

River Sheppey Communities

Flood Resilience Options Appraisal Report



September 2023

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River Sheppey Communities

Purpose of Review

The River Sheppey communities from Shepton Mallet, through Bowlsh and Darshill, to the village of Crocombe, have a long history of flooding, the causes of which are not fully understood. Somerset Rivers Authority (SRA) has funded a detailed review of relevant local factors to inform future actions to mitigate flood risk to these communities. This investigation has been led for the SRA by Mendip District Council (MDC) through their drainage consultant, *Calm* Engineering Ltd.

The purpose of the review is to undertake a detailed investigation into the mechanisms of flooding across the two sub-catchments of Crocombe and Shepton Mallet and determine the most appropriate options to improve the flood resilience of these communities. The options identified will provide a framework for multi-agency collaboration to fund and deliver meaningful actions on the ground for the Sheppey communities.

Background

The SRA funded the investigation of non-main river catchments in 2019/20 (led by MDC) where Crocombe and Shepton Mallet were identified as priority catchments for improved surface water management. The flood event in October 2020 (which flooded 19 properties) prompted a Section 19 Investigation by the LLFA. Previous events reported similar numbers of properties impacted (although these were via a different flooding mechanism and in different locations).

A review of past surveys revealed gaps in our understanding and so additional targeted surveys were commissioned in 2021/22 to fill these gaps and identify any deficiencies within the drainage system.

The fluvial, pluvial and groundwater flood risk within these two sub-catchments and the interplay between these mechanisms needed to be better understood so that mitigation opportunities could be identified and a means of delivery realised for the benefit of the Sheppey Communities.

THE PARTNERSHIP

- Mendip District Council
- Somerset County Council (Lead Local Flood Authority)
- Somerset Highways
- Wessex Water
- Environment Agency

With support from:

- Farming & Wildlife Advisory Group SW
- Wild Trout Trust

Funded by:



1 Introduction

Calm Engineering has been commissioned by **Mendip District Council (now Somerset Council)** to lead an Options Appraisal for the communities along the River Sheppey from Shepton to Croscombe, in Somerset. This review has been prompted by the significant flood event that affected these communities on 3 and 4 October 2020.

The purpose of the review is to undertake a detailed investigation into the mechanisms of flooding across the two sub-catchments of Croscombe and Shepton Mallet, identify flood risk issues and review a range of potential options to mitigate these, including Natural Flood Management (NFM) measures. The study will also identify ways in which community engagement can be used to improve resilience. It will result in the preparation of a list of potential actions to inform future partnership working opportunities and funding.

1.1 Approach

This review has consisted of the following:

- Review of all existing information and surveys carried out to date.
- Additional investigations and walkover surveys carried out in areas where data was missing, including CCTV survey of sections of culverted watercourses to review capacity and condition.
- Assessment of flow routes and capacity of the existing open watercourses, including assessment of whether changes in bed levels needs to be investigated.
- Identification of flood risk issues and a review of the options to mitigate these.
- Assessment of the need for additional measures for reducing blockages and maintenance in the future (i.e. trash screens).
- Initial consultation with landowners on land management practices and any potential implementation of NFM measures (i.e. constraints to delivery of these options).
- Review of any potential naturalisation of the existing watercourse (de-culverting) including any online wetland areas and tree planting currently identified within the MDC catchment review.
- Identification of ways in which community engagement can be used to improve resilience (education, change in behaviours, accountability and action).
- List of potential mitigation options to inform future opportunities for partnership working and funding bids, where required.
- Outline assessment to identify potential funding sources for delivery using the Partnership Funding approach.

The documents referenced in this report are listed in **Section 14**.

1.2 Project partners

Details of other project partners and an overview of their work within the catchments is provided below:

- **Somerset County Council Lead Local Flood Authority (LLFA)** has prepared two Section 19 reports on flooding within the sub-catchments investigated and will be a key partner in the delivery and implementation of any improvement works proposed in this review.
- **Somerset Highways** is responsible for highway drainage within the catchments and the maintenance thereof.
- **Wessex Water (WW)** has been investigating the sewer capacity issues in the two sub-catchments and are providing support and information to this review.
- The **Environment Agency (EA)** is responsible for the River Sheppey Main River from the point it crosses under the A361 Charlton Road to the east of Charlton House Hotel. The EA has also been conducting its own study of the River Sheppey catchment down to its confluence with the River Brue as part of the Brue Catchment Project.

The **Farming & Wildlife Advisory Group (FWAG)** has also been instrumental in consulting with the farming community to discuss Land Management Practices within the catchment, including any proposed options for surface water attenuation, environmental enhancements and other natural flood management techniques. This will be ongoing through the development and implementation of any proposed options.

Reports prepared by the **Wild Trout Trust** and **Westcountry Rivers Trust** have also informed the list of identified actions.

The support of the **River Sheppey communities** is also acknowledged, for the provision of information regarding flooding and local infrastructure and for their cooperation during periods of survey work.

1.3 Site location

Croscombe, Bowlish and Shepton Mallet are collectively located within the River Sheppey catchment in the centre of Mendip District. The western extent of the Croscombe catchment is located approximately 3.5km east of Wells. The area of the River Sheppey catchment being investigated is illustrated below in **Figure 1**.

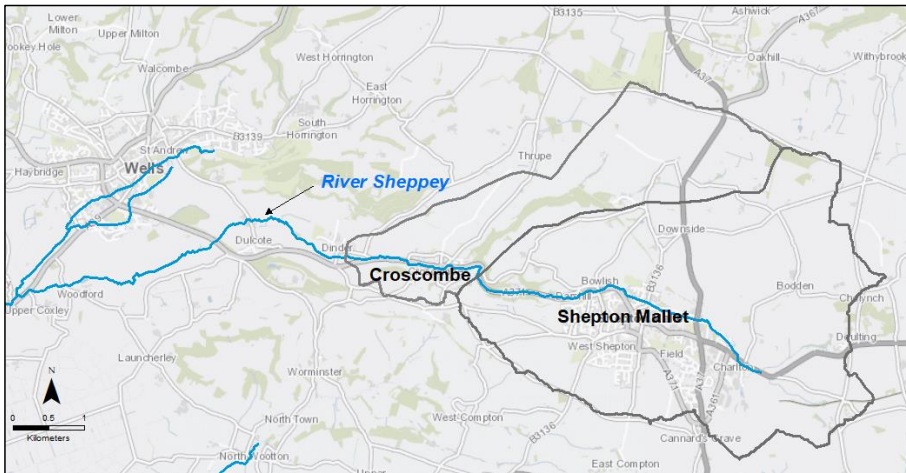


Figure 1: Location Map

1.4 The Shepton Mallet and Crocombe sub-catchments

1.4.1 Overview

The River Sheppey rises to the east of Shepton Mallet and west of Doulting and subsequently flows in a westerly direction towards the Somerset Levels. The river passes through Charlton and Shepton Mallet along the northern side of the town before passing through Bowlish and Darshill. Downstream from Shepton Mallet, the River Sheppey passes through Crocombe village.

The Sheppey catchment is steeply sided. Outside of Shepton Mallet (which is taken to include Bowlish and Darshill) and Crocombe, agriculture is the predominate land use.

The River Sheppey is classified as a main river for much of its length which means the Environment Agency has the overarching responsibility for flood risk management of the watercourse.

1.4.2 Shepton Mallet sub-catchment

Shepton Mallet is located in the headwaters of the River Sheppey. The topography surrounding Shepton Mallet is very steep, particularly to the north of the town. The town is surrounded by largely rural land use, predominantly pasture with occasional arable intensively farmed land use (i.e. maize). There are several small villages and hamlets in the east of the sub-catchment including Downside, Bodden and Doulting. The hamlets of Bowlish and Darshill lie along the A371 in the west of the sub-catchment (Figure 2).

The Shepton Mallet sub-catchment extends from where the River Sheppey rises near Doulting, westwards to just downstream of the Shepton Mallet Water Recycling Centre. Windsor Hill defines the catchment boundary to the north. The River Sheppey is designated as a main river downstream from the point it crosses under the A361 Charlton Road to the east of Charlton House Hotel.

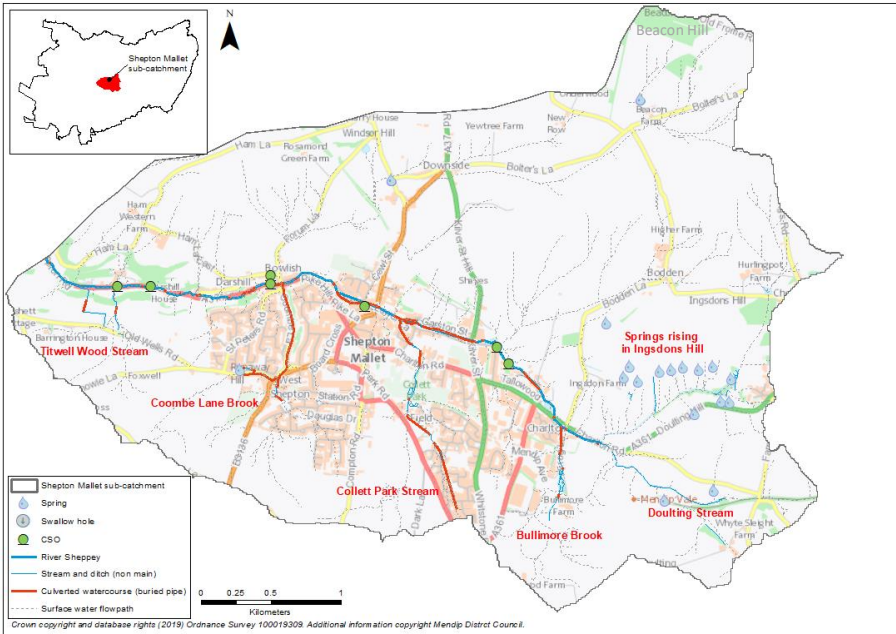


Figure 2: Shepton Mallet sub-catchment

There appear to be several hidden streams that flow through Shepton Mallet and eventually drain into the River Sheppey. From our investigations we have identified five ordinary watercourses (non-main rivers) that drain into the River Sheppey within the sub-catchment. Many of the watercourses are unnamed and therefore, to identify them, we have assigned names as part of this project. Most of these small tributary watercourses have been heavily modified due to urban development in Shepton Mallet and are contained within open ditches and culverts. Figure 3 shows the location of the watercourses with further detail outlined below:

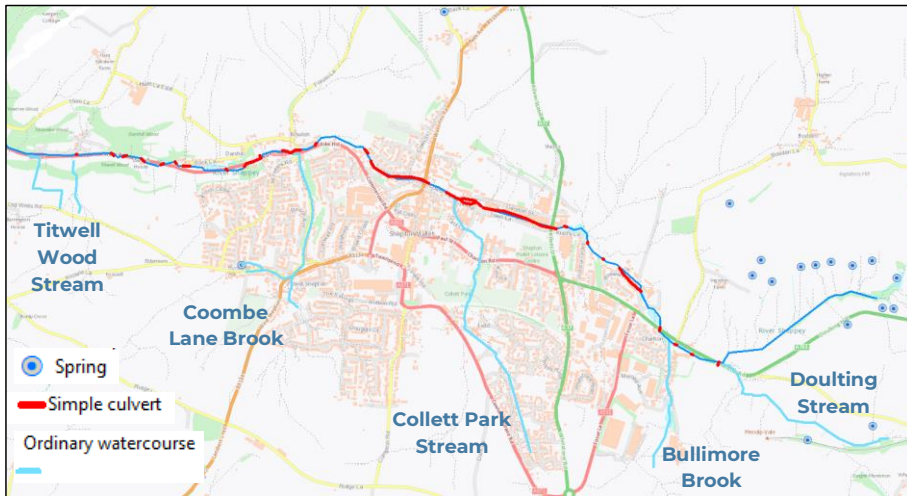
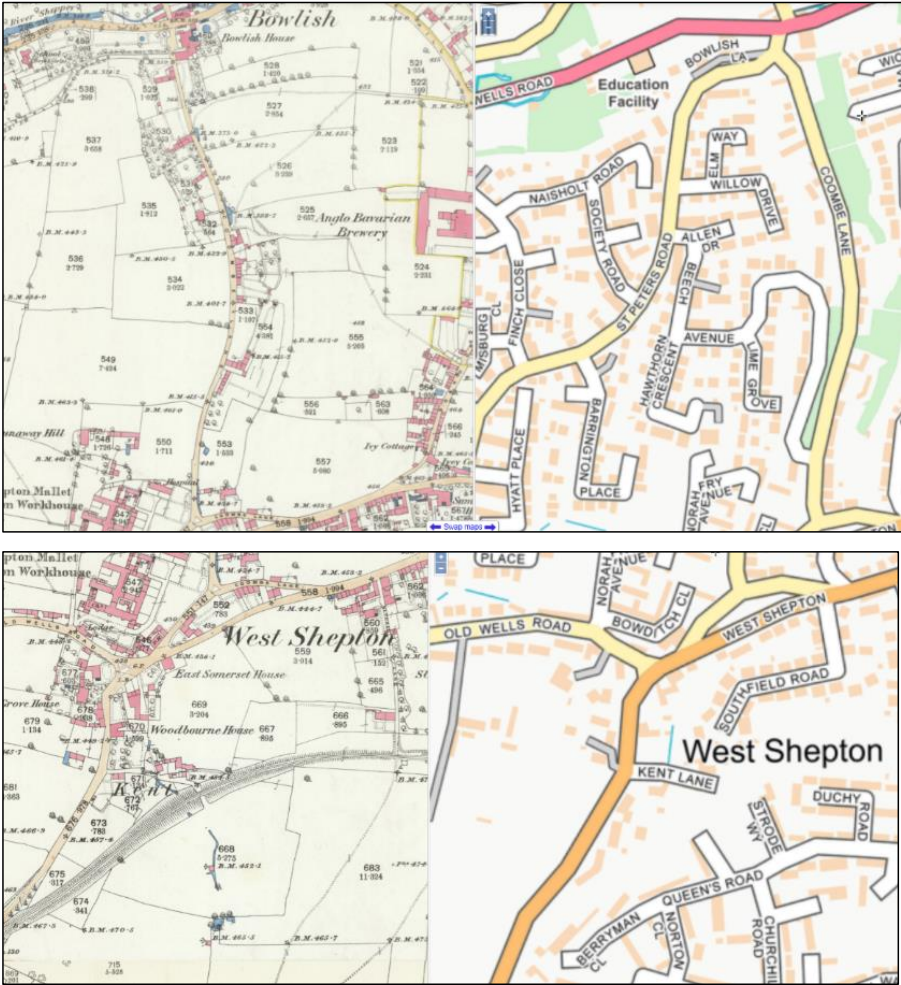


Figure 3: Ordinary watercourses draining into the River Sheppey in Shepton Mallet. Culverted lengths along the main River Sheppey are also shown

- **Titwell Wood Stream** - located to the west of the town extending from Old Wells Road and draining in a northerly direction to outfall into the Sheppey within a buried culvert that extends under the A371 Wells Road.
- **Coombe Lane Brook** – Coombe Lane sits within a very narrow natural valley and in the bottom of the valley is a watercourse which now flows within a culvert in a northerly direction along the lane discharging into the River Sheppey along the Wells Road at Bowlish. The brook appears to flow south to north from Kent Lane, crossing West Shepton and then into Coombe Lane. There appears to be a smaller spring fed tributary stream that flows into the brook from the west, just south of Old Wells Lane. Although the majority of the watercourse is culverted, historically parts of the culverted watercourse flowed within an open channel, including short lengths along Coombe Lane, as shown by 1873 25-inch Ordnance Survey map shown in **Figure 4**. Today, only one short length downstream of Kent Lane is visible within an open section of channel.
- **Collett Park Stream** – flows in a northerly direction through Collett Park. The stream has been highly modified and is extensively culverted and there is an amenity pond located within the park.
- **Bullimore Brook** - has its headwaters upstream of Frog Lane and flows in a northerly direction both within an open channel and piped culvert.
- **Doulting Stream** - flows in a north-westerly direction through rural land use (pasture) to the east of Shepton Mallet.



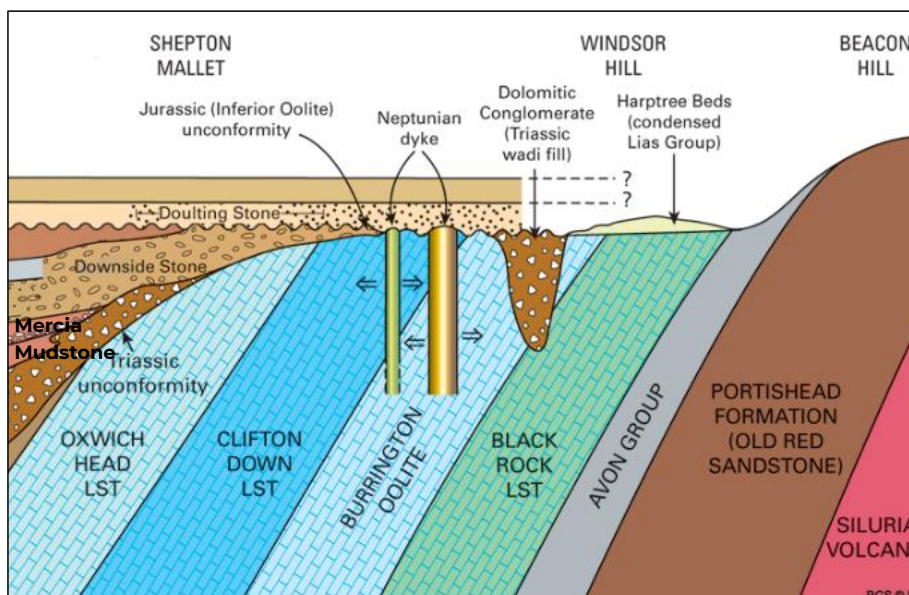
Source: side by side mapping from the National Library of Scotland (National Library of Scotland, 2022)

Figure 4: Historic mapping (dating to 1873) showing short open sections of channel along the Coombe Lane Brook

The River Sheppey is heavily modified within the town due to historic industry, i.e. mills and urban expansion. A major culverted length of watercourse extends for 1.1km from Kilver

Street to just downstream of Draycott Road¹. There are further culverted lengths downstream through Bowlish and Darshill, resulting from the construction in the 1850s of the Wells to Shepton Mallet road (now the A371). Where the river is contained within an open channel it is heavily modified and is contained between hard masonry banks. There are few areas within the town that have natural banks and connected undeveloped floodplain.

The underlying geology of the catchment has an important influence on the hydrogeology and flow regime in the watercourses in the catchment. Most of the town of Shepton Mallet is built on a shelf of Jurassic (Downside Stone), which is a Blue Lias limestone thought to be up to 30m thick. On the southern side of the town, the Downside Stone overlies Triassic Mercia Mudstone and Dolomitic Conglomerate. In the northern, steeper side of the town, the Downside Stone overlies carboniferous limestone between Doultling and Downside. Several streams which rise within the Sandstone geology to the north of Beacon Hill sink underground on meeting the Carboniferous Limestone.



(Source: (British Geological Survey, 2022))

Figure 5: Cross-section geology underlying Shepton Mallet

Around Doultling, to the east of the town there are several springs that emerge from the base of the permeable Inferior Oolite where it overlies the impermeable Charmouth

¹ There are three very short lengths of open channel along the culverted reach.

Mudstone (**Figure 5**). The springs include the St Aldhelm's Well, which is an ancient 'holy well' whose flow was reputed to never to run dry. The springs flow for a short distance within a network of incised field drains before entering the river. The Sheppey's reliable spring flow means that it contributes an important proportion of the summer base flow of the lower Brue (Environment Agency, 1998). A map of known springs above Shepton Mallet is shown in **Figure 4**.

1.4.3 Croscombe sub-catchment

Croscombe is contained within a very steep sided valley and the surface water drainage catchment lies predominantly to the east and north of the village (**Figure 7**). The sub-catchment is largely rural, consisting of a combination of arable, pasture and woodland.

Flow through the village is largely contained within the modified River Sheppey channel which is joined by several outfalls draining the steep catchment to the north. The River Sheppey has been highly modified by the historic construction of numerous mills that are now disused. The River Sheppey bifurcates at Jack's Bridge, with the main river flowing adjacent to Long Street and a millstream (leat) passing under the Manor House, re-joining the River Sheppey before it passes into a culvert for 200m.

As with Shepton, the underlying geology surrounding the village influences the hydrogeology and flow regime in the River Sheppey. Croscombe is built on Mercia Mudstone but is surrounded by both Jurassic limestone (Downside Stone) and carboniferous limestone. The Downside Stone overlies the carboniferous limestone and in places erosion has cut through the Downside Stone to reveal the older rocks beneath, such as has occurred within Ham Woods valley to the east of Croscombe. Several streams which rise within the Sandstone geology to the north of Beacon Hill sink underground on meeting the Carboniferous Limestone, such as happens within Ham Woods (see **Figure 6**). There is also a well-known sink (swallow hole) located along Thrupe Lane above Croscombe which takes flow from a small stream into an almost vertical cave system which is some 120m deep. It is understood water from this and other stream sinks resurges at St. Andrews's Risings in Wells and therefore effectively bypasses the River Sheppey within Croscombe.

The catchment therefore has two distinct hydrogeological zones:

- an area to the north where surface flows eventually make their way into the subterranean groundwater network; and
- an area to the south where surface water flows drain both over the surface and within the buried drainage network eventually out falling into the River Sheppey within the village.



Figure 6: Swallow hole, Ham Woods

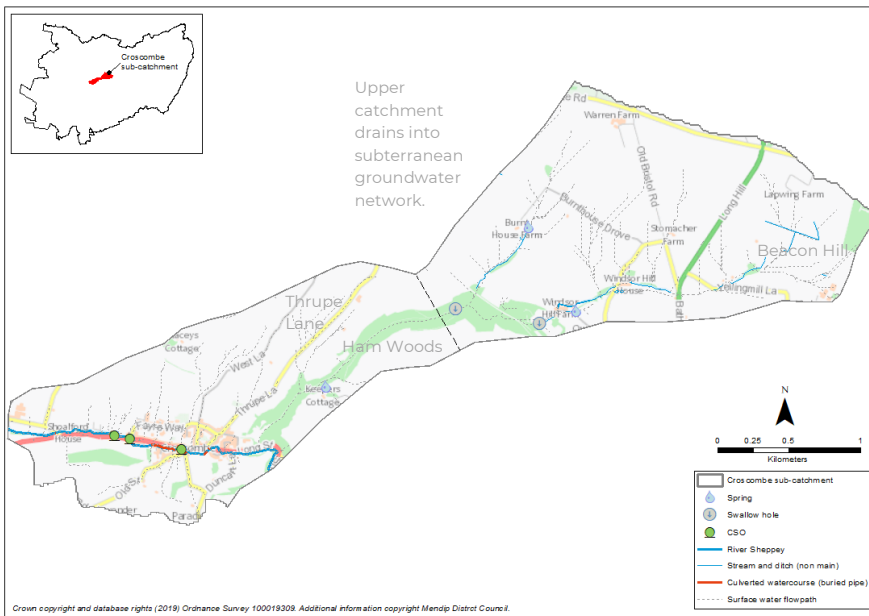


Figure 7: Croscombe sub-catchment

2 Legislation and policy context

2.1 Introduction

This section provides an overview of relevant UK wide legislation and policy and local policy and guidance in order to demonstrate key drivers for the actions identified within the two sub-catchments and potential sources of funding. A list is provided here, with additional detail included within [Appendix 1 \(section 15\)](#).

2.2 Legislation

The following key pieces of legislation have been reviewed:

- Water Framework Directive as implemented by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. The River Sheppey catchment is designated as 'Heavily Modified' and is of 'Moderate Ecological Status'. A range of reasons for not achieving a classification of 'Good' have been identified. These include sewage discharges and physical modification.
- Salmon and Freshwater Fisheries Act 1975, as amended. Of relevance in relation to structures that may obstruct the passage of fish within the River Sheppey, e.g. weirs.
- Eels Regulations 2009. Of relevance in relation to structures that may obstruct the passage of eels within the River Sheppey.

2.3 UK policy and guidance

The following documents have been reviewed:

- A Green Future: Our 25 Year Plan to Improve the Environment (DEFRA, 2018);
- National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting (DEFRA, 2018);
- National Risk Register (HM Government, 2020);
- Flood and Coastal Erosion Risk Management Policy Statement (DEFRA, 2020);
- National Flood and Coastal Erosion Risk Management Strategy (Environment Agency, 2020) and updates in 2021 and 2022 (Environment Agency, 2022);
- Flood and Coastal Erosion Risk Management Strategy Roadmap to 2026 (Environment Agency, 2022);
- National Planning Policy Framework (NPPF) (Ministry of Housing, Communities & Local Government, 2021);
- Flood Risk and Coastal Change Guidance (Ministry of Housing, Communities & Local Government, 2014), updated August 2022;

- Use nature-based solutions to reduce flooding in your area (Environment Agency, 2021);
- Working with Natural Processes to Reduce Flood Risk (Flood and Coastal Erosion Risk Management Research and Development Programme and Environment Agency, 2021).

