



WEST OXFORDSHIRE  
DISTRICT COUNCIL

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# Parish Flood Report: **Hailey**

July 2008

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



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## **1.0 INTRODUCTION**

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

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

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

### **1.1 Purpose of the report**

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

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

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

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

### **1.2 Roles and responsibilities**

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

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

**Environment Agency (EA)** – permissive 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 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
- 112 Red Cross Flood Grants totalling £211,590 administered by WODC overall
- 9 £250 Grant applications for Hailey, totalling £2,250
- 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 Hailey

### 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 Hailey 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 Hailey during July 2007 and potential mitigating solutions.

Hailey is a rural parish located approximately 2 miles to north of Witney. The Parish occupies a landscape of flat and rolling terrain, which predominantly drains southward towards the River Windrush. The geology underlying Hailey is dominated by Oxford Clay.

Visual walkover surveys have been undertaken of the flooded areas and properties. Meetings have been held with the affected residents, who have been in discussion with OCC, WODC and the EA. WODC has record of 9 applications for Grant Aid in Hailey.

Flooding experienced in Hailey was reported to be largely due to surface water run-off from surrounding agricultural land and flooding the highways that essentially cut off all access routes to Hailey village during the July 2007 flood event. Highway drainage was insufficient to deal with the run-off volumes generated. The areas affected have been defined as Whiteoak Green (Area 1), Delly Pool (Area 2), Cannon Leys (Area 3), Poffley End (Area 4), Witheridge Farm (Area 5) and New Yatt (Area 6).

There are also reports of historical sewer flooding in Church Lane during 2005. Thames Water have been contacted regarding this.

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

This report also includes Appendix 1 detailing the Options Summary, Appendix 2 showing Photographs and Appendix 3 Maps.

## 4.0 SURVEY

### 4.1 Description of Area

The Parish of Hailey is situated in rolling, open farmland to the north of Witney and is made up of several small villages. There is only one short stretch of EA statutory watercourse within the immediate vicinity of the Parish border. The majority of the drains and watercourses flow south towards Witney, ultimately feeding into the River Windrush.

From FEH data, the approximate catchment sizes of the streams flowing down from Whiteoak Green and Delly End area are around 6.6km<sup>2</sup>. Whiteoak Green and New Yatt sits towards the north and north east of the catchment, while Hailey village is located more towards the middle of the catchment. None of the flooding problems occur directly from watercourse flooding.

### 4.2 Survey Method

A visual walkover survey of the area affected by the July 2007 flooding has been undertaken, including Whiteoak Green, Delly Pool, Common Leys, Poffley End, Witheridge Farm and New Yatt.

See Appendix 2 – Photographs.

### 4.2 Meetings

**Table 1: Summary of meetings and flooding descriptions**

Date	Location	Description
Various	Hailey Village	<ul style="list-style-type: none"><li>• Parish Councillors, local residents, District and County Councillors</li></ul>
26.07.07	Poffley End	<ul style="list-style-type: none"><li>• Meeting with residents and OCC to discuss July 2007 flooding</li></ul>
16.06.08	Hailey Village	<ul style="list-style-type: none"><li>• Meeting with villagers to discuss July 2007 flooding.</li><li>• 9 Properties flooded, mainly attributed to flooding from fields onto local highways and preventing access to Hailey and surrounding village.</li><li>• Damage to property, some sewage flooding to properties also reported</li><li>• Report of sewage flooding on WOFD Flare database – affected property in Church Lane, Hailey during 2005</li></ul>



