



WEST OXFORDSHIRE  
DISTRICT COUNCIL

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# Parish Flood Report: **Bampton**

May 2008



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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 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 (Environment Agency, 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 organisations 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 powers<sup>1</sup> 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 riparian<sup>2</sup> land owner, and permissive powers<sup>1</sup> 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.

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<sup>1</sup> 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

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

## **1.5 Legal**

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

### Ditch Clearance

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

### Flood Grants

- 1137 WODC Flood Grants totalling £284,250 given out overall
  - 157 (£39,250) for Bampton
- 40 Red Cross Flood Grants totalling £80,929 administered by WODC overall
  - 15 (£20,750) for Bampton
- 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 Bampton

### 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
Consider producing a revised warning system that identifies a higher category of risk that is only issued in exceptional circumstances
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 Bampton 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 during July 2007 and potential mitigating solutions.

Important mitigation measures which can be put into effect immediately include regular maintenance and clearing of channels, culverts and ditches; and the installation of flood protection for individual properties. Mid-term measures include the creation of a pedestrian bridge, upsizing of culverts and the excavation of a new ditch. Longer term options include developing storage areas in the upstream catchments and changing farming techniques to improve infiltration. Thames Water is aware that the four pumping stations, which all pump to Bampton (STW) suffered from flooding. Thames water has carried out repairs to these stations since July 2007, and is including Bampton in their next submission to OFWAT. This will secure funding for work to protect their stations from becoming inoperable during severe storm events.

Mitigation measures which are implemented hastily may exacerbate flooding, and therefore their effects, on both upstream and downstream flow, need to be analysed carefully.

Area 1 – The main problem in this area is run off from agricultural land behind the Primary School and lack of maintenance of the highway drainage system. The recommendations involve a number of measures including investigating the feasibility of installing a system to prevent run off from farm land, setting up a maintenance regime for the highway drainage and protection for individual properties.

Area 2 - This area suffered due to lack of maintenance of the existing ditch and culvert system. Although the system would still have been overwhelmed during the events of July 2007, certain properties may not have been affected if better maintenance had previously been carried out

Area 3 – This area suffered from both main river and surface water drainage problems. There is a high frequency of flooding for more than a dozen properties. A series of alleviation measure are required which will collectively reduce the impacts of both type of flooding.

## **4.0 SURVEY**

### **4.1 Brook & river**

The Shill Brook joins with the Highmoor Brook just north of Bampton and then passes under the Clanfield Road (A4095) and loops east around the south of the town. It then passes beneath the Buckland Road in a south easterly direction and discharges into the Great Brook approximately 3km downstream.

### **4.2 Flooded properties**

In total 157 properties were flooded and claimed the West Oxfordshire District Council Flood Relief Grant. Approximately a third of these properties were reported as flooded from the Shill Brook. Flows exceeded the capacity of both bridges at the A4095 Clanfield Road which carries the Shill Brook in Bampton, flood water was held back causing flooding in properties upstream. Flood water eventually overtopped the road causing damage to the bridge parapet and directly into the Mill Green area where significant numbers of properties were flooded. Surface water also flowed towards Bampton from land drainage in the Weald area. Similarly, the other main area of flooding from the Shill Brook in Bampton took place on the Buckland Road, where the Shill Brook passes under Fishers Bridge. Flood flows could not pass this structure, pushing flood water into residential areas.

The New Road area suffered significant flooding from surface water flowing off the fields to the north (Mount Owen) and the fields behind the Primary School in Bowling Green Close.

There are no sluice gates in operation on the Shill Brook or Highmoor Brook that affect Bampton.

### **4.3 Surveys**

Since July 2007 various visual surveys have been carried out involving West Oxfordshire District Council, Oxfordshire County Council, Parish Council members, residents, Cottsway Housing, the Environment Agency and Thames Water. These visual surveys have raised actions for various parties, in addition to raising general awareness of how the different surface water systems interlink and operate.

The visual surveys on the weald area have been complimented by a level survey which has been undertaken by a contracted engineer. The results of this survey are included in appendix 2 (Pg 38). The recommendations stated in this survey are generally supported by District Council representatives.

### **4.4 Photographs**

Photographs in appendix 1 show various locations of concern, which have been identified from the visual surveys carried out. A copy of the Environment Agency's flood plain map is also enclosed.

### **4.5 Letters**

Letters of concern, emails, logged phone calls and 'on site' discussions have been used to assist the District Council in preparing this report and to understand the existing surface water disposal systems.