During the course of the investigation, additional documents have been published but were not available in time to inform the review. These include:

- Green Infrastructure Framework - Principles and Standards for England (Natural England, 2023);
- Environmental Improvement Plan. First revision of the 25 Year Environment Plan (HM Government, 2023).

2.4 Local policy and guidance

The following local policy and guidance documents been reviewed:

- West of England Sustainable Drainage Developer Guide (Bath & NE Somerset Council, Bristol City Council, North Somerset Council, Somerset County Council and South Gloucestershire Council, 2015);
- Climate Resilient Somerset - Somerset's Climate Emergency Strategy (Somerset County Council, 2020);
- Part I of the Mendip District Local Plan (Mendip District Council, 2014);
- Part II of the Mendip District Local Plan (Mendip District Council, 2021);
- Climate Emergency Plan (Mendip District Council, 2020);
- Shepton Mallet Town Centre Masterplan (Mendip District Council, 2022);
- Investing in Shepton's Future 2020–2024 (Shepton Mallet Town Council, 2020);
- Croscombe Parish Plan (Croscombe Parish Council, 2010);
- Croscombe Village Design Statement (Croscombe Parish Council, 2013).

2.5 Input to investigation

The review of the aforementioned legislation, policies and guidance has highlighted the need for this investigation:

- to recognize that the River Sheppey is a highly modified watercourse of moderate ecological status;
- to take a catchment-based approach to considering the full range of actions that could be taken in an area by a variety of bodies to improve resilience;
- to secure multiple benefits, e.g. increase biodiversity and support fisheries in addition to reducing flood risk;

- to consider future flood risk in addition to current risk;
- to promote sustainable drainage systems;
- to identify potential natural flood management/nature-based solutions that assist with 'slowing the flow' of water;
- to identify potential working partnerships to implement solutions;
- to improve the resilience of properties and the wider community;
- to increasing local awareness of flood risk, riparian owner responsibilities and actions that can be taken within local communities.

The review has also highlighted support for reducing flood risk, responding to the effects of climate change and enhancing biodiversity within the local community.

3 Catchment Action Plans

3.1 Somerset Catchment Partnership Action Plan Overview

An Action Plan has been prepared by the Somerset Catchment Partnership (SCP) for the 'Somerset catchments'. This includes the River Brue and its tributaries, which includes the River Sheppey (Somerset Catchment Partnership, 2019). The SCP has identified the following strategic goals:

- *"Improve land management and sustainable agriculture to reduce soil erosion, nutrient and pesticide loss;*
- *Improve wastewater management to reduce nutrients in watercourses from public and private wastewater;*
- *Restore functional ecosystems and connected habitats to benefit people, wildlife and fisheries;*
- *Improve water and flood risk management by using and restoring natural processes; and,*
- *Work with stakeholders to identify barriers to positive change and find solutions."*

Actions identified include:

- Hills to Levels approach and all projects associated;
- Sheppey Catchment Project;
- SPONGE2020 - a project developing innovative, nature-based solutions that address surface water flooding and related problems in different urban areas in Somerset, primarily focused on Taunton.

3.2 Brue Catchment Action Plan 2020-2025

The Brue Catchment faces many challenges as a result of complex water management and varied farming practices. It is a priority focus of the SCP and aligns with their strategic goals. In 2019, SCP partners and wider stakeholders were involved in developing a Catchment Action Plan through participating in an evidence and data review, workshops, and specialist focus groups to consider the issues and plan solutions (Somerset Catchment Partnership, 2019).

The issues affecting the catchment were identified as:

- **Water Quality** - Multiple Water Framework Directive (WFD) failures due to high phosphate levels from diffuse (agricultural runoff) and point source pollution (sewage).

- **Land use** - Loss of grassland and increased soil loss due to an increase in maize cultivation for intensive dairy farming and anaerobic digesters.
- **Water Quantity** - Flooding, water level management, land drainage, low flow and surface water abstraction
- **Climate Change** - Somerset's long coast and large areas of low-lying land make it one of the UK's most climate-vulnerable areas, facing increased risks from sea level rise, river flooding and drought. Even under the UK Government's more moderate projections, climate change is likely to pose significant threats to Somerset.
- **Habitats** - Ramsar sites and SSSI are failing to meet the environmental standards due to low water levels and high nutrients inputs from the rest of the catchment and local activities. Extensive channel modification, invasive species, peat shrinkage, excessive weed growth, poor habitat diversity.
- **Fisheries** - Multiple barriers to fish migration, fish kills due to low flow, eel regulation.
- **Bathing Waters** - Despite a £39 million Wessex Water investment into improving infrastructure, Burnham beach has lost its bathing water status after not achieving the required standard for four years in a row. Poor water quality has been attributed to diffuse agricultural & urban pollution, Water Recycling Centres & private septic tanks/sewage treatment.
- **Partnerships** - The drivers for change vary between partners and therefore partners seek to tackle individual issues. There is a need for good communication between partners, stakeholders and land managers to ensure shared understanding of the issues and facilitate joined up delivery.

After collating and reviewing the evidence and considering the issues highlighted, the Brue Catchment Action Plan outlines a series of focused objectives, and project proposals to be delivered by SCP partners over the period 2020-2025 (subject to funding), including the Sheppey Catchment Restoration Project. Slowing down water on the upper catchment through farm advice campaigns and grants, particularly in the Sheppey and Alham catchments is identified as an action.

3.3 Input to investigation

The review of the aforementioned Catchment Action Plans has highlighted that the actions identified through this investigation should, where appropriate, also try to resolve wider issues within the catchment and support the achievement of wider strategic goals, for example, through improved land management, habitat restoration, nature-based solutions, partnerships and community engagement.

4 Flood Management Plans and Risk Assessments

4.1 Overview

4.2 Environment Agency

4.2.1 South West River Basin District Flood Risk Management Plan 2015-2021

The Brue and Axe operational catchment falls within the South West River Basin District within the 2015-2021 Flood Risk Management Plan (Environment Agency, 2016). The Plan notes that:

"The catchment has a history of flood risk, generally due to the high rainfall that can lead to extensive flooding of the river valleys."

"Communities at risk of flooding from rivers ... include ... Shepton Mallet"

"Shepton Mallet and Cheddar are classed 95 of 114 as Rapid Response Catchments, as intense rain storms can lead to rapid run-off and increased flood risk over a short period of time."

"For the Brue and Axe catchment, flood risk is generally being managed effectively by working in partnership with the LLFAs, Local Authorities and IDBs. The Environment Agency will continue to encourage best practice farming, soil management and run-off limitation within the catchment, and work with the community to increase flood awareness."

4.2.2 North and Mid Somerset Catchment Flood Management Plan 2012

The North and Mid Somerset Catchment Flood Management Plan (Environment Agency, 2012) notes the following within Sub-area 7 – Levels and Moors Towns:

"This catchment has a long history of flooding, with the most significant event in recent years having occurred in Shepton Mallet in May 2008 when for the second time in 18 months 30 properties were affected by surface water and river flooding after periods of heavy rainfall."

"Currently the main sources of flood risk for people, property, infrastructure and the land are: ... surface water drainage flooding, which has occurred in Shepton Mallet and Cheddar."

Shepton Mallet is identified as a town with 25-50 properties at risk in a 1% annual probability river flood.

Relevant proposed actions include:

“Liaise with key stakeholders to:

- understand and review existing flood risk management activities undertaken in Wells, Shepton Mallet and Glastonbury;”*

“Undertake a study to investigate the potential for flood warning service to be introduced in Cheddar, Shepton Mallet, Wells and surrounding villages. Consider the use of rainfall forecasting techniques in place of water level or flow gauge data for triggering flood warnings. Based on the outcomes of the study, implement a flood warning system.

Prepare a flood emergency plan for Cheddar, Wells and Shepton Mallet taking account of the potential impacts of climate change and including scenarios of sewer flooding and overtopping or a breach of sluice gates in the urban river system and include procedures for protecting the heritage sites in Wells.”

“Encourage the use of Sustainable Drainage Systems on all new developments and redevelopments. Use the planning process to discourage re-development, encourage relocation and limit intensification of development in areas with a high risk of flooding.”

The EA has advised that Shepton Mallet has now had a flood warning service delivered. The EA is also developing a flood forecasting model for the River Sheppey to improve lead times for Croscombe and Shepton Mallet.

4.2.3 Updates

In December 2022, the Environment Agency published updated flood risk management plans for England to cover the period from 2021 – 2027 (Environment Agency, 2022).

The Environment Agency also published updated River Basin Management Plans in December 2022. The River Sheppey falls within the Brue and Axe operational catchment. This is within the South West River Basin District and the Somerset South and West Management Catchment (Environment Agency, 2022).

These updates should be taken into account when taking forward the recommendations from this investigation.

4.3 Somerset County Council

4.3.1 Preliminary Flood Risk Assessment Addendum Report June 2017

The preliminary flood risk assessment (PFRA) and flood risk areas (FRAs) for Somerset County Council were reviewed during 2017, using all relevant current flood risk data and information. Changes to the assessment of risk since the preliminary assessment report was published in 2011 were described in the (Somerset County Council, 2017).

Croscombe appears in Table 1 of the report which summarises the most significant flood events in Somerset since 2011. This related to flooding that occurred on 11 July 2012.

4.3.2 Local Flood Strategy Final February 2014

Somerset's Local Flood Strategy was published in 2014 (Somerset County Council , 2014). the guiding principle of the Somerset Local Flood Risk Management Strategy is:

"The risk of flooding and associated social, economic and environmental impacts will be managed through local leadership and coordinated work of all the Risk Management Authorities, businesses, community groups, voluntary sector organisations and local people working in partnership across Somerset."

4.4 Somerset Rivers Authority

4.4.1 Somerset Levels and Moors Flood Action Plan: A 20-year plan for a sustainable future

Somerset Rivers Authority oversees all the work being done as part of Somerset's 20 Year Flood Action Plan. The overarching aim of the Flood Action Plan is to reduce the frequency, duration and severity of flooding (Somerset Rivers Authority, 2014).

The Flood Action Plan's six main objectives are:

1. Reduce the frequency, depth and duration of flooding;
2. Maintain access for communities and business;
3. Increase resilience to flooding for families, agriculture, businesses, communities, and wildlife;
4. Make the most of the special characteristics of Somerset (with internationally important biodiversity, environment and cultural heritage);
5. Ensure strategic road and rail connectivity, both within Somerset and through the county to the South West peninsula;
6. Promote business confidence and growth.

Flood Action Plan work is organised into five main themes, which are echoed in the SRA's five main workstreams:

- **River Management;**
- **Land Management** including natural flood management activities;
- **Urban Water Management** including Sustainable Urban Drainage Schemes, planning and enforcement;
- **Resilient Infrastructure** including maintenance of highways drainage systems;
- **Building Local Resilience**, giving inspiration, support, advice, information and practical help to communities, households, businesses, and landowners across

Somerset to encourage and enable them to become more resilient and resistant to the impacts of flooding.

4.5 Mendip District Council

4.5.1 Mendip District Council Level 1 Strategic Flood Risk Assessment. Final Report. March 2020

In March 2020, Mendip District Council's Level 1 Strategic Flood Risk Assessment (SFRA) was published (JBA Consulting, 2020). The SFR covers both the Shepton Mallet and Croscombe sub-catchments.

The SFRA summarises historical flood incidents. Those of relevance to the Shepton Mallet and Croscombe sub-catchments are summarised in **Table 1**.

Ward	Total	Fluvial	Ground-water	Sewer	Surface Water	No Flooding	Un-known
Croscombe and Pilton	36	18		14	4 – following heavy rain		
Shepton East Ward	22				6 – flash floods		16
Shepton West Ward	14			6	8 - drainage		

Source: Table 5-5 (JBA Consulting, 2020)

Table 1: Summary of flood incidents per ward for each flooding source using the combined datasets of Mendip Council, SCC and Wessex Water

The SFRA also considers cumulative flood risk and identifies Croscombe and Shepton Mallet as having a 'High' ranking. The SFRA then identifies draft policy recommendations for addressing cumulative impact in all developments. For 'High' ranked areas the following policies are recommended:

- **Runoff peak flow and volume management** - Both greenfield and brownfield developments to achieve 20% betterment over greenfield runoff (for peak flow and volume) post development to counter cumulative impacts.
- **Level 2 SFRAs / Surface Water Management Plans (SWMPs)** - Undertake a Level 2 SFRA to consider further how the cumulative effects of potential peak rates and volumes of water from development sites would impact on peak flows, duration of flooding and timing of flood peaks on receiving watercourses. Such studies could provide further justification for greater restrictions through local planning policy with regards peak flow and volume control of surface water runoff from development sites that are over and above those required by national policy and

guidance. They could also identify where there are opportunities for allocated sites to provide on-site / off-site betterment Level 2 SFRAs as required Surface Water Management Plans as required Surface Water Management Plans as required 99 Aspect Cumulative impact score e.g. online / offline flood storage, and where land should be safeguarded for current and future flood management in line with NPPF Para 157b.

- **Critical Drainage Areas** - Mendip Council may designate these catchments as critical drainage areas, as required. This would mean that a site-specific flood risk assessment would be required for all developments, regardless of their size.

Policy recommendations are also made for all areas in relation to:

- SuDS;
- Development and flood risk management investment;
- New settlements;
- Intellectual Property Rights (IPR).

The SFRA outlines a range of strategic flood risk solutions. Many of these solutions are considered further in this report.

4.6 Shepton Mallet Town Council

When this investigation began, there was no community Flood Plan for Shepton Mallet. An initial meeting to discuss the preparation of a Flood Plan took place in spring 2022. As of February 2023, a Flood Plan has not yet been prepared.

4.7 Croscombe Parish Council

4.7.1 Croscombe Community Flood Plan April 2017

In April 2017 a Community Flood Plan was first prepared for Croscombe (Croscombe Parish Council, 2017). This was then updated in January 2022 (Croscombe Parish Council, 2022).

The Flood Plan includes details of locations at risk of flooding and sources of flooding. This is reproduced in **Table 2**.

Area	Location at risk	Source of flooding	Direction of flooding
Area 1	Bottom of Rock Street – Gardens and water ingress to houses possible	Heavy rain run off down Thrupe Lane and Rock Street	From north, down hill
Area 2	Bottom of Church Street along Long Street to the village shop –	Run off from Church Street, West Lane,	From north, down hill From south, down hills

	House flooding possible Road flooding and traffic disruption possible	Jack's Lane, Old Street Lane Overflow from River Sheppey	River overflow (river flows approx east to west)
Area 3	Lower end of Old Street Lane/Jack's Lane/Jack's Bridge - House flooding possible Road flooding and traffic disruption possible	Run off from fields along and down Jack's Lane, Old Street Lane Overflow from River Sheppey Groundwater	From south, down hills River overflow (river flows approx east to west) From below
Area 4	Long Street from village shop to Elderwell Lane – House flooding possible Road flooding and traffic disruption possible	Overflow from River Sheppey ² Water running along road and accumulating at low point Groundwater	River overflow (river flows approx east to west) Road flooding from centre running to east From below
Area 5	Long Street western end at junction with Fayreway and beyond – House flooding possible Road flooding and traffic disruption possible	Run off from fields Overflow from River Sheppey Groundwater	Usually from fields on southern side River overflow (river flows approx east to west) From below

Table 2: Locations at risk, sources of flooding and direction of flooding detailed in Crocombe Community Flood Plan 2022

One of the recommended actions to take prior to a flood event is to ensure all drains are clear in the areas at risk.

4.8 Input to investigation

The review of the aforementioned Flood Management Plan and Risk Assessments has highlighted the following:

- the catchment has a history of flood risk;
- the Sheppey is a Rapid Response Catchment;
- roads and properties are at risk from surface water drainage flooding;
- communities along the River Sheppey would benefit from improved flood forecasting;
- the need to tackle flooding through river management, land management, urban water management and improving the resilience of infrastructure;

the need to build community flood resilience.

² From our investigation, this is believed to be caused by restrictions in the culvert backing up flow.

5 Related studies of the River Sheppey

5.1 FWAG SW

A multiple benefit project to tackle Water Framework Directive (WFD) failures and flooding in the Sheppey and Keward Brook catchments was identified as a priority by the Somerset Catchment Partnership (SCP). In February and March 2018, catchment walkovers were carried out in the Sheppey Catchment by FWAG SW, with the aim of identifying issues affecting water quality and flooding, as well as identifying potential opportunities for Natural Flood Management (NFM) (FWAG SW, 2018).

The SCP were successful in obtaining EA funding in early 2018 for the catchment walkovers of the Sheppey and Keward Brook (the latter was undertaken by the Wild Trout Trust, see [section 5.2](#) of this report). The river survey and assessments were done by West Country Rivers Trust.

The catchment walkovers gathered evidence of water quality and flood issues and ground-truthed modelled flow pathways in the Sheppey Catchment. The major issues in the Sheppey catchment were identified as:

- Fisheries;
- Flood risk;
- Water quality, especially phosphate.

The Catchment Walkover report identifies potential NFM sites, five of which are located within the Shepton Mallet and Croscombe sub-catchments. The sites were identified as having potential for leaky woody dams or floodplain storage.

The SCP planned to acquire funding from the Rural Development Programme for England (RDPE) Water Environment Grant, to deliver a catchment-based project based on the findings of the FWAG SW and WTT reports. It is understood that this funding stream was not applied for and therefore the actions identified in this study have been reviewed as part of this investigation, and where appropriate, incorporated into the final list of potential opportunities, see [section 10](#) of this report.

FWAG SW is also continuing to progress projects within both the Shepton Mallet and Croscombe sub-catchments funded by the Somerset Rivers Authority 'Hills to Levels Delivery Project'. The Hills to Levels project is a holistic catchment management approach across catchments in Somerset, aiming to 'slow the flow' to reduce flood risk, reduce erosion, improve water quality, deliver wider environmental benefits, and increase resilience on the floodplain. It is likely this overarching project will be the main funding source for the delivery of any NFM opportunities identified with the Shepton and Croscombe catchments.

5.2 Westcountry Rivers Trust

In March 2016, 10km of the River Sheppey in Somerset was surveyed by the Westcountry Rivers Trust (WRT) and Bristol Avon Rivers Trust using a fisheries walkover methodology (Westcountry Rivers Trust, 2016). The report was prepared for the Environment Agency and received Water Framework Directive funding.

Habitat features were mapped and the river was found to be heavily modified and impacted by barriers to migration. Several recommendations were made to tackle the priority issues of fish passage and the secondary issue of non-functioning fisheries habitats.

The recommendations included a catchment restoration project, involving the EA and other partners with a vested interest in the river. Phase 4 of the proposed project includes land management solutions. Including *actions* to:

1. *Investigate and prioritise land management impacts and practices*
2. *Deliver river friendly farm advice*
3. *Identify farm opportunities and grants*
4. *Complete a wet weather walkover to determine diffuse and point source pollution inputs*
5. *Identify and deliver riparian zone management opportunities (fencing, tree management, buffer zones, etc.).*
6. *Consider flood risk management benefits in the catchment."*

In 2018, further walkover fisheries surveys were completed to include the section downstream of the previous surveys to the point where the Sheppey exhibits linear features associated with lowland levels and the Keward Brook (Westcountry Rivers Trust, 2018). These surveys are downstream of the Shepton Mallet and Croscombe sub-catchments.

5.3 Wild Trout Trust

In February and March 2021, the Wild Trout Trust carried out walkover surveys of the River Sheppey in Shepton Mallet (Wild Trout Trust, 2021) and Croscombe (Wild Trout Trust, 2021). These initial visits were undertaken to provide a baseline habitat assessment of the urban reaches of the River Sheppey as part of the TWIST (Transforming Waterways In Somerset Towns) pilot project – understanding pressures on the urban water environment, as well as investigating opportunities for physical enhancements and engaging urban dwellers with their local river.

One of the key findings that applies to both catchments is:

"The River Sheppey responds rapidly to rainfall, due to the steep topography of its upper catchment, and this 'flashiness' has been exacerbated by historic urbanisation."

Although, this *“may be even more pronounced in the narrow Croscombe valley.”*

In both catchments,

“River restoration to add sinuosity and flow diversity in urban and semi-urban areas could help to ‘slow the flow’ of spates on one hand, and maximise environmental benefits of low flows on the other.”

In both catchments, opportunities to reduce local flood risk were identified.

In Shepton Mallet this included:

- *“repurposing former mill ponds, and deculverting other suitable stretches, to create Sustainable Drainage Solutions (SuDS) and blue-green recreation spaces. This could also help to reduce flood risk further down the catchment.”*

In Croscombe this included:

- *“removing impoundments close to residential properties.”*

The reports also identified key findings in relation to water quality and habitat improvement, barriers to fish passage and opportunities for community engagement.

The findings of these reports have informed the potential opportunities outlined in this report.

5.4 Input to investigation

The review of the aforementioned related studies has highlighted that there a number of potential additional partner organisations that can assist with delivering solutions that not only reduce flood risk and improve resilience, but can also help deliver multiple benefits, e.g. addressing WFD failures and identifying opportunities for enhancing biodiversity and fisheries.

The findings of these reports have informed the potential opportunities outlined in this report.

6 Review of Flood History

The EA has prepared maps showing the extent of flooding from rivers and the sea and from surface water. The flood maps show four levels of flood risk:

- **High** - each year, the area has a chance of flooding of greater than 1 in 30 (3.3%)
- **Medium** - each year, the area has a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%)
- **Low** - each year, the area has a chance of flooding of between 1 in 1000 (0.1%) and 1 in 100 (1%)
- **Very low** - each year, the area has a chance of flooding of less than 1 in 1000 (0.1%).

6.1 Shepton Mallet sub-catchment

6.1.1 Flooding from the River Sheppey

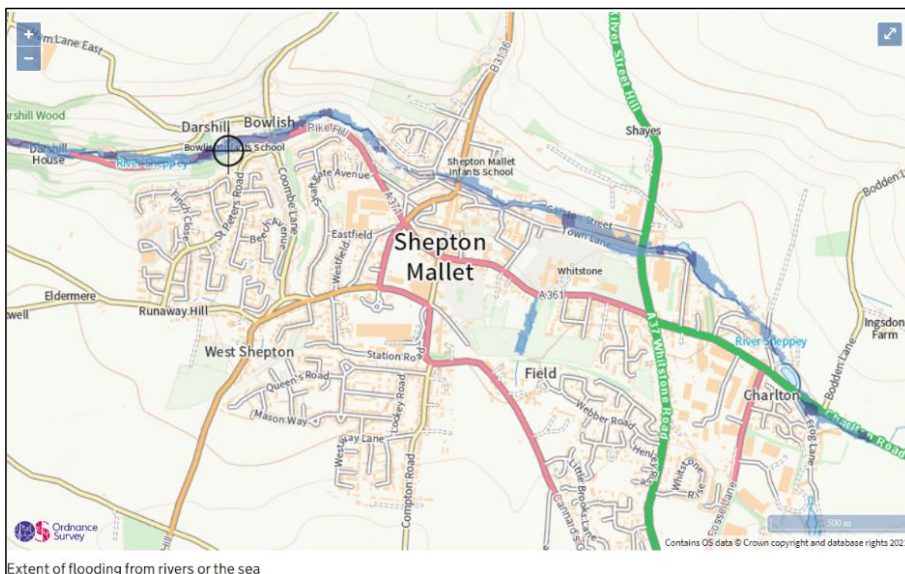


Figure 8: Environment Agency Rivers Flood Map – Shepton Mallet (June 2021)

The EA flood map in **Figure 8** shows that flooding of the River Sheppey has the potential to affect a number of roads and properties in the area. Main roads most at risk include:

- A371 at Bowlish and Darshill;
- B3136 south of Shepton Mallet Infants School;
- A37 near Kilver Court;
- A361 Charlton Road near Charlton House Hotel.

