

## **Section 19 Flood Investigation Report**

**Date:** 17<sup>th</sup> June 2022

Section 19 Flood Investigation Report: Witney, West Oxfordshire

Date of Flood Incident: 23<sup>rd</sup> & 24<sup>th</sup> December 2020

**Based upon a flood investigation report prepared by**

**West Oxfordshire District Council, January 2022**

### **Revision Schedule**

<b>Version</b>	<b>Date</b>	<b>Details</b>	<b>Author</b>	<b>Checked</b>	<b>Approved</b>
1	06/01/2022	West Oxfordshire District Council Draft Flood Investigation Report	Richard Bennett	Laurence King	
2	26/01/2022	West Oxfordshire District Council Final Flood Investigation Report	Richard Bennett	Laurence King	Frank Wilson
3	17/06/2022	Oxfordshire County Council Section 19 Final Flood Investigation Report	Richard Bennett	Chris Brown	Nick Mottram

## **EXECUTIVE SUMMARY**

This Section 19 Flood Investigation Report has been issued by Oxfordshire County Council (OCC) in its capacity as Lead Local Flood Authority (LLFA). It is based upon an investigation by West Oxfordshire District Council (WODC) into the Witney Christmas floods 2020, and draws upon further input from the Environment Agency (EA) and OCC. WODC works collaboratively through an informal agency agreement with OCC to undertake flood investigations as well as drainage enforcement and consenting functions on behalf of the LLFA in West Oxfordshire. In the interests of having this S19 investigation report concluded in an appropriate timeframe WODC procured additional support to produce an initial, comprehensive flood investigation report for Witney inviting comments from OCC, the EA and other stakeholders including the Witney Flood Group and landowners.

### **December 2020 flood event**

It was deemed necessary to complete a formal investigation into the flood incidents in Witney due to the number of properties that reported flooding internally.

At least 54 residential and business properties were confirmed as flooding internally on the 23rd and 24th December 2020. This included residents at Mill House Care Home, Riverside Gardens and Riverside House needing to be evacuated.

Surface water flooding of some roads first occurred during the 23rd December 2020 in a number of places in Witney (section 2.1 for more detail). The amount of rainfall and its intensity that fell on that day overwhelmed some parts of the highway drainage systems which are very reliant on outfalls to watercourses which had started to become compromised by the rising river level. This was followed on the 24th December 2020 by river flooding when the upstream catchment flows reached Witney and river levels peaked. The level peaked just after midnight on the 25<sup>th</sup> December 2020.

Not unusually in flood events, the causes are from multiple sources with no one cause and no one solution required to reduce risk of future events.

### **Conclusions**

From reviewing the information provided regarding the December 2020 flood event, historic river data and modelling information, it is clear that the 2020 event was greater than the current EA modelled 1 in 100 year flood event with flows similar to the peak flow in the modelled 1 in 100 year plus 20% event.

From the level information obtained from the Lidar (Laser Imaging, Detection and Ranging) data it is clear that there is an issue with flood plain connectivity downstream of the Aquarius site and through the raised footpath at Langel Common.

Levels in the field to the south of the Aquarius site and to the east of the eastern channel of the river Windrush seem to suggest that flood flows would not be able to fill and pass through to the flood plain further downstream as easily as the 2014 modelling suggests. The flood levels in the modelled 1 in 20 year event are lower than the ground levels in the field adjacent to the bank of the of eastern channel, therefore no flows will be able to pass back into the river during such an event. The modelled 1 in 100 year flood level is only slightly higher than the ground levels in some areas of the field so not all flows will be able to spill back in to the river as the model suggests.

The level of the raised footpath further downstream varies between 79.72m and 80.1m AOD which is higher than the modelled 1 in 100 year flood level of 79.68m AOD, confirming that the embankment is not accurately reflected in the 2014 model. The river through this area and upstream of Bridge Street is in poor condition due to no significant maintenance being carried out for many years.

It has been confirmed that an updated flood risk model for the Windrush and its tributaries through the town is to be carried out by the EA which will include information gathered since 2014 and from the December 2020 floods.

The updated model will need to fully understand the issues around Bridge Street and through to Langel Common, and confirm the main causes affecting the flood levels upstream of Bridge Street.

There is currently minimal information on the private and highway drainage systems throughout Witney and further investigations need to be carried out throughout the affected areas to fully understand the existing drainage systems and any issues with them.

## Main Recommendations

Recommendations	Lead Stakeholders	Consulting stakeholders
Communicate the explanation for the previous problems with the flood warning system and explore what further improvements and enhancements could be made.	EA	WODC, LLFA and residents.
Re-establish the Agency flood group meetings to discuss problems and to look at strategies to combat flooding due to Climate Change. Have periodic meetings with the local flood group to discuss the issues and recommendations with representatives from key authorities.	LLFA	All Authorities
Update the 2014 model with updated level information, especially downstream of the Aquarius Bridge through to the footpath at Langel Common. Include main tributaries through Witney	EA	WODC, LLFA, WFMG

Increased EA / riparian maintenance to be carried out along the River Windrush through and downstream of Witney. Proactive visits and encouragement to ensure riparian owners carry out their duties.	EA	Landowners, WFMG
Investigate if the river could be modified to increase flow capacity during severe conditions, especially between New Bridge Street through to the footpath in Langel Common.	EA	Landowners, LLFA and WODC.
Investigate if the perimeter ditch of the Aquarius site can be modified/ diverted to increase flow capacity.	WODC	EA, Landowners, LLFA
Look at improving flows through Langel Common footpath to ensure flood plain connectivity is improved during all flood events.	EA	LLFA, Landowners, WODC
Install gauge boards from Woodford Mill through to Langel Common.	EA	WFMG, LLFA, WODC
Set up a Flood Warden network with local volunteers to record the levels during flood events.	LLFA	EA, WFMG, OCC Emergency Planning Team
Look at opportunities for flood storage and increased flood plain capacity upstream of Witney and Crawley such as nature based solutions through partnership working.	EA	Landowners, LLFA, WODC
Look at opportunities for schemes to manage flows upstream of the Hailey Road drain such as nature based solutions through partnership working.	WODC	LLFA, EA Landowners, WFMG
Property flood resilience (PFR) measures which improve the resilience of the community before a flood occurs. Many properties have already carried out measures on their properties, but further funding and support may be available to help more people.	Homeowners	WODC, EA, LLFA
Measures to improve the resilience of existing public or community-owned infrastructure.	All Local Government Bodies	
Local community volunteer approaches to improve the community's ability to plan, respond and recover from flooding; link to local community emergency plans; encourage affected care home to develop Business Continuity Plan and Evacuation Plan.	All	Communities and Residents

WODC to continue regular maintenance of their ordinary watercourse assets and use their powers under the Land Drainage Act 1991 to ensure riparian owners carry out required maintenance.	WODC	Landowners
OCC to regularly check and maintain highway assets through Witney, in line with their current maintenance regimes. Any affected areas that haven't been checked after December 2020 should be prioritised. OCC seek to clarify ownership and maintenance responsibilities for watercourses, particularly where these are located within or near to the highway.	OCC Highways	LLFA and residents.
Bridge Street bridge to be checked regularly and de-silting under the bridge to be investigated, noting that without de-silting being also undertaken on the upstream side of the bridge there would be little benefit to only de-silting under the bridge.	OCC Highways	EA
Privately owned drainage systems to be checked for blockages and defects and remedial works to be carried out where necessary. Connectivity downstream to be confirmed.	Developers, Landowners	WODC, LLFA
Foul sewers to be checked for surface water connections, blockages and capacity issues. Remedial works to be carried out as necessary to minimise surface water entering the system and increase capacity.	TW	LLFA, WODC

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## **1. INTRODUCTION**

### **1.1. Lead Local Flood Authority (LLFA) Investigation**

Section 19 of the Flood and Water Management Act (F&WMA) states:

- 1) On becoming aware of a flood in its area, a Lead Local Flood Authority must, to the extent that it considers it necessary or appropriate, investigate: -
  - a. which risk management authorities have relevant flood risk management functions, and
  - b. whether each of those risk management authorities has exercised, or is proposing to exercise, those functions in response to the flood.
- 2) Where an authority carries out an investigation under subsection (1) it must: -
  - a. publish the results of its investigation, and
  - b. notify any relevant risk management authorities.

