Lambourn Parish Appendix K - Flooding

V1 January 2026

Prepared by Lambourn Parish Council

In conjunction with
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"…little Lambes-bourn…. All summer long (while all thy sisters shrinke)/That of thy tears a million daily drinke;/…. But (while the rest are full unto the top)/All winter long Thou never showst a drop". *Joshua Sylvester, 1598.*

Groundwater and Geology

The Parish of Lambourn is situated on the northern edge of a huge geological feature, the rock stratum known as "the Big Chalk", which underlies a swathe of eastern and southern England. The chalk forms a permeable, porous, fractured layer, known as an aquifer, which allows rainfall, known as groundwater, to infiltrate. It can move both vertically and laterally, saturating the chalk. The level at which the chalk becomes saturated is described as the water table. Below the Parish, the chalk is close to the surface, overlaying a layer of impermeable clay, which prevents the groundwater held in the chalk from seeping away. When the water table rises above the ground's ability to drain it, groundwater discharges.

The River Lambourn

The River Lambourn is a rare chalk stream, one of only 260 in the world. The upper section of the river, which flows through the Parish, is a groundwater-fed winterbourne or seasonal stream. Springs feeding the river generally rise in January or February, following rain which fell a few weeks previously, infiltrating the chalk. The water emerges from the ground as the water table rises. The river continues to flow until about September or October. In very dry years (such as 2022) the river may stop flowing as early as July. Called a winterbourne as it flows after winter rains, the name may also refer to the appearance of the springs (or bournes) in January/February.

Figure 1. Spring-fed pool in Lynch Wood, Lambourn

The official source of the River Lambourn is on the western edge of Lynch Wood in Upper Lambourn, augmented by springs which rise within the Wood. It is a winterbourne downstream as far as Maidencourt, between East Garston and Great Shefford. After this it is a perennial river, flowing all year round.

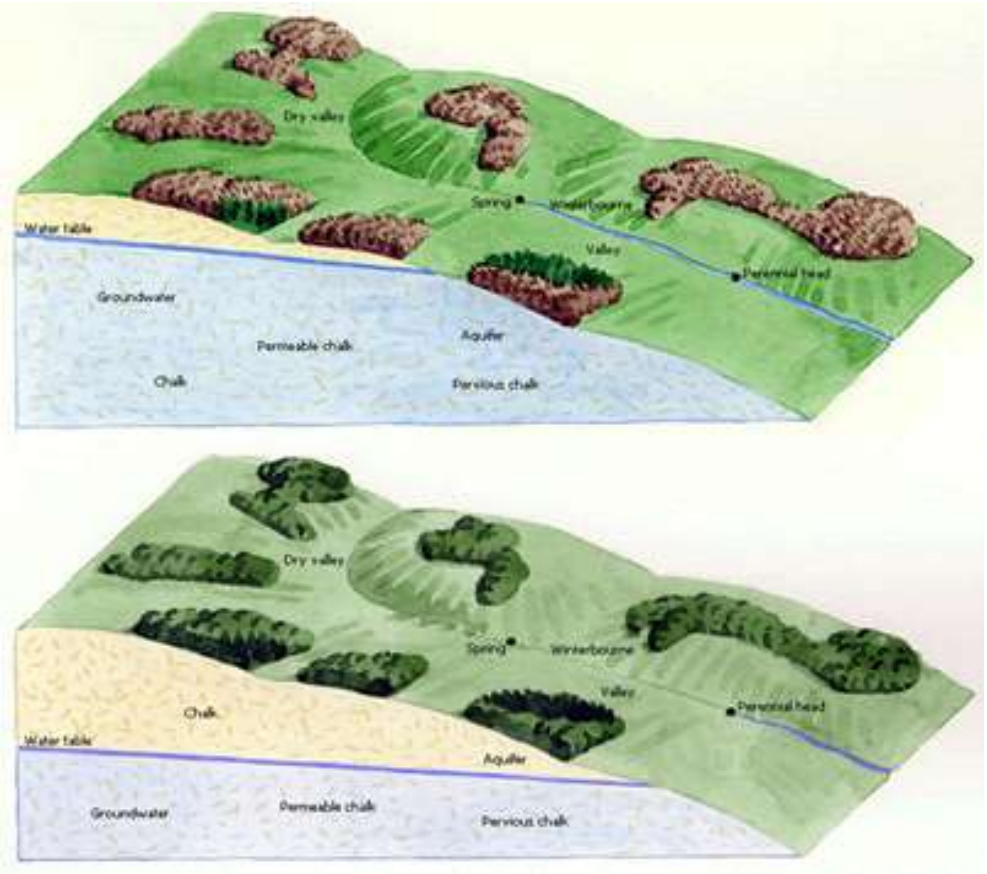

Figure 2. Why do Chalk Streams Sometimes Dry Up?