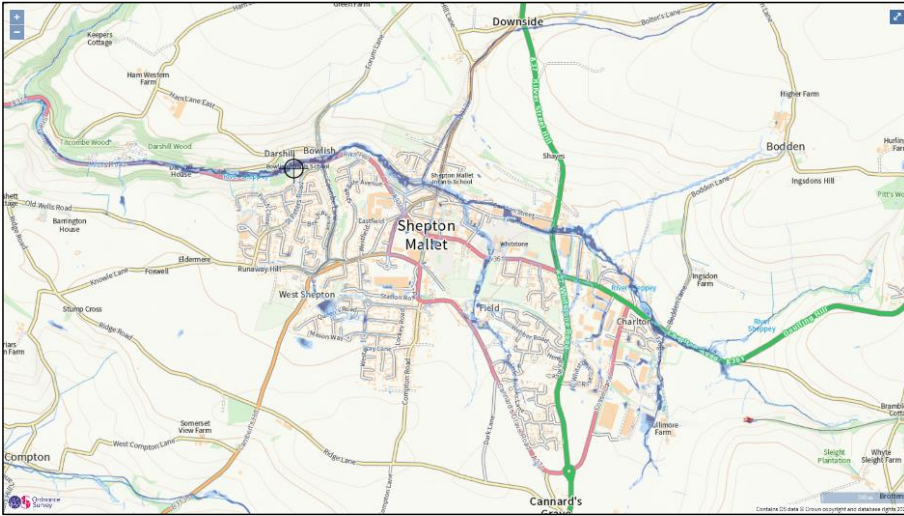
Table 3 outlines the historic flood events associated with the River Sheppey within the Shepton Mallet sub-catchment that have been reported to the LLFA.

Date	Location	Flooded	Flood Source(s)	Depth if known
12/07/1982	Lower Lane, Shepton Mallet	Property x15, school	River Sheppey	
20/10/2006	Wells Road, Bowlish	Property x3	River Sheppey	
14/08/2007	Pike Hill, Bowlish	Property x3	River Sheppey	
29/05/2008	Cannards Grave Rd, Shepton Mallet	Property x5, shops	River Sheppey	
19/07/2011	Charlton Road, Shepton Mallet	Highway	River Sheppey	
11/07/2012	Wells Road, Bowlish	School	River Sheppey	
11/07/2012	Lower Lane, Shepton Mallet	Property x1	River Sheppey	
04/11/2012	Shepton Road	Highway & Property x1	River Sheppey	
14/01/2014	Back Lane, Darshill	Highway	River Sheppey	
03 & 04/10/2020	Wells Road, Bowlish	Highway & Property x10	River Sheppey	
03 & 04/10/2020	Leg Lane and Leg Square, Shepton Mallet	Highway & Property x6	River Sheppey and drainage	

Table 3: Historic events reported in the LLFA RMA: Flooding caused by the River Sheppey within the Shepton Mallet sub-catchment

6.1.2 Flooding from surface water and drainage

The EA's surface water flood map is provided in **Figure 9**.



Extent of flooding from surface water

● High ● Medium ● Low ○ Very low

Figure 9: Environment Agency Surface Water Flood Map – Shepton Mallet (June 2021)

The EA has classified this sub-catchment as a ‘Rapid Response Catchment’ and there are recorded incidents of flooding to properties and roads, which are not associated with the main river. **Table 4** outlines the historic flood events associated with surface water or drainage within the Shepton Mallet sub-catchment that have been reported to the LLFA.

Date	Location	Flooded	Flood Source(s)	Depth if known
06/12/2007	Wells Road, Bowlish	Highway	Drainage	
11/01/2008	Victoria Grove, Shepton Mallet	Property x1	Surface	
04/11/2009	Wells Road, Bowlish	Highway	Surface	
24/11/2009	Commercial Road, Shepton Mallet	Highway	Drainage	
24/06/2011	Back Lane, Darshill	Property x1	Drainage	
03/11/2011	Back Lane, Darshill	Highway	Drainage	
04/11/2011	Charlton Road, Shepton Mallet	Highway	Drainage	
04/11/2011	Wells Road, Bowlish	Highway	Surface	~150mm
06/11/2011	Old Wells Road, Darshill	Highway	Culvert	

Date	Location	Flooded	Flood Source(s)	Depth if known
18/11/2011	Wells Rd / Back Ln, Bowlish	Highway	Drainage	~150mm
03/01/2012	Charlton Road, Shepton Mallet	Highway	Surface	~600mm
03/01/2012	Charlton Road, Shepton Mallet	Highway	Surface	
03/01/2012	Cannards Grave Rd, Shepton Mallet	Highway	Surface	
03/01/2012	High Street, Shepton Mallet	Highway	Surface	
26/01/2012	Old Wells Road, Darshill	Highway	Surface	
02/05/2012	Old Wells Road, Darshill	Highway	Drainage	
23/06/2012	Old Wells Road, Darshill	Highway	Drainage	
11/07/2012	Cannards Grave Rd, Shepton Mallet	Highway	Surface	
11/07/2012	Charlton Road, Shepton Mallet	Highway	Surface	
11/07/2012	Old Wells Road, Darshill	Highway	Surface	~1m
11/07/2012	Cannards Grave Rd, Shepton Mallet	Highway	Surface	
11/07/2012	West Shepton, Shepton Mallet	Highway	Drainage	~100mm
09/10/2012	Frog Lane, Shepton Mallet	Highway	Drainage	
09/10/2012	Knowle Lane, Shepton Mallet	Highway	Drainage	
10/10/2012	Frog Lane, Shepton Mallet	Highway	Drainage	
04/11/2012	Cannards Grave Rd, Shepton Mallet	Highway	Surface	
21/11/2012	Frog Lane, Shepton Mallet	Property x1, Highway	Surface	
21/11/2012	Cannards Grave Rd, Shepton Mallet	Property x3, Highway	Surface	
21/11/2012	Paul Street, Shepton Mallet	Highway	Drainage	
20/12/2012	Cannards Grave Rd, Shepton Mallet	Highway	Drainage	
29/12/2012	Cannards Grave Rd, Shepton Mallet	Highway	Drainage	

Date	Location	Flooded	Flood Source(s)	Depth if known
11/11/2013	Old Wells Road	Highway	Blocked culvert /drainage	
15/11/2013	West Shepton, Shepton Mallet	Highway	Surface	
30/12/2013	Frithfield Lane, Shepton Mallet	Highway	Drainage	
06/01/2014	Cannards Grave Rd, Shepton Mallet	Highway	Surface	
Various	Charlton Road, Shepton Mallet	Highway	Surface	
03 & 04/10/2020	Leg Lane and Leg Square, Shepton Mallet	Highway & Property x6	River Sheppey and drainage	

Table 4: Historic events reported in the LLFA RMA: Flooding caused by surface water/drainage within the Shepton Mallet sub-catchment

Of the flood incidents recorded, the majority appear to be associated with the modified drainage network along roads and through the urban area of Shepton Mallet. Many of the recorded incidents appear to be caused by blocked road gullies and/or inadequate capacity within the piped road drainage network.

There are, however, three locations where flood incidents have been recorded that can be attributed to other causes.

The first area is along Old Wells Road associated with the Titwell Wood Stream, refer **Figure 10**. There are reports of regular flooding of the Old Wells Road associated with a blocked culvert at the headwaters to this tributary watercourse. The watercourse flows in a northerly direction within both an open channel (confined to a channel located within the heavily vegetated field margins) and culverts. The tributary appears to be culverted under the Wells Road. Blockage of the upstream end of the culvert may lead to water flowing out directly onto the main road, where there are recorded incidents of flooding.

Flood incidents have also been recorded along Cannard's Grave Road in Shepton Mallet, refer **Figure 11**. The cause is likely to be associated with surface water runoff along the road and from the adjacent land (pasture). There are several vulnerable properties located along the Cannard's Grave Road, three of which have been reported as having been directly impacted by flooding.

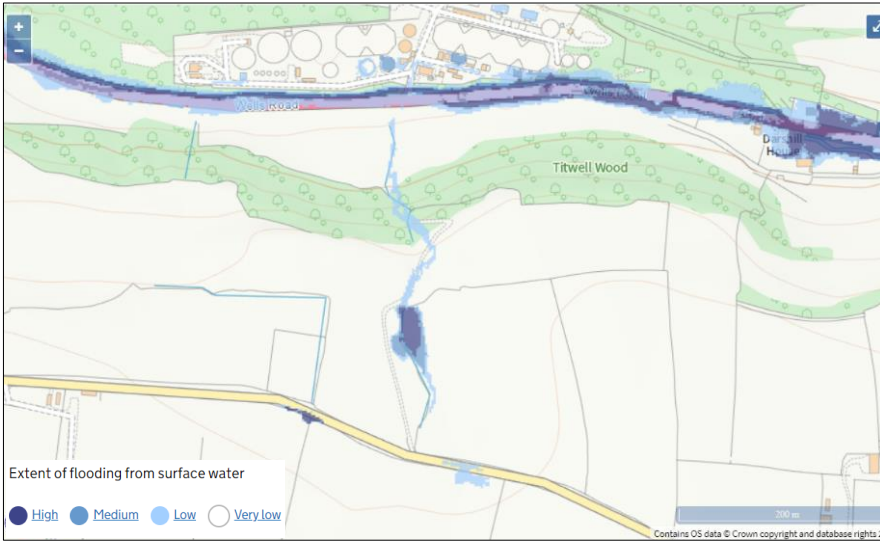


Figure 10: Environment Agency Surface Water Flood Map – Titwell Wood Stream (June 2021)

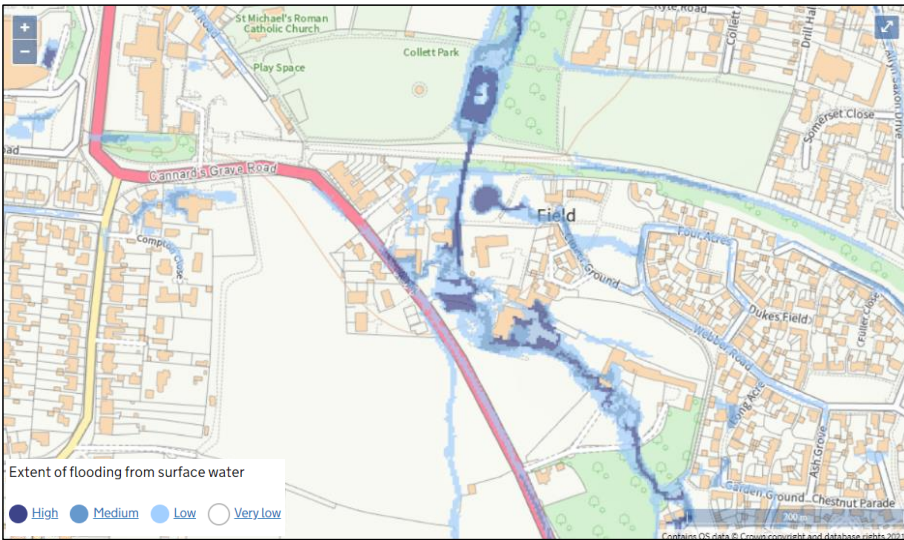


Figure 11: Environment Agency Surface Water Flood Map – Cannard's Grave Road (June 2021)

Regular flood incidents have been recorded along Charlton Road and Frog Lane, in the east of Shepton Mallet. There is a small tributary stream which drains the area to the south

joining into the River Sheppey through a culvert under Charlton Road. This stream (named here as the Bullimore Stream) is contained within an open channel for approximately 500m before becoming entirely confined within a culvert along Frog Lane. There are various smaller culverts along the length of the channel providing access to adjacent residential properties. Some of the culverts at the top end of Frog Lane are potentially undersized. There is a risk that they will become blocked by debris, causing the stream to overflow its banks and spill into the road, where this will combine with surface water flow and potentially contribute to the flooding issues recorded downstream along both Frog Lane and the Charlton Road. In addition, the land immediately upstream of Frog Lane is predominantly arable (maize) so there is potential for rapid runoff associated with this land use.

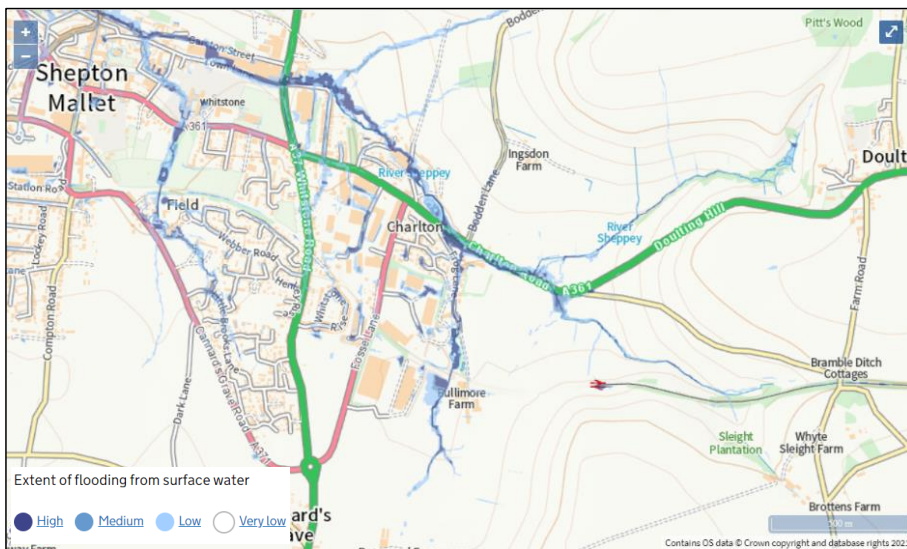
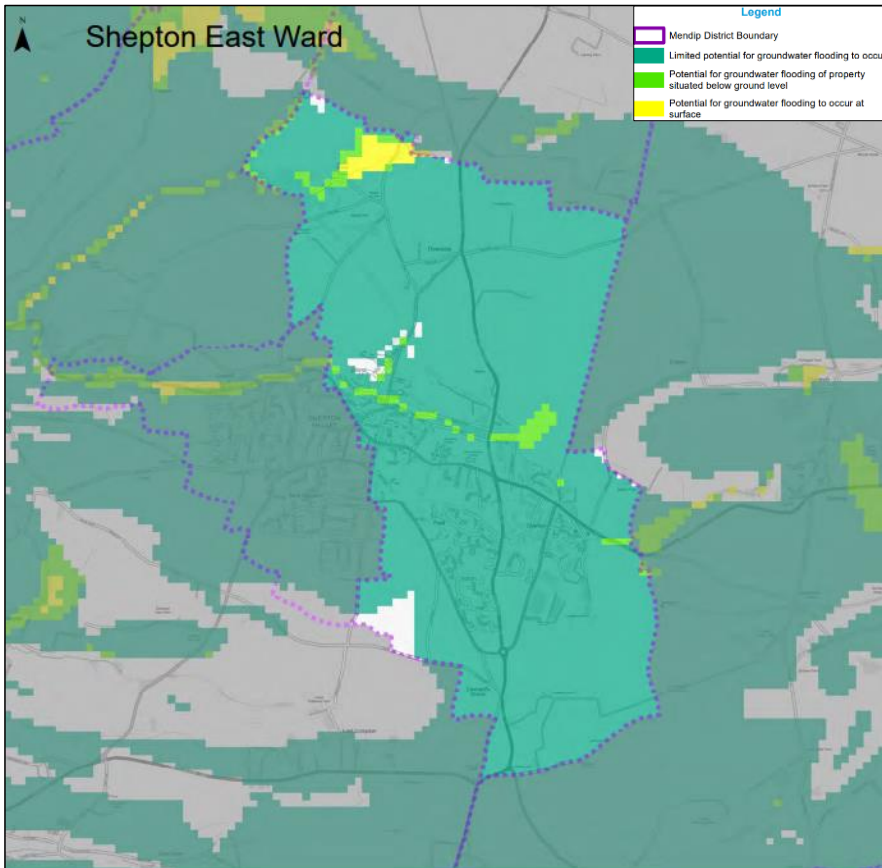


Figure 12: Environment Agency Surface Water Flood Map – Charlton Road / Frog Lane (June 2021)

6.1.3 Flooding from groundwater

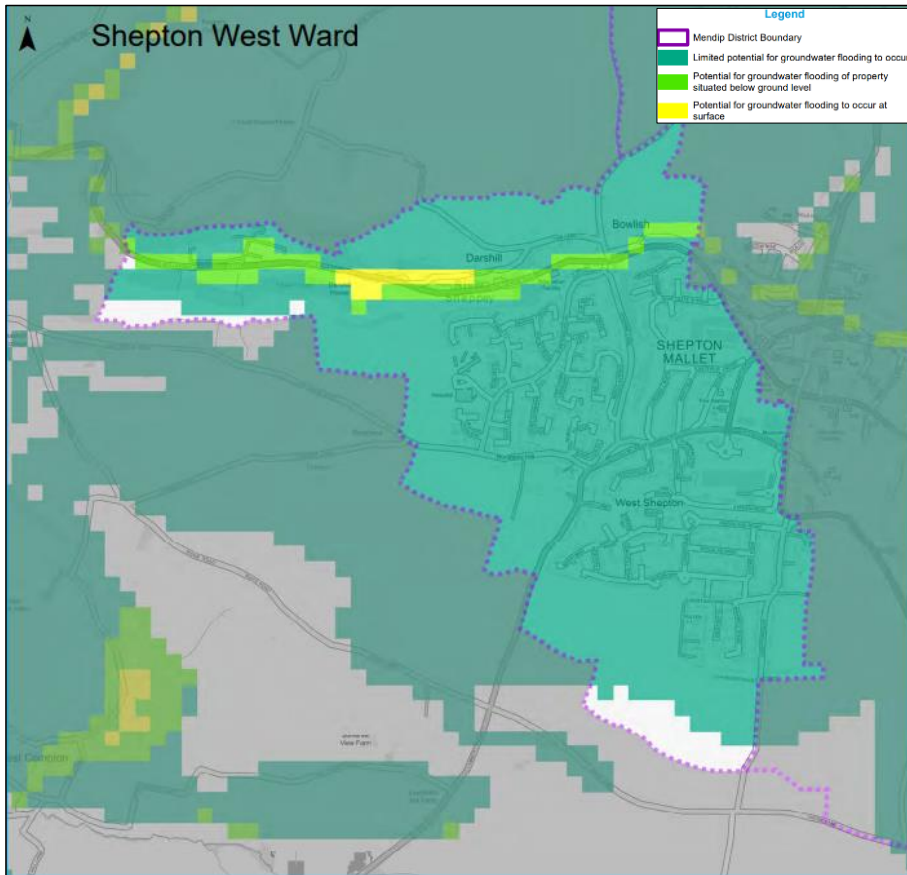
Map K of the Mendip Strategic Flood Risk Assessment (JBA Consulting, 2020) indicates that there is potential for groundwater flooding of property situated below ground level within some areas of Shepton Mallet East and West, as illustrated in Figure 13 and Figure 14. There is also potential for groundwater flooding to occur at the surface in some locations.

No groundwater flood incidents are reported in the summary provided in Table 1 of this report.



Source: (JBA Consulting, 2020).

Figure 13: Extract from Map K of the Mendip Strategic FRA: Shepton Mallet East Ward



Source: (JBA Consulting, 2020).

Figure 14: Extract from Map K of the Mendip Strategic FRA: Shepton Mallet West Ward

6.1.4 Flooding from sewers

In October 2020, flooding from sewers occurred at Bowlish, with properties reporting sewage entering both their homes and gardens. Flooding from sewers has also been reported in Kent lane.

Six sewer flooding incidents are reported to have occurred in Shepton West Ward in the summary provided in **Table 1** of this report.

6.2 Crocombe sub-catchment

6.2.1 Flooding from the River Sheppey

The EA flood map for rivers shows that much of the A371 through Crocombe and properties adjacent to it are at risk from flooding from the River Sheppey.

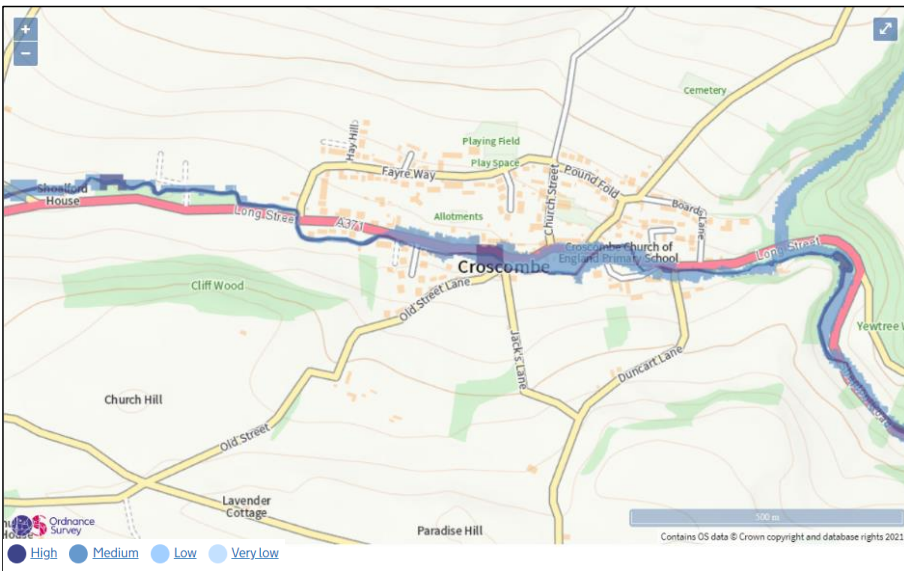


Figure 15: Environment Agency Rivers Flood Map – Crocombe (June 2021)

Date	Location	Flooded	Flood Source(s)	Depth if known
18/08/2006	Long Street, Crocombe	Property x3	River Sheppey	
13/12/2008	Long Street, Crocombe	Property x4	River Sheppey	
11/07/2012	Long Street & Church Street	Highway & Property x4	River Sheppey	~609mm
04/11/2012	Shepton Road	Highway & Property x1	River Sheppey	
03 & 04/10/2020	Long Street / Jack's Lane, Crocombe	Highway & Property x10	River Sheppey	

Table 5: Historic events reported to the LLFA RMA: Flooding caused by the River Sheppey within the Crocombe sub-catchment

Table 5 outlines the historic flood events associated with the River Sheppey within the Croscombe sub-catchment that have been reported to the LLFA. This identifies the key locations for flooding of properties and/or highways as being on Long Street, Church Street, Shepton Road and Jack's Lane.

6.2.2 Flooding from surface water and drainage

There are known incidents of flooding to properties and roads, which are not associated with the main river (see **Figure 16**) in Croscombe. The majority of flood incidents within the sub-catchment are recorded within Croscombe village and are associated with road and surface water runoff within the modified road drainage network.

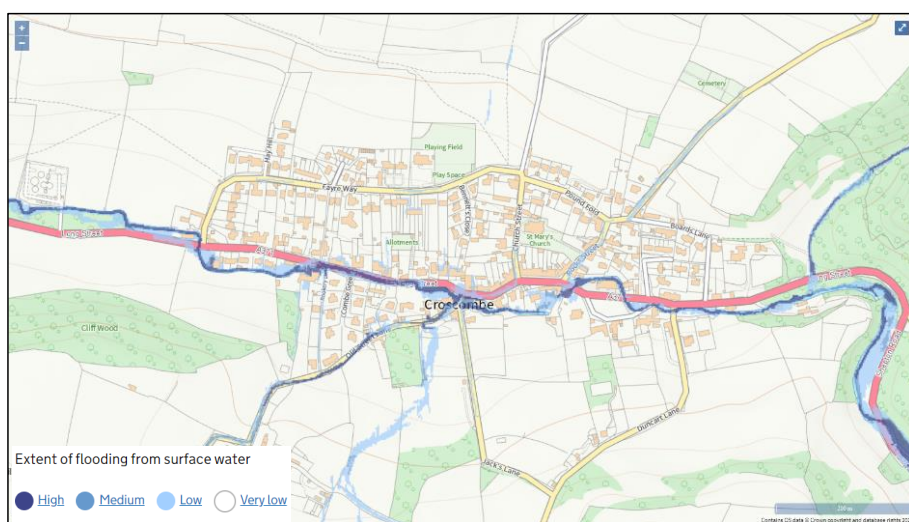


Figure 16: Environment Agency Surface Water Flood Map – Croscombe (June 2021)

Table 6 outlines the historic flood events associated with surface water or drainage within the Croscombe sub-catchment that have been reported to the LLFA. Long Street, Boards Lane and Thrupe Lane are the most reported locations for experiencing flooding associated with surface water runoff and issues associated with blocked drains.

