

## 24 PROPOSALS FOR MONITORING

### 24.1 INTRODUCTION

24.1.1 This section sets out a proposed strategy for monitoring the potential effects of the approach channel deepening in Poole Harbour and Poole Bay. The monitoring strategy has been developed to focus on those aspects that are predicted to be affected by the proposed channel dredging and/or which are considered to be of particular importance (i.e. concern has been expressed by consultees regarding potential impacts on a particular parameter). In addition, in cases where the consequences of change due to the proposed dredging would be of particular importance, targeted monitoring is considered to be an appropriate approach.

24.1.2 Currently, a significant amount of monitoring is undertaken within Poole Harbour and Poole Bay. Therefore, with respect to the deepening, the most effective approach would be to integrate any monitoring required with existing initiatives, where this is considered to be appropriate.

24.1.3 The following sub-sections outline the proposed monitoring strategy. Should the scheme receive consent, the detail of the methodology for monitoring will be discussed and agreed with the appropriate statutory and non-statutory organisations prior to implementation. In addition, at that stage it would be important to agree points at which action would be triggered and the most appropriate action to take in view of the findings of the monitoring. The following sections are, therefore, intended to set out the scope of a proposed monitoring programme and the principles of such monitoring.

### 24.2 PROPOSED MONITORING WITHIN POOLE HARBOUR

#### *Harbour- wide bathymetry*

24.2.1 PHC currently undertake detailed bathymetric surveys of the subtidal areas of the Harbour, including the navigation channels. Such monitoring also covers those areas where concern has been raised by Poole Yachting Association regarding the implications of the proposed scheme on water depths. Such monitoring is undertaken on a frequency that varies between 3 monthly and a 3 yearly schedule depending on the area and its perceived navigational importance and detailed analysis of the data is undertaken by PHC.

24.2.2 It is proposed that the above bathymetric monitoring should continue to be undertaken in order to monitor the ongoing changes in the Harbour and the effect of the proposed dredging on the subtidal areas of Poole Harbour. The data that is available to date forms a comprehensive baseline of the existing situation, and also defines changes over time, against which to monitor future change.

#### *Saltmarsh*

24.2.3 The monitoring of the extent of the saltmarsh in Poole Harbour that was undertaken by the Poole Harbour Study Group (2001-2002) provides a good baseline for future monitoring. This monitoring involved the use of hand-held Geographical Positioning

Systems (GPS), which is a very reliable means of monitoring habitat extent given that all saltmarsh areas identified are also effectively ground-truthed.

- 24.2.4 The extent to which LiDAR data is available and/or planned is not known. However, links with the Environment Agency and Local Authority strategy studies, and the use of this technique for surveillance of the Harbour into the future should be explored. Ideally, a combination of PHC bathymetric survey data, GPS surveying of the saltmarsh edge and any suitably ground-truthed LiDAR data that has been collected by third parties for the intertidal and flood plain would provide a good means of quantifying the ongoing evolution of the Harbour in the future.

*Suspended sediment concentrations*

- 24.2.5 During the consultation phase, some concern was raised by local fishermen (particularly shell fishermen) regarding the dispersion and settlement of fine material during the capital dredging of silts. It is, therefore, proposed that targeted monitoring of suspended sediment concentrations (SSC) would be undertaken during the dredging and that such monitoring would be phased. Prior to monitoring the capital dredging of silty material, it is proposed that a monitored trial of agitation dredging in the Turning Basin would be undertaken to inform the use of agitation methods for future maintenance dredging.

- 24.2.6 A comprehensive programme of continuous monitoring could involve the deployment of instrumentation for up to 4 to 5 months (as this would be over the winter period, it would cover the period during which storms may be expected) such that at least a 14 day baseline was measured followed by 7 days of agitation dredging and then around 2 months of the capital dredging of silts. A combination of intertidal mounted instruments (e.g. in the Wareham Channel, in the vicinity of South Deep and the Middle Ground) and instruments mounted to the quayside could be used. Intertidal bedframes could be instrumented to measure near-bed SSC, wave height, currents and bed elevation. Quayside instrumentation would measure only SSC. Data relating to wind speed and direction and rainfall would also be required. Data relating to river flows for a longer period up to and including the monitoring would complete the understanding, although these would not be essential.

- 24.2.7 It is not proposed to monitor throughout the whole of the capital dredging campaign. Some baseline measurements (at least a spring-neap cycle) followed by measurements during the likely worse case scenario (i.e. dredging of the siltiest material) are considered to be sufficient for determining the effects of dredging on SSC. The measurements would be important in contributing to the understanding of the overall physical functioning of the Harbour and may, therefore, be important for future wider management issues in the Harbour.