### 4.3 Stakeholder Communications and actions

**Table 2: Stakeholder Communications and actions**

Stakeholder	Description
TW	<ul style="list-style-type: none"> <li>• TW (Jenny Elliot) contacted in July 2008 regarding sewage flooding of some properties in Hailey village.</li> <li>• TW have reports of some properties being affected by sewage flooding. 1 property identified as flooded due to internal sewage flooding during 2007 at Delly End.</li> <li>• Insufficient numbers recorded to give justification for capital expenditure.</li> <li>• TW have no record for property flooded on Church Lane in 2005</li> <li>• Mitigation possible, however needs more reporting / feedback from customers who may have been affected by sewage flooding due to storm events</li> </ul>
WODC	<ul style="list-style-type: none"> <li>• Some instances of sewage flooding recorded on FLARE – no trace on TW records. WODC to identify if awareness of public needs to be raised in terms of reporting incidents of sewage flooding to TW or more sharing of information / inter-stakeholder communication required</li> </ul>
OCC	<ul style="list-style-type: none"> <li>• OCC (Wayne Barker) contacted regarding any potential actions for Hailey. Awaiting response.</li> <li>• OCC have cut grips in road at Cannon Leys, these are now overgrown</li> <li>• OCC have jetted out highway drainage at bends of New Yatt Road, New Yatt</li> <li>• OCC have recently upsized culvert at Poffley End Lane,</li> <li>• OCC have investigated highway flooding from agricultural run-off at Pitts Lane, Hailey. Resident is unhappy with results. OCC / WODC to investigate.</li> </ul>

### 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 9 residential properties in Hailey have received Emergency Flood Relief Grant Aid, however it is acknowledge this is not the total number of properties affected in the Parish as some owners have not claimed

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

## 5.0 PROBLEMS AND CAUSES

### 5.1 Plans

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

- Area 1 – Whiteoak Green
- Area 2 – Delly Pool
- Area 3 – Common Leys
- Area 4 – Poffley End
- Area 5 - Witheridge Farm
- Area 6 – New Yatt

A map detailing the following is shown in Appendix 2:

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

Following the site visit and discussions with villagers on 16th July 2008, the issues were identified as follows.

### 5.2 Area 1 – Whiteoak Green

#### 5.2.1 Overland flow onto B4022

During July 2007, the B4022 was heavily flooded and remained impassable for several days. Water flows down from the roads at New Found Out Farm across the fields to the southeast of the B4022. Water followed the natural topography and flowed onto the B4022, ponding to considerable depth and blocking the road.

### 5.3 Area 2 – Delly Pool and Hailey Village

#### 5.3.1 Highway flooding

Delly Pool is the location of an old pond and forms a localised low spot to the north of Hailey village. Flooding is due to run-off flowing down Wood Lane, the B4022 from Whiteoak Green and Hailey, collecting in the dip at the cross roads. The road here was impassable in July 2007 due to deep ponding of floodwater. The roadside ditch on Wood Lane is culverted at many points, with pipes of around 900mm diameter – these are considerably smaller than the ditch itself and would have acted as constrictions during July 2007. 7 properties claimed Grant Aid on Wood Lane. Highway flooding also affected properties on the B4022 running through Hailey village, 1 property claimed Grant Aid here.

### **5.3.2 Sewage flooding**

A home on Delly Lane was affected by internal sewer flooding during July 2007. This would have been due to the main sewer being overloaded by rainwater, then causing a backup of sewage into the private foul drain connecting into the house.

There are also reports of a house on Church Lane claiming the £250 compensation; it is unclear whether this is the same property affected by sewer flooding in 2005. Thames Water were unable to confirm this. Thames water have confirmed that a section of the sewer flowing towards the pumping station will be cleaned in 2008.

## **5.4 Area 3 – Common Leys**

### **5.4.1 Highway flooding**

The flooding at Common Leys was localised around the crossroads area, although depths are reported to have been up to 1-2m deep on 20<sup>th</sup> July 2007 and the junction was blocked to all traffic. The road levels at the cross roads are very flat at this location and surrounded by large open expanses of agricultural land, particularly to the east. The local surrounding topography is higher than the crossroads and the area of Common Leys forms a natural collection point for run-off from surrounding land. The ditches along Hatfield Pits Lane are heavily overgrown with dense vegetation, further exacerbating the situation.

## **5.5 Area 4 – Poffley End**

### **5.5.1 Highway and watercourse flooding**

Poffley End suffered from surface water run-off surcharging the road drainage system of Poffley End Road due to an undersized culvert. A stream runs from northwest to southeast under Poffley End Road, through some small ponds and out into open watercourse through agricultural land. In July 2007, the watercourse beyond the ponds was blocked and water built up in the ponds, eventually flooding nearby homes. OCC have also fitted a larger carrier pipe for the roadside drainage and the residents have fitted a private drainage system upstream of the ponds to deal with larger flows.

## **5.6 Area 5 – Witheridge Cross**

### **5.6.1 Highway flooding**

Highway water runoff collected at the road junction here, spot levels to the north in Hailey are around 3m higher than at Witheridge Cross, causing water to pond here.