Date	Location	Flooded	Flood Source(s)	Depth if known
01/02/1990	Long Street, Croscombe	Property x1	Surface	
22/03/1996	Long Street, Croscombe	Property x3	Surface	
21/08/1996	Long Street, Croscombe	Property x1	Surface	

Date	Location	Flooded	Flood Source(s)	Depth if known
21/08/2006	Long Street, Croscombe	Highway	Blocked drainage	
08/09/2006	Long Street, Croscombe	Highway	Surface	
27/10/2006	Long Street, Croscombe	Highway	Blocked drainage	
24/10/2007	Long Street, Croscombe	Highway & Property x1	Surface	
10/11/2008	Long Street, Croscombe	Highway	Blocked drainage	
12/11/2009	Long Street & Boards Lane, Croscombe	Highway	Drainage	
29/01/2010	Long Street, Croscombe	Highway	Drainage	
16/02/2011	Long Street, Croscombe	Highway	Blocked drainage	
04/11/2011	Long Street, Croscombe	Highway	Drainage	~130mm
02/01/2013	Thrupe Lane	Highway & Property x1	Blocked culvert /drainage	
24/12/2013	Long Street	Highway	Not recorded	
12/02/2014	Long Street	Highway	Surface	
Recorded as 'various'	Long Street & western end of village	Property x4	Surface	

Table 6: Historic events reported to the LLFA RMA: Flooding caused by surface water/drainage within the Croscombe sub-catchment

There are multiple incidents of flooding along Long Street in Croscombe. Flooding within the village can be largely attributed to rapid runoff from roads draining the steep slopes to the north of the village. Runoff is particularly concentrated along the steep hard road surface of Thrupe Lane and the parallel road/track that runs to the northwest of Thrupe Lane. There are some agricultural sources (i.e. arable and overwintering cattle) connected to the road which may contribute sediment laden runoff along the road and block gullies located downstream in Croscombe.

There are no other watercourses (non-main river) within Croscombe that flooding can be attributed to.

In summary, the main causes of flooding are likely to be associated with:

- rapid runoff and sediment delivery from hard surfaces during storm events – especially from flow pathways to the north of the village where there are some agricultural sources;
- blocked drains; and
- potential undersized road drainage pipes within Croscombe itself.

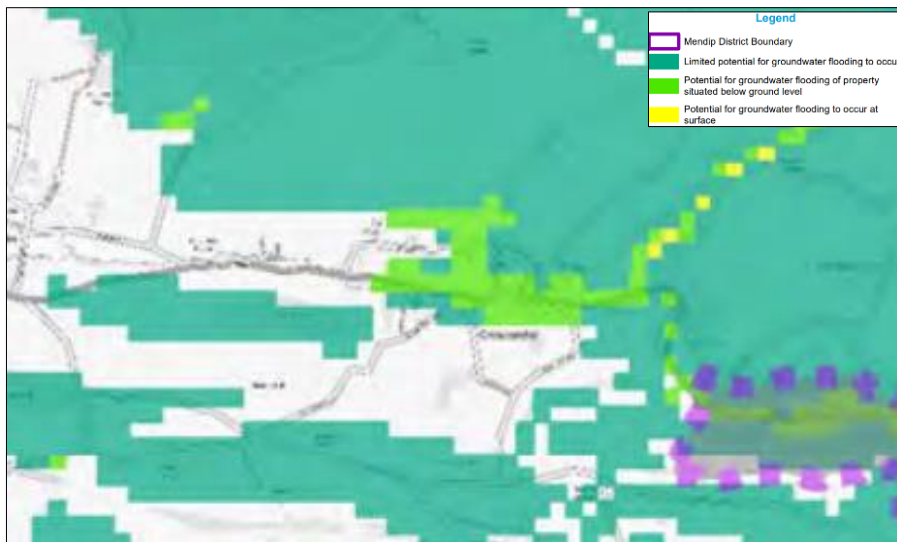
6.2.3 Flooding from groundwater

There are two swallets located upstream of Croscombe which convey surface water flow below ground. One of these is located within Ham Wood and the other is located just off Thrupe Lane. It is understood that flow entering the swallets bypasses Croscombe entirely and eventually resurfaces within St Andrews Well in the city of Wells (Stanton, 1973).

Following the October 2020 flood event, some properties along Long Street reported flood water coming up through internal floors. The Section 19 report indicated that the source of this was groundwater, however, local residents report that it was not groundwater but river water.

Map K of the Mendip Strategic Flood Risk Assessment (JBA Consulting, 2020) indicates that there is potential for groundwater flooding of property situated below ground level within some areas of Croscombe, as illustrated in **Figure 17**.

No groundwater flood incidents are reported in the summary provided in **Table 1** of this report.



Source: (JBA Consulting, 2020).

Figure 17: Extract from Map K of the Mendip Strategic FRA

6.2.4 Flooding from sewers

Some properties along Long Street reported flooding from sewers as a result of the October 2020 flood event. Wessex Water took remedial action as noted in **Table 7**.

Fourteen sewer flooding incidents are reported to have occurred in Croscombe and Pilton Ward in the summary provided in **Table 1** of this report.

7 Remedial works undertaken

Table 7 summarises works that have been previously undertaken to reduce the flooding problems identified within the sub-catchments.

Description of Works	Lead Partner	Dates
Shepton Mallet sub-catchment		
Shepton Mallet Improvement Scheme	Environment Agency	2011
Croscombe sub-catchment		
A highway drain located within Old Street Lane discharges into the River Sheppey downstream of Jack's Bridge and upstream of Manor House; this collects surface water runoff from Old Street Lane. Pipes increased in size from 225mm to 300mm diameter.	Somerset Highways	2009/2010
Works carried out on Jack's Bridge to alleviate road run-off from Old Street Lane and Jack's Lane. Discharge holes / spillways cut into the bridge's parapet to allow the surface water to discharge into the River Sheppey.	Somerset Highways	July 2009
Installation of Property Flood Resilience (PFR) products such as flood boards, toilet bungs, non-return valves (NRVs) and pumps	Environment Agency	2017
Surface water drainage improvements – installation of additional gullies	Somerset Highways	'After 2018 flood event'
Private Property Flood Resilience measures such as a flood door [NB. One property had to remove its PFR measures due to listed building status]	Residents	Pre-2020 flood event
Flood mitigation works carried to reduce infiltration into the sewer system to reduce the risk of internal property flooding from the sewers. It is understood that further infiltration lines were to be identified and filled in as soon as is possible.	Wessex Water	Post-2020 flood event
Land management and natural flood management as part of the 'Hills to Levels' project.	FWAG SW	Ongoing

Table 7: Historic flood risk mitigation initiatives

8 Investigation

8.1 Investigations undertaken

8.1.1 CCTV surveys

Where existing data was not sufficient, additional surveys have been undertaken to try to improve our understanding of the drainage network and to identify any specific issues that could be contributing to surface water flooding within the Shepton and Croscombe sub-catchments.

Following a review of previous CCTV survey work undertaken for the Environment Agency between 2017 and 2020, further detailed CCTV survey of the surface water system was undertaken in Croscombe in December 2021 and in Shepton Mallet in February/March 2022. Further surveys were also undertaken in both sub-catchments in September 2022.

Reference details of the CCTV reports are provide in **Table 8**. The CCTV locations are identified in [Error! Reference source not found.](#) and **Figure 20**. The results of the surveys have been shared with relevant partners.

Date	Author	Report Title
23 October 2022	Ghyston Engineering Ltd	Shepton Mallet Report on Surveys
18 October 2022	Ghyston Engineering Ltd	Croscombe Report on Surveys

Table 8: CCTV survey reports

Works undertaken to facilitate the CCTV investigations are as follows:

Shepton Mallet sub-catchment

- **Bottom of Cowl Street** – jetting;
- **Leg Square** – works to manhole cover;
- **St Peter’s Road** - works to manhole cover.

Croscombe sub-catchment

- **Jack’s Lane** – hedge maintenance for access to manholes;
- **Drain and gully clearance** – the following drains and gullies were cleaned through jetting, along with the mill leat that passes around the Manor House:
 - Fayre Way;
 - Rock Street;
 - Jack’s Lane;
 - Old Street Lane;

- o Junction of Jack's Lane and Long Street at Jack's Bridge.

Tonnes of silt, gravel and roots were removed.

During the CCTV survey in Croscombe, a foul sewer blockage was identified. Water was seen issuing out of a manhole cover. The survey team notified Wessex Water, who responded and cleared the blockage within a few hours.

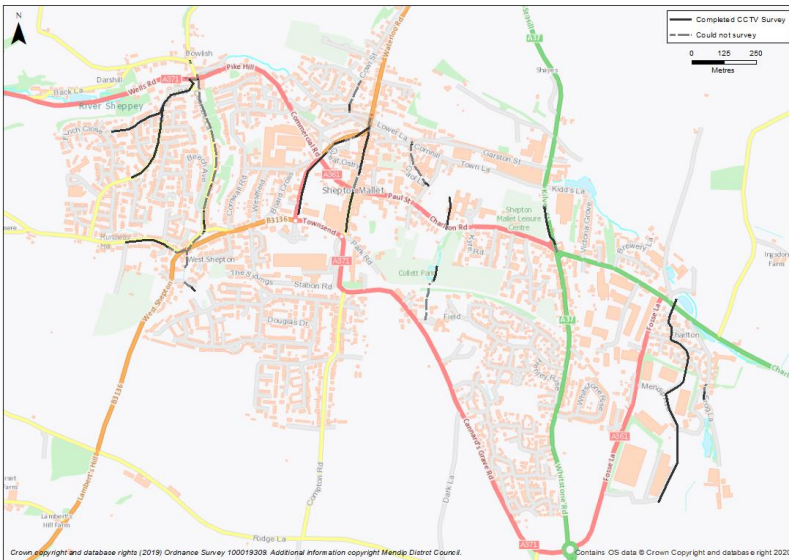


Figure 18: CCTV surveys – Shepton Mallet

Key findings of the CCTV investigations are as follows.

Shepton Mallet sub-catchment

- **Coombe Lane Brook** – The Coombe Lane Brook was traced as accurately as possible from the large collection chamber at Buckland Road to the River Sheppey, however due to the culvert size and presence of rock in the invert the survey remains incomplete. The survey observed a culvert in moderate condition with numerous third party services passing through the culvert creating restrictions to flow and potential features to catch debris. The collection chamber at the upstream end (Buckland Road) includes a debris screen which was substantially blocked and the chamber required maintenance. It is noted that there are very few access points to this culvert, especially along Coombe Lane.
- **Collett Park Stream** – During the course of the CCTV investigations, an attempt was made to trace this watercourse from Little Brooks Lane. When the surface water system was uncovered, flows were traced going into the Highways / Council drains

at Starling Way, then Webber Road and into the attenuation ponds at Clover Ground. An attempt was also made to trace the watercourse upstream of Clover Ground and through the Mendip District Council offices. However, physical restrictions to access prevented this, e.g. access to manholes.

- **Bullimore Brook** - Access issues prevented further tracing of this watercourse. Steps in the culvert under decking on Frog Lane appeared to be the most downstream point of access. No records of where the stream flows have been identified.
- **Old Wells Road** – The drain passing down Old Wells Road appears to mainly collect highway drainage and some overland flows. The houses to the north of Old Wells Road are served by a separate Wessex Water surface water system and do not appear to contribute to this system. A wet-weather walk-over demonstrated how few gullies there are at the west end of the Old Wells Road, but also that little water was witnessed flowing off the fields. The drain suffered from root ingress and requires remediation.

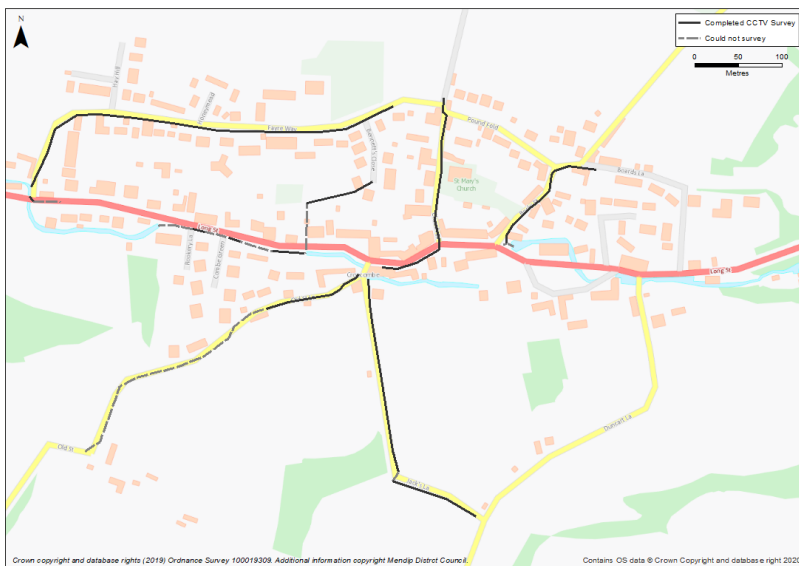


Figure 19: CCTV surveys – Croscombe

Croscombe sub-catchment

- **Southern Catchment (Jacks Lane and Old Street Lane)** – The two roads are steep with a functioning highway drainage system. It was, however, found that siltation of the gullies is an issue in both locations. The collection of runoff from the highways is inefficient, such that water continues to flow along the road and bypasses these collection facilities to pool at the bottom of the highway at Jack's Lane Bridge.

- **Northern Catchment** – A steep catchment means that silts and debris appear to be passed forward to the bottom either in the river or within drainage features along Long Street where the gradients are less steep and siltation occurs. The main issue lies along Long Street where there is siltation in surface water drains, sub-optimum river channel arrangement and potential obstructions to flow within tFigure 20: CCTV surveys – Croscombe

8.1.2 Review of Environment Agency CCTV surveys

In addition to carrying out CCTV surveys as part of this investigation, numerous CCTV reports prepared by the Environment Agency during the last 5 years were reviewed, as detailed in **Table 9**.

Asset Name	Location	CCTV Inspection Report Date
Shepton Mallet sub-catchment		
Simple Culvert: 104644	Under Charlton Road	05/12/2018
Simple Culvert: 104641	Charlton Road Hotel Entrance	09/01/2020
Simple Culvert: 103209	Charlton Road Hotel Main Entrance	17/03/2017
Simple Culvert: 103206	Under Charlton Road	17/03/2017
Martins Lane Culvert	Martins Lane	15/03/2017
Simple Culvert: 104627	Charlton Trading Estate	05/12/2018
Brewery lane culvert	Brewery Lane	15/03/2017
Simple Culvert: 104623	Fields Behind Woodlands Farmhouse	17/03/2017
Simple Culvert: 79665	Near Kilver Court	06/12/2018
Simple Culvert: 104447	Kidd's Lane (Kilver Court)	06/12/2018
79664	Fields Off Kidds Lane	15/03/2017
Simple Culvert: 104444	Kilver Street - Under Cider Factory Garston Street	30/11/2020
Simple Culvert: 104441	Off Cornhill Road	15/03/2017
Simple Culvert: 181701	Garston Street	10/12/2020
Simple Culvert: 102819	Lower Lane	10/12/2020
Draycott Rd culvert	Draycott Road	19/05/2017
Simple Culvert: 82159	Draycott Road	24/01/2020
Simple Culvert: 104260	Draycott Road	06/12/2018
Simple Culvert: 104257	End of Draycott Road	04/12/2020
Simple Culvert: 102801	Pike Hill (Under Bowlish lane)	16/03/2017
Simple Culvert: 104250	Under Forum Lane	04/12/2020
Simple Culvert: 152102	Wells Road - North of A371 Bowlish	04/12/2020

Asset Name	Location	CCTV Inspection Report Date
Simple Culvert: 150624	A371 Wells Road	24/01/2020
Simple Culvert: 159291	Under A371 Wells Road	04/12/2020
Simple Culvert: 152283	Under Ham Lane East (NB - Back Lane)	04/12/2020
Simple Culvert: 152107	Back Lane (NB - Access off Back Lane to properties)	28/01/2020
Simple Culvert: 146935	Under A371 Wells Road	16/03/2017
Simple Culvert: 146220	Under A371 Wells Road	04/12/2020
Simple Culvert: 159293	Under A371 Wells Road	16/03/2017
Simple Culvert: 159292	Under A371 Wells Road	16/03/2017
Simple Culvert: 146055	Under STW access	30/11/2020
Croscombe sub-catchment		
Simple Culvert: 144697	Under A371	17/03/2017
Simple Culvert: 105336	Under A371	23/01/2019
Culvert	Under A371 Long Street	07/12/2020
Simple Culvert: 153938	Off Long Street	07/12/2020
Old Street Culvert	Under Old Street (Jack's Bridge)	07/12/2020
Simple Culvert: 106726	Jack's Lane	29/01/2019
Simple Culvert: 105340	The Manor House	07/12/2020
Simple Culvert: 105338	The Manor House	07/12/2020
Simple Culvert: 152158	South of A371 Long Street	08/12/2020
Simple Culvert: 152157	Coombe Green	17/03/2017
Simple Culvert: 152156	South of A371 Long Street - Laurel Villa	08/12/2020
Simple Culvert: 151967	Fayreway - Under A371 - Townsend Barn	29/01/2020

Table 9: Environment Agency CCTV survey reports reviewed

8.1.3 Bed level surveys

Topographic survey data of the River Sheppey were provided by the Environment Agency, as detailed below:

- Croscombe Mill leat cross-section survey – Dec 2011 to Feb 2012.
- Croscombe side channel cross-section survey – Dec 2011 to Feb 2012.
- River Sheppey cross-sections from Croscombe STW to Charlton House – Dec 2011 to Feb 2012.
- River Sheppey long-section from Croscombe STW to Charlton House – Dec 2011 to Feb 2012.

- River Sheppey cross-sections in Croscombe – May 2016.

In addition, bed level cross-sections were undertaken using GPS in Croscombe on 5 July 2022 as part of this investigation. The surveys were undertaken in two locations identified by local residents as experiencing river beach formation.

8.1.4 Wet weather surveys

Due to the exceptionally low rainfall during the period of the investigation, only a limited number of wet weather surveys have been undertaken. Further surveys are recommended within **section 11.1** of this report.

8.1.5 Modelling

No modelling has been undertaken at this stage, but is recommended within **Section 11.1** of this report.

8.2 Constraints

8.2.1 Extent of surveys undertaken

As described above, a number of surveys have been undertaken to inform this investigation. Given time and budgetary constraints, it is not possible to survey all assets within the Shepton Mallet and Croscombe sub-catchments. Survey effort was focused on the highest priority areas. Recommendations for further surveys are incorporated into this report where appropriate.

8.2.2 Availability of information

This investigation has been informed by information provided by Partner organisations and other stakeholders, including local residents. In some cases further information has been requested but has not been obtained within the required timescales for inclusion within this report. Where appropriate, this report sets out where further information is required, or is awaited.

9 Issues Identified

9.1 Overview

This review has identified a number of general factors contributing to flooding within the Shepton Mallet and Crocombe sub-catchments:

- Prolonged rainfall leading to saturation of the sub-catchments leading to increased surface water runoff and high river levels.
- Steep-sided catchments with hard surfacing leading to rapid runoff.
- Historic modification of the river channel with pinch points.
- Siltation of the river channel, both in culverts and open channels.
- Blocked drains/culverts.
- Drains/culverts under capacity.

Flooding has generally occurred during periods of prolonged and/or intense rainfall when the sub-catchments have become saturated. The steep-sided nature of the sub-catchments leads to rapid runoff.

Some locations have been identified as being more vulnerable to flooding. These areas tend to experience multiple sources of flooding and require a variety of mitigation responses. The key areas identified are as follows:

Shepton Mallet sub-catchment

- Charlton;
- Frog Lane;
- Charlton Road;
- Cannard's Grave Road;
- Kent/West Shepton;
- Leg Square;
- Bowlish.

Crocombe sub-catchment

- Long Street.

The issues at these locations and other specific issues contributing to flooding within the Shepton Mallet and Crocombe sub-catchments have been identified. These issues are discussed below based on the five main workstreams of the SRA, as set out in **Section 4.4.1** of this report:

- **River Management;**
- **Land Management;**
- **Urban Water Management;**
- **Resilient Infrastructure;**
- **Building Local Resilience.**

9.2 River management

This review has identified the following river management issues.

9.2.1 Modification of the river channel

The River Sheppey has been subject to a great deal of historic modification to enable water to be used in industry, such as in mills, or to enable infrastructure such as roads to be constructed. This has led to large sections of the River Sheppey being artificially realigned or engineered or placed into culvert. There are very few sections of the River Sheppey within the catchments that can be considered 'natural'.

The WTT highlighted several flood risk management issues within their walkover reports for the River Sheppey in Shepton Mallet (Wild Trout Trust, 2021) and Crocombe (Wild Trout Trust, 2021) . The main issues identified are summarised below.

Shepton Mallet sub-catchment

- **Bullimore Brook and River Sheppey confluence** - the largely culverted Bullimore Brook appears to outfall into a stormwater retention basin downstream of Charlton Road (our CCTV investigations did not confirm this connection due to restrictions within the culverted watercourse). The condition of the stormwater basin is currently unknown (i.e. amount of siltation). It appears that the River Sheppey is cut off from the low lying basin by embankments, disconnecting it from the floodplain during low return period floods.
- **Downstream Brewery Lane (Viaduct)** – the river has been straightened and has fast, uniform flow. The river is disconnected from the floodplain during low return period floods.
- **Garston Street** - the River Sheppey emerges from a culvert in three short stretches of open channel within the green open space near Garston Street. These short sections of the main river channel are heavily confined by steep masonry and concrete walls. Trash screens are located on the culvert exit and entrances. This area is a flooding hotspot within Shepton.
- **Lower Lane** – the River Sheppey emerges briefly alongside Lower Lane within a short section of (heavily confined) open culverted river channel. Due to degree of confinement, the river is fast flowing and has no floodplain connection. There are also structures located along the river that cause a restriction to flow (**Figure 21**).



Figure 21: River Sheppey at Lower Lane

- **Downstream Draycott Road** – the River Sheppey flows for approx. 300m within a natural stretch of open watercourse. Historically there used to be a weir along this stretch of river to feed flow into a historic mill pond. The mill pond has since been infilled and the weir removed, however physical modification continues to impact on the river. The river has been straightened and widened and the upstream end has high banks that are protected with revetment (gabion baskets). These modifications have created poor floodplain connection and while this area does flood, it is perhaps less frequent than it should due to this physical modification.
- **Bowlish** - long stretches of the river in this area are channelized with fast flowing water and no floodplain connection.
- **Ham Mill** - the River Sheppey cascades through an old sluice gate and down a long, angled blockstone weir at Ham Mill. At the foot of this weir, the river drops into a culvert under the A371 Wells Road. The straight high-level leat channel which once provided a steady flow of water to Ham mill is considered within the WTT report to be a flood risk issue for residential properties in this area.
- **Darshill Mill** - At Darshill Mill the River Sheppey flows down into a culvert through a system of sluices and overflow channels. Due to the pinch-point it creates, it is likely to be adding to flood risk in the immediate area.

Croscombe sub-catchment

- **Duncart Lane Bridge and weir** – At Duncart Lane bridge the river flows along what appears to be a former online mill pond. The river is both very straight and uniform with associated fast erosive flows and poor floodplain connection. Just downstream of the old mill pond the River Sheppey flows over the mill pond's impounding structure – a large and complex weir. The weir creates an artificially 'perched'

channel in this area, which the WTT suggested could be increasing flood risk to local properties in this area.



Figure 22: Upstream of Duncart Lane Bridge and Old Mill weir

- **Downstream of Back Lane Bridge** - River Sheppey enters a semi-cultivated garden area, before flowing under the A371 Long Street in a deep culvert. The culvert entrance is low and small, suggesting that it may act as a throttle on higher flows. As such, the stretch of river and its adjoining gardens immediately upstream may become a useful flood attenuation area. This stretch of the river is constrained between high walls, but some of the walls adjoining the RB gardens are visibly deteriorating. A sewer pipe also crosses the river in this area which could be threatened by any uncontrolled collapse of the existing stone revetment walls.
- **Croscombe Primary School** - the River Sheppey continues to flow between high retaining walls, but is divided into two parallel streams by a central wall which according to the WTT walkover report, is in poor condition and is deteriorating. The River Sheppey reaches a complicated system of weirs which once supplied the Middle Mill factory. The split of flows (as well as the weirs) are all redundant historic structures. The poor condition of these structures is also a potentially contributing source of coarse material within the river which may be having an impact on bed levels downstream.
- **Jack's Lane Bridge (Old Street Lane Bridge)** - The artificial alignment of the river at Jack's Lane Bridge (Old Street Lane Bridge), Croscombe, is exceedingly poor and gives rise to a high level of hydraulic losses resulting in sediment deposition, which is in part responsible for local flooding in this area.

9.2.2 Condition of culverted sections

A more detailed appraisal of the culverts through Shepton Mallet and Croscombe is included within the Reports on Surveys provided in **Appendix 2** and **3**, found in **sections** [Error! Reference source not found.](#) and [Error! Reference source not found.](#) of this report.

