Swindon Borough Council

Section 19 Flood Investigation Report

FEBRUARY 2025

Date of Flood Incident: Autumn 2023

Section 19 Flood Investigation Report

Date: 10 FEBRARURY 2025

Section 19 Flood Investigation Report:
Date of Flood Incident: 17th -18th September 2023, 13th & 20th October 2023

Based upon a flood investigation report prepared by

Swindon Borough Council, February 2025

Revision Schedule

Version	Date	Details	Authors	Checked	Approved
1	10/02/2025	Swindon Borough Council 2023 Section 19 Flood Investigation Report	**Igho Emeseh**	**Igho Emeseh**	**Steve Iles**

Executive Summary

The impact of intense and prolonged rainfall that fell over a short period of time in Swindon Borough on 17th and 18th September, 13th & 20th October as well as 21st November 2023 as a result of severe storm events that occurred in Autumn of 2023, caused water levels to rise in rivers and watercourses. This resulted in widespread flooding as the local surface water drainage systems were overwhelmed. The sewers and the highway drainage systems therefore have nowhere to discharge to and this resulted in detrimental internal flooding to some properties and sections of the highway network.

This Flood Investigation Report has been produced by Swindon Borough Council (SBC) in its capacity as the Lead Local Flood Authority (LLFA) working in partnership with the Environment Agency and Thames Water under the duties set out in Section 19 of the Flood and Water Management Act 2010.

This report is a factual record of the flooding event that happened during 17th and 18th September, 13th & 20th October and 21st November 2023 and which Risk Management Authorities (RMA's) have relevant flood risk management functions, and whether each of those authorities exercised or proposed to exercise their management functions as per section 19(1) of the Flood and Water Management Act 2010. The report does not address wider issues beyond this remit. It draws upon input from different stakeholders including the Swindon Borough Council, Local Councilors, the Environment Agency (EA), Thames Water, Parish Council, Emergency Services, landowners and Residents.

The flooding event had a significant impact on local communities, affecting homes, local infrastructure and the environment.

Key findings:

- The most significant cause of the flooding in Autumn 2023 was as a result of multiple flooding mechanisms occurring and interacting dynamically.
- The high intensity of the rainfall was unable to infiltrate into the ground, resulting in surface water flooding.
- The design standard of the local drainage networks was exceeded by the severity of the rainfall.
- Water levels rose within the rivers, preventing the local drainage networks from discharging.
- Lack of sufficient capacity of storage ponds and lagoons within sub-catchment tributaries during intense and prolonged rainfall even Lack of consistency between the

river/watercourse alignment and the culverts direction causes that the flow velocity suddenly reduces at upstream end of and through culverts leading to siltation reducing the conveyance capacity of the watercourse and culvert, initially causing backwater effects and finally watercourse overflowing.

- The hydraulic capacity of some bridges and culverts across the main rivers / local watercourses were unable to cope with the sudden increase in the river flow resulting in water initially backing up upstream and then eventually overflowing the bridge and intensifying the flooding.

- Inadequate maintenance of rivers, watercourses, ditches, sewer system, culverted watercourses, storage ponds/lagoons etc. by riparian landowners or asset owners may have also contributed to the flooding.

- Majority of the properties that had internal flooding are located in areas of known high fluvial and/or surface water flood risk, being immediately adjacent to watercourses or in surface water flow pathways. When the surface water drainage systems become overwhelmed, they often follow the local topography to low spots.

- Many of the areas affected from internal flooding during this event have experienced flooding before, sometimes on multiple occasions, due to being in flood risk areas.

- Actions have previously been developed to address flooding problems in these areas. Whilst these may be able to mitigate some of the causes/impacts of flooding, it will not be possible to prevent flooding altogether in some of these areas. Any proposals will always be subject to available budgets, funding, resource, capacity and cross organisational co-ordination.
- The flood waters receded quickly after each flood event, suggesting that the drainage systems were functioning, but could not cope with the intensity and volumes of flood flows. This has been confirmed from reports by some residents of the areas impacted by the flood.
- Importance and effect of property Flood Resilience Measures - some communities are fully aware that they live on low lying areas susceptible to flooding (flood zones 2 and 3) and have taken some measures to protect their properties.
- Importance and necessity of public awareness concerning the maintenance responsibility of riparian landowners under Land Drainage Act 1991 has been highlighted (i.e. under this act, riparian landowners, those who own land adjoining watercourses, have a legal duty to maintain the flow of water within the watercourse and prevent flooding on their land. They are also responsible for obtaining consent from the relevant authority for any alterations or works on the watercourse).

- All the stakeholders responsible for risk management and flood protection/prevention collaborated and worked together / shared information during the storm events and all actively contributed to this report.
- The affected sub-catchments / areas may benefit from inclusive and detailed flood mapping / modelling in order to identify opportunities to mitigate future flooding events.
- It is recommended that the existing flood warning system may be reviewed with the possibility of expanding the coverage area and also enhancing the reliability and quality of alerts issued in order to benefit the affected communities.
- It is recommended that more residents should be encouraged to sign up to the existing flood warning system from the Environment Agency and weather forecasting systems from the Met Office.

The purpose of the report is to provide a factual account of the contributing factors, impacts and responses to the flooding, however, it also contains a number of recommendations about effective ways to manage / mitigate the impact of future flood risk. This will require all stakeholders working together in partnership. Most of the locations affected by the flood event will require further detailed investigations and engagement with the affected communities to make sure the full range of flood risk management options are considered and explored.

This report will focus on the following:

- Sequence of events leading to internal property flooding during the storm events
- The Council's response to calls and flood reports
- Response from emergency services and other concerned stakeholders
- Lessons learnt and
- Recommendation / Roles and responsibilities of:
- Swindon Borough Council
- Thames water
- Environment Agency
- Parish Council
- Emergency Services and
- Residents.

Contents

PART A – MAIN REPORT

1.0 INTRODUCTION

1.1. Background to Investigation

As the Lead Local Flood Authority (LLFA) for Swindon Borough Council , we have a duty to publish reports of investigations of flood incidents, as detailed within Section 19 of the Flood and Water Management Act 2010.

A Section 19 flood investigation report is a public statement of the circumstances of a flood event and the parties that have a role in managing the risks. This investigation is not an in-depth analysis of the flood risk nor the mechanisms giving rise to the flooding event. In addition, flood investigations do not give the LLFA powers to require any parties to undertake remedial action.

Section 19 of the Flood and Water Management Act (F&WMA) 2010 places a duty on Lead Local Flood Authorities to investigate instances of local flooding. It states:

1) On becoming aware of a flood in its areas, a lead local flood authority must, to the extent that it considers it necessary or appropriate, investigate:
   a) Which risk management authorities have relevant flood risk management functions, and
   b) Whether each of those risk management authorities has exercised, or is proposing to exercise, those functions in response to the flood.
2) Where an authority carries out an investigation under subsection (1) it must-
   a) Publish the results of its investigation, and
   b) Notify any relevant risk management authorities.

1.2. Purpose of Investigation

This Section 19 report is the result of the investigation into the flood events that occurred in Swindon Borough in Autumn 2023. It has been produced as a factual record of the flooding to meet the requirements of Section 19 of the Flood and Water Management Act 2010. Flooding on this scale takes time to investigate and between Autumn 2023 and publication of this report Swindon Borough Council has focused much of its activity on supporting those mostly affected by the flooding. It has met with the affected residents and other risk management authorities as well as other stakeholders to explore effective ways to manage / mitigate the impact of future flood events.

The report does not include mitigation options and actions to reduce flood risk for every location that flooded. However, such work is ongoing and the Risk Management Authorities (RMAs) involved in this report will continue to work together, engaging with communities to identify all potential options for each location. It is essential that this vital

activity is meticulously carried out to ensure that all flood risk management options are explored and the right solutions proposed.

Information for this report was collated from the following sources:

- Site visits and assessments undertaken by Risk Management Authorities staff including door knocking.
- Flooding details collected at 'Community Drop-in' events and from residents
- Records of properties flooded.
- Use of photos, from various sources, taken during or after the flood events.
- Viewing online or other video footages.
- Information provided by Fire and Rescue Service, such as call-out logs.
- Information from Thames Water.
- Road closure information from Swindon Borough Council.
- Personal observations from initial responders and Council/Utility company staff.

Every effort has been made to verify flooding at the locations identified in the report. However, due to the nature of the data and the methods used to collate this information, there may be potential under-reporting of flooding, particularly in areas that had already been affected by previous flooding events. This report therefore contains only data where flooding has been reported and is indicative only.

For example, the flooding that occurred as a result of Storm Ciaran on 1st & 2nd November 2023 was significantly less severe with only reports of external flooding but this still affected some of Swindon local road and transport network and resulted in school closures.

1.3. Swindon Criteria for Investigating Flood Incident

This report is the result of the investigation into the flooding that occurred in Autumn 2023 brought about by extreme weather and multiple storm events. It describes what happened when 'significant' flooding occurred. The definition of 'significant' and the criteria triggering an investigation is provided within Swindon Borough Council Section E.3 of its Local Flood Risk Management Strategy.

The following is the guide when it would consider it necessary or appropriate to investigate a flood incident:

- **Five or more residential properties flooded internally;**
- **Two or more non-residential properties flooded internally;**
- **One or more critical service (e.g. hospital) flooded, and/or;**
- **A key transport link is totally impassable for a significant period.**

As no two flood incidents are the same it is not feasible to cover all possible circumstances; therefore, there may be circumstances where the Council may choose to carry out an investigation where none of the above criteria is met."

1.4. Report Scope and Methodology

This Section 19 report investigated predominately the flooding in the six most impacted parish communities where in the case of this report 5 or more properties were identified as being flooded internally.

The report is the result of meticulous work based on data gathered from various sources including:

- **Field work/site visit while meeting with affected residents,**
- **Reports and calls received from affected residents before, during and after the flood events,**
- **Response from various flood risk and environmental management authorities,**
- **Emergency services,**
- **Parish/ward councils,**
- **Councilors,**
- **Cabinet,**
- **Different service areas and directorate within the Council, and**
- **Other stakeholders.**

The report analyses some of the actions and responses obtained from the sources listed above.

The report is divided into three parts:

- Part A - The main part of the report: This section provides useful and underlying area including an overview of the Autumn 2023 storm events, rainfall data, river level analysis, the operational response to the flooding and a series of strategic recommendations and lessons learned.

- Part B - The second part of the report focuses on the flooding at the six parishes/communities (priority areas) where 5 or more properties suffered internal flooding. This section also includes a summary of the other Parishes that

were affected by the 2 main 2023 Autumn storms in Swindon. The specific problems encountered by the community in each priority area during the flood event are also be highlighted with suggestions and recommendations.

- Part C - The final part of the report includes the appendices providing supporting information / data.

There will be some common theme in the recommendations made throughout the various parts of the report, particularly with respect to improving management and maintenance as well as community planning and resilience.

In accordance with the criteria above, not all flood risk and drainage issues resulting from the flooding or storm events can be investigated through the Section 19 process.

The report will not in itself attract any additional funding, nor can the Lead Local Flood Authority mandate other bodies and organisations to act on any of the recommendations or actions. All recommendations will be pursued depending on available resource including funding, as well as organisational priorities. Furthermore, it is not possible to resolve all instances of flooding. The main objective is to empower communities to better understand their flood risk vulnerabilities, report instances of flooding and work collaboratively to develop local resilience groups and flood plans.

2.0 ROLES AND RESPONSIBILITIES FOR MANAGING FLOOD RISK IN THE SWINDON BOROUGH.

2.1. Sources of Flooding

The Flood and Water Management Act (2010) defines flooding as any case where land not normally covered by water becomes covered by water. Flood risk is a combination of the following two components:

i. the chance (or probability / likelihood) that a location will flood from any source or type of flooding, and

ii. the impact (or consequence) that the flooding would cause if it occurred. The table below describes different sources of flood risk,

Table 1: Source and Description of Flood Risk

Source	Description
Fluvial flooding	Fluvial flooding (from either a main river or an ordinary watercourse) occurs when the flow capacity of a watercourse is exceeded, causing water to spill out of the channel into nearby areas of floodplain. These may or may not have been developed or have flood compatible uses. Bridges, Culverts and narrow channels in built-up areas can make flooding more likely.

Surface Water Flooding	Surface water flooding is caused by overland flow during periods of sustained or heavy rainfall, causing ponding of water where it becomes obstructed or collects in low lying areas. Local drains and infiltration into the ground are unable to cope with the volume of water present. More impermeable areas can increase the risk of surface water flooding occurring, which is mitigated by drainage systems, but these have a design capacity which may be overwhelmed in times of heavy rainfall.
Groundwater Flooding	Groundwater flooding occurs when the water held underground rises to a level where it breaks the surface in areas away from watercourses and drainage pathways. It is generally a result of extended periods of very heavy rain, but can also result from reduced abstraction, underground leaks or the displacement of underground flows.
Highway Flooding	Highway flooding occurs when the highway drainage system or the sewers they discharge into cannot cope with the amount of rainfall entering the system. This can be due to the size of the pipes or a blockage in the system.
Sewer Flooding	Flooding from a public or transferred sewer (including former Section 24 sewers) which enters a building or passes below a suspended floor'. A sewer is classed as overloaded (hydraulic flooding) when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Temporary problems such as blockages, siltation, collapses and equipment or operational failures are classed as "flooding other causes" (FOC).
Other Sources of Flood Risk	Canals can flood by overtopping or from a breach of a structure, or collapse of a culvert beneath a canal. Risk of flooding from a canal is managed by the responsible organisation. Reservoir

2.2. Risk Management Authorities (RMAs)

The responsibility for managing flooding in the UK is divided between different organisations depending on the type of flooding. These organisations are responsible for coordinating management of local flood risk from surface water, groundwater and ordinary watercourses in the county and are known as Risk Management Authorities (RMAs). Riparian landowners also have responsibilities for watercourses across their land and these are also detailed below.

Managing flood risks and flooding requires RMAs to work together. The RMAs in Swindon Borough under the Flood and Water Management Act 2010 are:

i. SBC - The Lead Local Flood Authority (LLFA).

ii. SBC - Local Highway Authority.

iii. Thames Water.

iv. The Environment Agency.

Each of these organisations has powers and duties under various legislation and regulations for the responsible management of natural water, flood risk and in some cases, coastal erosion.

The Act requires all the risk management authorities to cooperate with other relevant authorities in the exercise of their flood and coastal erosion risk management functions.

The section below sets out RMA's responsibilities for flood risk management in Swindon Borough.

i. SBC – The Lead Local Flood Authority (LLFA)

The Lead Local Flood Authority in this area is Swindon Borough Council (SBC). SBC has a role as an RMA in coordinating management of local flood risk from surface water, groundwater and ordinary watercourses in the borough.

ii. Local Highway Authority

Swindon Borough Council (SBC) is the Highway Authority. It has a duty and lead responsibility for providing and managing highway drainage assets and roadside ditches under the Highways Act 1980. The owners of land adjoining a highway also have a common-law duty to maintain ditches to prevent them causing a nuisance to road users. In addition, SBC also carry out routine highway gully cleaning as well as respond to requests for assistance during flood events including the provision of sandbags to properties and businesses at imminent risk where resources allow.

iii. Water Utility Company – Thames Water

Thames Water is responsible for flooding from foul sewers and surface water sewers that they own. Whilst undertaking this they must manage flood risk from sewers.

Thames Water have a duty to provide and maintain a system of public sewers so that the areas for which they are responsible are effectively drained (Water Industry Act, 1991). Sewerage systems are not, however, designed to accommodate flows from severe weather events and during severe weather the capacity of the sewerage network may be exceeded and result in localised surcharging and/or flooding. Thames Water classify severe weather as conditions that can lead to flooding and burst pipes, such as heavy rainfall, cold weather, wind, ice, and snow. Larger and more intense storms would therefore be expected to result in surcharging of the sewer network.

iv. Environment Agency (EA)

The Environment Agency is one of the RMAs as defined by the Flood and Water Management Act 2010. They are responsible for:

- A strategic overview of all sources of flooding and coastal erosion.

- Flood and erosion risk management activities on Main Rivers and the coast, regulating reservoir safety, and working in partnership with the Met Office to provide flood forecasts and warnings.

v. Landowners and Riparian Owners

Landowners and riparian owners are not part of the Risk Management Authorities (RMAs) but they have responsibilities to maintain the stretch of watercourse they own in order to prevent flooding on their land. They are also responsible for obtaining consent from the relevant authority for any alterations or works on the watercourse.

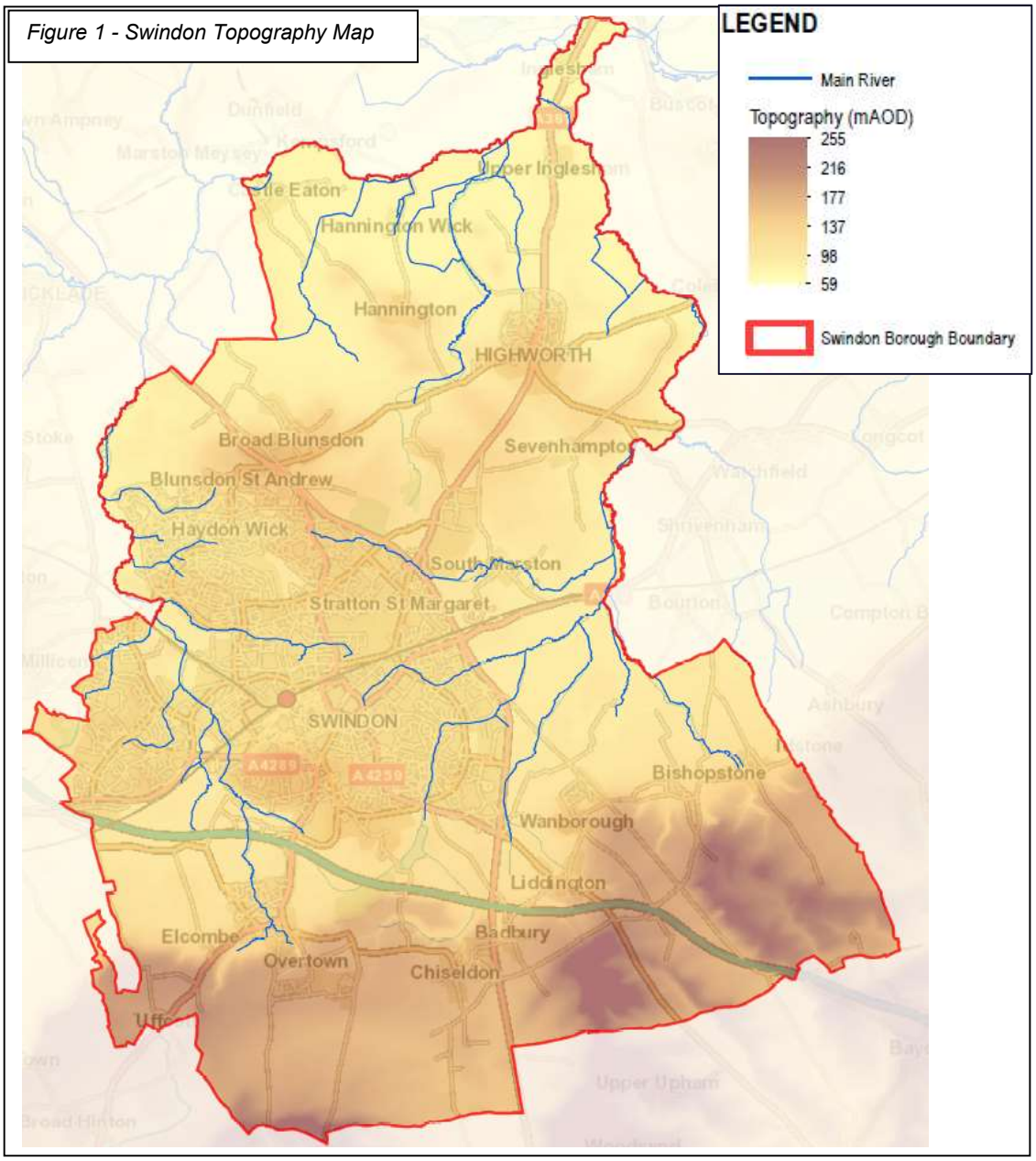
vi. Residents

Property owners are responsible for protecting their property from flooding. Residents who prepare for a flood can reduce damages by around 40% and reduce the likelihood of suffering from mental health impacts as a result. The EA have put together a 'Prepare, Act, Survive' guidance which includes simple but effective advice for residents who need to prepare for a flood with tips such as preparing a bag with medication and important documents and moving valuable and sentimental items upstairs or to higher ground. Further information on this can be found here: https://www.gov.uk/prepare-for-flooding.