### **4.6 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



There have been 157 applications for Grant Aid from Bampton. Many locations have been surveyed to verify the claim. All claimants have been given a sum of £250 towards Emergency Aid. This equates to 14.4% of the total number of properties affected in West Oxfordshire due to the events of July 2007.

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.

#### 4.7 Meetings & general communications

Table 1 Details of the main meetings attended by District Council representatives about the flooding in Bampton since July 2007.

Table 1

<b>Date</b>	<b>Main Participants</b>	<b>Description</b>
30/7/07	Laurence King (WODC) & Gordon Hunt (OCC)	Inspection of ditches at New Road and Weald Street
2/8/07	Laurence King & Residents	Inspecting damage in The Pieces
25/9/07	Phil Page (WODC) & Parish Council	Strategic Meeting to decide how WODC will be responding to flooding event
23/11/07	Laurence King & Residents at 23, New Road	Cause of flooding to property
8/11/07	Laurence King, Phil Page & Parish Council	Progress from WODC on flood defence results taken
19/11/07	Laurence King & Mr Sone & Parish Council members	Meeting with Mr Sone of The Pieces
14/12/07	Laurence King & Depot representatives	Inspect ditches to obtain quotation for cleaning them
5/12/07	Laurence King & Cottsway Housing	To obtain financial assistance to clean out New Road ditch
10/1/08	Laurence King & Residents of 33, New Road	Ditch being incorrectly filled in
17/1/08	Laurence King & Mrs J Richards of The Pieces	Causes of flooding of properties in cul-de-sac
22/1/08	Laurence King & Mr G Stephens	Blocked ditches along Buckland Road and the Meadow Brook
12/2/08	Laurence King & Mr R Smith (Parish Council)	Inspection of ditches between Ampney Orchard and Calais Farm
13/2/08	Laurence King & Mr C Rouse, D Hawkins (Parish Council) & D Pullman	Creation of a new ditch on Mr Rouse's land

Table 2 is a summary of telephone calls, emails and letters received by WODC.

Table 2

Location	Problems / Issues
<p style="text-align: center;">Mill Green (All numbers)</p>	<ul style="list-style-type: none"> <li>• Repeated flooding of homes from watercourse at front and surface water drainage at rear.</li> <li>• Lack of clarity on ownership of elements of the watercourse and footpath.</li> <li>• Inconsistent culvert sizes and fragmented system.</li> <li>• Why is water from weald directed through Mill Green.</li> </ul>
<p style="text-align: center;">Buckland Road Fishers bridge</p>	<ul style="list-style-type: none"> <li>• Inadequate maintenance on main river by Environment Agency was considered as the main cause of flooding of homes as discharge pipes from highway and land could not work due to high river bed and poor riverbank condition.</li> <li>• Inadequate maintenance on ditches along Buckland Road by riparian owners.</li> <li>• Lack of real understanding of scale of problem by WODC &amp; other organisations.</li> </ul>
<p style="text-align: center;">New Road Fox Close The Pieces</p>	<ul style="list-style-type: none"> <li>• Ditches filled in and not maintained.</li> <li>• Culvert entrances not protected by grills.</li> <li>• Damaged highway drainage which was poorly maintained.</li> <li>• Repeated flooding from same problem. No action.</li> <li>• Sewerage backing up into homes whenever flooding of highway occurs.</li> </ul>

## **5.0 PROBLEMS AND CAUSES**

### **5.1 Maps**

Appendix 2 contains:

- Figure 1 - shows 3 distinct areas of flooding in Bampton with the causes being outlined below.
- A map showing:
  - Bampton parish boundary
  - Environment Agency enmained watercourses
  - 0.1% annual probability and 1% annual probability of flooding occurring (previously referred to as 1:100 & 1:1,000 year storms)
- Area 3 – Weald maps of drainage

### **5.2 Area 1 – New Road / Bowling Green Close**

#### **5.2.1 Points 1 & 2**

This area encompasses the fields to the north of the Primary School, the recreation ground next to the school, Pembroke Place, Bowling Green Close, Ne Road, Fox Close, Calais Dene, The Pieces & Ampney Orchard (part).

#### **5.2.2 Run off**

Agricultural land run-off from the fields behind the Primary School, in addition to the surface water entering the highway drainage system, are the main sources of large volumes of water quickly appearing in the ditch and culvert system in the stated area. The problem has been poor maintenance of the system and additionally no control measures being in place to reduce the speed of the water entering the system.

