Section 19 Flood Investigation Report

Date: 25th September 2025

Section 19 Flood Investigation Report:
River Dorn through Sandford St Martin and the Bartons
Date of Flood Incident: 24/11/2024

Revision Schedule

Version	Date	Details	Author	Checked	Approved
1	25/09/2025	Draft Bartons Flood Investigation Report for review	JSF	AD	CM
2	03/12/2025	Additional information from Farmer Cluster comment	JSF	AD	CM
3	27/01/2026	Accessibility Review	JSF	AD	CM

Executive Summary

This Section 19 (S19) 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 OCC into the flood incident that occurred in Sandford St Martin, Westcott Barton, Middle Barton, and Steeple Barton the 24th of November 2024.

November 2024 Flood Event

A total of 21 properties in the Dorn catchment from Little Tew through to Steeple Barton were confirmed as flooding internally on the 24th of November 2024. Little Tew is situated on a tributary of the Dorn, with a more constrained and in parts culverted, smaller channel. Its location, contributing factors to the flooding and therefore recommendations are in part distinct from those villages on the Dorn itself. As a result of site visits in June and July 2025, a decision was made for Little Tew to be separated as its own Section 19 flood report.

This report focuses on the 15 properties and businesses upstream from Soho Farmhouse down through to Steeple Barton. Whilst some properties were affected by surface water flooding, or Tyte Brook, a tributary of the Dorn at Sandford St Martin, the flooded locations will be referred to as on The Dorn. These 15 properties are those that were confirmed to have flooding internally by West Oxfordshire District Council (WODC), In some cases, flood water remained inside homes for multiple days, with some residents out of their homes for months with properties being uninhabitable. As such, the flooding met the threshold for undertaking a formal S19 investigation (*Internal flooding (excluding to basements) to five or more residential properties or businesses within an area of 1km²*).

Flooding occurred on The Dorn as a result of unprecedented high rainfall for the area falling over a short period. The rainfall experienced over the 23rd and 24th of November 2024 was the highest and sixth highest daily rainfall recorded since records began at the nearest rain gauge station in Chipping Norton.

The sheer volume of water flowing through the River Dorn, combined with surface water runoff from surrounding land and roads, exceeded the channel capacity in multiple locations.

The main recommendations arising from this S19 investigation are summarised below.

Main Recommendations

Recommendation	**Lead Stakeholders**	**Consulting stakeholders**	**Time Frame (from publication)** Short term – delivered within 6 months Medium term – 1 - 2 years Long term - 2 years + On-going - Continuous activities
Support landowners in adopting sustainable land management practices, including woodland pasture conversion, improved grassland management, and installation of buffer strips and bunds.	OCC LLFA, Catchment partnership, Landowners		Medium term
Promote ecological enhancements such as wet woodland creation, sediment traps, debris dams, and embankment re-profiling to improve in-channel storage and biodiversity.	OCC LLFA, Catchment partnership, Landowners		Medium term
Continue collaboration with the Evenlode Catchment Partnership and North East Cotswold Farmer Cluster to implement natural flood management (NFM) interventions across the catchment.	OCC LLFA, Catchment partnership, Landowners		Ongoing

Engage with adjacent landowners to explore opportunities for reducing surface water flood risk at Soho Farm House	Soho Farm House, Landowners	OCC LLFA, WODC	Medium term
Review the condition and functionality of the twin culverts at ‘Poor Bridge’.	Landowner	WODC	Short term
Explore feasibility of installation of river level gauges at strategic locations along the River Dorn to improve understanding of flood profiles and support future event analysis.	OCC LLFA, Landowners		Medium term
Consider modelling the potential benefits of increased flood storage at key locations, including the confluence of the Dorn and the tributary from Little Tew at the B4022, and upstream of Westcott Barton, subject to landowner consent.	OCC LLFA		Medium term
WODC to use their powers under the Land Drainage Act 1991 to ensure Riparian owners carry out required maintenance.	WODC		Ongoing
Identify if any assets need to be added to the Asset Register maintained by the LLFA.	OCC LLFA		Short term

Consideration of practical Property Flood Resilience (PFR) measures to mitigate internal flooding of residential properties. This may be limited for properties that experienced internal flooding from groundwater rising up through the floor. Guidance on PFR measures can be viewed through Ciria document (C790F) and a link to this document is provided below: https://www.ciria.org/ItemDetail?iProductCode=C790F&Category=FREEPUBS&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91 Funding in the form of grants, may be available to support the property owners in delivering PFR measures – see Section 5.1.	Property Owners	OCC LLFA	Ongoing

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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 LLFA must, to the extent that it considers is 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
   c. 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.

The LLFA have a set criteria which determines when a S19 report is required. The criteria are set out below.

LLFA/OCC Criteria

- Internal flooding (excluding to basements) to five or more residential properties or businesses within an area of 1km².

- Internal flooding of a business premises employing more than 10 people within an area of 1km².

- 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 meeting for consideration.

1.2. Site location and context

This report relates to a flood event which occurred in villages on the River Dorn catchment, West Oxfordshire, OX7 (Figure 1) on 24th November 2024.