3.0 SWINDON BOROUGH COUNCIL LOCATION AND CONTEXT

Swindon Borough Council is a unitary authority area with borough status in Wiltshire, England. It occupies an area forming the north east corner of Wiltshire bordered by Gloucestershire (to the north) and Oxfordshire (to the east). The borough has a generally hilly landscape shaped by the upper Thames to the north, small tributaries draining into the Thames, and the Marlborough Downs rising toward the south.

Figure 1 - Swindon Topography Map

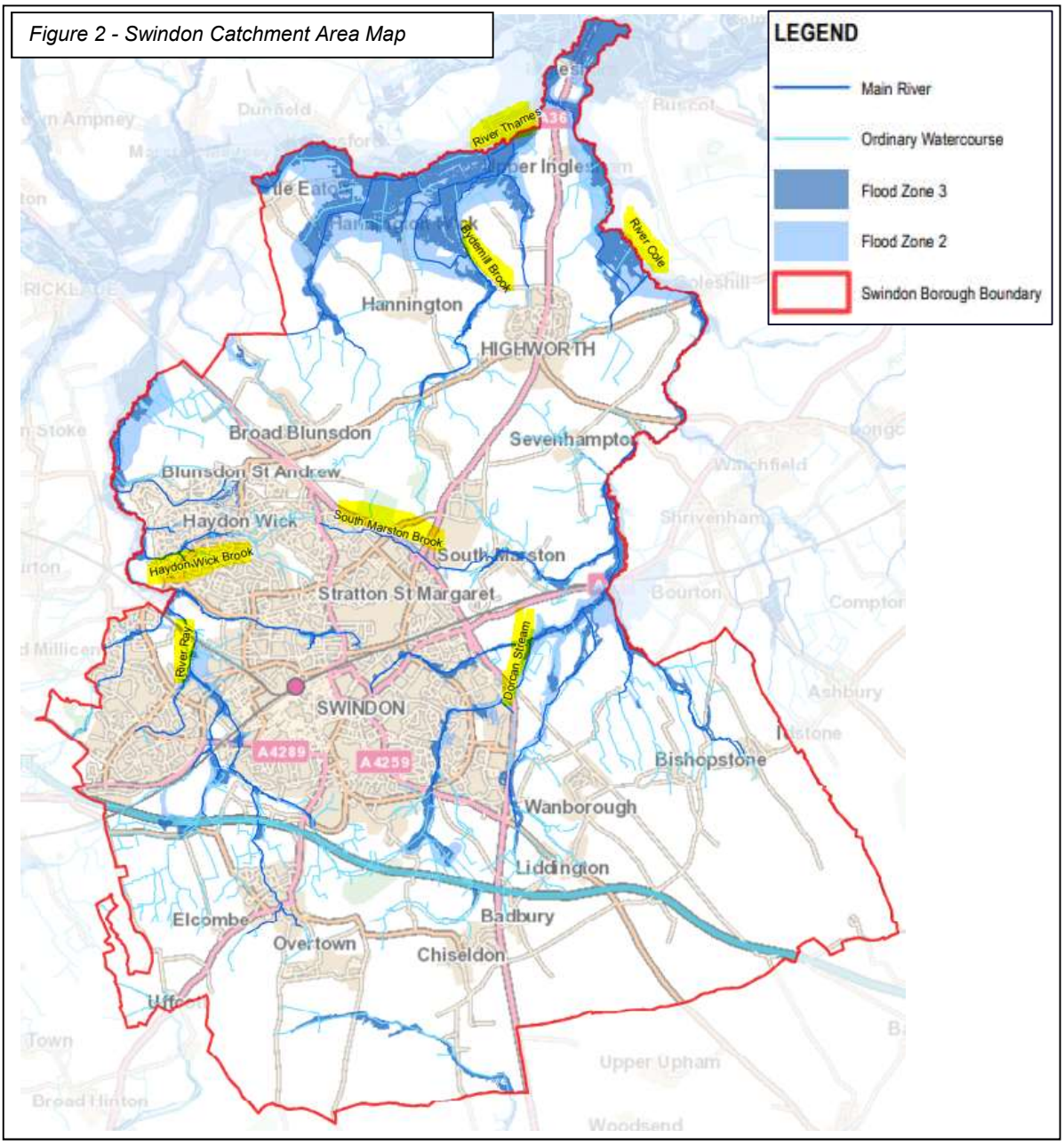


3.1 Catchment Characteristics

Swindon is predominantly drained by five key watercourses – The River Ray, River Cole, Liden Brook, Dorcan Stream and South Marston Brook, and their tributaries.

The River Ray and River Cole are both key tributaries of the River Thames. The River Ray, arising in Wroughton, flows south to north, along the western boundary of the borough towards Cricklade before joining the River Thames. The Ray drains much of the central and western half of the borough, The River Cole originates near the town centre of Swindon and flows eastwards towards the A419 and is joined by the Dorcan and Liden Brook tributaries as well as the South Marston Brook further north.

Figure 2 - Swindon Catchment Area Map



The borough has a largely urban core, comprising Swindon town center and suburbs. The borough is not significantly affected from flooding originating from outside its own boundary, but

has a key role in ensuring communities downstream, in Oxfordshire, do not suffer increased risk of flooding, particularly in respect to planning decisions.

Rivers and the drainage network have been altered over time, to facilitate the growth of the town, with watercourses directed to culverts and sewer systems as the town has developed. Historically, some development has been located in areas adjacent to watercourses. Some of these areas which were once green are now built and paved over become increasingly susceptible to flooding aided with climate change.

The hydrogeology in the borough is described in Section 3.2.2 of Swindon Strategic Flood Risk Assessment as being of varying permeability, due to bands of Oxford and Kimmeridge Clay formations, but also Gault and Chalk formations in the more southernly parts of the borough and consequently “will have varying runoff responses meaning that surface water flooding will occur and fluvial systems may respond rapidly to heavy rainfall events “.

3.2 Previous Flood Events

Swindon does not have a significant flooding history, and whilst there have been localised and persistent flooding issues in some communities, the borough was last severely flooded in 2007. Following the 2007 floods, the Environment Agency prepared a report “Swindon Floods Review: July 2007” outlining a series of actions and recommendations which was published in 2008. Flooding to some communities occurred in December 2013 but not enough to trigger the requirement of a S19 report.

4.0 FLOOD EVENT ANALYSIS

4.1 Rainfall & River Level analysis

The Environment Agency (EA) has several river level gauges in some of the main rivers in Swindon which it uses to measure the stage of river flows relative to a fixed point on or close to the riverbed (local datum). The location of these river gauges is shown within Figure 3 below.
(The EA also have a river gauge at South Marston (called Highworth Bridge site) which is not shown in fig. 3 below. This was launched on Nov 2023 – after the flood events)

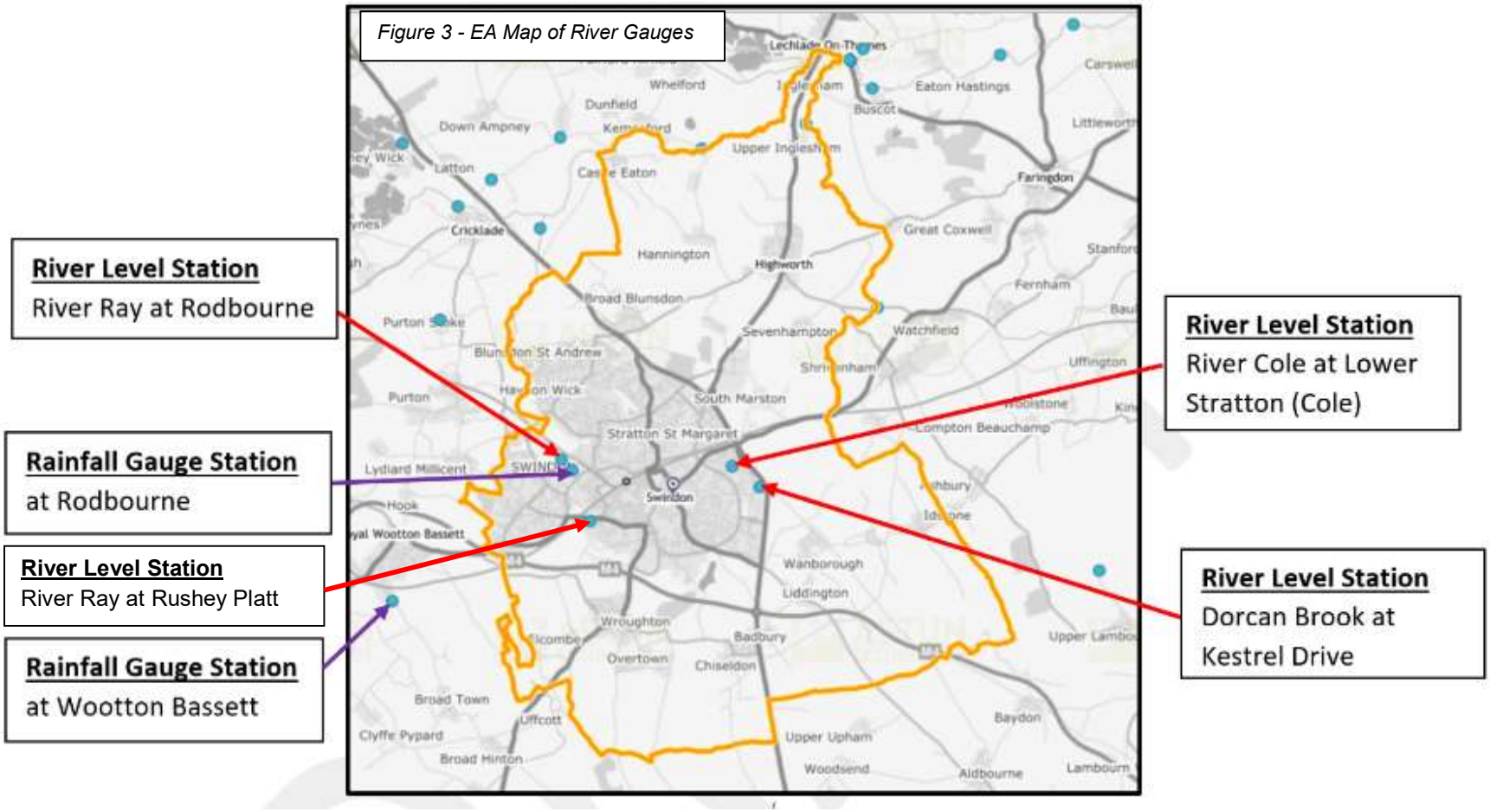


Figure 3 - EA Map of River Gauges

Graphs in Appendix C.1 are taken from rainfall data (15 min interval) measured at Swindon gauge stations and demonstrate that the most significant event during the Autumn 2023 in terms of rainfall was during the night of the 17th September and into the early hours of the 18th September.

The Swindon gauge stations measured around 80mm rain falling between 00:00 and 01:30 on 18th September, and 90mm overall over the whole storm event. The average **monthly** rainfall for Swindon for September has been identified around 46mm.

Appendix C.2 shows the readings and graphs from river level gauges on River Ray, Dorcan Stream and River Cole. These readings and graphs were compared with those of the previous year. The result show that the height of the rivers during the flooding events were higher than similar period of the previous year (see Appendix C2)

- September 2023 Flooding Event Analysis

The common pattern at all the stations reveal that the river levels responded quickly to the intense rainfall suggesting that there was considerable initial runoff from the catchment, but returned quickly to within its typical range, followed by a smaller peak around 36-48hours later.

Levels rose steeply in response to the rainfall with the Dorcan Brook reaching 2.098mASD at 02:30am, the River Cole in particular reaching 4.035mASD at 03:45am, and River Ray reaching 2.058mASD at 06:00 on 18th September 2023. There was a smaller peak around 48 hours later as catchments continued to respond.

This suggests rapid initial runoff from the catchment into the main river network. It is also noted that levels quickly fell again at all the river level stations to within typical ranges. The previous highest recorded events at each river level station was on 20th July 2007. Levels in the Cole and Ray systems came close to meeting those highest recorded levels.

Due to the coincident peaks in runoff volume and rising river levels, the drainage assets quickly became overwhelmed and then could not outfall, resulting in charged systems and the drainage networks then begin to back up thereby causing flooding.

- October 2023 Flooding Event Analysis

During the October 2023 storm event, some rainfall had fallen on the preceding two days, with peak rainfall occurring between 13:00 and 16:49 on 13th October 2023. River levels in River Cole started rising in response to rainfall from 11th October 2023 onwards, peaking at 3.757mASD 18:45 on 13th October 2023. The River Ray has a more gradual response initially, but then rises rapidly peaking at 1.667mASD at 19:45 on 13th October 2023.

The Environment Agency reported a fault on the Dorcan Brook gauge at Kestrel Way during this storm event, which meant it wasn't recording data during that time, and this is reflected in the graph.

It appears to be reinstated by the 17th October 2023. The event caused disruption to local roads and rail services[1].

During Storm Babet (between 19-21st October 2023), the rainfall measured at the Swindon rain gauge, whilst intense than in September 2023, rainfall fell steadily over a longer period and onto a more saturated catchment. Consequently, water levels in the river networks rose particularly quickly on the morning of 20th October 2023 in response to catchment runoff. The Dorcan Brook peaks first at 07:45 at 2.349mASD (which is a higher level than recorded during September 2023 event), the River Cole peaked at 3.815mASD at 08:00 and River Ray peaking at 2.020mASD at 11:15.

Despite levels in the River Ray and Dorcan Brook being high, considerably less properties were reported as experiencing internal property flooding during Storm Babet. This report considers that this could have been the result of under-reporting in those communities on this occasion, due to the flooding experienced in the prior two events or that communities and authorities had good awareness of the storm event ahead of time and therefore were better prepared, unlike the September 2023 event.

According to a Met Office report into Storm Babet, a rain gauging station at Lyneham in Wiltshire some 10 miles away from Swindon reported the highest rainfall recorded for October in 66 years. The event was particularly disruptive to services including schools as well as bus routes and rail services between Bristol and London[2] and a lane closure on the M4 due to flooding[3].

Storm Ciaran was a considerably smaller rainfall event that has been included in the investigation due to it being part of series of named storms during the Autumn of 2023, and because peak levels in the rivers did indicate flooding was possible. Whilst no properties were reported as flooding, this may have been due to under-reporting, and localised areas were impacted and roads flooded as reported in the local press[4]. It is important to understand the sensitivities of the river catchments to certain types of rainfall events, and following a succession of other significant storm events.

5 LEAD LOCAL FLOOD AUTHORITY (LLFA) AND RISK MANAGEMENT AUTHORITIES (RMA'S) RESPONSES

Both the LLFA and the RMAs received over 500 reports of flooding across Swindon during these storm events. These reports were from a variety of sources including stakeholders, professional partners, parish councils, local residents, businesses and media. This section of the report looks at

[1] Flood alerts in place for M4 and Swindon after heavy rain | Swindon Advertiser

[2] Storm Babet: Roundup of chaos caused by floods in Wiltshire | Swindon Advertiser

[3] Crash closes M4 as schools shut amid Storm Babet flooding - BBC News

[4] Storm Ciarán LIVE: Swindon and Wiltshire updates (wiltshire999s.co.uk)

the operational response to the flooding incidents that occurred during Autumn 2023 based on the information we have received to date.

5.1 Swindon Borough Council – The Lead Local Flood Authority (LLFA)

Prior to the flood event:

- SBC routinely carry out programmed gully cleaning and other remedial works on the drainage across the borough. The Council has an online asset management system where details of current gully inspection and cleansing regimes as well as road flooding incidents can be viewed.
- SBC has an asset management system, where drainage / gully defects can be reported and repairs / responses can be tracked.
- The highway drainage system did not contribute to the flooding.

During the flooding event:

- The Council operations center received over 78 flood incident reports from around 01:30 on 18th September 2023. These contacts were mostly property flooding, road flooding, and other operational issues. These continued throughout the day, concluding around mid-afternoon on 20th September 2023.
- A further 71 flood incident reports were received between 13-16th October 2023, and 103 reports were received on 19–25th October 2023 relating to Storm Babet. No enquiries were received on 1st/2nd November 2023 in response to Storm Ciaran.
- Six council-owned or managed properties were impacted during the flooding and vulnerable residents were checked by the Homeline Service and found to be safe and well. A number of other SBC owned or operated buildings were impacted by the flooding, and were subsequently closed for clean-up and repair. This included the Link Centre and STEAM museum[5].
- SBC Operations confirm that there were no full road closures during the flooding events, but some roads in the borough were only barely passable for short periods. Operations teams distributed sandbags, as stocks allowed, and put in place traffic management to control the speed of vehicles, particularly in communities where bow waves from cause property flooding.

[5] 'Significant' flooding shuts Swindon businesses - BBC News

Following the flooding event:

- The Council supported internal and external communications immediately after the events.
- The Council organised and attended multi-agency meetings and stakeholders group to discuss the flooding incidents, sharing and collating information for this investigation, and answering queries from local councilors.
- The Council commissioned a Section 19 Report to investigate and report on the flooding events.
- The LLFA provided details to Parish Councils on useful information to support community resilience to communicate on to their residents.
- The highway and drainage systems have been cleared (using a road sweeper where necessary).

5.2 Thames Water

Prior to the flood event:

- No known actions taken

During the Flooding Event:

- Thames Water declared a major incident at Swindon Sewerage Treatment works following the event of 17th/18th September 2023 due to flooding at the site and process failure.
- Thames Water advised that Swindon STW remained in service throughout but the flooding caused a number of assets to fail due to the depth of flood water.
- The flooding at the site impacted on drainage networks across Swindon.
- There was extensive flooding around final settlement tanks and digesters but flood waters were pumped down quickly and failed assets were quickly refurbished and put back in service.
- Whilst the flooding affected a large number of assets Thames Water advised that they remained fully compliant in terms of discharge permits.
- Thames Water self-reported for not treating full flow on one occasion during the flooding event which was caused by a failure on the inlet works but this was quickly found and rectified.
- Thames Water announced that critical assets like generators and pump stations will be elevated to prevent future flooding and some existing measures will be improved. The sludge stream is due to have 2 x new digesters installed over the next 2 years and these assets will also be elevated to help prevent flooding.
- Thames Water undertook a number of sewer investigations across the borough.

After the Flooding Event:

- No known actions taken

5.3 Dorset & Wiltshire Fire & Rescue Service (DWFRS)

Prior to the flood event:

- No known actions taken

During the Flooding Event:

- DWFRS reported 19 incidences of property flooding across the 4 flooding events, including 13 and 18th September 2023, 3 incidences on 13th October 2023 and 3 incidents during Storm Babet.
- Support from the service included providing advice, helping residents make properties safe and pumping out. Three incidents reported related to vehicles stuck in flood water including a person needing to be rescued from a stranded vehicle.

After the Flooding Event:

- No known actions taken

5.4 Environment Agency

Prior to the flood event:

- No known actions taken

During the Flooding Event:

The Environment Agency issued the following flood alerts and warnings and deployed Community Information Officers (CIOs) to visit flooded communities in Haydon Wick, Covingham and South Marston.