## **5.7 Area 6 – New Yatt**

### **5.7.1 Highway flooding**

The land to the east of the village is around 16 metres higher than New Yatt Road; some of the flooding would have been generated from agricultural run-off. The road through the village is fairly level, with a few dips in along the stretch of road, where water is able to collect. Drainage gully pots are also reported to be blocked and recent construction of a field access point on Kyte Lane has blocked a section of the ditch.

## 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										
Hailey										
Version 1 – July 2008										
Option ref	Flood Overview	Description of work required					Key issues			Comments
	Options	Environment Agency	Oxfordshire County Council	Thames Water	WODC	Private	Effectiveness	Affects on adjacent land	Cost	
		For queries Tel 08708 506 506 Or email enquiries@environment-agency.gov.uk	Main switchboard: 0845 310 1111 Or e-mail: online@oxfordshire.gov.uk	Enquiries: 0845 200 800	Switchboard: 01993 861 000					
<b>Area 1 – Whiteoak Green</b>										
	<b>Overland flow from fields to north running flooding B4022 above Singe Wood Farm</b>									
<b>A</b>	Construct bund to East of B4022 above private access track. Fit pipe under B4022 to transfer flow into field to west. Connect this field to drainage ditches via further pipe under access track		OCC to construct large diameter pipe under B4022		WODC to identify ownership of various land areas.  WODC to approve Parish Emergency Flood Plan	Riparian owner permission needed to construct bund and transfer pipes.  Parish to create own Emergency Flood Plan	Will reduce/eliminate ponding on road	Land take for flood storage	£5,000 to £20,000 construction	Funding of bunding TBA.
<b>B</b>	Construct short drainage channel East of B4022 above private access track. Dig attenuation pond in field to West of B4022. Connect pond to drainage ditches in open fields to south via second pipe under access track		OCC to construct large diameter pipe under B4022		WODC to identify ownership of various land areas	Riparian owner permission needed to construct channel and transfer pipes	Will reduce/eliminate ponding on road	Land take for flood storage	£5,000 to £20,000 construction	Funding of bunding TBA
<b>C</b>	Dig flood storage pond in field to south of St Johns Lane to collect run-off from roads/tracks. Floodwater here must be wholly contained within pond.				WODC to identify ownership of various land areas	Riparian owner permission needed to construct ditches and pond	Will reduce overland flow onto road	Land take for flood storage	£5,000 to £20,000 construction	Funding of bunding TBA
<b>D</b>	Clear grips and ditches along B4022 from Finstock area to New Found Out Farm		OCC have cleared the grips		WODC to instruct riparian owners to clear ditches	Riparian owner to carry out work			£500 to £5,000	
<b>Area 2 – Delly Pool, Delly End</b>										
	<b>Highway run-off blocking B4022 crossroads at Delly End</b>									
<b>A</b>	Jet out gullies in vicinity of Delly End crossroads and into Hailey Village along B4022. Clear Wood Lane ditch		OCC to maintain		WODC to co-ordinate		Will reduce excess flow onto highway		£500 to £5,000	
<b>B</b>	Increase capacity of culverted section of drains on Wood Lane. Investigate route of culvert under B4022 across riparian land to identify any blockages or for upsizing		OCC to investigate upsizing of all culverted sections, however OCC do not normally upsize culverts crossing B roads.		WODC to co-ordinate	Landowner co-operation required	Will improve surface water drainage		£5,000 to £20,000 construction	
<b>C</b>	Extra ditches and grips needed to cope with run-off from B4022 – North and South. Potential to route flows across field to west		OCC to arrange CCTV survey and repair surface water sewer if needed		WODC to co-ordinate	Landowner co-operation required	Will improve operation of surface water drains		£500 to £5,000	
<b>D</b>	Individual properties on Wood Lane and Hailey Village to install demountable flood defences					Private residents to purchase flood defence products	Will protect properties from floods		£500 to £5,000	