### **5.3 Area 2 – Ampney Orchard & Aston Road**

#### **5.3.1 Points 3, 4, 5 & 6**

This area includes part of Ampney Orchard, part of Aston Road (at the crossing with Ampney Orchard) the Buckland Road (from the junction with Aston Road), the area of Fishers Bridge & Calais Farm.

Points 3 & 5 are part of the system stated in area 1, however, due to the distance and road crossings involved, that fact is easily overlooked.

Large volumes of water exit the large diameter culvert at Ampney Orchard and enter a ditch which has been recently maintained to a good standard by the Parish Council. This ditch continues to the Aston Road, but enters private property approximately 30 meters from the junction with Aston Road. Unfortunately that section of ditch and the culvert crossing Aston Road has not been maintained. This resulted in water backing up and flooding the houses next to it on the Aston Road.

Water also flooded the Aston Road and property on the south side of it. There is a combination of culvert and ditch which runs south to the Calais Farm location. There is a boundary ditch running west to east which joins the ditch entering Calais Farm and this then becomes a culvert, to enable access to the farm buildings. The ditch reappears in the field adjacent to the farm buildings and continues to a pond which then runs through open farm land, to the confluence and Meadow Brook south west of Aston.

### **5.3.2 Point 4**

Indicates a problem with the size of a culvert which sits in front of a set of wooden double gates, leading into the grounds of The Grange.

The water (which is presumed to be highway run-off) surcharges out of this very small culvert and floods the Buckland Road. There are reports that homes are damaged by vehicles passing through the standing water, which pushes it to the houses and floods them. The water which remains in the ditch flows along the ditch which continues along the rear of the houses on the west side of Buckland Road. This water cannot discharge efficiently into the river at Fishers Bridge due to the outfalls being blocked up or submerged. The houses on this side of Buckland Road are therefore flooded from the front and rear.

### **5.3.3 Point 6**

Indicates the condition of the river as it passes through the area of Fishers Bridge. As previously stated, the level of the bed, the condition of the bank and the width of the channel are felt to contribute to the backing up of water in this area, which in turn causes a problem for the discharge of highway and agricultural run-off. Properties directly adjacent to the bridge as well as their neighbours flooded.

## **5.4 Area 3 – Weald Street (part) & Mill Green area**

### **5.4.1 Points 7, 8, 9, 10 & 11**

Indicate areas of concern in the system which carries water from a large part of the agricultural Weald catchment in addition to highway run-off from the Clanfield Road and the residential area south of this road.

### **5.4.2 Run off**

A large volume of uncontrolled agricultural run-off arrives at the southern end of the residential basin. This water is directed through a series of inconsistently sized culverts along a minor ditch adjacent a footpath and along short sections of ditch. The exact layout of this system is shown on the survey drawing in appendix 2 (pg 37) for this area. Water regularly surcharges out of the culvert confluence and the ditches, which causes regular flooding to homes. Highway run-off contributes to this problem, coming from the A4095 and the residential areas. Properties are also flooded from water surcharging out of the watercourses running adjacent to Mill Green and Brook House.

### **5.4.3 Point 7**

Is a detached problem as it appears the homes on Broad Street were flooded from inadequate highway drainage and 'wash' from passing vehicles. This water was/ is collected from rain falling directly onto the highway and not from agricultural run-off.