West Oxfordshire District Council (WODC) is not the Lead Local Flood Authority (LLFA), but does deliver a delegated Flood Risk Management Service for the LLFA through an informal arrangement.

The legal obligations of the LLFA cannot be delegated, but in the interests of having investigation reports concluded in a timeframe that will help reduce residents' concerns around speed of resolution WODC has produced this report for Witney, in conjunction with Oxfordshire County Council (OCC), which can be used by the LLFA and other RMA's for their own purposes.

The LLFA have set criteria which determines when a Section 19 report is required. The criteria are set out below and WODC have decided to follow those criteria.

#### **LLFA/OCC Criteria**

- Internal flooding (excluding to basements) to five or more residential properties or businesses within an area of 1km<sup>2</sup>.
- Internal flooding of a business premises employing more than 10 people within an area of 1km<sup>2</sup>.
- Internal flooding (excluding to basements) of at least one property or business for one week or longer.
- Flooding of one or more items of critical infrastructure, which could include hospitals, health centres, clinics, surgeries, colleges, schools, day nurseries, nursing homes, emergency services (police, fire, ambulance) stations, utilities and substations.

**Caused a transport link to be impassable:**

- Motorways, trunk roads, Class A and B highway closures shall all be investigated.
- Class C highways – 10 hours or more unless the route is the only means of access, or is primary route for critical infrastructure then reduce to 4 hours.
- Class U highways – 24 hours or more unless the route is the only means of access, or is primary route for critical infrastructure then reduce to 4 hours.
- All rail link closures shall be investigated.

Any flooding event that a risk management authority deems significant but does not meet the agreed thresholds should be put forward to the Agency flood group meetings for consideration.

**1.2. Site Location and context**

Witney is a thriving market town on the edge of the Cotswolds, 12 miles west of Oxford and just north of the A40 road. Witney has over 25,000 residents in over 10,000 households, according to recent figures from Oxfordshire County Council, making it the largest town in West Oxfordshire.

Witney has developed along the banks of the River Windrush. The river is braided upstream and downstream of Witney but through the built-up area, it has been straightened and it passes under two main road bridges, Bridge Street and New Bridge Street. In recent years, the town has expanded rapidly, with housing development at Madley Park, Millers Mews, Grangers Place, Woodford Mill and also post 2007, with the completion of the Aquarius Site and developments of notable size being built off Burford Road and West Witney.

Three main tributaries enter the River Windrush in the centre of Witney; Hailey Road Drain upstream of Bridge Street, the Madley Brook in Langel Common and the Colwell Brook/Queen Emma's Dyke system that joins the river Windrush near Ducklington. The Hailey Road Drain is culverted under Eastfield Road and Hailey Road.

A further tributary of the River Windrush, the Queen Emma's Dyke, forms and flows through Witney before joining the Windrush south of Witney.

The Environment Agency (EA) has previously identified Witney to be at high risk of fluvial flooding. The EA flood map, Risk of Flooding from Rivers and Seas, is shown in Figure 1 below.



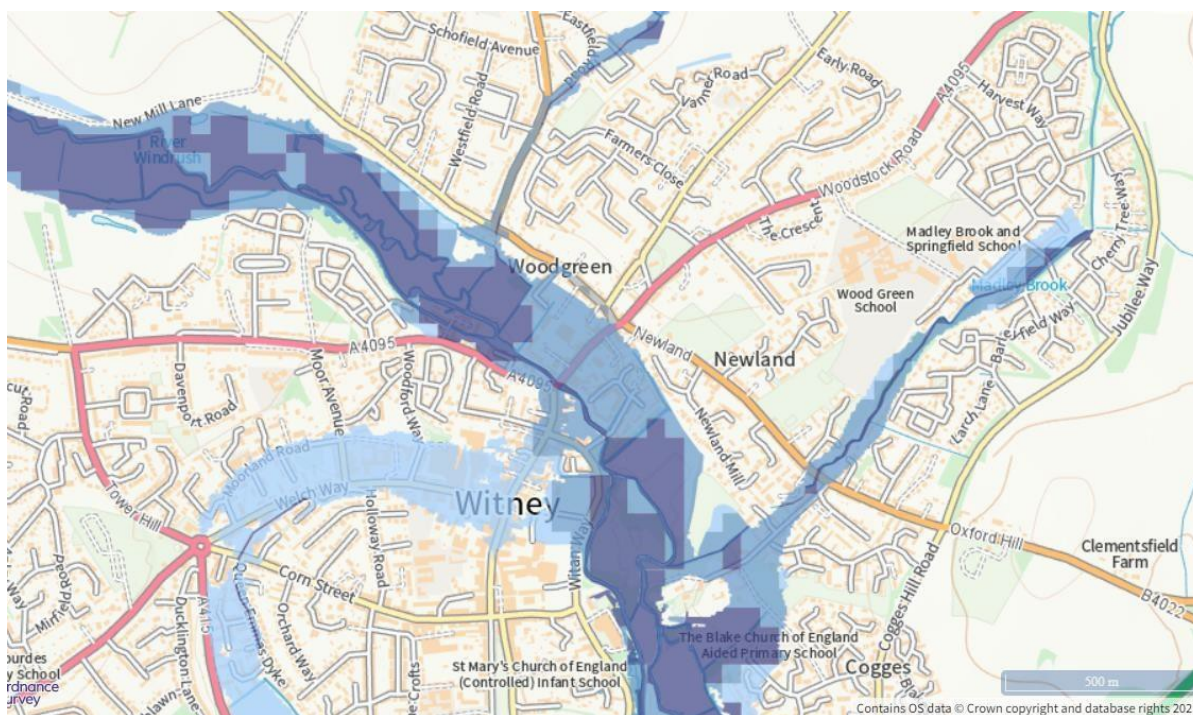


Figure 1 - EA flood map, Risk of Flooding from Rivers and Seas

### 1.3. Previous flood events

Numerous properties in Witney were flooded during the events of July 2007. The flooding was from multiple sources due to the sheer amount of rainfall that fell within a 24 hour period and the accumulation of rainfall from the weeks before.

The EA report “Witney Flood Review July 2007” stated *“On the 19 July 2007, 113mm of rain fell at Bourton-on-the-Water in 28 hours. This equates to more than twice the average monthly rainfall for July. Several rain gauges in the upper parts of the Windrush catchment recorded even greater totals: Sherbourne recorded 122mm, and Guiting 140mm. This extraordinary rain is what caused the majority of flooding in the town centre, from the River Windrush.”*

*“Rainfall totals for Witney (from the rain gauge at the Thames Water Sewage Treatment Works) are more relevant when considering flooding that the town witnessed on Friday 20 July – the pluvial flooding. This rain gauge recorded 84mm in 17 hours.”*

The EA report also confirmed that the peak flow recorded at the Worsham flow monitoring station during July 2007 was 29.26m<sup>3</sup>/s. The river flows during the July 2007 event are shown in figure 2 below.