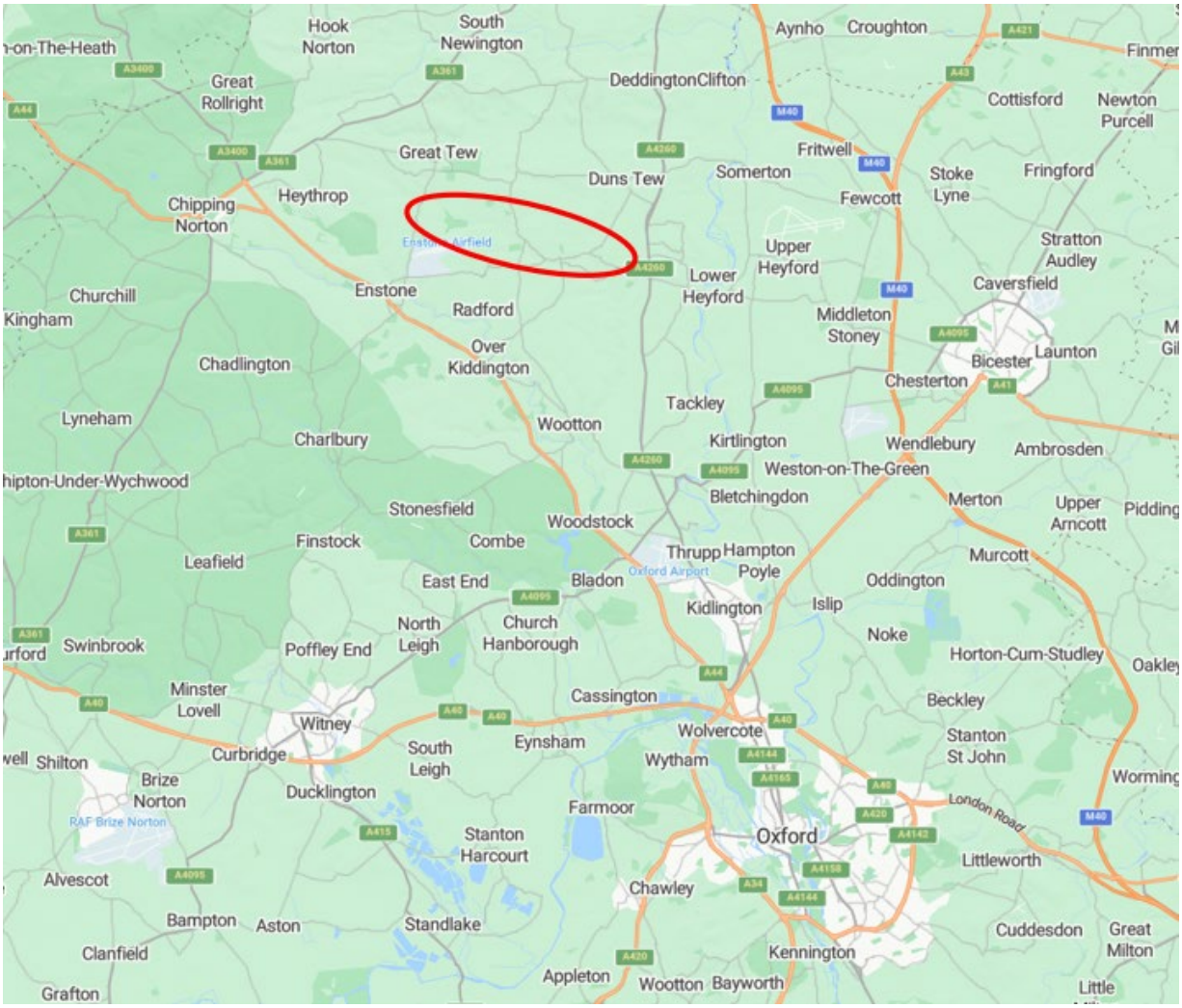

Figure 1 - Villages on the Dorn location in relation to Oxford/Bicester. Source: Microsoft 2025

The focus of this report is on villages located roughly 15km west of Bicester and 20km north of Oxford, along the River Dorn running west to east shown in Figure 2 through Soho Farm House, Sandford St Martin, Westcott Barton, Middle Barton, and Steeple Barton. The flooded properties and businesses are primarily adjacent to the Dorn with some in Sandford and Middle Barton affected by flooding from tributaries or surface water.

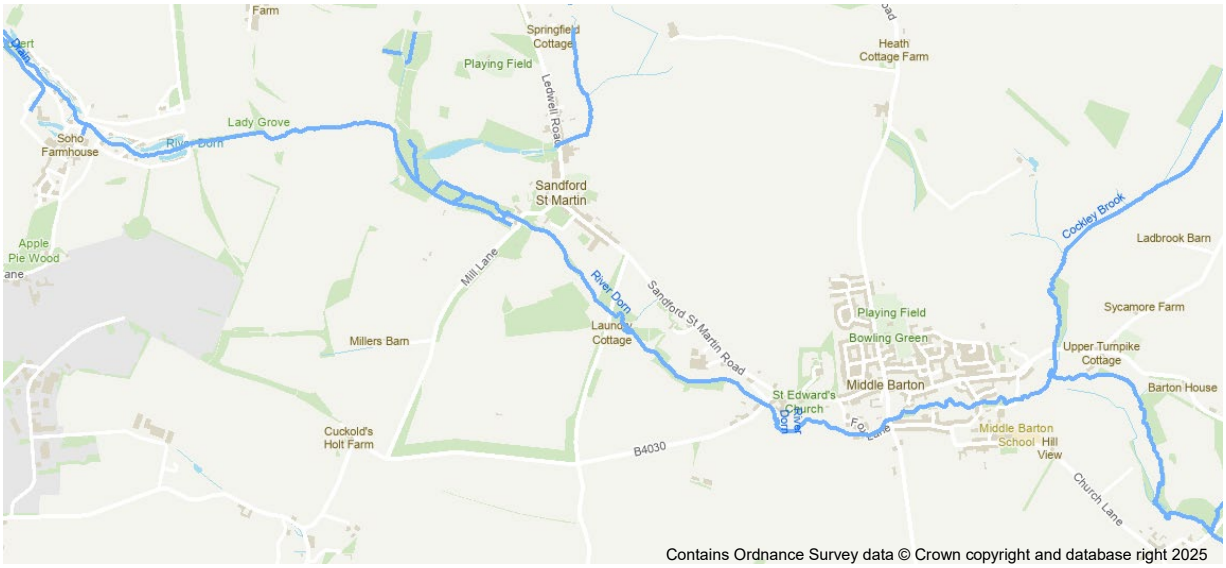

Figure 2 - Villages along the River Dorn

Figures 3 and 4 show the Environment Agency's Risk of Flooding from Rivers and the Sea map (RoFRS). The maps have been split into two in order to show the multiple locations within the report. Many of the flooded properties in the areas investigated by this report have a greater than 3.3% annual probability of flooding from rivers or the sea.

