



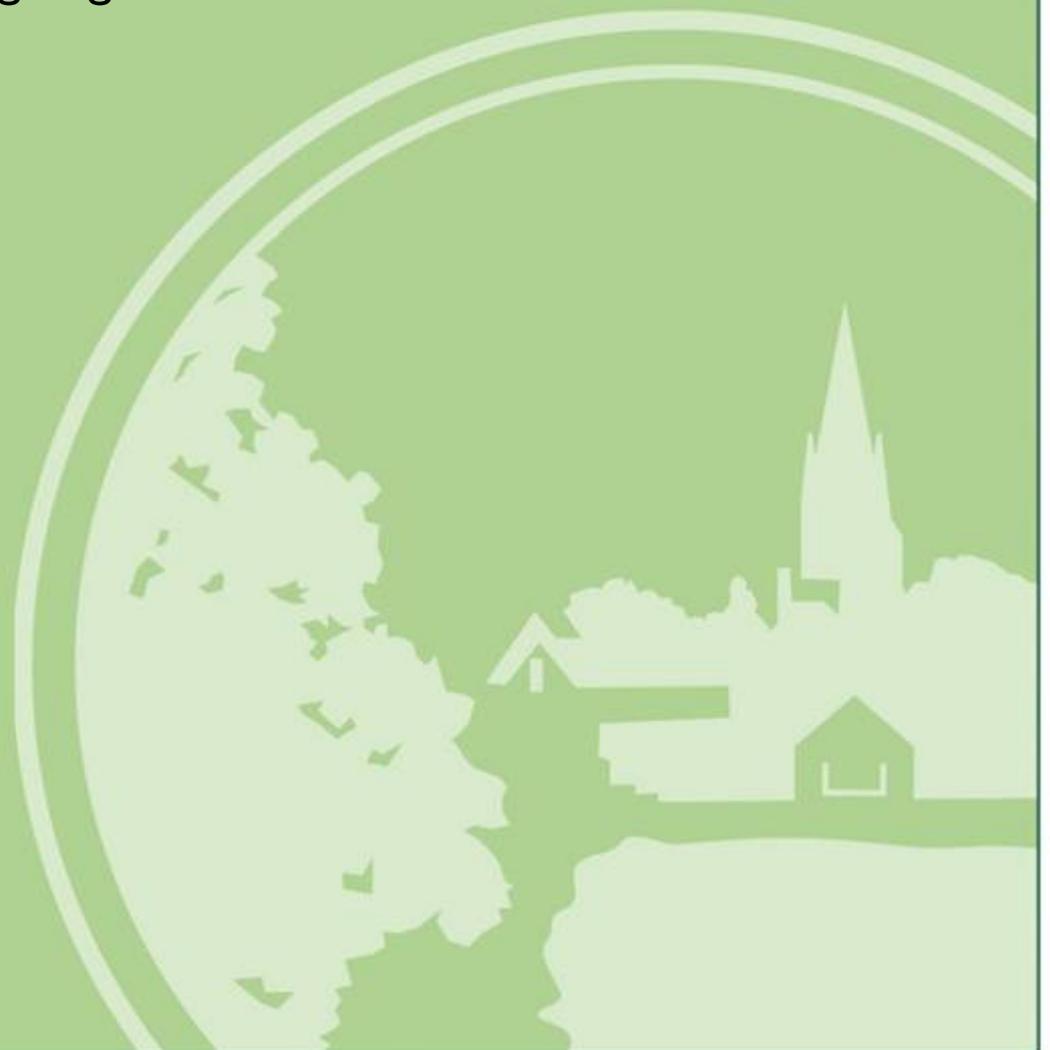
WEST OXFORDSHIRE
DISTRICT COUNCIL

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Parish Flood Report: **Eynsham**

July 2008

Version 1 – This report may be revised in the future to incorporate ongoing consultation results



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1.0 INTRODUCTION

On the 20th July 2007 large parts of the South of England were subjected to intensive storms. The scale and speed of the rainfall was unprecedented and took most communities by surprise causing widespread flooding of highways and property. On this occasion, unlike previous storms / flooding experienced, this impacted on many properties that had never been affected before, due to much of the flooding coming in the form of rain water run off from land.

A swathe of the district was particularly badly affected by the massive storms, which commenced in the morning and subsided in the evening. During the following days further disruption occurred due to rising river levels. At RAF Brize Norton, the records show that over 125 mm (5 inches) of rain fell in 12 hours, and this is a record going back over 100 years. Not only that, but the period from May to July had been the wettest on record since 1903 and meant that the ground was saturated and unable to absorb any more water.

On the 10th October 2007, the District Council's Cabinet considered a report of the Head of Street Scene and approved additional resources in order that a review of the affected areas could be carried out and further reports be prepared for the Council's considerations.

1.1 Purpose of the report

In response to requests from both the Parish and Town Councils and the general public West Oxfordshire District Council has produced a number of reports that identify each individual cause of flooding within the Parish / Town, what work is being carried out by external agencies (EA, Thames water etc); what the potential options are for future mitigation - and who might be best placed to fund such schemes. The reports themselves reflect the series of water systems that all played a part in the flooding experienced in July 2007 and will help all the organisations involved understand the need to sequence their activities.

This report has been prepared by a qualified Engineer in consultation with the key external agencies and seeks to explore the main reason behind why the floods happened in July 2007 and give an overview of the event itself. It will also provide an understanding of the different roles and levels of responsibility for the agencies involved.

This report should be used to make sure that all the agencies involved with flood prevention – like the Environment Agency, Thames Water, Oxfordshire County Council, Town / Parish Councils and private land owners – work in true partnership for the good of everyone in the local community.

A key outcome of the reports is that residents are given a broad overview of the complex linkages between the different organisations involved and also the range of options available.

1.2 Roles and responsibilities

One of West Oxfordshire District Councils key ongoing roles is to continue to lobby National agencies / Government on behalf of the residents and businesses of the district to secure funding and/or additional resources to assist with flood prevention and other relevant activities. The Council will also work closely with other agencies and organisation in order to highlight the local issues and actions identified in the report.

The legal responsibility for dealing with flooding lies with different agencies and is complex, so below is a simplified summary.

Environment Agency (EA) – permissive powers¹ for main rivers

Oxfordshire County Council (OCC) – Responsible for adopted highways and highway drainage.

Thames Water (TW) – Responsible for adopted foul and surface water sewers.

West Oxfordshire District Council (WODC) – duties as a riparian² land owner, and permissive powers¹ under Land Drainage Act 1991, Public Health Act 1936, Highways Act 1980 and Environmental Protection Act 1990.

Private land owners - duties as a riparian land owner.

1.3 Consultation and consent

The key organisations mentioned above are currently carrying out their own investigations, but operate independently of each other, have different methods of prioritisation and different funding criteria. The District Council has consulted with these agencies together with Parish Councils, Town Councils and individual property owners in order to prepare this report.

