



Public Agenda Item: Yes

Title: **The Northern Arm Breakwater – Brixham Harbour**

Wards Affected: **All Wards**

To: **Harbour Committee**

On: **12 September 2011**

Key Decision: **No**

Change to Budget: **Yes**

Change to Policy Framework: **No**

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1. What we are trying to achieve and the impact on our customers

- 1.1 To report to the Harbour Committee the outcomes from the Brixham Harbour Northern Arm Breakwater Concept Design Report (May 2011), produced by Parsons Brinckerhoff.
- 1.2 To consider the next steps in the potential development of a Northern Arm Breakwater at Brixham harbour. A Northern Arm Breakwater at Brixham would greatly improve the situation for our harbour customers and it is expected that it would make a significant contribution to the local economy.

2. Recommendation for decision

- 2.1 **That the Torbay Development Agency be asked to prepare a preliminary business case for the Northern Arm Breakwater; to include an economic analysis of the proposed development to assess the project's viability, its value and importance.**
- 2.2 **That the cost of the preliminary business case be funded from the Brixham harbour reserve and that the Executive Head of Tor Bay Harbour Authority be authorised to amend the revenue budget accordingly.**

3. Key points and reasons for recommendations

- 3.1 A preliminary business case would be needed as part of any application for future funding.

- 3.2 If the business case for the new breakwater is proved or accepted then consideration can be given to carry out an over-water site investigation to determine the specific soil properties needed to enable the design to be refined and hence the overall construction costs to be reviewed.
- 3.3 The Harbour Authority needs to make a decision about what to do next in respect of it's aspirations for the development of this strategically important piece of harbour infrastructure at Brixham.

For more detailed information on this proposal please refer to the supporting information attached.

**Kevin Mowat
Executive Head of Tor Bay Harbour Authority
Tor Bay Harbour Master**

Supporting information to Report

A1. Introduction and history

A1.1 The specific purpose of the proposed Northern Arm Breakwater is threefold :-

- To enhance the protection of the fish market with the aim of allowing the safe unloading of fish under all weather conditions.
- To provide sheltered water to stimulate a range of waterborne leisure uses but specifically to include the substantial expansion of leisure marina facilities. This could include the increase in the capacity of the existing MDL Marina in front of the current wave screen and along the existing breakwater. Also, the development of new marina facilities adjacent to Freshwater Quarry and Oxen Cove possibly attached to a residential / retail development within that site.
- To respond to the aspiration of the local community to provide a properly enclosed and safe harbour in all weather conditions.

A1.2 As part of the regeneration project's feasibility studies, Hyder Consulting were appointed in 2005 to undertake an outline design of the breakwater. This included the development of a wave model, a review of potential options and the provision of cost estimates. In 2008, as part of another study, consultants Halcrow were asked to carry out an evaluation and cost assessment of a further breakwater option.

A1.3 The South West Regional Development Agency's (SWRDA) £8.4m funding towards the Brixham Regeneration Scheme included £1.16m towards the development of Freshwater Quarry, Oxen Cove and the Northern Arm Breakwater. Due to the closure of all Regional Development Agencies by March 2012, the Torbay Development Agency (TDA) were, in 2009, being encouraged by SWRDA to look at ways to spend this money. SWRDA required that all or most of this funding had to be spent by April 2011.

A1.4 Aecom were appointed with Savills in autumn 2009 to carry out an options appraisal to examine what activities could be undertaken to improve the viability of any proposed development in the two car park sites and the new breakwater. The activities examined were those that a commercial developer would either evaluate as a risk to viability or feasibility of the ultimate development objectives, i.e. planning, economic, access, environmental and geotechnical, etc.

A1.5 The report, issued in January 2010, assessed the priority to be :-

1. To carry out an economic benefit assessment. This would provide evidence to developers that any ultimate investment of this size would provide adequate return with regard to the sustainability of the economy of Brixham.
2. To determine the cost of the breakwater construction and the undertaking of further surveys and design works.
3. To carry out due diligence surveys and investigations, e.g. site investigation works, cliff stability assessments, services surveys, etc.

4. To commence the planning process to allocate these sites within the LDF. This would improve the marketability and thus the value of the sites.

A1.6 Following meetings between the TDA, the Harbour Authority and SWRDA to review Aecom's recommended priority, the scope of works were agreed to be :-

1. Additional investigations. To include site investigation to Freshwater Quarry, cliff stability assessments, utilities survey and flood risk assessment.
2. The preparation of a Site Development Brief for Freshwater Quarry and Oxen Cove. The brief would :-
 - Clarify relevant planning policies and their application to the Freshwater Quarry and Oxen Cove sites.
 - Promote the development of the sites.
 - Provide design guidance appropriate to the particular attributes of the sites and their surroundings.
3. To carry out a concept design of the proposed breakwater.

A1.7 In July 2010 the tender process commenced to appoint the appropriate consultant to carry out the proposed work to carry out the initial design of the breakwater. Parsons Brinckerhoff with Royal Haskoning were appointed in October 2010.

A1.8 The scope of works included the following :-

- To take the 2D model produced by Hyder Consulting in 2005, review and update the parameters and develop an agreed and accepted final model.
- Using the final accepted 2D model, to test and optimise a number of alternative layouts. To determine that which offers the best protection for existing and new marina facilities and the new fish market / quay within the harbour taking into account the ownership of harbour fundus.
- To review possible construction methods (reviewing issues such as cost and time affects, benefits and impacts) and agree that which is appropriate for the preferred layout and wave environment and which offers the best value to the community. To review the engineering issues in relation to the construction of the new breakwater. The breakwater should have a design life of at least 50 years.
- To carry out a cost assessment of the final agreed layout and preferred construction method.
- To identify possible financial mechanisms to provide funding for the works.

