
REVIEW OF FLOODING WITHIN TORBAY

Report OSB/17/04 to the Executive 11th January 2005

Adopted by the Overview and Scrutiny Board on 6th
December 2004

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Paul Lucas, Executive Director

Further copies of this report can be obtained from :

Mark Hammett, Overview and Scrutiny Officer
01803 207063
markhammett@torbay.gov.uk

Foreword

Welcome to the report of the Flooding within Torbay Review Panel. This Panel was established to evaluate the measures that have been taken in Torbay to combat flood problems since 1999. The Panel also sought to assess the success of the measures undertaken to alleviate flooding and to identify any further issues which need addressing in the future in regard to flooding.

Throughout the process the Panel invited input and contributions from a variety of agencies and stakeholders including the Environment Services Directorate at Torbay Council, the Environment Agency, South West Water, Galmpton Resident's Association and the Chambers of Trade in Torquay, Brixham and Paignton.

This report takes on extra resonance in the light of the recent events at Boscastle in Cornwall where the misery of flooding is still all too visible. Therefore it is hoped that this report will in some small way contribute to the people of Torbay avoiding the same fate as they have experienced in the past.

Therefore in this report we have tried to address many of the problems that Torbay faces, and if we can alleviate or prevent these problems then all of the time and effort spent producing this report will have been worthwhile.

In the months that we have been investigating the reasons for flooding we have all seen the unfortunate events that occurred in Boscastle and we in Torbay can fully understand the effects that it had on their town and can sympathise with their plight. However we as a Council may be able to learn much from the disaster at Boscastle which will help our own residents in the future.

Finally can I take this opportunity to thank Mark Hammett for his hard work, and everyone else who has contributed to this review for their time and effort and for allowing us to benefit from their knowledge and expertise.

Councillor Alan Faulkner
Chairman of the Flooding Review Panel

1. Executive Summary

- 1.1 The Flooding Review Panel investigated the risks of flooding within Torbay.
- 1.2 Examined the measures that have been taken to prevent flooding in Torbay since 1999 and investigated any outstanding problems that will need consideration in the future.
- 1.3 The Panel met with a number of parties involved in the alleviation of flooding within Torbay and this enabled the local community and key stakeholders to put forward their view about the measures undertaken and the issues that will need to be addressed in the future.

It is recommended to the Executive:

- 1.4 That the Flooding Steering Group should co-ordinate actions to take forward the recommendations of this report.
- 1.5 That the Council should lobby DEFRA to alter its Benefit Cost Ratio system that is used to issue Grant Aid for local authorities so that areas like the South West receive equal consideration with other areas of the UK.
- 1.6 That the Council should lobby South West Water to replace the combined sewer system which currently operates in some areas of Torbay.
- 1.7 That the Council should seek assurances from South West Water that the sewage leak that occurred on 23rd August 2004 was a rare occurrence and that action is being taken to prevent this type of event happening in the future.
- 1.8 That the Council should note that flood alleviation work needs to be carried out at the following locations in the future: Station Lane and Victoria Road in Paignton, Bolton Street and Fore Street in Brixham, the area around Torre Abbey especially the King's Drive in Torquay and that the Council should monitor the need for work to be undertaken at Tweenaway Cross in the future.
- 1.9 That the Council should increase the public's awareness of flooding through displays in the Council's public buildings, that a mobile information unit should visit those areas of Torbay that historically suffer from flooding and that the Council should organise a Flood Awareness Week.
- 1.10 That the Council should investigate utilising the role of the Street Wardens so that they are trained to play a role during flood events.

- 1.11 That the Council should continue to monitor the methods through which it communicates flood alerts both internally and externally.
- 1.12 That the Strategic Director for Environment be requested to review the post-incident report on the flooding that took place at Boscastle on 16th August 2004 and act upon any new information or advice that is relevant to Torbay within that report.
- 1.13 That the Council should extend their thanks to all Council staff and outside agencies who have been involved in dealing with the alleviation of flooding within Torbay.
- 1.14 That the Development Control Committee should note the view of the Panel in regard to the contribution to flooding that is made by the construction of paths, driveways, decking and other building developments in the local community.

2. Introduction

- 2.1 Torbay has had a long history of experiencing flood problems, particularly during the summer months when the resort has suffered predominantly from fast, flash floods, which are difficult to predict. The reason for this can be traced back to the historical development of the area, as it has developed from the coast backwards. This has meant that as the three towns developed the public sewer system has had to cope with more and more houses and a larger population. The solution to this problem was to enlarge the sewers but this work has not always been carried out during the resort's development.
- 2.2 From 29th May 1999 onwards Torbay has suffered from a series of major flooding events with hundreds of properties being badly flooded. However the issue of flooding in Torbay became even more serious after the events of 24th December 1999 when severe flooding in Gampton resulted in a fatality.
- 2.3 Therefore in the light of these events and other subsequent flooding incidents the Flooding Review Panel was set up by the Overview and Scrutiny Board to investigate the risks of flooding within Torbay.
- 2.4 The key objectives of the review were:
- (i) To review the measures taken by Torbay Council to combat flooding problems within Torbay since 1999.
 - (ii) To review the measures taken by the Environment Agency and South West Water to address flooding problems within Torbay.
 - (iii) To review the success of the measures taken by Torbay Council, the Environment Agency and South West Water to combat flooding within the Torbay area.
 - (iv) To identify any further issues that need addressing in regard to flooding problems within Torbay in the future.
- 2.5 The Project Plan, which sets out the full details of the review including the methodology which was employed, is attached as Appendix 2.
- 2.6 The Membership of the Panel comprised of Councillors Carroll, Carter, Craig, Davis, Faulkner (Mr A) and Monaghan. Councillor Faulkner chaired the meetings of the Review Panel.