It is recognised that the majority of the options proposed in this report require further investigations / feasibility studies and / or consultation before they are carried out. Therefore these options may not be appropriate in every case when full costings, environmental, landscaping, biodiversity, built environment and historic factors are fully considered.

When considering protection against future flooding, it must be emphasised that the risk and impact of flooding can be mitigated against but in some cases not fully removed.

1.4 Response to this report

The options section of this report highlights the potential areas of work / activities under the responsible agency, for example the Environment Agency, West Oxfordshire District Council etc. If you have any specific questions relating to these activities please contact the relevant agency using the contact details provided at the top of the chart.

If you have any general questions please contact your Parish / Town Council who have been a key contributor to the production of the report and have agreed to act as the first point of contact.

The Council is also planning to hold a series of road shows in the Parish areas where representatives from all the relevant areas will be available to answer any questions local residents have as well as provide more information on ways residents may help themselves.

¹ Permissive powers are when an organisation may choose whether or not to exercise their powers. I.e. they are NOT under a duty. In making this choice account must be taken of any factors required by the legislation, plus for example how urgent, how necessary they are, cost, likely result, etc

² Riparian owners are responsible for the maintenance of any watercourse within or adjacent to the boundaries of their property.

1.5 Legal

No part of this report is to be reproduced, copied or used by any third party without the prior express written consent of WODC in its absolute discretion. All those reading this report acknowledge that any conditions, warranties or other terms implied by statute or common law are excluded to the fullest extent permitted by law. Without limiting the scope of the foregoing, West Oxfordshire District Council does not give any warranty, representation or undertaking as to the efficacy or usefulness of the information contained within this report, nor that any advice contained within this report will produce satisfactory results if followed. West Oxfordshire District Council hereby excludes liability to the fullest extent permitted by law for any reliance placed in this report by third parties.

2.0 THE DISTRICT COUNCIL'S ACHIEVEMENTS OVER THE PAST 12 MONTHS

Ditch Clearance

- 1731 Linear metres WODC owned ditches cleared overall
- 1923 Linear metres Privately owned ditches cleared overall
- Overall 2.27 miles of ditches have been cleared

Flood Grants

- 1137 WODC Flood Grants totalling £284,250 given out overall
 - 12 (£250) for Eynsham £3000
- 112 Red Cross Flood Grants totalling £211,590 administered by WODC overall
- 301 Hardship Grants totalling £155,050 given out overall

Reports

- Interim Flooding Report published October 2007
- 12 Parish Flood Reports completed by June 2008, 1 report for Eynsham

Actions from the Council's Interim Report published in January 2008

- The table below provides a summary of some of the completed actions identified in the report

Bronze command procedure to be updated to recognise the need for ensuring shift rotas are in place in the early stages of an emergency
Consider producing a revised warning system that identifies a higher category of risk that is only issued in exceptional circumstances
The emergency plan specifically addresses the need to keep in regular contact with elected members
That in future emergency situations District Councils ensure that they have a representative present at Silver Command from the start of the emergency to act as a conduit for information between Silver Command and the District Councils
The council should encourage all residents residing in the flood plain and in areas at risk of flooding to sign up to the EA Flood Alert system.
Provide clear information to residents and businesses about what type of waste we can collect and how it will be collected
Explanations to residents of our need for bulky waste to be placed on the roadside for collection
Commence a review of the mapping of the many thousands of privately owned ditches and culverts, and ensure they are kept clear and well maintained in accordance with the new policy (2 TOR 3)
Lobby central government for a single agency to take control of all land drainage issues
WODC continues to act in a coordination capacity with key external agencies
Continue to liaise with EA to ensure that procedures relating to planning consultations are robust. Seminar being arranged to take place during 2008 to progress this
Progress the Strategic Flood Risk Assessment
Approaches to be made to the EA and Metrological Office with regard to improving their predictive capability
During emergency events, have an external media person (BBC) in Bronze Command
Purchase digital TVs to assist with reviewing weather, local and national news to assist emergency management

3.0 EXECUTIVE SUMMARY

Following the flooding events of July 2007, West Oxfordshire District Council (WODC) has responded to requests from both Town and Parish Councils to aid the coordination of all the agencies and bodies that were undertaking their own investigations into the floods through the production of Parish Flood Reports.

This document is the Parish Flood Report for Eynsham and has been prepared by the Council's Engineering team. It pulls together information from external agencies and individual property owners and seeks to identify the causes of flooding in Eynsham during July 2007 and potential mitigating solutions.

Eynsham is the fourth largest settlement in West Oxfordshire with a population of approximately 5,000. It is located midway between Oxford and Witney to the south of the A40.

The Parish sits in the catchment of the River Thames which flows along its south eastern boundary and contains two further watercourses; the Chil Brook flowing in a south easterly direction through the centre of the parish and the Limb Brook again flowing in a south easterly direction along the southern parish boundary. The River Evenlode is located in the parish of Cassington, to the north east of Eynsham. However, a number of tributaries and drains, including the Eynsham Mead Ditch flow through the Parish of Eynsham and part of the River Evenlode floodplain encroaches into the eastern section of the parish.

Visual walkover surveys have been undertaken of the flooded areas and properties and meetings have been held with affected residents. WODC have record of 12 applications for Grant Aid in Eynsham, being 6 in Station Road, 4 at Barnard Gate, one property located adjacent to the Chil Brook to the west of the village and one property adjacent to the B4449 to the east of the village centre.

Flooding experienced in Eynsham has been assessed in three separate areas (see section 4.1) comprising from north to south:

- Barnard Gate (Area 1)
- Station Road (Area 2)
- Recreation Ground (Area 3).

Properties at Barnard gate (Area 1) suffered extensive damage with 4 properties claiming flood grant aid. Flooding was attributed to the Chil Brook which burst its banks and excessive localised overland flow from surrounding farmland. The old A40 road bridge also restricts extreme flows to the downstream watercourse.

Flooding in Station Road (Area 2) has been attributed to a combination of factors including inadequate maintenance of the Chil Brook which burst its banks in July 2007, inadequate capacity of the Station Road Bridge and inadequate highway drainage during severe events.

Flooding at the recreation ground (Area 3) is caused by blockage of historic flow paths of the original course of the Chil Brook. The railway embankment had culverts conveying flow at the recreation ground. When the railway embankment was replaced with the B4449, the culverts were not re-instated causing flooding to property in this area. The existing culvert construction under the new B4449 also restricts flow in the Chil Brook which backs up and floods adjacent land.

OCC are intending to realign the bridge on the B4022. The proposed work is classed as maintenance by the EA, so OCC will need to give regard to existing ecology systems in place, but will be able to proceed on environmental grounds.

Flooding problems and options, including description of works and how each public and private body is affected, effectiveness of each solution, affects on adjacent land and cost, are included in Section 5.

4.0 SURVEY

4.1 Description of Area

Eynsham is the fourth largest settlement in West Oxfordshire with a population of approximately 5,000. It is located midway between Oxford and Witney to the south of the A40.