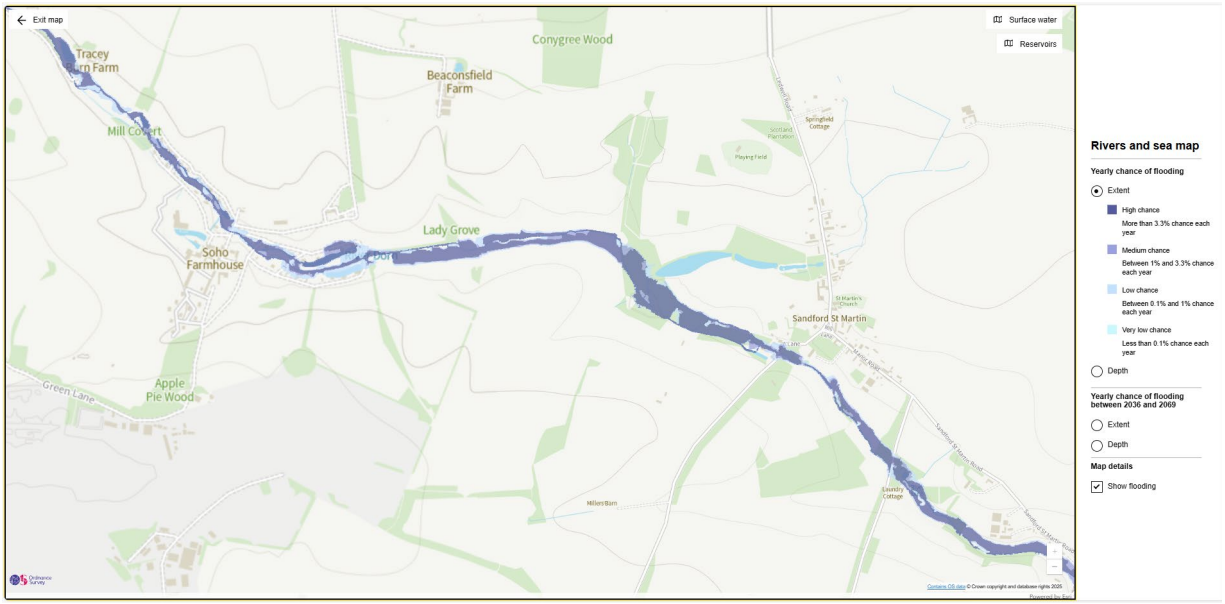

Figure 3 - RoFRS map for the easterly areas within this report Source: DEFRA, contains OS Data 2025.

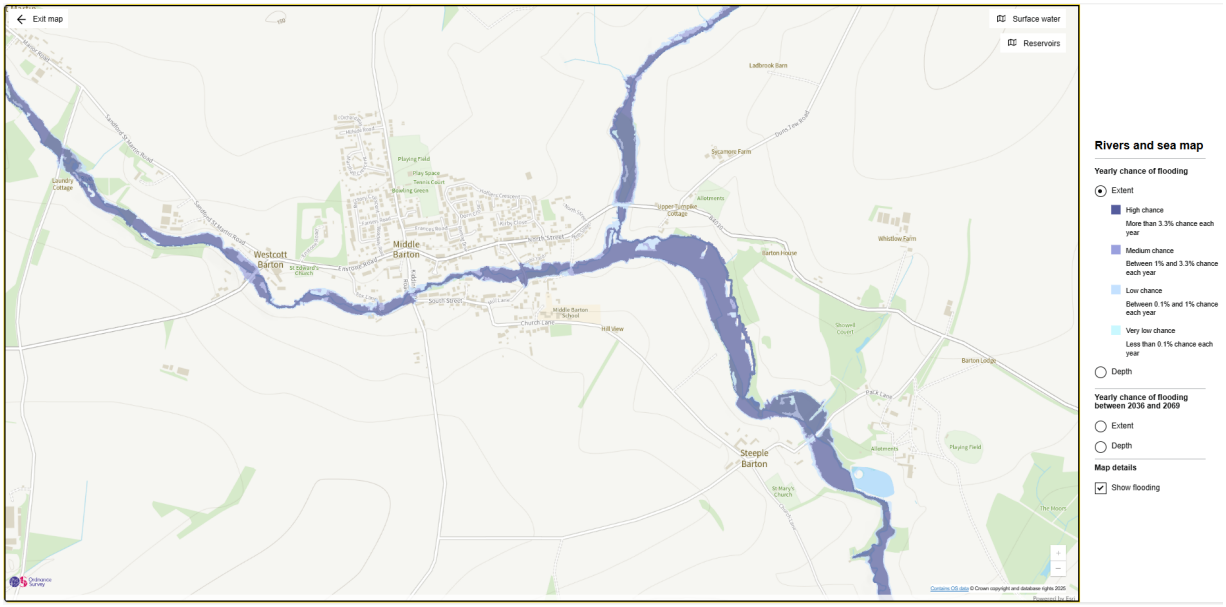

Figure 4 - RoFRS map for the easterly areas within this report Source: DEFRA, contains OS Data 2025.

Figure 5 and 6 illustrate the Risk of Flooding from Surface Water (RoFSW) for the area, taken from the Environment Agency website (Technical map - Check your long term flood risk - GOV.UK). This map indicates that most of the residential properties are within areas of low risk from surface water flooding. The flooding experienced by facilities at Soho Farmhouse are in a location of high surface water flooding probability with a clear surface water flow path from high land to the west of the B4022 towards the affected buildings.