Shepton Mallet sub-catchment

The culverts through Shepton Mallet are in varying condition. Numerous obstructions having been installed within, and through, the culverts by third parties which may be causing significant restrictions to flow. The structural condition of the culverts is generally serviceable. There are a couple of exceptions where voids have been seen forming behind the culvert walls where there is missing brickwork, and one section where the wall of a culvert is potentially being undermined by the action of the river flows. Most culverts need some maintenance activity to ensure their longevity. It is also noted that some sections of survey are completely missing or very poor quality such that an informed comment could not be given.

Croscombe sub-catchment

The culverts through Croscombe are in fair to good condition. Mainly comprising of masonry arch culverts, they would benefit from some maintenance activities (filling of voids, re-setting displaced bricks and pointing). They are, however, currently serviceable. Further consideration should be given to their arrangement and modelling of improvements to inform if larger scale works are required to improve hydraulics.

9.2.3 Changes in river bed level and possible obstructions

Shepton Mallet sub-catchment

Obstructions within culverts is a significant issue within Shepton Mallet and is discussed within **section 9.2.2**.

Changes in river bed level have not been highlighted by stakeholders as a specific issue of concern within the Shepton Mallet sub-catchment.

Croscombe sub-catchment

Residents in Croscombe reported increased bed levels as a serious concern and cause of increased flood risk. In particular:

- **Jack's Lane Bridge** – silting up of the channel over time causing obstruction of flow of water, contributing to local flooding.
- **Garden waste** – concern has been raised by residents within Croscombe that garden waste may be being deposited into the river. This can then cause obstructions further down the channel.



Figure 23: Photographs showing accumulation of sediment within the River Sheppey, Croscombe

During the course of this investigation some other areas of concern have been identified where sedimentation has restricted the outfall of existing culverts such as has been identified at Jack's Lane Bridge and a recommendation for improvements in this area is proposed in **section 100**. Further investigation may be required to determine the significance of other areas of river bed level change on flood risk (such as the junction of Fayreway and the A371) and impacts on the geomorphology of the watercourse.

9.2.4 Operation of flood controls

Following the October 2020 flood, a concern was raised by a Croscombe resident that opening the 'flood gates' in Shepton Mallet may have contributed to downstream flooding within Croscombe. The EA has confirmed that there are no flood gates on the River Sheppey in Shepton Mallet that could have contributed to flooding.

9.3 Land management

This review has identified the following land management issues.

9.3.1 Land use within upper catchment areas

Some agricultural land uses within a catchment can lead to soil being left exposed and vulnerable to erosion during heavy rainfall. Sediment laden runoff from fields can contribute to the blockage of drainage gullies and to the reduced capacity of the drainage

network over time. This issue can be especially exacerbated in steep catchments such as is the case above Shepton and Croscombe.

FWAG SW identified several fields across the northern slopes above Shepton Mallet and Croscombe. In addition, the WTT in their 2021 TWIST Reports identified several land management issues during their walk over survey of the River Sheppey.

The issues identified are summarised below.

Shepton Mallet sub-catchment

- **Winter grazing:**
 - **Upstream of Downside** - Dark brown coloured pond, with evidence of overflow onto a road and then into the nearby field. The field forms a small valley and runoff water accumulates at the valley bottom. Winter grazing cattle have trampled the waterlogged bottom and valley sides, culminating in a very muddy valley bottom. [Site 9 (FWAG SW, 2018)].
 - **Downstream Draycott Road** – the land alongside the River Sheppey is used for grazing horses, some evidence of poaching, soil compaction and erosion along the banks of the river (Wild Trout Trust, 2021).
- **Farm tracks:**
 - **Old Wells Road, west Sheppey** - Runoff from track, transporting sediment into drainage ditch. Quite a bit of silt deposition in the ditch. The drain from this ditch run at the top of the valley, flowing down the valley and culverted under the road and into the River Sheppey. Evidence of overland flow and erosion from the top of the valley and down the valley. Possible blocked culvert under the Wells Road (A371). [Site 10 (FWAG SW, 2018)]
 - **Knowle Lane, west Sheppey** - Extensive flooding of a field and adjacent single-track road. [Site 11 (FWAG SW, 2018)].
 - **Kidd's Lane** - Extensive farm tracks along flow pathway which drain down into the Sheppey at Kidd's Lane, evidence of runoff from field gate and down along the road. At the top of the hill, very extensive poaching and muddy farm tracks has resulted in above ankle depth of mud. Diffuse pollution grade 1. [Site 1 (FWAG SW, 2018)].
- **Maize fields:**
 - **Upstream of Chelynch, west Sheppey** - Flooding of maize field and nearby stables. Runoff from maize field, transportation of sediment is evident from the colour of the water. Some of the flood water is flowing onto the road and into the opposite field. [Site 2 (FWAG SW, 2018)].
 - **Upstream of Charlton Road, northern slopes** - Runoff from maize field and track into ditch. Muddy water from track and maize field flowing into ditch. Flooding of muddy water at the bottom of the maize field and flowing across a grassland field directly into the River Sheppey. The farmer is aware of the

issues in his maize field and will be reseeding to grass in these fields for beef cattle. [Site 3 (FWAG SW, 2018)].

- **Upstream of Charlton Road, southern slopes** - Runoff from maize field and a silage heap onto the road and straight into a drainage pipe. Runoff into the road and into road drains and a ditch along the A361 Charlton Road. [Site 4 (FWAG SW, 2018)].

Croscombe sub-catchment

- **Winter grazing:**

- **Upstream of A37, Ham Wood** - There is runoff into field from yards and a manure heap. Extensive poaching of a small stream/ditch from winter grazing. Large gullies formed cattle and by excessive overland flow transporting and depositing a lot of sediment at the bottom of the field near a ditch. [Site 5 (FWAG SW, 2018)].
- **Upstream Ham Wood** - Trampled ground at the top of the field with evidence of overland runoff into the stream. The stream contains a lot of silt deposition due to a fence built across the watercourse collecting debris and damming the stream. Opposite field contains gullies, with evidence of the transport and deposition into the watercourse. Extensive poaching around the edges of the pond. [Sites 12 and 14 (FWAG SW, 2018)].
- **Northern slopes above Croscombe** - Very extensive poaching of fields by overwinter cattle, some areas with ankle deep mud. [Site 7 (FWAG SW, 2018)].

- **Farm tracks:**

- **Ham Lane** - Farm tracks at the entrance of the field causing runoff of muddy water down the road and into drains. [Site 8 (FWAG SW, 2018)].

- **Maize fields:**

- **Northern slopes above Croscombe** - Runoff from maize field adjacent to West Lane.

9.4 Urban water management

This review has identified the following urban water management issues.

9.4.1 Lack of SUDs

Shepton Mallet sub-catchment

It is evident that within Shepton Mallet there is a lack of sustainable drainage measures, with large swathes of impermeable paved areas. The topography of the area does not lend itself well to large features in many locations due to the prevailing gradients. Most of the flows from highways, residential, commercial and industrial areas arrive at the river unattenuated. The following areas have been considered specifically, but should not discount the impact of the rest of Shepton Mallet.

- **Stormwater retention basin near Martins Lane** - a stormwater retention basin captures water from the large diameter Wessex Water storm sewer which collects water from the highway on the A361, the industrial units on Frampton Road and Mendip Avenue and the residential estate on Amulet Way. None of these areas benefit from SUDS arrangements to reduce or delay surface water entering the system. It is also assumed to collect flow from the largely culverted Bullimore Brook.
- **Showerings Cider Mill** - Wide expanses of impermeable car parks and roofs are likely to increase urban runoff into vulnerable pinch points downstream along the river in this area (Wild Trout Trust, 2021).
- **Collett Park Brook** - The surface water from the residential area bounded by Cannard's Grave Road, Whitstone Road and the old railway embankment all discharges into a large attenuation system South of Collett Park (off Clover Ground). Although there are some reasonable sized unpaved areas (grass and play area) there is still a lack of SUDS implementation within this estate which could prevent or reduce surface water at source. The discharge from the attenuation system then flows through the park, Whitstone School and down to Leg Square where there is a known flooding issue.
- **High Street** - The catchment flowing into the Wessex Storm sewer along high Street is very urban in nature including the central shopping precinct. There are no known SUDS or attenuation features within this catchment.
- **Old Market Street** - The catchment flowing into the storm sewer in Old Market Street includes a large amount of carparks and impermeable areas from supermarkets, public and private car parks and other commercial properties. There are no known SUDS features within these catchments.
- **Coombe Lane Culvert** - The upstream catchment of Coombe Lane culvert collects the residential estate(s) south of the railway embankment and West of Compton Road. This all collects near Kent Lane and flows rapidly downhill without any apparent attenuation or SUDS. The culvert then collects flows from Old Wells Road and areas surrounding Coombe Lane again without any apparent Attenuation or SUDS.
- **Bowlish** - Potential misconnections into the River Sheppey from adjacent residential land use (Wild Trout Trust, 2021).

Croscombe sub-catchment

- **Downstream of Rookery Lane** - Rapid runoff from roofs and paved areas is likely, and possible misconnections from adjacent residential properties (Wild Trout Trust, 2021).

9.4.2 Planning policy, guidance and enforcement

Shepton Mallet and Croscombe sub-catchments

Whilst a West of England Sustainable Drainage Developer Guide has been prepared, see **paragraph** [Error! Reference source not found.](#) of this report, guidance tailored to Somerset

County and Mendip District has not yet been published. Guidance for Somerset is, however, currently being prepared.

Mendip District Council does, however, require submission of a Sustainable Development Strategy for certain planning applications, as set out in its Planning Application Validation Guidance (Mendip District Council, 2021). The SuDS Strategy should address the issue of surface water runoff onto and off the site (Mendip District Council, 2022).

9.5 Resilient infrastructure

9.5.1 Highway drainage system

Shepton Mallet sub-catchment

From the recent inspection it would appear that the highways drainage system has sufficient capacity (or will have once essential maintenance has been undertaken) for the surface that it is draining. The capacity issues come largely from the culverted watercourses that receive this drainage. It should be noted however that at Pike Hill there is an apparent lack of highways drainage. There is a concern it may be draining into the foul water system. There are also potential issues with collection of surface water in certain areas such as Old Wells Road and Cannard's Grave Road. In these locations the number / position of the gullies and the sources of surface water (from large areas of road and run-off from fields) may require further consideration.

Croscombe sub-catchment

The steeper roads in Croscombe suffer from poor capture of surface water. The gullies or the falls of the highway surface are not conducive to picking up surface water flows, therefore at least some of the water flowing along the highway bypasses the gully positions and combines to form pools of water at low points. Small changes to the highway surface could help improve this, speed humps are proposed on Jack's Lane to help capture the surface water.

In addition, there are areas where surface water is trapped without a suitable outlet into a watercourse or drainage system. Specifically at the west end of Fayreway, at the bridge over the River Sheppey, there is a small pipe that runs through the bridge abutment which easily blocks with leaf litter / debris. This feature should be improved to provide resilience as this area is known to pond regularly.

9.5.2 Storm drainage system

Shepton Mallet sub-catchment

- **Whitstone Road** - The section of storm sewer from manhole SWMHx7 upstream is in poor condition with an increasing amount of cracks present along the soffit of the pipe, culminating with severe cracking and deformation of the pipe. This section of storm sewer should be restored, most likely by excavation and replacement.

9.5.3 Foul drainage system

Shepton Mallet and Croscombe sub-catchments

Due to the historic nature of the urban areas of Shepton Mallet and Croscombe, the foul and surface water drainage systems are also historic in nature. Aside from areas of housing developed in more recent times, e.g. in the vicinity of St Peter's Road, Shepton Mallet, much of the sub-catchments do not have a dedicated surface water sewerage network. This means that surface water could potentially be entering the Highways drainage network, culverted watercourses or the foul sewer network. Groundwater can also enter the sewers. This results in the foul sewer network exceeding capacity in certain locations during periods of intense rainfall. Combined Sewer Overflows (CSOs) have been installed on the network to alleviate pressure on the foul sewer network at such times.

Shepton Mallet sub-catchment

There are known issues such as in Kent Lane where the surface water appears to excessively infiltrate into the foul sewer creating a foul water flooding issue during storm events.

There have also been issues of foul water flooding at Ham Mills caused by the septic tank for Bowlish Infant School becoming inundated.

As noted in [paragraph 9.5.1](#), Pike Hill does not appear to have a separate highways drainage system and may also be contributing to the foul drainage flows.

CSO locations are shown on [Figure 2](#) and [Figure 7](#) and include:

- **Between Brewery Lane and Kilver Street** - Two CSOs outfall into the River Sheppey in this location. It is also understood that discharge from the Victoria Grove STW goes into Kilver Court lake (Wild Trout Trust, 2021).
- **Bowlish** - There are also 2 CSOs that drain into this area. In 2019, one spilled 10 times for a total of 3 hours and the other spilled 22 times for a total of 5 hours (Wild Trout Trust, 2021).

Croscombe sub-catchment

- **Downstream Back Lane Bridge** - Sewer pipe crosses the area: which could be threatened by an uncontrolled collapse of the existing (poor condition) stone revetments (Wild Trout Trust, 2021).
- **Jack's Bridge** - There is a CSO that drains into the River Sheppey just downstream of the bridge (Wild Trout Trust, 2021).
- **Downstream of A371** - a CSO enters the river in this area. In 2019, it spilled 7 times for a total of 2 hours.

9.6 Building local resilience

9.6.1 Information, education and advice



During the course of this study it was evident that there are currently multiple sources of information regarding flooding. It was not always clear to emergency responders or members of the public where to go for the right information. This can lead to delays in responding or not acting in accordance with the best available advice.

The following websites currently provide relevant local information:

- Somerset Prepared:
(www.somersetprepared.org.uk/hazard-advice/flooding/);
- Somerset County Council:
(www.somerset.gov.uk/waste-planning-and-land/flooding-information/);
- Mendip District Council:
(www.mendip.gov.uk/flood/);
- Environment Agency:
(www.gov.uk/browse/environment-countryside/flooding-extreme-weather).

Shepton Mallet sub-catchment

There is currently no specific local flood information resource for residents within Shepton Mallet.

Croscombe sub-catchment

Croscombe Parish Council has a 'Flood Focus' section on their website to signpost residents to useful resources (<https://croscombeparishcouncil.co.uk/croscombe-flood-focus/>).

9.6.2 Community awareness and community groups

Shepton Mallet sub-catchment

In October 2020, Shepton Mallet did not have a Flood Committee/Group or Flood Plan in place.

During the course of this investigation, Shepton Mallet Town Council representatives and members of the local community have met to discuss forming a group and preparing a plan, in liaison with the SRA and Environment Agency.

Croscombe sub-catchment

At the time of the October 2020 floods, Croscombe had a Flood Committee and Flood Plan in place. The community were able to respond accordingly.

Since October 2020, the Croscombe Flood Committee continued to meet regularly until February 2022. The Flood Committee applied for additional funding from the SRA and updated its Flood Plan. A local WhatsApp group was set up to share information between those affected by flooding or involved in providing assistance at times of flooding.

The SRA advised the Flood Committee that Somerset Prepared offered free training to community emergency volunteers. There is also training available for new co-ordinators of flood groups. Recruitment and training of additional Flood Wardens was proposed by the Flood Committee.

In April 2022, the Croscombe Flood Committee became a Working Group. The Working Group provides advice, and makes recommendations, to Croscombe Parish Council Full Council. The purpose of the Working Group is (Croscombe Parish Council, 2022):

- To seek to mitigate flooding: by providing advice, help and support to parishioners in preparation for and during flood events and to recommend to Croscombe Parish Council (CPC) any requirements to action these.
- To be aware of environmental issues across the parish with particular attention to the River Sheppey and to recommend to CPC any actions arising to maintain the health of the environment and ameliorate effects of climate change with regard to biodiversity, pollution and sustainability.

9.6.3 Lack of resources

Linked to the above issues, some communities have not had access to appropriate resources to support them before, during or after flood events.

Shepton Mallet sub-catchment

Local residents within Shepton Mallet do not currently have specific resources available to them to support with flood events.

Croscombe sub-catchment

As a result of having a Flood Plan in place, some flood management resources were available within Croscombe at the time of the October 2020 floods.

In 2021, Croscombe Parish Council applied to Somerset Prepared for funding for:

- a transducer;
- sand bags;
- high vis vests;
- sand store / 2x grit bins;
- road sign;
- traffic cones;
- display boards; and
- Flood Warden training.

SRA funding for the majority of the above was approved and Croscombe Parish Council confirmed support of 20% of the grant. In addition, the EA committed to replacing a gauge board and SCC Highways advised that they will provide Flood Warning signs after

completion of a volunteer's agreement. Somerset Prepared is also working with the Parish Council to provide the most appropriate transducer from an alternative fund.

9.6.4 Property flood resilience

Shepton Mallet sub-catchment

During the course of the investigation it has been established that some private properties may benefit from the installation of PFR measures. This includes properties within Leg Square.

Croscombe sub-catchment

Some private properties on Long Street, Croscombe, have not benefited from the installation of PFR measures for a variety of reasons. This means that they remain vulnerable to flooding. In some cases, the historic nature of the property (listed building) has resulted in installed measures having to be removed.

10 Action Plan Options

10.1 Overview

This section provides details of all of the opportunities identified within the sub-catchments of Shepton Mallet and Croscombe. They are again based on the five main workstreams of the SRA.

A summary of the opportunities is provided within **section 0** of this report. **Figure 24** to **Figure 30** identify the locations of the options by SRA workstream.

At this initial stage, no potential options have been discounted. It should, however, be noted that not all the potential opportunities identified will be able to progress. Many of the opportunities identified are subject to further detailed investigation to determine their feasibility. Other potential constraints include; the availability of resources and funding, the need to balance priorities, acquiring planning permission or other licences and consents, acquiring landowner permission and addressing conflicting interests. Arguably, there are also opportunities for community involvement and some opportunities could be taken forward by local groups utilising local volunteer resources where appropriate.

10.2 River management

The following river management opportunities have been identified. Their locations are shown on **Figure 24** and **Figure 25**.

10.2.1 River and floodplain restoration

Shepton Mallet sub-catchment

- **RM.SM.1: Charlton Road** - Opportunity to remove the weir and re-meander the river through the current footprint of the lake and further upstream, create additional flood storage (Wild Trout Trust, 2021).
- **RM.SM.2: Wessex Water stormwater retention basin, Charlton Road** - There may be an opportunity at the Wessex Water storm asset north of Charlton Road, or the pond off Martins Lane, to increase the attenuation potential and / or install outflow controls to allow the area to function as a temporary wetland and Sustainable Drainage Scheme (SuDS) in order to restrict the discharge rate to hold back more flow, more often, and therefore reduce the peaks within the River Sheppey. Potential also to reconnect the River Sheppey with the stormwater basin and ponds to create a larger area of floodplain attenuation, as well as provide improvements to biodiversity (i.e. wetland habitat) and amenity - blue-green 'pocket park'.
- **RM.SM.3: Bullimore Brook, Frog Lane** - opportunity to create additional flood storage/attenuation by enlarging and modifying an existing pond along the Bullimore Brook.

- **RM.SM.4: Brewery Lane (viaduct)** – consideration should be given to re-meandering the channel into the green space on the right bank, to reduce the channel's gradient, reconnect the river with the floodplain (perhaps also creating seasonal wetlands) and 'slowing the flow' of water into more intensively urbanised areas downstream.
- **RM.SM.5: Garston Street (downstream of Showerings Cider Mill)** – opportunity to 'daylight' culverted stretches of watercourse and establishing soft natural river banks as well as provide flood storage/attenuation and amenity - blue-green 'pocket park' (Mendip District Council, 2022).
- **RM.SM.6: Remove hard banks along the River Sheppey at Lower Lane** – opportunity to remove hard banks and bed structures to naturalise the river and create more space for water along the existing open section of river channel.
- **RM.SM.7: Downstream Draycott Road** - there is space to modify the floodplain and river channel to provide flood storage/attenuation in this area.
- **RM.SM.8: Upstream of Bowlish** - there is space along the right bank of the River Sheppey to create additional floodplain storage.
- **RM.SM.9: Darshill Wood** – remove low walls alongside the river to re-meander the river into the woodland along the RB and to create additional floodplain storage and wet woodland habitat.
- **RM.SM.10: Darshill Mill** - remove the weir at Darshill Mill and re-grade the river channel.
- **RM.SM.11: Ham Mill** - remove the weir and re-grade the river channel.
- **RM.SM.12: Collett Park Stream through Whitstone School and Plant Nursery** - consider opportunities to 'daylight' culverted stretches of the stream and establishing soft natural riverbanks. Modify the existing pond within the plant nursery to provide flood storage/attenuation, improve biodiversity and provide amenity/educational opportunity. Liaison with the school, nursery and community groups to develop options.
- **RM.SM.13: Collett Park** – There are significant opportunities within Collett Park to restore a long stretch of the Collett Park Stream in order to develop more extensive habitats and provide additional flood attenuation. Features include:
 - Naturalise the banks of the duck pond, deepen and increase the storage capacity and redirect the stream flow through the pond so it provides flood attenuation.
 - Naturalise the watercourse by removing hard banks and bed structures and creating more space for water along the existing open sections of river channel.
 - Create a new linear flood attenuation pond along the western boundary. There is already a small spring flowing along the western boundary, this could be supplemented with an overflow arrangement from the duck pond including a cascade of linear ponds to slow and store storm flows.

- Improve amenity by creating a blue-green 'pocket park'.
- **RM.SM.14: Collett Park Stream headwaters** – in the headwaters of the stream near to Cannard's Grave Road carry out further CCTV surveys to investigate where the stream is culverted. Consider opportunities to 'daylight' culverted lengths of watercourse as well as providing flood storage/attenuation and amenity (pocket parks). Incorporation of SUDs measures.

Croscombe sub-catchment

- **RM.C.1: Flood storage/attenuation upstream of Croscombe (alongside the A371)** – there is space along the banks of the River Sheppey to create additional floodplain storage/slow the flow.
- **RM.C.2: Re-meander the channel downstream of Duncart Lane Bridge** – opportunities identified to re-meander the channel through the old pond.
- **RM.C.3: Realign the river at Jack's Lane Bridge (Old Street Lane Bridge).**
- **RM.C.4: Reconnect floodplain/ flood storage upstream of Townsend Bridge** – there is space along the left bank of the River Sheppey to create additional floodplain storage immediately upstream of the bridge.
- **RM.C.5: Remove the weir downstream of Duncart Lane Bridge** - remove the structure completely and re-grade the river channel.
- **RM.C.6: Riverbank improvements downstream of Back Lane Bridge** – remove or repair sections of deteriorating river bank and replace with a soft, vegetated and reprofiled bank.
- **RM.C.7: Repair the riverbanks along the Sheppey near Croscombe Primary School.**
- **RM.C.8: Remove the weir at Croscombe Primary School** - remove the structure completely and re-grade the river channel.
- **RM.C.9: Install debris catchment arrangement at weir at Croscombe Primary School**
- **RM.C.10: Garden waste** – raise awareness within the community to ensure that people understand the importance of not depositing garden (or other) waste into the river. It is recommended that this be led by the Croscombe Flood and Environment Working Group.
- **RM.C.11: River bed level change investigation** – commission a geomorphological investigation to identify potential sources of sediment along the River Sheppey to determine the impact on river bed level. Recommendations and actions to be identified.
- **RM.C.12: Desilting channel** – desilting channel at Jack's Lane Bridge.
- **RM.C.13: Long Street culvert** – consider rebuilding.