3. Process

3.1 The Panel met formally on 10 occasions to consider evidence and to work through its Project Plan. It also visited the Meteorological Office and the Devon Area Office of the Environment Agency.

3.2 Evidence for the Review Panel's work was collected from the following presentations and discussions with:

Parvis Khansari, Assistant Director, Engineering and Property Services, Torbay Council

Dave Stewart, Service Manager (Drainage), Torbay Council

Richard Thorpe, Director of Finance, Torbay Council

Adrian Rushworth, Area Flood Defence Manager, Environment Agency.

Peter Brookes, Programme Leader, South West Water.

David Barr, Gampston Residents Association.

Brian Harris, Torquay Chamber of Trade.

Peter Bushe, Brixham Chamber of Trade.

James O'Dwyer, Paignton Chamber of Trade.

David Thacker, Torbay Hospitality Association.

Richard Clarke, Emergency Planning Officer, Torbay Council

Peter Dempsey, Senior Hydrologist, Meteorological Office.

Murray Dale, Senior Hydrologist, Meteorological Office.

Hamish Hall, Engineer, Hasford Poskoning.

3.3 The list of key documents (including background papers, reports and briefing notes) which were considered by the Panel is attached as Appendix 3.

4. Key Findings

Major flooding incidents since 1999

4.1 Torbay has suffered from the following incidents of major flooding since 1999:

- 29th May 1999 when 30 properties were flooded.
- 24th October 1999 when 200 properties were flooded.
- 24th December 1999 when 86 properties were flooded.
- 19th August 2000 when 55 properties were flooded.
- 7-13th December 2000 when 28 properties were flooded.
- 26th January 2001 when 34 properties were flooded.
- 1st January 2003 when 39 properties were flooded.
- 22nd June 2004 when 28 properties were flooded.

Duties and Responsibilities

4.2 It was explained to the Panel that the following institutions had the following duties and responsibilities:

- Local Authority
Torbay Council acts as the Land Drainage Authority and is responsible for looking after ordinary water courses within Torbay. It also has a responsibility to look after the coastal flood defences within Torbay.
- Highway Authority
Because Torbay Council is a Unitary Authority it is also the Highway Authority and therefore has a responsibility to stop and remedy the flooding of the highways in Torbay.
- Environment Agency
The Environment Agency has a responsibility for the main rivers in Torbay. Torbay only has one main river, the Gaimpton watercourse.
- Water Companies
Water Companies like South West Water are responsible for the public sewer system under the 1991 Water Industry Act.

Funding of flooding schemes

4.3 The Director of Finance explained that the funding of flooding projects fell into two areas:

- External funding (from outside bodies)
- Internal funding (from within the Council)

1. External Funding

(A) The Environment Agency

The Environment Agency is responsible for the flood risk from main rivers as well as flooding from the sea. Therefore within Torbay they have a responsibility for the Gaimpton watercourse.

The Agency is funded through levies raised by local authorities (like Torbay Council) known as Flood Defence Levies, and Government grants. A local Flood Defence Committee then agrees an annual programme of improvement and maintenance work. However the selection of the location of projects to be carried out is done through a scoring system which tends to benefit areas of high population density, which can disadvantage some areas of the South West.

Torbay has recently benefited from the Environment Agency undertaking a major flood defence project at Gaimpton Watercourse at a cost of £500,000.

(B) DEFRA (Department of Environment, Food and Rural Affairs)

External funding is also available to the Council for flood defence schemes from the Department of Environment, Food and Rural Affairs (DEFRA). The Council can apply for funding from DEFRA, this is known as Grant Aid and comes from the Department's Flood Management Forward Capital Programme. Currently the Council has achieved funding for work to take place at Higher Brixham, and is awaiting confirmation of its bid for projects at Paignton town centre and Goodrington Sea Wall.

But the Panel were informed that the Council only receives Grant Aid if the Benefit Cost Ratio (which calculates the benefits of the scheme economically, environmentally and on the local population) scores highly enough to warrant the Aid. The Panel were informed that at times this Benefit Cost Ratio system seemed to benefit areas of high population density which can place areas like the South West at a disadvantage in gaining Grant Aid.

However it must be noted that this Grant only covers about 45% of the construction costs for the scheme so the Council has to find the funding for the balance.

2. Internal Funding

The Council has no specific budget for flood defence schemes and is reliant on grants from DEFRA for large schemes and the highways budget for smaller scale flood works.

When the Council undertakes large scale flood defence schemes it bids for Grant Aid from DEFRA, however this will not cover the full cost of the work to be undertaken. Therefore the Council has to fund the balance through Supported Borrowing, this is when the Council borrows the money needed and pays it back over time, this process is very similar to mortgage repayments.

If DEFRA refuses to offer Grant Aid then the Council will have to fund the whole cost of the flood defence scheme.

The Council also carries out minor schemes in relation to flooding and these smaller schemes are funded in two ways:

- If the work is carried out on private land then the costs of the work are recovered through the landowner.
- Through the highways budget.

What measures have been taken by the Council to alleviate flooding in Torbay since 1999?

- 4.4 The Council held a Flood Fair on 12th April 2003 at Torbay Leisure Centre. This event aimed to increase public awareness of flooding, provided information on flood prevention products, and information on what to do if their property flooded. The Council provides flood prevention advice via the Council's Website and has distributed Environment Agency leaflets giving advice on flooding to all households in Torbay which have suffered from flooding. The Council also produced an insert to go inside the publications which informed the public on what to do if flooding occurs on their property. The Council also promotes Floodline, a telephone warning system which is run by the Environment Agency.
- 4.5 The Council works closely with other agencies involved in flood alleviation like South West Water, the Environment Agency and the Meteorological Office.
- 4.6 The Council has undertaken a large number of minor flood alleviation schemes which are generally less than £50,000 in value. A list of the minor schemes that have recently been completed is included at Appendix 4. The Panel were informed that the implementation of the minor schemes in Torbay had significantly contributed to limiting the severity of the flooding that occurred on the 1st January 2003.