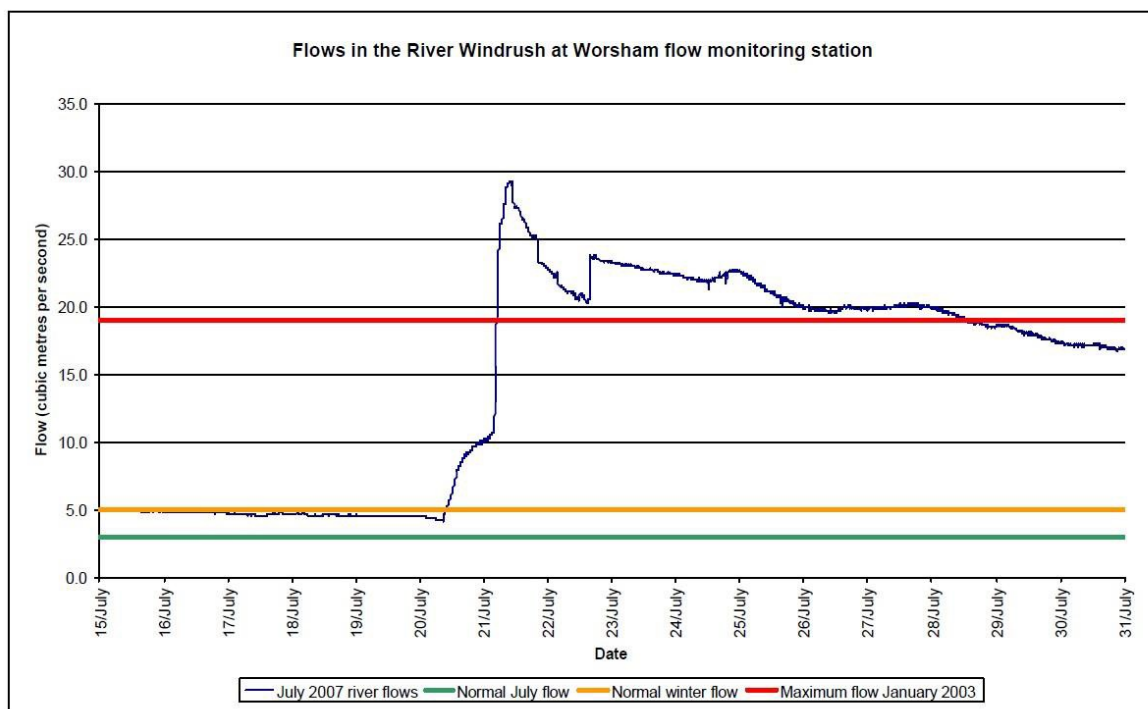


Figure 2 – July 2007 river flows for the River Windrush from EA Flood Review July 2007

The West Oxfordshire District Council Witney flood report stated that RAF Brize Norton recorded 125 millimetres of rain in a period of 12 hours.

In December 2013 - January 2014, flooding was also experienced in Witney. Internal flooding was reported in West End (including the industrial Estate), Bridge Street and Riverside gardens and also highway flooding in Eastfield Road and Hailey Road which was witnessed on the 23<sup>rd</sup> and 24<sup>th</sup> December. Flooding also occurred in February 2014. Rather than a significant rainfall event, the flooding in January and February was mainly down to continuous heavy rainfall which did not allow the river level to recover to its normal level.

## **2. RECENT FLOOD ISSUES AND INVESTIGATION**

### **2.1. Summary of December 2020 Floods**

It was deemed necessary to complete a formal investigation into the flood incidents in Witney due to the number of properties that reported flooding internally.

At least 54 residential and business properties were confirmed as flooding internally on the 23rd and 24th December 2020. This included residents at Mill House Care Home, Riverside Gardens and Riverside House needing to be evacuated.

The main areas affected with internal flooding were Woodford Mill, Riverside Gardens, Bridge Street (including Bridge Street Mills), West End (including Industrial Estate), Millers Mews, Newland area (near the Madley Brook) and Eastfield Road. One property was also affected in New Yatt Road.

At least one unit in the Industrial Estate off Bridge Street (Bridge Street Mills) flooded internally with surcharging from the foul sewer drainage system.

Highway flooding was also reported on Hailey Road linked to the Hailey Road Drain. Further external flooding was reported in Blakes Avenue, Park Road, Marriots Walk, Cherry Tree Way, Vanner Road and Woodford Way Car Park. There may have been internal flooding in these areas although no internal flooding was confirmed by WODC or OCC.

Surface water flooding first occurred on the 23<sup>rd</sup> December 2020 in a number of places in Witney, due to the sheer amount of rainfall and intensity that fell on that day which overwhelmed the existing drainage systems. This was followed on the 24<sup>th</sup> December 2020 by river flooding when the upstream catchment flows reached Witney and river levels peaked. The level peaked just after midnight on the 25<sup>th</sup> December 2020.

Not unusually in flood events, the causes are from multiple sources with no one cause and no one solution required to reduce risk of future events.

River levels were already high from the significant rainfall that fell at the beginning of October 2020 and river levels were unable to fall back to normal levels before the event on the 23<sup>rd</sup> December.

### **2.2. Rainfall and river data analysis**

Data has been obtained from CEH, riverlevels.uk and Shoothill Gauge Map. The rain gauge upstream of Witney at Worsham recorded 37.22mm of rainfall on the 23/12/2020 and a total of 64.5mm in the 7 days up to 25/12/2020 when the river was still at its peak upstream of Bridge Street. The gauge in Bourton on the Water, which is located in the upper part of the Windrush catchment, record 56.1mm of rainfall on the 23/12/2020 and 89.7mm for the 7 days up to 25/12/2020.

The Worsham river gauge confirmed the peak flow in the Windrush was 30.348 m<sup>3</sup>/s on the 24/12/2020. This was more than the flow recorded in July 2007 which was 29.26m<sup>3</sup>/s.

The gauge at Riverside Gardens, recorded the flood level to peak at 81.45m AOD on the 25/12/2020. (Datum Level 79m + gauge reading 2.45m). The hydrograph for December 2020 is shown below.

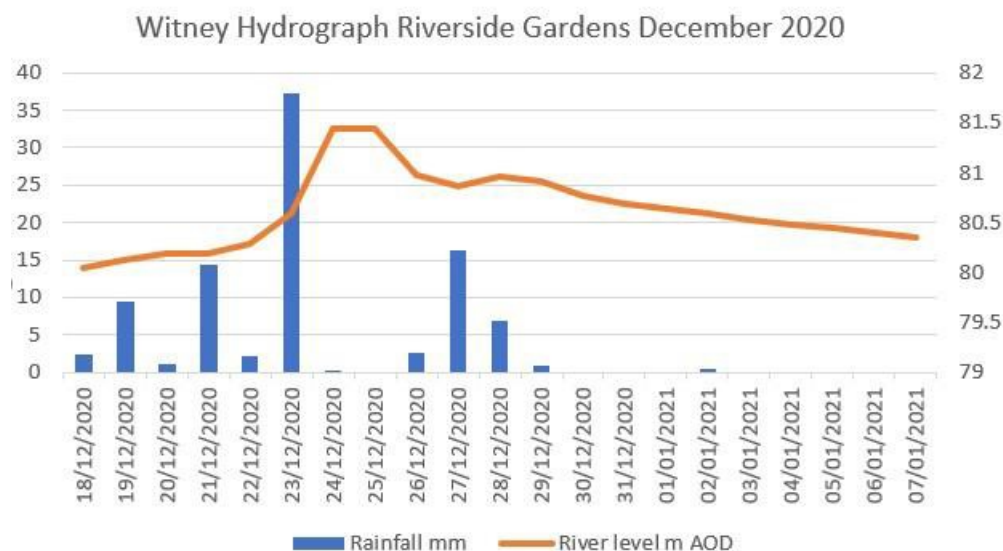


Figure 3 - Hydrograph for Riverside Gardens December 2020

### 2.3. Documents Reviewed

A list of the documents reviewed as part of this report are listed below;

- WODC Parish Flood Report for Witney (May 2008)
- EA report Witney Flood Review July 2007 (February 2008)
- Witney Flood Mitigation Groups Report, River Windrush at Witney; Flooding in December 2020 (January 2021)
- Witney Flood Mitigation Group update to Members (September 2021)
- CH2M Hill Post 2007 ABD – Windrush: Worsham to Witney (A40) Modelling Report and updated model for the EA (April 2014)
- Councillor Enright's Witney Floods 2020, Notes of meeting with residents (January 2021)
- Oxfordshire County Council Preliminary Flood Risk Assessment (April 2011)

### 2.4. Existing Level information

Lidar (Laser Imaging, Detection and Ranging) data of the 2020 flown survey was obtained from the Environment Agency's data.gov.uk website. This has been reviewed and the levels in the field to the south of the Aquarius site, between the two channels and to the east of the eastern channel of the River Windrush seem to suggest that any out of bank flows will not be able to fill and pass through to the flood plain further downstream easily. The ground levels in the flood plain rise up in places in the field adjacent to the eastern channel and the flood plain is lower than the bank of the river further downstream before the confluence with the Madley Brook. Upon completion of the EA updated model, this situation can be looked at.



The Lidar data shows the level of the raised footpath in Langel Common varies between 79.72m and 80.1m AOD. It shows that this is a continuous raised structure which completely disconnects the flood plain upstream and downstream. It is important that this reported situation is included in the EA modelling to be carried out.

