



WEST OXFORDSHIRE
DISTRICT COUNCIL

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Parish Flood Report: Cassington

November 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 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 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 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 Council who have been a key contributor to the production of the report and have agreed to act as the first point of contact.

1.5 Legal

For the avoidance of doubt it should be noted that 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

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.
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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

Flood Grants

- WODC Flood Grants totalling **£284,250** given out in West Oxfordshire.

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 the Emergency Plan recognises the role the elected members can play in emergency and recovery situations
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 a 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.
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 Meteorological Office with regard to improving their predictive capability
WODC continues to act in a coordination capacity with key external agencies
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
Bid to EA for £1 Million (over 3 Years for river surveying, modelling and improvements)
Final West Oxfordshire District Council strategic report to be published in November 2008
Flood Products Fair held in Witney 9 th October 2008

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 the village of Cassington and has been prepared by the Council's Engineering team. It pulls together information from external agencies and individual property owners. It identifies the causes of flooding in Cassington during July 2007 and potential mitigating solutions.

The report itself is broken down into a number of sections and will include;

- An overview of flooding history in Cassington and flood related issues raised by residents
- A presentation of the problems and causes of flooding in Cassington during July 2007.
- A summary of all the flooding issues and potential mitigation options.
- A breakdown of the recommendations for immediate, mid-term and long term actions including the responsible agency based on the options identified.

The summary below lists the main sources of flooding in Cassington that have been identified by the residents. More detail is provided regarding the specific locations and the causes in section 5 of the report.

3.1 Sources of flooding

The main source of flood water for the two concerned areas is the recreational field area. Water from this area affects the two areas in two different ways. Firstly, water flows overland from the field, exiting the field at the park entrance. The water then flows into the turning circle at the end of the public road. Once the water has accumulated sufficiently to reach a level above the kerb line, it enters the back gardens of the even numbered houses on Elms Road via a low lying pathway to the side of a property. The water then flows across the rear gardens attempting to re-join the Elms Road drain. During certain events the amount of water involved causes flooding to properties. In addition to some properties experiencing periodic flooding from this source, they also experience flooding from the lateral movement of water from the Elm Road drain. This is due to the restrictions on the watercourse and culvert system downstream.

An additional aspect to this source of flooding is the movement of water along the Elms Road. During severe events, water flows from the recreational area in such volumes as to flood both the rear gardens and Elms Road towards the Yarnton Road junction. During severe events water enters the front of several low-lying properties on the even numbered side of Elms Road, in addition to flowing directly across Yarnton Road, towards Foxwell Court.

It must be noted that although the existing highway drainage system in Elms Road may require cleaning, it has not been designed to cope with the amount of water involved during severe storm events, as it flows from the land and not the highway. The Elms Road drain is part of an en-mained watercourse and culvert system. This watercourse is en-mained from the northern end of the sports field, for its length along the rear of the houses on Elms Road on the even numbered side. The Environment Agency has a maintenance schedule for this section of watercourse, however, it is felt that a failure to adequately clear vegetation and to maintain the channel is a contributory factor to the flooding which occurs in Elms Road during severe events, as the water cannot flow adequately to enter or be contained in the channel. Photographs of the densely vegetated channel and silted up culverts are included in the appendix.

The culverts under Yarnton Road require checking to ensure they are working to their maximum capacity. Any partial blockages will undoubtedly cause a “backing up” of water in the Elms Road drain, which the Environment Agency would not be accountable for, as the culverts under the Yarnton Road are the responsibility of Oxfordshire County Council Highways. As previously stated, the main source of flooding is the sports field area, so any major solution to the periodic flooding of this area must involve solving the problems associated with that area.

4.0 SURVEY

4.1 Description of area

The Parish of Cassington is approximately 928 Hectares in size. It is situated approximately 6 miles to the east of Witney. It is bordered by the River Evenlode to the west and the River Thames and Battimer floodplain to the south and east. The northern side of the parish contains farmland which slopes towards the residential area.

A map of the parish is shown in Figure I. The areas affected by flooding have been identified as (1) & (2).

4.2 Survey approach

A visual walk-over survey has been undertaken. Photographs of some of the flood affected areas are in Appendix I.

