

Agenda Item

Executive Board

12 November 2009

Mark Reilly



Pennington Point – Cliff Erosion Review

Summary

Following an increase in cliff falls at Pennington Point, the Council commissioned Royal Haskoning, in September 2008, to carry out an assessment of the recent cliff erosion. It was intended that the assessment would be brief, but would be used to establish if there was an increased flooding risk to Sidmouth following the cliff falls and subsequently any appropriate emergency works to protect the Town. The report would be used to support a bid for grant funding to pay for the cost of any approved emergency works.

The study confirmed that although the cliff face at Pennington Point has shown signs of erosion, there was at that time no immediate requirement for emergency works to be undertaken. It should be noted that there is an inherent risk and safety concern associated with cliff faces of this nature. Therefore in addition to the safety measures already implemented, the report suggested that periodic surveys should be carried out to monitor the erosion of the cliff and manage health and safety issues on council-owned land in this area.

A previous version of this officers Executive Board Report was taken to the Executive Board on 1st April 2009 but was withdrawn following public representation with an Executive resolution “that the decision on the Royal Haskoning assessment of the recent cliff erosion at Pennington Point be deferred to allow time for the consultants to work with the Council Officers and public representatives to examine any areas of the engineer’s report that may need clarification”.

A meeting was held on the 24 April 2009 with public representatives and other interested organisations. Several issues with the report were raised at that meeting but the one issue that gave the most concern were the erosion rates given for the cliffs. It was agreed that the report would address some of these issues and that the cliff erosion rates given be revisited. It was the request of the group that other factual historic evidence relating to the position of the cliffs in the past be considered.

The revised report from Royal Haskoning (see attached report) was presented to the public representatives and other interested organisations at a meeting, held on the 22nd October 2009, chaired by the Deputy Leader Councillor G Brown. There was a discussion regarding the details in the report and although there was still some concerns voiced regarding the cliff erosion rates a consensus was reached by the group on the following points:

- a) That the Pennington Point Cliff Erosion Review report be accepted for what it was intended. That is to determine if Sidmouth Town was at an increased risk of flooding following cliff falls and if proven to be used to obtain relevant approval and funding for emergency works, from the EA, to protect the Town.
- b) That a request is made to the Executive Board to commission a report which takes into consideration the outcomes of the Pennington Point study in 2001 and the Environmental Statement developed in 2002. This report would need to include Devon County Council; Environment Agency; Natural England; National Trust; South West Water; Sidmouth Town Council; and consult with other appropriate groups and public representatives. The purpose of the report would be to produce evidence for a submission to justify and obtain funding for a

programme of works which would give improved protection to the Town of Sidmouth from the consequences of the continued erosion of the cliffs east of Sidmouth.

- c) That the group continue to work together to consider potential future issues that may arise at Pennington Point. The group would meet when required as appropriate.

The Members of the group currently include East Devon DC, Devon County Council, Environment Agency, Natural England, National Trust, South West Water, Sidmouth Town Council, Sidmouth Chamber of Commerce, Sidmouth Hospitality Association, Salcombe Hill Residents' Association, and Sidmouth Vision Group. The local MP, Local Ward Members and the Local County Councillor form part of the group.

It is recommended that:-

1. **Members are requested to accept the conclusions and recommendations of the consultants report including the requirement to make periodic surveys of the cliff and beach. This would provide a useful database that would assist with future decisions on the management of the frontage and assess future risk to the eastern town of Sidmouth. There is the need to make future budgetary provision for the survey work as there is currently no budget provision and each survey would cost approximately £10k.**
2. **Members are asked to consider commissioning a further report (Project Appraisal Report) which takes into consideration the outcomes of the Pennington Point study in 2001 and the Environmental Statement developed in 2002. This report would form part of a submission to Defra requesting approval and funding for a programme of works or a scheme which would give better protection to the Town of Sidmouth from the consequences of continued erosion of the cliffs east of Sidmouth. There is currently no budget for this work which has an estimated cost of approximately £40k.**

(a) Reasons for Recommendation

Please read the main body of the report.

(b) Alternative Options

Do nothing.

(c) Risk Considerations

Failure to act could put Sidmouth Town at a future risk from flooding through the effects of coastal processes.

(d) Policy and Budgetary Considerations

The proposed work meets the corporate priority "Take care of and improve our environment". There is currently no budget available for continued monitoring.

(e) Date for Review of Decision

Not Applicable.

