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# Parish Flood Report: Little Tew

November 2008

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# I.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.

# I.I 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.

# I.2 Roles and responsibilities

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

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

Environment Agency (EA) – permissive powers<sup>1</sup> for main rivers

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

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

West Oxfordshire District Council (WODC) – duties as a riparian<sup>2</sup> land owner, and permissive powers<sup>1</sup> under Land Drainage Act 1991, Public Health Act 1936, Highways Act 1980 and Environmental Protection Act 1990.

Private land owners - duties as a riparian land owner.

# I.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.

# I.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.

<sup>&</sup>lt;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

# I.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 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 to be held in Witney 9th 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 Little Tew 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 Little Tew 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 Little Tew and flood related issues raised by residents
- A presentation of the problems and causes of flooding in Little Tew 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 Little Tew that have been identified by the residents. More detail is provided regarding the specific locations and the causes in section 5 of the report.

# **Sources of flooding**

Two streams pass through the village, one on the east side and one on the west side. These streams rise from springs to the north of the village and collect land drainage and field run-off. Both watercourses become culverted as they enter the village. The culvert systems are unable to cope with large storm events (due to various issues) and water surges into the low centre of the village. The water flows to the centre of the village from the east and the west, but then turns south, running over a granular access lane, called Chapel Lane. This overland flow is then guided into an undersized open metal grating. The grating is situated on top of the culvert which takes a percentage of the culverted stream, which flows to the east of the village. The grating cannot accommodate the amount of run-off, which rapidly arrives at this low point, so the water flows around the boundary walls of the three properties there. Water then enters the properties due to their low threshold levels, height of gardens and the sheer volume of water involved.

Highway flooding occurs due to water surcharging from the culvert entrances onto the road, where it travels to the low point previously mentioned. The existing highway drainage cannot accommodate large amounts of run-off.

It is also felt that the confluence of these watercourses, which is found approximately 30 metres south of the rear boundary of Cosicot, requires de-silting and the channel requires re-profiling. The section of the watercourse which flows through the Great Tew estate also requires surveying, to ascertain whether any channel maintenance work is required. A lack of maintenance on this section of the channel would contribute to a backing up of water into the culvert in Chapel Lane. This is not thought to be a major contributory factor, unless physical obstructions to the natural rate of flow are found to exist.

# 4.0 SURVEY

# 4.1 Description of area

The Parish of Little Tew is approximately 948 Hectares in size. It sits in a valley which is cut into the elevated plateau of the north Oxfordshire uplands on the north-eastern edge of the Cotswolds. There are two ordinary watercourses located within the Parish boundary. These watercourses receive land drainage and field run-off in addition to highway drainage.

A map of the parish is shown in Figure 1. The areas affected by flooding have been identified as (1), (2) and (3)

Figure 2 shows the location of the watercourses and existing culverts.

# 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 Little Tew in July 2007 are given in Table below;

A briefing meeting was held on the 15<sup>th</sup> September 2008 between Mr. L. King (West Oxfordshire District Council), members of the Parish Meeting and concerned residents. This included; Mr. V. Weinstein, Mr. A. Jones, Mr. M. Tomlinson, Mrs N. Sanders and Mr J. Edgington.

# 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

To date the owners of 3 residential properties in the Parish of Little Tew 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 Little Tew has been compiled since July 2007 by WODC and is stored electronically.

# 5.0 PROBLEMS AND CAUSES

# 5.1 Plans

Appendix 2 contains 3 maps:-

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

- 2. Fig 2 Culvert location Map
- 3. Fig.3 Environment Agency plan showing:-
- Little Tew 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

# <u>Note</u> – 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 I

This area involves a small agricultural catchment, in addition to a spring fed ordinary watercourse. No properties have experienced flooding, however, the main problem found in this area is a major contributor to flooding in Chapel Lane.

The main problem is the existing section of culverted watercourse, which crosses the entranceway of the Manor House. This culvert consists of two 300mm pipes which continue to a manhole in the common land outside of the Manor house. These 300mm pipes are not laid in a correct fashion, and contribute to the surcharging witnessed at the entranceway to the Manor House. Water then flows onto the granular access area. When this area has become saturated and full, the water spills onto the highway with floodingof the front garden of No oven cottage, thereafter falling to the Church Enstone Road junction and beyond that to the entrance to Chapel Lane.

The agricultural / Pasture land found north of the Manor House mainly falls south east to the watercourse flowing towards the Manor House. Any diversion of this water would force it south through a field gate and also onto the granular access road which leads to Water Lane. This would obviously by-pass the culvert system and be counter productive to reducing the flows which run onto the highway.