Date	Time	Warning / Alert Area	Type
18/09/2023	02:12:37	River Cole and Dorcan Brook	Flood Alert
18/09/2023	03:43:21	River Ray and Swinbourne for West Swindon area to above Water Eaton	Flood Alert

18/09/2023	03:57:37	River Cole for the Covingham and Lower Stratton areas in Swindon	Flood Warning
18/09/2023	03:57:41	River Cole from A419 and A420 roads in Swindon to above Upper Inglesham	Flood Warning
20/09/2023	16:41:17	River Cole and Dorcan Brook	Flood Alert
13/10/2023	17:12:32	River Cole and Dorcan Brook	Flood Alert
13/10/2023	18:42:19	River Ray and Swinbourne for West Swindon area to above Water Eaton	Flood Alert
20/10/2023	05:43:02	River Cole and Dorcan Brook	Flood Alert
20/10/2023	07:12:42	River Ray and Swinbourne for West Swindon area to above Water Eaton	Flood Alert
02/11/2023	07:43:02	River Cole and Dorcan Brook	Flood Alert
02/11/2023	08:43:09	River Ray and Swinbourne for West Swindon area to above Water Eaton	Flood Alert
02/11/2023	22:27:36	River Cole and Dorcan Brook	Flood Alert

After the Flooding Event:

- No known actions taken

5.5 Parish Councils

Prior to the flood event:

- No known actions taken

During the Flooding Event:

- No known actions taken

Parish Councils provided details of how their communities were impacted by the flooding events and any support they offered to their residents.

After the Flooding Event:

- No known actions taken

6 COMMUNICATIONS AND COMMUNITY ENGAGEMENT

In the days after the flooding events, the Lead Local Flood Authority wrote to parish councils requesting information about the flooding that was experienced in their communities. Further information was sent out to parishes advising on free community resilience training opportunities that were available.

It was hoped that flooding in Swindon might be able to apply for the flood recover grants offered by government in response to Storm Babet. Unfortunately, the threshold of 50 internal flooded properties was not met during that event, so did not meet the funding criteria set out by the Secretary of State.

The LLFA visited a number of sites after the flooding events, in response to specific enquiries and complaints, including:

- Pack Hill
- Moresby Close
- Romney Way
- Badbury Lane
- Perry's Lane

It is recognised that some communities may have expected more direct engagement with the LLFA during the course of the investigation. With partners such as the EA and Thames Water, the flooding team at Swindon Council were working to establish a program of community engagement events during Summer 2024 to better understand the most impacted communities about flood risk concerns. Unfortunately, these could not be effectively resourced and coincided with the general election period, which can put limits on some community engagement activities. As flooding information had already been requested through parishes and local councilors, a decision was made by SBC not to hold these events as part of the S19 investigation process. A public consultation period prior to the publication of this document will provide communities with an additional opportunity to feed into this investigation.

7 FLOOD RISK MANAGEMENT RESPONSIBILITIES

There are different responsibilities for flood management depending on the type of flooding. Organisations responsible for coordinating management of local flood risk from surface water, groundwater and ordinary watercourses in the county are known as Risk Management Authorities (RMAs) and their responsibilities are detailed below. Riparian landowners also have responsibilities for watercourses across their land and these are also detailed below. More information on flood risk management responsibilities can be found here[6].

[6] Managing flood risk: roles and responsibilities | Local Government Association

7.1 Lead Local Flood Authority (LLFA)

The Lead Local Flood Authority in this area is Swindon Borough Council. Swindon Borough Council has a role as an RMA in coordinating management of local flood risk from surface water, groundwater and ordinary watercourses in the borough.

7.2 Swindon Borough Council (SBC)

Swindon Borough Council have responsibilities to inspect and maintain all watercourses on Council land, respond to requests for assistance during flood events and have the power to carry out flood risk management work which will benefit management of surface runoff, groundwater and ordinary watercourses. Swindon Borough Council has the authority to manage highways maintainable at the public expense.

7.3 Environment Agency (EA)

The Environment Agency is one of the RMAs as defined by the Flood and Water Management Act 2010. Protecting the river environment and managing flood risk is part of their job. The EA is the risk management authority for flooding from main rivers.

7.4 Water Utility Company – Thames Water

Thames Water is responsible for flooding from foul sewers and surface water sewers that they own. Whilst undertaking this they must manage flood risk from sewers. Thames, as asset owners, need to give consent to anyone wishing to connect or discharge into their network.

7.5 Landowners and Riparian Owners

Landowners and riparian owners must maintain any culvert, or the bed and banks of any adjacent watercourse. They should clear away any debris from the watercourse or culvert even if it did not originate from their land.
Riparian owners can find further guidance on their responsibilities as landowners at https://www.gov.uk/guidance/owning-a-watercourse

7.6 Residents

Property owners are responsible for protecting their property from flooding.
Residents who prepare for a flood can reduce damages by around 40% and reduce the likelihood of suffering from mental health impacts as a result. The EA have put together a ‘Prepare, Act, Survive’ guidance which includes simple but effective advice for residents who need to prepare for a flood with tips such as preparing a bag with medication and important documents and moving valuable and sentimental items upstairs or to higher ground. This document can be viewed online

at https://flood-warning-information.service.gov.uk/what-to-do-in-a-floodFlood Re[7] have a website that provides useful advice and resources on insurance and property flood protection, resilience and re-instatement (e.g. Build Back Better).

[7] https://flood-warning-information.service.gov.uk/what-to-do-in-a-floodFlood Re

8 RECOMMENDATIONS

1	All RMA's should consider clearly define roles and responsibilities for each RMA.	• All RMA's
2	RMA's may want to consider establishing a flood data collection protocol between them for timely receipt of information.	• All RMA's
3	RMA's may want to consider shared data reporting and improved communication.	• All RMA's
4	The LLFA may continue to ensure that proposed developments within the Borough uses innovative SuDS solutions to further reduce flood risks especially in high flood risk areas.	• SBC - LLFA
5	The LLFA may want to identify small scale schemes and interventions that could be implemented by the parishes.	• SBC - LLFA
6	The LLFA may consider working across organisations and the Local Resilience Forum, to train flood wardens and set up community resilience groups.	• SBC - LLFA
7	The EA may want to consider ensuring that 'main river' watercourses are suitably maintained and trigger levels for Flood Alerts in this area are functional.	• The Environment Agency (EA)
8	For all main rivers, the EA may consider improving the maintenance of the bed and banks of the watercourse, and also the trees and shrubs growing on the banks.	• The Environment Agency (EA)
9	The LLFA and The Environment Agency may want to consider engaging with the Local Planning Authority and using that opportunity to highlight the need for careful management of surface water, and the value of a systematic and thorough approach to surface water management.	• SBC – LLFA,
10	The LLFA and The Environment Agency may want to consider Identifying bridges and culverts along watercourses that have limited hydraulic capacity to accommodate increased river flow.	• SBC – LLFA
11	Thames Water may consider reviewing and prioritising surveys and investigations of foul and surface water sewer network.	• Thames Water
12	Thames Water may want to consider enhancing improvements / regular maintenance of the foul and surface water sewer networks in the local catchment	• Thames Water

13	Property Owners may consider registering for the Environment Agency Flood Warning Service (where available), and/or Met office weather warnings. We also recommend that property owners and resident's check their long-term flood risk on the *Check the long term flood risk for an area in England - GOV.UK* for an area service.	• Property Owners
14	Residents may consider preparing and following personal resilience/flood plans as well as forming a flood action group in order to improve the awareness of flooding as a community to improve their resilience to flooding. Assistance could be sought from the National Flood Forum to aid in the creation of this group.	• Residents / Property Owners
15	Homeowners may consider installation of Property Level Protection as well as implementing property flood resilience measures. These measures can either be in the form of resistance measures which aim to reduce the ingress of water into a property. Or resilience measures could be installed which do not restrict the flow of water but instead allow for a faster recovery following a flood event.	• Residents / Property Owners
16	The residents may consider creating an action plan for what do for when their property is affected by flooding. This will detail what the residents should do in the event of a flood.	• Residents / Property Owners
17	Riparian owners may consider establishing an effective maintenance regime for watercourses, culverts and ditches passing through or crossing all or part of their land.	• Riparian Owners

9 SUMMARY AND CONCLUSIONS

Chapter 8 of this report contains a suite of recommendation actions that are relevant to all stakeholders.

The following additional strategic recommendations may broadly prompt further investigations and improvements. These strategic measures affects all stakeholders and include data management, effective operational response, information sharing, as well as community resilience across Swindon Borough.

These measures will be imperative to set out key priorities, potential pathways to delivery and importantly mechanisms for funding.

9.1 Strategic & Integrated Flood Risk Management

The LLFA should consider updating their Local Flood Risk Management Strategy for Swindon, and this will help provide a framework for flood risk management activities within the borough, and needs to align well with priorities in the National FCERM strategy.

9.2 Section 19 Process Improvements

The LLFA should consider updating the Section 19 investigation and reporting process. As part of this process, the LLFA should incorporate the outcome of the DEFRA project which is currently underway to support LLFA's with the Section 19 reports with guidance and a simplified and consistent process, as part of governmental reviews into surface water flood management[8][9].

9.3 Flood Data Sharing

It is recommended that data sharing protocols are maintained between all stakeholders and key partners to ensure easy sharing of information.

9.4 Communication

It is recommended that partners continue to signpost to relevant authorities but take care when advising the public potential causes of flooding and 'responsible' parties, as this can often be complex particularly in the urban environment.

[8] Surface water and drainage: review of responsibilities - GOV.UK (www.gov.uk)

[9] Surface water flooding - NIC

Joint communications following flooding events should be encouraged, and partners may wish to advise their incident communication leads to work with those of other organisations. In addition, partners should share data as soon as reasonably practical and in a format that can be easily incorporated. Working together on community engagement should also be a priority for all organisations.

Better co-ordination of planned maintenance activities and future projects to align program of work and maximise budgets and funding.

Shared data reporting and collection systems such as the Flood Online Reporting Tool (FORT[10]) could also be considered for rollout. (*This tool is used by other councils and authorities in the South West including Devon, Somerset and Dorset.)*

9.5 Community Engagement for Future Resilience

SBC LLFA should consider working across organisations and the Local Resilience Forum, to train flood wardens and set up community resilience groups. Community training for resilience has been developed by Chartered Institute of Water and Environmental Management (CIWEM) and details of this were forwarded to parishes following the flooding.

9.6 Asset Management

All RMA's should endeavor to have and maintain a comprehensive record of all flood risk assets on their asset management systems, including ownership and condition.
The expected asset management system should be able to identify critical flood risk assets across the borough (statutory function of the LLFA), determine asset ownership and how these are managed and maintained. This register has to be publicly available and there is an existing mechanism via Integrated Asset Management Systems (IAMS).

[10] FORT - Home (dorsetcouncil.gov.uk)

PART B – THE SIX PRIORITY AREAS

The following sections contain the investigation reports on flooding for the six parishes/communities (priority areas) where 5 or more properties suffered internal flooding.

These parishes / communities are:

1. **Central Swindon**
    a. Summary of flood incidence within Central Swindon
    b. Detail and location of reported flooding events and operational response/ action taken
    c. Maps and photographs
    d. Analysis
    e. Conclusion
2. **Convingham and Nythe**
    a. Summary of flood incidence within Covingham and Nythe
    b. Detail and location of reported flooding events and operational response/ action taken
    c. Maps and photographs
    d. Analysis
    e. Conclusion
3. **Haydon Wick and Abbey Meads**
    a. Summary of flood incidence within Haydon Wick and Abbey Meads
    b. Detail and location of reported flooding events and operational response/ action taken
    c. Maps and photographs
    d. Analysis
    e. Conclusion
4. **Mannington and Western**
    a. Summary of flood incidence within Mannington and Western
    b. Detail and location of reported flooding events and operational response/ action taken
    c. Maps and photographs
    d. Analysis
    e. Conclusion
5. **Rodbourne Cheney**
    a. Summary of flood incidence within Rodbourne Cheney
    b. Detail and location of reported flooding events and operational response/ action taken
    c. Maps and photographs
    d. Analysis
    e. Conclusion

6. **South Marston**
    a. Summary of flood incidence within South Marston
    b. Detail and location of reported flooding events and operational response/ action taken
    c. Maps and photographs
    d. Analysis
    e. Conclusion

B.1. Central Swindon

The northern boundary of Central ward is predominantly defined by the Great Western Railway line running broadly south west to north east through Swindon town center. The south western extent of the ward is at the Deanery of Church of England Academy / Redposts. The southern boundary is defined by the route of the old canal (Wilts and Berks), Fleming Way, Queens Drive and Drakes Way, to its north eastern boundary at Marshgate.

At the South West boundary, The River Ray enters the ward area in the Rushey Platt nature reserve, flowing north and under the Wootton Bassett road into Westcott recreation ground then culverted under the railway line. An ordinary watercourse draining the Kingshill area flows east to west and joins the River Ray in the Wescott allotments.

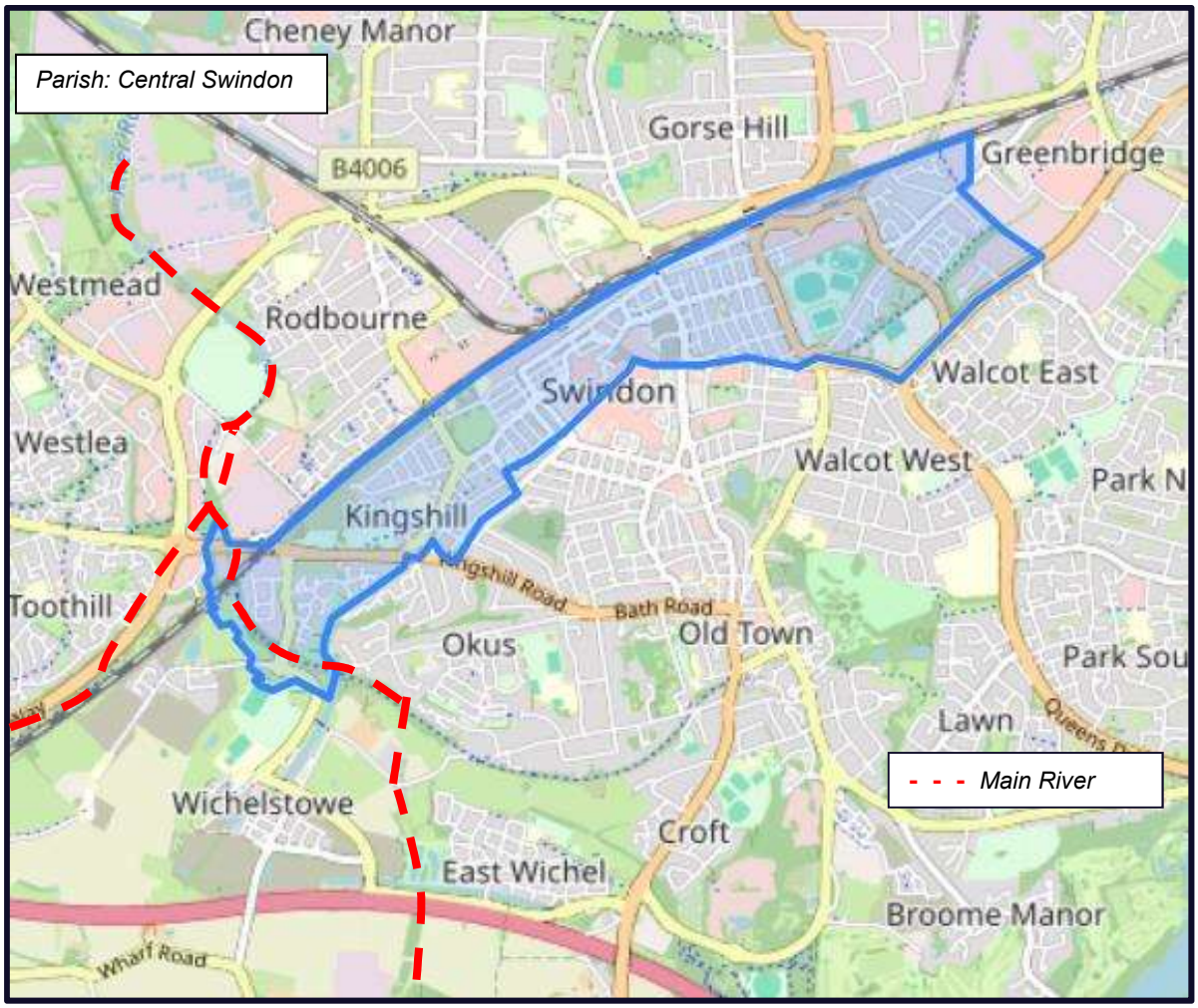


Figure 4: Map showing Parish Boundary of - Central Swindon

B.1.1. Summary of Flood Incidence within Central Swindon

Main River/Watercourse	River Ray/Swin Bourne
Catchment	Predominantly urban – impermeable areas
Number of Properties Flooded Internally	33 properties reported internal flooding 18th September 2023 No reported internal flooding in October or November 2023 events
Impacted Areas:	Birch Street, Westcott Place, Albion Street, Park Lane, Milton Road Arthur Bennett Court – Local Businesses and Properties impacted including flooding to a basement flat.
Road Closures/ Impacts	Park Lane, Farringdon Road and Westcott Place
Emergency Impacts (hospital, doctors, emergency services, care services)	None reported
Council Property/ Estates	Sanford House reported internal flooding
Environmental Impacts	Flood water reported to be clear
Cause	Properties located in areas of surface water flood risk Intense rainfall event generating significant volumes of water which exceeded– combined sewer and surface water systems charged. Blocked gullies were identified as potentially contributing to local flooding – Swindon Borough Council's Operations team have reported that gully cleansing can be challenging in this area as cars park over gullies, preventing access for cleaning. Older, combined drainage and roof water draining directly onto the highway. Local Sewer Pumping Station unable to cope with volumes. Drainage network layout issues – whilst Thames Water did not consider this to be the main issue for this event, parts of the network layout are not considered optimal particularly in heavy rain. Previous incidents of blocked drainage from Thames Water's records found there to be gravel and limescale within the network - reducing pipe capacity. A lack of riparian management

	Swindon sewerage treatment works severely flooded causing operational difficulties across the drainage network
Operational Response	Swindon Borough Council distributed sandbags, as stocks allowed, to properties at imminent risk Dorset & Wiltshire Fire and Rescue service attended properties in Birch Street, Curtis Street and Edmund Street during the flooding event. Gullies cleaned following September 2023 event, and again ahead of Storm Babet. 24 sewer investigation reports undertaken - Thames claim that Sewer Pump Station was overwhelmed and suffered flooding.
Flood Warning	According to the Historic Flood Warnings database, **Flood Alert** was issued for River Ray and Swinbourne for West Swindon area to above Water Eaton at 03:43 on 18th September 2023. Swinbourne is within a **Flood Warning** area. No flood warning for Swinbourne issued for this area during any of the storm events in 2023, suggesting warning levels weren't reached, which is consistent with the flooding experienced having no fluvial element.
Future Projects	Planned maintenance of network in areas surrounding Birch Street is being programme by Thames Water for October 2024.
Risk Management Authorities	• Swindon Borough Council (SBC) as Lead Local Flood Authority (LLFA) have a statutory responsibility to manage surface water on its adopted highway network • Swindon Borough Council's Highway Operations Teams (SBC Operations) maintain all of the existing adopted highway drainage assets (within available budget) and provided assistance during emergency flood events. • Thames Water (TW) own, maintain and repair public sewers under roads and footpaths. They are also responsible for any sewers which properties share with their neighbours, even if they are under the garden or driveway. • Environment Agency (EA) manage the main river network which runs through Swindon. They also help people and wildlife adapt to climate change and reduce its impacts – this includes flooding.
Previous Flooding	No records.

