WEST OXFORDSHIRE
DISTRICT COUNCIL

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Parish Flood Report:
Kelmscott

July 2008

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

Contents

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 powers[1] 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[2] land owner, and permissive powers[1] 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

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
  - 13 (£3,250) for Kelmscott
- 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

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 Kelmscott 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 Kelmscott during July 2007 and potential mitigating solutions.

Kelmscott is a rural parish located approximately 2 1/4 miles to the east of Lechlade and 10 miles south of Carterton. The parish sits in the floodplain of the River Thames and directly in the catchment of Kelmscott Brook. There is a network of several modified and artificial watercourses in the area.

Visual walkover surveys have been undertaken of the flooded areas and properties. Meetings have been held with the affected residents, who have also formed a village flood defence committee, they have been in discussion with OCC, WODC and the EA. WODC have record of 13 applications for Grant Aid in Kelmscott.

Flooding experienced in Kelmscott has been assessed as two areas, as the village is small consisting of just 36 properties and the flooding is due to fluvial sources.

The area surrounding the village experiences flooding regularly, though to a limited extent when compared to July 2007. Following the 2007 flood event, the villagers of Kelmscott formed a flood defence committee and proceeded to identify the factors which contributed to the flooding. This included commissioning of a survey to deduce local topography and flow routes. The findings indicated that flooding was predominantly from the south-west and from the old Leach River via a network of linking drains which flow through the village. This link has since been removed by damming of the watercourse. Drainage ditches in and around the village have also been cleared during arranged work parties.

The flood defence committee has also produced a list of works and submitted this to the EA, who have visited the village to discuss these plans.

Flooding problems and how each public and private body is affected, effectiveness of each solution, affects on adjacent land and cost, are included in Section 5. Priority ranking is included in Section 6.

Conclusions and recommendations, including maintenance and flood defence improvement measures and programme, are shown in Section 7.

This report also includes Appendix 1 showing Photographs, Appendix 2 showing Maps and Appendix 3 provides a glossary.

4.0 SURVEY

4.1 Description of Area

The village of Kelmscott sits on the left bank of the River Thames in the Cotwolds. It is located approximately 4 miles to the east of Lechlade and 10 miles south of Carterton.

The parish is rural in nature, forming part of the catchment area for the Kelmscott Brook, which drains area to the north west, running eastwards through the village via an open drain. The village itself is located on the left bank floodplain of the River Thames

The parish also contains a number of other watercourses and linking ditches as described below:

- The old River Leach course runs to the SE of the village and is disconnected from the upper catchment, which now drains SW to the Thames via an artificial stretch of channel. Enfield Ditch links the old River Leach to College Drain.

- Radcot Cut is an artificial channel running parallel along the Thames from Lechlade, running below Kelmscott in an easterly direction. Several drainage ditches link Radcot Brook to College Drain.

The disconnected catchment area of the old River Leach is around 1 km^2; the natural catchment of the River Leach above the diversion point is 77 km^2. Kelmscott Brook has an upstream area of around 1.8 km^2 and Longford Brook has an area of 4.3 km^2. Putting things into context, the Thames upstream of this area has an FEH determined catchment area of 1005 km^2.

For the purposes of this report, local farms, pubs etc have been used to name lanes in order that flooding can be described.

4.2 Survey Method

A visual walk-over survey of the area affected by the July 2007 flooding has been undertaken, including the properties on the road near the old school house and the area around the The pub. A visit to the Thames floodplain below Lechlade was also conducted

See Appendix 1 – Photographs.

4.3 Meetings

A summary of meetings held in Kelmscott after the July 2007 flooding is given in Table 1.

Table 1: Summary of meetings and flooding descriptions

Date	Location	Description
25.10.07	Village Hall, Kelmscott	• Meeting for villagers to discuss July 2007 flooding. Present – Local District Councillor, Strategic Director WODC Environmental Services, Local Villagers • 13 Properties flooded, attributed to river flooding. • Problems caused by water inundating village from south west. • Flood warnings issued to village by EA and National Trust • Event duration 24-36hrs • Damage to property, livestock and septic tanks • Need to form flood risk working party
28.04.08	Kelmscott	• Meeting with working party & EA to discuss proposals for works on riparian land
29.04.08	Homelea, Kelmscott	• Meeting between Jake Nelson and Scott Wilson to discuss flooding, post-flood and other potential solutions for Kelmscott. • Work parties formed, ditches and watercourse banks cleared. Ditch from Old Leach to Kelmscott dammed. • Topographic survey commissioned by village to determine low points / flow routes • Plan of proposed riparian drainage works submitted to EA

4.3 Stakeholder Communications and Actions

Table 2: Summary of Telephone Calls made with EA, TW and OCC (June 2008)

Details of conversations held with stakeholders in May/June 2008 are included in Table 2.