- 4.7 The Council also has a number of outstanding schemes which it is seeking to address in the future or which are already being undertaken. A list of these schemes is included at Appendix 5.
- 4.8 The Council has been involved in some major flood alleviation projects since 1999. It spent £30,000 to alleviate the immediate threat of flooding on the Galmpton Watercourse before a larger scheme was implemented by the Environment Agency.
- 4.9 The Council has also secured funding from DEFRA for a major flood alleviation scheme on the Higher Brixham Watercourse. The scheme involves improving various culverts with some existing pipes being replaced with pipes which have a larger diameter.

Over the years the Higher Brixham watercourse has suffered from severe flooding in various locations along its length with up to 64 properties being flooded.

The estimated cost of the work on the Higher Brixham watercourse is estimated to be £500,000 with 45% of the funding coming from DEFRA and the balance coming from Torbay Council.

- 4.10 The Panel was also informed that the Council had submitted a bid to DEFRA for a major flood alleviation scheme to take place in Paignton town centre. Between 1999 and 2003 properties within the Victoria stream catchment, specifically in Station Lane, Dartmouth Road, Adelphi Road, Queens Road and Sands Road, have suffered flooding on at least four occasions.

Properties in this area are connected to the surface water system which eventually discharges to coastal waters at two locations - Paignton Sands and Paignton Harbour. Historically the system has suffered from extensive flooding, particularly when storms have coincided with high tides. At high tides the system becomes tide locked and either cannot discharge or has a vastly reduced discharge rate to coastal waters. If a storm occurs whilst the system is tide locked then the available storage is quickly utilised and hence flooding is inevitable. At least 84 properties are known to have been flooded, however it has been estimated that up to 150 properties could be at risk of internal and external flooding during storm events.

The scheme will involve the provision of a new Pumping Station in Paignton, the replacement and upsizing of culverts and sewers, the installation of a new "tide flex" valve and the removal of existing flap valves as well as the removal of the surface water connection to Station Lane Pumping Station.

The estimated cost of the work to be undertaken on this scheme is £1.2 million with part of the funding coming from DEFRA and the balance coming from Torbay Council.

The Panel were also informed that properties in Station Lane had suffered flooding as a result of the combined sewers system being overbarged. South West Water is due to carry out flood alleviation works at Station Lane during 2005. These works will include the construction of additional storage at Station Lane Pumping Station.

- 4.11 It was also explained to the Panel that the Council was currently in the process of submitting a bid to DEFRA for a pre-pair work to be undertaken on Goodrington Sea Wall, so that it can continue to protect Goodrington Park from coastal flooding. If the bid is successful then the work will commence in 2006 at an estimated cost of £490,000.
- 4.12 The Panel was informed that Torbay Council had been working closely with the Meteorological Office in developing improved flood forecast tools in the UK. The project, which was funded by the Treasury, commenced in April 2003 and involved Torbay Council as well as Birmingham City Council and Conwy County Borough Council.
- 4.13 The project assessed a number of historical storm events which took place in the local authorities' areas and explored the accuracy of the Meteorological Office's forecasting tools in predicting heavy rainfall which would lead to severe flooding.
- 4.14 The Council also operates a 24 hour control room which receives flood alerts from the Meteorological Office and the Environment Agency via fax. During office hours this information is cascaded down to a pre-determined list of recipients to act upon. Out of office hours the control room notifies the Highways Division, the duty Harbourmaster and Arboriculture so that they can take the necessary arrangements.
- 4.15 It was also explained to the Panel that the Highways Division carries out regular checks when it receives flood warnings to ensure that a list of pre-determined culverts, screens and gullies are free from blockage and will be able to cope with any potential flood water. The Highways Division also maintains a sufficient stock of sandbags which it will use at its discretion to deal with flooding. This stock of sandbags is also maintained to ensure that the public can purchase them in times of flooding to protect their property.
- 4.16 The Panel were also informed that the Council would take the lead in the post-incident recovery of the area after a major flooding event.

What measures have been taken by the Environment Agency to address flooding problems within Torbay?

- 4.17 The Panel were informed that the Environment Agency has undertaken a major flood alleviation scheme on Galmpton watercourse. It was explained to the Panel that although the watercourse in Galmpton was small it was highly susceptible to flooding and that the work which was undertaken was difficult to carry out as it was completed in a confined area.
- 4.18 The Environment Agency scheme consisted primarily of new or replacement culverts which reduced the chance of collapse or blockage. They also incorporated overflow screens should the culverts become overwhelmed.
- 4.19 The work carried out at Galmpton by the Environment Agency was completed in 2003 at a cost of £500,000.
- 4.20 The Panel were informed that from 2006 the Environment Agency would be taking responsibility for Torbay's Critical Ordinary Watercourses (COWs).
- 4.21 It was also explained to the Panel that Torbay would be receiving flood warning gauges from the Environment Agency in the future. A tidal gauge will be located in Torquay Harbour and a rain gauge was being implemented at Torre Abbey.
- 4.22 The Environment Agency has also introduced, at Torbay Council's request, coastal flood warning for the areas of the South Devon which are exposed to easterly weather conditions.

What measures have been taken by South West Water to address flooding problems within Torbay?

