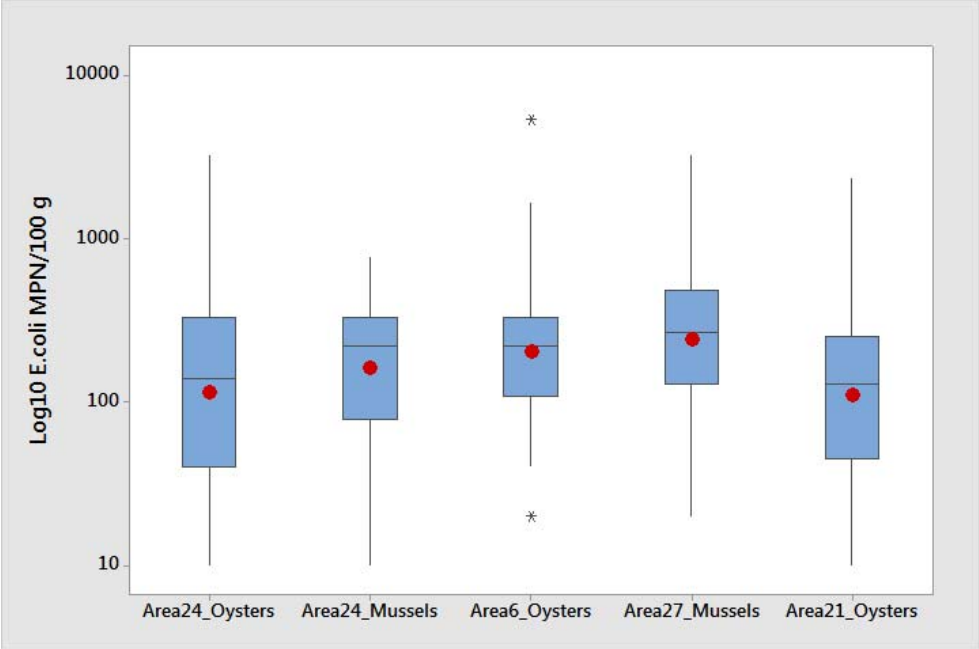

Figure 2. Boxplots of *E. coli* results for the RMPs at La Hurel

Statistical analysis (paired-t test) of the Log^{10} transformed *E. coli* results showed results were significantly higher at La Hurel Holding bed for both mussels and Pacific oysters (common mussels Area 27 > Area 24 ($p=0.042$); Pacific oysters Area 6 > Area 21 ($p=0.011$) and Area 21 ($p=0.011$).

Although the descriptive statistics showed slightly higher results in oysters at La Hurel Main Bed North than at La Hurel Main Bed South, a paired-t test showed no statistically significant difference between the two.

Table 2. Descriptive statistics for La Hurel *E. coli* data (Jan 2013 – Oct 2016 inclusive)

Table 2. Descriptive statistics for La Hurel *E. coli* data (Jan 2013 – Oct 2016 inclusive)	E. coli MPN/100 g				
	La Hurel Holding Area Area 6 Area 27		La Hurel Main Bed North Area 24		La Hurel Main Bed South Area 21
	Pacific oysters	Mussels	Pacific oysters	Mussels	Pacific oysters
No. of samples	44	44	44	44	44
Minimum	20	20	<20	<20	<20
Maximum	5400	3300	3300	790	2400
Median	220	270	155	225	130
Geometric mean	208	242	124	168	109
90%ile	756	756	780	490	490
No of results >230 *E. coli*/100 g	13	22	14	19	10
No of results >4600 *E. coli*/100 g	1	0	0	0	0

Conclusions

Analysis of the *E. coli* data obtained from January 2013 onward did show a significant difference in average log^{10}-transformed *E. coli* results in shellfish between La Hurel Holding Area and the other two production areas, though no significant difference was seen between La Hurel Main Bed North and La Hurel Main Bed South. Although the proposal extends the beds at La Hurel Main Bed North towards identified contamination sources north of the shellfishery, these were found in the sanitary survey to have less impact at this bed than local sources further to the south.

The proposed extension to La Hurel Main Bed South expands cultivation to the south and east of the current production area, and therefore slightly further offshore of contaminating sources around La Rocque Point. The large majority of the identified new bed areas lies within the currently classified area and therefore proposed expansion would be adequately represented by the existing RMPs.

However, the pending expansion of the bed at Area 21 (shown in green hashed lines in Figure 1) would extend that bed westward and closer to sources of contamination arising onshore making some alteration of RMP location necessary here (see 'Recommendations' below for details). As currently drawn, this area also extends into the La Hurel Holding Bed production area.

Recommendations

All coordinates are given as WGS84.

Production areas

The La Hurel North and South Main Bed production areas should be extended as proposed, with the present La Hurel Holding Bed (La Hurel West) production area retained as currently defined. The recommended definitions for the three areas are given below, with the changes highlighted in yellow:

La Hurel West:The area bounded by a line drawn from 49° 10'.75 N 2° 1'.58 W to 49° 10'.75 N 2° 1'.42 W to 49° 9'.87 N 2° 0'.83 W to 49° 9'.87 N 2° 1'.58 W and back to 49° 10'.75 N 2° 1'.58 W.