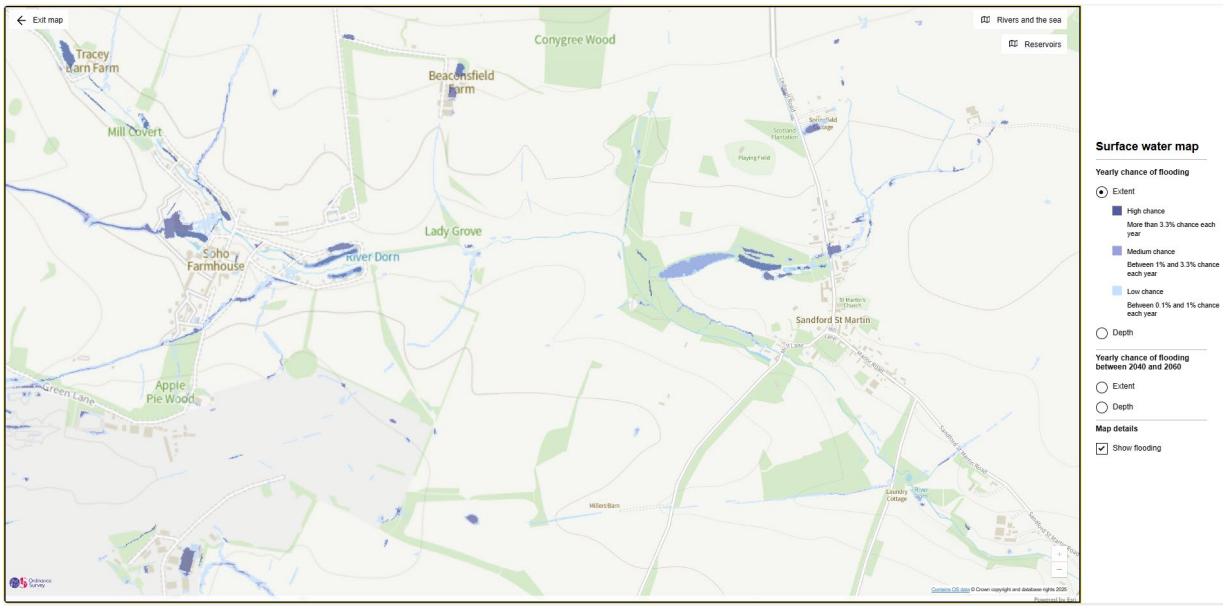

Figure 5 - (westerley areas) Risk of Flooding from Surface Water Map according to risk of surface water flooding annually. Source: DEFRA, contains OS Data 2025.

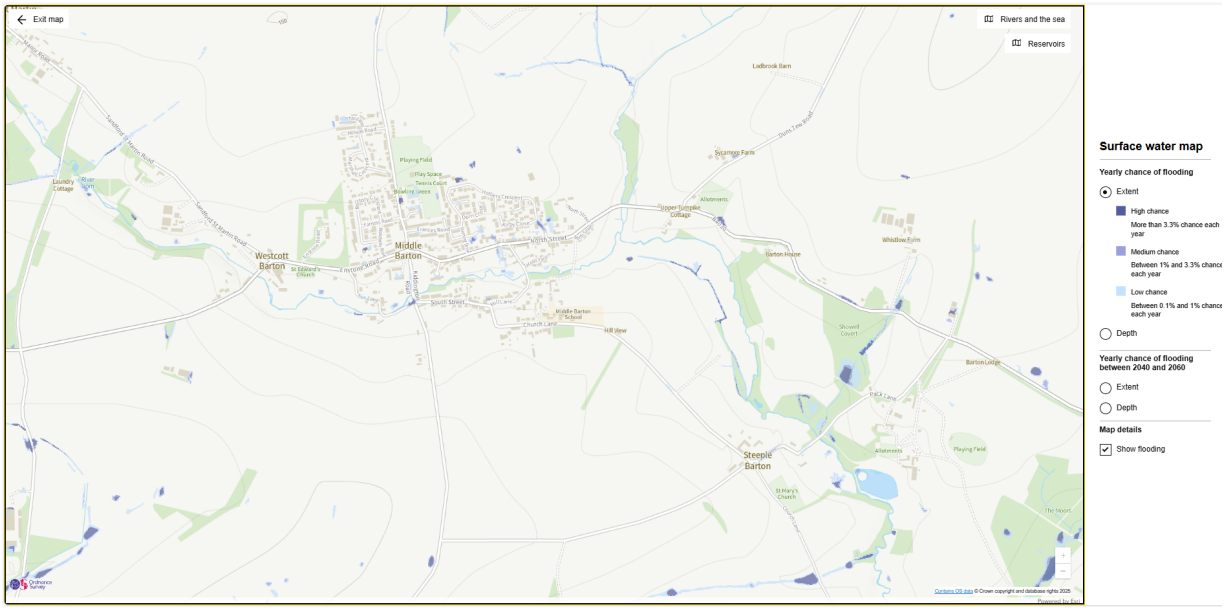

Figure 6 – (Easterley areas) Risk of Flooding from Surface Water Map according to risk of surface water flooding annually. Source: DEFRA, contains OS Data 2025.

1.3. Previous flood events

The villages along the Dorn have historically experienced flooding. Information on previous flood events has been gathered both from the local Strategic Flood Risk Assessment (SRFA) and from flood incidents reported to OCC. Details are provided below:

- July 2007 – Fluvial flooding – Oxfordshire experienced widespread flooding across the county with rainfall levels the highest since records began, with a total of 126mm of rain recording at RAF Brize Norton's weather station on the 20th of July. An estimated 1,631 homes and 72 businesses were flooded across West Oxfordshire. Following the event, a flood report was written on Little Tew by WODC and OCC proposed a programme of highway drainage maintenance including gully cleaning, grip maintenance and flood defence improvements.

Flood events in Middle Barton - two surface water incidents were recorded in Middle Barton off Kiddington Rd and Church Ln, both in 2020. A section 19 flood report for April 2024 was completed with the source of flooding again being surface water. Records also show flooding to a property in Sandford St Martin in 2020 and Middle Barton properties adjacent to the Mill Lane ford on the Dorn.

2. RECENT FLOOD ISSUES AND INVESTIGATION

2.1. Summary of November 2024 Floods

The Met Office's report into Storm Bert, describes severe weather impacts across the UK on 22nd – 25th November 2024[1]. Storm Bert brought heavy rain, strong winds, and disruptive snow to large parts of the country, particularly affecting southern and western regions. Across the three day period of 22nd-24th November, the Met Office reported that Oxfordshire received the whole monthly rainfall average or more, leading to significant flooding issues across the county. Communities across the Cherwell and West Oxfordshire districts were most impacted, with multiple locations within this district experiencing more than 5 properties flooding internally.