The Parish sits in the catchment of the River Thames which flows along its south eastern boundary and contains two spring fed tributary watercourses as described below:

The **Chil Brook flows** in a south easterly direction, flowing to the south of the village centre. The Brook rises in farmland to the north west of the parish in Eynsham Hall Park where two large lakes containing sluice gates form the head of the watercourse. The brook then flows through Barnard Gate, under the old and new A40 road bridges before turning to a south easterly direction onto Eynsham village.

At this point the watercourse is crossed by Chilmore Bridge at Station Road and the B4449 prior to its confluence with the Limb Brook located in the floodplain of the River Thames just upstream of Oxford Road. On meeting the Oxford Road, the Chil Brook splits into three, with one drain flowing parallel to the Oxford Road on the western side carrying flows directly to the River Thames upstream of Swinford. The remaining two channels flow under the A4044 (Oxford Road) and then split again, the second channel flows parallel to Oxford Road on the eastern side carrying flows directly to the River Thames at Lock House in Swinford. The final channel continues in an easterly direction along Wharf Stream to its confluence with the Thames downstream of Swinford.

Using the Flood Estimation Handbook (FEH), the catchment size at three points along the watercourse has been calculated as follows:

Chil Brook at Freeland Lane crossing, upstream of Barnard Gate: 4.33km²

Chil Brook at Station Road: 12.20km²

Chil Brook at B4449 crossing: 12.70km²

The **Limb Brook** is spring fed, rising in land to the south of the A40 in the parish of South Leigh. The watercourse flows in an easterly direction along the southern boundary of Eynsham, before turning to the north east and onto its confluence with the Chi Brook at the B4044 Oxford Road and onto the River Thames at Swinford. The Limb Brook in Eynsham flows through rural land and no reports of flooding of property due to this watercourse have been made.

The **Eynsham Mead ditch** flows to the east of the village of Eynsham. It rises in farmland to the north of the A40 at acre Hill House. The drain then flows in a north easterly direction, to cross the B4449 at Mill Lane, then southward to cross the A40 at the A40/B4449 junction and the Cassington Road. The ditch then flows parallel to Mead Lane track and to its confluence with the River Thames downstream of Swinford. During times of flood, the Eynsham Mead ditch becomes part of the floodplain associated with the River Evenlode.

4.2 Survey Method

A visual walkover survey of properties affected by the July 2007 flooding has been undertaken and discussions have been held with WODC and some local residents.

See Appendix 2 - Photographs

4.2 Meetings

A summary of meetings and correspondence about flooding in Eynsham are given in Table 1.

Table I: Summary of meetings and flooding descriptions

Date	Location	Description
08/07/08	Station Road, Eynsham.	<p>Flooding experienced in Station Road area in 1960's, approx 1999 and July 2007.</p> <p>Serious Flooding in 1968, similar to that of last summers, affected the properties of Chil Brook Cottage (then Leigh View), Willow View and No. 8. The house at the grove suffered approximately 15" of water throughout reports indicate.</p>
08/07/08	Station Road, Eynsham.	<p>Water entering the "Cowcroft" field on Christmas eve 1985, caused flooding of the garden at the Sidings, Station Road.</p> <p>Although flood waters surrounded the house, on this occasion only the garage was flooded.</p>
08/07/08	Station Road, Eynsham.	<p>Rapidly rising flood water within the "Cowcroft" on a February morning in 2002 surrounded the house, breaching inside to a level of about half an inch, resulting in insurance claims for carpets and flooring.</p> <p>The Signal Box and Tor Cottage both had flooded gardens and lost fishponds. Chil Brook cottage (empty at the time) had about 4", whilst Leigh View and No.8 were both affected.</p> <p>Flooding event coincided with serious flash flooding of Witney and Kidlington, which are well documented.</p>
08/07/08	Station Road, Eynsham.	<p>Flood waters are reported to have ingressed into the garden at station road, as well as at Signal Box and Tor Cottage in January 2007.</p> <p>All three houses lost fishponds, although waters did not enter properties on this occasion.</p>
08/07/08	Station Road, Eynsham.	<p>Last summers well documented flooding affected 7 houses upon station road, namely; The Sidings, The Grove, The signal Box, Tor Cottage, Chil Brook Cottage, Willow View and No.8.</p> <p>The sidings house was flooded to a depth of almost 600mm (2 foot), as was Chil Brook cottage.</p>
02/07/08	Correspondence with Peter brown from Jim Pullin.	<p>Removal of two large culverts that used to take floodwater under the railway and were filled in when it was converted to a road has compounded backing up of flood waters.</p>
17/04/08	Correspondence with Jim Sokol from Jim Pullin.	<p>Stretch between Station road bridge and Bypass bridge de silted a couple of years ago. Build up of reed growth and debris just upstream of and under the bypass road bridge, much of it deposited by the floods in January and July over the past few mild and dry winters.</p> <p>Restriction of flow cited as major cause of flooding problem in this area.</p>
06/03/08	Station Road, Eynsham, Correspondence from Robert Hoare to Gordon Hunt.	<p>Further complaints logged, with flood waters reported to have risen significantly over night, flowing over the top of the bridge arch and flooding the field across the road following a few hours of rain.</p> <p>A long standing local resident suggests that a few days heavy rain is normally required for the Chil Brook to reach such a high level.</p>

23/11/07	Correspondence from Jim Sokol.	<p>Wooden bank at Chil Brook cottage narrowing the channel. The wooden footbridge outside numbers 49-51 appeared to require clearing underneath.</p> <p>Constriction of flow conveyance through the relief culvert by willow tree and encroaching bank. Below the old road, the three sapling willows growing below the road bridge should ideally be removed.</p> <p>Removal of obstructions at the downstream end of the A40 would lower the water level by a least 600mm (2 foot).</p>
06/11/07	Meeting with Eynsham Parish Council in Eynsham.	<p>Recent flooding in Eynsham over 16/17 October attributed to high level of rainfall – 2.5 inches.</p> <p>Suggestion of building bund along the playing fields verbally agreed by both Mr Hunt and Mr Green, and later with Mr Hempstead at the EA. Awaiting receipt of a written report from the EA before any further action can be taken.</p> <p>In response to suggestions of constructing large pipes to divert flow through to the fish ponds from station road, Mr Hunt, having seen the flooding on the playing fields, feels solution will not work until bund suggestion was investigated. If pipes installed, more water could be diverted into playing fields area and thus further flood Park Cottage. At present, no work can be carried out at station road without possibly making the flooding worse at Park Cottage so works on hold.</p>
29/10/07	Station Road, Eynsham, Correspondence from Gordon Hunt to Robert Hoare.	<p>Pipe suggested flowing into the old fish ponds and discharging out to the stream above the Bypass bridge. The stream does over top and floods the playing fields so the additional pipe will affect flooding downstream. Parish council needs to agree to an earth bundle around the farm house by the playing field to negate additional flow. Both items need environment agency approval.</p> <p>Drainage of additional housing sites to the west will be kept to the existing land drainage flows and will not affect property of the brook.</p>
27/10/07	Station Road, Eynsham, Correspondence from Robert Hoare to Gordon Hunt.	<p>Resident Proposal of a pipe to by pass the bridge into the fish ponds, diverting water back into the brook at the existing ditch that presently drains the fish ponds.</p> <p>This would not cause any additional flooding of the playing field, but stop the water hitting the top of the bridge which then causes the back up and flooding of station road.</p> <p>Also, residents Concerned over the consequences of proposed housing developments to the west of the village upon resultant run off from hard surfaces.</p>
22/10/07	Park Cottage.	<p>OCC visit to local resident situation is:</p> <p>OCC have met WODC to propose construction of a 450mm diameter culvert in addition to the existing Station Road bridge discharging to the fish ponds area.</p> <p>This pipe will slightly improve the pressure on Station Road.</p> <p>WODC in agreement with proposal, subject to the concerns of people living downstream being addressed. EA approval required. EA are waiting for a developer to do some computer modelling of the streams.</p> <p>OCC want WODC to agree to some embankment works on the planning field downstream before the 450mm culvert is built.</p>