During the winter, when rainfall is heavy and able to percolate through the chalk, the aquifer will be well topped up. The head of the stream moves up the valley as the water table rises. In summer, little rainfall percolates into the chalk as it is mostly taken up by plants and lost through evaporation. The water table drops and the head of the stream moves down the valley, leaving the top section of the stream dry[1].

The whole of the River Lambourn, to its confluence with the River Kennet in Newbury, is an internationally designated Special Area of Conservation (SAC)[2] and a Site of Special Scientific Interest (SSSI). Of England's 224 chalk streams, only 12 have a

[1] Chilterns Chalk Stream Project: https://www.chilternstreams.org/discover/how-do-chalk-streams-work
[2] River Lambourn SAC UK0030257 Compilation date: May 2005 Version. EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora. Citation for Special Area of Conservation (SAC) Name: River Lambourn. Unitary Authority/County: West Berkshire. SAC status: Designated on 1 April 2005. Grid reference: SU398739. SAC EU code: UK0030257. Area (ha): 27.27. Component SSSI: River Lambourn SSSI

protected status and only four are SACs, one of which is the Lambourn[3].

Filtered through layers of chalk, the water as it emerges is pure, has a stable, alkaline mineral content and a stable temperature (10'C -12'C).

The SAC Citation notes that a key feature of the river is "the ephemeral nature" of the winterbourne and "Any flora or fauna occurring in these stretches must be adapted to wide variations in flow". Species of particular note are "pond water-crowfoot *Ranunculus peltatus,……..* fool's-water-cress *Apium nodiflorum* and the moss *Fontinalis antipyretica*". Whilst not all the other flora and fauna mentioned in the Citation are present in the winterbourne, the health of this section impacts the whole river.

Nutrient Neutrality

In March 2022, West Berkshire Council (WBC), along with others in Wiltshire and Oxfordshire, received a letter from Natural England informing them that the River Lambourn Special Area of Conservation (a designated habitat site) was in an unfavourable condition, specifically due to levels of phosphorus pollution. As a result, the River Lambourn catchment area, which includes most of the Parish of Lambourn, had been declared a Nutrient Neutrality Zone (NNZ)

Nutrient Neutrality is a strategy to prevent worsening nutrient pollution due to development. In the River Lambourn SAC nutrient catchment, any development proposals that discharge phosphorus must ensure that, as a minimum, an equivalent amount of phosphorus is removed through mitigation. Phosphorus sources include sewage effluent and agricultural run-off. (Fertilizers contribute to levels of both phosphorus and nitrogen, which is also of concern). In the NNZ, planning permission for development requires proof that the development is "nutrient neutral," meaning the nutrient runoff and wastewater from the new development must not exceed the levels from the current land use. If applicants cannot show this mitigation, then planning permission will not be granted.

WBC has commissioned a specialist report, prepared by Royal Haskoning DHV, which provides detail of a number of solutions that could be implemented to address Nutrient Neutrality. See Lambourn Phosphate Mitigation Solutions Report - West Berkshire Council.

The Report provides a summary of the solutions most likely to be deliverable. Funding has been secured from the Government's Local Nutrient Mitigation Fund, for a nutrient neutrality programme to develop and deliver projects to reduce the nutrients entering the River Lambourn.

WBC has also produced a bespoke calculator that developers can use to understand how much mitigation is required. See Phosphate calculator - West Berkshire Council.

[3] The others being the Hampshire Itchen, the Wiltshire Avon and the Norfolk Wensum.