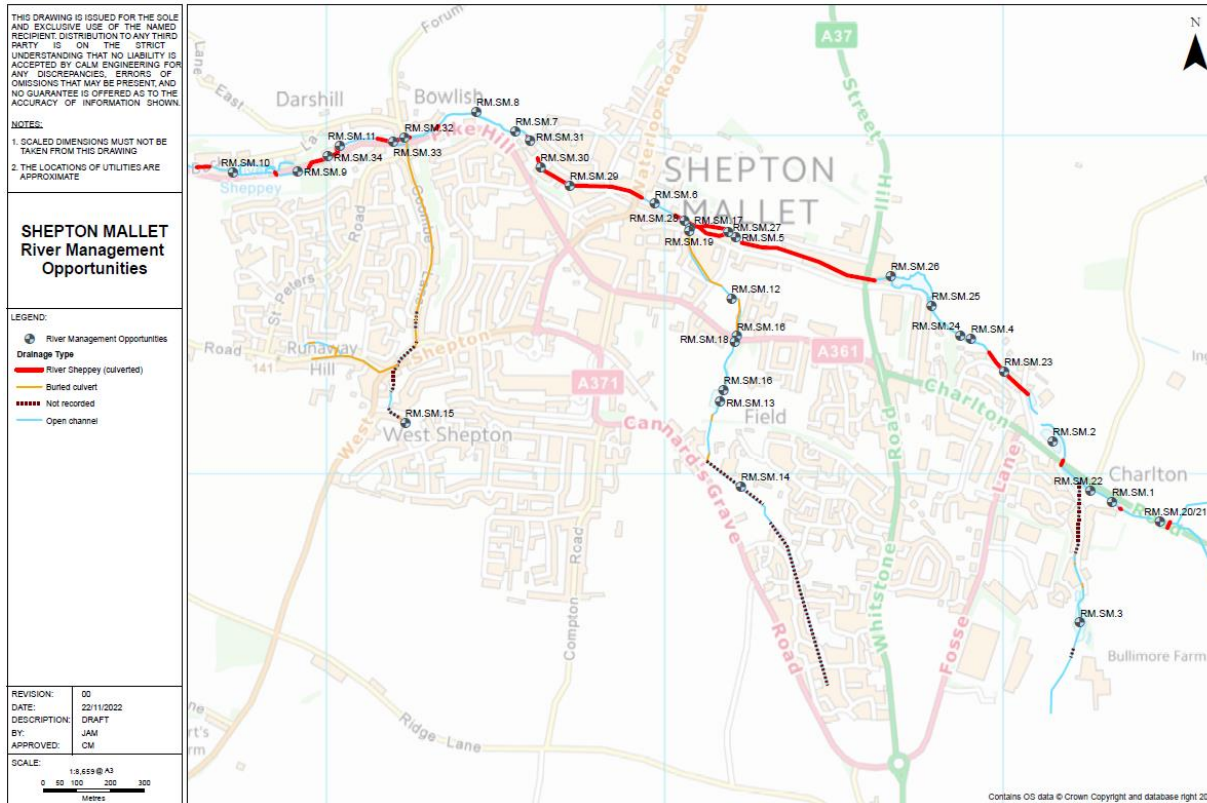


Figure 24: River Management opportunities: Shepton Mallet sub-catchment

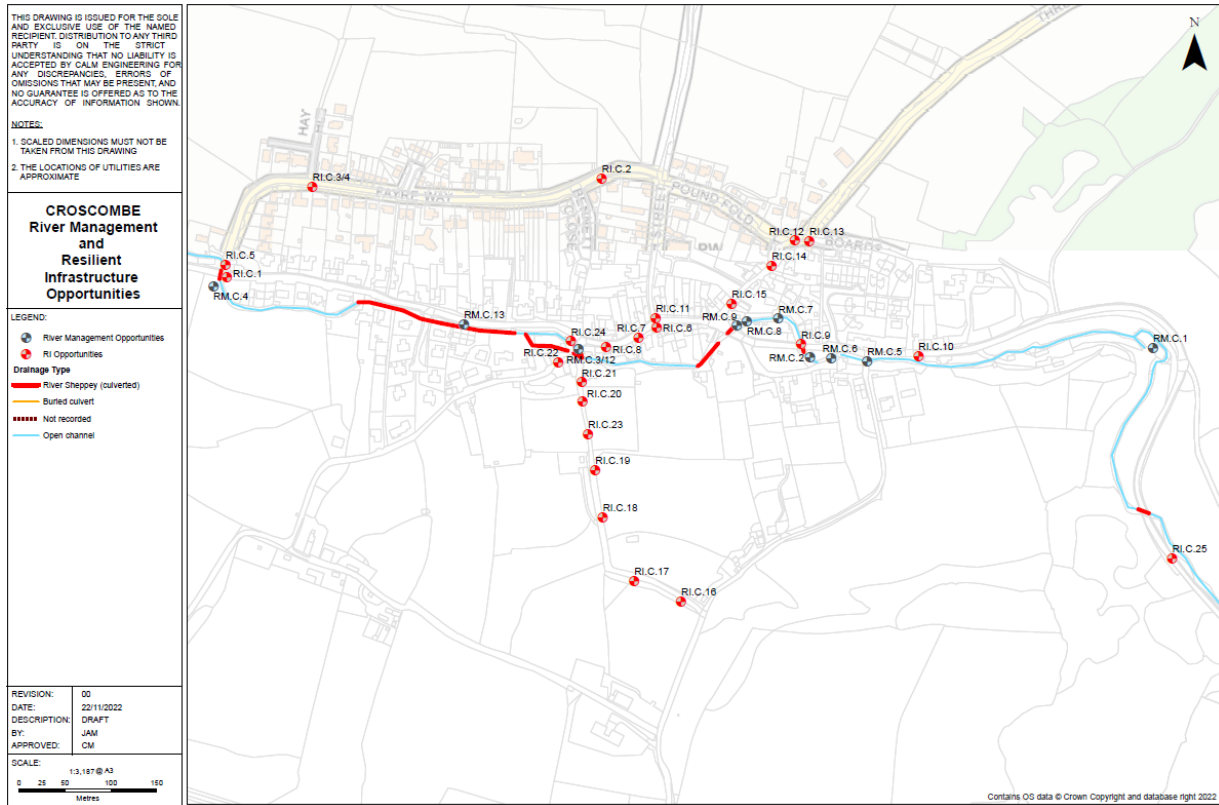


Figure 25: River Management and Resilient Infrastructure opportunities: Croscombe sub-catchment

10.2.2 Culvert restoration and maintenance

It should be noted that many of the culverts identified for restoration and maintenance are privately owned assets. In these instances it is the responsibility of the asset owner to carry out any necessary maintenance.

For the EA or Lead Local Flood Authority to take on responsibility for undertaking works on the main river or ordinary watercourse, it would be necessary to demonstrate that repairs are a high priority and urgent enough to attract funding for inclusion in maintenance programmes.

Shepton Mallet sub-catchment

- **RM.SM.15: Buckland Road chamber** - It is recommended that the Buckland Road chamber be cleared of silt and debris (see **RM.SM.16**). It is also recommended that the chamber covers be amended to enable maintenance access, for example, cut the chamber covers in half to make them a safer weight to open, an additional support beam may then be required, and locking bar to control access.
- **RM.SM.16: Trash screen clearance along:**
 - **Kent Lane**
 - **Collett Park**
 - **Whitstone School**
- **RM.SM.17: Leg Square culvert** – A utility identified as causing a restriction within the culvert between Leg Square and the River Sheppey should be removed.
- **RM.SM.18: Collett Park – Charlton Road debris screen** - Currently there is no debris screen on the upstream side of the Charlton Road culvert, with the debris collecting on the trash screen within Whitstone School. This is not an ideal situation, with access to the trash screen being poor. An alternative arrangement should be sought with a trash screen on the upstream side of the culvert in an accessible position (currently within private grounds – permission should be sought / explored).
- **RM.SM.19: Leg Square** - The manhole on the culvert within Leg Square has openings within the cover which allow flood water out of the culvert, and potentially from the nearby River Sheppey, out onto the highway. Consideration has been given to replacement of this asset to help prevent flooding, however to make this effective, the gullies within the area and all connections would need to have one-way valves installed on them, else water will find an alternative pathway. Resolution of the capacity within the culvert appears to be the better long term solution.

The following actions have also been identified in relation to culverts on the main river:

Ref.	Location	Issue	Actions
RM.SM.20	A361 Charlton Road Culvert (I)	Incomplete survey due to high water level	Clear culvert and complete survey

Ref.	Location	Issue	Actions
RM.SM.21	A361 Charlton Road Culvert (2)	Minor defects	Pointing and brickwork
RM.SM.22	A361 Charlton Road Culvert (3)	Incomplete survey due to water and silt levels	De-silt and complete survey
RM.SM.23	Martins Lane Culvert (2)	Utility preventing survey	Utility to be removed from culvert
RM.SM.24	Woodlands Farm Culvert	Pipe diameter may present a throttle	Investigate culvert as throttle and potential upstream storage
RM.SM.25	Victoria Grove Culvert	Incomplete survey due to high water level	Complete survey
RM.SM.26	Kilver Street Culvert	Miscellaneous pipes and cables running within the culvert	Investigate pipes in culvert
RM.SM.27	Garston Street Culvert	Missing bricks with voids behind	Repair missing bricks with voids behind
RM.SM.28	Lower Lane Culvert	Restrictions to flow and survey	Removal of utilities from culvert. Survey bifurcation.
RM.SM.29	Draycott Road Culvert	Poor quality survey images	Re-survey
RM.SM.30	Priory Cottage Culvert	Significant defects	Re-survey to confirm deformation and undercutting.
RM.SM.31	Culvert – The Mead	Missing bricks and mortar	Replace missing bricks and mortar
RM.SM.32	Forum Lane Culvert	No survey available	Complete survey
RM.SM.33	Wells Road Culvert	No survey available	Complete survey
RM.SM.34	A371 Bowlsh Culvert	Significant amount of debris, stones and silt restricting capacity	Remove silt and debris

Croscombe sub-catchment

- **RM.C.II: Jack's Lane Bridge** – desilting within the overwide section of channel downstream of the bridge within the main river is required. It is proposed to clear sediment by hand from the silt bank in front of the third bridge arch/outfall within the main river. Desilting of a storm drain in this location is also proposed. It is proposed to undertake this work as part of the SRA funded Enhanced Maintenance Works.

Following the desilting works, it is recommended that future monitoring and maintenance arrangements be discussed and agreed between risk management authorities and other relevant parties (i.e. riparian owners).

Consideration should be given to designating this structure as a flood risk asset by an appropriate risk management authority (RMA). Maintaining this system should help reduce flood risk to properties in the vicinity of Jack's Lane Bridge. It is understood that Somerset Highways' Bridge Inspector undertakes routine monitoring of the bridge structure, but this does not consider flood risk.

- **RM.C.12: Long Street** – Consider rebuilding the Long Street culvert

10.3 Land management

The following land management opportunities have been identified. Their locations are shown on

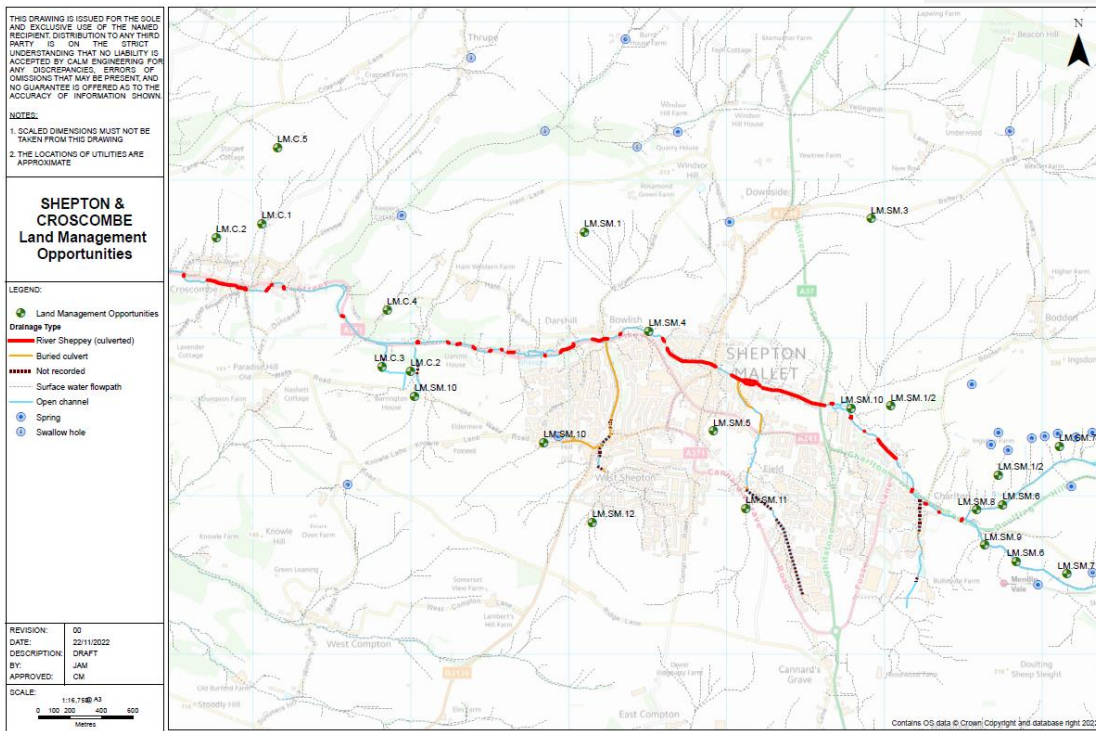


Figure 26.

Shepton Mallet sub-catchment

- **LM.SM.1: Explore opportunities to change land use from maize and overwintering cattle on fields** - draining out onto Forum Lane upstream of Bowlsh and draining into the Sheppey (from Sheppey east), upstream of Kidd's Lane.

- **LM.SM.2: Explore opportunities to change land use from maize on fields draining steep fields** - to the north of Charlton Road (upper Sheppey), along the steep fields south of A361 (upper Sheppey), draining down into Chelynych (upper Sheppey) and to the east of the B3136 (West Shepton).
- **LM.SM.3:** Liaise with landowners to discuss potential for land use change (overwintering cattle) upstream of Downside.
- **LM.SM.4: Install fencing along Sheppey downstream of Draycott Road** – create a riparian buffer alongside the river to prevent livestock access.
- **LM.SM.5: Tree planting within Shepton Mallet Town Centre** (see section 2.3.3 of the Shepton Mallet Masterplan) (Mendip District Council, 2022).
- **LM.SM.6: Riparian tree planting** – along the Doultong Stream, upstream of Kidd's Lane and along the upper River Sheppey near Doultong.

Croscombe sub-catchment

- **LM.C.1: Explore opportunities to change land use from maize and overwintering cattle on fields on the steep northern slopes (draining out onto West Lane) above Croscombe.**
- **LM.C.2: Explore opportunities for tree planting along the river and flow pathways above Croscombe (i.e. Titwell Wood Stream and along the northern slope above the village).**

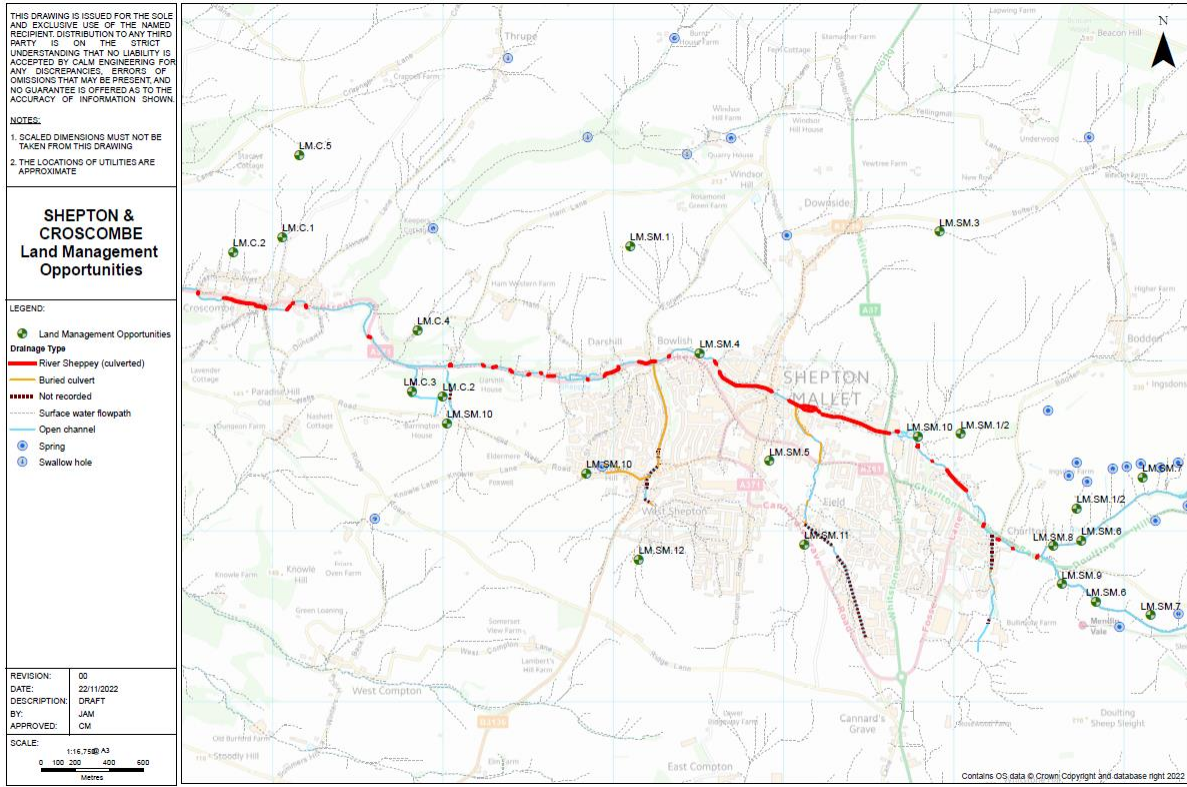


Figure 26: Land Management opportunities: Shepton Mallet and Croscombe sub-catchments

10.3.1 Natural flood management

The following natural flood management opportunities have been identified:

Shepton Mallet sub-catchment

- **LM.SM.7: Install leaky wood dams (or infill) spring fed ditches** near Doultong (upper Sheppey) and along ditches draining into the Doultong Stream.
- **LM.SM.8: Potential to create a 3.8ha wetland (floodplain storage and attenuation - stage zero site)** within the headwaters of the River Sheppey to the west of Doultong and upstream of the A361.
- **LM.SM.9: Potential to create a 1ha wetland (floodplain storage and attenuation - stage zero site)** along the Doultong Stream upstream of the A361.
- **LM.SM.10: Install NFM measures to reduce sediment laden runoff along farm tracks (i.e. gateway sleepers)** - identified along Old Wells Road, Knowle Lane and Kidd's Lane.
- **LM.SM.11: Install NFM measures to reduce runoff from flow pathways leading onto Cannard's Grave Road.**
- **LM.SM.12: Install NFM measures within the field adjacent to the B3136 to reduce runoff from flow pathways (i.e. attenuation pond) leading into Coombe Brook.**

Croscombe sub-catchment

- **LM.C.3: Titwell Wood Stream (upstream of Croscombe)** – Liaise with the landowner to investigate if/where the stream is piped. Consider opportunities to 'daylight' the stream as well as provide flood storage/attenuation upstream of the B371 (Wells Road).
- **LM.C.4: Install NFM measures to reduce runoff along farm tracks** - identified along Ham Lane and at the downstream end of Ham Wood.
- **LM.C.5: Create a wildlife corridor across flow pathways** - on the northern slope above Croscombe (FWAG SW, 2018).

10.4 Urban water management

The following urban water management opportunities have been identified. Their locations are shown on **Figure 27**, with the exception of general opportunities

10.4.1 Planning policy and enforcement

Commented [AC1]: Caroline to review this section

General opportunities

- **UWM.G.1** - It is recommended that the Somerset Sustainable Drainage Guide be published as soon as possible.

- **UWM.G.2** – It is recommended that Somerset Council requests a SUDS Strategy with all planning applications that require one in accordance with planning application validation guidance.
- **UWM.G.3** – It is recommended that Somerset Council ensures that SUDS measures are incorporated into any new developments in accordance with an approved SUDS Strategy. Widening the remit of Building Control could be considered to ensure its implementation.
- **UWM.G.4** – It is recommended that Somerset Council develops a Sustainable Drainage Action Plan for delivering SUDS measures within the public realm. This should identify opportunities with the Shepton Mallet and Croscombe sub-catchments, delivery partners and funding opportunities. Potential opportunities are identified within MDC’s Shepton Mallet Masterplan and also within this report, e.g. UWM.SM.4: Old Wells Road (see [section 10.4.2](#) of this report).
- **UWM.G.5: Planning policy** - It is recommended that Development Policy 23 be updated to state:

“Development Policy 23: Managing Flood Risk

1. Development will follow a sequential approach to flood risk management, giving priority to the development of sites with the lowest risk of flooding. The development of sites with a sequentially greater risk of flooding will only be considered where essential for regeneration or where necessary to meet specific local requirements.

2. Development in areas at risk of flooding will be expected to:

a) be resilient to flooding through design and layout; and

b) incorporate sensitively designed mitigation measures, which may take the form of on-site flood defence works and/or a contribution towards, or a commitment to undertake, such off-site measures as may be necessary, to ensure that the development remains safe from flooding over its lifetime, taking into account the predicted impact of climate change.

3. All development will also be expected to incorporate appropriate water management measures to reduce surface water run-off and ensure that it does not increase flood risks elsewhere. This must include the use of sustainable urban drainage systems (SUDS).”

Shepton Mallet sub-catchment

- **UWM.SM.1: Critical drainage area** - It is recommended that consideration be given to the designation of a Critical Drainage Area (CDA) within Shepton Mallet. This should tie into a review of local planning policy for areas deemed to be within CDA’s and should therefore be subject to additional planning restrictions on surface water discharge.

10.4.2 SUDS

Potential opportunities to implement sustainable urban drainage have been identified at the following locations:

Shepton Mallet sub-catchment

- **UWM.SM.2 - Buckland Road** - The large chamber at Buckland Road accepts a large amount of flow from numerous sources and represents a key point within the storm drainage network. This chamber is located adjacent to a play area and within an area of green space south of the former railway embankment. This would be an excellent location to position an attenuation feature and possibly an amenity pond. One of the incoming sources of surface water appears to collect a spring and so it would be continuously fed with fresh water.

If sized correctly with a restricted outlet, this could then provide relief to the downstream properties and slow down the impact of storm event. This could also remove the existing largely inaccessible chamber, and allow provision for maintenance of the trash screen etc.

- **UWM.SM.3 - Clover Ground upstream of Collett Park** - There is an existing attenuation system at Clover Ground upstream of Collett Park. The design of this should be examined to determine whether the existing attenuation can be expanded by increasing the outlet flow restriction, increasing the attenuation volume, or a combination of the two.
- **UWM.SM.4: Old Wells Road** – opportunity to attenuate surface water flows along Old Wells Road and by dropping curb to utilize an existing green space alongside the road (SUDs opportunity).

10.4.3 Property level measures

Shepton Mallet and Croscombe sub-catchments

- **UWM.G.6: Water butts and raingardens** – residents within the sub-catchments should be encouraged to introduce property-level water management measures such as water butts and raingardens.

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- NOTES:
1. SCALED DIMENSIONS MUST NOT BE TAKEN FROM THIS DRAWING
 2. THE LOCATIONS OF UTILITIES ARE APPROXIMATE

SHEPTON MALLET
Resilient Infrastructure and Urban Water Management Opportunities

- LEGEND:
- Opportunities
 - Resilient Infrastructure
 - Urban Water Management
 - Drainage Type
 - River Sheppey (culverted)
 - Buried culvert
 - Not recorded
 - Open channel

REVISION:	00
DATE:	22/11/2022
DESCRIPTION:	DRAFT
BY:	JAM
APPROVED:	CM
SCALE:	1:8,649 @ A3
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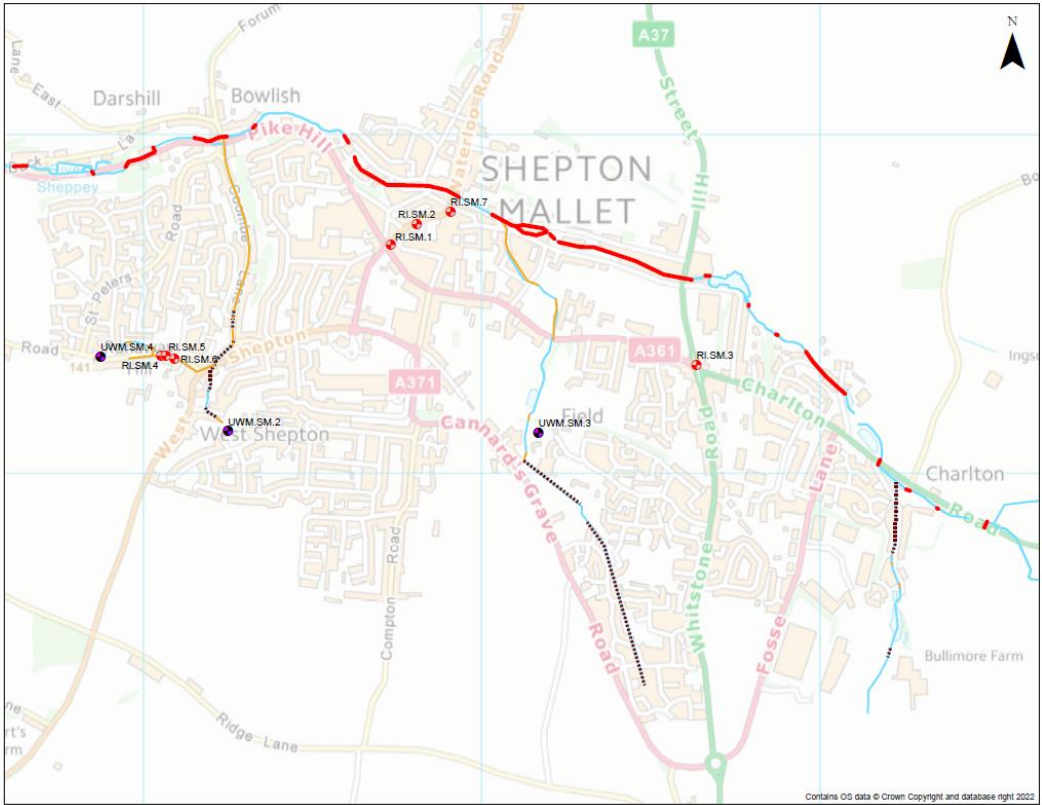


Figure 27: Urban Water Management and Resilient Infrastructure opportunities: Shepton Mallet

10.5 Resilient Infrastructure

The following resilient infrastructure opportunities have been identified. Their locations are shown on **Figure 25** and **Figure 27**.