B.1.2. Detail and location of reported flooding events and operational response/ action taken

Location	Date	Reported flooding	Report Source	Causes	Operational response
Birch Street	17th/ 18th September 2023	20 properties with internal flooding	Thames Water Dorset and Wiltshire Fire and Rescue Services Swindon Borough Council	Local surface water and combined drainage systems overwhelmed resulting in surcharging. Highway gullies are not designed to convey such high volumes of runoff so these were not able to cope with the volume of rain falling. Blocked gullies reported.	Thames Water – 24 sewer investigation reports. SBC Operations team cleared gullies
Park Lane	17th/ 18th September 2023	4 properties with internal flooding	Thames Water Swindon Borough Council		SBC Operations team cleared gullies
Milton Road	17th/ 18th September 2023	1 property with internal flooding	Thames Water Swindon Borough Council		SBC Operations team cleared gullies
Read Street	17th/ 18th September 2023	1 property with internal flooding	Thames Water Swindon Borough Council		SBC Operations team cleared gullies
Wescott Place	17th/ 18th September 2023	4 properties with internal flooding	Thames Water Swindon Borough Council		SBC Operations team cleared gullies
Farringdon Road	17th/ 18th September 2023	1 property with internal flooding	Thames Water Swindon Borough Council		SBC Operations team cleared gullies
Albion Street	17th/ 18th September 2023	2 properties with	Thames Water		SBC Operations team cleared gullies

		internal flooding	Swindon Borough Council		

B.1.3. Local Maps and Photographs

Figure 5 Environment Agency Surface Water Flood Map for Central Swindon

B.1.4. Analysis

A review of local flood mapping identifies three main flow pathways in Central Swindon. One follows the route of the Swinbourne, flowing south north towards the railway line, the second flows along and adjacent to the Kingshill Road, and a final one takes flows along Eastcott Road & Regent Street into the town centre. It is a heavily urbanised catchment, with Farringdon Road being a low point in the local topography. Properties impacted during the flooding are shown in areas which are at risk of surface water flooding.

The flooding here is assessed to have been caused by intense rainfall event on this urbanised catchment which quickly overwhelmed the local drainage network. Excess water unable to access the network due to in part to blocked and surcharged drainage, subsequently flowing across the ground surface into properties. There was anecdotal evidence of blocked road gullies, which apparently had been reported to SBC by local residents on previous occasions but not managed. These were subsequently cleared by SBC Operations following the incident.

There appears to be a blockage history according to Thames Water, therefore would recommend an education exercise (leaflet drop) to avoid common blockers such as wet wipes and sanitary products.
However, it is understood that severe flooding issues at Swindon Treatment Works contributed to widescale problems across the network, and this was resolved post-incident by Thames Water, and in subsequent storm events the drainage flowed more effectively. Reports identify that water in properties was clean, which suggest it did not contain foul water, yet the system here is combined.

B.1.5. Conclusions

The following are recommended actions for further review and investigation, subject to organisational priorities and available funding.

Recommended Actions	Action Owner/ Risk Management Authority	Delivery Programme
Review opportunity to undertake Integrated Catchment modelling of drainage and watercourse network interactions – potentially as part of a broader Surface Water Management Plan	All	Local Flood Risk Management Strategy
Drainage network and capacity improvements – e.g. resolving drainage layout issues	Thames Water	Drainage and Wastewater Management Plans / Business Plans
Review gulley inspection and cleaning regime, and identify with the community any improvements to the service.	Swindon Borough Council	Annual programming Gully Management Plan
Understand presence, and condition, of any existing Property Flood Resilience Measures (PFR) and identify future opportunities for PFR.	Swindon Borough Council/ Thames Water	Local Flood Risk Management Strategy
Review opportunities for surface water disconnection (water butts/ planters/ rain gardens)	Swindon Borough Council/Thames Water	Local Flood Risk Management Strategy
Develop a programme for riparian maintenance of ordinary watercourse within the parish	Swindon Borough Council	SBC Asset Management & Operational Planning & programmes
Local education and awareness (prevent blockages)	Thames Water	Drainage and Wastewater Management Plans
Local flood planning & preparedness (Flood Groups)	All	Local Resilience Forum

B.2. Covingham and Nythe

Covingham is located to the east of Swindon town centre. The eastern boundary is defined by the A419 running broadly north south. The western boundary is defined by Dorcan Way, the southern boundary is in part defined by the route of the Dorcan Brook incorporating the roads Bullfinch Close, Pheasant Close and Mallard Close and skirts the northern boundary of the Dorcan Industrial Estate. Flowing through the ward are two key river systems, the River Cole and the Dorcan Stream. The River Cole flows predominantly from west to north east towards the A419 where is it is culverted emerging into the area between Symmetry Park and Lotmead Farm. The Dorcan Stream flows from the south and at the ward boundary turns to flow eastwards again towards the A419. The Dorcan Brook then flows north east to converge with the River Cole to the south of Symmetry Park.

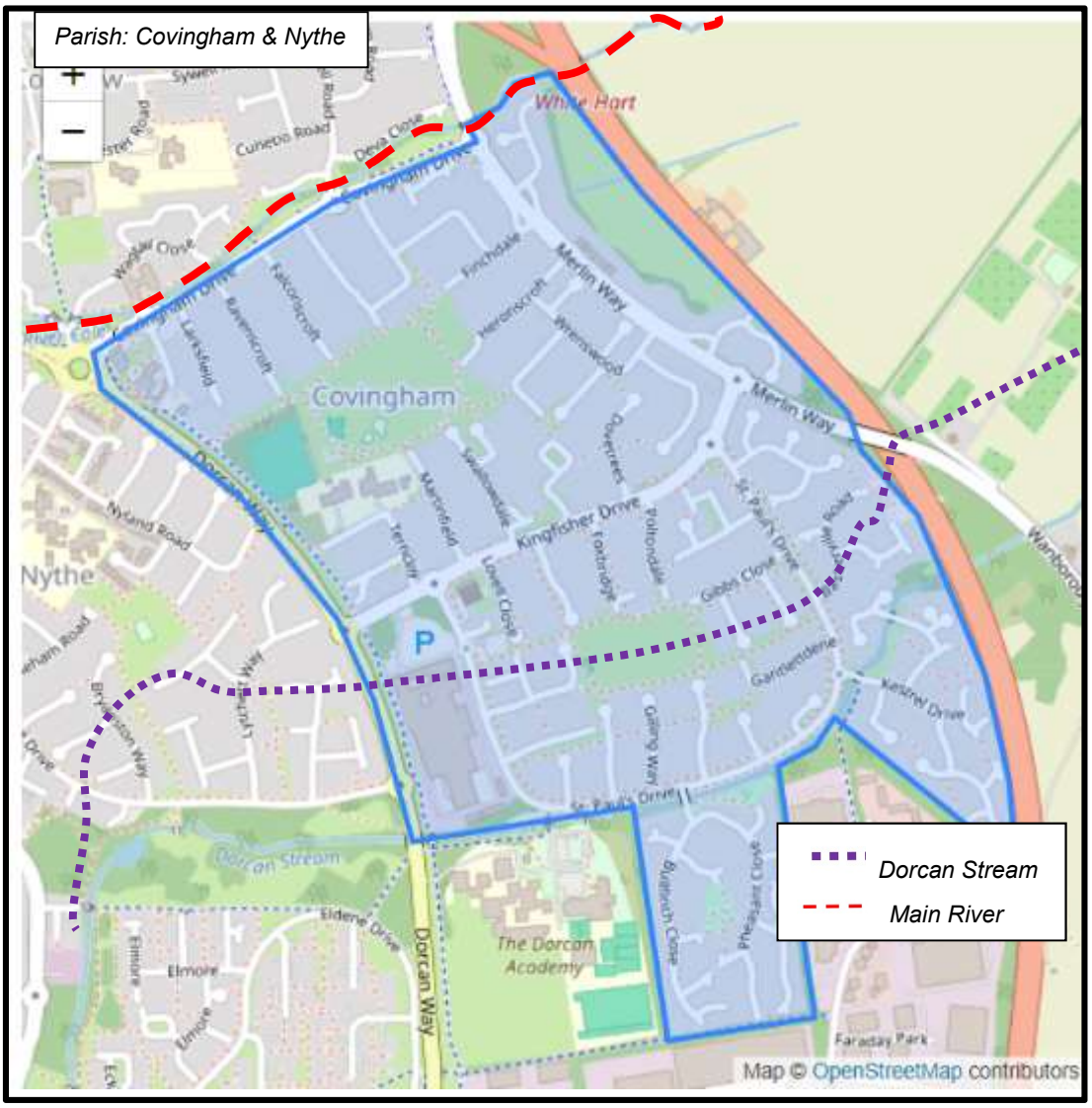


Figure 6: Map showing Parish Boundary of Covingham & Nythe

B.2.1. Summary of Flood Incidence within the Parish

Main River/Watercourse	River Cole & Dorcan Stream
Catchment	Predominantly Urban – impermeable areas
Number of Properties Flooded Internally	10 properties reported internal flooding 17th/ 18th September 2023 1 property reported internal flooding 13th October 2023
Impacted Areas:	Peregrine Close, Blakeney Avenue
Road Closures/ Impacts	Residential road and car park impassable
Emergency Impacts (hospital, doctors, emergency services, care services)	None reported
Council Property/ Estates	None reported
Environmental Impacts	Reports of foul flooding
Cause	High fluvial flood levels in River Cole Rapid response of river systems following intense rainfall led to surcharging of local drainage systems – causing foul and surface water flooding to properties. Collapsed section of the drainage network in Peregrine Close identified which may have contributed to flooding issues Cole sewer pumping station overwhelmed due to high flows. Orientation of surface water outfall to Main River in Peregrine may exacerbate drainage issues. Silt build up, if not removed, may eventually impact on the outfall.
Operational Response	Swindon Borough Council distributed sandbags, as stocks allowed, to properties at imminent risk
Flood Warning	18/09/2023 03:57:37 – Flood warning - River Cole for the Covingham and Lower Stratton areas in Swindon 13/10/2023 - Flood alert for River Cole & Dorcan Stream 20/10/2023 - Flood alert for River Cole & Dorcan Stream 02/11/2023 - Flood alert for River Cole & Dorcan Stream

Future Projects	Environment Agency led modelling and appraisal of options in this area Swindon Borough Council project being progressed for St Pauls Drive which will involve carrying out bank stabilising works to sections of the Dorcan Stream
Risk Management Authorities	- Swindon Borough Council (SBC) as Lead Local Flood Authority (LLFA) have a statutory responsibility to manage surface water on its adopted highway network - Swindon Borough Council's Highway Operations Teams (SBC Operations) maintain all of the existing adopted highway drainage assets within available budget and provide assistance during emergency flood events - Thames Water (TW) own, maintain and repair public sewers under roads and footpaths. They are also responsible for any sewers which properties share with their neighbours, even if they are under the garden or driveway. - Environment Agency (EA) manage the main river network which runs through Swindon. They also help people and wildlife adapt to climate change and reduce its impacts – this includes flooding.
Previous Flooding	July 2007 December 2013

B.2.2. Detail and Location of Reported Flooding Events and Operational Response/ Action Taken

Location	Date	Reported flooding	Report Source	Causes	Operational response
Peregrine Close	17/18th Sept 2023	10 properties reported internal flooding 18 properties reported external flooding (flooding to integral garages, gardens or curtilages)	Swindon Borough Council Environment Agency Thames Water	Residents suggest that internal flooding was already starting to occur around 03:30am prior to receipt of the Environment Agency's flood warning. Some properties have Property Flood Resilience measures but anecdotal evidence suggests that	Environment Agency issue flood warning for the River Cole at 03:58 on 18th September 2023. Dorset & Wiltshire Fire Service received call at 04:29 17th September from a resident. They attended site and provided advice. Thames Water attended properties flooding in Peregrine Close on 18th

				these weren't deployed in time and some properties were still flooded. There is conflicting evidence regarding whether the Thames Water sewer pumping station located in Peregrine Close was operating fully during the flooding. Thames reported that there was an alarm sounding at the pumping station but no pump failures identified – they reported that they pumping system was overwhelmed. Residents report flooding from the river and on the road, suggesting flooding to properties was from a combination of fluvial and surface water flooding as a result of drainage overwhelm.	September and undertook sewer investigation reports. Thames Water advised that the foul sewer systems were subsequently cleared and took a CCTV survey of the surface water network. On the 18th September Swindon Borough Council Operations team went to site to clear x2 blocked gullies Environment Agency Community Information Officers visited affected properties on 21st September 2024. Representatives from the Environment Agency visited Peregrine Close on 22nd December 2023 and met with the local Councillor.

	20th Oct 2023	1 property external flooding			Environment Agency issues Flood Alert issued at 05:43 for the River Cole on 20th October 2023. Swindon Borough Council Operatives attended site when the River Ray burst its bank in October on 13/10/2023, 20/10/2023, 23/10/2023, 25/10/2023 to offer assistance
Blakeney Avenue	13th October 2023	1 property flooded internally	Thames Water	Foul and surface water flooding reported. Thames Water sewer pumping station failure due to hydraulic overload however the pumps remained running. Locally charged drainage networks due to high water levels in River Cole.	Thames Water conducted sewer investigation Dorset & Wiltshire Fire Service attended site and provided advise.

B.2.3. Local Maps and Photographs

Figure 7 Fluvial Flood Map – Peregrine Close (enclosed in red circle)

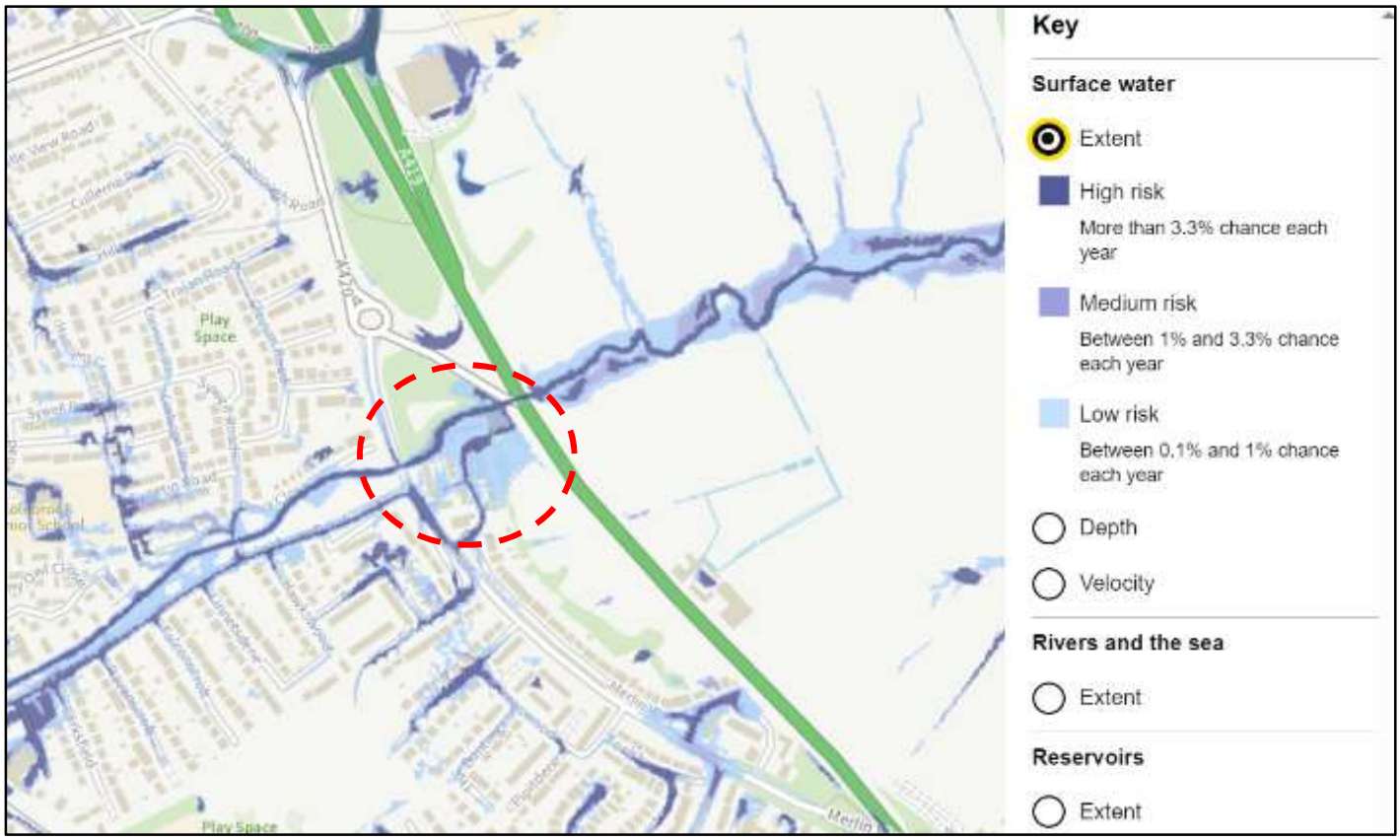


Figure 8 Surface Water Flood Map - Peregrine Close (enclosed in red circle)

Figure 9 Photo showing flooding to residential carpark area

B.2.4. Analysis

The community in Peregrine Close have regularly suffered with the threat of flooding. Due to the impact of previous flooding in 2007, the Environment Agency published a report in 2008, which included a series of conclusions and recommendations.

Residents reported that the flood warning received for the River Cole seemed out of sync with the flooding experienced. It is concluded that the properties were impacted in the first instance by surface water likely caused by the surcharged drainage network due to high river levels. Several properties had property flood resilience or protection measures, but were either ineffective or not deployed in time. This type of flooding is rapid, so passive flood resilience measures (self-closing airbricks, flood doors, etc) and built in flood recovery measures (tiled floors, washable kitchen cupboards, raised electrics) would be more effective in this location as they are not reliant on the user having to physically deploy them. The risk of fluvial flooding at this location is affected by the effective conveyance of flow through the culvert under the A419. Once flows exceed the capacity of the culvert, flows back up in the channel.

Peregrine Close currently has a private surface water drainage system, however following the recent flooding Thames Water undertook a survey of the surface water drainage network and identified a collapsed section, requiring the survey to be abandoned. Furthermore, Thames Water cleared the area around the outfall to the river of silt. Acknowledging their obligations under the private sewer transfer regulations[11], Thames Water have advised that as the private system connects directly to the river (and not the public sewerage system), it would not fall under the provisions

[11] The private sewers transfer regulations - GOV.UK

of the regulations and therefore not within their remit or responsibility to repair and maintain. However, given the multiple flooding issues experienced at this location, facilitating the adoption of the surface water drainage is imperative to ensure that repair and ongoing maintenance. The orientation of the surface water outfall to the River Cole at Peregrine Close is counter to the flow in the receiving watercourse, meaning more likely the build up of silt and debris the less efficient the flows.

B.2.5. Conclusions

The following are recommended actions for further review and investigation, subject to organisational priorities and available funding.

Recommended Actions	Action Owner/ Risk Management Authority	Delivery Mechanism
Review riparian responsibilities including SBC's in the vicinity.	All	Local Flood Risk Management Strategy
Vegetation clearance and blockage removal	Swindon Borough Council/ Riparian owners	Swindon Borough Council Operations Team – Land and Property.
Asset surveys and inspection	All	Local Flood Risk Management Strategy Environment Agency Annual Maintenance Programme / Asset Performance Drainage and Wastewater Management Plans
Review of effectiveness of existing flood warnings	Environment Agency	Environment Agency Flood Forecasting and Warning Service
Review Property Flood Resilience provision to properties.	Environment Agency / Swindon Borough Council	Local Flood Risk Management Strategy The Environment Agency have bid for Property level protection at Peregrine Close – the decision on bids is expected to be revealed December 2024 – February 2025
Flood alleviation scheme appraisal – cost benefit / modelling of options	Environment Agency / Swindon Borough Council	Environment Agency has approval to progress this work.