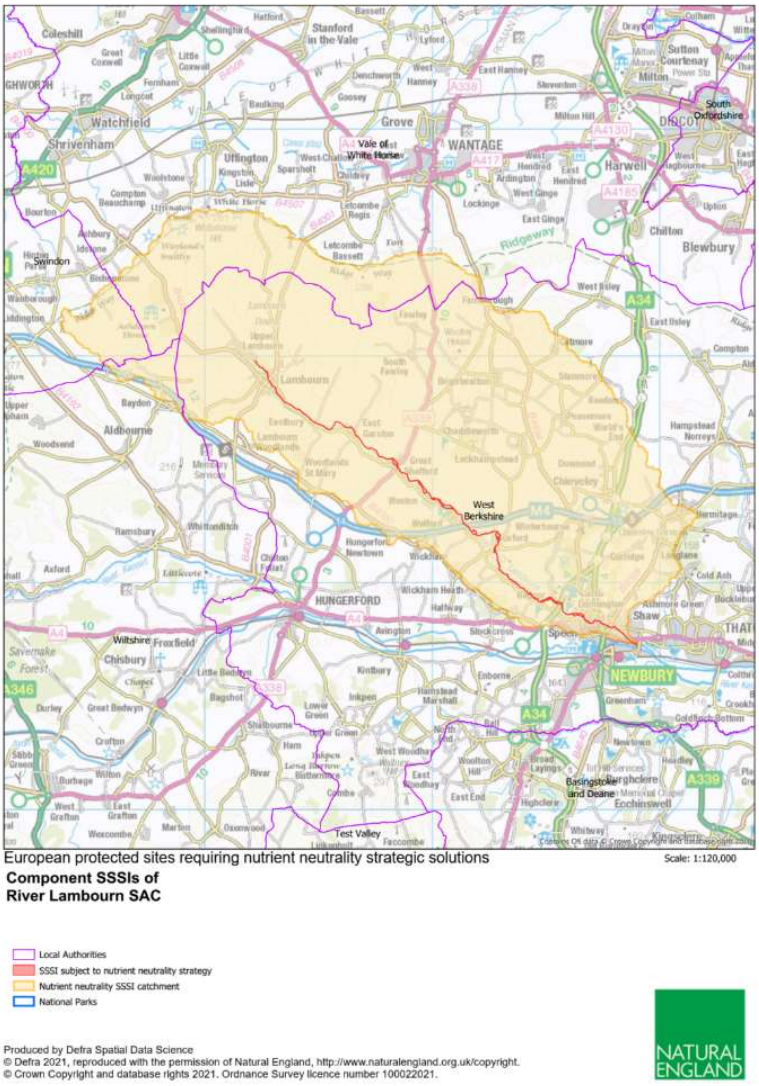

Figure 3. The Catchment Area of the River Lambourn

Types of Flooding Experienced in the Parish

1. Groundwater

Groundwater is the least understood flooding mechanism. It affects the local drainage patterns and significant parts of the Parish are particularly susceptible to groundwater flooding when the water table rises.

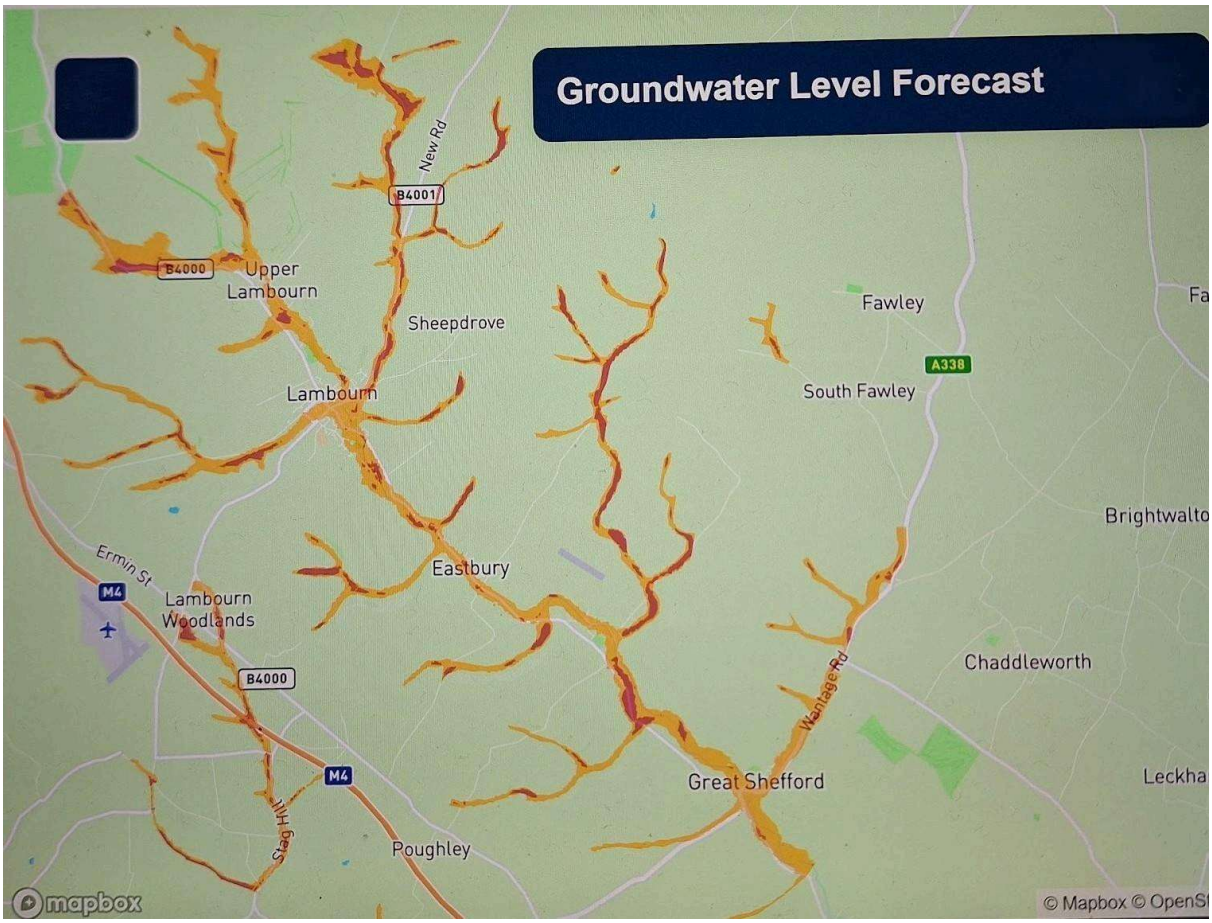

Figure 4. Areas Susceptible to Groundwater Flooding, 7th February 2025[4]

Major groundwater flooding events, in which homes are inundated, have occurred more frequently since 2000. The power of rising groundwater is often underestimated. It can find cracks and gaps and examples have been cited of it bubbling up through concrete floors. Groundwater can be unpredictable, appearing in unexpected places.