*Waterbird populations*

- 24.2.8 Comprehensive counts of waterbird populations are undertaken as part of the Wetland Birds Survey (WeBS) through the autumn and winter period at low water on a sector by sector basis throughout Poole Harbour. Although no effects are predicted on waterbird populations as a result of the proposed scheme, given the internationally important status of the habitats and waterbird populations within the Harbour, it is important that these populations are monitored. It is considered that the WeBS is the most appropriate method for monitoring waterbird populations in Poole Harbour and no changes to this

programme are required as a result of the proposed scheme. However, the data from WeBs should be analysed on an annual basis.

## **24.3 PROPOSED MONITORING AT THE ENTRANCE TO POOLE HARBOUR**

### *Current regime*

- 24.3.1 The strong currents through the Harbour entrance, and potential changes to these currents, are of concern to the Poole Yachting Association. However, it is predicted that there would be little change to current speeds as a result of the proposed channel deepening. Whilst the ADCP measurements undertaken as part of the baseline studies did not detect the detail of the recirculation zone on the North Haven side of the entrance, and did not extend into the zone where minor change has been predicted adjacent to South Haven Point, it would be practical to repeat this survey following the dredging to demonstrate whether there has been a change to flow conditions in the entrance as a result.

### *Position of chains for the chain ferry*

- 24.3.2 At present, PHC monitor the positions of the chains at 12 monthly intervals and it is proposed that this would be continued following the proposed channel deepening.

## **24.4 PROPOSED MONITORING WITHIN POOLE BAY**

### *Beach profiles*

- 24.4.1 It is considered that the programme of beach profile monitoring already in place in Poole Bay is comprehensive and would be adequate for determining whether or not changes occur at the coastline following the proposed dredging. Currently, beach profiling on Poole and Bournemouth beaches is generally at 40m centres, extending for a distance of approximately 500m down the shore. Similarly, beach profiling is undertaken at 12 monthly intervals from the Sandbanks ferry slip, through Shell Bay to Studland Sandpit. Further south, profiling is undertaken every 4 years.
- 24.4.2 For the most sensitive locations between the middle of Studland Bay around South Haven Point into the Harbour, it is proposed that additional surveys of existing or additional profiles (before, during and after the proposed capital dredging) should be undertaken to complement and extend the existing beach profile data.

### *Bathymetry*

- 24.4.3 The hydraulic studies determined that the changing morphology of Hook Sands was an important influence on wave conditions in the area. It is considered that existing PHC bathymetric surveys of the area around the Swash Channel and Hook Sands are adequate to describe the baseline conditions. Such surveys would continue following the proposed capital dredging and would be sufficient to determine any effect of the dredging on these areas.

24.4.4 Bathymetric survey of the Swanage disposal ground should be undertaken before, during and after the disposal of capital dredgings in order to assess the degree of accumulation of material at the disposal ground.

24.4.5 A detailed record of dredging, nourishment and disposal activities would be maintained by PHC (as is normal practice). This record would include a broad characterisation of the nature of the material going to the disposal ground.

*Suspended sediment concentrations and deposition on subtidal marine communities*

24.4.6 Concern has been expressed regarding the predicted increases in SSC during the offshore disposal of dredged material and the potential subsequent deposition of fine sediment on subtidal marine communities of nature conservation importance.

24.4.7 It is considered that the most appropriate and efficient approach to monitoring such effects is to use a combination of different methods. In order to quantify changes to SSC during the offshore disposal of dredged material, it would be practical to deploy a suitably instrumented bed frame in the vicinity of the *Sabellaria spinulosa* reefs and maerl beds to measure near-bed conditions during periods of disposal of silty material. The results of such monitoring, with placement of dredged material in the south-east quadrant of the disposal site, would demonstrate the effect of disposal in the vicinity of these features. This would involve continuous monitoring involving up to 3 months of deployment of the instrumentation, including baseline measurements. This approach would have a wider benefit from a nature conservation point of view in characterising the existing conditions under which these species exist.

24.4.8 In combination with the above, a series of dive surveys on areas of nature conservation interest would be the most suitable approach to the surveillance of potential deposition of fine sediment at these sites. Dives before, during and after the disposal and beach nourishment activities would be required and it would be important to devise some means of quantifying the outcome of such monitoring. Sites could include the predicted locations of the mud patches in Poole Bay and Swanage Bay, *Sabellaria spinulosa* reefs, maerl beds, *Ampelisca* mats and *Zostera marina* beds.

## **24.5 REPORTING AND PRESENTATION OF MONITORING**

24.5.1 It is proposed that the details of the monitoring described above (e.g. exact methodology, frequency, duration, etc.) would be discussed and agreed with appropriate bodies (e.g. English Nature, CEFAS, etc.) subject to the scheme receiving consent. In addition, at this stage it would be necessary to agree a reporting strategy and an appropriate forum for the dissemination of findings. However, a possible approach could be to report on the findings of monitoring undertaken during the construction period on completion of the dredging and to report on subsequent monitoring on an annual basis.