A1.9 Their final report was issued in May 2011. In partnership with the TDA, officers from Tor Bay Harbour Authority formed a central part of the report's consultation process along with a number of key stakeholder organisations including the RNLI, Brixham Yacht Club, Brixham 21 and Brixham Town Council.

A1.10 The agreed baseline option was a single rock armour breakwater extending some 360m north east from the slipway adjacent to AstraZeneca towards the disused fuel jetty on Victoria Breakwater. The estimated cost was between £25m and £38m which included construction, design and site supervision costs with a 20% contingency / risk allowance.

A1.11 The main reason for this large estimated cost is due to the design being based on limited site investigation / information. The available site investigation did not include specific tests to determine the settlement / consolidation properties of the lower level silt material within the harbour. Further site investigation was not carried out as part of this study as it could not have been procured, mobilised and carried out prior to the SWRDA's April 2011 spend deadline. Consequently, the consultant had to make conservative assumptions as to the settlement / consolidation properties of the harbour bed material. It is considered that with accurate soil property information, savings could be made to the overall cost of the breakwater through innovative design and construction.

A1.12 Section 7 of the Parsons Brinckerhoff final concept design report identifies a list of "next steps". These are noted as being :-

- (1) Preliminary business case.
- (2) Geotechnical investigation.
- (3) Select development partner.
- (4) Detailed business case.
- (5) Outline planning application.
- (6) Detailed planning application.
- (7) Procurement of breakwater.
- (8) Final business case.
- (9) Let contract to construct breakwater.

A1.13 In more detail, the initial steps, (1) and (2), are :-

- (1) To carry out an economic analysis of the proposed development to assess the project's viability, its value and importance. It will need to consider the project not only in the general Torbay and Brixham context but also to the wider south west regional view. The business case will need to assess issues such as strategic fit, objectives, options, commercial aspects, affordability and achievability. This document would be used as part of any application for funding. If the business case for the new breakwater is proved or accepted then consideration could be given to progress to step (2).
- (2) To carry out an over-water site investigation to determine the specific soil properties needed to enable the design to be refined and hence the overall construction costs to be reviewed.

A2. Risk Assessment

A2.1 Outline of significant key risks

A2.1.1 The £35,000 costs associated with delivering the preliminary business case would be abortive if the project did not proceed. However, approximately £230,000 has been spent to date to get to the current position in the design of this structure.

A2.1.2 Failure to develop a business case will jeopardise and/or delay any future external funding bids or any related investment opportunities.

A2.2 Remaining risks

A2.2.1 It should be noted that there is the potential for the actual ground conditions to be worse than that assumed in the Parsons Brinckerhoff report. This will have implications for both the update of the report and the current estimated capital costs of the project.

A3. Other Options

A3.1 The Harbour Authority could decide not to take any further action until a clear funding opportunity becomes available for this significant capital project.

A4. Summary of resource implications

A4.1 The initial estimate of costs for the above steps is :-

1. To carry out a preliminary business case - £35,000.
This work could be carried out by the TDA though some work may be externally sourced.
2. To carry out the required site investigation - £137,500.
This includes;
 - (a) £112,900 for site works;
 - Mobilisation of barge and rig.
 - Drilling of 6 no. boreholes and the necessary sampling and in-situ testing.
 - Laboratory testing.
 - Demobilisation.
 - 15% contingency to take account of the fact that the work is weather dependant.
 - (b) £11,300 for professional fees
 - (c) £13,300 contingency i.e. towing charges for the barge etc
3. To carry out the refinement of the design - £15,000.
This includes for;
 - Re-design based on the new soils information.
 - To carry out new model runs of the wave impacts on the assumption that the footprint and slope angles of the breakwater are substantially changed.
 - To update the environmental scoping report with the new information regarding the site.
 - To up-date the previously issued report to include the findings of the new marine site investigation, the modelling and the re-design. Re-costing would be carried out and the conclusions / recommendations revised.

A4.2 The total cost would be in the order of £187,500.

A5. What impact will there be on equalities, environmental sustainability and crime and disorder?

A5.1 It is not considered that the proposal will have an impact on equalities, environmental sustainability or crime and disorder.

A6. Consultation and Customer Focus

A6.1 As indicated in A1.9 a number of key stakeholders were consulted as part of the development of the Northern Arm Breakwater Concept Design Report.

A6.2 The content of the consultants report and this report were discussed at the meeting of the Brixham Harbour Liaison Forum.

A7. Are there any implications for other Business Units?

A7.1 Yes – the Torbay Development Agency will be asked to produce the preliminary business case.

Appendices

Appendix 1 Brixham Harbour Northern Arm Breakwater – Concept Design Report (May 2011)

Appendix 2 Brixham Harbour Northern Arm Breakwater – Option Costs (May 2011)

Appendix 3 Brixham Harbour Northern Arm Breakwater – Figures/Drawings (May 2011)

Background Papers:

Victoria Breakwater, Brixham, Geotechnical Investigation Report, 2011, Yeandle Geotechnical / Case Consultants

Brixham Regeneration – Northern Arm Breakwater, Design Evaluation and Cost Assessment of Option C, 2008, Halcrow

Brixham Northern Arm Breakwater, Outline Design Report, 2006, Hyder

Brixham Environmental Statement, 2006, Hyder

Brixham Harbour Regeneration, Numerical Modelling, Breakwater Design Applications, 2005, Hyder

Brixham Harbour Regeneration, Brixham Harbour Numerical Model Set Up Report, 2005, Hyder

Brixham Harbour Regeneration Strategy, Site Investigation Factual Report, 2000, Scott Wilson