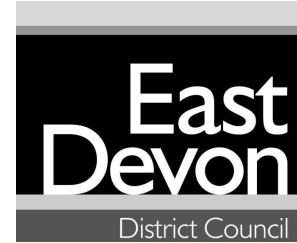


Agenda Item 10

Housing Review Board

14 January 2010

Jg



River Otter Tipton Vale, Tipton St. John

Summary

This report presents a summary of our consultant's findings following the commission to investigate the risk of erosion and concerns about possible flooding to council homes in Tipton Vale, Tipton St. John adjacent to the river Otter.

We have received advice on the protection works necessary to prevent further erosion of the river bank on land close to our bungalows. Several options are available to us, but all have considerable cost implications and difficulties as the land subject to the erosion is not in the council's ownership. This report proposes a way forward and an engineering project to protect some 130 metres of river bank adjacent to council homes.

Recommendation

To prepare a scheme of river bank protection, secure funding for the project and work towards implementation in 2011.

a) Reasons for Recommendation

To protect council property from damage by river bank erosion.

b) Alternative Options

A number of options are set out in the report.

c) Risk Considerations

There is a risk of doing nothing with the river moving closer to council homes. There is also a risk that the protection works are not successful as the rates of erosion and flooding are notoriously hard to predict accurately.

d) Policy and Budgetary Considerations

We do not have a policy covering the issues set out in the report. The report contains a guide price for river bank protection works.

e) Date for Review of Decision

Annual monitoring and regular progress is necessary.

1 Background

- 1.1 This report is a follow up report from the earlier report in March 2009 which considered the threat to our bungalows at Tipton Vale, Tipton St. John from the movement of the river Otter and the potential for further river bank erosion and fluvial flooding. The Board will recall that the land between our properties and the river bed is not in the ownership of the council.

- 1.2 We know that the river Otter follows a long left hand bend adjacent to, upstream and downstream of our properties, and erosion on the outside of the bend has been progressing over a number of years. Downstream the owner of the land has protected land and property by the construction of a steep rock armour revetment/wall. The plans in the attached report show the work undertaken to date.
- 1.3 Our main concern is river bank erosion where the river flow causes it to eat into the river bank and where the bank is soft it will cause continual collapse of the bank.
- 1.4 Since we last reported we have employed a specialist consultant to assess the problem. Howick Consultants of Clyst Honiton have now undertaken a detailed assessment. We also made a small provision in the draft Housing Revenue Account budget for 2010/11 for monitoring the river Otter.

2 Survey findings

- 2.1 Howick Consultants have provided a detailed technical report on their findings. I have included an extract of the report as **annex 1**. The investigation involved a variety of tests and modelling of data including river velocities, flood levels, and scour rates.
- 2.2 It can be clearly seen from the Ordnance Survey and other monitoring how much the river has changed its course over the last century. We are advised that this natural change in the river is likely to continue and be exaggerated by extreme weather conditions.
- 2.3 The conclusions and recommendations flowing from the technical assessment are:
 - The right bank of the river Otter is eroding at an average of 1.5m per year and at this rate will reach the boundary of the Tipton Vale housing in 13 years.
 - It has been assessed that the bed of the river adjacent to the right bank could erode to a depth of approximately 2.3m below general bed level during a flood; this is in line with observations immediately downstream following the October 2008 flood. Protection works will have to allow for this erosion.
 - It is recommended that bank protection is used to prevent further erosion that should be primarily in the form of a rip-rap laid on a stable bank (at a slope of 1 in 2) and that a falling apron should be used to protect the bank face of scour holes at the toe of the bank.
 - It is recommended that the upper part of the slope should be protected in environmentally acceptable and sustainable ways using vegetation (willows, etc.) and that the overall form of the bank and the protection should be designed to achieve a natural river bank.
 - The budget for the protection works is estimated to be £221,130.
 - It is recommended that the bed level of the river is monitored so that any changes in bed level can be recorded and used to establish an appropriate design bed level.
 - It is recommended that the flood flow velocities are monitored in the upper river prior to finalising design to enable the mass of the rip-rap to be confirmed.
- 2.4 The riparian landowner has an interest in protecting his land and we will need the cooperation and permission of the landowner to undertake any river bank protection works, which will necessarily be constructed on land not in the ownership of the council. There will be a series of negotiations and legal considerations before any work can commence.

- 2.5 Our consultants report presents options for river bank protection (see annex). These are essentially a Dry Armourstone wall; Battered wall (similar to the downstream revetment); Gabion walls (wire baskets filled with stone); Riprap bank protection (graded armourstone) or a variation of Riprap with vegetation. The primary protection is required below the water level and for the lower part of the river bank with a more natural form of protection towards the top of the bank. It is proposed that some 130 metres of river bank will need protecting.
- 2.6 In discussions with Howick Consultants we also considered creating an engineering solution to sheet pile around our properties to create an impermeable barrier. We are advised that this is a difficult solution to achieve the depths required.
- 2.7 Our consultants are exploring whether there is any financial support likely to be available from the Environment Agency or others. We understand that assistance may be available for flood prevention, but protection of property from river bank erosion is usually the responsibility of the owner of the property affected.
- 2.8 It can be seen that effective river bank protection is expensive and we do not have the available resources in our Housing Revenue Account or housing capital plan. We have been presented with little option but to undertake some form of protection work.

3 Next steps

- 3.1 If the Board agree with the recommendation we now need to prepare for a major capital project with a likely start in 2011. This will include some further design work on the engineering solution; specification; tendering the work etc.
- 3.2 It will be necessary to identify a means of funding the project which has been estimated to cost circa. £221k. We do not have this amount of funding readily available in the Housing Revenue Account and will have to consider how the sum might be factored in next year or a capital plan bid made to secure the funding. We will need to explore any contributions that may be available from the Environment Agency or others.
- 3.3 We also need to enter into discussions with the landowner and obtain his permission to undertake work on his land. Consult the Environment Agency; Parish Council and adjacent landowners. We will need to obtain planning permission for a scheme of river bank protection. The Board is invited to approve the recommendation.

Legal Implications

There are no legal implications on which to comment at this point, but there will be a need to think about the legal consequences of procuring services in undertaking any capital project and entering into agreements with the landowners affected by the proposed project.

Financial Implications

Any potential grant funding from the Environment Agency and other sources should be rigorously pursued as soon as possible.

Funding of the total estimated £221k costs by means of a PWLB loan, would incur annual repayments of £16,500 for principal and interest over 20 years, based on rates of 4.43% as at 4th January 2010. The £221k includes a 30% uncertainty contingency of £51k.

Consultation on Reports to the Executive

None.

Background Papers

- Report to the Housing Review Board March 2009
- Howick Consultants report Tipton Vale River Erosion Feasibility Study, October 2009.

John Golding
Head of Housing and Social Inclusion

Housing Review Board
14 January 2010