Review enhancement maintenance and silt removal	Environment Agency / Swindon Borough Council	Environment Agency have bid for funding to desilt River Cole adjacent to Peregrine Close. Decision on bids expected to be revealed December 2024 – February 2025
Clarify ownership of surface water drainage and repair damaged section of drainage network (identify opportunities to reduce instances of foul and surface water flooding).	Thames Water / Community	Drainage and Wastewater Management Plans
Review gulley inspection and cleaning regime	Swindon Borough Council	Annual programming Gully Management Strategy
Drainage connectivity & Main River impacts	Environment Agency / Swindon Borough Council	Surface Water Management Plan
Local education and awareness (prevent blockages)	Thames Water	Drainage and Wastewater Management Plans
Local flood planning & preparedness (Flood Groups)	All	Local Resilience Forum
Review opportunities surface water disconnection (water butts/ planters) and SuDS Retrofit utilising green spaces adjacent highways.	Swindon Borough Council / Thames Water	Local Flood Risk Management Strategy

B.3. Haydon Wick and Abbey Meads

Haydon Wick parish is located to the north of Swindon town centre. It comprises the areas of Haydon Wick, Haydon End and parts of Abbey Meads. The western boundary is defined by the River Ray, and the eastern extents of Whitworh Road Cemetery and Seven Fields open space. The north and north western boundaries are predominantly defined by the A4198 Thamesdown Drive and the B4534 Elstree Way/ Westfield Way. The southern boundary extends down towards Akers Way, and cutting through the area between Boscombe Road and Avonmead.

Abbey Meads is drained via the Haydon Wick Brook and a series of ordinary watercourses. Two ordinary watercourses converge near Elsham Way, and with another near Catherine Wayte Primary School on Elstree Way, to form the Haydon Wick Brook. Downstream of the B4534 Westfield Way the Haydon Wick Brook becomes Main River, flowing in a westerly direction. Two sections of Main River join the Haydon Wick brook near Coriander Way. The Haydon Wick Brook continues to flow to the west and converges with the River Ray to the west of Thamesdown Drive near Moulden Hill Country Park.

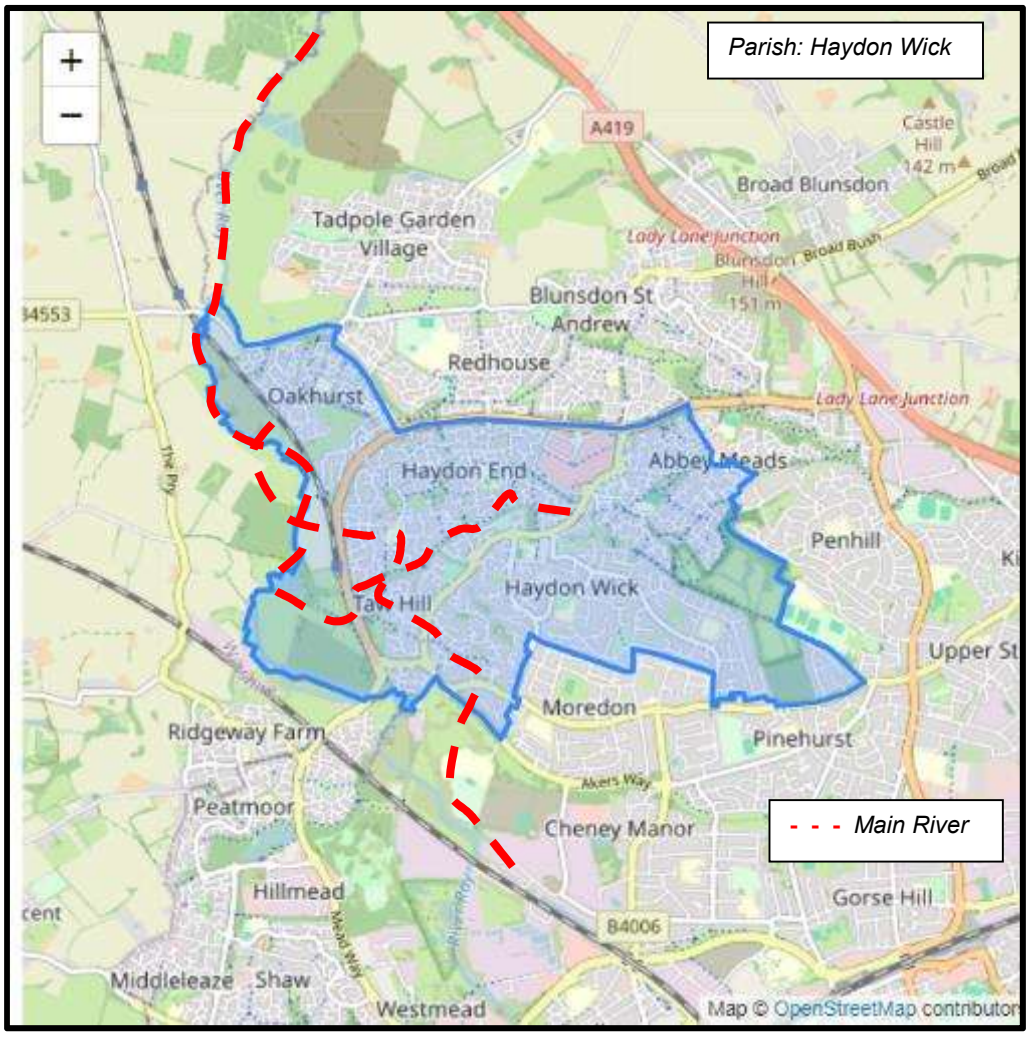


Figure 10 Map to show Parish Boundary

B.3.1. Summary of Flood Incidence within Haydon Wick and Abbey Meads

Main River/Watercourse	Haydon Wick Brook and tributaries
Catchment	Predominately urban – impermeable areas although a larger amount of open spaces and greenfield
Number of Properties Flooded Internally	11 properties reported internal flooding 17th/ 18th September 2 properties report internal flooding 20th October
Impacted Areas:	Parsley Close, Clary Road, Callington Road, Larchmore Close, Coriander Way, and Haydonview Road.
Road Closures / Impacts	None reported
Emergency Impacts (hospital, doctors, emergency services, care services)	None reported
Council Property/ Estates	None reported
Environmental Impacts	Flood water reported to be clear
Cause	Fluvial flood levels and surface water / drainage interactions Residents reported to Thames Water that there was a potential issue with the existing flood defence near Parsley Close. An investigation carried out by the Environment Agency regarding these reports of 'gaps' in the sheet piling to date have not identified any issue, but that further assessment of this has been delayed over the winter. The Environment Agency advise that some 'gaps' in the defence are a deliberate part of the design of the defence but confirm these lie above the design flood level of the defence. EA record: • Owner of 2 Parsley Close confirmed internal flooding to their property and understood 1, 3, 4 and 5 had also flooded. This end of the close is on higher ground and they thought the issue was surface water, running down the road and ponding/backing up from a low point at the bottom of the close. • Owner of 6 Parsley Close they confirmed internal flooding and thought there may have been a problem with the flood defences as described in the draft Section 19. • Flooding from a tributary of the Haydon Wick Brook was described by a resident at 34 Clary Road. They believe a trash screen was blocked which worsened the flooding. Flooding was reported to be coming from one of the tributaries of the Haydon Wick Brook, which joins upstream of Parsley Close.

	Intense rainfall event generating significant volumes of water which exceeded– combined sewer and surface water systems charged. Reports of blocked gullies in the area
Operational Response	Swindon Borough Council distributed sandbags, as stocks allowed, to properties at imminent risk Thames Water carried out an investigation and clearance of their surface water network
Flood Warning	Flood alert (River Ray) covers the Haydon Wick area issued for all four events. This is not an area that Environment Agency provide a Flood Warning for.
Future Projects	Swindon Borough Council has put together a project for Flood Defence Grant in Aid Funding (FDGiA) via the Environment Agency. This project will involve retrofitting SuDS (sustainable drainage systems) (this project is currently at initial feasibility scoping stage)
Risk Management Authorities	- Swindon Borough Council (SBC) as Lead Local Flood Authority (LLFA) have a statutory responsibility to manage surface water on its adopted highway network - Swindon Borough Council's Highway Operations Teams (SBC Operations) maintain all of the existing adopted highway drainage assets within available budget and provide assistance during emergency flood events - Thames Water (TW) own, maintain and repair public sewers under roads and footpaths. They are also responsible for any sewers which properties share with their neighbours, even if they are under the garden or driveway. - Environment Agency (EA) manage the main river network which runs through Swindon. They also help people and wildlife adapt to climate change and reduce its impacts – this includes flooding.
Previous Flooding	2007

B.3.2. Detail and Location of Reported Flooding Events and Operational Response/ Action Taken

Location	Date	Reported Flooding	Report Source	Causes	Operational Response
Parsley Close	17th / 18th September 2023	6 properties reported internal flooding	Thames Water	Charged drainage system unable to cope with the volume of rainfall	Thames Water undertook 8 sewer investigations at properties in this road.

	20th October 2023	2 properties reported internal flooding		Overtopping of Haydon Wick flood defence – residents have also suggested there are gaps in the sheet piling. The Environment Agency are going to investigate this.	Environment Agency Community Information Officers visited residents in Parsley Close on 19th September 2023.
Clary Road	17th / 18th September 2023	3 properties reported internal flooding	Environment Agency	General observations from Community Information Officer were that there was evidence of flow (flattened grass and wrack marks) above the course of the culvert and leading towards Clary Road. They also noted that whilst the Haydon Wick Brook had been high and out of bank, they saw no evidence of overtopping of defences. Overgrown watercourse – requires clearing / maintenance to ensure that surface water drainage system can continue to discharge effectively. However, drainage likely to have been surcharged due to high water levels in the watercourses.	Environment Agency Community Information Officers visited residents in Clary Road on 19th September 2023.
Coriander Way	17th / 18th September 2023	1 property reported internal flooding		The highway drainage charged due to over topping of the bank that discharges into the Haydon Wick Brook	

Larchmore Close	17th / 18th September 2023	1 property reported internal flooding		The property that flooded looked to have a threshold below the road level which means this property is located at the lowest point and water runoff will naturally gravitate here	

B.3.3. Local Maps and Photographs

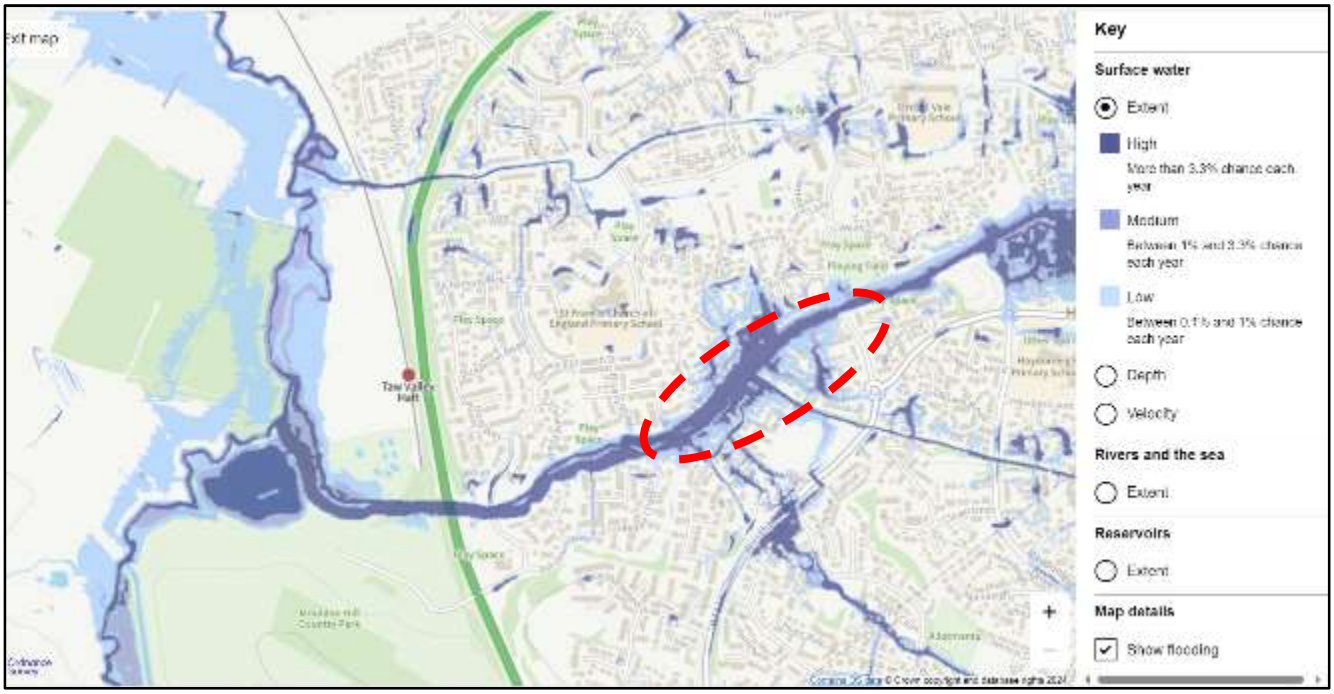


Figure 11 Surface Water Flood Risk - Parsley Close, Coriander Way, Clary Road, Henchard Crescent (enclosed in red circle)

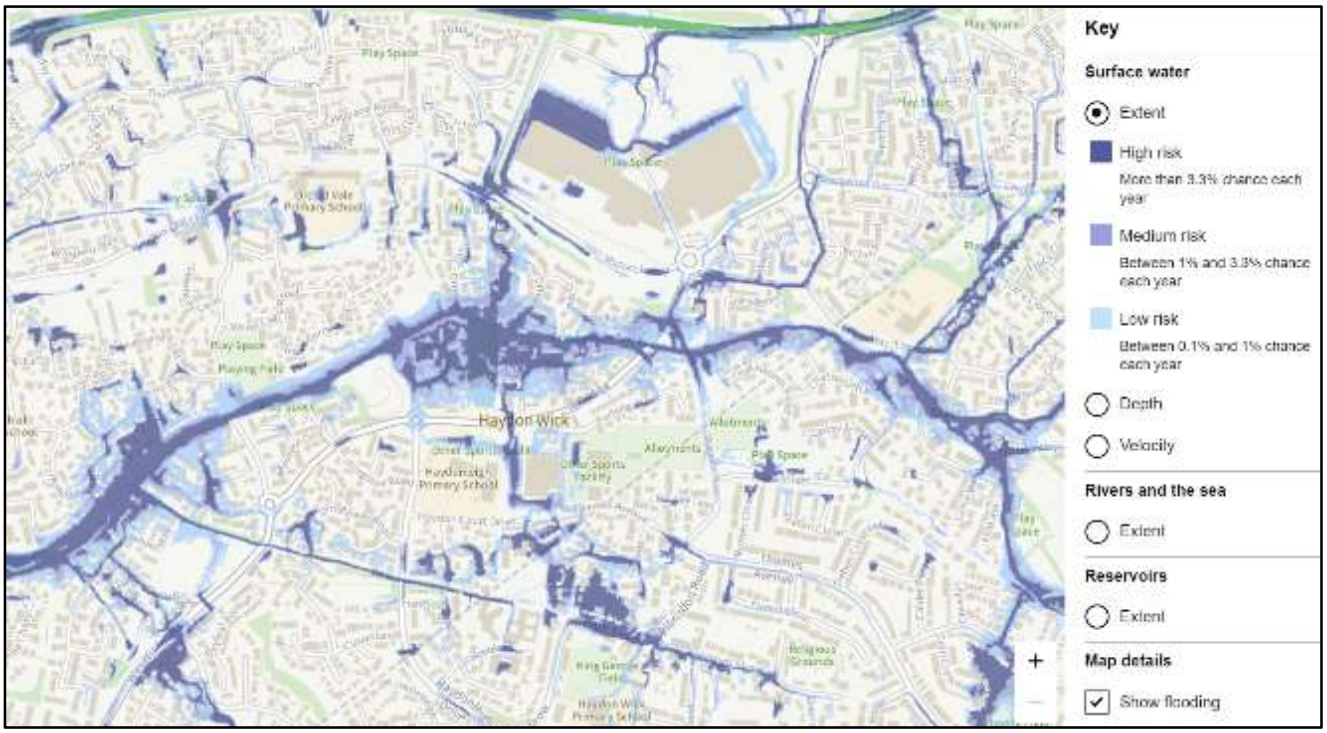


Figure 12 Surface Water Flood Risk for Haydon Wick Parish

Figure 13 Overgrown watercourse channel - Clary Road (Main River Section)

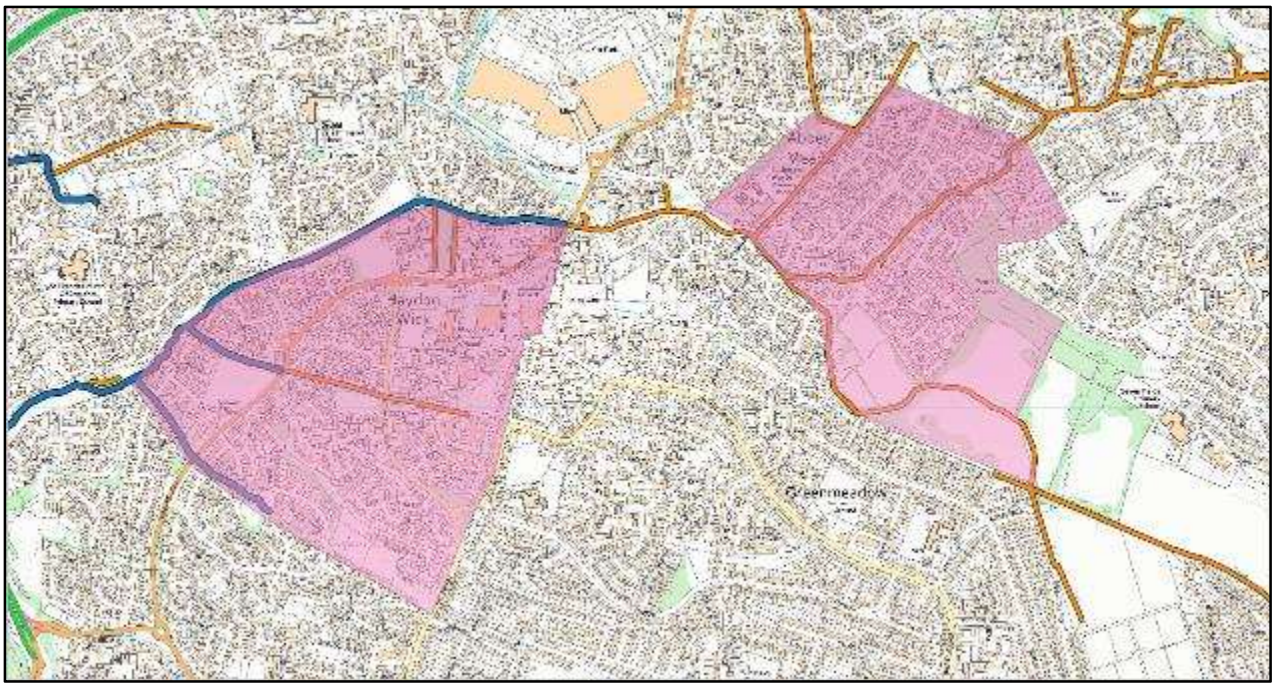


Figure 14 Haydon Wick / Abbey Meads High Priority Areas (Pink) Main River (Blue) and Ordinary Watercourses (Orange)

B.3.4. Analysis

With the exception of Larchmore Close, which is an area at very low risk of fluvial flooding, all other affected properties are all located in both fluvial and surface water flood risk areas.