Option ref	Flood Overview	Description of work required					Key issues			Comments
		Environment Agency	Oxfordshire County Council	Thames Water	WODC	Private	Effectiveness	Affects on adjacent land	Cost	
	<b>Options</b>									
		For queries Tel 08708 506 506 Or email enquiries@environment-agency.gov.uk	Main switchboard: 0845 310 1111 Or e-mail: online@oxfordshire.gov.uk	Enquiries: 0845 200 800	Switchboard: 01993 861 000					
<b>E</b>	<b>Internal sewage flooding of property on Delly Lane</b>  TW to investigate sources of flood water ingress into sewer system via CCTV survey and upsize piping or remove surface water inflows			TW to investigate			Potential to reduce sewer flooding across village		£500 to £5,000 feasibility	
<b>F</b>	Individual properties to be fitted with non-return / anti-backflow devices on private foul connection pipes					Residents to investigate fitting of non-return valves	Will protect individual homes		£500 to £5,000 installation cost	
<b>Area 3 – Common Leys</b>										
	<b>Flooding of cross roads with Hatfield Pits and Whittings Lane from agricultural run-off</b>									
<b>A</b>	Clear dense vegetation from roadside ditches on Hatfield Pits Lane, re-cut grips. Investigate drainage provision on Whittings Lane		OCC to carry out roadside ditch maintenance in vicinity of cross roads				Will alleviate flooding due to improved drainage		£500 to £5,000	Work completed
<b>B</b>	Dig attenuation pond in field to east of crossroads. Will collect run-off from higher ground, also potential to store highway run-off		OCC need to be contacted		WODC to co-ordinate	Riparian owners need to be consulted regarding works / funding	Run-off from east will be stored in new pond	Land take, less run-off across fields	£5,000 to £20,000 construction	Funding TBA
<b>C</b>	Construct bund on field to east of cross roads to prevent run-off reaching road surface. Piped outflow to ditches		OCC need to be contacted		WODC to investigate land ownership and advise on maintenance liability	Riparian owners need to be consulted regarding works / funding	Run-off from east will be stored behind bund		£5,000 to £20,000 construction	Funding TBA
<b>Area 4 – Poffley End</b>										
	<b>Flooding of Poffley End Road and Poffley Manor from highway drainage and minor watercourse</b>									
<b>A</b>	Jet out gullies on Poffley End Road		OCC to regularly maintain highway drainage				Overland flow will be stored on land north of cottages	Less flooding	£500 to £5,000	
<b>B</b>	Clear watercourse upstream of Poffley End Road and downstream of small ponds	EA consultation required			WODC to investigate land ownership and advise on maintenance liability	Riparian owners to maintain small stream under Land Drainage Act 1991	Levels in vicinity of Poffley End Road	Less flooding	£500 to £5,000	
<b>Area 5 – Witheridge Farm</b>										
	<b>Flooding of B4022 road junction with Poffley End Road</b>									
<b>A</b>	Jet out existing Gully pots at Poffley End / B4022 road junction		OCC to carry out roadside ditch maintenance in vicinity of cross roads				Will alleviate flooding due to improved drainage		£500 to £5,000	

Option ref	Flood Overview	Description of work required					Key issues			Comments
		Environment Agency	Oxfordshire County Council	Thames Water	WODC	Private	Effectiveness	Affects on adjacent land	Cost	
	<b>Options</b>	For queries Tel 08708 506 506 Or email enquiries@environment-agency.gov.uk	Main switchboard: 0845 310 1111 Or e-mail: online@oxfordshire.gov.uk	Enquiries: 0845 200 800	Switchboard: 01993 861 000					
<b>B</b>	Insert extra Gully pots at Poffley End / B4022 road junction, investigate potential for increasing carrier pipe diameters		OCC to investigate potential of upgrading road drainage			Riparian owners need to be consulted regarding works / funding	Will alleviate flooding due to increased drainage capacity	Less flooding	£5,000 to £20,000 construction	
<b>C</b>	Dig drainage ditch and grips along eastern edge of B4022 at junction.		OCC to investigate potential of upgrading road drainage			Riparian owners need to be consulted regarding works / funding	Will alleviate flooding due to increased drainage capacity		£500 to £5,000	
<b>D</b>	Dig attenuation pond in land to east				WODC to investigate land ownership and advise	Riparian owners need to be consulted regarding works / funding	Will provide temporary storage of excess flows	Land take, reduced overland flow downstream of pond	£5,000 to £20,000 construction	
<b>Area 6 – New Yatt</b>										
	<b>Flooding of New Yatt Road at several locations along road near to business centre</b>									
<b>A</b>	Repair damaged drain opposite picnic area. Jet out drains on New Yatt Road, Kyte Lane and Farm Lane. Clear ditch opposite Business Centre and dig grips.		OCC to carry out road maintenance		WODC to co-ordinate		Will maintain existing road drainage		£500 to £5,000	
<b>B</b>	Examine potential for re-profiling of road between Whitehill Farm and Whitehill to remove dip		OCC to investigate feasibility of re-profiling road		WODC to co-ordinate		Will remove dip in road		£5,000 to £20,000 construction	
<b>C</b>	Install roadside swales between Whitehill Farm and Whitehill. Link with grips		OCC to investigate installation of swales		WODC to co-ordinate		Will transfer some highway run-off away from road		£500 to £5,000	
<b>D</b>	Construct roadside bund or ditch between Whitehill Farm and Whitehill.				WODC to ensure flood risk is not transferred elsewhere	Riparian owner to construct bund or dig interceptory ditch	This will intercept flows from high ground		£500 to £5,000	
<b>All Areas in Parish</b>										
	<b>Potential for serious financial damages and loss of life in vulnerable groups (elderly, disabled and young).</b>									
<b>A</b>	Parish to create own emergency plan via meetings with local residents and appropriate stakeholders				WODC to approve Parish Emergency Flood Plan	Local residents to contribute to plan with information / needs	Will protect lives and property			