Review of Cliff Erosion and its impact on Infrastructure East of Sidmouth

1.0 The Report on Cliff Erosion at Pennington Point

The report needed to determine the rate of erosion of the cliffs at Pennington Point and the potential risk to the various structures and properties at the Eastern end of Sidmouth. The report was also required to look at what actions were required once the erosion rates and risks had been determined. The report included the following:

- i. Establish base information using previous studies
- ii. Understand the current problem and issues
- iii. Scope the methodology for the report
- iv. Carry out the survey and assess results
- v. Review previous options
- vi. Consider if benefits of a scheme are sufficient for approval
- vii. Conclusions and Recommendations

Once the report was completed there was a need to discuss its contents with other asset owners. These asset owners were:

- (a) The River Sid western wall, which is the responsibility of the Environment Agency
- (b) The South West Water pumping station
- (c) The coastal footpath and the Alma Bridge, which are the responsibility of Devon County Council, and
- (d) The foreshore immediately east of Pennington Point, which is the responsibility of the National Trust, although some of this may have reverted back to the Crown.

2.0 Sidmouth – Pennington Point Coastal Study, August 2001

The Pennington Point frontage was the subject of a study carried out in August 2001 for East Devon District Council (EDDC) by Posford Duvivier (now Royal Haskoning). That report addressed the following issues:

i. Previous erosion rates

Analysis of surveys carried out in 1996 and 2001 indicated that erosion rates occurring at Pennington Point were in the order of 1.5 – 2 m per year. Previously the rate of erosion had been considerably less, at approximately 0.2 - 0.5 m/yr.

ii. Anticipated future erosion rates

Based on the above, the consequences of erosion continuing at the rates of 1.5 and 2.0 m/yr were investigated.

iii. Options for works that might be carried out to protect the cliff from erosion

Four options were put forward. These ranged from upgrading the River Sid western wall to full protection of cliff face that would be sufficient to cover the frontage of the cliff top properties (approximately 200m).

iv. A cost benefit analysis

The findings of this analysis were that there may be a case for attracting central government (at that time DEFRA) funding for

upgrading the River Sid western wall, but not for undertaking work to provide protection to the cliff.

v. Environmental Issues

It was noted that Pennington Point lay within the following designated sites:

- Sidmouth to West Bay candidate SAC
- Sidmouth to Beer Coast SSSI
- Lyme Bay Sensitive Marine Area
- Dorset and East Devon Coast proposed World Heritage Site

An Environmental Statement (ES) was prepared in December 2002 by Posford Haskoning. This ES was developed to support a defence option that provided protection to Pennington Point and extended along the full length of the Salcombe Hill/Cliff Road frontage. However this option, when submitted, was not approved.

2.1 The Alma Bridge Emergency Rock Groyne

A small rock boulder stub groyne was constructed in 2002 as a short-term measure to protect the east abutment of the Alma Bridge in anticipation of further erosion of Pennington Point.

3.0 The Current Problem

The current problem is the recent cliff falls at Pennington Point. Whilst this is an immediate concern as it is highly visible from the Sidmouth esplanade, it forms part of the wider erosion issue and resulting consequences at Pennington Point and Salcombe Hill cliffs. This includes:-

- i. Erosion of the Alma Bridge foundations and eventual collapse of the bridge
- ii. Loss of a short section of coast path due to erosion.
- iii. Direct wave attack on the River Sid wall, which might lead to overtopping on the Ham recreation ground and beyond, including flooding to properties at the eastern part of the town
- iv. A longer term issue of possible collapse of the river wall and a threat to the underground South West Water pumping station at The Ham
- v. Eventual threat to the properties fronting Cliff Road.

While the above are the direct future consequences, cliff falls can occur at any time and are a danger to persons in the area. Cliff falls also have the potential to cut off egress routes at high tide.

4.0 Report Methodology

The approach for the 2008 Royal Haskoning report was to:-

- i. Determine changes to the cliff that have occurred since 2002. This was carried out by:
 - undertaking a survey of the cliff and beach area
 - taking aerial photographs of the frontage
 - taking photographs at ground level from approximately the same vantage points as those taken in 2002 and

- comparing all of the above with the survey and photographs taken in 2001/2002 and determining changes that have occurred
- ii. Re assessing (from the 2001 report) erosion rates based on the above information
- iii. Reviewing options, benefits and costs
- iv. Putting forward recommendations for management of the frontage.

5.0 Results of Survey and Photographs in September 2008

5.1 Survey

Merrett Surveys were commissioned by Royal Haskoning to undertake a remote, ground based, LiDAR survey. This is a relatively new technique, which is able to present the survey and photographic detail in both 2D and 3D perspectives. This survey technique accurately records all the cliff's features, including the top of the cliff without health and safety risk.