## **2.5. Site visits and observations**

A meeting was held with the Witney Flood Mitigation Group (WFMG) on the 10/12/2021. This involved a site walkover from Langel Common footpath up to Woodford Mill to look at and discuss the main issues and concerns of the flood group and residents of Witney.

The walkover followed the river up through Langel common, the Aquarius site, Bridge Street Mills, Bridge Street, Mill Street, Riverside Gardens and Woodford Mill. However, the other affected areas including West End, Hailey/Eastfield Road and Madley Brook were also discussed.

The main concerns raised were regarding lack of river maintenance which was evident throughout the site walkover. WFMG understand that this is the responsibility of the riparian owners, however they are concerned at the lack of action by key authorities to ensure the necessary maintenance is carried out. Figure 5 below shows a fallen tree in the river at the rear of the Blanket Hall.



Figure 5 – Fallen Tree at the rear of Blanket Hall

The current gauge boards at Bridge Street were discussed and it was mentioned that they are submerged during floods. WFMG would like to see further gauge boards installed on the Windrush, ideally from Woodford Mill down to Langel Common footbridge so the difference in levels throughout, upstream and downstream of the key structures, can be monitored and assessed.

Concerns were raised over the channel alignment and capacity of the bridge on Bridge Street. It was observed to be restricting peak flows and causing a bow wave effect when the river levels were high on the evening of the 24<sup>th</sup> December 2020. This is evident in Figure 6 below.



Figure 6 – Bridge Street Bridge upstream 24th December 2020 approximately 23:30PM.  
Photo provided by Witney Flood Mitigation Group

The raised footpath in Langel Common, shown in Figure 7 below, is a significant concern to the WFMG and affected residents as it has been observed impounding flood plain flows which is evident in Figure 7. The photograph also shows a noticeable difference in level upstream and downstream. WFMG would like to see this replaced with a continuous bridge to allow the flows to pass through unrestricted.



Figure 7 – Footpath in Langel Common, overtopping. Photograph provided by WFMG

Figure 8 below shows the risk of flooding from surface water. Although it doesn't take into account the river channel and bridge structures, it identifies the low-lying areas through Langel Common and clearly shows the continuous raised footpath that could act as a barrier to flood waters.



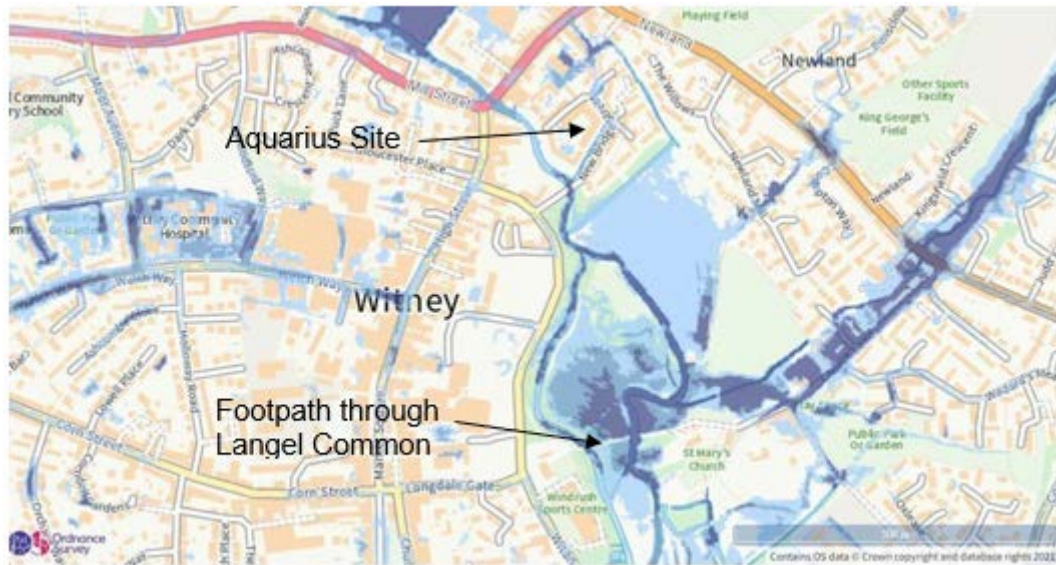


Figure 8 – EA Risk of Flooding from Surface Water

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Other information provided by WFMG is listed below;

- The flood warning was issued too late and after properties were flooding.
- Sewer flooding in Bridge Street Mills - One of the properties in this area had an overall insurance bill of £40,000. Total estimated insurance bill for all businesses affected is c£300,000. None can now get insured.
- Riverside House/Gardens - 13 Residents were evacuated for 20 hours, 4 homes were flooded, with repairs taking on average 6 months, one resident was still not back in after nearly 12 months
- Mill House Care Home - 9 Residents were evacuated.

WFMG and affected residents in Witney felt there was a lack of action, communication and collaboration from all the key authorities.

The actions WFMG see as quick wins are;

- Significant EA/riparian maintenance carried out from Woodford Mill to downstream of the footbridge through Langel Common.
- New gauge boards installed from Woodford Mill to Langel Common footbridge
- Investigation into the replacement of the raised footpath with a continuous bridge.

## 2.6. Environment Agency Model Review

Modelling information has been provided by the Environment Agency (EA) which is based on the Windrush (Worsham to A40) 2014 model. The peak flow recorded at Worsham on the 24/12/2020 compares to the modelled 1 in 100 year plus 20% event and the recorded peak flood level at Riverside Gardens is greater than the 1 in 100 year flood event.



The 2014 model was an update of the existing model following the construction of the fish bypass channel and replacement weir. It also was updated to better reflect the flows through Bridge Street.

The modelling shows all modelled flows including the modelled flows in the 1 in 100 year plus 70% climate change event to pass through the Bridge Street Bridge however, it shows the flood levels to increase significantly upstream, up to the 70% modelled event. The modelling does suggest a capacity issue further downstream where the river splits into two channels (Figure 9). The model outputs show flows reduce at the river split significantly by over 7m<sup>3</sup>/s. It is hoped that the update of the model will help to clarify the situation.



Figure 9 – River Windrush split into two channels.

It is not clear from the modelling if the increase in flood levels upstream of Bridge Street are caused by the Bridge itself or the capacity issues downstream.

The model results suggests that all the excess flows will spill into the flood plain at this point and re-join the river further downstream before the raised footpath in Langel Common. It also suggests that the water will overspill the footpath in the 1 in 100 year event. The flood level at the footpath is 79.68m AOD for the modelled 1 in 100 year event. The modelled 1 in 100 year flood extent is shown in Figure 10 below.

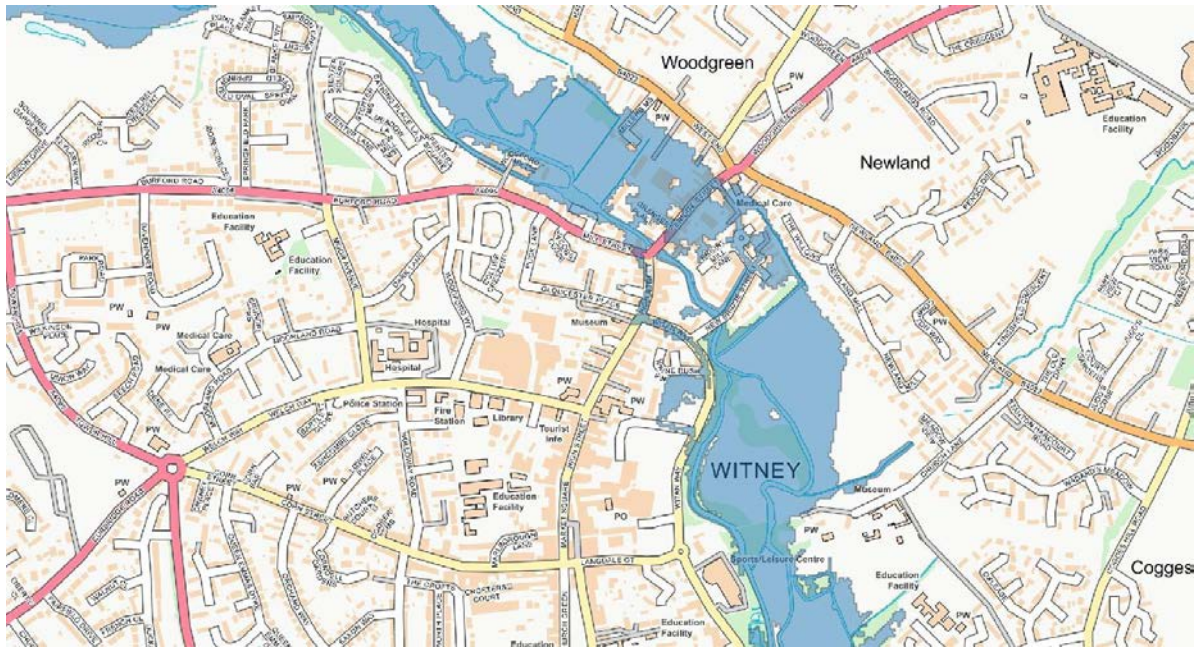


Figure 10 – EA modelled 1 in 100 year flood extent

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The 2014 model doesn't include the tributaries through Witney.