The heavy rainfall from the 22nd to the 24th of November led to increased surface runoff in several locations across the catchment. As this runoff flowed through the catchment, the river levels of the River Dorn began to rise, peaking on the 24th of November and causing flooding in various areas. The sheer volume of water in the catchment on the 24th of November was likely the main cause of the flood events, particularly as river levels approached or exceeded channel capacity. Additionally, discussions with residents suggested partial blockages of structures, and some obstructions in the channel in some areas may have contributed to flooding in some locations. Whilst some of the properties that reported flooding were situated in Flood Zones 2 or 3, it should be noted that some properties that reported flooding were located in Flood Zone 1, land identified as having a low probability of flooding by the Environment Agency's Flood Map for Planning.

2.2. Rainfall and River Data analysis

As mentioned in Section 2.1, across the three-day period of 22nd-24th November, the Met Office reported that Oxfordshire received their monthly rainfall average or more (Figure 7). Many parts of the county received particularly heavy rainfall on these dates, with the UK recording its wettest calendar day on 23rd November– as an average across the whole country – since 3rd October 2020.

[1] Storm Bert, 22 to 25 November 2024 (Met Office, 2024)

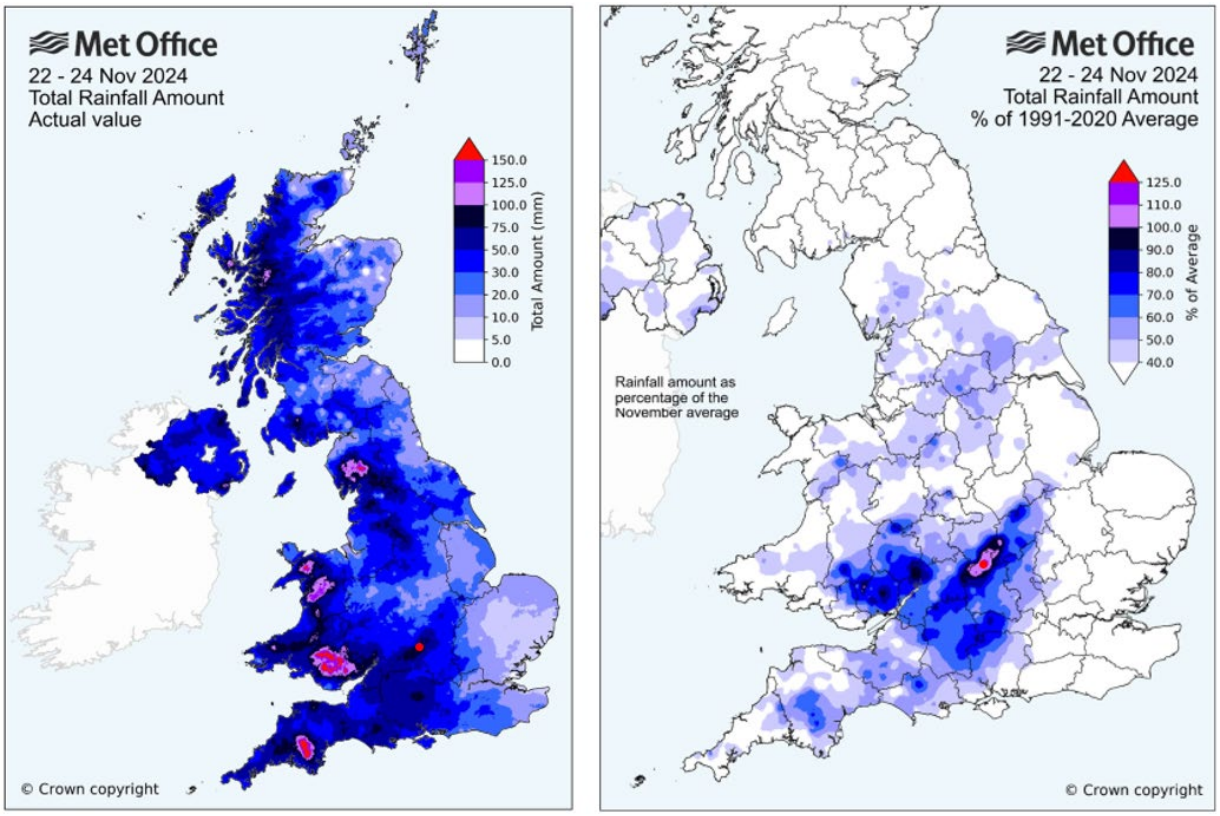

Figure 7 – 22nd-24th November total rainfall amount (left) and % of 1991-2020 November average (right). Red dot = Dorn at Sandford St Martin location (Met Office, 2024).

To explore rainfall, data has been obtained from the Department for Environment Food & Rural Affairs' Hydrology Data Explorer[2]. At the Chipping Norton rain gauge, the nearest to the Tews, Bartons and Sandford St Martin (around 10km to the west) approximately 77mm of rain fell across November 23rd-24th, with a 15-minute maximum of 5mm falling at 1pm on the November 24th. The daily rainfall total of 45mm on the 24th of November is the sixth highest since records began at Chipping Norton gauge in December 1989. It should be noted that this data is still classified as unchecked by DEFRA, meaning it is raw and uninspected, and may change in the future.

[2] Hydrology Data Explorer, 2025. Department for Environment Food & Rural Affairs.