4.3 Meetings

Details of key meetings attended by District Council representatives about the flooding of Cassington in July 2007 are given below;

- 6th December 2007. West Oxfordshire District Council representative (consultant) attended a Parish Council meeting.
- 8th July 2008. Nick Hands met the Clerk to Cassington Parish Council on Elms Road.
- 30th September 2008. West Oxfordshire District Council Engineer met Parish Clerk (Liz Bickley) and Vice-Chairman of Parish Council (Mr. Olaf Rock) at Elms Road.

4.3.1 Application for Grant Aid

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

- Emergency Flood Relief Grant Aid of £250 per applicant
- Administered Red Cross relief aid
- Hardship grants
- Council Tax exemptions

To date the owners of 2 residential properties in the Parish of Cassington have received Emergency Flood Relief Grant Aid, however it is acknowledged that this may not be the total number of properties affected as some owners may have been reluctant to claim.

4.3.2 Flooding History

A flooding history relevant to the Parish of Cassington has been compiled since July 2007 by WODC and is stored electronically at the West Oxfordshire District Council offices.

5.0 PROBLEMS AND CAUSES

5.1 Plans

Appendix 2 contains 2 maps:-

1. Fig 1 – Parish map showing areas discussed in the report

2. Fig.2 – Environment Agency plan showing:-

- Cassington parish boundary
- Main rivers and enmained water courses in the area
- Flood Zone 2, January 2008 - 0.1% annual probability of flooding occurring or low to medium risk. Previously referred to as 1:1,000 year flooding
- Flood Zone 3, January 2008 - 1% annual probability of flooding occurring or high risk. Previously referred to as 1:100 year flooding

Note – this EA map has been updated to reflect the events of July 2007. All references to flood zones in this report refer to the previous EA flood zone map i.e. pre July 2007.

5.2 Area 1 – Elms Road

This area includes the sports field and playground. As stated, this area is the source of the main body of water which causes periodic flooding of residential properties in Elms Road. The sports field is bordered by a ditch and the presumption is that the correct use of this ditch will reduce the amount of uncontrolled water which exits the sports field area, via the private section of road leading to Elms Road.

The first action is to carry out a level survey of the sports field and the perimeter ditch, to ascertain whether the sports field run-off can be directed into the ditch, in addition to clarifying which direction the ditch can be graded to fall. The Elms Road drain which is an enmained watercourse, should also be surveyed, as the failure to maximise the capacity of the channel is felt to contribute to the flooding problem. The several low-lying residential properties which periodically flood could be protected by flood resilient measures being fitted, however, such measures can only be effective if the residents are aware of a flood risk. Historically, the residents have received no warning of a flood risk, or the event occurred at such a speed as to prevent mitigation measures to be able to be put in place.

Other options to prevent an uncontrolled amount of water exiting the sports field, or to attenuate water in the ditch system are stated in the Options Table contained in this report.

5.3 Area 2 -

This area involves several residential areas, including Foxwell Court, St. Peters Close, Horsemere Lane, Foxwell End and Reynolds Farm. The issue for the Foxwell Court area is how to cope with the flash flooding which has blighted this courtyard for over 10 years. The other areas concern is mainly the frequency and extent of the maintenance of the watercourse which flows through the stated residential areas.

The Foxwell Court area has suffered severe flooding over many years, due mainly to “flash” flooding from water surcharging from the highway drainage system and water exiting the Elms Road Drain. Foxwell Court and Foxwell End are low lying, in comparison to the Yarnton Road. This fact highlights the need to provide protection to these properties from water flowing across the Yarnton Road. A defensive tarmac “hump” was suggested, however, this would not facilitate easy access for disabled residents, or provide a high level of defence.

In addition to the two main areas, there is an isolated area of concern in the Jericho Farm area. This area of land has also experienced flooding prior to July 2007. A discussion is required between West Oxfordshire District Council and the landowners with regard to the creation of a new ditch system, which would alleviate the localised flooding risk in the Jericho area.

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.

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 can 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, and can use enforcement powers under the Land Drainage Act 1991 to ensure they carry out their duties if necessary.