## CONCLUSIONS AND RECOMMENDATIONS

### 7.1 Area 1 – Whiteoak Green

#### 7.1.1 Flood defence improvement schemes

##### Mid-Term (under 1 -2 years)

- Option A – Construction of holding bunds in corner of private land to east of B4022 and north of access track (Riparian / WODC). Fit large diameter pipe to transfer flow under road into field west of B4022 (behind Chasewood Cottage). Fitting a further pipe at the upstream face of the private access track will allow connection to field drainage to South.
- Option B – Transfer overland flood flows under B4022 using localised profiling of land to create 'lead-in' funnel to a new large diameter flood relief culvert under the road (OCC). Dig attenuation pond (Private / WODC) in land west of B4022 (behind Chasewood Cottage) with controlled outflow via second pipe under access track to field ditch network.
- Option C – (Riparian / WODC) Dig flood storage pond in field to south of St Johns Lane to collect run-off from roads/tracks. Floodwater here must be wholly contained within pond and collect run-off from St Johns Lane, the B4022, Akeman Street and Pay Lane.
- Option D – OCC have cleared grips and WODC to instruct riparian owners to maintain ditches along B4022 from Finstock area to New Found Out Farm

### 7.2 Area 2 – Delly Pool, Delly End

#### 7.2.1 Maintenance

- Option A - OCC to Jet out gullies in vicinity of Delly End crossroads, clear Wood Lane ditch

#### 7.1.2 Flood defence improvement schemes

##### Immediate (under 1 year)

- Option C – OCC to dig extra drainage ditches and grips to cope with run-off from B4022 – North and South. Discharge flow across field to North of Priests Hill Lane

##### Mid-Term (under 1 -2 years)

- Option B – Increase capacity of culverted section of drains on Wood Lane. Investigate route of culvert under B4022 across riparian land



### **7.1.3 Sewer Flooding**

#### Immediate (under 1 year)

- Option F - Individual properties to be fitted with non-return / anti-backflow devices on private foul connection pipes

#### Mid-Term (under 1 -2 years)

- Option E – TW to investigate sources of flood water ingress into sewer system via CCTV survey and upsize piping or remove surface water inflows

## **7.3 Area 3 – Common Leys**

### **7.3.1 Maintenance**

- Option clear dense vegetation from roadside ditches on Hatfield Pits Lane, re-cut grips. Investigate drainage provision on Whitings Lane

### **7.3.2 Flood defence improvement schemes**

#### Mid-Term (under 1 -2 years)

- Option B – (Riparian/WODC) Dig attenuation pond in field to east of crossroads. Will collect runoff from higher ground, also potential to store highway runoff
- Option C – (Riparian/WODC) Construct bund on field to east of cross roads to prevent run-off reaching road surface. Piped outflow to ditches

## **7.4 Area 4 – Poffley End**

### **7.4.1 Maintenance**

- Option A – OCC to ensure new 9" culvert is adequately maintained, jet out regularly

### **7.4.2 Flood defence improvement schemes**

#### Mid-Term (under 1 -2 years)

- Option B – (Riparian / WODC) Clear watercourse upstream of Poffley End Road and downstream of small ponds

## **7.5 Area 5 – Witheridge Farm**

### **7.5.1 Maintenance**

- Option A – Jet out existing Gullies at Poffley End / B4022 road junction

### **7.5.2 Flood defence improvement schemes**

#### Immediate (under 1 year)

- Option C – OCC / Riparian owners to cut drainage ditch and grips along eastern edge of B4022 at junction.