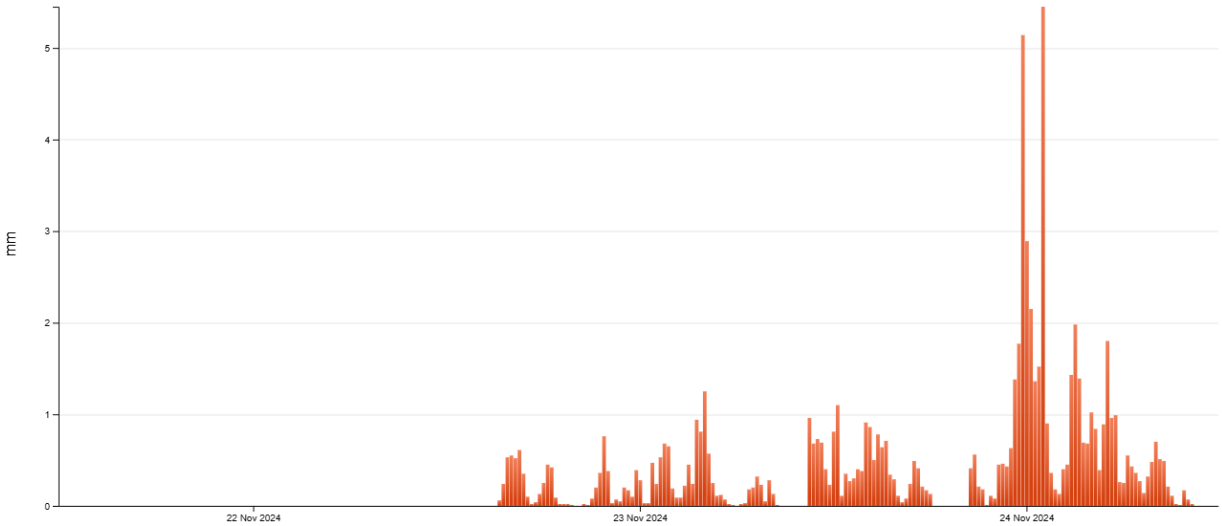

Figure 8 - Total recorded rainfall at Chipping Norton Gauge 22nd – 24th November (DEFRA 2025).

Although there is no river gauge along the River Dorn, the river levels recorded at the Bloxham Brook river level gauge (approximately 9km to the north) shows the effects of the prolonged rainfall event (Figure 9). Prior to the rainfall event, river levels in the Bloxham Brook recorded around 0.6m before steadily increasing on the morning of the 23rd of November, drastically peaking in the afternoon of the 24th at a 2.2m. While this provides an overview of river behaviour in the vicinity, the numerical values are not directly comparable, as Bloxham Brook has a different capacity than the River Dorn. However, the graph offers a solid representation of the fluvial response to the prolonged rainfall.

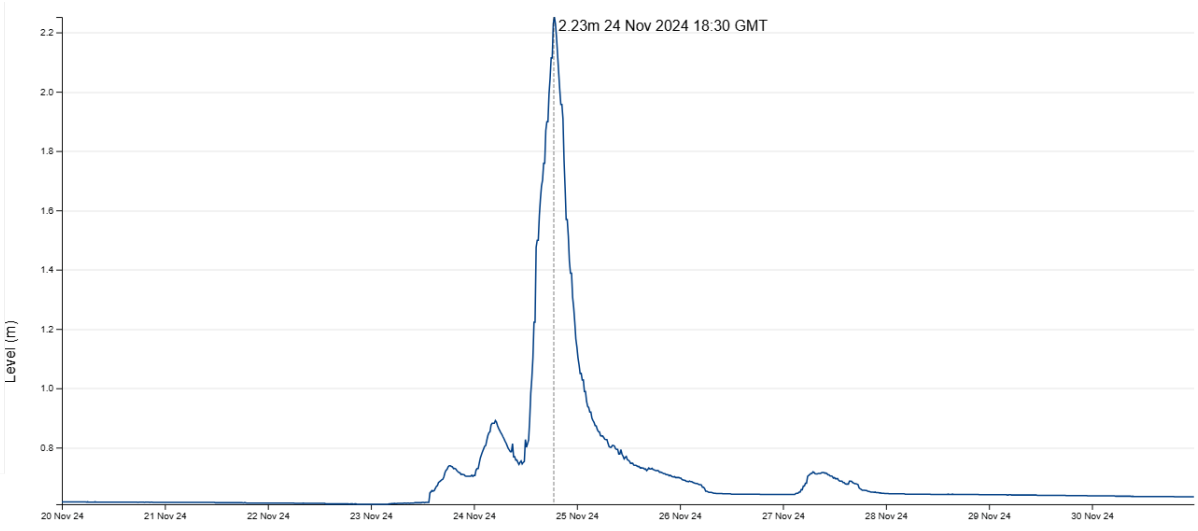

Figure 9 – River levels in the Bloxham Brook prior to, during and flooding the flood event – maximum level peaking a 2.2m (DEFRA 2025).

The data presented here supports the suggestion that county-wide intense rainfall on the 23rd and 24th of November was the primary cause of flooding to villages along the River Dorn. The heavy rainfall likely followed surface water flow routes through surrounding land, making its way to the Dorn, which had already collected rainfall from its upstream catchment. Consequently, the River Dorn experienced an increase in flow and level due to the rainfall, likely raising the risk of out of bank fluvial flooding.

2.3. Site Visits and Observations

Two site visits were conducted in June and July 2025 with representatives of OCC, walking the Dorn in sections between the Tributary through Little Tew (separate S19 report), down through Soho Farm House, to Sandford St Martin, and the Bartons. Personnel met with local residents from some of the affected properties.

The River Dorn is a river which in most part is in a relatively natural state through the length observed in site visits for this investigation. There are however multiple structures for crossings and some properties in close proximity to the channel, specifically in the downstream sections of Westcott/Steeple Barton where a highway bridge and two fords cross. The condition of the watercourse through its length on the site visits was seen to be good, with no significant maintenance issues identified.

Starting just off the Dorn, at the 'Boat House' at Soho Farm House, a multi-use leisure facility. The affected buildings are shown to be at a high risk of surface water flooding (more than 3.3% chance each year) with a clear surface water flow path from high land to the west of the B4022. Figure 10 below shows the view up that flow path with significant silt deposition in the foreground from the flood event. It is recommended that Soho Farm House engage with adjacent landowners with support where required from WODC/LLFA to explore opportunities to reduce the risk of surface water flooding.

Figure 10 - View up from above the 'Boat House' showing surface water flow path

Figure 11 - Soho Farm House, Risk of flooding from surface water (RoFSW) map. Source: DEFRA, contains OS Data 2025.