[4] Source: Project Groundwater Flood Warnings. Red denotes groundwater likely to be flowing overground, Yellow indicates groundwater may be just below ground.

Examples of Groundwater Flooding:

Figure 5. Crowle Road, 2014

Figure 6. Upper Lambourn, 2014

Groundwater penetration into the sewerage system is an on-going problem in the Parish. Groundwater can enter the sewerage system through the pipes and manholes, at a defect (crack, hole, displaced joint) or a normal joint on the sewer or in the manhole. As the water table rises the sewers fill, and manhole covers lift, allowing raw sewage to flow along streets and into the river. When the sewers are inundated, sewage has to be tankered away – a noisy, 24/7 operation. In 2023 - 2024 sewage discharged from manholes in Newbury Street, Goose Green and Oxford Street in Lambourn, and Eastbury and Upper Lambourn, from December to May, but shorter periods were recorded in Newbury Street, Lambourn and elsewhere between December 2012 – January 2013; January 2020 – May 2020; February 2021 – March 2021; May 2023 – June 2023 and intermittently from 05/01/2025. Going further back, in late 2000 properties in Tubbs Farm Close were badly affected by sewage flowing from manholes and residents had to use Portaloos from November 2000 to March 2001. Sewage also surcharged in Eastbury and Upper Lambourn, as well as Newbury Street and Oxford Street in Lambourn.

Figure 7. Newbury Street, 20th June 2023

Residents are furious about the risks to public health and to the environment, especially the River Lambourn. These issues have been on-going for at least 30 years and little has been done until recently to address their concerns. Many residents believe there should be no further development until the problems with the sewers are fixed and object to planning applications for this reason. Thames Water's response to planning application consultation requests is usually to say the sewer has capacity for the development.

Thames Water owns and is responsible for maintaining and repairing the public sewers (usually those under roads and footpaths) and for any shared sewers. Waste drainage pipes within property boundaries are the responsibility of the property owner and for many years Thames Water blamed the problems on water entering via private pipework and appeared to be directing its efforts into mitigation rather than successful remedial work. Recent sewer lining and manhole sealing has led to some improvements. Residents have been reminded not to flush items which block sewers, such as wipes.

2. Pluvial or Surface Water

There has been an increase in flooding due to heavy rainfall in recent years, linked to climate change.

When there is too much rain for drains and drainage systems to deal with, the resultant run-off causes localised surface water flooding, including flash flooding. In the Parish there are several areas where this occurs on a regular basis, due to either the lay of the land, blocked drainage systems such as ditches, or the lack of permeable surfaces. Sites that have had topsoil cleared for development without adequate drainage solutions being considered or put in place are of particular concern. Surface water tends to pool in low-lying areas and can seriously affect highways.

Examples of Pluvial Flooding:

Sheepdrove Road and Gwyn's Piece, Lambourn, May 1993:

A flash flood event happened on Wednesday 26th May 1993, when it rained continuously from about 5am until 8am. Flood waters came down Sheepdrove Road from the hills and flowed into residents' properties at the foot of Sheepdrove, and then on into Gwyn's Piece. In at least one property in Sheepdrove Road the water flooded all over the ground floor to just below the electric points. The Fire Brigade pumped out the sewer, which was full to the top, and once the rain stopped the flood waters drained away into the sewers which had been cleared. Flooding across Oxford Street and Sheepdrove Road continues to occur after heavy rain.

In July 2007, following heavy rain, (60mm fell in 24 hours) water poured down the dry valleys to the west of Lambourn village into the allotments, cascading through the racing yard of Windsor House on Crowle Road and on, flooding the houses at Old

Coach Works and the Universal Stores. The water ran down the High Street, flooding through the George pub, and into Newbury Street. Flooding was also severe in Upper Lambourn as water cascaded from the flooded fields and along the High Street. The fibresand gallop on the Upper Lambourn Road was badly damaged.

Figure 8. Lambourn Allotments, July 2007

A report, commissioned by Lambourn Parish Council, was produced by ADAS and came to the following conclusions: the flood which reached the allotments had a catchment area estimated at approximately 800 hectares, extending through seven dry valleys, the longest of which is nearly 5 km in length. The expected runoff from the catchment is around 8600 cubic meters, which can cause significant flooding in the allotments, covering an area of about 8800 square meters. Flooding has become more frequent since 2007 due to changes in rainfall patterns, with shorter but more intense rainfalls leading to quick runoff and waterlogging.