La Hurel Main Bed North: The area bounded by a line drawn from 49° 10'.75 N 2° 1'.42 W to 49° 10'.95 N 2° 0'.92W to 49° 10'.46 N 2° 0'.59 W to 49° 10'.31 N 2° 1'.12W and back to 49° 10'.75 N 2° 1'.42 W.

La Hurel Main Bed South: The area bounded by a line drawn from 49° 10'.31 N 2° 1'.12 W to 49° 10'.46 N 2° 0'.59 W to 49° 9'.99 N 2° 0'.28 W to 49° 9'.87 N 2° 0'.83 W and back to 49° 10'.31 N 2° 1'.12 W.

RMPs

It is recommended that the present RMP be maintained for La Hurel Main Bed North.

It is recommended that the two RMPs for La Hurel West be maintained at their present locations (49° 10'.35 N 2° 1'.49W for common mussels and 49° 10'.20 N 2° 1'.49W for Pacific oysters).

The species to be sampled at those RMPs should be amended if the species to be harvested from those production areas change (i.e. the species to be sampled should reflect the species to be harvested).

It is recommended that the RMP for La Hurel Main Bed South be retained at its current position. Should the proposed extension to the bed at Area 21 be granted, the RMP should be relocated to the southwestern extent of the area. The species sampled at that RMP should reflect the species in place when the extended area is brought into use and should then be changed, as necessary, to reflect any changes in species to be harvested from the area.

The RMP locations are summarized in Table 3.

Tolerance

It is proposed that a maximum tolerance of 20 m around the designated RMP location be applied.

Depth of sampling

Not applicable.

Maintenance of present sampling arrangements

The existing production area boundaries and RMPs locations should be maintained until any expansion of Area 21 is confirmed and equipment and stock put in place. Shellfish should be *in situ* for at least two weeks prior to sampling in order that they equilibrate to the microbiological quality of the location.

Table 3. Recommended RMP locations

Production Area	RMP location
La Hurel Holding Bed (West) Mussels	49° 10'.35 N 2° 1'.49W
La Hurel Holding Bed (West) Pacific oysters	49° 10'.20 N 2° 1'.49W
La Hurel Main Bed North	49° 10'.50 N 2° 1'.07 W
La Hurel Main Bed South	49° 10'.02 N 2° 0.'83 W

Appendix 1: Conclusions of the 2012 sanitary survey

The main potential sources of faecal contamination come from three broad categories:

i. Those arising in the immediate vicinity of the trestles which include wildlife sources and possible discharges from boats.

ii. Those arising from the near shore, which include fresh water sources, surface water overflows and intermittent outfalls. These may contain a mix of point and diffuse source contamination of both human and animal origin.

iii. Those arising from further afield, which would include discharges at Bellozanne as well as intermittent discharges from the Cavern and at Le Dicq outfall.

The mix of sources affecting the St. Clements Bay fishery differ from those likely to impact the Grouville Bay fishery.

From a geographical perspective, these can be further described as:

i. To the west of St Clement's Bay, there is the continuous discharge at Bellozanne and the intermittent discharges from the Cavern and the Le Dicq outfall during heavy rainfall events and the stream outlets further up the shore at Le Dicq. There may also be contributions from boat activity in the vicinity of the harbour and marina at St Helier.

ii. To the north of the shellfish sites in Grouville Bay there is the stream with intermittent discharge at Gorey slip and other intermittent outfalls between there and Fauvic. The main impacts from wildlife will be seen at the more northerly classified areas within Grouville Bay.

Low flows and some *E. coli* content have been seen at many of the observed outfalls/outlets during dry weather. This will increase during wet weather at those containing stream water, land run-off or road run-off even in the absence of sewerage overflow operation.

Dilution of contamination and mixing of seawater is generally high but this may be modified at the local level by the seawater running through the system of gutters and channels in the sand. Currents tend to flow southward in Grouville Bay much of the time. However, over the last half of the flood tide and the first half of the ebb tide the flow will be principally in a northerly direction. In St Clement's Bay the currents tend to flow eastward over the ebb tide and westward over the flood tide.

From the historical shellfish *E. coli* data obtained up to September 2011,

the western side of St Clement's Bay and the southern end of Grouville Bay showed the highest levels of contamination and the two oyster areas at Seymour Tower the lowest. Since September 2011, a number of high results have been obtained for the Pacific oyster sampling points in Grouville Bay and a very high result was seen in Area 26 at Seymour Tower.

Given the large population on the south-east side of the island of Jersey, and other potential sources of faecal contamination, it is presently unlikely that shellfisheries located relatively close to shore will consistently attain the quality required for an A classification. The associated water quality of an average (geometric mean) of <10 *E. coli*/100 ml is very stringent compared to bathing water standards (e.g. a 90%ile of 250 *E. coli*/100 ml for the Excellent category under the 2006 Directive).

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Head office
Centre for Environment, Fisheries & Aquaculture Science
Pakefield Road
Lowestoft
Suffolk
NR33 0HT
Tel: +44 (0) 1502 56 2244
Fax: +44 (0) 1502 51 3865

Weymouth office
Barrack Road
The Nothe
Weymouth
DT4 8UB

Tel: +44 (0) 1305 206600
Fax: +44 (0) 1305 206601

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