18/10/07	Correspondence with Jim Sokol.	<p>Site visit suggested channel of Chil Brook flowing very well for majority of length as natural bed is stone gravel. Dredging is therefore not necessary, and may only encourage replacing of 'healthy' gravel/stone beds with silt and growth of aquatic reeds and weeds.</p> <p>Widening of the channel deemed pointless as bridge is the dominant governing factor – it can only pass that width of water through. Channel flow slows markedly 100 metres from the bypass bridge, attributed to the acute angle of the bridge.</p> <p>Added that Eynsham had almost three inches of rain over night, and that many watercourses in the region overtopped because of similar figures.</p>
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WODC have liaised with the EA and OCC and a summary of details is included in Table 2 below.

Table 2: Summary of telephone calls/emails/correspondence made with EA/OCC

Company	Comments
EA	<p>November 2007 - EA contacted agents for Eynsham Hall Estate to request that trees, boughs and obstructions be removed from the Chil Brook immediately downstream of the A40.</p> <p>The EA's maintenance regime is scheduled on the basis of flood risk priority and resources with each main river given a category being low, medium or high risk. The Chil Brook is classed as medium risk as the total number of properties within the floodplain is medium with little risk to life. Every year the EA aim to undertake work on some medium risk systems.</p> <p>The EA feel that while increased maintenance could lead to reductions in water levels during minor flood events, it would not have helped during the flooding experienced in July 2007 due to the volumes of water involved.</p> <p>The EA have inspected the watercourse and noted the bed with stone/gravel with a fair gradient. They do not therefore plan any dredging of the Chil Brook. Historically many streams have been dredged and succeeded only in replacing 'healthy' gravel/stone beds with silt because the nature of the stream will always react to its natural level after a short period. The silt then may grow aquatic reeds/weeds where there is available sunlight.</p> <p>The EA do not feel that widening the Chil Brook at Station Road bridge would be advantageous as the banks are in line with the bridge abutments i.e. the bridge is the governing factor</p>
OCC	<p>OCC representatives have met with local residents of Eynsham. Possible solutions at Station Road are: 450mm diameter pipe to alleviate flooding at Station Road Bridge which will relieve pressure on station road. EA approval would be required which has not yet been given. A developer is currently modelling some of the streams in the area and the EA are hoping to use this information to support their response.</p> <p>OCC are concerned that this work should not go ahead without mitigation for flooding at recreation ground such as some embankment works.</p>
TW	<p>There have been no flooding incidents attributed to foul water in the Parish of Eynsham.</p>

4.4 Application for Grant Aid

The District Council has distributed a range of financial support to the residents of district in the form of;

- Emergency Flood Relief Grant Aid of £250
- 'Hardship' Grants
- Red Cross Grants

To date the owners of 12 residential properties in Eynsham have received Emergency Flood Relief Grant Aid, however it is acknowledge this is not the total number of properties affected in the Parish as some owners have been reluctant to claim.

Whilst the Emergency Flood Relief Grant Aid was not paid to industrial and commercial properties, the Council did provide advice and support to local business affected by the flooding on funding available from Business Link and other organisations.

5.0 PROBLEMS AND CAUSES

5.1 Plans

Figure 1 in Appendix 2 shows areas in Eynsham where properties flooded in July 2007 and where owners have made claims for grant assistance. The flooding can be broadly split into three areas being:

Area 1 – Barnard Gate

Area 2 – Station Road

Area 3 – Recreation Ground

It should be noted that at the head of the Chil Brook is a lake within the grounds of Eynsham Hall controlled by sluice gates. In July 2007, local residents reported that these sluice gates were closed and water was flowing over the top of them into the Chil Brook.

It should also be noted that the parish of Eynsham is not directly affected by flooding from the River Thames at Eynsham Lock as flooding in Eynsham is experienced long before flooding in the Thames as this location due to its position high up in the catchment of the Chil Brook.

Under the Land Drainage Act 1991, a landowner has a duty to accept any natural surface water runoff from adjacent land and pass it on to any downstream landowner. Also under this act a landowner has responsibility to protect his property from flooding. If the flooding is caused by works carried out by other parties then the problem becomes a civil matter between land owners.

A map detailing the following is shown in Appendix 2:

- 1% annual probability of flooding - Flood Zone 3 (previously referred to as 1 in 100 year flooding)
A plan showing the 2008 Environment Agency 1% probability Flood Zone, this is the area defined by the EA as the extent of a flood with a 1 per cent chance happening in any year. This is the high probability risk zone.
- 0.1% annual probability flooding – Flood Zone 2 (previously referred to as 1 in 1000 year flooding)
A plan showing the 2008 Environment Agency 0.1% probability Flood Zone, this is the area defined by the EA as the extent of a flood with a 0.1 per cent chance happening in any year. This is the medium probability risk zone

There are a number of issues associated with the proposed developments in East Eynsham which primarily fall into 2 categories; firstly housing and secondly the current application for gravel extraction which may have a potential impact on the surrounding water courses and existing commercial premises. We have spoken with a large local commercial organisation in the area who have informed us they are undertaking their own hydrological study and would seek to discuss the findings of their study in the future.

Currently runoff from existing development to the east of Eynsham outfalls to farmland in East Eynsham, adjacent to the B4449. Site visits conducted by WODC have failed to find a culvert crossing of the B4449 to carry this water downstream away from East Eynsham. This has led to concern that development in this area may have a detrimental impact on an area with existing drainage issues.

A Flood Risk Assessment is underway for proposed development in this area which in accordance with Planning Policy Statement 25 should “identify and assess the risks of all forms of flooding to and from the development and demonstrate how these flood risks will be managed”. In accordance with PPS25 guidelines, “the FRA should also identify opportunities to reduce the probability and consequence of flooding”.

This development is not discussed further in this report as flooding of property has not been experienced in this location. However, the above proposed development will undergo consultation with WODC and the EA to ensure that all flood risk issues are analysed.