#### Mid-Term (under 1 -2 years)

- Option B – OCC to Insert extra Gullies at Poffley End / B4022 road junction, look at potential to increase carrier pipe diameters
- Option D – Construct attenuation pond in riparian land

## **7.6 Area 6 – New Yatt**

### **7.6.1 Maintenance**

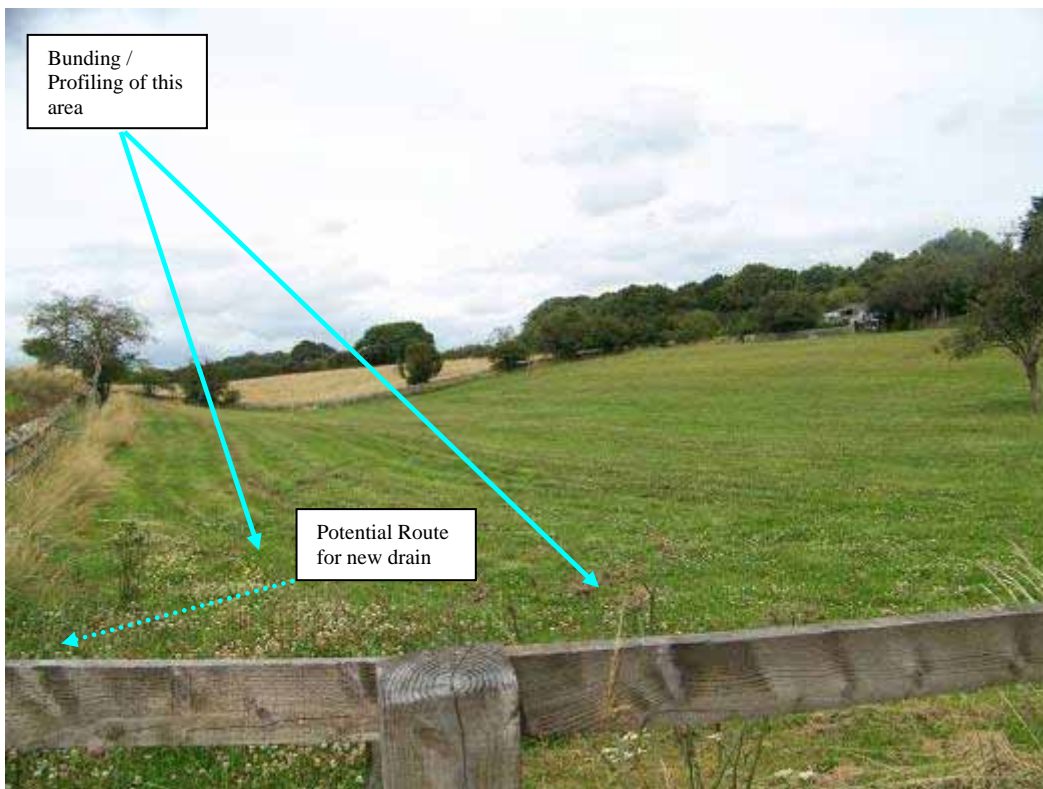
- Option A – Repair damaged drain opposite picnic area. Jet out drains on New Yatt Road, Kyte Lane and Farm Lane. Clear ditch opposite Business Centre and dig grips.

### **7.6.2 Flood defence improvement schemes**

#### Mid-Term (under 1 -2 years)

- Option B – OCC to examine potential for re-profiling of road between Whitehill Farm and Whitehill to remove dip
- Option C – OCC / Riparian owner to install roadside swales between Whitehill Farm and Whitehill. Link with grips
- Option D - Riparian owner to construct roadside bund or ditch between Whitehill Farm and Whitehill.