Location	Description
EA	• EA have visited Kelmscott recently regarding proposed list works proposed via village defence Committee • The EA currently provide a flood warning service to properties in the Kelmscott area. Not everyone is signed up for this • The EA have stated they prefer that flood defence measures in these areas are in the form of flood resilient measures to individual properties rather than civil engineering schemes • EA are now considering the consent for the recent private flood defence works submitted via the parish council
OCC	• OCC have carried out work within the last two years to replace highway drainage and complete kerbing works by the pub where flooding of the highway was occurring. OCC feel that ditch maintenance by riparian owners is poor in this parish contributing to flooding.
WODC	• WODC arranged 2 meetings in October 2007 - between the village committee and EA also OCC. WODC in contact with Parish committee throughout
TW	• The entire village is on septic tanks at the moment. TW have been contacted regarding future plans for the village and whether they could be brought onto mains sewerage – Awaiting response.

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 13 residential properties Kelmscott have received Emergency Flood Relief Grant Aid, however it is acknowledge this is not the total number of properties affected in the Parishes 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, which can be found in appendix 2, shows areas in Kelmscott where properties flooded in July 2007 and where owners have made claims for grant assistance. The flooding can be broadly split into two areas being:

- Area 1: Top (unnamed) road running west-east through village
- Area 2: The Plough Inn / Kelmscott Manor

The map shows areas where properties were affected by flooding in July 2007, overlaid with 2008 Environment Agency Flood Zones.

- 1% probability of flooding - Flood Zone 3 (previously referred to as 1 in 100 year flooding)
  - 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% probability of flooding – Flood Zone 2 (previously referred to as 1 in 1000 year flooding)
  - 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.

5.2 Area 1 – Home Farm Lane in the vicinity of Homelea / Old School

In July 2007, homes located to the north of Home Farm Lane (the lane used to access Kelmscott from the Lechlade direction) in Kelmscott were flooded.

These properties are located just outside of the 2007 Environment Agency 0.1% probability floodplain (previously referred to as 1 in 1000 year Flood Zone).

Flooding here is attributed to the following:

5.2.1 Flooding from overtopping of College Ditch

College ditch transfers flow from the fields that form the upper reaches of Kelmscott Brook, eastward along the verge of Home Farm Lane to the EA maintained reach of channel to the east of the village.

In July 2007, the rural upstream catchment was heavily waterlogged leading to high volumes of runoff discharging to the College ditch.

College Ditch running through the village itself is narrow, shallow, modified for aesthetic appearance and is culverted in sections. This all reduces an already small watercourse's flow capacity further, resulting in large volumes of water flooding onto Home Farm Lane, flooding properties in the area before flowing into the village. It is also highly likely that College ditch and associated field drains were receiving flood flows from the Old Leach course and Radcot Brook via the Enfield Ditch link.

The Old Leach links into Radcot Cut, which ultimately links into the Thames at around 5km downstream of Kelmscott.

During the July 2007 flood event, flood levels on the Thames remained high for several days (as reported by the EA). This would have effectively blocked the entire downstream end of Radcot Cut and its tributaries, with water levels rising back along the entire system. This would have led to prolonged flooding onto the surrounding fields and ditches. The College Drain effectively became a conduit for some of this excess flow. This occurred against the backdrop of continued heavy rain in the upper catchments and saturated ground conditions, further exacerbating flooding in the lower areas.

5.2.2 Flooding from re-activation of Old River Leach (Marlake Ditch)

Examination of the River Leach watercourse shows an FEH-based upper catchment area of 77km^2 predominantly draining south east, then being subject to a sharp change in channel direction to the south west. This 90 degree elbow is caused by the new cut running south west to the Thames at Lechlade. It is also reported by Kelmscott village defence committee that an overflow pipe links the watercourse here to Marlake Ditch.