Area I - Elms Road and Sports Field

Area		I			
Flooded Properties & Causes		Periodic flooding of low-lying properties from a combination of surface water overland flow and water escaping the Elm Road drain (enmained watercourse).			
Options		1	2	3	4
Description of options		Carry out level survey of sports field and perimeter ditch. To clarify how to grade ditch & sports field, to convey water to existing pond and watercourse	Create a new balancing pond in corner of sports field on enmained part of watercourse to control amount of water entering Elm Road drain.	Install larger culvert under sports field entrance. Install a metal grill at gate entrance to "catch" water and redirect it into ditch leading to Elms Road drain.	Carry out increased level of channel and culvert maintenance on Elms Road drain and culverts under Yarnton Road.
Responsible Agencies	EA For queries Tel: 08708 506506	Consent required to carry out clearance grading work on ditch.	Technical approval and consent required		EA to be approached as they will supervise
	OCC For queries Tel: 08453 101111			Entrance way is private property. No Oxfordshire County Council consent required	Oxfordshire County Council to be requested to survey, jet and regularly maintain culverts under Yarnton Road
	Thames Water For queries Tel: 08459 200800				
	WODC For queries Tel: 01993 861000	WODC to facilitate consent to carry out work.	WODC can assist with technical approval of scheme and surveying.	Technical approval and site supervision to be supplied by WODC	WODC to coordinate actions by partner organisations.
	Private/Other Organisations	Parish Council and Blenheim Estates are freehold owners of land. Riparian owners to fund scheme.	Riparian owners to fund scheme. EA to be approached as a possible funding partner.	Parish Council to fund work as landowners.	Riparian owners of land adjacent to Elms Road drain will be expected to contribute to work.
Effectiveness/ Effects on adjacent land		Would increase amount of water entering and retained by ditches and existing sump. Reduce frequency of water exiting sports field entrance.	Will control water in system, which will allow Elm Road drain channel to cope with flows.	Will reduce amount of water exiting sports field but effects on adjacent property should be quantified.	Will facilitate an improved rate of flow of water to the downstream side of Yarnton Road.
Cost		Survey £2K; construction - £5K-£20K	Up to 5K	£5K - £10K	£5K – £10K

Area I - Elms Road and Sports Field

Area		I		
Flooded Properties & Causes		Periodic flooding of low-lying properties from a combination of surface water overland flow and water escaping the Elm Road drain (enmained watercourse).		
Options		5	6	7
Description of options		Install a land drainage system on sports field, which incorporates a granular backfill and perforated pipes. This system to be connected to the perimeter ditch and / or balancing pond.	Low lying properties have flood defence products supplied and fitted. This should include additional gullies and drainage.	Comprehensive jetting and condition survey of highway drainage and public sewer in Elms Road and Yarnton Road.
Responsible Agencies	EA For queries Tel: 08708 506506	Require discharge consent if connected to enmained ditch	Discharge consent required if new drainage to discharge into Elms Road drain	
	OCC For queries Tel: 08453 101111			Oxfordshire County Council to carry out work on Elms Road
	Thames Water For queries Tel: 08459 200800			TW to carry out work on public sewer
	WODC For queries Tel: 01993 861000	Can assist with technical approval of scheme	Able to assist with surveys and product approvals	
	Private/Other Organisations	Parish Council to fund work as landowners	Parish Council and residents could fund this as an alternative to work on sports field area	
Effectiveness/ Effects on adjacent land		Will ensure surface water run-off is retained on sports field and directed into ditch system	Defences only effective if warnings are given, to allow residents to fit them. Drainage would only defend against lower order events	Will ensure system is working at maximum capacity. This will assist in lower order events only.
Cost		£10K-£20K	£10K-£20K	£5K – £10K

Area 2 – Foxwell Court, Foxwell End, St. Peters Close, Horsemere Lane, Reynold Farm and Jericho Farm