- 4.23 It was explained to the Panel that from 1991 to 1999 the Council had carried out many flood alleviation projects which were financed by South West Water. The locations where this work was carried out is included at Appendix 6.
- 4.24 In 1991 the Council worked in partnership with the Water Research Centre on hydraulic modelling of the sewer network in Torbay. This research recommended that 3 large water tanks should be built in Torbay to contain flood water at times of high rainfall. These tanks would then slowly release the water once the danger of flooding had disappeared. These tanks were built at Hele, Elcombe and Upton by South West Water.
- 4.25 As a result of the severe flooding that occurred within Torquay and Paignton during 1999, South West Water commissioned Torbay Council to undertake a detailed assessment into the cause of flooding and propose possible flood alleviation measures that may be undertaken in

the future. This report was published in 2001 and the main recommendations for Paignton form the basis of the major flood alleviation scheme currently being considered by DEFRA together with the works shortly to be undertaken by South West Water in Station Lane/Dartmouth Road. Within Torquay the report identified a flood alleviation scheme for Union Street/Fleet Street however as the existing public sewer system meets OFWAT's hydraulic design criteria South West Water are not funded to carry out this scheme. Torbay Council have approached DEFRA regarding this work however as the flooding does not originate from a watercourse or main river they would not provide grant aid funding for the scheme.

- 4.26 South West Water has also carried out work on 149 individual properties in Torbay which have been included on the DG5 Register. The DG5 Register is a list of properties which require work to be undertaken on them to stop them being flooded by water emanating from the public sewer.
- 4.27 The Panel were also informed that South West Water had successfully completed Torbay's first ever comprehensive sewage treatment works at Brokenbury Quarry. The treatment capacity of these works is the largest in the whole of the South West Water region and cost £65 million to complete.
- 4.28 It was also explained to the Panel that the major project being undertaken by South West Water in Torbay in the future would be the work it was undertaking jointly with Torbay Council in Paignton town centre. The work being implemented by South West Water was in relation to the existing Station Lane Pumping Station. This work would include the additional provision of approximately 110 cubic metres of storage. This work is due to commence in January 2005.
- 4.29 The Panel were also informed that South West Water would continue to do work on any DG5 properties in Torbay, but that this work would have to be prioritised along with other DG5 properties in the South West Peninsula.

How successful have the measures taken by Torbay Council been in alleviating flooding in Torbay?

- 4.30 At a meeting held on 26th August 2004 local stakeholders stated that the Council had been quite successful in dealing with local flooding problems and had completed many successful projects in various locations across Torbay.

- 4.31 However they also added that there were still many areas in Torbay which still suffered from flooding incidents and that these needed to be addressed in the future.
- 4.32 Galmpton Residents Association also praised the Council for the work it had carried out in Galmpton by undertaking a feasibility study prior to work being carried out by the Environment Agency.
- 4.33 It was also explained to the Panel that Torbay Council had been relatively successful in dealing with flood alerts since it had received them from the Meteorological Office and the Environment Agency but that reacting to them was difficult as the alerts were not geographically specific to Torbay. Therefore past experience had shown that on occasions flood warnings have been issued but no flooding has occurred and conversely that flooding has occurred when no flood alert warning has been received.

How successful have the measures taken by the Environment Agency been in alleviating flooding in Torbay?

- 4.34 At a meeting held on 12th August 2004 the Environment Agency stated that it considered the project it had undertaken in Galmpton to be a great success. However it was also stated that the Agency felt that the scheme was going to be difficult to maintain in the future because local residents had built into the watercourse.
- 4.35 A meeting of stakeholders held on 26th August 2004 confirmed the Environment Agency's opinion on the success of the project in Galmpton. A representative of Galmpton Residents Association stated that the Association was highly in press with the scheme and the follow-up work that was being carried out by the Agency in regard to informing the local residents about their rights and responsibilities in relation to the local watercourse.
- 4.36 The Association stated that the scheme had undergone a major test on Tuesday 22nd June 2004, when Galmpton was hit with some very heavy rainfall, and the scheme had coped very well with the rainwater in their opinion.
- 4.37 Overall the Association stated that they were very happy with the work that had been completed at Galmpton at the present time.

How successful have the measures taken by South West Water been in alleviating flooding in Torbay?

- 4.38 At a stakeholders meeting held on 26th August 2004 South West Water was praised for the building of the storage tanks at Hele, Elacombe and Upton as these schemes had reduced the number of significant flooding incidents in Torquay to two rare incidents in 1999.

- 4.39 South West Water was also praised for the work it had funded at Littlegate Road, Paignton.
- 4.40 However local stakeholders raised their concerns in reaction to an overflow of sewage which occurred on 23rd August 2004 which had caused considerable damage to the tourist trade in Torbay and significant pollution to a local beach.
- What further issues need to be addressed in regard to flooding in Torbay?
- 4.41 The Panel were told that the direction of the Council's Flood Steering Group needed to be addressed in the future.
- 4.42 It was explained to the Panel that land use in the UK was contributing to the increase in severe flooding incidents. The expansion of housing and the increasing tendency to build paths, driveways and decking were all contributing to flooding as rain water was not soaking into the soil. A representative from South West Water explained that the proliferation of paths, drives and other paved areas was a real problem in the UK and was a contributing factor to the flooding that occurred in Boscastle. He went on to explain that the growing population and an increase in housing in Torbay would only exacerbate the current situation in the future.
- 4.43 Local stakeholders also pointed out that flooding had a significant impact upon the local business community in Torbay. It was explained that severe floods impact not only on a business's stock but also on its customer base. Therefore it was suggested that the Council should investigate ways in which they could help the local business community in dealing with flood incidents in the future.
- 4.44 The Panel were also informed of a number of areas in Torbay which still suffered from frequent flooding. The area around Station Lane and Victoria Park in Paignton were both areas that were identified as being prone to frequent flooding. Local stakeholders also identified the area around Tweenaway Cross as an area of potential concern in the future.
- 4.45 In Brixham the area around Bolton Street was highlighted as an area of frequent flooding as was the south side of Fore Street.
- 4.46 The only area of Torquay which was highlighted was the area of Tor Abbey, especially the King's Drive. However it was explained that the flooding in this area was particularly disruptive as the roads were a major arterial route for Torbay.