## 2.7. Remedial Work Undertaken

Site visits and meetings were carried out by the WODC Flood Engineer and the EA after the flooding to discuss the merit of several items of work.

In response to the flooding, the EA dealt with several incidents in Witney which included sending two crews out to investigate and check for blockages in the river and deploying a number of experienced officers to Witney immediately following the flooding to talk to residents affected by the flooding. Following this, advice and support was provided, specifically on obtaining grants for property level resilience at Riverside Gardens.

The EA have undertaken annual maintenance on Main Rivers in Witney along the Madley Brook, Emmas Dyke, River Windrush (West Branch), Colwell Brook and the Hailey Road Drain.

WODC have carried out the annual maintenance of the WODC owned watercourses to the rear of West End industrial estate and Millers mews.

WODC have given advice on PFR to those affected residents who have shown an inclination to acquire it.

WODC are currently reviewing their Emergency Response Plan.

The EA made immediate improvements to the Flood Warning Service for Witney, based on lessons learned from the December 2020 flooding. After the EA issue a flood warning, they carry out a review to see whether any aspects of the flood warning process can be improved. As the flood warning at Witney was issued late, due to the river level rising so rapidly, they carried out this process during January 2021. They have since made two changes.

Firstly, they have revised the threshold at which they consider issuing the flood warning, which needs to provide two hours' notice of property flooding. As river levels rose much more quickly than previously seen on the Witney gauge (installed in 2008) they have lowered the initial threshold. However, they do need to manage a balance between the need for timeliness with the risk of false alarms which degrade customer confidence in the flood warning service.

Secondly, they have reviewed both level and flow data from the gauge upstream at Worsham. This has shown that a flow rate of 20m<sup>3</sup>/s (cumecs, or cubic metres per second) at Worsham relates to flood warning levels being reached at Witney. An alarm has now been added to the flow at Worsham which will notify their duty officers when this flow is reached.

The EA acquired funding in the 2021/22 financial year to further investigate flood risk in Witney. This includes building on the understanding of the 2014 Initial Assessment, considering information gathered since 2014 and during the December 2020 flooding, and developing an updated flood risk computer model for the Windrush and its tributaries through the town. The modelling work is in progress. It is detailed in nature and the work will therefore need to continue into and through the next (2022/23) financial year and beyond.

The improved understanding from the modelling work will be key to future decisions regarding options to manage flood risk in Witney. The updated model could also be used to provide an improved understanding of reported issues, such as those between Bridge Street and Langel Common. Any decisions regarding options to manage flood risk in Witney will consider the benefits and costs and will ensure that flood risk is not increased elsewhere. Other benefits from the updated model will include an updated flood map for planning, an improved basis for Flood Warnings and improved data for use in assessing options and their benefits.

Residents can sign up to the Flood Warning Service to receive Flood Alerts and Flood Warnings using this link <https://www.gov.uk/sign-up-for-flood-warnings> or by calling Floodline on 0345 988 1188.

## **2.8. Current Maintenance**

WODC carries out annual maintenance on WODC owned ordinary watercourses throughout Witney, which includes the ditches behind Millers Mews and West End Industrial Estate.

Using their permissive powers, the EA carry out annual maintenance on Main Rivers in Witney where it is needed, justified, funded and resourced. This involves vegetation trimming and blockage removal along the Madley Brook, Queen Emmas Dyke, Windrush (West Branch), Colwell Brook and the Hailey Road Drain. Maintenance was carried out at these locations between June and October 2021.

Riparian owners also have a responsibility for maintaining their watercourses. This includes removing blockages, fallen trees or overhanging branches or cutting back trees and shrubs on the bank if they could cause flooding to other landowners' property.

The EA report issues that they are aware of, such as fallen trees and channel blockages, to riparian owners for them to remove. They also provide riparian owners with advice and encourage them to carry out their own maintenance.

### 3. CONCLUSIONS

From reviewing the information provided regarding the December 2020 flood event, historic river data and modelling information, it is clear that the 2020 event was greater than the current EA modelled 1 in 100 year flood event with flows similar to the peak flow in the modelled 1 in 100 year plus 20% event.

From the Lidar level data it is clear that there is an issue with flood plain connectivity downstream of the Aquarius site and through the raised footpath at Langel Common.

Levels in the field to the south of the Aquarius site and to the east of the eastern channel of the River Windrush seem to suggest that flood flows would not be able to fill and pass through to the flood plain further downstream easily as the 2014 model suggests. The flood levels in the modelled 1 in 20 year event are lower than the ground levels in the field adjacent to the bank of the of eastern channel, therefore no flows will be able to pass back into the river during such an event. The modelled 1 in 100 year flood level is only slightly higher than the ground levels in some areas of the field so not all flows will be able to spill back in to the river as the model suggests.

The level of the raised footpath further downstream varies between 79.72m and 80.1m AOD which is higher than the modelled 1 in 100 year flood level of 79.68m AOD, confirming that the embankment is not accurately reflected in the 2014 model.

The river through this area and upstream of Bridge Street is in poor condition due to no significant maintenance being carried out for many years.

An updated flood risk model for the Windrush and its tributaries through the town is to be carried out by the EA which will include information gathered since 2014 and from the December 2020 floods.

The updated model will need to fully understand the issues around Bridge Street and through to Langel Common, and confirm the main causes affecting the flood levels upstream of Bridge Street.

There is currently minimal information on the private and highway drainage systems throughout Witney and further investigations need to be carried out throughout the affected areas to fully understand the existing drainage systems and any issues with them.



## **4. RIGHTS AND RESPONSIBILITIES**

### **4.1. Communities and Residents**

Communities may consist of the Town or Parish Council, Flood Forum, Community Group and affected residents, amongst others.

Communities and residents who are aware that they are at risk of flooding should take action to ensure that they and their properties are protected.

Community resilience is important in providing information and support to each other if flooding is anticipated. Actions taken can include [subscribing to Met Office email alerts](#) for weather warnings, nominating a Community Flood Warden, producing a community flood plan, implementing property level protection and moving valuable items to higher ground. Finally, individual households can create their own personal flood plans such as collating important documents for quick removal from the property, torches, waterproof clothing etc.

Oxfordshire County Council has produced a number of flood guides covering various subjects, some of which relate to this type of flood incident. The relevant guides have been identified and are available at: [www.oxfordshirefloodtoolkit.com](http://www.oxfordshirefloodtoolkit.com)

### **4.2. Lead Local Flood Authority (LLFA)**

As stated within the introduction section, OCC as the LLFA has a responsibility to investigate flood incidents under Section 19 of the F&WMA.

The LLFA also has a responsibility to maintain a register of assets which have a significant effect on flooding from surface runoff, groundwater or ordinary watercourses (non-Main River) as detailed within Section 21 of the F&WMA. The register must contain a record about each structure or feature, including the ownership and state of repair. OCC is also required to keep a record of flooding hotspots across the county.

OCC's practice relating to third party assets is to provide general information about third party asset owner responsibilities such as through the Flood Toolkit and community events.