# 5.3 Area 2

Although no properties actually flooded, there are records of the rear garden of No Oven Cottage flooding. This has been a rare event, but with the allowance made for climate change and the increase in the amount of water to be conveyed by the system, thought should be given to protecting this proerty from future storm events. At present the rear garden floods from water coming front the front of the property, but when changes are made to the way that the system controls the route that water flows, the watercourse will be expected to cope with larger volumes.

An old piece of metal pipe laid across the stream at the rear of No Oven Cottage, could become the point of a dam, and as such this redundant piece of pipe should be removed. The real issue in this area is the lack of maintenance on the culvert which comes from outside the Manor House to finish in the rear garden of Croft Cottages. No access chambers are visible. The performance of this culvert in storm events is unknown. This could be contributing to the water backing up to the Manor House.

The culvert which passes under the Church Enstone Road seems to be in an adequate condition. The issue of whether it can accommodate the increase in flow (from the improvements to be made at the Manor House) is to be discussed. An option would be to install a flood relief culvert at this point. This would alleviate any possible risks to the property adjacent to this crossing. It is agreed that the stream requires a visual survey from the Church Enstone Road bridge, to the confluence with the stream at the rear of Chapel Lane. A good clear channel will be required to ensure that storm water is drawn through the village to the flood plain area.

# 5.4 Area 3

This area includes the three properties that claimed the £250 flood relief grant. In addition to these properties it is reported that other properties did flood, but did not claim the grant for personal reasons. The main problem in this area is the stream that flows in the southerly direction through the grounds of Cherwell House. The stream enters a culvert, roadside of the front boundary wall of Cherwell House. This culvert continues in both the road and footpath to a point approximately 20 metres east of the Chapel Lane entranceway. At this point it turns almost 90° to the south and continues through grassland to the Cosicot and New Cottage properties. The culvert continues through the gap between those two properties to the discharge point, south of Cosicot.

This culvert surcharges at the upstream end, just outside Cherwell House. The water then flows on the highway down to the entranceway of Chapel Lane, where it meets the water from the west of the village. It then pools and ultimately the highway drainage cannot cope, at which point the water flows down Chapel Lane to the low lying properties at the end of the lane.

Another contributor to the problem is the water which runs off the fields to the south east of Chapel Lane. These fields discharge water onto the footpath which exits in a sloping fashion onto the Chipping Norton Road. This water is rapidly conveyed by the hard surfacing of the footpath and as such becomes a contributor to the flows causing an issue for Chapel Lane. One property is known to have experienced severe flooding due directly to this field run-off.

# 6.0 OPTIONS

The following table shows the possible options available for flood alleviation schemes throughout the Parish, and their potential effectiveness, as assessed by the District Council Engineers.

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 1991to ensure they carry out their duties if necessary.

# Area I

Area Flooded Properties & Causes				I	
		Periodic surcharging of existing culvert outside the Manor House and non- maintenance of culvert and watercourse.			
	Options	I	2	3	4
Description of options		Replace 6 metre length of existing 300mm pipes with one 525mm pipe at the entrance to the Manor House	Jet length of culvert from outside the Manor House to south of Chipping Norton Road	Clear and regularly maintain watercourse in Water Lane up to the pond	Remove culverted section of watercourse and reinstate open ditch including section in grounds of Croft Cottages
	EA For queries Tel: 08708 506506 OCC For queries	OCC to be approached to	OCC to carry out work	Inform EA of intent to carry out work	
Responsible Agencies	Tel: 08453 101111	confirm previous offer to assist with funding scheme			
nsible A	<b>Thames Water</b> For queries Tel: 08459 200800				
Respo	WODC For queries Tel: 01993 861000	Area concerned is common land so WODC to fund work in conjunction with OCC		WODC to co-ordinate works	Area concerned is common land so WODC to fund work in conjunction with OCC
	Private/Other				
Organisations Effectiveness/ Effects on adjacent land		Will considerably reduce the amount of water which floods the highway and in turn Chapel Lane. Downstream system will need to be able to accommodate increased flows.	Will assist culvert in dealing with storm run-off also reducing amount of water travelling towards Chapel Lane	Will ensure capacity of channel is maximised	Will prevent problem of future obstructions causing a problem to flows. A ditch will also convey more water than a culvert. Access problems for maintenance will also be eliminated. The current use of the land by residents should be taken into account.
Cost		£2K - £5K	£2K - £5K	£2K - £5K	should be ta