Summary of Cliff Top Changes

The assessment indicates a relatively stable erosion rate between 1888 and 1996, but with a marked increase in erosion since 1996 to an average of 0.41 m/year. Peak erosion rates for specific locations are higher, up to 0.98 m/year. All rates are contained in Appendix D of the attached report.

After reviewing the above data and even taking account of the increase in erosion rate since 1996, it is evident that the average erosion that has occurred between Pennington Point and along Salcombe Hill is not as serious predicted in the Pennington Point Coastal Study of 2001 (1.5-2 m/year).

Topographic surveys were undertaken both after the initial cliff fall on 11 September 2008 and following a cliff fall on 25 September 2008. The volume of cliff fall between the two dates was 356m³.

5.2 Aerial Photography

The aerial photographs from 1987, 1993, 1999, 2000 and September 2008 are presented in Appendix B of the attached report. The photos show that cliff recession has occurred particularly over the western half of the Pennington Point/Salcombe Hill frontage.

5.3 Ground Photography

In Appendix B, the ground-based photographs taken in 2002 can be compared with photographs taken from the same vantage point on 30 September 2008. The recent cliff recession at Pennington Point can be easily identified.

6.0 Review of Options

The overall cliff recession since 2001 has been less than the predictions made in the 2001 report. The recent cliff falls are part of a pattern that can be expected to continue.

In summary, there are no assets (e.g. cliff top properties, The Ham pumping station, the Alma Bridge or the residential area beyond The Ham recreation ground) which are at further or increased risk as a result of recent events. Namely, no further or increased risk as a result of recent events to the eastern end of Sidmouth Town.

Based on the above review, it is not necessary to undertake short-term emergency works to protect the cliff. Broadly, the options for providing longer-term protection to Pennington Point and the rationale for implementation remain much as identified within the 2001 report.

These were:-

Option I - River wall upgrading

Option II - Rock groyne at Pennington Point

Option III - Rock revetment at Pennington Point (approx 50 metres)

Option IV - Rock revetment at Pennington Point extending to cover the properties fronting Cliff Road (approx 200 metres).

7.0 Scheme Benefits

Scheme benefits (i.e. the damages and loss that would be avoided by implementing a scheme) were identified in the 2001 report in accordance with guidelines for economic analysis as given by DEFRA.

These guidelines remain broadly similar today, although the procedures for allocation of funding have changed. It was not possible in 2001 to derive an economic justification for works to be carried out to protect the cliff (that is - options).

The actual erosion rates since 2001 are less than those that were predicted and therefore both the need for a scheme is less pressing and the economic justification is also correspondingly less. However, an increased risk due to climate change was not considered in the 2001 report.

An economic justification was demonstrated for undertaking work to upgrade the River Sid western wall. However, much of the benefit was based on the damage that might occur to The Ham Pumping Station.

The most vulnerable assets in the medium term are associated with the Alma Bridge and the coastal footpath. Although these are highly valuable social and amenity assets, they do not provide significant economic benefits if protected in terms of current Defra funding allocation. This means that East Devon District Council would have difficulty in promoting an acceptable emergency or permanent scheme to protect these assets. This is particularly the case as there is already a means for a diversion of the coastal footpath. None of these assets are the responsibility of East Devon DC.

8.0 Conclusions and Recommendations from the Report

The main conclusions arising from this brief study are:-

1. The overall cliff erosion which has occurred since 2002 is less than that predicted in the 2001 report, even taking account of the accelerated erosion since 1996.
2. Some recent cliff falls have occurred at Pennington Point and further falls are likely to occur in the near future, particularly where there are overhanging sections of cliff.
3. There are no assets which are immediately at risk which might lead to an economic justification for undertaking emergency work.

4. There is no change in the risk of flooding to Sidmouth, due to increased exposure to wave attack.
5. Four options for protecting Pennington Point were identified within the 2001 report. While the options would provide additional protection, only upgrading of the River Sid wall could be justified economically.
6. The frontage is located within an area that has several environmental designations and is therefore subject to the appropriate considerations. The Environmental Statement of December 2002 covers many of these issues and any works in this area will need to take account of these designations in their design and implementation.
7. There is a clear danger to the public from cliff falls, which can occur at anytime.
8. At the time of writing, there are no visible signs that would suggest the imminent loss of the footpath that ascends the Pennington Point Hill, although the cliff face is in close proximity to this footpath and should be monitored.