Due to the large upstream catchment area and the intensity of the storms, it is very possible that flood flows in the upper catchment were able to surcharge the banks at the point of sudden channel change. This would have caused the Leach watercourse to 'back up' with high volumes exiting south-east along the original course of the river (Old River Leach) toward the Kelmscott area; the overflow pipe linking the Old River Leach to the Marlake ditch would certainly have been operating. This scenario would have been made more likely given that water levels in the lower catchment of the River Leach would have been increased back along its length due to the sustained high levels in the River Thames.

5.3 Area 2 – The Plough / Kelmscott Manor

In July 2007, homes in the vicinity of the public house and Kelmscott Manor, were flooded. Water is reported to have been 2-3 feet deep in places.

Some of these properties are located inside the 2007 Environment Agency 1% probability floodplain (previously referred to as 1 in 100 year Flood Zone). All properties affected sit within the 0.1% probability floodplain (previously referred to as 1 in 1000 year Flood Zone).

Flooding here is attributed to the following:

5.3.1 Flooding from Radcot Cut

Flooding is reported to have approached the village from the south west. An initial overview of the watercourses suggests that this will have partly flowed from the direction of Radcot Cut. Radcot Cut is an artificial channel which begins just south of Lechlade, in the fields of the Thames floodplain. It flows approximately parallel to the Thames, running below Kelmscott village. The south side of the cut in this location is embanked to prevent direct ingress into the village across from the Thames. The Old River Leach flows into Radcot Cut upstream of the village and will have received flows due to the mechanism described in 4.2.2.

Another source of flow into the Radcot Cut is via overbank flow directly from the River Thames. The Radcot Cut flows south east from Lechlade in a semi-circular route, curving back north-east to Kelmscott village. It then diverts due east below the village and this sudden change in direction is a likely point of overtopping into the village. Levels in the Radcot Cut will have been high due to it being unable to discharge into the high flowing Thames.

A site visit to the upstream end of Radcot Cut at Lechlade shows that water can exit the Thames at the series of meander bends and flow a short distance across open land directly into the Radcot Cut. The EA have since confirmed that the Thames inundated its floodplain below Lechlade and depending on levels in this portion of Radcot Cut, flows from the Thames may well have even been inundating the fields to the north of the re-routed River Leach.

5.4 Other flooding sources

Because of the nature of the flat land and drainage network at Kelmscott, flooding will have a combination of surface water run-off being unable to drain away into already flooding watercourses and the flooding from watercourses themselves.

Work parties have since been clearing the network of field drains in and around Kelmscott.

There is no formal foul sewer network in the village; all properties are served by septic tanks and soakaways. The antecedent saturated ground conditions and the intense rainfall led to flooding of these domestic sewage systems.

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 1. 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