The change from arable land to rough grassland reduced the soil's ability to absorb water, causing more surface runoff. Additionally, a raised gallop acts as a barrier, contributing to the flooding of the allotments but also protecting the village from potential flooding, which could pose a risk to life. The report highlighted the trade-off between flooding the allotments and preventing more severe flooding in residential areas.

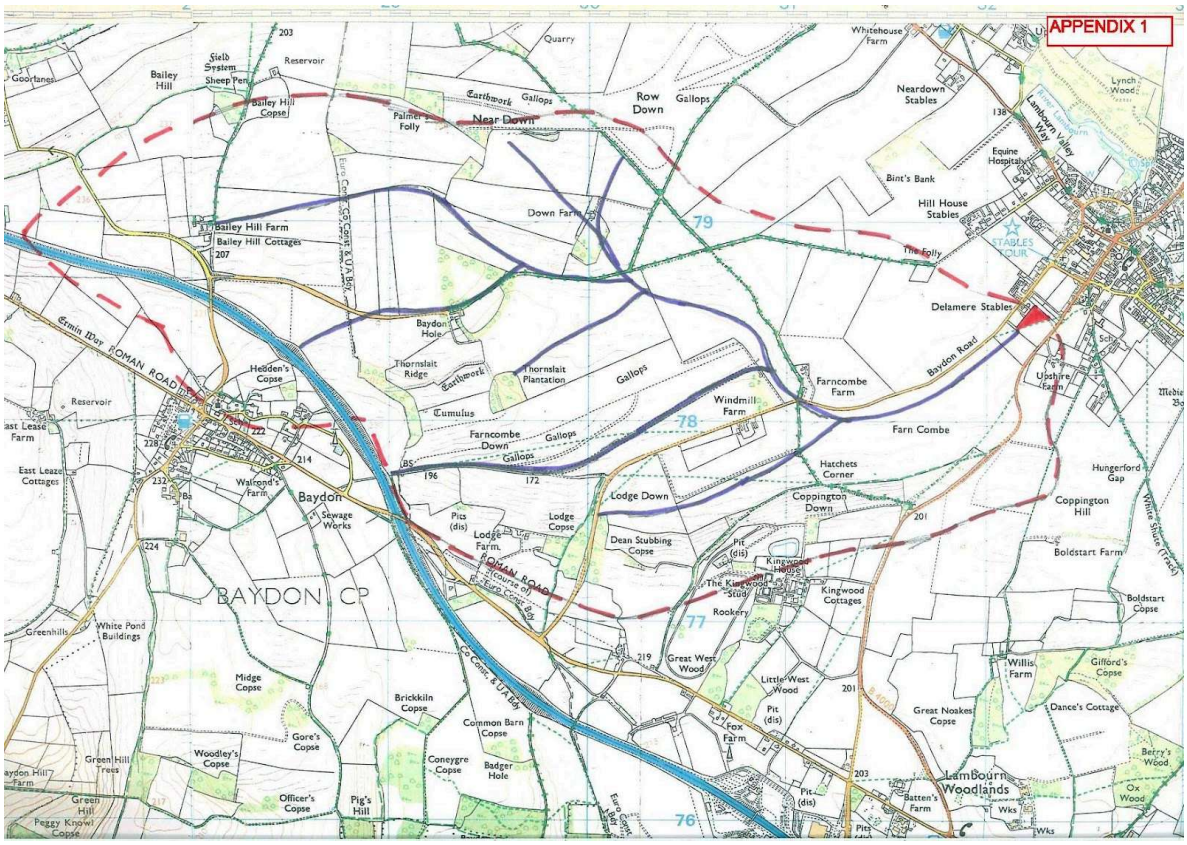

Figure 9. Map from ADAS Report, Showing Dry Valleys which Funnel Run-off into the Parish Allotments

Ramsbury Road, Lambourn Woodlands. 2019 to present day. After the removal of a large area of topsoil in 2019, the drainage along the Ramsbury Road has been disrupted, with water spilling from the site, over-topping the roadside ditch, across the road and onto neighbouring properties.

Folly Road/Upper Lambourn Road: Heavy or persistent rainfall causes a large volume of water to flow down Folly Road and out onto the Upper Lambourn Road. Similar flooding occurs down Greenways and Edwards Hill and in other roads across the Parish.

3. Fluvial

Fluvial or river flooding occurs when a river channel cannot accommodate the volume of water flowing into it, causing water to overflow onto the surrounding land. The winterbourne section of the River Lambourn is groundwater-fed and overtops its banks relatively rarely. When it does, it is often the result of human action in blocking or restricting the course of the river. For example, in Eastbury, property and garden extensions have caused “bottlenecks”.

The special status (SAC, SSSI) of the river Lambourn gives it the highest level of legal environmental protection and means that care has to be taken when solutions to flooding, such as dredging, are considered. The Environment Agency should be consulted before work on the river is undertaken and can prosecute illegal activity.