Just beyond the downstream end of the Soho Farm House site, the Dorn is culverted for footpath access either side of an unclassified road in twin 750mm diameter concrete pipes, known as 'Poor Bridge' shown in Figure 12. These do appear to be a reduction in cross section relative to the channel upstream and downstream and were reported to have been at times a blockage issue. This section of road is beyond the extent of public highway. Whilst the flood risk from blockage to properties was not significant there is a safety risk in a rainfall event related to clearance of the culverts if they become blocked. The asset owner was advised should they wish to replace with an improved structure, they could apply for Ordinary Watercourse Consent with West Oxfordshire District Council.

Figure 12 - Twin culverts, Poor Bridge

Downstream towards Sandford St Martin, the watercourse makes its way through woodland adjacent to agricultural land. The channel through this section was seen to

be in good condition. One location of note was shown in figure 13 with fallen mature trees across the river. These were not viewed as an issue and would more likely have a small flood risk benefit to downstream villages through slowing the flow through this land and allowing the watercourse to spill out of channel onto the woodland in a high rainfall event.

Figure 13 - Mature trees in channel upstream of Sandford St Martin

The Dorn is joined by tributary Tyte Brook via a number of ponds which provide some limited attenuation before entering the Dorn. One property was affected from Tyte Brook with the kitchen and living room flooded.

In Sandford St Martin, two properties flooded from out of channel flows on the Dorn. A blockage in channel led to build up of flood water behind a dry-stone wall, where weep holes were also partially blocked causing a collapse. The reinstatement can be shown in the colour contrast of stone in Figure 14 below.

Figure 14 - Repaired wall that had collapsed during flood event

A mix of views from those flooded are in resident reports of a surge in the river level, with those further downstream along the Dorn, at Westcott Barton referencing that they felt a sudden release of water further up exacerbated the flood impact.

The collapse of the wall above may have been what was described, but without any solid evidence or alternative leads to investigate it is not possible to make a conclusion on this.

Recording data in the Dorn at multiple locations from level gauges would help better understand both the profile of future rainfall events on the river and also over time enable a comparison of similar events with the introduction of any interventions and their effect on peaks.

As the overall condition and capacity of the River Dorn is good with no significant issues to maintenance observed through its length, a wider catchment based approach to flood management is required. Measures to slow overland flows and reduce flood peak would have a positive effect on flood.

Residents in close proximity to the Dorn, such as the fords should explore the options for property level resilience measures and protection. In these locations there is minimal opportunity for interventions to the channel or modification of structures on it.

There are locations along the Dorn where the profile of the land has possibility for increased storage, examples being at the confluence of the Dorn and tributary from Little Tew at the B4022, and upstream of Westcott Barton. Subject to landowner consent a modelling of the potential benefits of storage could be explored.

Three Properties were flooded on Enstone Road, Westcott Barton, with high levels from the river combined with surface water from the highway that rises steeply to the south west. At Fox Lane, that also rises steeply to the North from the Dorn, surface water flows added to the high levels in the river where an additional 6 properties were affected.

By the ford on Mill Lane, Middle Barton, there has been a build-up of gravel and building material to the river bed immediately downstream of the footbridge within the downstream stone river bank wall section, which may be restricting flow and increasing flood risk to properties adjacent to the river.

The North East Cotswold Farmer Cluster are working with a number of landowners through the Dorn catchment and have identified a number of natural flood management interventions across the catchment that will help to reduce flood risk to downstream properties. These measures aim to restore natural hydrological processes, enhance landscape resilience, and improve ecological value while mitigating flood impacts. Evenlode Landscape Recovery Ltd is a Special Purpose Vehicle designed to crowd in funding and landowner participation for Natural Flood Management (as well as carbon, biodiversity and water quality markets). This is funded in part by Defra, with also Scottish and Southern Electric investing £2m for 200 ha of floodplain reconnection and woodland creation, including areas that will benefit this section of the Dorn.

Key interventions include floodplain reconnection through various approaches, such as reactivating historical paleo channels, reconnecting field boundary ditches, and modifying straight, perched sections of watercourses to encourage lateral flow and wetland formation.

Floodplain wetland mosaics are to be developed to increase water retention and habitat diversity, effectively creating a sponge-like valley floor.

Land use changes subject to landowner consent include converting some areas of arable land to woodland pasture with deliberate canopy planting along flow pathways

and transitioning to improved grassland management—both by changing land use and enhancing existing grasslands. Arable margins will be adapted to include temporary water bodies and metre-high bunds to intercept surface flows, with ridge and furrow techniques employed to slow runoff.

Areas of wet woodland creation will provide additional storage and ecological benefits, while wetlands and in-line sediment traps will be installed to capture sediment and slow flows. Wooded debris dams will be introduced into channels to increase hydraulic roughness, and embankments will be reprofiled to enhance in-channel storage.

Further measures include the installation of buffer strips along arable field margins to slow overland flow, and the use of ditch lines and debris dams to retain water within channels and adjacent field margins. Complexity in woodland planting will be increased through species diversification and natural regeneration following selective willow felling as well as self seeding species. In some areas, channel infilling will be used to promote overtopping into adjacent land, enhancing floodplain connectivity. Together, these interventions form a multi-functional landscape approach that supports flood risk reduction, biodiversity enhancement, and sustainable land management.

3. CONCLUSIONS

An analysis of the rainfall event, and adjacent watercourse level information and site visits undertaken in June and July 2025 provided an overview of the flood profile, the River Dorn and its surrounding catchment.

Whilst there are both natural and modified features that influence flood risk, the river itself was found to be in good condition, with few maintenance concerns on riparian owners and a largely natural channel profile. Specific areas such as the ‘Boat House’ at Soho Farm House were identified as being at high risk of surface water flooding due to topographical flow paths from elevated land to the west. It is recommended that Soho Farm House engage with adjacent landowners, supported by WODC and the LLFA, to explore collaborative options for reducing surface water flood risk.

Structural features such as the twin culverts at ‘Poor Bridge’ present potential constraints to flow and have been reported as occasional blockage points. While no direct flood risk to properties was observed, there are safety implications during high rainfall if Soho Farmhouse staff attempt to clear any blockages.

Resident accounts of sudden surges in river levels cannot be conclusively verified without improved data collection. The installation of level gauges would support better understanding of flood events.