Area	2
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	Area	2					
Flooded Properties & Causes Options Description of options		Lack of culvert maintenance, poor condition of highway drainage system and lack					
		of maintenance of watercourse					
		I	2	3	4	5	
		Install flood relief culvert at Church Enstone Road Bridge	Carry out maintenance on watercourse channel south of Church Enstone Road bridge	Jet clean and survey the culvert in the grounds of Croft Cottages	Carry out gulley and lateral cleaning of highway drainage on Church Enstone Road and Chipping Norton Road	At junction of Chipping Norton Road and Church Enstone Road, re- profile highway to fall into Church Enstone Road.	
	<b>EA</b> For queries Tel: 08708 506506		Inform EA of intention to carry out work				
Responsible Agencies	OCC For queries Tel: 08453 101111	OCC to give consent. Possible source of funding		OCC to part fund work	OCC to carry out this work	OCC to carry out this work	
	<b>Thames Water</b> For queries Tel: 08459 200800						
	WODC For queries Tel: 01993 861000	Possible source of funding	WODC to co- ordinate work			WODC to assist with level survey of the highway	
	Private/Other Organisations		Riparian owners to carry out regular channel maintenance	To part fund work			
	tiveness/ Effects on ent land	Will reduce risk to property neighbouring road bridge and will assist flows to pass to south of residential area	Will assist in drawing flows through residential area	Will assist in ensuring system does not surcharge outside the Manor House	Will reduce the amount of water ponding on the highway which causes damage to the highway	Will redirect any remaining storm water moving towards Chapel Lane into the watercourse at the Church Enstone Road bridge downstream side	
		1		1	1	3100	

# Area 3

Causes   have flooded. Primary cause excess water from culverted water low lying properties     Options   I   2   3     Description of options   Excavate ditch adjacent public footpath to direct run-off into watercourse in Great Tew estate   Enlarge metal grating infront of Cosicot   Carry out survey of culvert in grounds of Cosicot and carry out repairs as required     EA   For queries   Ea   OCC   OCC   OCC   OCC to assist with survey costs     Tel: 08708 506506   OCC   For queries   OUDC to liaise   Risk assessment required   OCC to assist with survey costs     Tel: 08453 101111   Thames Water   For queries   Risk assessment required   Residents and OCC to approve design     VODC   WODC to liaise   Risk assessment to enforce this   Residents to fund this installation   Residents and OCC to organise	3 3 properties claimed the flood relief grant, but more properties are thought to have flooded. Primary cause excess water from culverted watercourse arriving at low lying properties				
Description of options   Excavate ditch adjacent public footpath to direct run-off into watercourse in Great Tew estate   Enlarge metal grating infront of Cosicot   Carry out survey of culvert in grounds of Cosicot and carry out repairs as required     80   EA   For queries   For queries   Carry out survey of culvert in grounds of Cosicot     90   For queries   Tel: 08708 506506   OCC   OCC to assist with survey costs     91   Thames Water   For queries   OCC to assist with survey costs     7el: 08453 101111   Thames Water   For queries   OCC to assist with survey costs     7el: 08459 200800   WODC to liaise   Risk assessment required   WODC to approve design     7el: 01993 861000   With riparian owners. Could use legal powers to enforce this   Residents to fund this installation   Residents and OCC to organise					
Signationadjacent public footpath to direct run-off into watercourse in Great Tew estategrating infront of Cosicotculvert in grounds of Cosicot and carry out repairs as requiredEA For queries 	4				
For queries Tel: 08708 506506OCC OCC For queries Tel: 08453 101111OCC to assist with survey costsThames Water For queries Tel: 08459 200800WODC to liaise with riparian owners. Could use legal powers to enforce thisRisk assessment required WODC to approve designPrivate/Other OrganisationsPrivate landowner to fund workResidents to fund this installationResidents and OCC to organise	Increase highway drainage maintenance on Chipping Norton Road to include jetting of culvert in highway				
SolutionFor queries Tel: 08453 101111survey costsThames Water For queries Tel: 08459 200800WODC to liaise with riparian owners. Could use legal powers to enforce thisRisk assessment required WODC to approve designPrivate/Other OrganisationsPrivate landowner to fund workResidents to fund this installationResidents and OCC to organise					
For queries Tel: 08459 200800WODC to liaise with riparian owners. Could use legal powers to enforce thisRisk assessment required WODC to approve designPrivate/Other OrganisationsPrivate landowner to fund workResidents to fund this installationResidents and OCC to organise	OCC to carry out this work				
Organisations landowner to fund work fund this installation OCC to organise					
Organisations landowner to fund work fund this installation OCC to organise					
however cannot legally be forced to create this at their cost					
	This will reduce the amount of water sat on the highway and reduce damage to highway construction. Possible repairs will also be identified. Up to £5K				