5.2 Area 1 – Barnard Gate

In 2007, 4 properties claimed flood grant aid following flooding at Barnard Gate. Three of these properties are located in the Environment Agency 1% probability of flooding – Flood Zone 3 (1 in 100 years Flood Zone) associated with the Chil Brook. One property sits across all three flood zone, being partially located in the Environment Agency Flood Zone 3, Flood Zone 2 and Flood Zone 1.

The Chil Brook drains runoff from a rural upstream catchment with an area estimated (Using FEH) to be approximately 4.33km².

The causes of flooding at Barnard Gate are the following:

5.2.1 Direct Flooding from the Chil Brook caused by Land drainage

The surface water drainage system located on Freeland Lane adjacent to Barnard Gate consists of a series of ditches in the verge which connects to the Chil Brook at the bridge crossing just upstream from Barnard Gate. In July 2007 large volumes of surface water were running from the adjacent farmland to these drainage ditches and onto the Chil Brook adding to the flooding at Barnard Gate.

5.2.2 Direct flooding from the Chil Brook caused by inadequate capacity of the old A40 road bridge

The capacity of the opening of the bridge at the old A40 crossing was not sufficient to take the peak runoff flow in the Chil Brook in July 2007. Water levels in the Chil Brook rose significantly in a short space of time. It was recorded that the water level was greater than the capacity of the old A40 road bridge which led to 'backing up' of water along the Chil Brook which flows directly in front of properties. This led to the Chil Brook breaking its banks and flooding property at Barnard Gate. See Photos 9, 10, 11 of the old A40 road bridge in flood.

5.2.3 Direct flooding from the Chil Brook caused by driveway access crossings over watercourse

A number of driveway access points have been built across the Chil Brook at Barnard Gate (see photo 1 for example). This restricts flow along the watercourse and causes water levels to rise upstream of the bridge crossings, flowing out of bank onto surrounding land leading to flooding of property.

5.2.2 Direct flooding from Overland Flow from farmland at the rear of properties

Direct overland flow occurs when the ground either becomes fully saturated, preventing any percolation into the upper layers of the soil, or where the rainfall intensity and rate is greater than the percolation rate of the receiving ground. Both result in sheet runoff, or water flowing directly off the surface of the land.

Direct runoff from fields at the rear of properties at Barnard Gate discharges into field drains which outfall to the Chil Brook (photo 2). The volume of runoff led to direct flooding of property in this area.

5.3 Area 2 – Station Road

In 2007, 6 properties claimed flood grant aid following flooding at Station Road. All 6 of these properties are located in the Environment Agency 1% probability of flooding – Flood Zone 3 (1 in 100 years Flood Zone) associated with the Chil Brook.

The Chil Brook collects runoff from a rural upstream catchment with an area estimated (Using FEH) to be approximately 12.20km² at the Station Road/Chilmore bridge.

Local residents have provided details of flooding history at Station Road as described below:

- July 1968 – A flood with similar severity to July 2007 occurred at Station Road leading to flooding of four properties in the area.
- December 1985 – flooding from the Chil Brook to the adjacent farmland and. Internal flooding was experienced in one property on Station Rod.
- February 2002 – flooding from the Chil Brook to adjacent farmland and internal flooding to four properties on Station Road.
- January 2007 – extensive flooding from the Chil Brook to adjacent farmland and gardens. No internal flooding of property on Station Road recorded.
- July 2007 – Extensive flooding to 7 properties in the area with depths of up to 600 mm (2 foot) in places.

The causes of flooding at Station Road are the following:

5.3.1 Inadequate capacity of Chilmore Bridge at Station Road

The capacity of the opening of Chilmore Bridge was not sufficient to take the peak flow in the Chil Brook in July 2007 (photo 15). Water levels in the Chil Brook rose significantly in a short period of time. It was recorded that the water level was greater than the capacity of the Chilmore Bridge which then led to 'backing up' of water along the Chil Brook into adjacent fields and gardens. As the water level rises, the depth of water on the floodplain increases and water flows over Station Road to flood property to the east. In July 2007, the depth of internal flooding was up to 600mm (2 foot) in places (Photos 18, 19, 20). It is to be noted that the bridge would not have been designed to cope with such a large event.

5.3.2 Inadequate maintenance of Chil Brook upstream and downstream of Station Road

The Chil Brook at this location is a statutory Main River designated as Medium Risk by the EA and as such the EA have permissive powers to maintain the watercourse. The EA have not adequately maintained this watercourse for a number of years and the channel appears to be heavily overgrown in places with large trees causing silting and reductions in flow. In July 2007, water levels in the Chil Brook rose and the reduced channel capacity prematurely forced flood water onto the floodplain which flowed into adjacent property. Photo 16 shows the Chil Brook at Chilmore Bridge.

5.3.3 Road Runoff on Station Road

During the course of the heavy rain in July 2007, ponding was observed on a number of roads through the village. As the rainfall intensity increased, the surface water drains and gullies began to surcharge and water flowed down roads, increasing in depth until kerbs and driveways were overtopped and properties with lower flood levels were flooded.

Several properties along Station Road were affected by surface water flooding from the highway.

This was exacerbated in this location as flood water from the Chil Brook was flowing onto the highway to the already inundated drainage system.

5.4 Area 3 – Recreation Ground

In 2007, 1 property claimed flood grant aid following flooding at the recreation ground. This property is located in the Environment Agency 1% probability of flooding – Flood Zone 3 (1 in 100 years Flood Zone) associated with the Chil Brook.

The Chil Brook collects runoff from a rural upstream catchment with an area estimated (Using FEH) to be approximately 12.70km² at the B4449 bridge crossing.

Local residents have provided details of the flood history of this property as outlined below:

- July 2007 – 750mm internal flooding
- October 2007 – major flooding of playing field and garden
- January 2008 – 300mm internal flooding
- June 2008 – 2008 –600mm (2 foot) of water at property, residents own flood prevention measures prevented internal flooding to the property. The level of flood water was only 10cm below that of July 2007.

The causes of flooding at the Recreation Ground are the following:

5.4.1 Blockage of historical Chil Brook drainage path following construction of B4449

The Chil Brook in its current path flows from the Chilmore Bridge at Station Road, to the south of the fish ponds and parallel to the B4449 before crossing the highway and flowing in a south easterly direction to its confluence with the Limb Brook.

Historical mapping of the area included in Appendix 2 shows the original path of the Chil Brook. The watercourse used to flow to the north of the current channel and then across the recreation ground before crossing the railway embankment in two piped culverts. As the area has become developed, the Chil Brook was moved and the original channel across the recreation ground filled in to allow use of the land as sports pitches. Where the watercourse crossed the railway embankments in culverts, the B4449 now resides and no culverts were incorporated into the road design.

During periods of intense rainfall, water naturally collects in the dip in the recreation ground where the original Chil Brook flowed. As water collects, it flows in a ditch to the B4449 embankment where it backs up and causes flooding to property.