As LLFA, OCC require support and cooperation from other risk management authorities, communities and individual home owners to ensure flood incidents are reported, and any assets which have a significant effect on flood risk are recorded on the asset register.

While OCC can suggest possible causes of flooding in Witney and make recommendations to ensure flood risk is mitigated as far as possible, the F&WMA does not provide OCC with the mandate or funding to act on identified causes of flooding or force risk management authorities to undertake any recommended actions, however funding can be sought from other sources if schemes are identified.

### **4.3. Highway Authority (Oxfordshire Highways)**

Oxfordshire Highways have a duty to maintain the highway under Section 41 of the Highway Act 1980 but subject to the special defence in Section 58.

New highway drainage systems are designed to National Highways Design Manual for Roads and Bridges (Volume 4, Section 2, 2020). They are only required to be constructed to drain surface water runoff from within the highway catchment rather than from the wider catchment.

There are historic drainage systems in historic highways which can become the responsibility of the Highway Authority due to dedication, as opposed to adoption. These drainage systems may not have been designed to any standard.

Oxfordshire Highways undertake regular highway drainage cleansing, identify and develop a detailed plan of their assets.

If flooding occurs OCC will assess the capacity of the highway assets and identify any areas with insufficient capacity for draining runoff from the highway. Where this leads to flood risk to properties improvement works should be considered.

Oxfordshire Highways should assess the suitability of third-party drainage systems accepting discharge from highway drainage systems and report any unsatisfactory areas to the relevant Risk Management Authorities.

### **4.4. Water Authority - Thames Water Utilities (TW)**

Water and sewerage companies are responsible for managing the risks of flooding from surface water, foul water or combined sewer systems. Public sewers are designed to protect properties from the risk of flooding in normal wet weather conditions. However, in extreme weather conditions there is a risk that sewer systems can become overwhelmed and result in sewer flooding.

Sewerage undertakers have a duty, under Section 94 of the Water Industry Act 1991, to provide sewers for the drainage of buildings and associated paved areas within property boundaries. Since the 1<sup>st</sup> October 2011 the majority of private sewers and lateral drains in England and Wales were transferred into public ownership, meaning they are now the responsibility of the relevant sewerage undertaker.

A public sewer is a conduit, normally a pipe that is vested in a water and sewerage company or predecessor, that drains two or more properties and conveys foul, surface water or combined sewage from one point to another, and discharges via a positive outfall.

There is no automatic right of connection for other sources of drainage to the public sewer network. Connection is therefore discretionary following an application to connect.

#### **4.5. West Oxfordshire District Council (WODC)**

District councils have powers under Section 14 of the Land Drainage Act 1991 (LDA) to undertake flood risk management works on ordinary watercourses (non Main River) where deemed necessary.

Under Section 20 of the LDA, district councils have the powers to (by agreement of any person and at that person's expense) carry out any drainage work which that person is entitled to carry out. Agreement may not be required in certain emergency or legally upheld situations.

West Oxfordshire District Council also has delegated authority from OCC/LLFA to serve notice on persons requiring them to carry out necessary works to maintain the flow of ordinary watercourses under Section 25 of the LDA and receives funding from the LLFA to do this.

The District Council is the planning authority and has a role in building control and the building regulations.

#### **4.6. Environment Agency (EA)**

The EA is responsible for taking a strategic overview of the management of all sources of flooding and coastal erosion. This includes setting the direction for managing the risks through national and strategic plans; providing evidence and advice to inform Government policy and support others; working collaboratively to support the development of risk management skills and capacity; and providing a framework to support local delivery.

The EA also has operational responsibility for managing the risk of flooding from main rivers. Main rivers are usually larger river and streams and include all watercourses defined on the main river map which can be accessed at <https://environment.data.gov.uk/DefraDataDownload/?mapService=EA/StatutoryMainRiverMap&Mode=spatial>

The responsibility for maintenance and repair of rivers lies with the riparian owner, but the EA have permissive powers to carry out maintenance work on main rivers under Section 165 of the Water Resources Act 1991 (WRA).

The EA encourage third party asset owners to maintain their property in appropriate condition and may take enforcement action on a prioritised basis where it is appropriate. They may also consider undertaking maintenance or repair of third party assets only where it can be justified in order to safeguard the public interest and where other options are not appropriate.

Further remit of the EA includes;

- preparing preliminary flood risk assessments and flood risk management plans for flooding from main rivers, reservoirs and the sea (Flood Risk Regulations 2009)



- warning and informing (Ministerial Direction to the National Rivers Authority, 1996)
- regulating activities that may affect the risk of flooding from main rivers (Environmental Permitting Regulations (England and Wales) Regulations 2016)
- Carrying out surveys and mapping (Flood Risk Regulations 2009, Water Resources Act 1991)
- reporting to the minister on flood and coastal erosion risk and how the national and local strategies are being applied by all of the authorities involved (FWMA, 2010)
- acting as a statutory consultee for planning authorities providing advice on planning applications, local plans and environmental assessments regarding flood risk from main rivers and the sea (Town and Country Planning (Development Management Procedure) (England) Order 2015)

#### **4.7. Land Owners and Developers**

Land owners are responsible for the drainage of their land and controlling any movement of sediment from their land. Legally, owners of lower-level ground have to accept natural land drainage from adjacent land at a higher level. The exception to this is where the owner of the higher-level land has carried out “improvements” such that the runoff from the land cannot be considered “natural”.

Agricultural practices by land owners can be considered as “improvements” to the land, so that cultivation of crops or other land uses can take place. Mitigation works are required on improved land to account for the change in natural land drainage and changes to surface water runoff this can create.

Land owners and developers are responsible for working with the local planning authority to ensure that their development is completed in accordance with the planning permission and all conditions that have been imposed.

Advice for developers is available on the Oxfordshire Flood Toolkit.

[www.oxfordshirefloodtoolkit.com/planning/developers/](http://www.oxfordshirefloodtoolkit.com/planning/developers/)

## 5. RECOMMENDATIONS

### 5.1. General

Listed below are the recommendations emanating from this formal Section 19 Flood Investigation Report. All the recommendations are simply initial recommendations that require discussing in detail to determine their true feasibility.

It is important to note that it is for the relevant responsible body or persons to assess each recommendation in terms of the legal obligation, funding, resource implications, priority and cost/benefit analysis of undertaking such action.

The recommendations may be included within the action plan linked to the Local Flood Risk Management Strategy or in the relevant risk management authority's future work programmes, as appropriate.

Authorities should work together to look into funding opportunities to carry out the listed recommendations. There are multiple funding sources which could contribute to schemes and improvement works going forward. The majority of schemes will require elements of partnership working and contributions to be successfully funded. They are likely to need to provide multiple benefits such as improving flood resilience whilst also managing water levels, reducing drought risks, helping nature recovery as well as climate adaptation.

There are several funding options available which can be explored through multi agency working groups such as,

- Flood & Coastal Erosion Risk Management (FCERM)
  - Flood Defence Grant in Aid (FDGiA)
  - Local Levy Regional Flood and Coastal Committee (RFCC)
- DEFRA Natural Flood Management Funding
- Woodland Creation Grants
- Agricultural & Environmental Schemes (Countryside Stewardship)
- Funding sources relating to development and regeneration, such as section 106 agreements, Community Infrastructure Levy (CIL) and New Homes Bonus Scheme
- Non-government organisations and charitable trusts
- Community fundraising and events
- Lotteries (Heritage Lottery Fund, Big Lottery, Arts Council)
- Volunteering
- Nature for Climate Fund
- Grants from other government departments, such as BEIS, MHCLG, DfT, DfE (for example, Flood Resilient Schools)
- UKRI – the research councils funding
- Business in the community
- Green recovery challenge fund
- Partnership funding (for example, contributions from partners, local authorities, businesses and communities et

## 5.2. Main Recommendations

Recommendations	Lead Stakeholders	Consulting stakeholders
Communicate the explanation for the previous problems with the flood warning system and explore what further improvements and enhancements could be made.	EA	WODC, LLFA and residents.
Re-establish the Agency flood group meetings to discuss problems and to look at strategies to combat flooding due to Climate Change. Have periodic meetings with the local flood group to discuss the issues and recommendations with representatives from key authorities.	LLFA	All Authorities
Update the 2014 model with updated level information, especially downstream of the Aquarius Bridge through to the footpath at Langel Common. Include main tributaries through Witney	EA	WODC, LLFA, WFMG
Increased EA / riparian maintenance to be carried out along the River Windrush through and downstream of Witney. Proactive visits and encouragement to ensure riparian owners carry out their duties.	EA	Landowners, WFMG
Investigate if the river could be modified to increase flow capacity during severe conditions, especially between New Bridge Street through to the footpath in Langel Common.	EA	Landowners, LLFA and WODC.