- 4.47 The Meteorological Office also made representations to the Panel that they would like to work with local authorities like Torbay Council in the future in developing their weather forecasting tools so that they could issue more geographically specific flood warnings.
- 4.48 In a presentation delivered by an engineer from the environmental consultants, Posford Haskoning, the Panel were informed that many councils had difficulties in interpreting the severity of the warnings issued by the Meteorological Office and the Environment Agency. It was suggested to the Panel that this issue needed to be addressed in the future by local authorities via training.
- 4.49 It was also suggested to the Panel that the Council should continue to investigate new methods of communicating flood warnings both internally and externally other than by using the phone and fax.
- 4.50 The Panel also considered the role of Street Wardens in helping the community to deal with flooding events in Torbay. However there was some concern about the role the Wardens would fulfil, how the Wardens would be trained and the dangers they may face in dealing with flood related problems. Nevertheless the Panel identified that the Wardens do have a role to play in ensuring that vulnerable members of the community are safe during a severe flooding event.

5. Conclusions

- 5.1 Overall the Panel were impressed with the efforts that the Council has made to alleviate flooding within Torbay. The Panel felt reassured that the Council had carried out many flood alleviation schemes and had more planned for the future. They were also pleased that the Council had taken significant efforts to inform the local community about the risks of flooding through a Flooding Fair and leaflets.
- 5.2 The Panel were also impressed with the flood alleviation work that has been carried out by the Environment Agency and South West Water within Torbay, and were pleased that South West Water would be working with the Council in the future to undertake a flood alleviation project in Paignton town centre.
- 5.3 The Panel considered that the work being done by the Council in co-operation with the Meteorological Office in developing improved flood forecasting tools was extremely valuable and should continue in the future.
- 5.4 Nevertheless the Panel were aware that there are still many areas of Torbay that suffer from flooding and that the Council needs to continue to work closely with the agencies that provide flood alleviation schemes and advice on flood prevention.

6 Recommendations

It is recommended to the Executive:

- 6.1 That the Flooding Steering Group should co-ordinate actions to take forward the recommendations of this report.
- 6.2 That the Council should lobby DEFRA to alter its Benefit Cost Ratio system that is used to issue Grant Aid for local authorities so that areas like the South West receive equal consideration with other areas of the UK.
- 6.3 That the Council should lobby South West Water to replace the combined sewer system which currently operates in some areas of Torbay.
- 6.4 That the Council should seek assurances from South West Water that the sewage leak that occurred on 23rd August 2004 was a rare occurrence and that action is being taken to prevent this type of event happening in the future.
- 6.5 That the Council should note that flood alleviation work needs to be carried out at the following locations in the future: Station Lane and Victoria Road in Paignton, Bolton Street and Fore Street in Brixham, the area around Tor Abbey especially the King's Drive in Torquay and that the Council should monitor the need for work to be undertaken at Tweenaway Cross in the future.
- 6.6 That the Council should increase the public's awareness of flooding through displays in the Council's public buildings, that a mobile information unit should visit those areas of Torbay that historically suffer from flooding and that the Council should organise a Flood Awareness Week.
- 6.7 That the Council should investigate utilising the role of the Street Wardens so that they are trained to play a role during flood events.
- 6.8 That the Council should continue to monitor the methods through which it communicates flood alerts both internally and externally.
- 6.9 That the Strategic Director for Environment be requested to review the post-incident report on the flooding that took place at Boscastle on 16th August 2004 and act upon any new information or advice that is relevant to Torbay within that report.
- 6.10 That the Council should extend their thanks to all Council staff and outside agencies who have been involved in dealing with the alleviation of flooding within Torbay.
- 6.11 That the Development Control Committee should note the view of the Panel in regard to the contribution to flooding that is made by the

construction of paths, driveways, decking and other building developments in the local community.

7. Monitoring Arrangements

- 7.1 It is proposed that the Panel should reconvene in 2005 to assess the outcome of its recommendations.

Acknowledgements

The Members of the Review Panel would like to thank all the people and organisations who contributed towards the work of this review particularly:

Parvish Khansari, Assistant Director Engineering and Property Services.

Dave Stewart, Service Manager (Drainage).

Richard Thorpe, Director of Finance.

Adrian Rushworth, Area Flood Defence Manager, Environment Agency.

Peter Brookes, Programme Leader, South West Water.

David Barr, Galmpton Residents Association.

Brian Harris, Torquay Chamber of Trade.

Peter Bushell, Brixham Chamber of Trade.

James O'Dwyer, Paignton Chamber of Trade.

David Thacker, Torbay Hospitality Association.

Peter Dempsey, Senior Hydrologist, Meteorological Office.

Murray Dale, Senior Hydrologist, Meteorological Office.

Hamish Hall, Posford Haskoning.

Richard Clarke, Emergency Planning Officer.