5.4.2 Inadequate capacity of B4449 crossing of Chil Brook

The Chil Brook runs parallel on its approach to and downstream from the B4449 bridge crossing forcing water through two 90 degree bends in the vicinity of the Recreation ground prior to flowing away (photos 21 to 26). During periods of heavy rainfall, levels in the Chil Brook rise significantly in a short period of time and the angle of this bridge prevents maximum flows crossing the B4449. Water instead backs up behind the bridge and flows out of bank, across the recreation ground and into property. It is noted that this bridge has a larger capacity to pass water, than the original rail bridge.

5.4.3 Inadequate maintenance of B4449 crossing of Chil Brook

The Chil Brook at this location is designated 'Main River' and the EA have permissive powers for maintenance. On inspection it appears that the EA have maintained the Chil Brook upstream of the B4449 bridge crossing but have stopped short of the face of the bridge. As a result a large amount of growth is evident in the channel both upstream and downstream of the bridge (see photos 23 and 24). During periods of heavy rain such as experienced in July 2007 and June 2008, the heavily overgrown channel greatly reduced the capacity of the B4449 crossing leading to backing up of water in the channel and flooding of adjacent land and property.

6.0 OPTIONS

The following table shows the possible options available for flood alleviation schemes throughout the Parish, and their potential effectiveness, as assessed by the District Council Engineers. The areas affected by flooding within the Parish have been given unique area numbers, i.e. Area I. Several options for flood alleviation projects are identified for each area as “Actions” or “Options”.

Many of these options will require further detailed investigation along with the agreement of the responsible landowner, identification of budget and a cost benefit analysis to be carried out before they could be implemented.

Some of the options shown are also mutually exclusive, that is if one option is carried out then another will not be necessary, to find if this is the case for an option, please look at the detailed description in the Conclusions and Recommendations Section (7.0).

If you require further information regarding a particular option, please contact the agency that would be responsible for implementation of the proposal, where this has been shown, using the contact information at the top of the column. If no contact details are shown, there may be a private landowner responsible. If this is the case the District Council will ensure that private landowners are made aware of their responsibilities.

Parish Flood Options										
Eynsham										
Version 1 – July 2008										
Option ref	Flood Overview	Description of work required					Key issues			Comments
	Options	Environment Agency	Oxfordshire County Council	Thames Water	WODC	Private	Effectiveness	Affects on adjacent land	Cost	
		For queries Tel 08708 506 506 Or email enquiries@environment-agency.gov.uk	Main switchboard: 0845 310 1111 Or e-mail: online@oxfordshire.gov.uk	Enquiries: 0845 200 800	Switchboard: 01993 861 000					
Area 1 – Barnard Gate										
	<p>Direct flooding from the Chil Brook</p> <p>Overland flow from farmland in the upstream catchment of the Chil Brook feeds to a series of roadside ditches along Freeland Lane and onto the Chil Brook. In July 2007, the volume of water entering the Chil Brook from the roadside ditches led to flooding downstream at Barnard Gate.</p>									
A	Provision of a flood storage area at the end of roadside ditches along Freeland Lane prior to outfall to the Chil Brook. This could be in the form of a pond or swale.	EA to carry out feasibility and works			WODC to provide co-ordination role	Approval required from riparian owner	Will reduce volume of water entering Chil Brook from the upstream catchment	Increased flooding of adjacent farmland	£5,000 to £20,000	Landowner has not been approached regarding works
B	Changes to land management e.g. contour ploughing to reduce direct runoff from farmland entering Chil Brook at Barnard Gate from the upstream catchment	EA to advise landowner of land management techniques to reduce runoff or store water prior to flowing onto the lane at Lower End			WODC to provide a co-ordination role	Landowner/occupier of fields to change farming technique to increase infiltration.	Studies have shown that this has had mixed results	There will be a change in land use in the upstream catchment	Up to £5,000	Landowners in the upstream catchment have not been approached. It may be possible for landowners/farmers to obtain environmental grants to plant hedgerows.
C	Flood resilient measures to be fitted to property	The EA website contains reference information on flood resilient measures that can be used to protect houses.				Homeowners to provide protection against flooding to their properties e.g. flood boards, flood proofing of exterior walls, sandbags, air brick covers, water resistant door frames	Measures are only effective if defences are put in place before the water level rises.	None	Up to £5,000	Homeowners have not been approached regarding this option. On completion of the emergency flood plan, it should be sent to WODC for approval and registration.
	Direct flooding from Chil Brook caused by obstructions in the channel. As rainfall intensity increases and water level rises, obstructions in the watercourse cause water levels to rise and flood property									
D	Maintain banks and bed of the Chil Brook.				WODC to provide co-ordination role and to ensure that riparian owners are completing works as required	Chil Brook is not main river at this location - riparian owners have the responsibility to maintain the banks and bed of the river.	Will ensure that the Chil Brook is flowing to its full capacity	Improved land drainage	Up to £5,000 per clearance	On inspection in June 2008, the watercourse appeared largely clear adjacent to Barnard Gate, with more obstruction upstream
E	Removal of bridge obstructions along Chil Brook at Barnard Gate	EA to advise owners of suitable crossing sizes.				Landowner to increase size of driveway access crossings	This will increase flow of water downstream	May increase flood risk downstream at the old A40 bridge crossing	Up to £5,000 per crossing	Some landowners have already completed this work.
F	Maintenance of the new A40 road bridge downstream of Barnard Gate		OCC to carry out works to remove debris and blockage of the new A40 road bridge				This will increase flow of water downstream	May increase flood risk downstream of the new A40 road bridge	Up to £5,000	OCC have not been contacted regarding this work