Investigate if the perimeter ditch of the Aquarius site can be modified/ diverted to increase flow capacity.	WODC	EA, Landowners, LLFA
Look at improving flows through Langel Common footpath to ensure flood plain connectivity is improved during all flood events.	EA	LLFA, Landowners, WODC
Install gauge boards from Woodford Mill through to Langel Common.	EA	WFMG, LLFA, WODC
Set up a Flood Warden network with local volunteers to record the levels during flood events.	LLFA	EA, WFMG, OCC Emergency Planning Team
Look at opportunities for flood storage and increased flood plain capacity upstream of Witney and Crawley such as nature based solutions through partnership working.	EA	Landowners, LLFA, WODC
Look at opportunities for schemes to manage flows upstream of the Hailey Road drain such as nature based solutions through partnership working.	WODC	LLFA, EA Landowners, WFMG
Property flood resilience (PFR) measures which improve the resilience of the community before a flood occurs. Many properties have already carried out measures on their properties, but further funding and support may be available to help more people.	Homeowners	WODC, EA, LLFA
Measures to improve the resilience of existing public or community-owned infrastructure.	All Local Government Bodies	
Local community volunteer approaches to improve the community's ability to plan, respond and recover from flooding; link to local community emergency plans; encourage affected care home to develop Business Continuity Plan and Evacuation Plan.	All	Communities and Residents

WODC to continue regular maintenance of their ordinary watercourse assets and use their powers under the Land Drainage Act 1991 to ensure riparian owners carry out required maintenance.	WODC	Landowners
OCC to regularly check and maintain highway assets through Witney, in line with their current maintenance regimes. Any affected areas that haven't been checked after December 2020 should be prioritised. OCC seek to clarify ownership and maintenance responsibilities for watercourses, particularly where these are located within or near to the highway.	OCC Highways	LLFA and residents.
Bridge Street bridge to be checked regularly and de-silting under the bridge to be investigated, noting that without de-silting being also undertaken on the upstream side of the bridge there would be little benefit to only de-silting under the bridge.	OCC Highways	EA
Privately owned drainage systems to be checked for blockages and defects and remedial works to be carried out where necessary. Connectivity downstream to be confirmed.	Developers, Landowners	WODC, LLFA
Foul sewers to be checked for surface water connections, blockages and capacity issues. Remedial works to be carried out as necessary to minimise surface water entering the system and increase capacity.	TW	LLFA, WODC

### 5.3. Communities and Residents

(e.g. Town/Parish Council, The National Flood Forum, community group, land owners and affected residents)

Nominate a Community Flood Warden to help coordinate the following:

- Preparing household emergency plans for vulnerable properties in this area.
- Regularly inspecting ditches and pipework in the area of flood risk. Report blockages or other issues to the land owner and the LLFA.
- Explore options for property level protection and implement any recommendations. This could include additional drainage at the rear of properties, self-sealing air bricks and flood barriers.

Information on flood prevention measures for home owners, communities and businesses can be found on the Flood Toolkit:

[www.oxfordshirefloodtoolkit.com/risk/prevention](http://www.oxfordshirefloodtoolkit.com/risk/prevention)

Residents should check whether they are at risk of flooding by using the long term flood risk service <https://www.gov.uk/check-long-term-flood-risk>. If they are at risk of flooding they should sign up for flood warnings by visiting [sign up for flood warnings-gov.uk](https://www.gov.uk/sign-up-for-flood-warnings).

Permanent measures such as installing floodgates, raising electrical sockets and fitting non-return valves on pipes can also be considered. WODC, OCC, the EA and the National Flood Forum can provide advice on these matters and more information can be found at:

[www.oxfordshirefloodtoolkit.com/emergency/preparation](http://www.oxfordshirefloodtoolkit.com/emergency/preparation)

<https://nationalfloodforum.org.uk/>

Explore community wide solutions (e.g. attenuation areas, overflow routes, tree planting). Use the Flood Toolkit Funding Tool to find sponsors who may be willing to help fund improvement projects: [www.oxfordshirefloodtoolkit.com/risk/funding](http://www.oxfordshirefloodtoolkit.com/risk/funding)

Continue to report flood incidents to the LLFA at:

[www.oxfordshirefloodtoolkit.com/emergency/report-flood](http://www.oxfordshirefloodtoolkit.com/emergency/report-flood). Endeavour to obtain as much evidence of flood events as possible, such as photographic and video evidence.

Residents to explore obtaining Government subsidised flood insurance via Can Flood Re Help Me? <https://www.floodre.co.uk/>

#### **5.4. Lead Local Flood Authority (LLFA)**

LLFA Team to work with the Oxfordshire County Council Emergency Planning Team and the EA to set up and support a community based Flood Warden Network.

Assist the Oxfordshire County Council Emergency Planning Team, the EA and other flood management authorities to support the community in the production of a community flood plan and provide advice to residents on how to explore options for property level protection.

Inform owners of the drainage systems and watercourses within the overall surface water catchment area of their legal responsibilities.

Re-establish the Risk Management Authority Flood Group meetings to discuss problems and to look at strategies to combat flooding due to climate change. Have periodic meetings with the local flood group to discuss the issues and recommendations with representatives from key authorities.

Assist WODC in looking at opportunities for schemes to manage flows upstream of the Hailey Road drain such as nature-based solutions through partnership working.

#### **5.5. Highway Authority (Oxfordshire Highways)**

Regularly check and maintain highway assets through Witney in line with their current maintenance regimes. Any affected areas that haven't been checked after December 2020 should be prioritised.

Assess the capacity of the highway assets in the affected areas and identify any areas with insufficient capacity for draining runoff from the highway. Where this leads to flood risk to properties improvement works should be considered.

Assess the suitability of third-party drainage systems accepting discharge from highway drainage systems and report any unsatisfactory areas to the relevant risk management authorities.

Work with the community and LLFA to clarify ownership and maintenance responsibilities for watercourses, particularly where these are located within or near to the highway.

Bridge Street bridge to be checked regularly and de-silting under the bridge to be investigated, noting that without de-silting being also undertaken on the upstream side of the bridge there would be little benefit to simply de-silting under the bridge.

## **5.6. Water Authority Thames Water Utilities (TW)**

Assess the sources of water entering the public sewerage system. Foul sewers to be checked for surface water connections, blockages and capacity issues. Remedial works to be carried out as necessary to minimise surface water entering the system and increase capacity.

Assess the capacity of their assets and identify any areas of insufficient capacity. Where this leads to flood risk to properties improvement work must be considered.

## **5.7. West Oxfordshire District Council**

Continue to consult with the EA and LLFA as required in respect of planning applications for new developments to reduce flood risk. Aim to ensure that all works are carried out in accordance with the approved plans and documents.

Review the planning policies relating to developments in the vicinity of the flooding incident, together with any flood risk assessments and drainage designs. Consider contacting the developers to take action in the event that any items relating to surface water drainage and flood risk are not evident or ineffective in the final developments or in the construction period.

Utilise their enforcement powers under Section 25 of the Land Drainage Act 1991 where it is considered that riparian owners are failing to maintain ordinary watercourses in their ownership.

Continue regular maintenance of their ordinary watercourse assets, in line with current maintenance regimes and their statutory powers.

Endeavour to assist other flood risk management authorities and land owners in the preparation of a detailed plan of assets relating to drainage and flood risk, to share with the LLFA and the community.

Investigate if the perimeter ditch of the Aquarius site can be modified/ diverted to increase flow capacity.

Support developers and landowners to investigate private drainage and check for blockages and defects with remedial works to be carried out where necessary.

Continue to support homeowners and businesses in providing individual property level protection.