Area		2				
Flooded Properties & Causes		Residential areas periodically inundated by surface water run-off from Elms Road area, or from highway drainage system. Additionally, water surcharges from Cassington stream due to inadequate channel capacity and culverts.				
Options		1	2	3	4	5
Description of options		Install large diameter linear highway drain in carriageway, to protect entrance of Foxwell Court. This would need to be connected to Elms Road drain	Carry out survey & extensive maintenance of Cassington stream to maximise channel capacity & flow rate. Jet culverts & frequency of grill clearance in St. Peter's Close. Continue along Horsemere Lane	Install flood resilient measures to properties	Create a new ditch, which will connect with the Battimer ditch (Jericho Farm area)	Extensive jetting of culverts under Elms Road junction and on Yarnton Road. Jet all gully laterals and empty highway gullies on a twice yearly basis.
Responsible Agencies	EA For queries Tel: 08708 506506	EA to give discharge consent.	EA to assist with work and contacting riparian owners		EA consent required	
	OCC For queries Tel: 08453 101111	OCC to carry out this work subject to survey approving scheme	Jet highway drainage in residential areas and ensure discharge points are clear			OCC to carry out this work
	Thames Water For queries Tel: 08459 200800					
	WODC For queries Tel: 01993 861000		WODC to assist in contacting riparian owners	Can assist with surveys and product approvals	To assist with survey of scheme	
	Private/Other Organisations		Riparian owners to carry out part of the work	Private householders to fund installations	Landowners to fund work	
Effectiveness/ Effects on adjacent land		Will defend against water entering low-lying courtyard area. Effective if Yarnton Road culverts are working well.	Will assist to drain through residential areas from Elms Road area	Defences only effective if warnings allow time to fit	Will allow positive drainage of saturated land	
Cost		£5K to £10K	£10K to £20K	£10K	£5K to £10K	£5K to £10K

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 Area 1 - Elms Road and Sports Field

7.1.1 Maintenance

The following on-going maintenance is recommended:

Option 4 - Carry out increased level of channel and culvert maintenance on Elms Road drain and culverts under Yarnton Road.

Option 7 - Comprehensive jetting and condition survey of highway drainage and public sewer in Elms Road and Yarnton Road

Both are to be carried out as soon as possible

7.1.2 Flood defence improvement schemes

The following flood defence improvement schemes are recommended:

Mid-Term (under 1-2 years)

Option 1 - Carry out level survey of sports field and perimeter ditch. To clarify how to grade ditch & sports field, to convey water to existing pond and watercourse

Option 3 - Install larger culvert under sports field entrance. Install a metal grill at gate entrance to "catch" water and redirect it into ditch leading to Elms Road drain.

Option 2 (subject to topographical survey supporting scheme) - Create a new balancing pond in corner of sports field on enained part of watercourse to control amount of water entering Elm Road drain.

Long-Term (3 years or more)

Option 5 - Install a land drainage system on sports field, which incorporates a granular backfill and perforated pipes. This system to be connected to the perimeter ditch and / or balancing pond.

Option 6 - Low lying properties have flood defence products supplied and fitted. This should include additional gullies and drainage.

7.2 Area 2

7.2.1 Maintenance

The following on-going maintenance is recommended:

Option 2 - Carry out survey & extensive maintenance of Cassington stream to maximise channel capacity & flow rate. Jet culverts & frequency of grill clearance in St. Peter's Close. Continue along Horsemere Lane

Option 5 - Extensive jetting of culverts under Elms Road junction and on Yarnton Road. Jet all gully laterals and empty highway gullies on a twice yearly basis.

As soon as possible

7.2.2 Flood defence improvement schemes

Mid-Term (under 1-2 years)

The following flood defence improvement schemes are recommended:

Option 1 - Install large diameter linear highway drain in carriageway, to protect entrance of Foxwell Court. This would need to be connected to Elms Road drain

Option 3 - Install flood resilient measures to properties

Option 4 - Create a new ditch, which will connect with the Battimore ditch (Jericho Farm area)

Appendix I: Photographs



Area I - Bridlepath and ditch south-west of recreation ground



Area I - Recreation ground



Area I - Ditch around recreation ground



Area I - Low-lying flooded property



Area I - Ditch around recreation ground



Area I - Flood protection outside Elms Road properties



Area I - Junction of Elms Road & Yarnton Road.
Note: drainage ditch stops at this property



Area I - Perimeter ditch of recreational field. This is on the southern side



Area I - Bridle path and ditch boundary of recreational field



Area I - Balancing pond created by Parish Council, adjacent to recreational field



Area I - Playground at Elms Road recreational area



Area I - Looking down Elms Road , from recreational field end of road



Area 1 - Looking upstream in Elms Road ditch. This is the first section from the recreational field. EA do not clear



Area 2 - Blocked grating on Yarnton Road, near Foxwell Close



Area 2- Highway drainage opposite Foxwell Court



Area 2- Foxwell Court



Area 2- Highway Drainage outlet opposite Foxwell Court



Area 2- Highway drainage culvert opposite Foxwell Court. Culverts pass under Yarnton Road. They convey water from enmained Elms Road ditch. Note: Sediment and debris blocking grated culvert



Area 2- Water damage around gulley outside Foxwell Court