Given the overall good condition of the River Dorn, and flooded properties particularly in downstream locations being close to the channel where there are limited options for intervention aside from property level protection where possible, a catchment-wide approach to flood management is required. Natural flood management interventions being developed by the Evenlode Catchment Partnership and associated farm clusters offer opportunities have an impact on flood peaks as well as environmental benefits. Further exploration of storage potential at key confluence points, subject to landowner engagement, could complement these efforts and contribute to a more sustainable flood management strategy across the catchment.

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, becoming 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.

OCC 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

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 practices relating to third party assets is to notify third party owners of their asset forming part of a flood risk system and assist by advising those third party owners on the condition of their assets and their maintenance responsibilities.

As LLFA, OCC will be looking for support from other risk management authorities, communities and individual homeowners 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 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.

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 Highways England's Design Manual for Roads and Bridges (Volume 4, Section 2). 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 1st of 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

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.

WODC has only 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. Landowners and Developers

Landowners 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 landowners 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.

Landowners 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/

5. RECOMMENDATIONS

5.1. General

Listed below are the recommendations arising from this formal Section 19 Flood Investigation Report. All the actions are initial recommendations that require further discussion with relevant stakeholders to determine their 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 actions. 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
- 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 etc.

5.2. Main Recommendations

The main recommendations arising from this Section 19 investigation are summarised in Table 5-1

Recommendation	**Lead Stakeholders**	**Consulting stakeholders**	**Time Frame (from publication)** Short term – delivered within 6 months Medium term – 1 - 2 years Long term - 2 years + On-going - Continuous activities
Support landowners in adopting sustainable land management practices, including woodland pasture conversion, improved grassland management, and installation of buffer strips and bunds.	OCC LLFA, Catchment partnership, Landowners		Medium term
Promote ecological enhancements such as wet woodland creation, sediment traps, debris dams, and embankment re-profiling to improve in-channel storage and biodiversity.	OCC LLFA, Catchment partnership, Landowners		Medium term
Continue collaboration with the Evenlode Catchment Partnership and North East Cotswold Farmer Cluster to implement natural flood management (NFM) interventions across the catchment.	OCC LLFA, Catchment partnership, Landowners		Ongoing

Engage with adjacent landowners to explore opportunities for reducing surface water flood risk at Soho Farm House	Soho Farm House, Landowners	OCC LLFA, WODC	Medium term
Review the condition and functionality of the twin culverts at ‘Poor Bridge’.	Landowner	WODC	Short term
Explore feasibility of installation of river level gauges at strategic locations along the River Dorn to improve understanding of flood profiles and support future event analysis.	OCC LLFA, Landowners		Medium term
Consider modelling the potential benefits of increased flood storage at key locations, including the confluence of the Dorn and the tributary from Little Tew at the B4022, and upstream of Westcott Barton, subject to landowner consent.	OCC LLFA		Medium term
WODC to use their powers under the Land Drainage Act 1991 to ensure Riparian owners carry out required maintenance.	WODC		Ongoing
Identify if any assets need to be added to the Asset Register maintained by the LLFA.	OCC LLFA		Short term

Consideration of practical Property Flood Resilience (PFR) measures to mitigate internal flooding of residential properties. This may be limited for properties that experienced internal flooding from groundwater rising up through the floor. Guidance on PFR measures can be viewed through Ciria document (C790F) and a link to this document is provided below: https://www.ciria.org/ItemDetail?iProductCode=C790F&Category=FREEPUBS&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91 Funding in the form of grants, may be available to support the property owners in delivering PFR measures – see Section 5.1.	Property Owners	OCC LLFA	Ongoing

Table 5-1 Recommendations

5.3. Communities and Residents

These include Town/Parish Council, Flood Forum, Community Group, landowners and affected residents.

Nominate Community Flood Wardens 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 landowner 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

Residents should check whether they are at risk of flooding by using the long term flood risk service www.gov.uk/check-long-term-flood-risk.lf they are at risk of flooding they should sign up for flood warnings by visiting sign up for flood warnings-gov.uk.

Permanent measures such as installing floodgates, raising electrical sockets and using flood resistant material when doing building work should be considered. WODC, OCC and the Environment Agency can provide advice on these matters and more information can be found at:
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

Continue to report flood incidents to the Lead Local Flood Authority at: 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 OCC Joint Oxfordshire Resilience Team (JORT) and the EA to set up and support a community-based Flood Warden Network.

Assist the JORT, 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 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.

Work with WODC in looking at opportunities for schemes to manage flows upstream such as nature-based solutions through partnership working.

5.5. Highway Authority (Oxfordshire Highways)

Regularly check and maintain highway assets through Woodstock in line with their current maintenance regimes. Add detailed information of the assets to the OCC Asset Register.

Assess the capacity of the highway assets with support from the LLFA and WODC to identify any areas with insufficient capacity for draining runoff from the highway. Where this leads to flood risk to properties improvement works must 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.

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.

Ensure the existing foul system is not compromised from future development proposals.

5.7. West Oxfordshire District Council

Continue to consult with the Environment Agency 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.

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

Support 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. Landowners and Developers

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

Landowners 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.

Landowners 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.

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 (**Error! Hyperlink reference not valid.**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 channelling of water over the land when it rains
- Using techniques and machinery to 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 channelling 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 recommended actions outlined in this FIR 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 WODC and OCC.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the time of preparation and WODC and OCC 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.

WODC or OCC 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
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

USEFUL LINKS

Highways Act 1980:
www.legislation.gov.uk/ukpga/1980/66/contents
Water Resources Act 1991:
www.legislation.gov.uk/ukpga/1991/57/contents
Land Drainage Act 1991:
www.legislation.gov.uk/ukpga/1991/59/contents
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
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
EA - Up to date information on flood alerts & warnings:
Flood alerts and warnings - GOV.UK
Oxfordshire County Council Flood and Water Management Web Pages:
www.oxfordshirefloodtoolkit.com
https://www.oxfordshire.gov.uk/residents/fire-and-public-safety/emergency-planning/community-resilience
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

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

Thames Water
Emergency Tel: 0800 316 9800 (select option 1)
Website: www.thameswater.co.uk/help-and-advice/bursts-and-leaks/report-a-leak- or-burst-pipe