Option ref	Flood Overview	Description of work required					Key Issues			Comments
		Environment Agency	Oxfordshire County Council	Thames Water	WODC	Private	Effectiveness	Affects on adjacent land	Cost	
	Options									
		For queries Tel 08708 506 506 Or email enquiries@environment-agency.gov.uk	Main switchboard: 0845 310 1111 Or e-mail: online@oxfordshire.gov.uk	Enquiries: 0845 200 800	Switchboard: 01993 861 000					
Area 1 – Barnard Gate (cont...)										
	Direct flooding from the Chil Brook caused by inadequate capacity of the old A40 road bridge									
G	During periods of intense rainfall water levels rise in the Chil Brook at Barnard gate and the old A40 road bridge becomes surcharged, increasing water levels upstream at Barnard Gate		Bridge is the responsibility of OCC. Survey of bridge capacity required to establish its effect on water levels during extreme flood events and upgrade if required		WODC to provide co-ordination		Up sizing the bridge crossing will ensure maximum flow downstream, reducing flood risk in Barnard Gate	Increased flood risk downstream	Up to £5,000 for modelling of bridge	OCC carry out works on bridges depending on structural integrity. As the old A40 is sound funding for an upgrade is unlikely
H	Install a flood relief culvert to increase capacity of old A40 road bridge	EA consent required.	OCC to carry out feasibility of works		WODC to provide co-ordination		Will increase capacity of old A40 road bridge and reduce flood risk to Barnard Gate	Increased flood risk downstream	Up to £5,000 feasibility £20,000 to £50,000 design/construction	Ground levels are unlikely to enable this option as the road level is much higher than the bridge.
	Direct flooding caused by overland flow from rear of properties in Barnard Gate Overland flow from fields at the rear of Barnard Gate flows through property to reach the Chil Brook									
I	Landowner to provide storage of overland flow, either in ditches or a pond with a orifice control prior to discharge to Barnard Gate	EA to be consulted regarding discharges to watercourse			WODC to provide co-ordination role	Landowner to carry out works	Reduced flood risk to downstream property	Improved land drainage, will require some land take for storage area	Up to £5,000	Riparian owners in properties affected have carried out some remedial works on the drainage to increase pipe size, include a trash screen and move the outfall location to the Chil Brook
Area 2 – Station Road										
	Inadequate capacity of Chilmore Bridge at Station Road. During periods of intense rainfall, water level in the Chil Brook rises and surcharges at the Chilmore Bridge. Water then backs up and floods onto the banks of the watercourse and onto Station Road									
A	450mm diameter flood relief culvert to be laid to the side of the Station Road Bridge to convey water downstream to the fish ponds and then back to the Chil brook using the existing ditch that drains the ponds	Would require EA consent	OCC agree that this would help alleviate flooding in Station Road but are concerned about the affect on property downstream		WODC to provide co-ordination role.This option will require much more of a detailed survey to enable it to progress.		Will reduce flooding in Station Road	May increase flood risk downstream at the recreation ground	£5,000 to £20,000	Consultation is on-going. OCC are not in agreement with this option until downstream flooding at the recreation ground is resolved.
B	Re-direct spring outfall that enters the Chil Brook on the upstream side of the bridge to downstream so as to reduce flows upstream during periods of heavy rain.									
C	Flood resilient measures to be fitted to property in the 1 in 100 year Flood Zone.	The EA website contains reference information on flood resilient measures that can be used to protect houses.				Homeowners to provide protection against flooding to their properties e.g. flood boards, flood proofing of exterior walls, sandbags, air brick covers, water resistant door frames	Measures are only effective if defences are put in place before the water level rises.	None	Up to £5,000	Homeowners have not been approached regarding this option. On completion of the emergency flood plan, it should be sent to WODC for approval and registration.

Option ref	Flood Overview	Description of work required					Key Issues			Comments
		Environment Agency	Oxfordshire County Council	Thames Water	WODC	Private	Effectiveness	Affects on adjacent land	Cost	
	Options	For queries Tel 08708 506 506 Or email enquiries@environmen t-agency.gov.uk	Main switchboard: 0845 310 1111 Or e-mail: online@oxfordshire.go v.uk	Enquiries: 0845 200 800	Switchboard: 01993 861 000					

Area 2 – Station Road (cont...)

D	Create a flood storage area upstream of Chilmore Bridge on the existing floodplain. This could be placed on the southern side of the watercourse in between the brook and the dismantled railway line	EA to carry out feasibility and design of storage area.			WODC to provide co-ordination role	Landowners to be approached	Will increase upstream storage and reduce volumes of water flowing to Chilmore Bridge	Will require land take, but this land is already not suitable for farming	£5,000 to £20,000	Required further consultation
E	Create a bund at the rear of properties to the west of Station Road to prevent flood water crossing Station Road.	EA to carry out feasibility and design of bund			WODC to provide co-ordination role	Landowners to be approached	Will reduce flooding to Station Road	Increased flooding upstream	£5,000 to £20,000	Requires further consultation
	Inadequate maintenance of Chil Brook upstream of Chilmore Bridge.									
F	Maintain Chil Brook to prevent blockages during flood events and collapse of banks	EA to carry out maintenance of Chil Brook at Station Road	OCC to de-silt in vicinity of bridge.		WODC to provide co-ordination role		Will ensure that the watercourse is working to its full capacity	Will improve land drainage	Up to £5,000	The watercourse is Medium risk but has not been cleared for a number of years. Local residents report that the banks of the brook have collapsed in places leading to water flooding adjacent land.
	Inadequate road drainage During periods of intense rainfall, surface water gullies start to surcharge and water flows along the road surface until driveways are overtopped and property flooded.									
G	Maintain road gullies and drainage in Eynsham		OCC to carry out gully clearance on Station Road, including removal of roots where required				Will ensure that the current system is working to its full capacity and reduce ponding on the highway	Improved land drainage and reduced flood risk from the road	Up to £5,000	OCC carry out maintenance of Gullies 1 and ¼ times a year.

Area 3 – Recreation Ground

	Blockage of historical drainage path of old Chil Brook by the B4449 leads to backing up behind the road and flooding of property.									
A	Reinstate the culvert crossing that used to convey flow from the old Chil Brook under the railway embankment.		OCC to carry out works as the highway failed to allow a drainage path for the historical Chil Brook when constructing the B4449.				Will allow the flow of water downstream to the Chil Brook and reduce flood risk to property	Improved land drainage upstream. Will increase flood risk to farm land directly downstream of the B4449	£20,000 to £50,000	OCC have not been consulted regarding this work

Option ref	Flood Overview	Description of work required					Key Issues			Comments
		Options	Environment Agency	Oxfordshire County Council	Thames Water	WODC	Private	Effectiveness	Affects on adjacent land	
		For queries Tel 08708 506 506 Or email enquiries@environment-agency.gov.uk	Main switchboard: 0845 310 1111 Or e-mail: online@oxfordshire.gov.uk	Enquiries: 0845 200 800	Switchboard: 01993 861 000					
Area 3 – Recreation Ground (cont...)										
B	Build an earth bund around affected property to protect from flooding	Would require EA consent				The playing fields re currently leased form Fields in Trust to the Parish Council who sub let them to PFMC so they will need to be advised of any potential works. Fields in Trust have agreed to inspect the site with regard to the lease if a bund is seen to be the best way forward.			£5,000 to £20,000	There is already a bund on part of the affected property which has been effective
C	Flood resilient measures to be fitted to property in the 1 in 100 year Flood Zone.	The EA website contains reference information on flood resilient measures that can be used to protect houses.				Homeowners to provide protection against flooding to their properties e.g. flood boards, flood proofing of exterior walls, sandbags, air brick covers, water resistant door frames	Measures are only effective if defences are put in place before the water level rises.	None	Up to £5,000	Homeowners have successfully used some flood defence measures. On completion of the emergency flood plan, it should be sent to WODC for approval and registration.
	Inadequate capacity of B4449 crossing of Chil Brook. During periods of intense rainfall, the B4449 bridge surcharges causing backing up of water along the channel. This problem is increased by the angle of the bridge in relation to the watercourse									
D	Improve the angle of approach to the bridge crossing by extending the leading wall. This is also required at the downstream face.		OCC to carry out feasibility and design of works to upstream and downstream approaches.			May require land take on the downstream side	Will improve capacity of the B4449 bridge and increase flow to downstream	May increase flood risk downstream	£5,000 to £20,000	OCC have not been approached regarding this work
E	Install flood overflow pipes to increase capacity of the bridge during times of peak flow		OCC to carry out feasibility and design of works				Will improve capacity of the B4449 bridge and increase flow to downstream	May increase flood risk downstream	£20,000 to £50,000	OCC have not been approached regarding this work
	Inadequate maintenance of Chil Brook at the B4449 crossing									
F	Maintain banks and bed of the Chil Brook upstream and downstream of the B4449 crossing	EA to carry out maintenance of this section of watercourse as a priority as it is heavily overgrown and impeding flow			WODC to provide co-ordination role		Will ensure Chil Brook is conveying maximum flow and not causing water to back up at the B4449 bridge	May increase flood risk downstream	Up to £5,000	EA carried out clearance of the Chil Brook downstream of the Station Road Bridge to the B4449 crossing Autumn 2007. appeared to stop short of the B4449 crossing and now conveys more water to this pinch point