There are flood defences along the Haydon Wick Brook, but there are varying accounts regarding whether the defences overtopped or flows utilised gaps in the flood defence. However, river levels in the brook were exceptionally high, and the area was subject to a flood alert. This resulted in overwhelmed surface water drainage systems allowing water to over top and flood properties

Local topography means surface water drainage systems, either when exceeded or unable to discharge, will flow overland towards low spots. Thames Water records suggest that foul drainage systems here regularly become blocked. Whilst gullies are regularly cleaned, some gullies become more susceptible to blocking with debris, but it is important to understand that gullies are designed to drain sections of the highway, not manage additional water from ditches and overland from fluvial flood flows or excessive runoff. When all drainage systems are at or over capacity (full) due to high water levels in receiving watercourses, inevitably water will take time to drain down and away.

Figure 13 shows an example of heavy vegetation contained in a watercourse. On further inspection it can be seen that both Main River and ordinary watercourse channels close to impact properties are heavily vegetated (and potentially silted as a consequence). The lack of maintenance could be helping to reduce capacity to convey flows or hold water back under surcharge scenarios. This will result in breach of the

banks and a possible cause of flooding. Swindon Borough Council and possibly parish have considerable land ownership or open space adjacent watercourses in Swindon.

Funding has been secured to retrofit sustainable drainage systems (SuDS) in the Haydon Wick / Abbey Meads area which will be funded through a Flood Defence Grant in Aid (FDGiA) bid through the Environment Agency. The next steps are to undertake a feasibility study which will identify areas where the greatest benefits can be achieved. The aim is to provide localised resilience in the drainage network by helping to slow or manage flows through the catchment.

B.3.5. Conclusions

The following are recommended actions for further review and investigation, subject to organisational priorities and available funding.

Recommended Actions	Action Owner/ Risk Management Authority	Delivery Mechanism
Review Community area action plan Community area action plan[12]	All	Local Flood Risk Management Strategy
Asset surveys and inspection on SBC owned land	Swindon Borough Council	Local Flood Risk Management Strategy Drainage and Wastewater Management Plans
Proactive maintenance of Main River including desilting	Environment Agency	Environment Agency Annual Maintenance Program / Asset Performance.
Investigate condition of ordinary watercourses and any associated assets Vegetation and silt management plans for ordinary watercourses within SBC land ownership	Swindon Borough Council	Local Flood Risk Management Strategy

[12] Community area action plan

Flood warning – could the EA provide warnings in the area	Environment Agency	Environment Agency Flood Forecasting and Warning Service
Review drainage network – opportunities for additional network storage to be provided	Thames Water	Drainage and Wastewater Management Plans
Review gulley inspection and cleaning regime	Swindon Borough Council	Annual programming Gully Management Plan
Drainage connectivity & Main River impacts	Environment Agency	Local Flood Risk Management Strategy Environment Agency Annual Maintenance Program / Asset Performance
Local education and awareness (prevent blockages)	Thames Water	Drainage and Wastewater Management Plans
Local flood planning, preparedness & education (Flood Groups) Does the community understand its risk and are residents adequately insured/ prepared	All	Local Resilience Forum
Progress Haydon Wick SuDS retrofit to improve local drainage resilience	Swindon Borough Council / Environment Agency	Flood Defence Grant in Aid (FDGiA) funding secured
Identify opportunities for Property Flood Resilience Measures	All	Local Flood Risk Management Strategy
Review opportunities for gully and surface water disconnection (water butts/ planters) and SuDS Retrofit – utilising green spaces adjacent highways.	Swindon Borough Council	Local Flood Risk Management Strategy
Develop corporate wide understanding of riparian responsibilities and delivery of maintenance - priority clearance of ordinary watercourse network, making sure effective surface water drainage can occur but also on Main River sections where Swindon Borough Council are the landowner.	All	Local Flood Risk Management Strategy

B.4. Mannington and Western

The ward of Mannington and Western lies to the west of Swindon town center. It comprises the areas of Westlea, Toothill and parts of Westmead.

The south east boundary is defined by the Great Western Railway line, with the north eastern boundary by the Golden Valley Railway line. The western boundary is less well defined, but is delineated along Idovers Drive, Pevensey Way, Ashington Way, Rivenhall Road and Westlea Drive.

Through the center of the ward flows the River Ray, which converges with the Elcombe Brook on the eastern side of Mannington Recreation Ground. In the Westlea area, the Whitehill Stream flows from the west under Whitehill Way emerging near the Link Centre. The Whitehill Stream flows in an easterly and north easterly direction through the Westlea estate, before taking a sharp turn to the north west in the open space between Moresby Close and Stancombe Park. Here is continues north west and then north to finally converge with the River Ray at Westmead.

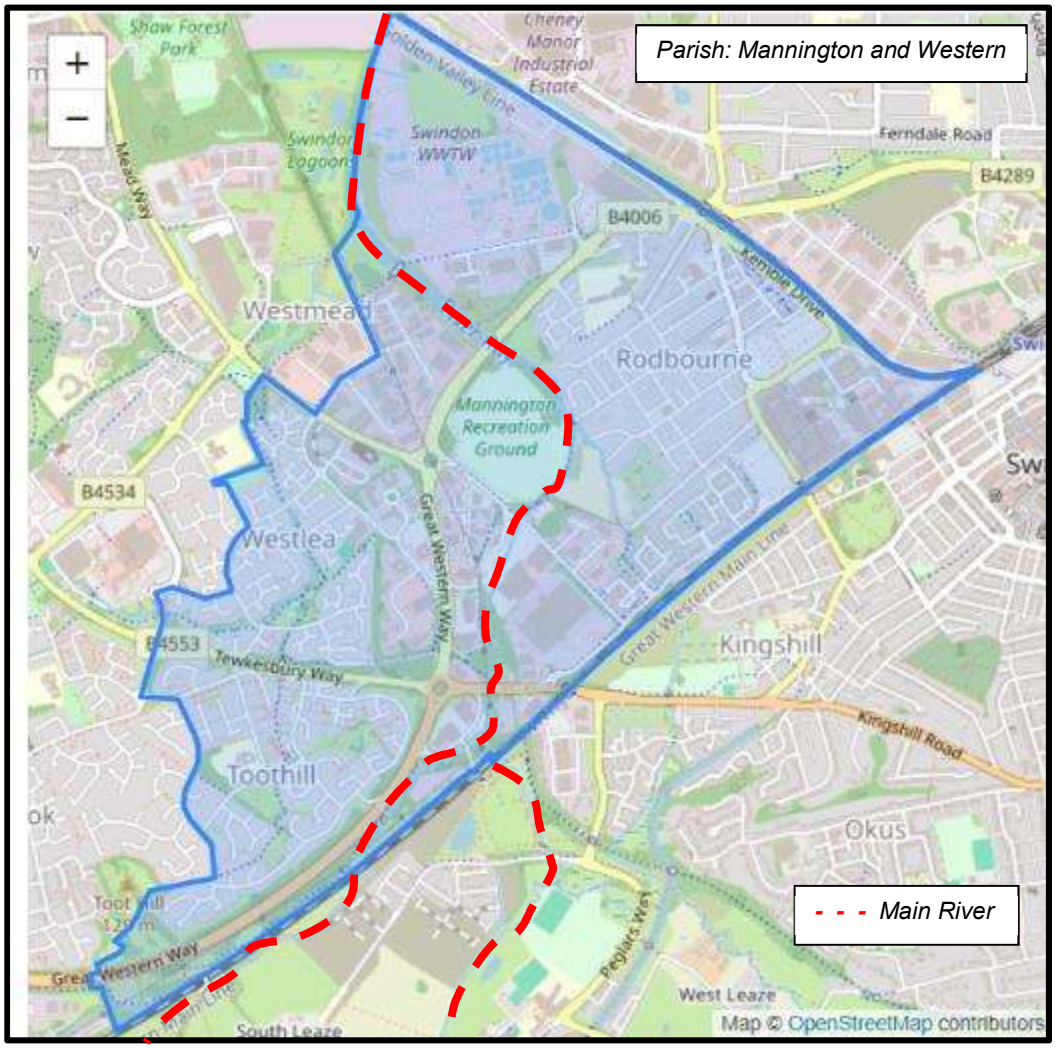


Figure 15: Parish Boundary for Mannington and Western

B.4.1. Summary of Flood Incidence within Mannington and Western

Main River/Watercourse	Whitehill Stream
Catchment	Predominantly urban – impermeable areas
Number of Properties Flooded	24 properties reported internal flooding 17th/18th September 2023 2 properties reported internal flooding 13th October 2023 which flooded again during Storm Babet.
Impacted Areas:	Montagu Street, Moresby Close, Benwell Close, Stancombe Park, Risingham Mead, Morris Street, Conisborough, Beverley
Road Closures/ Impacts	None reported
Emergency Impacts (hospitals, doctors, emergency services, care services)	None reported
Council Property/ Estates	None reported
Environmental Impacts	Reports of foul flooding
Cause	Maintenance of the Whitehill Stream – the stream has become silted up in sections which may be reducing the capacity and effective drainage. Local drainage impacted when river levels rose and breached within the Whitehill Stream (Main River) around Toothill and Westlea. Large drainage catchment discharging into the Whitehill Stream. Foul drainage system overwhelmed and subsequently surcharged. Reports of blocked gullies Thames Water CCTV survey found roots blockage in the surface water drainage in Stancombe Park after the flood event which may have contributed to the flooding of some properties in the area. Swindon Borough Council's Operations team found and removed section of detritus and concrete lodged in a highway drainage system downstream of the original flooding Property Flood Resilience measures installed for some properties following previous flooding problems however it was noted that some of the seals of these features have been affected – which means that

	they no longer offer as much resistance. They also may not have been deployed in time. Localised surface water drainage issues in Montagu Street. The shared downpipe of terraced houses outfall onto the highway, increasing surface water runoff. Swindon sewage treatment works flooded and caused widespread issues with the drainage network. Limited coverage flood warning service.
Operational Response	Swindon Borough Council distributed sandbags, as stocks allowed, to properties at imminent risk Environment Agency community information officers visited properties in Moresby Close after 18th September 2023 flooding. Swindon Borough Council Operations Team visited Montagu Street to meet resident on 18th September 2023 Community clearance of Whitehill Stream Clearing of Whitehill Brook | Rt Hon Robert Buckland KC MP
Flood Warning	There are no flood warning services in this area
Future Projects	Environment Agency have applied for funding to spot desilt sections of the Whitehill Stream Issues at Moresby Close and Toothill areas have been added to the councils Drainage Pipeline projects program for further consideration.
Risk Management Authorities	- Swindon Borough Council (SBC) as Lead Local Flood Authority (LLFA) have a statutory responsibility to manage surface water on its adopted highway network - Swindon Borough Council's Highway Operations Teams (SBC Operations) maintain all of the existing adopted highway drainage assets within available budget and provide assistance during emergency flood events - Thames Water (TW) own, maintain and repair public sewers under roads and footpaths. They are also responsible for any sewers which properties share with their neighbours, even if they are under the garden or driveway. - Environment Agency (EA) manage the main river network which runs through Swindon. They also help people and wildlife adapt to climate change and reduce its impacts – this includes flooding.
Previous Flooding Events	2006 Montagu Street – reported in Swindon advertiser July 2007 – Montagu Street identified as having one property with internal flooding July 2007 – Conisborough

	Environment Agency have records of flooding at Benwell Close and Moresby Close in recent years.

B.4.2. Detail and Location of Reported Flooding Events and Operational Response/ Action Taken

Location	Date	Reported Flooding	Report Source	Causes	Operational response
Montagu Street	17/18th September 2023	2 properties reported internal flooding	Dorset and Wiltshire Fire Service Swindon Borough Council Mannington & Western Parish Council	Properties are shown as being at high risk of surface water flooding on the Environment Agency maps. Intense rainfall between 1am – 5am falling on heavily urbanised catchment overwhelmed local drainage network, and took time to drain away. Photos show floodwaters were gone by 9:00am on 18th September 2023. Residents reported that there was a historic issue of drains being blocked. However, as the water drained away within a few hours, it suggests the drains had functionality but became overwhelmed.	Dorsst & Wiltshire Fire Service receive a call at 01:32:52 regarding flooding to property - reported as providing advice only. Swindon Borough Council operations team visited residents at 9:00am morning of 18th September 2023. Swindon Borough Council operations team cleared the gullies 18th September 2023.

				It should be noted the properties in the area are terraced and have shared drainage which discharge directly onto the highway. This then adds extra run off to the surface water catchment.	
Moresby Close		7 properties reported internal flooding	Environment Agency Thames Water Mannington & Western Parish Council Swindon Borough Council	According to residents internal flooding started at around 0230 on 18/9/23 and had started falling again within an hour. Intense rainfall which caused the main river to surcharge. Consequently, this resulted in the surface water network also surcharging. Siltation and vegetation in the watercourse may have contributed to the reduced capacity but not thought to be a significant standalone factor due to the volume of rainfall. A flume at the bottom end of the Whitehill Stream, close to River Ray confluence, was also mentioned as	Thames Water attended flooded properties in September, spoke to residents and undertook sewer flood investigation reports. Environment Agency Community Information Officers attended site on 19th September 2023 and spoke to residents Swindon Borough Council operations team cleared drains on 24th May 2023 and again following the flooding on 23rd October 2023. Thames Water advised that in November 2023, surface water sewer was cleaned in Moseby Close to remove calcium

				potentially affecting the watercourses ability to convey this volume of runoff. TBC Surface water has been diverted from its usual path into the Whitehill Stream catchment from Toothill / West Wichel as part of recent development works which has increased the catchment for the area.	build up in the network, which following reviews of the CCTV, it is showing to be clear of debris and functioning well
Benwell Close	17/18th September 2023	2 properties reported flooding internally	Environment Agency Dorset and Wiltshire Fire Service Swindon Borough Council	0130 on 18/9/23. Water had fallen by around 0400 They described water entering the garden and finding its way into the house. Some PFR measures installed but these were overwhelmed. Property is attached to their neighbour, no24, and they believe water may have entered that property more quickly as they don't have PFR installed. Stated flood depths in the garden around 500mm, internal flooding around 250mm. Property has flooded 3 times previously.	Flooded properties following September event, spoke to residents undertook sewer flood investigation reports. At the time of righting Thames Water had no confirmed site visit Environment Agency Community Information Officers attended site on 19th September and spoke to residents Swindon Borough Council Lead Local Flood Authority team & Operations team attended site visit on March 2024 to discuss flooding

					issues with residents.
	October 2023	1 property reported flooding internally	Environment Agency Swindon Borough Council		Swindon Borough Council operations team cleared drains on 23rd October 2023
Risingham Mead	17/18th September 2023	8 properties reported internal flooding	Thames Water	Surface water drainage for this area connects to the Whitehill Stream. The drainage network surcharged as levels in the watercourse rose. Large drainage catchment upstream.	Thames Water attended properties in Risingham Mead following the flooding to undertake sewer investigation work.
Feather Wood	17/18th September 2023	1 property reported internal flooding 2 properties reported flooding externally (flooding to integral garages, gardens or curtilages)			Thames Water attended properties in Feather Wood following the flooding to undertake sewer investigation. Thames Water have cleaned and CCTV surveyed in the area due to debris, stones and bricks in the drainage system – Thames Water are looking into benefits of lining the drainage in this area
Kirkstall Close	20th October 2023	1 property reported flooding but unclear if this was	Thames Water		

		internal of external			
Woodchester	18th September 2023	1 property reported external flooding (flooding to integral garages, gardens or curtilages)			
Conisborough	17/18th September 2023	2 properties reported internal flooding	Local Councillor Swindon Borough Council	Parish advise that there have been previous drainage issues here due to blockages in the foul network, but the current flooding occurred due to surface water runoff	Gullies were cleaned August 2023
Stancombe Park	17/18th September 2023	2 properties reported internal flooding	Swindon Borough Council	Flooding is predominantly a result of a surcharged drainage system. This is a result of a very intense rainfall event and high water levels in the receiving watercourse. However, parish council report that Thames Water identified roots within the drainage system that may have compromised its functionality. Thames Water data recorded these properties as having flooded but no sewer flood investigation	Swindon Borough Council's operation team attended site on 16/10/23, 18/10/23 but found no defects on site

				reports were undertaken.	
	13th October 2023	2 properties reported internal flooding			
	20th October 2023	2 properties reported internal flooding			Parish Council advise Thames Water visited on three occasions in week prior to 20th October 2023. Thames Water provided the following information following their investigation "*patch liners were installed in the network in Stancombe Park to eliminate some defects, roots and infiltration*"

B.4.3. Local Maps and Photographs

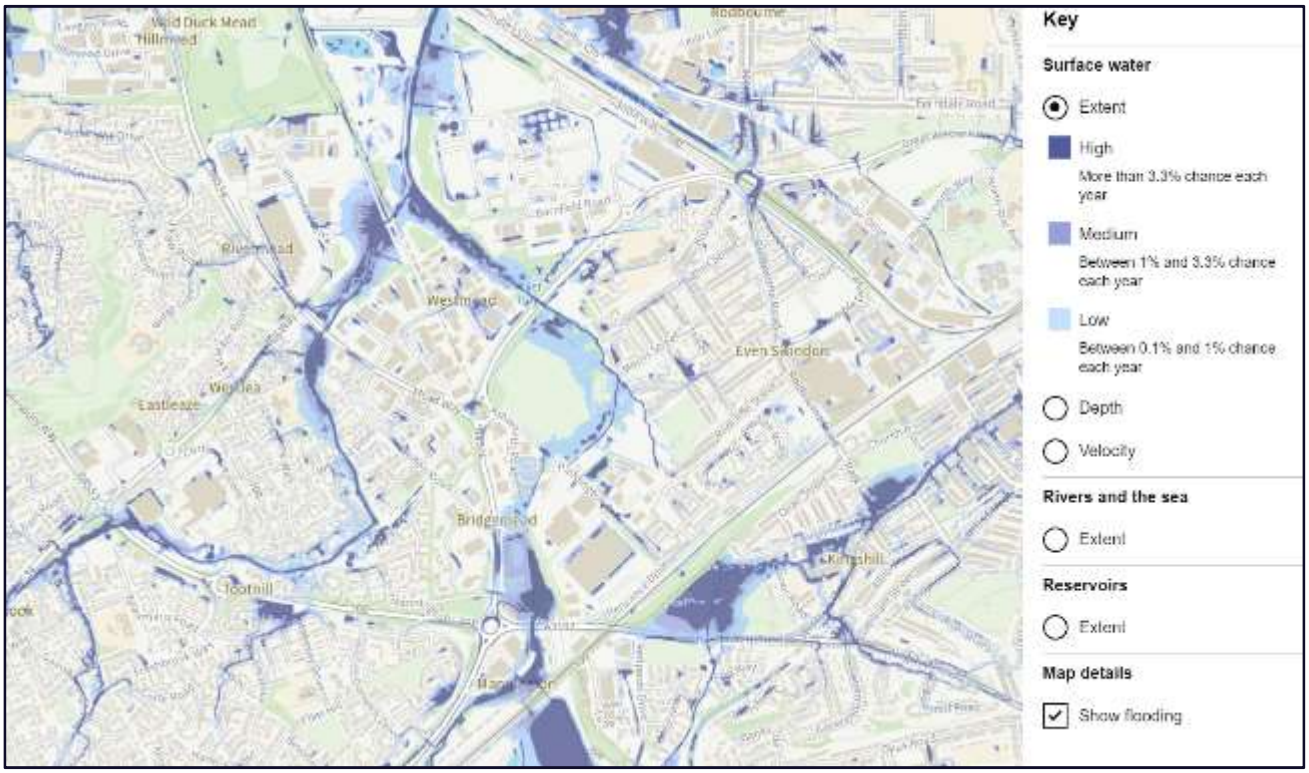


Figure 16 Surface Water Flood Risk Map - Whitehill Stream – Westlea and Toothill areas

Figure 17 Fluvial Flood Risk Map - Whitehill Stream area Westlea and Toothill areas