10.5.1 Highways drainage capacity improvements

Shepton Mallet sub-catchment

No specific highways drainage capacity issues were identified during this investigation.

Croscombe sub-catchment

- **RI.C.1: Long Street (A371)** – the highways drains at the west end of Croscombe have insufficient capacity. It is recommended that the pipes be replaced to increase capacity and improve condition.

10.5.2 Maintenance of highways drainage systems

Shepton Mallet sub-catchment

Within the Shepton Mallet sub-catchment the potential issues identified on the highway drainage network and recommended actions are summarised in **Table 10**. They are also described in further detail in **Appendix 2** in **section Error! Reference source not found.** of this report.

Ref.	Location	Issue	Actions
RI.SM.1	Old Market Road	Intrusion of roots	Root cutting and lining
RI.SM.2	Rectory Road	Intrusion of roots	Root cutting and lining
RI.SM.3	Whitstone Road	Pipe cracked and deformed	Excavate and replace
RI.SM.4	Old Wells Road	Intrusion of roots	Root cutting and lining
RI.SM.5	Old Wells Road	Highway drain cracked and deformed	Re-lining
RI.SM.6	Old Wells Road	Highway drain cracked and deformed	Excavate and replace
RI.SM.7	High Street	Service pipe restricting flow	Remove utility

Table 10: Resilient Infrastructure – highways drainage issues and actions in Shepton Mallet

Croscombe sub-catchment

Within the Croscombe sub-catchment the potential issues identified on the highway drainage network and recommended actions are summarised in **Table 11**. They are also described in further detail in **Appendix 3** in **section Error! Reference source not found.** of this report.

Ref.	Location	Issue	Actions
RI.C.2	Fayreway	Root ingress	Root cut and re-line
RI.C.3	Fayreway	Multiple fractures	Structural liner
RI.C.4	Fayreway	Buried manhole	Uncover
RI.C.5	Fayreway	Improve surface water relief pipe	Install new gully
RI.C.6	Long Street (A371)	Accumulated debris	Jetting
RI.C.7	Long Street (A371)	Multiple fractures	Structural liner
RI.C.8	Long Street (A371)	Intruding obstruction	Excavate, cut back and make good
RI.C.9	Long Street (A371)	Debris and blockage	Jetting and river works (silt removal)
RI.C.10	Long Street (A371)	Blocked Gullies	Root cut and re-line
RI.C.11	Church Street	Rocks and debris	Removal of rocks and debris
RI.C.12	Rock Street	Fractures and partial collapse	Excavate and replace
RI.C.13	Rock Street	Pipe collapsed cannot pass	Excavate and replace
RI.C.14	Rock Street	Poor repair causing restriction	Excavate and replace
RI.C.15	Rock Street	Pipe cracked (crazing)	Structural liner
RI.C.16	Jack's Lane	Root ingress	Root cutting and lining
RI.C.17	Jack's Lane	Root ingress and encrustation	Root cutting and lining
RI.C.18	Jack's Lane	Tap roots and deposits	Root cutting and lining
RI.C.19	Jack's Lane	Encrustation and deposits	Jetting
RI.C.20	Jack's Lane	Fine roots and deposits	Root cutting and lining
RI.C.21	Jack's Lane	Fractured pipe	Structural liner
RI.C.22	Old Street Lane	Silt and debris	Jetting
RI.C.23	Jack's Lane (opportunity)	Improvements to surface water collection required	Install speed humps
RI.C.24	Jack's Lane (opportunity)	Siltation of outfall pipe	Extend outfall pipe and river working
RI.C.25	Shepton Road (A371)	Surface water runoff – poor drainage	New gullies

Table 11: Resilient Infrastructure – highways drainage issues and actions in Croscombe

10.5.3 Foul drainage improvements

At the time of finalising this report Wessex Water were unable to provide any further details relating to foul flooding, system capacity, maintenance and CSOs. This will be provided in further updates as and when this data is received.

10.6 Building local resilience

The following opportunities have been identified to build local resilience:

10.6.1 Community flood plans

Shepton Mallet sub-catchment

- **BLR.SM.1: Flood Group** - It is recommended that the local community, with the support of Shepton Mallet Town Council, the SRA and EA, establish a Flood Group and then meet regularly. The Terms of Reference for the Flood Group would need to be determined. The Flood Group could provide advice to Shepton Mallet Town Council Full Council regarding flood matters.
- **BLR.SM.2: Flood Plan** - It is recommended that the local community, with the support of Shepton Mallet Town Council, the SRA and EA, develop a Flood Plan and review this on an annual basis.

Croscombe sub-catchment

- **BLR.C.1: Flood Group** - It is recommended that the Croscombe Flood Working Group continue to meet regularly and provide advice to the Croscombe Parish Council Full Council.
- **BLR.C.2: Flood Plan** - It is recommended that the Croscombe Flood Plan is reviewed annually to keep it up to date.

10.6.2 Flood Wardens

Shepton Mallet sub-catchment

- **BLR.SM.3: Flood Warden recruitment** – It is recommended that Flood Wardens are recruited with responsibility for key parts of town. The locations would be defined within the Flood Plan.
- **BLR.SM.4: Flood Warden training** - It is recommended that Flood Wardens receive appropriate training. Training can be provided by Somerset Prepared.

Croscombe sub-catchment

- **BLR.C.3: Flood Warden recruitment** - It is recommended that additional Flood Wardens are recruited.

- **BLR.C.4: Flood Warden training** - It is recommended that current and new Flood Wardens receive appropriate training. Training can be provided by Somerset Prepared.

10.6.3 Flood warnings

Shepton Mallet and Croscombe sub-catchments

- **BLR.G.1: Flood Warnings** - It is recommended that members of the local community sign up to receive flood warnings (<https://www.gov.uk/sign-up-for-flood-warnings>). The EA has been developing a flood forecasting model for the River Sheppey to improve lead times for Croscombe and Shepton Mallet.

Croscombe sub-catchment

- **BLR.C.5: Installation of river level monitor and telemetry** - A river level monitor and telemetry device is due to be installed by the EA in Croscombe, with SRA funding. This will provide additional local flood warnings.
- **BLR.C.6: Maintenance of river level monitor and telemetry** - The SRA will fund the EA to maintain the telemetry for the first 5 years. During this time the EA will provide some training for the community on the system and its maintenance. The community will be encouraged to perform routine checks for anything that may affect the operation of the device, e.g. vegetation or damage.

After 5 years, the funding situation will be reviewed by the SRA, EA and the community. At this time the SRA and/or Parish Council could continue to fund the EA to operate the telemetry, or take the decision that it should be removed.

10.6.4 Flood reporting

Shepton Mallet and Croscombe sub-catchments

- **BLR.G.2** - It is recommended that members of the local community report all flood incidents on the FORT website: (<https://swim.geowessex.com/somerset>).

10.6.5 Information, education and advice

Shepton Mallet and Croscombe sub-catchments

- **BLR.G.3: Somerset online flood resource** - During the course of this investigation, the SRA confirmed that grant funding has been made available to provide a new online resource for information about flooding within Somerset. This should be developed and local communities advised when the resource becomes available.
- **BLR.G.4: Community awareness** - It is recommended that community awareness of the River Sheppey be raised through promotion of community and citizen science initiatives, such as:
 - Westcountry Rivers Trust – Citizen Science Investigations:
(<https://wrt.org.uk/westcountry-csi/>)

- Wessex Water and Somerset Wildlife Trust - Water Guardians:
(www.somersetwildlife.org/get-involved/volunteering/wessex-water-guardians-community-project)
- Wild Trout Trust – Trout in the Town:
(<https://www.wildtrout.org/content/trout-town>)

- **BLR.G.5:** It is recommended that education and awareness is provided in local schools. The SRA and EA has Community Engagement Officers that can help to provide this. Wessex Water also has Education Advisors.

Shepton Mallet sub-catchment

- **BLR.SM.5: Shepton Mallet flood webpage** - It is recommended that the Shepton Mallet Town Council website provides local information regarding flooding. It is recommended that this information be kept up to date and linked to the new Somerset online resource once it is available.

Croscombe sub-catchment

- **BLR.C.7: Flood Focus webpage** - The Croscombe Parish Council website hosts information regarding flooding on a 'Flood Focus' page. It is recommended that this information be kept up to date and linked to the new Somerset online resource once it is available.

10.6.6 Property flood resilience

Shepton Mallet sub-catchment

- **BLR.SM.6: PFR** - The Environment Agency has advised that requirements for additional PFR within Shepton Mallet are being reviewed. Appropriate support should be provided for the installation of PFR where required.

Croscombe sub-catchment

- **BLR.C.8: Historic building PFR** - As a result of this investigation, discussions are taking place between relevant Agencies (e.g. SRA, Environment Agency, Somerset Council, Historic England) to identify how the issue of PFR within historic buildings can be resolved locally.

10.6.7 'Adopt a drain'

Shepton Mallet and Croscombe sub-catchments

- **BLR.G.6: 'Adopt a drain'** – Review the feasibility of an 'Adopt a drain' scheme, similar to that in the USA (<https://adopt-a-drain.org/>), which asks residents to adopt a drain in their neighbourhood and keep it clear of leaves, trash, and other debris to reduce water pollution.

11 Further investigations

11.1 Wet weather surveys

It is recommended that further targeted wet weather surveys are undertaken to better understand existing conditions.

11.2 Monitoring

The hydrology of this area is very complex. IN order to understand the responses the catchment has to rainfall it would be beneficial to undertake some groundwater level monitoring and river level monitoring in key areas of the catchment. This could help to identify key triggers for flood risk in the future and inform any mitigation opportunities identified within this report.

11.3 Modelling

There is a need to undertake detailed hydraulic modelling of the catchment to help determine whether the actions proposed will provide sufficient benefit to be invested in. One area requiring further work is the river arrangement and culvert restrictions along Long Street in Croscombe. There are also various third party utilities running within the culverts of Shepton Mallet which should be better understood before removal is pursued. The culvert at Woodlands Farm (Shepton Mallet) also appears to present a significant restriction to flow; however this could be coupled with storage if the landowner is amenable.

It would also be beneficial to review the proposed attenuation features and improvements in such a model to show the potential benefits.

Modelling of the catchment, flow pathways and groundwater flow will also be crucial to assess the sensitivity of the system to climate change and how these mechanisms might influence one another. This was planned to be part of this investigation, but budgets and programme would not allow this to be undertaken upfront.

11.4 Feasibility and Scoping studies

Prior to undertaking many of the actions listed a range of additional studies are likely to be required. These would include, but are not limited to, environmental studies such as ecological assessments and heritage assessments, geomorphological studies.

12 Summary

Table 12 provides a summary of issues and potential opportunities identified according to SRA workstream. A separate spreadsheet provides details of all of the opportunities identified.

At this initial stage, no potential options have been discounted. It should, however, be noted that not all of the potential opportunities identified will be able to progress due to issues such as their cost, complexity and availability of funding. The opportunities identified need to be subject to further detailed review in order to determine their feasibility.

Issues	Opportunities identified
River Management	
<ul style="list-style-type: none"> • Historic modification of the river channel • Condition of culverts • Bed level changes • Channel obstructions 	<ul style="list-style-type: none"> • River and floodplain restoration • Culvert restoration and maintenance
Land Management	
<ul style="list-style-type: none"> • Land use in upper catchment, e.g. winter grazing, maize 	<ul style="list-style-type: none"> • Changes in land use • Tree planting • Natural flood management
Urban Water Management	
<ul style="list-style-type: none"> • Lack of sustainable urban drainage systems • Need for additional guidance and changes in local policies 	<ul style="list-style-type: none"> • New guidelines and policies • Planning policy enforcement • Sustainable urban drainage, e.g. attenuation features, ponds • Water butts and raingardens
Resilient Infrastructure	
<ul style="list-style-type: none"> • Capacity of parts of the drainage network • Condition of parts of the drainage network 	<ul style="list-style-type: none"> • Capacity improvements • Repairs and maintenance
Building Local Resilience	
<ul style="list-style-type: none"> • Accessibility of flood information • Community awareness of flooding and local resilience measures 	<ul style="list-style-type: none"> • Website • Community flood plan, flood group and flood wardens

Issues	Opportunities identified
<ul style="list-style-type: none"> • Lack of resources to respond to flood incidents • Need for additional property level resilience measures 	<ul style="list-style-type: none"> • Reporting of flooding • Citizen science initiatives • Property flood resilience • 'Adopt a drain'

Table 12: Summary of issues and opportunities

The opportunities identified are also shown for all SRA workstreams by location on **Figure 28** for Shepton Mallet (West) **Figure 29** for Shepton Mallet (East) and **Figure 30** for Croscombe in order to demonstrate how different opportunities can work together in combination.

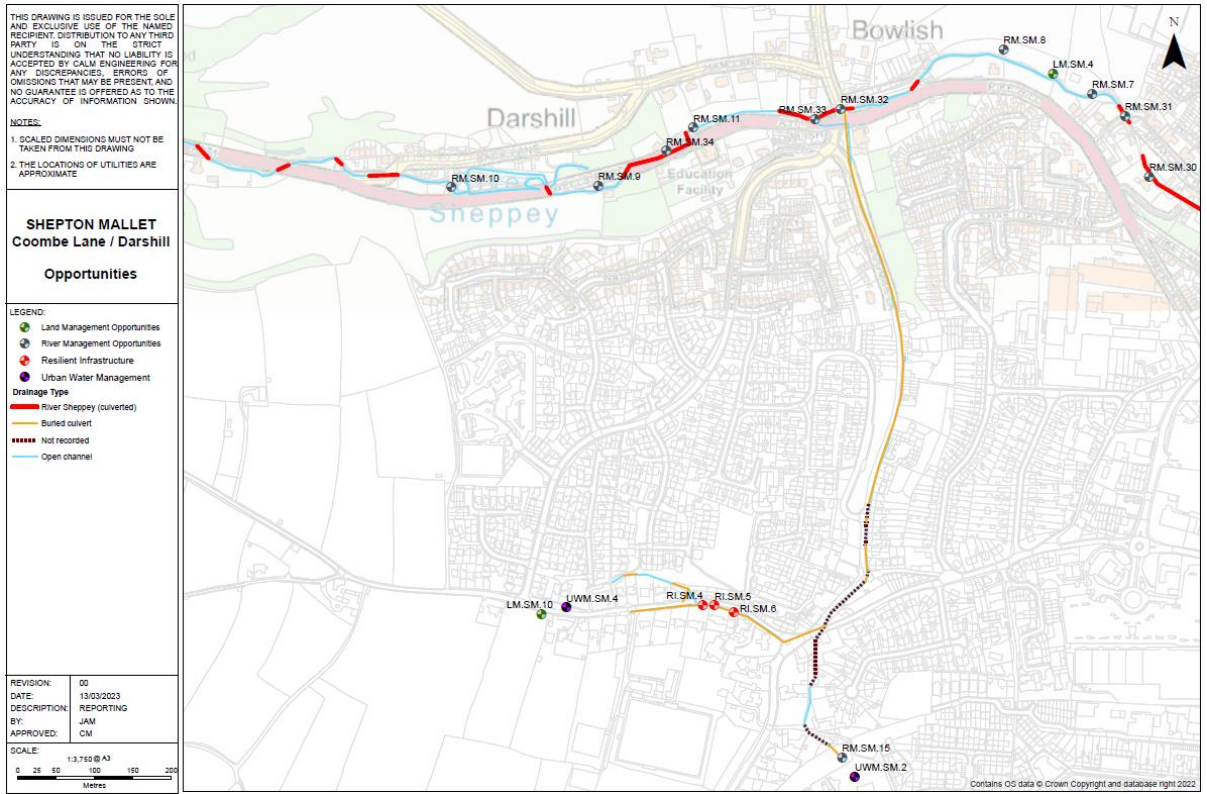


Figure 28: Opportunities: Shepton Mallet (West)

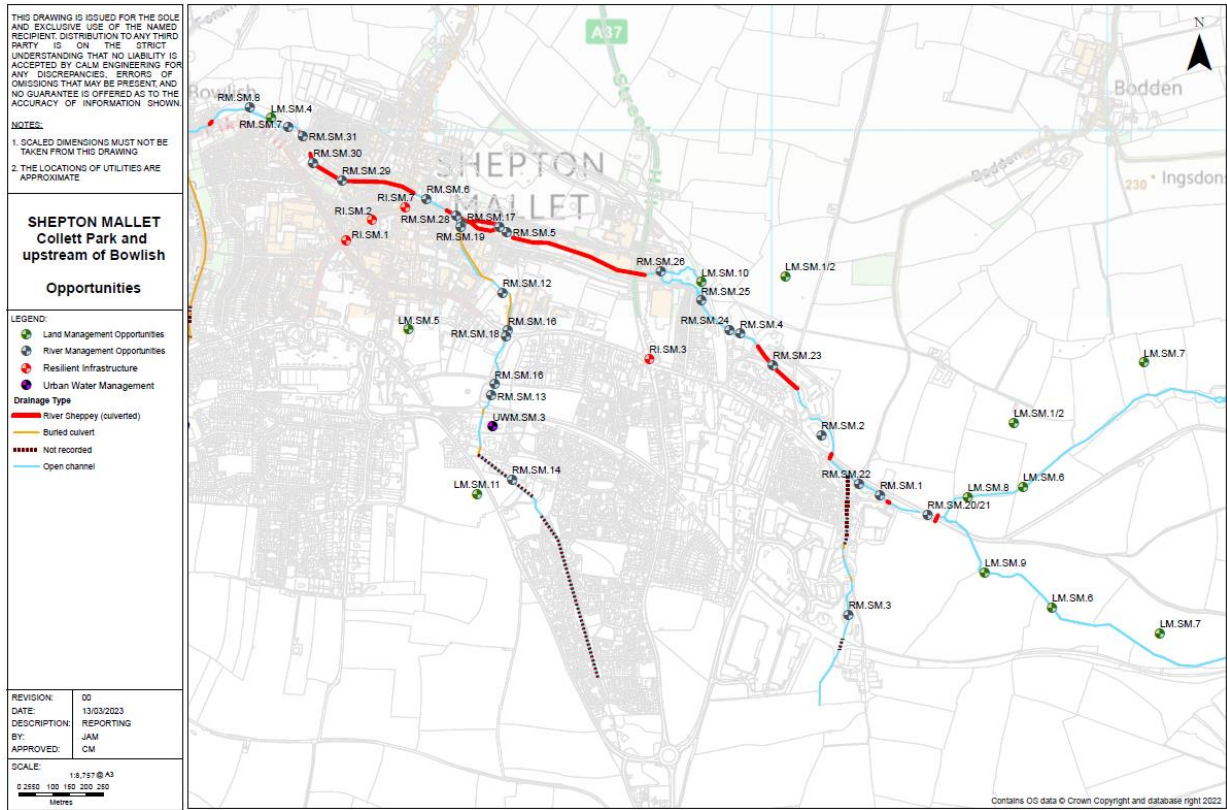


Figure 29: Opportunities: Shepton Mallet (East)

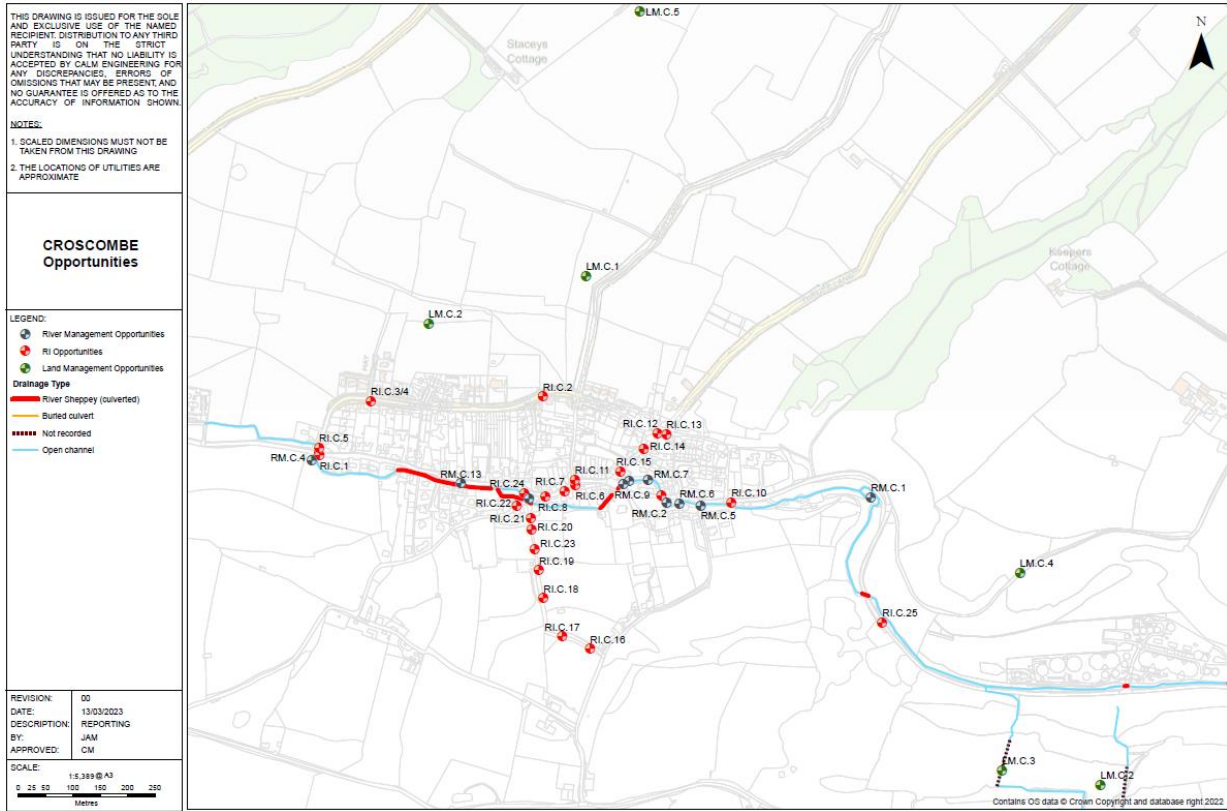


Figure 30: Opportunities: Crocombe

13 Partnership and future funding

13.1 Introduction

Some of the opportunities identified can be taken forward by partners as part of their routine operations, however, others may require the formation of new partnerships and access to additional funding.

Many of the potential opportunities identified within this study would have multiple benefits, beyond reducing flood risk and increasing resilience to flooding. For example, the River Sheppey is classified as a Heavily Modified Waterbody under the Water Framework Directive (WFD) and many of the options would contribute towards the WFD objectives for this catchment. Some of the suggested actions would also contribute towards achieving compliance with the Eels (England and Wales) Regulations 2019 and Salmon and Freshwater Fisheries Act 1975.

As ecology, fisheries and water quality may also benefit this broadens the opportunities to work in partnership with other organisations and access a range of funding sources.

13.2 Potential partners

Potential partners for taking actions forward on a catchment-wide basis include:

- Somerset Rivers Authority;
- Somerset Council;
- Environment Agency;
- Wessex Water;
- FWAG SW;
- Town/Parish Council;
- Wild Trout Trust;
- Westcountry Rivers Trust;
- Landowners, businesses, residents.

A number of existing partnership arrangements are in place, for example, as part of the Brue Priority Catchment, a dedicated River Sheppey fisheries stakeholder group was established in 2020-21. WTT and WRT are members of the group. Further community engagement projects could encourage other groups to set up and take an active role in building resilience within these communities.