Combinations of Causes of Flooding

When the different types of flooding occur at the same time the consequences can be particularly serious. For example, in January 2024 the groundwater level was already high (including along the Wantage Road) when Storm Henk arrived and deposited rainwater on saturated ground. Floodwater came down the Wantage Road from Mile End and flooded into several properties on Sheepdrove Road. In addition, the pressure of the groundwater under one house (built in the 1980s) caused water to come up through the base of the property resulting in dampness in the walls, and ruining carpets and kitchen units. The owners have had to move out and repairs and flood resilience measures are not expected to be completed until April 2026.

Responses and Mitigation

Care of the River Lambourn, responsibility for water quality, measures to alleviate flooding, maintenance of drains and sewers and sewage disposal all involve multiple agencies and individuals and impact the community. The flood resilience of individual property owners, as well as the community at large, is a matter of concern. Finding solutions to problems is more effective if these groups work together.

Examples of action taken/being taken on flooding issues in the Parish of Lambourn:

<u>Membury Industrial Estate Flooding and Drainage Plan</u>

1. Introduction

Membury Industrial Estate, located on the former RAF Membury Airfield, has evolved into a key employment hub since the post-war period. However, the original drainage systems have been lost, and recent rapid expansion has increased impermeable surfaces across the site. The loss of vegetation, compacted soil, and inadequate drainage capacity have resulted in regular surface water flooding, particularly along Ramsbury Road and around the Dixons Business units, south of the M4 flyover. This plan outlines the main causes and proposes sustainable, practical measures to reduce future flood risk.

2. Current Issues and Causes

Vegetation removal: trees and green cover once absorbed and intercepted rainfall; their loss has increased runoff and reduced soil stability.

Soil compaction: heavy construction and traffic have reduced infiltration, causing an increase in surface water pooling and rapid surface water flow.

Impermeable surfaces: new hard standing areas discharge directly from the site onto the Ramsbury Road, into the Dixons Business Units to overstressed drains.

Aging infrastructure: many original drainage lines are fragmented, undersized, or remain a mystery as the documentation of these were lost during World War 2.

Altered water cycle: reduced infiltration and evapotranspiration have led to higher peak flows and more frequent flooding.

Ongoing Works and Coordination

West Berkshire Council is currently finalising a temporary highway drainage solution to alleviate flooding around the Dixons Unit, south of the M4 flyover. In addition, they are considering a £40,000 quote for consultation to examine the wider Membury flooding issues. This coordinated effort provides an opportunity for the Parish Council and local stakeholders to align local drainage improvements with regional flood resilience initiatives.

3. Flood Mitigation and Drainage Strategy

A combined approach of Sustainable Drainage Systems (SuDS), landscaping, and infrastructure upgrades is required to manage flood risk effectively. The Key mitigation measures are listed below:

- Permeable surfacing in parking areas and access roads to promote infiltration.
- Swales and filter systems to capture and slow runoff before it enters drainage systems.
- Rain gardens and bioretention planters near buildings to store and filter stormwater.
- Attenuation ponds or tanks-to temporarily store excess rainwater.
- Tree planting and green corridors using native species to stabilise soil/absorb water.
- Soil decompaction and landscaping to restore infiltration capacity.
- Routine drainage maintenance through a joint estate–parish partnership.
- Tree planting and enforcement of landscaping planning conditions need to be actioned, with some SuDS retrofit and landscaping.

4. Monitoring and Review

Flooding records, maintenance schedules, and SuDS performance should be reviewed annually, with updates incorporated into future versions of this plan or the Neighborhood Development Plan review cycle.

5. Policy Alignment

This plan supports the following local objectives:

- Policy FDP1 – Sustainable Drainage: all new or redeveloped plots must include SuDS measures to manage runoff on-site, with discharge limited to greenfield rates.
- Policy FDP2 – Vegetation and Landscape Restoration: development should replace lost vegetation with equivalent or improved green infrastructure to aid infiltration and biodiversity.

- Policy FDP3 – Inclusive Flood Management: the Parish Council will work with West Berkshire Council, the Environment Agency, local businesses and residents, to ensure coordinated solutions, building on West Berkshire's current drainage works and forthcoming consultation.

6. Implementation Summary

Action	Lead Stakeholder		Notes
Temporary highway works	West Berkshire Council	2026	South of M4 flyover – Dixons area
Wider flood consultation	West Berkshire Council	2026	£40,000 technical study

Lambourn Parish Council has, over many years, worked to find solutions to problems caused by flooding, including combining efforts with neighbouring Parishes, lobbying Thames Water, West Berkshire Council and the Environment Agency, helping to source sandbags and appointing flood wardens.

