

Subject: **Harbour Dredging**

Director/Head of Service: Head of Planning and Regeneration

Decision Issues: These are within the authority of the Board

Decision: Non Key

Ward: **Harbour**

Summary: *This report re-examines the use of water injection dredging as opposed to conventional dredging, which is currently carried out at the harbour, and makes recommendation as to the way forward.*

To Resolve: **That conventional dredging is still the best option for Whitstable Harbour. This method should be used for the next dredge, due about September 2014. However, if more information comes available about the effects of water injection dredging carried out adjacent to shellfish beds close to the time that the next dredge is due, then the situation may need to be reviewed.**

Classification: **This report is open to the public.**

SUPPORTING INFORMATION

1. Introduction

Members will recall that the possibility of water injection dredging (WID) being carried out at the harbour has been discussed a number of times. At the November 2010 meeting of the board it was resolved that conventional dredging be carried out for the foreseeable future and the situation be reviewed in three years time when more information on WID, and its potential effects on shellfish beds, might become available. Members have asked for an update on the situation and this report summarises the present situation.

2. Background

The current practice for dredging the harbour is that it is carried out on an “as and when required” basis. This is when the silt level has built up to such an extent that the larger vessels have difficulty in entering/leaving the harbour except on the higher spring tides. Generally this is when there is about 8,500 m³ of silt within the harbour basin and particularly when the silt is high between the East and West Quays. Dredging of the harbour has in the past therefore been necessary on average once every three years. The method of dredging has always been the conventional method of grab or bucket dredging from a floating pontoon/barge and transportation from the harbour in a bottom-emptying barge for disposal at a designated marine

disposal area. The current disposal area is located 1.2 km offshore of Long Rock. The last dredge was completed in September 2011 and 7,500m³ was removed at a cost of £74,416. This was actually £3,500 cheaper than the cost of the dredge in 2008.

A FEPA Licence, operated by the Marine Management Organisation (MMO), has always been required for conventional dredging and disposal at sea and this usually takes about four months to receive from initial application. The Licence requires that the silt is tested for potential contaminants, which all must be below certain stipulated levels. The Licence procedure also requires consultation with and the approval of various authorities including Natural England, Environment Agency and Kent & Essex Sea Fisheries Committee.

An alternative method of dredging is by the Water Injection Dredging (WID) method and this possibility has been discussed by the Harbour Board on a number of occasions in the past. WID is likely to be cheaper than conventional dredging in the long term and could be carried out on an annual basis to keep the silt continually at a lower level. WID is quite commonly used elsewhere and is a tried and tested method.

The major concern about WID is that it could affect the shellfish beds outside the harbour. A further concern is that from 1st April 2012 it will also require a FEPA Licence and in view of the internationally designated marine nature conservation site immediately to the west of the harbour, as well as potential risk to the shellfish beds, the licence conditions are likely to be severe. A full Environmental Impact Assessment (EIA) would also be needed.

3. Relevant Council Policy/Strategies/Budgetary Documents

Whitstable Harbour Strategic Plan 2010.

4. Consultation

Meetings with the Harbour Master and representatives from the shellfish industry have taken place with respect to using WID in the harbour. The opinion of all was that WID is an unknown operation at the harbour and there is a risk of either smothering the shellfish with silt and drowning them or contaminating them with any pollutants that might be in the silt.

This would have massive repercussions on the industry and if the beds became polluted, that this could run into millions of pounds and certainly claims would be made against the Council.

Contact has also been made with West Whelks regarding the whelk fisheries and they were also very much against the WID proposal. They pointed out that whelks were cultivated/collected from within the sector where the silt would be likely to disperse/settle out.

Discussions have also taken place with CEFAS, Natural England, Environment Agency and the MMO regarding the possibility of using the WID technique for dredging the harbour. Again all echoed the same concerns that you should proceed with extreme caution when planning to use WID near shellfish beds. The latest advice from MMO was that at this location, adjacent to an internationally designated marine conservation area, an EIA would almost certainly be needed before they would be in a position to consider a FEPA Licence.

Officers have attended several workshops on WID where again the affect on sensitive ecological receptors and silt dispersal was discussed but with no firm conclusions being derived.

5. Water Injection Dredging (WID) Method

The WID technique is a method of dredging using jets of water developed by the company Van Oord (UK) Ltd. It consists of injecting large quantities of water, under low pressure, into silt or fine sediment to bring it back into suspension. This action breaks down the cohesion between the grains allowing the sediment to form a mixture with the injected water. The mixture turns into a density current, which, being fluid will move under the influence of gravity and density gradients. Large quantities of sediment can be moved in this way in a small space of time.

Generally WID commences up to an hour before high tide in order to bring the silt into suspension so that it can flow out of the harbour via the water column on the ebb tide. WID would then continue during the ebb tide for as long as there was sufficient water depth for the dredger to operate – up to three hours maximum after high tide but depending on the tides could be only two hours.

It has been shown from studies at a number of sites that the silt flow path and where it may begin to settle out tends also to follow the seabed channel contours as well as following the ebb tide current direction.

WID has been carried out for many years both in this country and abroad. It has been proved to be a very successful operation for maintenance dredging in most locations and has been used by a number of major operators such as PLA. The City Council has used this system for 15 years at Herne Bay without problems and was one of the first authorities to use it in England.