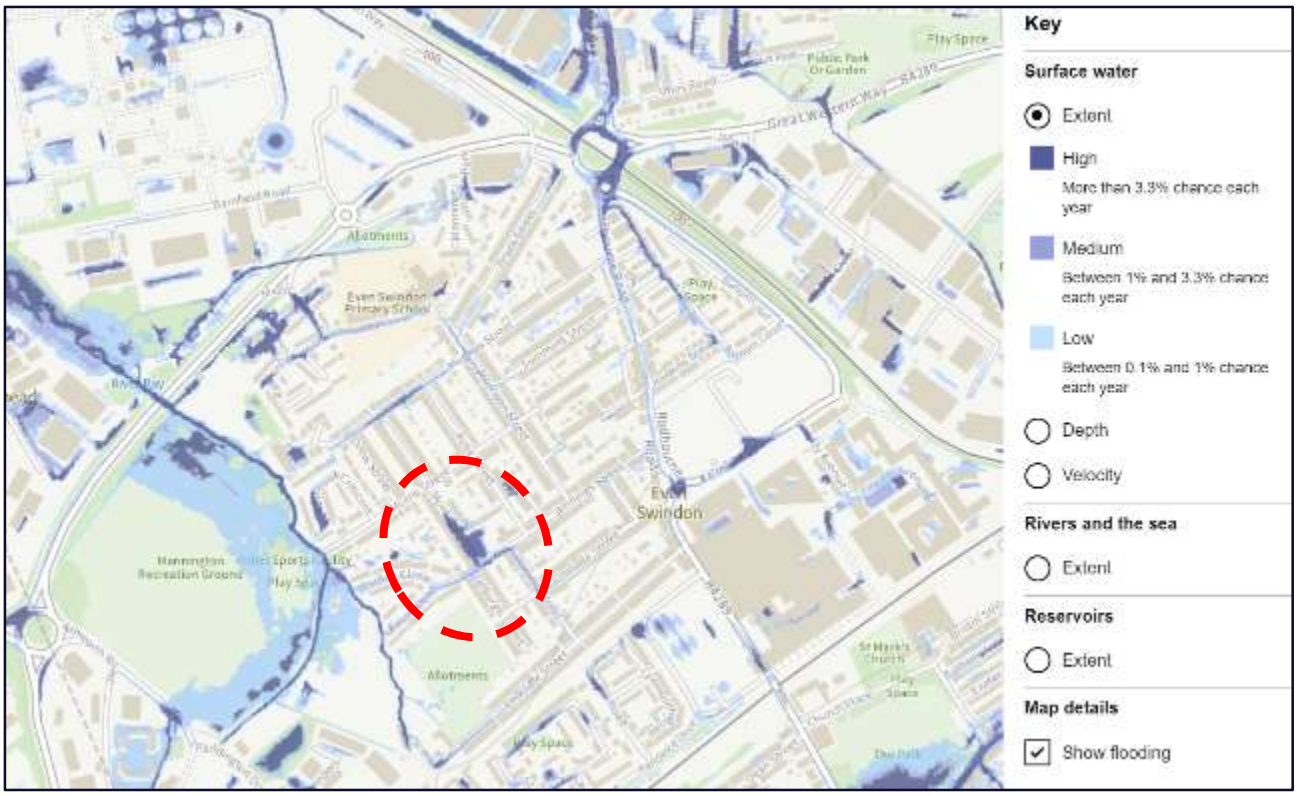


Figure 18 Surface Water Flood Risk Map - Montagu Street (enclosed in red circle)

Figure 19 Fluvial Flood Risk Map (showing section of ordinary watercourse to the rear of Montagu Street properties (enclosed in red circle)

Figure 20Shared roof drainage downpipe discharging onto the highway footpath in Montagu Street

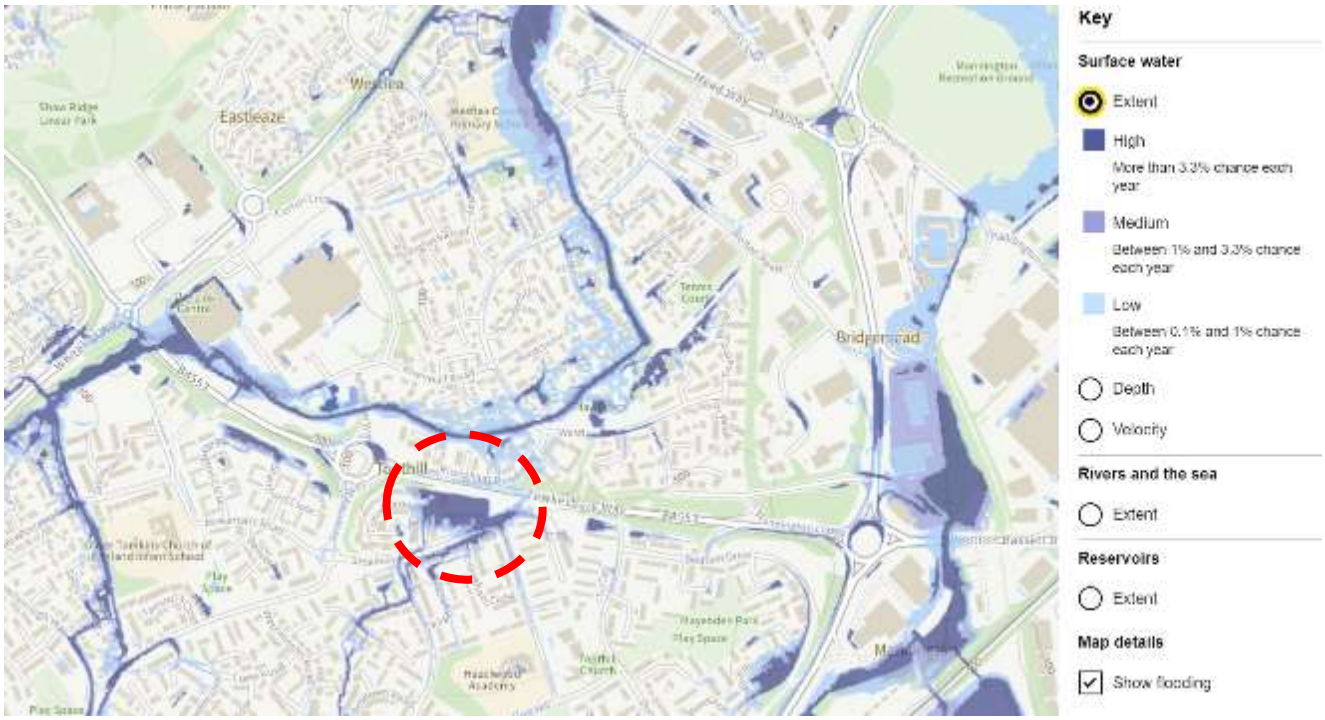


Figure 21 Surface Water flood map (Conisborough / Risigham Mead area (enclosed in red circle)

B.4.4. Analysis

In terms of the flooding in the Montagu Street area, this is a result of a number of factors being in a high urban area, where water runs off from impermeable areas and follows the topography to local low spots. Drainage becomes overwhelmed, and floods properties. Properties in the affected area of Montagu Street are shown to be at high risk of surface water flooding. Keeping drains clear and assessing any drainage defects will likely help alleviate flooding as there are a number of defected gullies reported on our drainage management system, but extreme storms will always exceed the design capacity of the drainage network, so considering property flood resilience measures may help those who have issues with repeated flooding.

In the Westlea and Toothill areas the issue is drainage becomes charged due to high levels in the Whitehill Stream. There is concern from residents that the stream isn't well managed, and this may be impacting on capacity. Clearance work and capacity assessment is required here. Furthermore, a considerable surface water drainage catchment discharges into the Whitehill Stream just upstream of Moresby Close meaning properties in this area regularly flood when the drainage system cannot discharge. There are a number of opportunities for potential improvement here, such as desilting and improving the management of the watercourse, or looking at interventions such as flood storage or sustainable drainage systems.

B.4.5. Conclusions

The following are recommended actions for further review and investigation, subject to organisational priorities and available funding.

Recommended Actions	**Action Owner/ Risk Management Authority**	**Delivery Mechanism**
Asset surveys and inspection	All	Local Flood Risk Management Strategy Asset Performance programmes Drainage and Wastewater Management Plans
Investigate route and condition of ordinary watercourse in Montagu Street (emerging from behind no. 25)	Swindon Borough Council	Local Flood Risk Management Strategy
Reinstating Whitehill Stream river channel dimensions (silt removal) and how this would be managed and maintained over time	Environment Agency and Swindon Borough Council	Annual programming for maintenance activities Environment Agency programmed to clear section of

		watercourse in the vicinity of Moresby Close September/October 2024 Environment Agency have bid for funding to do spot desilting works here. Decision on bids expected to be revealed December 2024 – February 2025
Opportunities in the river corridor to create flood storage – reduce overall flood levels and alleviate drainage networks.	Environment Agency / Swindon Borough Council	Local Flood Risk Management Strategy
Identify and resolve issues with defective gullies	Swindon Borough Council / Thames Water	Drainage and Wastewater Management Plans Annual Programming
Review drainage network – could this be improved?	Thames Water	Drainage and Wastewater Management Plans
Review gulley inspection and cleaning regime	Swindon Borough Council	Annual programming
Drainage connectivity & Main River impacts	All	Local flood risk management strategy
Pro-active inspection of combined drainage network	Thames Water	Annual programming
Local education and awareness (prevent blockages)	Thames Water	Local Resilience Forum
Local flood planning & preparedness (Flood Groups) – improved flood warning service?	All	Local Resilience Forum
Identify opportunities for Property Flood Resilience Measures	All	Local Flood Risk Management Strategy
Review opportunities for management of roof drainage in Montagu Street. Community centre car park (Montagu Street) retrofit SuDS or storage.	Swindon Borough Council/ Thames Water	Local Flood Risk Management Strategy
Review riparian responsibilities including SBC's land ownership	All	Local Flood Risk Management Strategy

B.5. Rodbourne Cheney

The South of the boundary runs behind the Cheney Manor Industrial Estate and continues running adjacent to Kemble Drive to the railway line. From the railway line the boundary goes North to Pinehurst where the Eastern boundary runs along some of Pinehurst Road towards Moredon and including most of Beech Avenue and most of Whitworth Road.

At the West boundary, The River Ray enters the ward through woodland and green spaces before continuing South beyond the Parish boundary. The Austradius Brook also enters from the North West of the boundary and runs South along Akers Way to the East of the parish boundary.

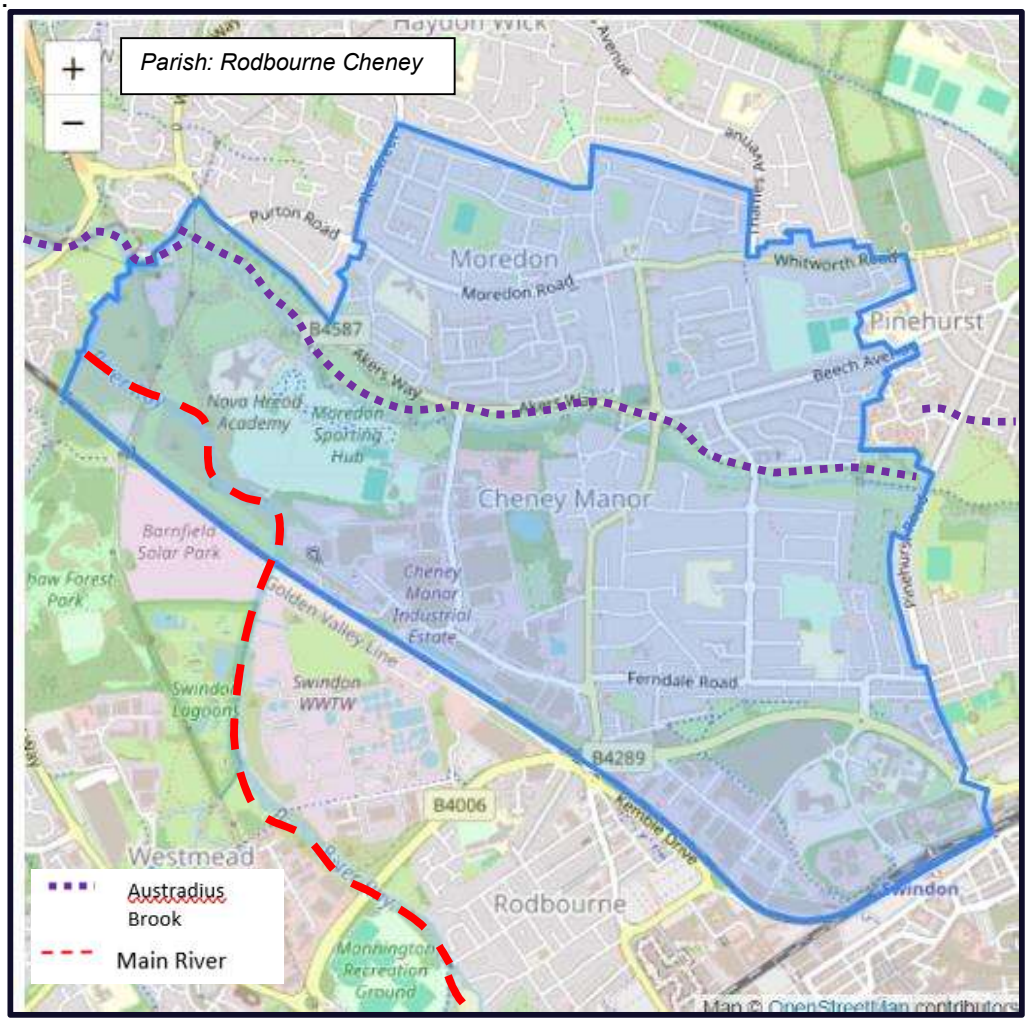


Figure 229: Map to show parish boundary

B.5.1. Summary of Flood Incidence within Rodbourne Cheney

Main River/Watercourse	Austradius Brook / River Ray
Catchment	Predominantly urban – impermeable areas
Number of Properties Flooded	11 properties flooded in September 2023 2 properties flooded on 13th October 2023
Impacted Areas:	Cheney Manor Road, Churchward Avenue, Somerset Road, Vicarage Road, Moredon Road, Cheney Manor Industrial Estate
Road Closures/ Impacts	Roads flooded but not closed
Emergency Impacts (hospitals, doctors, emergency services, care services)	10a Vicarage Road – Care Home had internal flooding
Council Property/ Estates	10a Vicarage Road – Care Home had internal flooding
Environmental Impact	Reports of combined surface water and foul network surcharging
Cause	Heavy rainfall event Local watercourse flooding – High fluvial and surface water flood risk area Combined surface water and foul network overwhelmed
Operational Response	Swindon Borough Council distributed sandbags, as stocks allowed, to properties at imminent risk Gullies cleaned following September 2023 event, and again ahead of Storm Babet.
Flood Warning	According to the Historic Flood Warnings database, **Flood Alert** was issued for River Ray on 18th September 2023. No warning for Austradius Brook
Future Projects	The culvert adjacent to Blagrove Industrial Estate is on Swindon Borough Councils drainage list of pipeline projects to consider improvement options due to regular blockages and deteriorating gabion baskets.
Risk Management Authorities	- Swindon Borough Council (SBC) as Lead Local Flood Authority (LLFA) have a statutory responsibility to manage surface water on its adopted highway network - Swindon Borough Council's Highway Operations Teams (SBC Operations) maintain all of the existing adopted

	highway drainage assets within available budget and provided assistance during emergency flood events - Thames Water (TW) own, maintain and repair public sewers under roads and footpaths. They are also responsible for any sewers which properties share with their neighbours, even if they are under the garden or driveway. - Environment Agency (EA) manage the main river network which runs through Swindon. They also help people and wildlife adapt to climate change and reduce its impacts – this includes flooding.
Previous Flooding	2007

B.5.2. Detail and Location of Reported Flooding Events and Operational Response/ Action Taken

Location	Date	Reported Flooding	Report Source	Causes	Operational Response
Cheney Manor Road	17/18th September 2023	8 properties reported internal flooding	Swindon Borough Council Thames Water	Highway drainage and the combined sewer system were unable to cope with the intensity of rainfall produced during this event and charged due to high water levels in the network. 2x culverts in the area were overwhelmed causing slow flows on surface water network. All these properties are very close to the Swindon Sewerage Treatment Works that was in major incident mode due to process failure and mass flooding on the site following the storm.	Thames Water undertook 7 Sewer Investigations Culvert clearance work carried out by Swindon Borough Council Operations Team adjacent to Blagrove Industrial Estate.

Churchward Avenue	17/18th September 2023	2 properties reported internal flooding	Thames Water Swindon Borough Council	To the rear of properties in Churchward Avenue is a high flood risk area. High river levels in the adjacent watercourse would likely have caused local drainage systems to breach, and back up causing flooding to the road. Property thresholds at or below road level meaning a lot of properties are located at the lowest point and surface water will naturally gravitate towards here Downpipes directed to highway	20/09/2023 Swindon Borough Council operation team attended site and cleared gullies
Somerset Road		1 property reported internal flooding			
Vicarage Road		1 property reported internal flooding	Swindon Borough Council Civil Contingency Team		Swindon Borough Council owned property in 10a Vicarage Road suffered internal flooding on 18th September and care services (Homeline) were involved.
Moredon Road		1 business reported internal flooding		Lack of drainage / shared drainage	

Cheney Manor Industrial Estate		Multiple businesses reported flooding (unknown if this was internal or external)	Swindon Borough Council	High surface water flood risk area Culverted watercourses and drainage systems overwhelmed.	Swindon Borough Council Operations team went to site to clear the adjacent culverts trash screen

B.5.3. Local Maps and Photographs

Figure 23 Surface Water Flood Risk Map for Rodbourne Cheney

Figure 24 Fluvial Flood Risk Map for Rodbourney Cheney

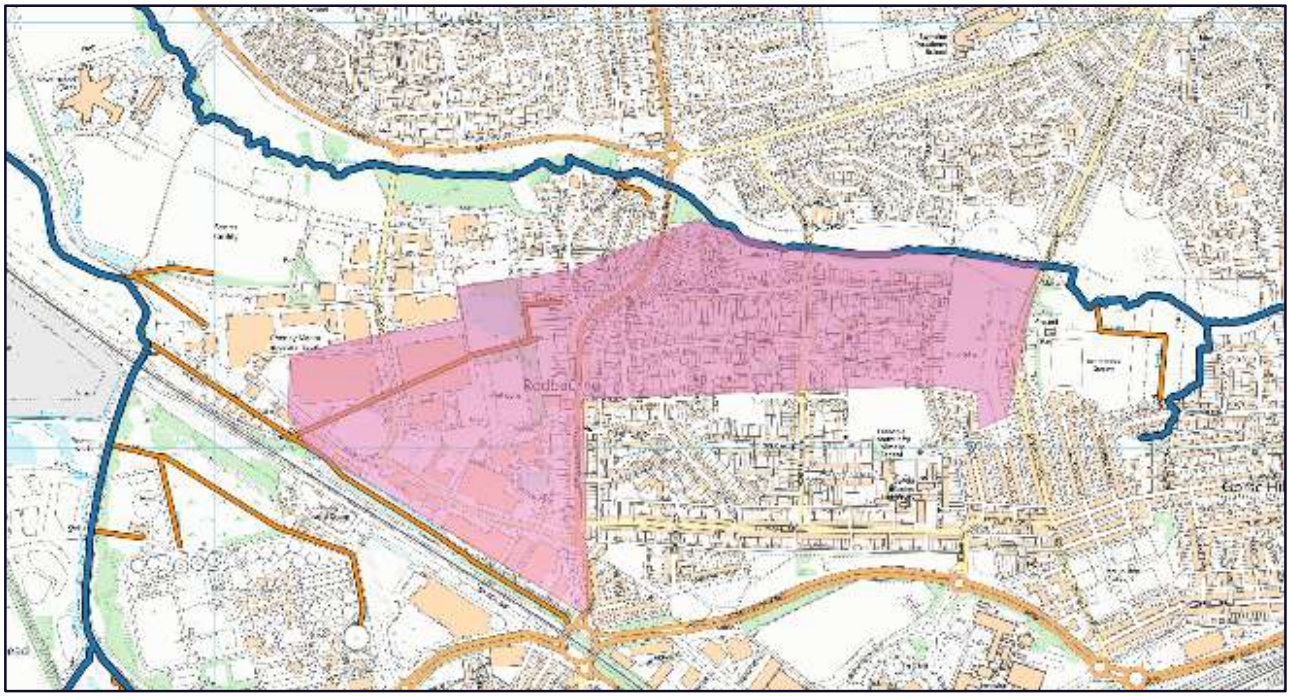


Figure 25 Rodbourne Cheney High Priority Area (Pink) Main River (Blue) and Ordinary Watercourses (Orange)

Figure 26 Churchward Avenue – Photo Credit: Sarah Cumming (3 am) – Swindon Advertiser

B.5.4. Analysis

There are a number of factors that would have contributed to the flooding in this area. As a lot Rodboune Cheney is within a high urban area, water runs off from impermeable areas follows the topography to local low spots as a result drainage becomes overwhelmed, and floods properties.