Appendix 1

Implications of the Recommendations

Legal	Street Wardens are a new body being established under the Anti-Social Behaviour Act 2003 to assist with that type of enforcement, and whilst they could be used to help with flooding there are doubts about whether it comes within their general remit.
Financial	The report identifies a number of spending pressures that, if taken into our spending plans, will result in significant revenue and capital commitments for the Council. These will have to be assessed in the light of other priorities the council may have at that time, but will have to be funded from either Council Tax for revenue projects, or the Council's own resources for capital projects.
Human Resources	There will be implications for Human Resources regarding the training required for Street Wardens if the recommendations are adopted.
Property	There are no implications for the Council's property as a result of these recommendations.
Change Mgt Plan	There are no implications for the Change Management plan.

The recommendations contained within this Report are in accordance with the Council's Budget and Policy Framework

The recommendations contained within this Report would not be a Key Decision

Appendix 2

Review of Flooding within Torbay

Project Plan

Objective of the Review

To investigate the risks of flooding within Torbay, to assess the measures taken to prevent flooding since 1999, and to investigate the outstanding problems that need consideration in the future.

Introduction

The Torbay area has suffered from several severe flooding incidents in recent years. Some of the worst floods were seen in May, October and December 1999, the last one resulting in a fatality in Gampston. Subsequent flooding incidents have occurred in recent years that have impacted across the area with flooding occurring in Torquay Town centre and low lying areas of Paignton and Brixham.

Scope of the Review

1. To review the measures taken by Torbay Council to combat flooding problems within Torbay since 1999.
2. To review the measures taken by the Environment Agency and South West Water to address flooding problems within Torbay.
3. To review the success of the measures taken by Torbay Council, the Environment Agency and South West Water to combat flooding within the Torbay area.
4. To identify any further issues that need addressing in regard to flooding problems within Torbay in the future.

Service Background

The responsibility for flooding throughout England and Wales lies with various organisations, each either having duties or powers for different elements. The principal organisations include local authorities, highway authorities, the Environment Agency, water companies and riparian owners. In addition the Department of Environment, Food and Rural Affairs (DEFRA) is responsible for providing strategic guidance in regard to flood management.

The responsibility of each organisation is outlined below:

Under the Land Drainage Act 1991 local authorities are classified as the local drainage authority and they are responsible for managing the flood risk from ordinary watercourses (open and culverted). Additionally, if the local authority is a coastal authority they are responsible for the risk provided by coastal erosion and coastal flooding. Local authorities have permissive powers to carry out improvement works to flood defences and they provide an emergency response during major incidents.

Highway authorities are responsible for ensuring that the public highway is free from surface water flooding. Also where watercourses pass either under the public highway or within the boundary of the public highway the highway authority becomes a riparian owner of the watercourse and as such are responsible for the maintenance of the watercourse (see responsibilities of riparian owners below).

The Environment Agency is responsible for the flood risk arising from main rivers as well as flooding from the sea. They maintain, operate and improve flood defences and provide a 24-hour flood warning service and emergency response. Although they are not responsible for ordinary watercourses they have to consent any works being undertaken on a watercourse. The Environment Agency is responsible for reporting to DEFRA on government targets.

The water companies are only responsible for flooding from the public sewerage system in accordance with the guidelines set by the water regulator OFWAT.

Riparian owners are identified as the landowner adjacent to a main river or ordinary watercourse. Riparian landowners have certain rights and responsibilities in relation to the watercourses flowing through or adjacent to their property. These "riparian rights" are based on common law and have been defined as a result of legal cases over many years. As a riparian owner they are responsible for the maintenance of the watercourse through their property and they are not allowed to impede the flow of water along the length of the watercourse.

DEFRA are a government body and they are responsible for policy and providing strategic guidance in regards to flood management.

Legislative Background

Various legislation exists for dealing with land drainage and flooding matters. The principal legislation is as follows:

The Land Drainage Act 1991
Water Resources Act 1991
Environment Act 1995
Public Health Act 1936

Local Authorities

Under the Land Drainage Act 1991 local authorities are classified as the operating authority for ordinary watercourses. The authorities have permissive powers to carry out works to ordinary watercourses to prevent flooding or remedy and investigate damage due to flooding. Under this act local authorities have the power to serve notice on riparian owners to carry out maintenance works in order that flows are not impeded.

In addition to dealing with land drainage the local authorities have a duty to consider conservation as well as raising income through general charging arrangements to cover the costs of flood alleviation schemes and other land drainage matters.

Where culverts are blocked or the flow is impeded local authorities have power under the Public Health Act 1936 to serve notice on the landowner or occupier of adjoining land to clear the culvert.

Environment Agency

Under the Water Resources Act 1991 the Agency has permissive powers to maintain and improve main rivers for efficient passage of flood flows and the management of water levels. The Agency also has powers to construct and maintain defences against flooding on main rivers however they do not have powers to carry out works on ordinary watercourses. In addition the Agency are responsible for issuing flood warnings. Where work is to be carried out by a third party in, over or beneath a main river consent of the agency is required. The Agency under this act are also responsible for producing flood risk mapping which indicate the indicative flood plains.

Under the Land Drainage Act 1991 the Agency are required to give consent to any construction or alteration works on ordinary watercourses which may influence the free flow of water along the watercourse. The Agency can refuse to give consent to these works. Where work has been carried out without the consent of the Agency the Agency have powers to remove or alter the works and reclaim the cost of these works.

Under the Environment Act 1995 the Agency is placed under a duty to exercise general supervision of all matters relating to flood defence. In carrying out these duties they also have a duty to promote conservation. As part of this duty the Agency is a statutory consultee in the town and country planning process.