13.3 Potential funding sources

Potential sources of funding include:

13.3.1 Somerset Rivers Authority

Somerset Rivers Authority's main aim is to give Somerset the greater flood protection and resilience that long experience has shown it needs. Somerset Rivers Authority focuses heavily on providing additional maintenance and improvements to rivers and their catchments, roads prone to flooding, and structures such as culverts and drains.

New projects are added every year. They go into a yearly Enhanced Programme, approved by the SRA Board at a final budget-setting meeting held every March. Actions can also be added during the course of a year.

13.3.2 Somerset Catchment Partnership

Funding is available through established river catchment partnerships such as the Somerset Catchment Partnership.

13.3.3 Nature Recovery Network

Defra and Natural England are bringing together partners, legislation, and funding to create the Nature Recovery Network (NRN). One of the objectives of the NRN is to improve the landscape's resilience to climate change, providing natural solutions to reduce carbon and manage flood risk, and sustaining vital ecosystems such as improved soil, clean water and clean air.

A range of funding is being established to underpin the NRN. This includes Countryside Stewardship and three schemes that will reward environmental land management: the Sustainable Farming Incentive, Local Nature Recovery and Landscape Recovery schemes.

The government has announced a range of funding opportunities for nature, including the £640 million Nature for Climate Fund and £80 million Green Recovery Challenge Fund.

The government is also broadening the funding base for the NRN, for example by encouraging private and third sector businesses to invest in the natural environment. In particular, they are incentivising action for businesses in the development sector by mandating biodiversity net gain.

13.3.4 Ofwat Innovation Fund

Ofwat, the Water Services Regulation Authority for England and Wales, has established a £200 million Innovation Fund to grow the water sector's capacity to innovate, enabling it to better meet the evolving needs of customers, society and the environment.

The Innovation Fund, delivered in partnership with Challenge Works (formerly known as Nesta Challenges) and supported by Arup and Isle Utilities, is designed to complement Ofwat's

existing approach to innovation and to help deliver against Ofwat's strategy which highlights the role of innovation in meeting many of the challenges the sector faces.

Through the Fund, Ofwat are delivering a series of innovation competitions that water companies, in partnerships with others, can enter. Different rounds of the competitions are expected to run until 2025, and Ofwat are currently consulting on a proposal to continue the Fund until 2030, but the goal is that the Innovation Fund's impact will continue well beyond even this.

13.3.5 Wessex Water Foundation

The Wessex Water Foundation provides funding for projects which bring people together to build stronger communities.

Launched in 2020 and run in partnership with the Somerset, Wiltshire, Dorset and Quartet Community Foundation, this fund provides grants to projects across the Wessex Water region, totalling at least £500,000 per year.

Two funds will support communities during 2023:

- The Environment Fund supports charitable and community activities that aim to have a positive impact on the local environment;
- The Community Fund aims to support community-based activities or projects that meet a local need and seek to improve the lives of local people who are in most need of support.

13.3.6 DEFRA Water Environment Investment Fund (WEIF)

Defra provide capital and revenue funding to help deliver Water Framework Directive objectives, through projects on the Environment Programme, referred to as the Water Environment Improvement Fund (WEIF). The primary purpose of this funding is to protect the water environment from deterioration and deliver measurable improvements, working in partnership with others and facilitating catchment scale engagement.

The objectives of the Water Environment Investment Fund are:

- To contribute to achieving statutory water body objectives, focusing on River Basin Management Plan (RBMP) measures without an owner
- To increase stakeholder engagement to ensure local needs and priorities for water natural capital are met
- To increase natural carbon storage and enable the water environment and water dependent wildlife to adapt and become more resilient to climate change impacts
- To protect and restore habitat conditions for at-risk priority water dependent species
- Maximise cost beneficial investment and secure wider economic, social and commercial benefits through improvements to natural capital

Through this fund the Environment Agency is looking to adopt a partnership first, catchment approach, focusing on local communities, partner needs and looking for co-benefits.

WTT (working with WRT) have successfully applied for WEIF funding and are undertaking work on the River Sheppey related to improvements in the priority aspects of water quality, fish passage and surveys, habitat enhancement and river restoration. Similar work is expected to continue into the next financial year and hopefully beyond. The scope of this partnership work utilising WEIF funding is flexible, and while it is currently ecological focussed there is potential for it to evolve and expand to encompass flood risk and NFM measures.

13.3.7 EA Fisheries Improvement Programme (FIP)

Established by the EA in 2015, the Fisheries Improvement Programme (FIP) reinvests fishing licence income back into projects that provide positive outcomes for anglers. Examples of projects that could receive FIP funding include projects that create fish passages, sustainable habitats, urban fisheries and improve local angling club fisheries.

13.3.8 Wessex Local Levy

Local levy funds are raised by a levy on local authorities. Regional Flood and Coastal Committee members are appointed from Lead Local Flood Authorities and the Environment Agency to plan and invest in flood and coastal erosion risk management. Projects are selected by the Committee. The local levy can fund all types of flood risk management projects, both traditional and natural approaches.

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15 Appendix 1: Legislation and policy context

15.1 Introduction

This section provides an overview of relevant UK wide legislation and policy and local policy and guidance in order to demonstrate key drivers for the actions identified within the two sub-catchments and potential sources of funding.

15.2 UK policy and guidance

15.2.1 A Green Future: Our 25 Year Plan to Improve the Environment

A Green Future, the government's 25 Year Plan to Improve the Environment was published in January 2018 (DEFRA, 2018). It sets out what the government intends to do to improve the environment, within a generation. One of the 25-year goals is:

"A reduced risk of harm from environmental hazards such as flooding and drought."

The plan includes the following targets:

"We will reduce the risk of harm to people, the environment and the economy from natural hazards including flooding, drought and coastal erosion by:

- *Making sure everyone is able to access the information they need to assess any risks to their lives and livelihoods, health and prosperity posed by flooding and coastal erosion.*
- *Bringing the public, private and third sectors together to work with communities and individuals to reduce the risk of harm.*
- *Making sure that decisions on land use, including development, reflect the level of current and future flood risk.*
- *Ensuring interruptions to water supplies are minimised during prolonged dry weather and drought.*
- *Boosting the long-term resilience of our homes, businesses and infrastructure."*

Chapter 1 of the plan relates to "Using and managing land sustainably". In terms of managing flood risk, the Plan states that the focus will be on:

- Using more natural flood management solutions where appropriate;
- Increasing the uptake of sustainable drainage systems, especially in new developments; and

- Improving the resilience of properties at risk of flooding and the time it takes them to recover should flooding occur.

This is in addition to updating the national flood and coastal erosion risk management strategy and strengthening the relevant protections in the National Planning Policy Framework.

This Hills to Levels project in Somerset is cited as an example of working with natural processes and natural flood management.

Flood management is also identified in the Plan as an additional benefit of the proposed Nature Recovery Network.

15.2.2 National Adaptation Programme

The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting (DEFRA, 2018) was published in July 2018. This report sets out what government and others will be doing over the next 5 years to be ready for the challenges of climate change.

- **Section 2.5** of the report deals with natural flood management.
- **Section 2.8** recognises the role of agriculture in mitigating flood risk, alongside the risks to farms themselves.
- **Section 3** recognises different sources of flooding as a risk to infrastructure, including the energy sector, telecommunications and transport. The Cabinet Office has established a National Infrastructure Resilience Council (NIRC) to bring together utilities companies to share information about the locations of their assets and to take a coordinated approach to flood resilience.
- **Chapter 4** also recognises that flooding presents a risk to people and the built environment. It refers to the need to revise the NPPF and supporting flood and coastal risk management. A holistic approach to flood and coastal erosion risk management is outlined, addressing the aspects of prevention, protection, adaptation, response, and acceptance.
- **Chapter 5** notes that flooding also presents a risk to business and industry.
- **Chapter 6** considers the role of local authorities in flood risk management.

15.2.3 National Risk Register

The National Risk Register (HM Government, 2020) identifies three types of flooding:

- **coastal** (where high tides and storm surges combine to cause the sea to flood inland);
- **rivers and streams**, known as 'fluvial flooding' (where waterways overflow their banks into surrounding areas);
- **surface water** (where rainfall overwhelms drainage systems).

The National Risk Register set out measures to reduce vulnerability, make better predictions of flooding and improve coordination.

15.2.4 Flood and Coastal Erosion Risk Management Policy Statement

The Flood and Coastal Erosion Risk Management Policy Statement was published in July 2020 (DEFRA, 2020) and sets out the government's long-term ambition to create a nation more resilient to future flood and coastal erosion risk. In doing so, reduce the risk of harm to people, the environment and the economy.

Alongside the Policy Statement, the Environment Agency has published its National Flood and Coastal Erosion Risk Management Strategy for England (see below). This provides a framework to guide the activities of those involved in flood and coastal erosion risk management. Taken together, the Policy Statement and the National Strategy will ensure that the country is more resilient to flooding and coastal erosion in the long term.

The Policy Statement sets out five policy areas:

- **Upgrading and expanding national flood defences and infrastructure** – Building new flood defences and ensuring that new and existing defences are well maintained so that they continue to be effective in a changing climate.
- **Managing the flow of water more effectively** - Delivering an integrated approach to managing water. This will not only help to better protect communities from flooding but will provide wider benefits for water resource management and the environment. Increasing the number of water management schemes within and across catchments to reduce flood risk and help manage drought risk. Promoting actions which prevent and better manage the impacts of surface water flood risk including by increasing the provision of sustainable drainage systems.
- **Harnessing the power of nature to reduce flood and coastal erosion risk and achieve multiple benefits** -The power of nature will be part of the solution to tackling flood and coastal erosion risks. Doubling the number of government funded projects which include nature-based solutions to reduce flood and coastal erosion risk. Nature-based solutions provide wider environmental and social benefits including nature recovery – to protect and restore habitats, species and landscapes – and improved water availability. Continuing to strengthen links between natural flood risk management and wider benefits and exploring how to do more to deliver multiple benefits from a range of interventions working together.
- **Better preparing our communities** - Ensuring that all homes currently at high risk of flooding are better protected or better prepared. Maintaining and enhancing planning policies that direct new development away from areas at risk. New properties and infrastructure need to be resilient to flooding and coastal erosion to deliver high quality and affordable homes and thriving communities that the country needs in a changing climate. Ensuring communities and businesses have the information they need to take ownership of their resilience. Providing support

to communities to increase awareness and understanding of risk, and sharing advice on steps which can help to better prepare. Key sectors – such as the insurance, development and property industries – will be encouraged to make their products and services more resilient through innovation and greater use of new technology. Policies will help to ensure that buildings, important infrastructure sites and key public services are better prepared to manage flood risk. Working together to support communities, including when flooding happens and in recovery afterwards.

- **Enabling more resilient places through a catchment-based approach** - Supporting every place to thrive in a changing climate by adopting and encouraging a catchment-based approach. This means considering the full range of actions that could be taken in an area, upstream and downstream, by a variety of bodies to improve resilience. Transforming the current approach to local flood and coastal erosion risk planning so that every area of England will have a more strategic and comprehensive plan that drives long-term local action and investment. Local flood and coastal erosion plans will link with wider plans for an area such as water resource plans and local nature recovery strategies to seize opportunities to secure multiple benefits.

15.2.5 National Flood and Coastal Erosion Risk Management Strategy for England

The National Flood and Coastal Erosion Risk Management Strategy, published in July 2020, sets out a vision of a nation ready for, and resilient to, flooding and coastal change through to the year 2100 (Environment Agency, 2020). The Strategy describes what needs to be done by all risk management authorities involved in flood and coastal erosion risk management for the benefit of people and places. This includes the Environment Agency, lead local flood authorities, district councils, internal drainage boards, highways authorities and water and sewerage companies, who must exercise their flood and coastal erosion risk management activities, including plans and strategies, consistently with the Strategy.

The Strategy recognises the need for individuals, communities, the third sector, businesses, farmers, land managers and infrastructure providers to contribute to planning and adapting to future flooding and coastal change.

The Strategy has 3 long-term ambitions, underpinned by evidence about future risk and investment needs. They are:

- **Climate resilient places:** working with partners to bolster resilience to flooding and coastal change across the nation, both now and in the face of climate change.
- **Today's growth and infrastructure resilient in tomorrow's climate:** making the right investment and planning decisions to secure sustainable growth and environmental improvements, as well as infrastructure resilient to flooding and coastal change.

- **A nation ready to respond and adapt to flooding and coastal change:** ensuring local people understand their risk to flooding and coastal change, and know their responsibilities and how to take action.

The Strategy has been updated in 2021 and 2022 (Environment Agency, 2022).

15.2.6 National Flood and Coastal Erosion Risk Management Strategy for England Action Plan

A Flood and Coastal Erosion Risk Management (FCERM) Strategy Action Plan was published in May 2021 (Environment Agency, 2021). This focused on actions from April 2021 to April 2022. It described what was already being done to achieve the ambitions of the National Flood and Coastal Erosion Risk Management Strategy for England.

In June 2022, the Environment Agency published a Flood and Coastal Erosion Risk Management Strategy Roadmap to 2026. The roadmap contains practical actions out to 2026 which ensure progress toward the strategy's 2100 vision. The roadmap supersedes the Action Plan published in May 2021 (Environment Agency, 2022).

15.2.7 Flood and Coastal Risk Projects, Schemes and Strategies: Climate Change Allowances

The Climate Change Allowances document provides guidance on when and how risk management authorities should use climate change allowances for flood and coastal risk projects, schemes and strategies (Environment Agency, 2021). It was published in July 2020 and last updated in May 2022.

15.2.8 National Planning Policy Framework

The National Planning Policy Framework (NPPF) was first published in March 2012. It was most recently updated in July 2021 (Ministry of Housing, Communities & Local Government, 2021). The NPPF sets out the government's planning policies for England and how these are expected to be applied.

Chapter 14 deals with 'Meeting the challenge of climate change, flooding and coastal change'. The NPPF makes reference to mitigating and adapting to climate change, including increased flooding. It states that,

"policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts." (para. 153)

In relation to planning and flood risk it states,

"Strategic policies should be informed by a strategic flood risk assessment, and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the

Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards.” (para. 160)

All plans should use,

“opportunities provided by new development and improvements in green and other infrastructure to reduce the causes and impacts of flooding, (making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management)” (para. 161c)

15.2.9 Flood Risk and Coastal Change Guidance

Flood Risk and Coastal Change Guidance was published in March 2014 (Ministry of Housing, Communities & Local Government, 2014), with the most recent update published in August 2022. The guidance advises how to take account of and address the risks associated with flooding and coastal change in the planning process.

15.2.10 Use Nature-based Solutions to Reduce Flooding in Your Area Guidance

The guidance document ‘Use nature-based solutions to reduce flooding in your area’ was published in June 2021 (Environment Agency, 2021). It provides guidance on how to use natural options to reduce flooding, who to contact for advice, and funding.

15.2.11 Working with Natural Processes to Reduce Flood Risk

This website, published in February 2021, provides the evidence base for working with natural processes to reduce flood risk (Flood and Coastal Erosion Risk Management Research and Development Programme and Environment Agency, 2021).

15.3 Somerset County Council

15.3.1 West of England Sustainable Drainage Developer Guide

In 2015 Somerset County Council collaborated with Bristol City, Bath and North East Somerset, North Somerset and South Gloucestershire Councils to develop a SuDS guidance document (Bath & NE Somerset Council, Bristol City Council, North Somerset Council, Somerset County Council and South Gloucestershire Council, 2015).

The guide signposts to existing policy and guidance to support the delivery of a sustainable approach to the drainage of new development in the sub-region. From 6 April 2015, it was expected that local planning policy and decisions on Major Developments (10 dwellings or more; or equivalent non-residential or mixed development) to ensure that sustainable drainage systems for the management of run-off are put in place, unless demonstrated to be inappropriate.

It is understood that Somerset County Council were anticipated to provide details of the character of the County and specific technical and procedural requirements to support this guide. This is in development, however, has not yet been published (see [Section Error! Reference source not found.](#) of this report).

15.3.2 Sustainable Drainage Guide

Somerset County Council, with funding from Somerset Rivers Authority, are developing up-to-date guidance for the delivery of sustainable drainage (SuDS) in Somerset (Somerset Rivers Authority and Somerset County Council, 2022).

15.3.3 Somerset's Climate Emergency Strategy

Towards a Climate Resilient Somerset - Somerset's Climate Emergency Strategy was adopted in November 2020 (Somerset County Council, 2020). The Strategy acknowledges that parts of Somerset are vulnerable to flooding and that Climate Change will increase the risk of flooding. One of the 9 sectors or themes identified in the Strategy is:

*"Our **Water** resources - how they are managed to minimise the impacts of flooding and drought on our residents, buildings and landscapes".*

The expected local impacts of Climate Change include:

- **Transport Networks:** Disruption to transport networks from extreme weather events, (flood and heat) impacting on local economy, health & wellbeing. Flood risk to transport infrastructure.
- **The Built environment:** New design standards needed for drainage, insulation and building fabric etc. Increased flood risk.
- **Business and industry:** Disruption to transport, energy and communications.
- **The Natural Environment and Agriculture:** Damage to crops & landscapes from flooding.
- **Water (Flood Risk and Drought):** Increase risk of coastal, pluvial and fluvial flooding. Increased flash flood risk from extreme weather events.
- **Health and Wellbeing:** Flooding impacts on health, wellbeing and livelihoods.

The co-benefits of acting on Climate Change are identified as including reduced costs from flood and extreme events and reduced flood risk (coastal, pluvial and fluvial).

Key focuses for the Natural Environment within the Strategy include:

- *"restoring nature at scale to enable natural processes, such as carbon sequestration and natural flood management to function. We should lead by example and be bold in our approach setting a target of at least 30% of Somerset's land cover being managed positively for nature with healthy natural processes by 2030"*

- *engaging communities and landowners in protecting and restoring nature for their own benefit and wider benefit of the environment*

The Local Nature Partnership is identified as a means to deliver these outcomes.

The Strategy makes reference to Somerset's innovative 'Adaptation Pathways in Somerset' (APIS) and 'Co-Adapt' projects as examples of collaborative approaches to managing flood risk and ensuring the County is adequately prepared for the future.

In relation to adaptation, the Strategy states:

"Adaptation measures to address climate impacts should seek to achieve multiple benefits. Techniques such as Natural Flood Management and Sustainable Drainage Systems (SuDS) are already widely implemented addressing flood and water management challenges in a more sustainable way and offering increased carbon sequestration and improved catchment management.

These innovative projects often include engagement with the local community to develop opportunities and "co-create" solutions, raising awareness of Climate Change and flooding risks."

15.4 Mendip District Council

15.4.1 Mendip District Local Plan 2006-2029

Part I of the Mendip District Local Plan was adopted in December 2014 (Mendip District Council, 2014). It sets out strategic and local planning policies for Mendip District to 2029. Part II was adopted in December 2021 and relates to sites and policies (Mendip District Council, 2021).

The Local Plan acknowledges that,

"The Levels and Moors form a substantial area at high risk of fluvial flooding and this affects Glastonbury and its surrounding villages. Flash flooding, caused by surface run-off is also a problem in some areas, especially Shepton Mallet. In the future, acknowledging climate change effects, flood risk areas will be more prone to incident and pressure on drainage systems in areas where flood risk is less prevalent may still result in localised inundation" (para. 2.17).

A specific threat identified in relation to Shepton Mallet is, *"Increased surface water flooding arising from new development and climate change"* (page 67). The vision for Shepton Mallet for 2029 states that, *"Flooding is less of a threat to the town and to communities downstream along the River Sheppey, with storm-water capacity problems having been addressed and new development having incorporated Sustainable Urban Drainage Systems."*

Development Policy 23 (page 124) addresses flood risk:

"Development Policy 23: Managing Flood Risk

1. Development will follow a sequential approach to flood risk management, giving priority to the development of sites with the lowest risk of flooding. The development of sites with a sequentially greater risk of flooding will only be considered where essential for regeneration or where necessary to meet specific local requirements.

2. Development in areas at risk of flooding will be expected to:

a) be resilient to flooding through design and layout; and

b) incorporate sensitively designed mitigation measures, which may take the form of on-site flood defence works and/or a contribution towards, or a commitment to undertake, such off-site measures as may be necessary, in order to ensure that the development remains safe from flooding over its lifetime, taking into account the predicted impact of climate change.

3. All development will also be expected to incorporate appropriate water management measures to reduce surface water run-off and ensure that it does not increase flood risks elsewhere. This should include the use of sustainable urban drainage systems (SUDS)."

15.4.2 Climate Emergency Plan

Mendip District Council has prepared a Climate Emergency Plan (Mendip District Council, 2020). The Plan doesn't specifically address flooding. However, it does make reference to delivering a programme of community and stakeholder engagement across the Council and Mendip district and working with local people and partners for the protection and enhancement of the built and natural environment.

15.4.3 Shepton Mallet Town Centre Masterplan

The Shepton Mallet Town Centre Masterplan was published in May 2022 (Mendip District Council, 2022). The following projects are relevant in terms of potential flood management and interventions along the River Sheppey:

- Project 1 – Collett Park to the town centre incorporates measures to introduce trees, planters and SUDs;
- Project 2 – Great Ostry to the Market Place incorporates measures to introduce trees, planters and SUDs;
- Project 3 – Commercial Road to High Street incorporates measures to introduce trees, planters and SUDs;
- Project 6 – High Street incorporates measures to introduce trees, planters and SUDs;
- Project 7 – Market Place incorporates measures to introduce trees, planters and SUDs;
- Project 8 – Painting, Planting and Maintenance incorporates measures to introduce trees, planters and SUDs and refers to the introduction of rain gardens and removal of areas of hard paving to improve flood resilience;

- Project 9 – River Sheppey proposes improving the setting and access to the river along Lower Lane and potentially carrying out de-culverting and enhancing the existing open space on Garston Street.

15.5 Shepton Mallet Town Council

15.5.1 Shepton Mallet Neighbourhood Plan

A Neighbourhood Plan for Shepton Mallet is being prepared (Shepton Mallet Town Council, 2021).

15.5.2 Investing in Shepton's Future 2020–2024

In 2020 Shepton Mallet Town Council published its Town Plan (Shepton Mallet Town Council, 2020). The plan states that it will drive the Town Council forward over a 4 year period, giving it a purpose: to improve and develop the future of the town. The key priorities identified, focusing on those most relevant to this study, are categorised as:

- **People** - To put the community at the heart of everything that the Council does and ensure that Shepton is a healthy, thriving and attractive place to live and work, with a strong sense of community. This includes celebrating volunteering, encouraging participation in community activities, supporting initiatives that encourage wellbeing and cultural development of the community.
- **Placemaking** - Provide and improve facilities and services and develop a well-connected town. This includes supporting the delivery of the Neighbourhood Plan, improving the built environment, making the town more welcoming, promoting and protecting the town's heritage and improving physical and digital connectivity.
- **Protected environment** - Take an active role to maintain and enhance the green and clean environment, by being environmentally conscious and sustainable. This includes protecting and improving the rural environment, protecting and enhancing biodiversity, protecting and improving Collett Park, aiming to be carbon neutral and fight climate change.
- **Play** - Encourage participation in recreational activities and provide the opportunity for safe and inclusive play.
- **Promotion** - Promote Shepton as a destination market town, based on a strong platform of culture, arts and heritage.

15.6 Croscombe Parish Council

15.6.1 Croscombe Parish Plan

The Croscombe Parish Plan was published in 2010 (Croscombe Parish Council, 2010). Page 3 of the Parish Plan notes,

"You expressed a great deal of concern about flooding in the village and poor drain and river clearance.

SCC Highways Authority has done major engineering works to try to solve the flooding problem. Extra drains and run-offs at Thrupe Lane, Old Street and other locations have been installed with the aim of getting floodwater into the Sheppey more efficiently.

The Environment Agency has cleared the river but it is important that all property owners living alongside the river do undertake their own clearance of vegetation where they have riparian responsibility."

[Error! Reference source not found.](#) shows photographs from 1932 (left) and 2010 (right) included in the Croscombe Parish Plan.



Figure 31: Photographs included in the Croscombe Parish Plan 2010

15.6.2 Croscombe Village Design Statement.

The Croscombe Village Design Statement was published in January 2013 (Croscombe Parish Council, 2013). The Design Statement was prepared by the Parish Council in consultation with Mendip District Council. The Design Statement notes that,

"In the 1960s/70s major work was done to the River Sheppey and its culverts to ameliorate flooding caused by the river in spate. There is a continuing programme of works to improve the drainage of run-off water from the steep valley sides during periods of heavy rain. Not surprisingly, the possibility of an increased flood risk is a material consideration in any new build close to the River Sheppey" (page 5).

It also notes that, *"Trees, native hedging and the River Sheppey are important to village character and should be enhanced in any development"* (page 14).

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