With respect to previous studies, the point must be made that these were carried out where the depth of water at high tide and during the WID operation was more than is available at Whitstable – generally by over a metre and in some cases significantly greater depth. A further point of note is that as far as can be ascertained from information available, the ebb current at other WID sites has been more than at Whitstable. The ebb current at Whitstable, once outside the eddy current at the harbour mouth, is very slack.

It is not known whether there have been any WID operations carried out where there have been designated shellfish beds (under the Regulations) just outside the dredging area. The system is used successfully at Rye Harbour but there are no shellfish beds in the same proximity as at Whitstable.

If the Board wishes to continue to contemplate the use of WID at Whitstable there will be a need to collect data, build and run a numerical flow model to assess where the silt plume would disperse to and settle out for all states of tide and wind direction. Such a study carried out by a specialist consultant is estimated to cost £15,000. If the model showed that silt would not be likely to settle out on the shellfish beds then the next step would be to apply for a FEPA Licence to carry out a controlled WID test in order that actual monitoring of flow paths and silt settlement could be carried out. With all that information and the modelling results an EIA could then be compiled to support the case to MMO for a licence for a full WID regime. The monitoring and compilation of the EIA would be likely to cost a further £10,000. Even after such modelling and monitoring there would still be no guarantee there would be no effect to the shellfish beds.

6. Implications

(a) Financial Implications – An estimated £25,000 would be required in order to be reasonably satisfied as to whether WID would be suitable at the harbour.

- (b) Staffing/Resource Implications – there would be additional engineering staffing costs charged to the harbour for the management of and input to any additional studies on WID.
- (c) Property Portfolio Implications – Failure to keep the harbour dredged clear of silt, by whatever method, would severely affect its operation which would be contrary to the implementation of the Whitstable Harbour Strategic Plan.
- (d) Legal Implications – The key legislative mechanisms relevant to dredging are the Water Framework Directive 2000 and the Food & Environmental Protection Act (FEPA) 1985.

A FEPA Licence is now required for WID and conventional dredging. The testing and analysis for the FEPA Licence is carried out by the independent Centre for Environment, Fisheries & Aquaculture Science (CEFAS) who also provide advice to MMO on marine environmental aspects.

The Environment Agency is the responsible body for ensuring that these regulations are applied. Any pollution resulting from activities that may affect shellfish waters would be dealt with under the Surface Waters (Shellfish) Directive 1997.

- (e) Environmental/Sustainability Implications – The Harbour must be dredged to allow its continuing operation and needs to be dredged using a method that will not be harmful to the surrounding environment.
- (f) Planning Implications – Planning consent is not required, as this is maintenance work. Consent for the dredging and disposal of arisings, will have to be obtained from the Marine Management Organisation.
- (g) Human Rights Issues (Legal) – none.
- (h) Equalities – none.
- (i) Crime and Disorder Implications – none.

7. Conclusions (with reasons supporting the recommendation)

- (a) WID is a tried and tested system which works well in the right location;
- (b) Previous test results have shown that some of the contaminants within the silt are close to the stipulated “Action Levels” which poses a potential risk to the shellfish beds if using WID but would not be an issue for conventional dredging;
- (c) Water levels at the harbour are less than at other successful WID operations and this would affect the window when the operation could take place – probably only during the spring tide cycle and about half hour before to maximum two and a half hours after high tide. This would result in a higher cost for WID at the harbour than at other locations where it has been carried out;
- (d) Because there are reduced water levels at Whitstable Harbour compared with other monitored WID sites this could mean that the silt may not remain in suspension and could settle out onto the seabed relatively close to the harbour entrance. The presence of The Street could also have a significant effect on this;
- (e) Currents on the ebb tide once outside the harbour entrance are relatively slack and this could also result in the silt settling out earlier than at other WID monitored sites;

- (f) Generally the suspended silt pathway during WID follows the seabed contours and the ebb current direction - this could mean that it will pass over areas where oysters and possibly other shellfish are cultivated;
- (g) A FEPA Licence is required for both conventional dredging and WID and discussion with relevant authorities reveals that there is concern amongst them as to the possible effects on shellfish beds. Any problems that occur could result in the Harbour Authority being prosecuted;
- (h) Consultation with the local shellfish industry reveals that there is concern about WID particularly from Seasalter Shellfish and the Whitstable Oyster Fisheries Company who are likely to be the most affected. The shellfish industry would be consulted as part of the FEPA Licence application process and would make strong objections. It would therefore be unlikely that an application for a WID FEPA Licence would be successful;
- (i) Numerical modelling and study work for WID would about £25,000 and even then there would still be no guarantee there would be no effect to the shellfish beds;
- (j) WID is cheaper than conventional dredging, however, the need for modelling/study and monitoring for WID would bring the costs of the two types of operation to a similar value;
- (k) The major concern must be that if any contamination occurred to the shellfish beds as a result of WID then the compensation costs to the Council could be extremely high. Even if there were problems with the oysters some time after dredging there is the likelihood that the operation would be blamed and the Council could be involved in lengthy legal disputes;
- (l) Shellfish, particularly oysters, are an important industry for Whitstable both in fact and in name. Should problems occur as a result of WID this would result in very bad publicity for the Council as a whole and Whitstable in particular – probably at a national level;

The Harbour must be dredged to allow its continuing operation and it is recommended that for the foreseeable future WID is no longer considered as an alternative to conventional dredging. The next dredge is due in 2014 and that should be carried out by conventional dredging. Should more information on WID become available, particularly where it has been used adjacent to shellfish beds, then the Board may wish to review the situation.

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