In 2000 DEFRA introduced High Level Targets and these set the context for the elaboration of the Agency's supervisory role. As the principal operating authority the Agency has a key responsibility in the achievement of these High Level Targets. This is achieved through its supervision by consent role, advice to operating authorities and by monitoring and reporting on the

progress of targets. As part of these High Level Targets bcal authorities are expected to produce a publicly available policy statement setting out plans for delivery of the Government policy aims and objectives. In addition bcal authorities are expected to carry out an annual assets survey of all flood defences on ordinary watercourses within their boundary and send the results of these surveys to the Agency for reporting to DEFRA.

As part of the High Level Targets the Environment Agency and bcal authorities have agreed those ordinary watercourses that are to be classified as critical ordinary watercourses (watercourses that flood numerous properties and cause disruption to transport on a regular basis). These critical ordinary watercourses will be maintained (classified as main rivers) by the Agency and responsibility for the operation and maintenance of the watercourses will pass from bcal authorities to the Agency. Where the Agency considers the bcal authorities are maintaining these watercourses satisfactorily, the Agency is empowered to contact the operation and maintenance of these watercourses back to the bcal authority.

Initial Supporting Documentation

Report Env/29/01 Flood Steering Group

Torbay Council Flood Report Sunday 24th October 1999

Torbay Council Flood Report Saturday 19th August 2000

Torbay Council Flood Report 29th May 1999

Review Panel

Councillor Faulkner (Mr A). Lead Member.

Councillor Carter

Councillor Davis

Councillor Monaghan

Councillor Camm

Councillor Craig

Fboding Project Plan

Time table for Review and Methodology

Date	Time	Venue	Council/Stakeholder/Community Representatives	Key Tasks
July 2nd 2004	10am	Town Hall	Overview and Scrutiny Panel	<ul style="list-style-type: none"> To agree the objectives and scope of the Project Plan for the Review. To agree the key tasks to be undertaken by the Panel in completing its Review.
July 7th 2004	10am	Town Hall	<p>Parv Khansari, Assistant Director Engineering and Property Services.</p> <p>Dave Stewart, Service Manager (Drainage).</p>	<ul style="list-style-type: none"> To brief the Review Panel on the extent of the fboding that took place in 1999 and to inform the Panel of the recent work undertaken by the Council on Flood alleviation before and since 1999.

29th July 2004	2pm	Town Hall	Richard Thorne, Director of Finance.	<ul style="list-style-type: none"> To explain to the Review Panel how the Council funds flooding schemes and staff time to carry out flooding projects.
12th August 2004	10am	Town Hall	Adrian Rushworth, Area Flood Defence Manager, The Environment Agency.	<ul style="list-style-type: none"> To receive a briefing from the Environment Agency on the work done in regard to flooding in the Torbay area since 1999.
20th August 2004	10am	Town Hall	Peter Brookes, Programme Leader, South West Water.	<ul style="list-style-type: none"> To receive a briefing from South West Water on the work done in regard to flooding in the Torbay area since 1999.

26th August 2004	2pm	Town Hall	<p>Mr David Barr, Gampston Residents Association.</p> <p>Mr Brian Harris, Torquay Chamber of Trade.</p> <p>Mr Peter Bushell, Brixham Chamber of Trade.</p> <p>Mr James O'Dwyer, Paignton Chamber of Trade.</p> <p>Mr Thacker, Torbay Hospitality Association.</p>	<ul style="list-style-type: none"> To consider information received from key stakeholders about their views and opinions on the provision and success of flood alleviation schemes in the Torbay area since 1999.
13th September 2004	10am	Met Office and Environment Agency	<p>Peter Dempsey, Senior Consultant (Hydrology), Meteorological Office.</p> <p>Adrian Rushworth, Environment Agency.</p>	<ul style="list-style-type: none"> To receive a briefing from the Meteorological Office on weather patterns in the future, especially in regard to flooding in the Torbay area as well as the provision of flood warnings in the future. To visit the Flood Control Centre at the Environment Agency.
22nd	10am	Town Hall	Richard Clarke, Emergency	<ul style="list-style-type: none"> To brief the Panel on the procedures and

September 2004			Planning Officer	measures that are undertaken when the Council receives a flood alert.
14th October 2004	am	Town Hall	Overview and Scrutiny Panel	<ul style="list-style-type: none"> To consider whether there are any further issues in relation to flooding in the Torbay area that have not been addressed by the Review panel. To determine the conclusions of the Review. To determine the recommendations of the Review. To finalise the report of the Review Panel.

The final report of the Review Panel will be presented to the Overview and Scrutiny Board at a meeting to be held on 6th December 2004.

Appendix 3

List of Key Documents

- Fboding Directory, Devon and Torbay, Environment Agency.
- Living on the Edge, an updated guide to the rights and responsibilities of a riverside owner, Environment Agency.
- Paignton Town Centre, Fboding Avoidance Scheme, Synopsis of Project Appraisal Report.
- Higher Brixham Watercourse, Fboding Avoidance Scheme, Synopsis of Project Appraisal Report.
- Critical Rainfall Thresholds for Pluvial Fboding, Synopsis of Final Report.
- Herald Express, Tuesday, August 24th 2004.
- Grassroots, the Torbay Coast and Countryside Trust Magazine, Summer 2004.