Recently LPC formed a Working Group to look at groundwater and surface water flooding of any sort within the Parish. The Group works with local landowners, West Berkshire Council, Thames Water, Project Groundwater and other organisations to find answers to flooding issues, for example:

- Clearing ditches and roadside grips. Where local landowners and West Berkshire Highways keep ditches and roadside grips clear the impact of flooding is moderated.
- Supporting a hydrologist report on the movement of groundwater.
- Addressing sewerage problems with Thames Water.
- Investigating the introduction of local wetlands.

Effective local solutions are being explored, using local knowledge and understanding of the way groundwater and surface water contribute to flooding in the Parish.

Eastbury Flood Alleviation Scheme

See Appendix L.

The Lambourn Valley Flood Forum (LVFF)[5]

The LVFF was originally set up as a result of the serious flooding in the valley in 2014 and I became Chairman in 2019 after I was elected Ward Member for Lambourn for West Berkshire Council. LVFF meets virtually four times a year and has gone from its

[5] Howard Woollaston, Chairman, Lambourn Valley Flood Forum

original remit, of covering the stretches of the Lambourn from where it rises in Upper Lambourn through Lambourn and Eastbury within the ward then through East Garston, Great Shefford and the villages down to the outskirts of Newbury, to encompass the whole of the river down to its confluence with the River Kennet.

It comprises all village Flood Wardens and operational representatives of The Environment Agency, Thames Water and West Berkshire Council as lead Flood Authority. It is not just a talking shop but endeavours to hold the statutory authorities to account by robust but calm questioning. In so doing it has achieved an enormous amount particularly the lining of sewer pipes, tankering, flood alleviation schemes and renovation of sewage works. Everything aiming to prevent flooding and in particular manholes pouring raw sewage onto roads and pavements with all of the inherent public health issues attached.

Since the winter of 2023/4 this appears to be successful but most of the issues revolve around springs created by high levels of ground water caused by excessive rainfall. Needless to say, what starts in Upper Lambourn impacts right down the valley as there is only one way for the water to go.

Lambourn "Dashboard"

The Pang Valley Flood Forum, working with the Lambourn Valley Flood Forum, has compiled a "dashboard" which combines data about monthly rainfall totals, groundwater and river levels from several sources to provide flood alerts and warnings for the Lambourn Valley. The information is based on Environment Agency and the Flood Information Service statistics and provides some historic data. See https://www.floodalleviation.uk/lambourn/dashboard/.

Project Groundwater

Project Groundwater is an initiative funded by Defra and managed by the Environment Agency as part of the £200 million Flood and Coastal Resilience Innovation Programme. It focuses on improving resilience to groundwater flooding in 9 high-risk areas of the Chiltern Hills and Berkshire Downs, including the Lambourn Valley. The pilot project aims to develop and test new approaches to flood resilience, including improved monitoring of when and where groundwater emerges, modelling, mapping, and warning systems, providing a template for other authorities. Community engagement is central, with efforts to increase awareness, provide alerts, and offer advice to minimize disruption and damage. Project Groundwater provides a Groundwater Level Forecast, which gives the current groundwater level AOD and a map showing the areas at risk. See https://www.projectgroundwater.co.uk/.

Upper Lambourn Winterbourne Restoration Project

Groundwater flooding poses unique challenges that traditional nature-based solutions (NBS) have often been considered ill-suited to address. While NBS typically focus on

surface water and river flooding, their potential to mitigate groundwater flood risk - and deliver wider environmental and community benefits - remains underexplored.

Working with a local landowner and the Lambourn Valley Flood Forum, and using government funding, this proposed initiative aims to recreate a seasonal winterbourne channel and wetland upstream of Upper Lambourn to:

- Manage seasonal groundwater flows.
- Hold back surface water.
- Reduce sediment pollution.
- Improve water quality in the River Lambourn chalk stream.

The objective is to research whether NBS can contribute to groundwater flood resilience, while also delivering wider benefits to local communities.

The proposed project would aim to re-create a natural winterbourne channel and wetland area along B4000 upstream (or west) of Upper Lambourn to manage seasonal groundwater flows, hold back surface water flows, reduce sediment pollution, and improve downstream water quality in the River Lambourn chalk stream.

Thames Water

Thames Water has taken measures over several years to repair and improve the sewerage system and mitigate flooding. Thames Water's Waste Network Infiltration Task Force try out ways of mitigating a problem, as shown below.