Following on from the above, the recommendations in the report are:-

1. There was no need to undertake immediate emergency works to Pennington Point.
2. It would be good practice to undertake periodic surveys of the cliff and beach. This would provide a useful database which would assist with future decisions on the management of the frontage. This work would inform the Council when there is an increased risk to Sidmouth of flooding due to erosion and determine a need for action.
3. Both the coastal footpath and the Alma Bridge are at the highest risk if no works are carried out to protect against erosion, although failure is unlikely to occur in the very short term.
4. Further option investigation, including beach management, to protect Pennington Point and the adjacent Salcombe Hill cliff could be undertaken. However, it should be recognised that the likelihood of attracting central government funding for such schemes is very limited.
5. Measures should be put in place to warn the public of the danger of cliff falls. We note that this is currently being addressed.
6. A review should be carried out to determine the works which might be appropriate to upgrade the River Sid western wall. We believe that the wall is the responsibility of the Environment Agency, who as the owner of the asset would be responsible for inspection and maintenance. The local assets at risk if wall failure occurred are both the South West Water pumping station and the Town Councils public open space.
7. If no further protection work is to be undertaken, management plans should be drawn up for rerouting of the coastal footpath and relocating the Alma Bridge. At some point it will become necessary to close the footpath and/or bridge for health and safety reasons. The condition of the footpath and bridge should be monitored regularly. An alternative route for the coastal footpath has been highlighted in the report. Devon County Council, as the owner of the asset, would be responsible for inspection, maintenance and if necessary diversion.

9.0 Consultation with Stakeholders

On 4 February 2009, a meeting was convened between East Devon District Council and the main asset owners, at the offices of Royal Haskoning, to discuss the details of the report. Present were



representatives of Devon County Council, South West Water and the Environment Agency.

These organisations had been given copies of the report and were asked to clarify what, if any, actions / measures or future contingencies they would consider putting in place to protect their assets. They were also asked if their prospective organisations would contribute to on-going monitoring of the processes at Pennington Point.

The organisations stated that they had their own monitoring regimes; with a contingency in place should their structures be at risk. There was a view that it was unlikely that the organisations would joint fund, with EDDC, a monitoring scheme.

10.0 Conclusions

The “Review of cliff erosion at Pennington Point” has led to the following conclusions:

1. There are no assets (e.g. cliff top properties, The Ham pumping station, the Alma Bridge or the residential area beyond The Ham recreation ground) which are at further or increased risk as a result of recent events.
2. There is no further or increased risks as a result of recent events to the eastern end of Sidmouth Town.
3. There is no need to undertake immediate emergency works to Pennington Point.
4. The actual erosion rates since 2002 are less than those that were predicted and therefore the evidence to support an economic justification, in terms of current Defra funding allocation, for a scheme is also correspondingly less.
5. The organisations (Devon County Council, Environment Agency and South West Water) have their own monitoring regimes with a contingency in place should their structures be at risk. These organisations would not joint fund a monitoring scheme with EDDC, but will continue to manage and protect as necessary their own assets.
6. It is anticipated that the National Trust will manage public health and safety from collapsing cliffs on their foreshore, immediately east of Pennington Point.
7. It would be good practice to undertake periodic surveys of the cliff and beach. This would provide a useful database that would assist with future decisions on the management of the frontage. There is no budget for this work and the cost for an annual survey / review of the cliffs at Pennington Point is estimated to be approximately £10,000 per occasion.
8. Should, at any future time, it become evident that continued erosion of the cliffs at Pennington Point were to put Eastern Town at risk of flooding, this would justify consideration of emergency works. The Environment Agency had already indicated that they would have supported and funded emergency works if this review had indicated that the works were necessary and justified. A sum of £30,000 was put aside for any necessary emergency works but, due to works being unjustified, then this funding was not available.
9. At the meeting of the 24 April 2009, with public representatives and other interested organisations, a request was made that East Devon DC consider commissioning a report which takes into consideration the outcomes of the Pennington Point study in 2001 and the Environmental Statement developed in 2002. This report would form part of a submission to Defra requesting funding for a programme of works, or a scheme, which would give improved protection to the Town of Sidmouth from the consequences of the continued erosion of the cliffs east of Sidmouth. EDDC on their own would

be unlikely to get funding for any works, but a combined EA/DCC and EDDC approach may be more successful. There is currently no budget for this work and the survey would cost approximately £40,000.

Legal Implications

Provided that adequate signage to warn the public of the danger of cliff falls is maintained there are no legal issues requiring comment at this time.

Financial Implications

As indicated in the report, there is no budgetary provision for monitoring work at Pennington Point. If it is considered necessary, and cannot be met by identifying savings or by re-prioritising other work, then it will place an additional burden on the Council's already stretched financial resources.

Conversely, if monitoring is not carried out, any potential worsening of the situation could involve the Council in greater expense at a later date.

Consultation on Reports to the Executive

None.

Background Papers

Pennington Point Cliff Erosion Review – Final Report October 2009 (attached).

Appendices

None.

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Executive Board
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