## 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.

# West Oxfordshire District Council

## Parish Flood Defence Report – Options summary

Bampton Parish

May 2008

Option ref	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	For queries Tel: 0845 310 1111 or e-mail northernarea@oxfordshire.gov.uk	For queries Tel: 08459 200800	For queries Tel; 01993 861000 or e-mail enquiries@westoxon.gov.uk	Bampton Parish Council 01993 851476				
<b>Area I – New Road/Bowling Green Close</b>										
A	Summary of maintenance actions		Survey Fox Close – highway drainage. Clear ditch adjacent to school in Bowling Green Close. Fit trash screens on culverts under highways. Clean out highway gulleys more frequently on New Road	Increase defence of foul sewer against ingress of surface water. Thames Water are completing a sewer upgrade in 2008.	Organise camera survey of culverts. Inspect ditches on New Road periodically. Clean gratings (when fitted)	Do not obstruct ditches with debris. Landowner to clear ditch behind school.	Will considerably reduce the risk of flooding the properties in storm events.	None	Camera survey £1k. Ditch clearance by Landowner. No cost to WODC. Trash screens £2k	Coordination by WODC to ensure these actions occur.
	The main problem in this area is that properties are regularly flooded due to the amount of uncontrolled run-off coming from a large agricultural catchment									
B	Individual flood protection to the houses					Housing Association and Residents	Very effective in dealing with 'flash-flooding' of homes.	None	Varies to each property. Average £1.5k	
C	Land drainage for recreation field next to school.		OCC to reduce run-offs by installing land drainage.				Would reduce amount of 'quick run-off' entering system going to New Road.	None	£5k to £20k	
D	Formalise maintenance regime of system.		Joint coordination between OCC, WODC & Cottsway Housing		Joint coordination between OCC, WODC & Cottsway Housing	Joint coordination between OCC, WODC & Cottsway Housing	Would ensure problems are 'owned' and therefore resolved. Reduces flooding risk to properties from blockages	None	No direct cost to clarify ownership or responsibility.	
E	Attenuation area in field behind school.				WODC to survey and present true feasibility	Permission to be sought from Landowner	Would considerably reduce amount of uncontrolled run-off into restricted ditch system.	None	£50k to £100k	
F	Hydrobrake at ditch confluence upstream of school.		Joint coordination between OCC and WODC		Joint coordination between OCC and WODC		Would slow rate of water entering restricted ditch system to New Road.	Localised flooding of fields	Up to £5k	
G	Removal of undersized pipes and culverts in New Road				Enforcement by WODC only.	Housing association and Residents to carry out and fund works.	Would allow a consistent amount of water to flow at a quicker rate into culvert on New Road.	None	£50k to £100k	

Option ref	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	For queries Tel: 0845 310 1111 or e-mail northernarea@oxfordshire.gov.uk	For queries Tel: 08459 200800	For queries Tel; 01993 861000 or e-mail enquiries@westoxon.gov.uk	For queries contact Bampton Parish Council 01993 851476				
<b>Area 2 – Ampney Orchard and Aston Road</b>										
A	Summary of maintenance actions	Desilting in area of Fishers Bridge	Jet and clean culvert under Aston Road and Increase in gulley clearing frequency		To organise camera survey of culvert behind houses	Resident to clear ditch to WODC specification. Farmers to increase ditch capacity towards main drain.	Considerably reduce localised flooding problems due to surcharging of ditches and culverts.	None	EA costs £50k to £100k. OCC £2k Private £2k	The most important action rests with the EA
	The main problem in this area is the large amount of surface water run-off is being restricted by inconsistent culvert sizes and a lack of maintenance of ditches.									
B	Ensure desilting of river bed and bank clearance is carried out.	EA to sanction some work and carry out other items.			Coordination role for WODC to ensure main river work is carried out.	Riparian responsibilities on the Shillbrook.	Increase capacity (medium term) of main river in vicinity of dwellings. Increase rate of flow past residential area.	Investigation required into effects of quicker rates of run-off in adjoining farmland.	EA £50 to £100k. Private (variable)	
C	Ditch clearance		To assist in traffic management		To liaise with private owners to carry out ditch clearance.	Riparian responsibilities to be enforced	Minor protection in lesser events. Clearance must be continued through to main drain.	None	Depending on extent of riparian owners land.	
D	Water courses	Enamined water courses to be maintained			To liaise with private owners to carry out ditch clearance.	Riparian responsibilities to be upheld	This will maximise the channels and allow a quicker discharge onto the flood plains	None	EA to bear costs as this is enamined area.	
E	Purchase of residential flood defence products					Individual properties defended by manufactured products	Very effective against flash flooding and 'wash' from vehicles	None	Varies Average £1..5k per dwelling.	
F	Upsizing existing culvert adjacent to the road.				To assist in identifying responsibility of existing culvert	Possibility of landowner being asked to fund works	Would stop discharge of water onto Buckland Road and reduce potential of flooding to low lying homes.	None	Up to £5k	
G	Formalising maintenance regime for this section of the system.				WODC to act in a coordination role		Very effective against flash flooding	None		A joint action to ensure the condition of this system is monitored and actions are 'owned' and pursued.
H	Attenuation of water in private grounds				A survey is needed to look at the feasibility of storing water in the grounds of The Grange.	Landowners consent is required unless WODC wish to act under the Land Drainage Act 1991/4.	Would allow system to drain into the main river at a reduced rate.	Possible flooding of area adjacent attenuation pond.	£50k to £100k	