# Area 3

Area Flooded Properties & Causes		3			
		3 properties claimed the flood relief grant, but more properties are thought to have flooded. Primary cause excess water from culverted watercourse arriving at low lying properties			
	Options	5	6	7	8
Description of options		Install new angled metal grating at culvert entrance outside Cherwell House boundary wall and cut out existing vertical grating in boundary wall	Investigate increasing attenuation of water in the pond / spring area north of Cherwell House	Change level of gardens in Chapel Lane to create pathway for storm water to escape	Increase kerb height and profile of entranceway to Chapel Lane
	<b>EA</b> For queries Tel: 08708 506506				
sa	OCC For queries Tel: 08453 101111				OCC to carry out this work
Agenci	<b>Thames Water</b> For queries Tel: 08459 200800				
Responsible Agencies	WODC For queries Tel: 01993 861000	WODC to fund this work as grating is on common land	WODC could assist with level survey		
	Private/Other Organisations		Riparian owners consent required. Private residents to fund work.	Riparian owners consent required	
Effectiveness/ Effects on adjacent land		Reduce frequency of blockages and risk to residents who regularly need to unblock existing grating during storm events	Could cause flooding to adjacent farmland. Will reduce rate water enters culvert system during storm events	Will allow water to escape to watercourse, prior to ponding and entering properties	Will protect Chapel Lane from highway run-off during lower order storm events
Cost		Up to £IK	£5K to £20K	£2K to £5K	Up to £5K

# 7.0 CONCLUSIONS AND RECOMMENDATIONS

#### 7.1 Area I

#### 7.1.1 Maintenance

The following maintenance is recommended;

- Option 2 Carry out maintenance on watercourse channel south of Church Enstone Road bridge
- Option 3 Clear and regularly maintain watercourse in Water Lane up to the pond

Both are to be carried out as soon as possible

#### 7.1.2 Flood defence improvement schemes

The following flood defence improvements are recommended

#### <u>Under I year</u>

• Option I - Replace 6 metre length of existing 300mm pipes with one 525mm pipe at the entrance to the Manor House

#### Long-term (+3 years)

• Option 4 - Remove culverted section of watercourse and reinstate open ditch including section in grounds of Croft Cottages

#### 7.2 Area 2

#### 7.2.1 Maintenance

The following maintenance is recommended;

- Option 2 Carry out maintenance on watercourse channel south of Church Enstone Road bridge
- Option 3 Jet clean and survey the culvert in the grounds of Croft Cottages
- Option 4 Carry out gulley and lateral cleaning of highway drainage on Church Enstone Road and Chipping Norton Road

All are to be carried out as soon as possible

#### 7.2.2 Flood defence improvement schemes

The following flood defence improvements are recommended

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

- Options I Install flood relief culvert at Church Enstone Road Bridge
- Option 5 At junction of Chipping Norton Road and Church Enstone Road, reprofile highway to fall into Church Enstone Road.

# 7.3 Area 3

# 7.3.1 Maintenance

The following maintenance is recommended;

• Option 4 - Increase highway drainage maintenance on Chipping Norton Road to include jetting of culvert in highway

# 7.3.2 Flood defence improvement schemes

The following flood defence improvements are recommended for further discussion.

#### <u>Under I year</u>

- Options 2 Enlarge metal grating infront of Cosicot
- Option 3 Carry out survey of culvert in grounds of Cosicot and carry out repairs as required
- Option5 Install new angled metal grating at culvert entrance outside Cherwell House boundary wall and cut out existing vertical grating in boundary wall

# Mid-Term (I – 2 years)

- Options I Excavate ditch adjacent public footpath to direct run-off into watercourse in Great Tew estate
- Option 6 Investigate increasing attenuation of water in the pond / spring area north of Cherwell House
- Option 7 Change level of gardens in Chapel Lane to create pathway for storm water to escape
- Option 8 Increase kerb height and profile of entranceway to Chapel Lane

Appendix I: Photographs



Watercourse at rear of Chapel Lane, looking downstream



Point looking downstream, at direction of culverted watercourse, towards property in Chapel Close



Open grille on culverted watercourse, which passes through private property in Chapel Lane



View looking towards paddock at rear of inundated property on Chipping Norton Road



Vertical grating, which receives highway drainage and land drainage run-off



Public footpath on Chipping Norton Road. Fall of footpath is towards Chipping Norton Road.

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Vertical grating in stone wall



Works in progress on ordinary watercourse in land of Cherwell House



Looking upstream, at ordinary watercourse in grounds of Cherwell House



Junction of Church Enstone Road and Chipping Norton Road



Junction of Church Enstone Road and Chipping Norton Road



Highway drainage outlet at a Church Enstone Road culvert.

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Outfall on culvert on Church Enstone Road



Upstream side of culvert on Church Enstone Road



Manhole on culverted watercourse and position of highway gulley connected to it



Field sloping towards Water Lane and the gateway neighbouring The Manor House



View looking towards gateway of field neighbouring The Manor House



Entrance way to The Manor House showing culverted watercourse



Dropped kerbs at entrance way to Chapel Lane



Looking uphill from village towards Church Enstone



Watercourse behind Church burial ground



Watercourse behind Church burial ground



Remains of footbridge support at rear of No Oven House



Footbridge at rear of No Oven House on watercourse





Outfall of culvert in grounds of No Oven House

Position of blocked / broken highway gulley and soakaway at The Green