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 Area 1 – Barnard Gate

7.1.1 Maintenance

The following on-going maintenance is recommended:

- Option D - Maintain banks and bed of the Chil Brook.
- Option F - Maintenance of the new A40 road bridge downstream of Barnard Gate
- OCC to clear debris and silt from under both A40 bridges (old and new)

The EA walked this section of watercourse in July 2008 and noted that a lot of improvements have been made at Barnard Gate with removal of willow that used to encroach the channel and clearance of the channel upstream and downstream of the A40 crossing.

7.1.2 Flood defence improvement schemes

The following flood defence improvement schemes are recommended:

Immediate (under 1 year)

- Option C - Flood resilient measures to be fitted to property
- Option E - Removal of bridge obstructions along Chil Brook at Barnard Gate

Mid-Term (under 1 -2 years)

- Option A - Provision of a flood storage area at the end of roadside ditches along Freeland Lane prior to outfall to the Chil Brook. This could be in the form of a pond or swale.
- Option G - Upgrade existing old A40 road bridge to increase capacity.
- Option H - Install a flood relief culvert to increase capacity of old A40 road bridge. EA consent is required.
- Option I - Landowner to provide storage of overland flow, either in ditches or a pond with a orifice control prior to discharge to Barnard Gate

Long-Term (3 years or more)

- Option B - Changes to land management e.g. contour ploughing to reduce direct runoff from farmland entering Chil Brook at Barnard Gate from the upstream catchment.

7.2 Area 2 – Station Road

7.2.1 Maintenance

The following on-going maintenance is recommended:

- Option F - Maintain Chil Brook to prevent blockages during flood events and collapse of banks
- Option G - Maintain road gullies and drainage in Eynsham

7.2.2 Flood defence improvement schemes

The following flood defence improvement schemes are recommended:

Immediate (under 1 year)

- Option C - Flood resilient measures to be fitted to property in the 1 in 100 year Flood Zone.

Mid-Term (under 1 -2 years)

- Option A - 450mm diameter flood relief culvert to be laid to the side of the Station Road Bridge to convey water downstream to the fish ponds and then back to the Chil brook using the existing ditch that drains the ponds. Note: OCC are not in agreement with this works until flooding downstream at the Recreation Ground is resolved.
- Option B - Re-direct spring outfall that enters the Chil Brook on the upstream side of the bridge to downstream so as to reduce flows upstream during periods of heavy rain.
- Option E - Create a bund at the rear of properties to the west of Station Road to prevent flood water crossing Station Road.

Long-Term (3 years or more)

- Option D - Create a flood storage area upstream of Chilmore Bridge on the existing floodplain. This could be placed on the southern side of the watercourse in between the brook and the dismantled railway line

7.3 Area 3 – Recreation Ground

7.3.1 Maintenance

The following on-going maintenance is recommended:

- Option F - Maintain banks and bed of the Chil Brook upstream and downstream of the B4449 crossing

7.3.2 Flood defence improvement schemes

The following flood defence improvement schemes are recommended:

Immediate (under 1 year)

- Option A - Reinstate the culvert crossing that used to convey flow from the old Chil Brook under the railway embankment. A study of the effects of this action on the downstream area, is recommended, before this is progressed.
- Option C - Flood resilient measures to be fitted to property in the 1 in 100 year Flood Zone (some measures already in place)

Mid-Term (under 1 -2 years)

- Option B - Build an earth bund around affected property to protect from flooding
- Option D - Improve the angle of approach to the bridge crossing by extending the leading wall. This is also required at the downstream face.
- Option E - Install flood overflow pipes to increase capacity of the bridge during times of peak flow

Appendix I: Photographs

Area I – Barnard Gate

Photo 1 – Bridge Obstructions at the top of Barnard Gate.



Photo 2 – Field drainage entering a pipe at the rear of properties on Barnard Gate



Area I – Barnard Gate

Photo 3 – Exist of field drainage at the front of property on Chil Brook

Field Drainage Outfall



Photo 4 – Chil Brook flowing in front of property at Barnard Gate



Area I – Barnard Gate

Photo 5 – Chil Brook in flood **3rd June 2008**. Photo is looking upstream at Barnard Gate with the old A40 behind



Line of Chil Brook

Photo 6 – Barnard Gate in flood **20th July 2007**



Area I – Barnard Gate

Photo 7 – Barnard Gate in flood 3rd June 2008



Photo 8 – Barnard Gate in flood 3rd June 2008



Line of Chil Brook

Area 1 – Barnard Gate

Photo 9 – Old A40 road bridge looking downstream to bridge



Photo 10 – Old A40 road bridge **3rd June 2008**. Note the flood level of this event was lower than that of June 2007.



Photo 11 – Old A40 road bridge **June 2007** – water is over the lane and bridge is surcharged.



Photo 12 – New A40 crossing requiring maintenance of the channel bed (Chil Brook).



Area 2 – Station Road

Photo 13 – Field drainage outfalling to the Chil Brook just upstream of Chil Bridge



Photo 14 – Upstream face of Chil Bridge



Area 2 – Station Road

Photo 15 – Station Road/Chilmore Bridge looking downstream



Photo 16 – Chil Brook at Station Road Bridge looking upstream from the bridge



Area 2 – Station Road

Photo 17 – Looking along Station Road towards Eynsham



Photo 18 – Looking along Station Road towards Eynsham in July 2007



Area 2 – Station Road

Photo 19 – Station Road Eynsham July 2007



Photo 20 – Station Road, Eynsham July 2007



Area 3 – Recreation Ground

Photo 21 – Looking downstream towards B4449 bridge crossing. Photo shows growth in channel and the angle of approach to bridge crossing



Photo 22 – B4449 bridge crossing July 2007



Area 3 – Recreation Ground

Photo 23 – B4449 bridge crossing looking upstream along the Chil Brook



Photo 24 – Standing on the B4449 road bridge looking downstream along Chil Brook



Area 3 – Recreation Ground

Photo 25 – Downstream face of B4449 road bridge



Photo 26 – Downstream of B4449 road bridge.