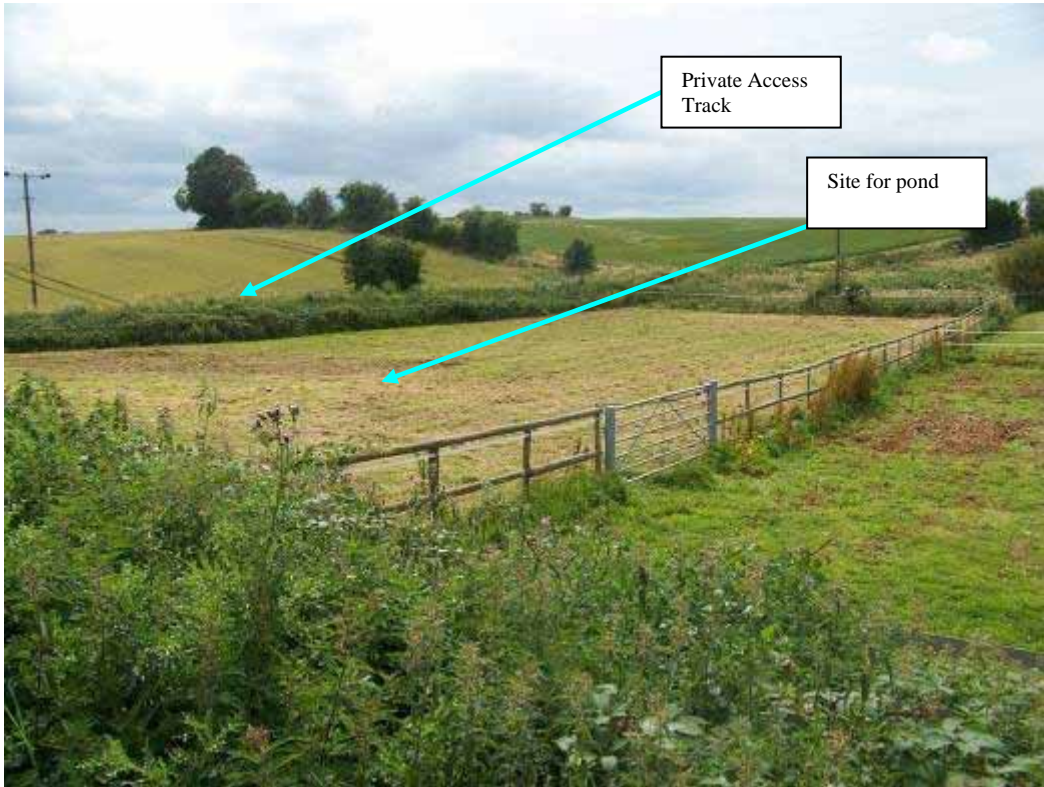
## Appendix 1: Photographs



Whiteoak Green Flow route of water across land towards B4022 on left. Corner of field is potential location of bund / drain in Option A and B



Looking down onto B4022 from private residence, flow path is shown – road was deeply flooded beyond gate



From B4022 flood location, looking west towards potential site of attenuation pond as suggested in Option C. Pipes would be required under access track

#### Area 2 – Delly Pool



B4022 / Wood Lane junction - Site of July 2007 flooding





Wood Lane roadside ditch – Culvert entrance, route is under B4022 and west under riparian land for considerable distance. Outfall unknown – investigate as per Option B



Wood Lane – roadside ditch looking west to B4022. Vegetation clearance required





Wood Lane drainage ditch capacity much reduced by driveways – needs larger / double piping (Option B)

### Area 3 – Common Leys



Common Leys - Poffley End Lane / Whittings Lane junction - Site of July 2007 flooding





Overgrown grips leading to overgrown ditch - Poffley End Lane / Whitings Lane junction



Looking towards Poffley End. Depth of water here was in excess of 1 metre



Area 4 – Poffley End



Poffley End Road – site of recent OCC culvert upsizing works



Poffley End Road – above inlet of site of recent OCC culvert upsizing works. Drain re-dug





Poffley End Road – looking west along badly overgrown watercourse. Riparian land



Poffley End Road; opposite to watercourse, drainage upsizing - private works on driveway

## Area 5 – Witheridge Farm



Poffley End Lane and B4022 junction – site of July 2007 flooding, very flat with small and infrequently spaced Gully pots



**Area 6 – New Yatt**



New Yatt Road – East of village, site of flooding and also potential for re-profiling of road surfaces



New Yatt Road – looking west into village