Option ref	Solution 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	For queries Tel: 0845 310 1111 or e-mail northernarea@oxfordshire.gov.uk	For queries Tel: 08459 200800	F For queries Tel; 01993 861000 or e-mail enquiries @westoxon.gov.uk	For queries contact Bampton Parish Council 01993 851476				
<b>Area 3 – Weald Street (part) and Mill Green area</b>										
A	Summary of maintenance actions		Jettings and clearing of highway gulleys. The survey and cleaning of highway drainage on the Clanfield Road and Bridge Street. Cleaning of area under bridge on the Clanfield Road. Cleaning of culverts in Weald street.			Ditch clearing north of Ham Court	Reduce impact on homes in lesser events.	None	OCC Up to 5k Private £2k	
	This main problems in this area is a high volume of water coming off a large agricultural catchment, plus the main river regularly surcharging.									
B	Increase in priority of main river maintenance	Raising the priority of area					Increase speed of water (and capacity) passing residential area.	Impact on downstream areas will need establishing	£50 to £100k pa	
C & D	Re-profiling of Mill green area	A permission to be sought			To assist in obtaining EA approval and inspections of work.	Riparian owners to carry out work.	Assist in guiding water away from houses in Mill Green	Flooding of larger area of Mill Green than at present	£5k to £20k	
E	Creation of a swale				To design and inspect work. Possible need to fund this item of work.	Possible funding of work by residents	Decrease frequency of flooding at rear of Mill green and Primrose Lane	Possible flooding of field if swale surcharges in severe event	Up to £5k	
F	Removal of undersized culvert crossing footpath		Work to be carried out preferably by OCC as it crosses adopted footway		To coordinate work with OCC and residents and possible funding source.	Possible funding of work by residents if OCC disown scheme	Will considerably increase the flow of water away from the residential area.	None	Up to 5k	
G	Purchase of individual flood protection products				Will advise residents on appropriate products	Residents to purchase approved products	Will assist in flood situations	None	Average £1.5k per dwelling	
H	Attenuation area in private grounds				To survey and prepare feasibility report. Possible source of funding for scheme		Considerably decrease rate of water entering the restricted system	Possible flooding of adjoining ground in severe event	£20k to £50k	
I	Control device to restrict flow in Weald ditch system				To identify location for device and possible impact of installing it. Survey required		Survey required	Unknown at this time	Up to £5k	
J	Upsizing of pipes and culverts	To assist in design	Responsible for culverts under adoptable highways		To assist in design	To fund work in private land	Minor unless outfall points function correctly into main river		£5k to £20k	
K	Increase in type and frequency of maintenance on enmained watercourses	Preferred organisation to fund and approve work			To enforce riparian duties on landowners	Riparian responsibilities enforced	EA to carry out modelling to show effects	Unknown at this time	£5k to £20k	
L	Attenuation area formed on land north of Ham Court	EA to approve design			To assist with feasibility study and possibly be source of funding		Unknown at this stage	Unknown	£20k to £50k	
M	Heightening of existing stone embankment in front of cottages on Mi Green	EA to approve design			WODC to assist with design including assessment of structural implications on neighbouring properties	Private house holders to fund work	Unknown at this stage	Structural implications	£5 to £20k	



## **7.0 CONCLUSIONS AND RECOMMENDATIONS**

### **7.1 Area I – New Road / Bowling Green Close**

#### **7.1.1 Maintenance (Option A)**

Since July The District Council and Cottsway Housing have cleared out the ditch and culvert system which runs from junction of Bowling Green close to Calais Dene. Oxfordshire County Council has cleaned out the existing highway gullies along New Road, in addition to cleaning out the culverts under the road crossings. In future, WODC will be monitoring the condition of this system and will actively pursue anybody found to be allowing obstructions to build up in it.

- Further ditch clearance is required by the owner of the fields behind the Primary School. The District Council will pursue this action.
- Oxfordshire County Council will clear the ditch which exists between the school and the recreation ground.
- A camera survey is required of the culvert which runs from the edge of the recreation field to New Road.
- A camera survey is required of the culvert which runs from New Road to Ampney Orchard.
- Trash screens are required on the culvert openings to prevent litter having a damming effect as well as a protection against children entering the culverts. OCC will only fit trash screens on culverts of over 375mm.
- Residents to be encouraged not to leave garden waste or litter in the ditch.
- Survey potentially damaged highway drainage in Fox Close.
- An increase in the frequency of gully clearing along New Road due to the amount of dropped kerbs on front of the lower lying houses.