## **5.8. Environment Agency (EA)**

Assist Oxfordshire County Council Emergency Planning Team and the LLFA to support the community in the establishment of a community based Flood Wardens network.

Fully understand and communicate the explanation for the previous issues with flood warnings for Witney. Consider what further improvements could be made to the alerts for Witney (and West Oxfordshire).

Update the 2014 model with updated level information, especially downstream of the Aquarius bridge through to the footpath at Langel Common. Include main tributaries through Witney. Fully understand the issues affecting river levels upstream of Bridge Street.

Increased maintenance to be carried out along the river Windrush through and downstream of Witney. Proactive visits to riparian owners and encouragement to ensure they carry out their duties, also work with local groups to ensure regular maintenance is carried out.

Investigate if the river could be modified to increase flow capacity during severe conditions, especially between New Bridge Street through to the footpath in Langel Common.

Look at improving flows through Langel Common footpath to ensure flood plain connectivity is improved during all flood events.

Install gauge boards from Woodford Mill through to Langel Common.

Look at opportunities for flood storage and increased flood plain capacity upstream of Witney and Crawley such as nature based solutions through partnership working.

## **5.9. Land Owners and Developers**

Developers should work with local authorities to ensure all development is completed in accordance with approved plans and documents, and planning policy.

Land owners should undertake regular inspection and maintenance of their drainage systems in accordance with a defined maintenance regime. Further, they should identify and develop a detailed plan of their assets to share with the LLFA, other flood risk management authorities and the community.

Land owners should assess the capacity of their drainage systems and identify any areas with insufficient capacity for the collection, conveyance, storage and disposal of surface water. Where this could lead to runoff to the public highway or nuisance to third party private property, improvement works should be considered.

Landowners who are riparian owners are responsible for carrying out work to maintain the natural flow of water in the relevant watercourse. Such work will include

the removal of significant blockages and the removal of vegetation if it is causing premature flooding to third party land and or property.

Review the library of flood guides on the Oxfordshire Flood Toolkit.

Agricultural land owners should carry out works to their land to reduce surface water runoff. These include following principles of good soil husbandry and providing land drainage systems such as ditches (<https://www.gov.uk/guidance/create-and-use-a-soil-management-plan>).

These works help to retain the natural land drainage regime and provide the best soil conditions for the continued agricultural use of the land. Examples of good practice for reducing surface water runoff from agricultural land are:

- Ploughing fields in a perpendicular direction to the slope of the land, reducing the effect of channeling of water over the land when it rains
- Using techniques and machinery that limit compaction of soils
- Growing crops that match the capability of the land, particularly in relation to the timings of activities and not overworking soils through the year
- Providing new ditches, sub-soil drainage and outfalls, and reinstating and regularly maintaining existing ditches. Old existing ditches may be completely filled and difficult to see. The type of soil make-up, type of flora and overall lie of the land can help to determine the routes of filled in historic ditches
- Preventing changes to the levels of the land that would cause channeling of surface water to a single point where this would not naturally occur.

It should be noted that following good practice for managing surface water runoff cannot completely remove the risks of natural land drainage and the associated quantities and flow routes of runoff that can cause flooding.

## **6. DISCLAIMER**

The findings of the report are based on a subjective assessment of the information available by those undertaking the investigation and therefore may not include all relevant information. As such it should not be considered as a definitive assessment of all factors that may have triggered or contributed to the flood event.

Any recommendations outlined in this Section 19 Flood Investigation Report will be for the relevant responsible body or persons to assess in terms of resource implications, priority and cost/benefit analysis of the proposal. Moving forward, these may be included in the action plan linked to the Local Flood Risk Management Strategy or in the relevant risk management authority's future work programme as appropriate.

The opinions, conclusions and any recommendations in this Report are based on information provided to West Oxfordshire District Council and Oxfordshire County Council.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the time of preparation and Oxfordshire County Council expressly disclaims responsibility for any error in, or omission from, this report arising from or in connection with those opinions, conclusions and any recommendations.

The implications for producing Flood Investigation Reports and any consequences of blight have been considered. The process of gaining insurance for a property and/or purchasing/selling a property and any flooding issues identified are considered a separate and legally binding process placed upon property owners and this is independent of and does not relate to the information in this report highlighting flooding to properties at a street level.

Oxfordshire County Council do not accept any liability for the use of this report or its contents by any third party.

## **ACRONYMS**

WODC West Oxfordshire District Council  
OCC Oxfordshire County Council  
EA Environment Agency  
TW Thames Water  
WFMG Witney Flood Mitigation Group  
FIR Flood Investigation Report  
F&WMA Flood and Water Management Act 2010  
LDA Land Drainage Act 1991  
LLFA Lead Local Flood Authority  
WRA Water Resources Act 1991  
PFR Property Flood Resilience

## **USEFUL LINKS**

### **Highways Act 1980:**

[www.legislation.gov.uk/ukpga/1980/66/contents](http://www.legislation.gov.uk/ukpga/1980/66/contents)

### **Water Resources Act 1991:**

[www.legislation.gov.uk/ukpga/1991/57/contents](http://www.legislation.gov.uk/ukpga/1991/57/contents)

### **Land Drainage Act 1991:**

[www.legislation.gov.uk/ukpga/1991/59/contents](http://www.legislation.gov.uk/ukpga/1991/59/contents)

**EA - 'Living on the Edge'** a guide to the rights and responsibilities of riverside occupation: [www.gov.uk/government/publications/riverside-ownership-rights-and-responsibilities](http://www.gov.uk/government/publications/riverside-ownership-rights-and-responsibilities)

### **EA - Prepare your Property for Flooding:**

How to reduce flood damage Flood protection products and services

[www.gov.uk/government/publications/prepare-your-property-for-flooding](http://www.gov.uk/government/publications/prepare-your-property-for-flooding)

### **EA - Long term flood risk service:**

<https://www.gov.uk/check-long-term-flood-risk>

### **EA - Sign up for flood warnings:**

[Sign up for flood warnings - GOV.UK \(www.gov.uk\)](http://www.gov.uk/sign-up-for-flood-warnings)

### **EA - Up to date information on flood alerts & warnings:**

[Check for flooding - GOV.UK \(www.gov.uk\)](http://www.gov.uk/check-for-flooding)

### **Oxfordshire County Council Flood and Water Management Web Pages:**

[www.oxfordshirefloodtoolkit.com](http://www.oxfordshirefloodtoolkit.com)

<https://www.oxfordshire.gov.uk/residents/fire-and-public-safety/emergency-planning/community-resilience>

### **West Oxfordshire District Council Flood Reports and Reviews;**

<https://www.westoxon.gov.uk/environment/flooding/flood-reports-and-reviews/>

### **Flood and Water Management Act 2010**

<http://www.legislation.gov.uk/ukpga/2010/29/contents>

## **USEFUL CONTACTS**

### **Oxfordshire County Council Highways:**

Tel: 0345 310 1111

Website: [www.fixmystreet.oxfordshire.gov.uk](http://www.fixmystreet.oxfordshire.gov.uk)

### **Environment Agency:**

General Tel: 08708 506 506 (Mon-Fri 8-6) Call charges apply.

Incident Hotline: 0800 807060 (24 hrs)

Floodline: 0345 988 1188

Email: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)

### **Thames Water**

Emergency Tel: 0800 316 9800 (select option 1)

Website: [www.thameswater.co.uk/help-and-advice/bursts-and-leaks/report-a-leak-orburst-pipe](http://www.thameswater.co.uk/help-and-advice/bursts-and-leaks/report-a-leak-orburst-pipe)



## Appendix A – Further Photos



Bridge at New Bridge Street, Aquarius Site access



River Windrush looking downstream from Bridge Street





Channel through Woodford Mill



Weir near Woodford Mill



Gauge at Blanket Hall in 2007. Photo provided by Witney Flood Mitigation Group



Flooding behind Eastfield Road backing up from Hailey Road Drain. Visible flow route from Vanner Road. Photo provided by Witney Flood Mitigation Group





Upstream of Bridge Street Bridge



Riverside Gardens 24th December 2020 approximately 23:10PM. Level recorded at 23:15pm by the river gauge was 81.443m AOD. Photo provided by Witney Flood Mitigation Group