Appendix 4

Minor flood alleviation schemes completed by Torbay Council

Watercourse Flooding Problems - Schemes Completed			
Watercourse	Location/Problem	Solution	Date Completed
River Fleet	Winstone Avenue/Poorly designed screen	Replace screen	2002/03
Hollicombe	Hollicombe Ponds/Dilapidated storage pond	Reconstruct headwall and reinstate pond	2001/02
Occombe Valley	Coombe Park/Hydraulic overload of downstream culvert	Construct new storage pond in park	2001/02
Occombe Valley	Occombe Road Culvert/Very poor structural condition	Reconstruct sections of culvert	75% complete
Occombe Valley	Occombe Woods/Overloading culvert downstream	Construct check weirs	2002/03
Victoria Stream	Paignton Green/Defective Flap Valve	Replace flap valve	2000/01
Clennon Valley	R/O Kings Ash/Silt reducing hydraulic capacity	Remove silt	2002/03
Clennon Valley	Dartmouth Road/Silt reducing hydraulic capacity	Remove silt	2001/02
Galmpton	Galmpton Glade/Collapse of culvert	Carry out emergency repair works	2000/01
Churston	Brixham Road/Overloading culvert under road	Upsize culvert and install new trash screen	2000/01
Higher Brixham	Various/Reduction in hydraulic capacity due to debris	Removal of debris and silt	2001/02
Higher Brixham	Horsepool Street/Poorly designed screen	Replace screen	2001/02
Higher Brixham	St Margaret Clitheroe School/Poorly designed screen	Replace screen	2001/02

Higher Brixham	Doctors Road/poorly designed screen	Replace screen	2001/02
Yalberton	Totnes Road/Reduced capacity under road due to silt	Remove silt	2002/03
Yalberton	R/O Totnes Road/Flooding due to build-up of silt	Remove silt	2002/03
Aller Brook	A380 Culvert/Risk of flooding due to build-up of silt	Remove silt	2002/03
Maidencombe	Beach Access/Collapse of culvert/lack of capacity	Replace culvert with increased capacity	2001/02

Highways Flooding Problems - Schemes Completed			
Location	Problem	Solution	Date Completed
Hellevoetsluis Way	Blocked/damaged french drains	Reconstruct french drains	2002/03
Churston Way	Flooding on highway	Install new soakaway	2002/03
Marldon Way	Blocked/damaged french drains	Reconstruct french drains	2002/03
Winstone Avenue	Poorly designed trash screen on watercourse	Replace screen	2002/03
Occombe Valley Road	Culverted watercourse collapsed	Reconstruct section of culvert	2002/03
Occombe Valley Road	Culverted watercourse collapsed	Reconstruct section of culvert	2003/04
Rathmore Road/Falkland Road	Flooding on highway	Install new soakaway	2003/04

Appendix 5

Outstanding flood alleviation schemes to be completed by Torbay Council

Watercourse Flooding Problems - Outstanding Schemes			
Watercourse	Location/Problem	Solution	Comments
Cockington	Old Mill Road/Poorly designed screen	Replace screen	
Hollicombe	Old Paignton Road/Poorly designed screen	Replace screen	
Hollicombe	Gas Works/Hydraulic overloading of culvert	As part of new development upsize culvert	
Occombe Valley	Occombe Road Culvert/Very poor structural condition	Reconstruct sections of culvert	25% to complete
Victoria Stream	Paignton Town Centre Flood Alleviation	Construct new pumping station	Submitted to DEFRA
Victoria Stream	Paignton Green/Defective Flap Valve	Remove defective flap valve	
Clennon Valley	Kings Ash Road/Poorly designed trash screen	Replace screen	
Clennon Valley	Dart Valley Railway/Debris within culvert	Removal of debris and inspect culvert	
Broadsands	Outfall/Defective Flap Valve	Replace defective flap valve	
Churston	Alston Lane/Hydraulic overload of culvert under road	Upsize culvert and install silt trap	
Higher Brixham	Flood Alleviation Scheme	Hydraulic upsize of culverts and storage	Scheme approved
Yalberton	R/O Totnes Road/Flooding to front and rear gardens	Carry out investigations and propose solutions	Underway

Highways Flooding Problems - Outstanding Schemes			
Location	Problem	Solution	Comments
Occombe Valley Road	Culverted watercourse in danger of collapse	Reconstruct section of culvert	Planned for 2004/05
Brixham Road at Windy Corner	Flooding on highway	Install new soakaway	Planned for 2004/05
Cockington Lane O/s Rose Cottage	External flooding to property	Install new highway drain	Planned for 2004/05
Dartmouth Road O/s Gliddon Ford	Flooding on highway	Install new soakaway	Planned for 2004/05
Newton Road/Old Woods Hill	Flooding on highway	Install new highway drain	
Wheatridge Lane	External flooding to property	Install new highway drain	
Combe Lane	External flooding to property	Install screen and clean culvert	
Marldon Road	Flooding on highway	Install new highway drain	
Blagdon Road	Flooding on highway	Install new soakaway and drain	
Upton Manor Road, Brixham	Flooding on highway	Install new highway drain	
Centry Road	Flooding on highway	Install new highway drain	
Tor Park Road	Flooding on highway	Clean culvert and assess capacity	
Long Road/Stoke Road	Flooding on highway	Install new highway drain	
Browns Bridge Rd/Barton Hill Way	Flooding on highway	Install new highway drain	
Old Mill Road/Cockington Lane	Flooding on highway	Modify existing screen arrangement	

Appendix 6

Flood alleviation schemes completed by Torbay Council with funding from South West Water between 1991 and 1999.

- Pettor Road, Torquay where 2 properties were protected by increasing the capacity of the sewer at a cost of £30,000.
- Newton Road, Torquay where 20 properties were protected with the construction of a large tunnel at a cost of £2 million.
- Shewell Valley, Torquay where 2 properties were protected by the construction of a large sewer tank at the cost of £50,000.
- Little Gate Road, Paignton where 25 properties were protected by increasing the capacity of the sewer at a cost of £200,000.
- St Michael's Road, Paignton where 10 properties were protected by the up-sizing of the sewer's storage capacity at a cost of £100,000.
- Cliff Road, Paignton where properties were protected by the up-sizing of the sewer's storage capacity at a cost of £75,000.