Kelmscott

Version 1 –June 2008

Option ref	Flood Overview	Description of work required					Key issues			Comments
	Options	**Environment Agency** For queries Tel 08708 506 506 Or email enquiries@environment-agency.gov.uk	**Oxfordshire County Council** Highways: 0845 310111 Or e-mail online@oxfordshire.gov.uk	**Thames Water** Enquiries: 08459 200 800	**WODC** Switchboard: 01993 861000	**Private**	**Effectiveness**	**Affects on adjacent land**	**Cost**	
Area 1 – Home Farm Lane in vicinity of Homelea / Old School										
	Flooding from overtopping of College Ditch									
A	Prevent flows from Old Leach reaching College ditch by damming the Enfield Ditch.	EA have provided advice to the villagers on this work				This work has been completed by villagers	Reduced flow entering ditch system from Leach during lower order flood events. Will still be inundated during out-of bank flows	Reduced flooding of adjacent land?	Up to £5k	Village flood defence work party has completed this work
B	Maintain and dredge ditch network		OCC to carry out maintenance of roadside ditches through village		WODC to provide a co-ordination role and confirm ownership of ditches	Riparian owners to maintain field drains in fields to west and north west of Kelmscott	Improved flow conveyance	Improved land drainage	up to £5k	Village flood defence work party has completed this work
C	Increase the capacity of ditches through village. (Deepen, remove small culverts where possible)		OCC to carry out works on roadside ditches where they are responsible		WODC to provide a co-ordination role and confirm ownership of ditches	Riparian owners to increase size of ditches on their land	Improved flow conveyance	Improved land drainage	up to £5k	
D	Excavate flood storage pond upstream of village in vicinity of Enfield Ditch	EA to advise on feasibility in conjunction with WODC			WODC to investigate feasibility in conjunction with EA	Potential for village works party to construct pond	Will reduce flow volumes in College Drain	Loss of land to construct pond	£20k to £50k	Landowners have not been approached regarding this option
E	Flood- resilient measures on properties.	EA website contains advice on flood resilient measures				Homeowners to provide protection against flooding to their properties e.g. flood boards, flood proofing of exterior walls, sand bags.	Only effective if defences are put in place before the water level rises.	Potential to increase flood risk to adjacent property as flood water will be displaced	up to £5k	Homeowners have not been approached regarding flood resilience measures.
F	Improve awareness and take up of flood warning provision	EA to provide consultation				Homeowners to sign up to Flood Warnings Direct	Will provide advance flood warning to residents			Some residents are already signed up to service
G	Maintain Kelmscott Brook below village	EA are responsible for maintenance								
	Re-activation of Old River Leach system with flows from upper Leach catchment									
H	Inspect left bank heights (downstream view) of River Leach at diversionary 'elbow' where new cut begins. Assess likely flood flows reaching Old Leach system	EA to inspect left hand bank levels – assess if overtopping into floodplain occurs via modelling			WODC to provide co-ordination role if required		Increased left bank protection will prevent water reaching Old Cut	Will push flows into fields to on right bank at elbow	£5k to £20k	EA have not been consulted regarding this work
I	Investigate effectiveness of offline flood storage in vicinity of diverted reach	EA to assess option of attenuation pond below diversion point			WODC to provide co-ordination role		Will store out of bank flows, preventing direct flood routing into Old Leach system		£5k to £20k	
J	Assess operation of overflow pipe reported to be operating. Remover / reinstate at higher level	EA to inspect operation of overflow pipe. Combine with above study			WODC to provide co-ordination role		Reduce flows entering Old River Leach from new cut		up to £5k	Only solves problem for River Leach in-bank flows

Parish Flood Options

Kelmscott

Version 1 –June 2008

Option ref	Flood Overview	Description of work required					Key issues			Comments
	Options	**Environment Agency** For queries Tel 08708 506 506 Or email enquiries@environment-agency.gov.uk	**Oxfordshire County Council** Highways: 0845 310111 Or e-mail online@oxfordshire.gov.uk	**Thames Water** Enquiries: 08459 200 800	**WODC** Switchboard: 01993 861000	**Private**	**Effectiveness**	**Affects on adjacent land**	**Cost**	
K	Investigate operation regime of sluices at Lechlade Mill	EA to inspect operation of private sluices / liaise with owner			WODC to provide a co-ordination role where required		Reduce flows entering Old River Leach from new cut			
Area 2 – Plough Inn / Kelmscott Manor										
	Direct flooding of properties from fields to the west of the village – Radcot Cut.									
A	Construct private flood defence bund along western perimeter of village	EA to advise on private flood bund location/ land drainage consent/ plus any necessary flood compensation			WODC to provide a co-ordination role	Potential for village works party and land owners to construct bund	Will prevent majority of floodplain flows reaching village and retain floodplain		£20k to £50k	
B	Improve awareness and take up of flood warning provision	EA to provide consultation				Homeowners to sign up to Flood Warnings Direct	Will provide advance flood warning to residents			Some residents are already signed up to service
C	Maintain channel and banks Radcot Cut and Old Leach	EA has responsibility to maintain Radcot Cut as this is main river			WODC to provide co-ordination role		Will increase channel capacity during times of flood	Will contain flood waters in channel for longer and reduce flooding of surrounding land	£20k to £50k	Village flood defence work party have cleared vegetation from channel
D	Fit one way flow valves on ditches linking Radcot Cut to village drainage network, reinstate old ditch to and build up embankment levels on Radcot Cut and build up bank levels on right bank of Radcot Cut	EA to advise							£5k to £20k	Village flood defence committee have already submitted a plan of proposed works to EA
E	Flood- resilient measures on properties	The EA website contains reference information on flood resilient measures			WODC to provide a co-ordination role where required	Homeowners to provide protection against flooding to their properties e.g. flood boards, flood proofing of exterior walls, sand bags.	Only effective if flood boards are put in place before water levels rise.	None	up to £5k	Homeowners have not been approached regarding flood resilience measures
F	Investigate spill points from Thames into Radcot Cut. Potential for attenuation / extend embankments of Radcot Cut to prevent ingress	EA to assess where water is able to flow across from Thames into Radcot Cut			WODC to provide co-ordination role				Feasibility Up to £5k	EA have not been approached regarding this work
G	Construct flood relief channel at rear of properties to intercept overland flow from west	EA to advise				Potential for village works party to construct flood relief ditch			£20k to £50k	