#### **7.1.2 Flood defence improvement schemes**

##### Immediate (under 1 year)

- Option B - investigate the possibility of fitting individual flood defence products to homes in Fox Close and New Road.
- Option C - investigate the requirement for land drainage on the recreational field to reduce the rate of run-off which affects homes in Pembroke Place.
- Option D - formalise maintenance regime for entire system in area I by agreement between OCC, WODC, Parish Council, Cottsway Housing and residents.

##### Mid Term (2 – 3 years)

- Option E - attenuation area in field behind school.
- Option F - control device at confluence of ditches north of school.
- Option G - Removal of undersized pipes in ditch on New Road. Investigate possible attenuation area in land managed by White Owl Farm.

## **7.2 Area 2 - Ampney Orchard & Aston Road**

### **7.2.1 Maintenance (Option A)**

- Clearance of the ditch is required at the junction of Ampney Orchard and Aston Road.
- Clearing of culvert which runs under Aston Road.
- A camera survey of the culvert which runs from Aston Road to Calais Farm.
- Clearance of the ditch which runs from Calais Farm towards the sewerage works area.
- Main river maintenance by the Environment Agency upstream and downstream of Fishers Bridge.
- Jetting of highway drainage outfall from Fishers Bridge to rear of homes on Buckland Road.
- Increase in highway gully cleaning from junction of Aston Road along Buckland Road to Fishers Bridge

### **7.2.2 Flood Defence Improvement Schemes**

#### Immediate (under 1 year)

- Option B - WODC to ensure that between EA and the riparian owner's adequate work on the main river is carried out in the vicinity of Fishers Bridge.
- Option C - ditches running each side of Buckland Road past recreational ground and towards Nurseries are cleared out.
- Option D - WODC to ensure that the Meadow Brook, The Grange drain and the Radcot cut are maintained adequately by the EA and the riparian owners.
- Option E - purchase of individual flood defence products for houses affected by 'wash' from passing vehicles on Buckland Road.
- Option F - the culvert in front of the wooden gates on the junction of Aston Road and Buckland Road is upsized.
- Option G - formal maintenance regime is agreed by all responsible parties for this system.

#### Mid Term (under 2 years)

- Option H - investigation into source of water running along High Street (which could be from the drain at the back of the Village Hall) and the possible attenuation of this in the grounds of The Grange on High Street.

## **7.3 Area 3 – Weald Street (part) & Mill Green area**

### **7.3.1 Maintenance (Option A)**

- Cleaning of highway gulleys along Broad Street and the surveying of the lateral pipes.
- Survey and cleaning of highway drainage on the Clanfield Road and Bridge Street.
- Ditch cleaning from north of Ham Court.
- Clearing of any silt, gravel or debris from under bridges on the Clanfield Road. This will increase the bed depth to reduce the possibility of damage to the houses on Mill Green or the parapet walls.
- Cleaning of culverts on Weald street.

### 7.3.2 Flood Defence Improvement Schemes

#### Immediate (under 1 year)

- Option B - increase in EA maintenance of Shill Brook in the Mill Green / Brook House area.
- Option C - the lowering of the bank and the creation of a channel on Mill Green between the Bourne and Sill Brook.
- Option D - the raising of the bank on the Brook House side, subject to further investigation.
- Option E - the creation of a swale in land managed by Colin Rouse at the rear of Mill Green. This would divert water away from two culverts and increase the rate that the water would reach the Shillbrook.
- Option F - the removal of the 300mm diameter culvert in the footpath adjacent to Rose Cottage. This would be replaced with a pedestrian bridge. This would allow a much larger flow away from this junction of ditches and pipes.
- Option G - purchase of individual property flood defence products.

#### Mid Term (2 – 3 years)

- Option H - possible provision of an attenuation area for water (coming from weald) in the grounds of Weald Manor.
- Option I - a control device installed in the Weald Street ditch system to control agriculture run-off.
- Option J - upsizing of culverts and pipes throughout area whether in public highway or private gardens.
- Option K - increase in main river maintenance from north of Bampton to south of village.
- Option L - possible attenuation areas formed on main river alignment north of Ham Court.
- Option M – heightening of the stone embankment in front of the Mill Green Cottages to retain the water during severe storm events. This will also require much further investigation, as there could be considerable structural implications for neighbouring properties

## Appendix I: Photos







Area 1 e  
New Road  
Highway drainage



Area 1 f  
Recreation field