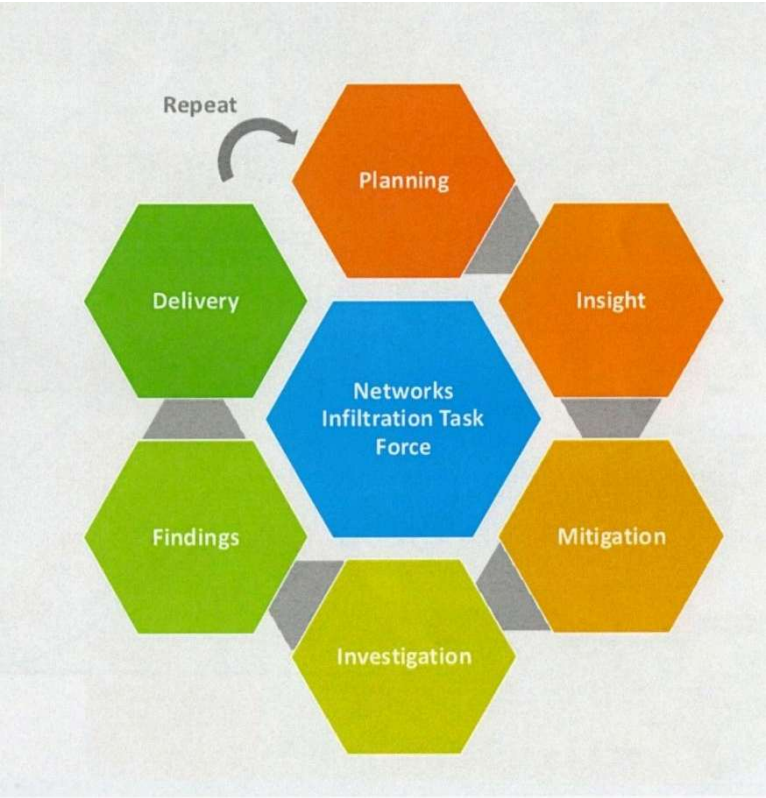

Figure 10. Waste Water Network Infiltration

Flooding Local Improvement Process (FLIP): these are one-way valves with added pumps. They push flows from the property into a full sewer, when the valve is closed. Properties in the Parish, particularly in Eastbury, have been fitted with these valves.

Lining of Sewers and Sealing of Manholes: sections of sewer have been lined over the past 40 years. The latest work involves Upper Lambourn, where there are 1.25km of lining and 19 manholes to seal, Eastbury, with 450m of lining and nine manholes to seal and Lambourn, where 112m have been lined and a partial collapse of the sewer repaired.

East Shefford Sewage Treatment Works: this has been upgraded at a cost of more than £10 million. This project will improve its ability to treat the volumes of incoming sewage and provide a higher quality of treated effluent going to the river in line with the Environment Agency Permit.

Figure 11. ATAC, 2020

Mobile Filter Unit (ATAC Unit): an ATAC was installed on Newbury Street in 2020 and has been deployed each year since, now situated on the public footpath beside the Fire Station. Thames Water monitors groundwater levels and the ATAC is turned on

when they impact the sewer network. The filter unit runs 24 hours a day, which does disturb nearby residents. A pump feeds the sewage into the unit so it can be filtered and then discharged to the River Lambourn. There is local concern about the amount of pollution which is being released into the river, especially when the unit breaks down.

Tankering: at the times when the sewers are filled by groundwater, tankers remove sewage in Upper Lambourn and Eastbury. This operation can go on for weeks, as groundwater levels take time to fall.

Natural flood defences: planting, such as the willow beds at Eastbury, helps to take up water, and can be used to slow the flow of water enabling the ground to absorb surface water. Sheepdrove Organic Farm uses a reedbed system to treat the wastewater on the farm, visible below.

Figure 12. Reed Bed System, Sheepdrove Organic Farm

Action for the River Kennet (ARK)

This organisation is the local River Trust for the Kennet catchment, which includes the River Lambourn. ARK offers advice and practical examples of caring for the river in natural and sustainable ways. It also monitors the health of the River Lambourn, including the amount of sewage released into the water.

From post on ARK Action for the River Kennet Facebook page, 6 March 2024:

*"We tested the water here (*at Oxford Street manhole, beside the river) *in the River Lambourn in Lambourn for bacteria and found 100,000 colony forming units per ml.*

The Lambourn is an internationally rare chalk stream, a designated SSSI and a SAC. Our chalk streams are often described as the rain forests of England, a fragile ecosystem, teaming with life and yet here months of untreated sewage is pouring directly into one from this 'popped' lid.

There may be lots of water diluting the sewage but the smell is unmistakable and our testing shows the very high concentrations of bacteria present".

The Environment Agency

Monitors the River Lambourn, providing flood warnings, forecasts and alerts, and information about river levels and water quality.

LAM2, Land West of Wantage Road:

Information from Tristan Robinson, about the preparation work Thakeham have done/are doing for the development of this site:

"We are proposing through the Vision Document, an attenuation basin near the site entrance (which is the lowest point of the site). Foul water drainage will be by connection to the existing sewage system (with a financial contribution as/if deemed appropriate by the Provider/ West Berks).

In terms of background, we review Environment Agency mapping and also local district studies such as the West Berks Strategic Flood Risk Assessment (SFRA) level 1 & 2, in particular appendix K & L of SFRA level 1 (groundwater emergence mapping and groundwater flood mapping). Separately, we would review any wider publicly available information – this may be local historic borehole records or recent planning applications. In preparation for application, we would undertake (and are currently undertaking in this instance) winter ground water monitoring".