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 Area 1 – Lane running east in the vicinity of Home Farm

7.1.1 Maintenance

The following on-going maintenance is recommended:

- OCC to assist riparian in maintaining roadside ditches through village and riparian owners to manage field drainage (Option B)
- EA to maintain Kelmscott Brook below village – dredge and ensure optimum channel conditions, clear vegetation. Ensure this is done regularly (Option G)

7.1.2 Flood defence improvement schemes

Immediate (under 1 year)

- Private - prevent flows from entering Enfield / College ditch via blocking off flow route from Radcot Cut (Option A). This has already been done by the work party and will be effective in reducing flooding from Radcot Cut into the drainage network as long as Radcot Cut remains in-bank.
- Private - flood resilient measures to be fitted to individual properties via residents (Option E).
- EA/Private - improve take-up of flood warning service (Option F).
- EA to inspect left bank heights at start of diversionary 'elbow' on River Leach new cut - to assess overtopping into Old Leach (Option H)

Mid-Term (under 1 -2 years)

- OCC in conjunction with riparian owners to look at increasing capacity of College Ditch and Manor Farm Ditches through village. (Option C).
- EA investigate excavation of flood attenuation pond upstream of village (Option D)
- EA to investigate effectiveness of offline storage in vicinity of diverted reach (Option I).
- EA to assess operation of overflow pipe reported to be operating from new cut into Old Leach. (Option J).
- EA to investigate operation of sluices at Lechlade Mill and impacts (Option K).

7.2 Area 2 – Plough Inn / Kelmscott Manor

7.2.1 Maintenance

The following on-going maintenance is recommended:

- EA to maintain channel and banks of Old River Leach (Marlake Ditch) and Radcot Cut (Option C)

7.2.2 Flood defence improvement schemes

Immediate (under 1 year)

- Riparian owners/villagers are planning to fit one way flow valves on ditches running north-south from village to Radcot Cut, to reinstate original field drains and also remove low points in RH embankment of Radcot Cut (Option D)
- EA flood warning provision to residents (Option B)
- Private – residents to investigate individual property flood proofing (Option E)

Mid-Term (under 1 -2 years)

- Construct private flood defence bund along western perimeter of village - preserving floodplain storage and separating village buildings from flood water (Option A)
- Construct private flood relief channel / ditch at rear of properties to intercept overland flow from west. EA to advise (Option G)

We would make recommendations to say that where the EA decide some works to be economically unviable, that consideration be given to which of these options could be realistically carried out by the village work parties (with guidance from the EA and WODC).

Appendix 1: Photographs

Area 1 – Home Farm Lane in vicinity of Homelea / Old School

Kelmscott - College drain on right of top road. Looking west towards Lechlade

Flow route of floodwater down top road. Looking west near Old School

College Ditch looking east out of village from culvert under road. Note minimal ditch capacity in village

Kelmscott Brook – east of village, looking N at upstream limit of EA maintained section. Village work party channel maintenance clearly shown

Looking south to Kelmscott down Manor Farm ditch – village work party clearing in evidence. Village work party channel maintenance clearly shown

Area 2 – Plough Inn / Kelmscott Manor

Looking in direction of flood route - east from Enfield Ditch to village

Enfield Ditch / Old Leach looking NE to village

Enfield Ditch – Dammed at confluence with the Old Leach

Old River Leach near Enfield Ditch

Radcot Cut and Old Leach confluence below village, cleared vegetation in foreground

Radcot Cut looking west from footbridge. Thames floodplain behind raised bank (RH). Discussion with EA to shore up right bank levels

Triangle adjacent to Manor Farm looking south – floodwaters here reported 2-3ft deep

Minimal ditch capacity at Manor Farm – entire section requires deepening, minimal clearance under access bridge