Flooding to the properties was caused by a number of contributors. Drainage systems being unable to cope with the intensity of rainfall from this event meant a lot of the drainage network (including gullies, watercourses, culverts and the foul combined sewer system) subsequently surcharged. It is also worth noting that all of these properties are very close to the Swindon Sewerage Treatment Works that was in major incident mode due to process failure and mass flooding on the site following the storm.

In regards to the flooding in Churchward Avenue the rear of these properties is a high flood risk area, high river levels in this watercourse would likely have caused local drainage systems to breach, and back up causing flooding to the road. This would have been contributed by rising groundwater levels with the rising levels in the brook.

Cheney Manor Industrial Estate is a high surface water flood risk area which means that flooding during extreme rainfall events is expected. Notwithstanding this, the adjacent culvert trash screen on inspection was blocked and Swindon Borough Council's Operations team went to site to clear this. This culvert trash screen is now added to the list of assets the operatives will clear and inspect in response to storm warnings.

B.5.5. Conclusions

The following are recommended actions for further review and investigation, subject to organisational priorities and available funding.

Recommended Actions	Action Owner/ Risk Management Authority	Delivery Mechanism
Identify opportunities for Property Flood Resilience Measures	All	Local Flood Risk Management Strategy
Review Community Action Plan	Swindon Borough Council	Community Action Plan
Review /update flood mapping /modelling to identify strategic improvement opportunities	All	Local Flood Risk Management Strategy
Local flood planning & preparedness (Flood Groups) in particular the appetite for a flood warden scheme or resilience group	All	Local Resilience Forum
Undertake vegetation clearance and review need to fit trash screen on culverted watercourse upstream Darby Close.	Swindon Borough Council	Drainage pipeline project
Review riparian responsibilities / landownership	All	Local Flood Risk Management Strategy
Review gully cleansing regime	Swindon Borough Council	Gully Management Plan
Drainage Infrastructure Review	Thames Water / Swindon Borough Council	Gully Management Plan
Council owned property flood resilience	Swindon Borough Council	Estates & Property Drainage pipeline project
Investigate condition / regime of ordinary watercourses and any associated assets.	Swindon Borough Council	Local Flood Risk Management Strategy

B.6. South Marston

The South Marston ward is located to the north east of Swindon. The ward is strongly dominated by the South Marston Industrial Estate to the north and the Panattoni Park (Former Honda site) to the west. The South Marston Brook flows through Panattoni Park from east to west to its outfall into the River Cole. An ordinary watercourse flows from the South Marston industrial estate and converges with the South Marston Brook at Chapel Lane, but a further channel exists flowing towards Nightingale Lane.

There are a number of allocated sites for new development within the village – these include proposed developments forming part of the New Eastern Villages (NEV).

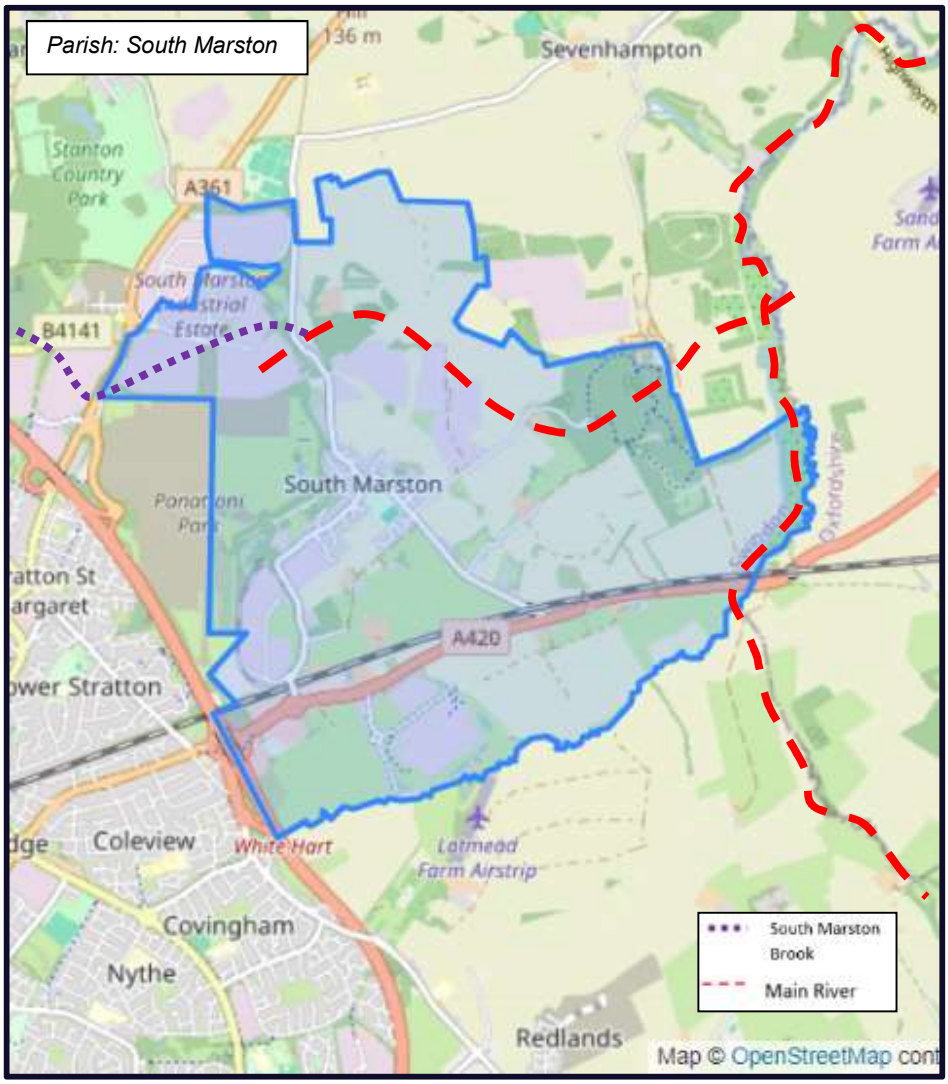


Figure 26 Map to show parish boundary

B.6.1. Summary of Flood Incidence within the Parish

Main River/Watercourse	South Marston Brook and a network of ordinary watercourses/drainage
Catchment	Rural, urban and industrial
Number of Properties Internally Flooded	10 properties reported internal flooding
Impacted Areas:	Highworth Road, Vicarage Lane, Chapel Lane, Greenfields, Nightingale Lane, Byron Court, Quarrybrook Close.
Road Closures/ Impacts	Highworth Road flooded – traffic management put in place to slow down vehicles
Emergency impacts (hospitals, doctors, emergency services, care services)	The Parish reported "We had carers visiting the elderly abandoning their vehicle to wade barefoot into the Quarrybrook estate to the north".
Council Property/ Estates	None reported
Environmental Impact	Flood water reported to be clear
Cause	Rainfall / storm event which caused river levels to rise quickly. Fluvial and surface water issues Lack of riparian management of watercourses altering flow regimes. Pond/basin ownership and maintenance issues Culvert capacity
Operational Response	Swindon Borough Council distributed sandbags, as stocks allowed, to properties at imminent risk Swindon Borough Council's operations team visited Morses Lane to clear gullies and ditches in the area Thames Water pumped water away from Byron Court Environment Agency cleared trash screens to culvert in Greenfields
Flood Warning	The Environment Agency's flood warning service commenced in November 2023, so was not operational during the September 2023 event or Storm Babet.

Future Projects	Morses Lane is on Swindon Borough Council's drainage list of pipeline projects which will look to install additional drainage in the area.
Risk Management Authorities	- Swindon Borough Council (SBC) as Lead Local Flood Authority (LLFA) have a statutory responsibility to manage surface water on its adopted highway network - Swindon Borough Council's Highway Operations Teams (SBC Operations) maintain all of the existing adopted highway drainage assets within available budget and provide assistance during emergency flood events - Thames Water (TW) own, maintain and repair public sewers under roads and footpaths. They are also responsible for any sewers which properties share with their neighbours, even if they are under the garden or driveway. - Environment Agency (EA) manage the main river network which runs through Swindon. They also help people and wildlife adapt to climate change and reduce its impacts – this includes flooding.
Previous Flooding	A significant proportion of the 53 village houses which suffered an ingress of water in the 2007 storms are located in Greenfields and Highworth Road beyond. Residents in Greenfields report flooding in December 2013. Parish reports that properties in the community have experienced flooding or close calls before.

B.6.2. Detail and Location of Reported Flooding Events and Operational Response/ Action Taken

Location	Date	Reported Flooding	Report Source	Causes	Operational Response
Morses Lane	17th /18th September 2023	Road flooded	Swindon Borough Council	Blocked ditches and blocked gullies	Swindon Borough Council Operations team visited site 17/04/24 to clear the ditches and gullies in this area.
Greenfields	18th September 2023	2 properties reported internal flooding 1 property reported external flooding (flooding to integral garages, gardens or curtilages)	Environment Agency Thames Water	Residents report flooding started between 02:30 – 04:30 on 18th September. Suggested peak at 04:05.	Thames Water pumped water in the area around Byron Court. Environment Agency cleared the trash screen at the culvert entrance Environment Agency Community Information Officers were out speaking to residents affected following the September 2023 flooding event.
Nightingale Lane		1 property reported internal flooding	Thames Water	Thames Water confirmed that the pumping station was fully operational during Storm Babet but struggled to keep up with the flows within the network	

				due to the scale of the event.	
Chapel Lane		3 properties reported internal flooding			
Highworth Road/ Thornhill		4 properties reported internal flooding	Swindon Borough Council		Swindon Borough Council's operations team supported residents on Highworth Road by putting in place traffic management to slow traffic down to try and prevent impact of bow waves.

B.6.3. Local Maps and Photographs

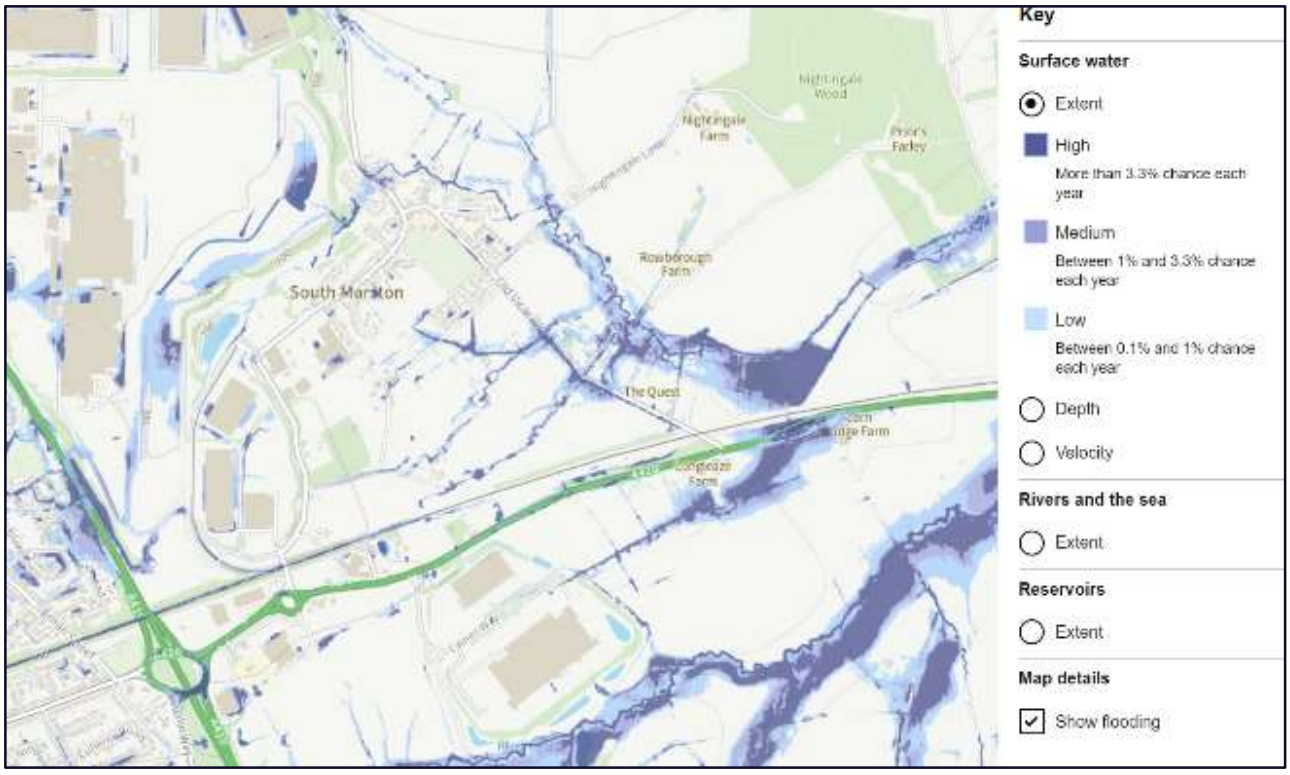


Figure 27 Surface Water Flood Map of South Marston

Figure 28 Fluvial Flood Risk Map for South Marston

B.6.4. Analysis

There are a number of attributes to the flooding in South Marston during these events.
The storms resulted in very heavy rainfall over this period which meant that a lot of the existing drainage features struggled to manage the increased flows. Notwithstanding this, South Marston has a lot of watercourses and storage ponds within the parish and the maintenance and capacity of these assets are unknown in most areas. These features need to be reviewed by the asset owners to ensure that they are fully operational in the event of a further storm and that trash screens are kept clear to avoid restricting the flow of water.

Thames Water confirmed that the pumping station was operational during Storm Babet but struggled to keep up with the flows within the network due to the scale of the event. Improvement and capacity shall be considered by Thames Water.

B.6.5. Conclusions

The following are recommended actions for further review and investigation, subject to organisational priorities and available funding.

Recommended Actions	Action Owner/ Risk Management Authority	Delivery Mechanism
Opportunities to minimise and reduce development impacts in the NEV area.	Swindon Borough Council	Planning process through implementation of Sustainable Drainage Solutions (SuDS)
Review flood mapping /modelling to identify strategic improvement opportunities	All	Local Flood Risk Management Strategy
Understand / develop strategic pond ownership, monitoring and maintenance arrangements and role of these in local flood risk	All	Local policy / procedures Local Flood Risk Management Strategy
Review whether community concerns regarding the new French drains on farmland is worsening risk at Nightingale lane	Swindon Borough Council	Local policy/ procedures
Flood warning service –collate and review residents experiences since the event.	Environment Agency	Environment Agency
Review pumping station capacity	Thames Water	Thames Water processes
Local flood planning & preparedness (Flood Groups) in particular the appetite for a flood warden scheme or resilience group	All	Local Resilience Forum
Identify opportunities for Property Flood Resilience Measures	All	Local Flood Risk Management Strategy
Review riparian responsibilities / landownership	All	Local Flood Risk Management Strategy
Investigate condition / regime of ordinary watercourses and any associated assets	Swindon Borough Council	Local Flood Risk Management Strategy

PART C - APPENDICES

C.1 Rainfall Data Graphs

C.1.1 Rainfall data (15 min interval) measured at various Swindon gauge stations Sept 2023

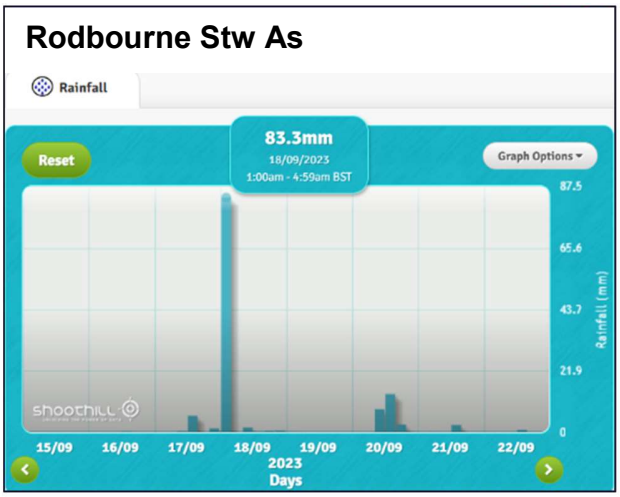


Figure 27 Graph showing rainfall records at Rodbourne Stw As) (Shoothill)1

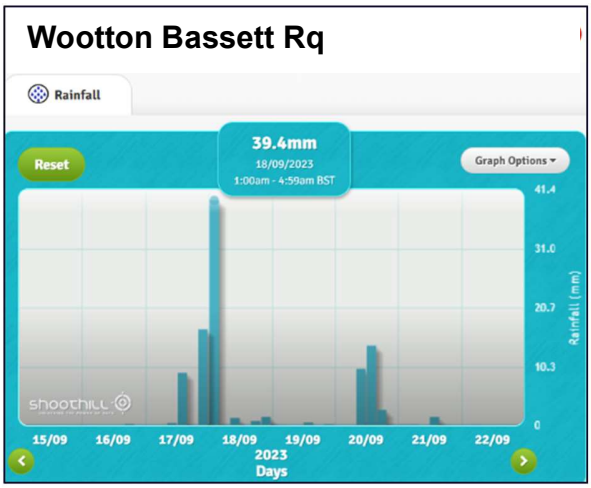


Figure 28 Graph to show rainfall records at Wootton Bassett Rg. (copyright Shoothill)

C.1.2 Rainfall data (15 min interval) measured at various Swindon gauge stations Oct 2023

Figure 29 Graph to show rainfall records (Rodbourne Stw As) (Shoothill)

Figure 31 Graph to show rainfall records (Rodbourne Stw As) (Shoothill)

C.1.3 Rainfall data (15 min interval) measured at various Swindon gauge stations Oct 2023

Wootton Bassett Rq

Figure 30 Graph to show rainfall records (Wootton Bassett Rg) (Shoothill)

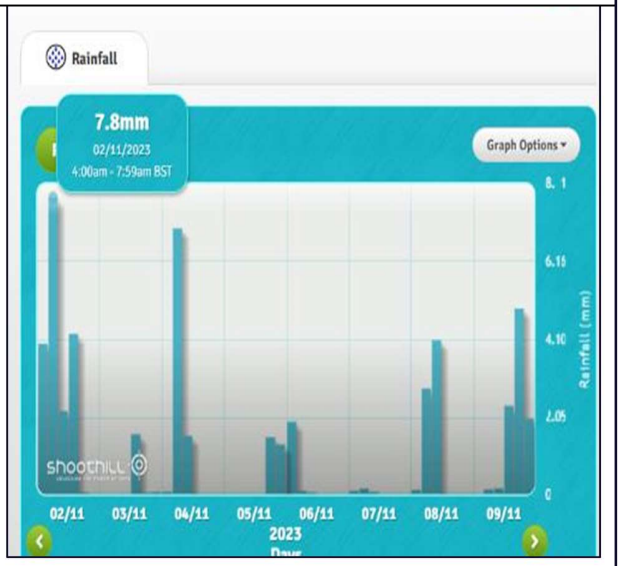
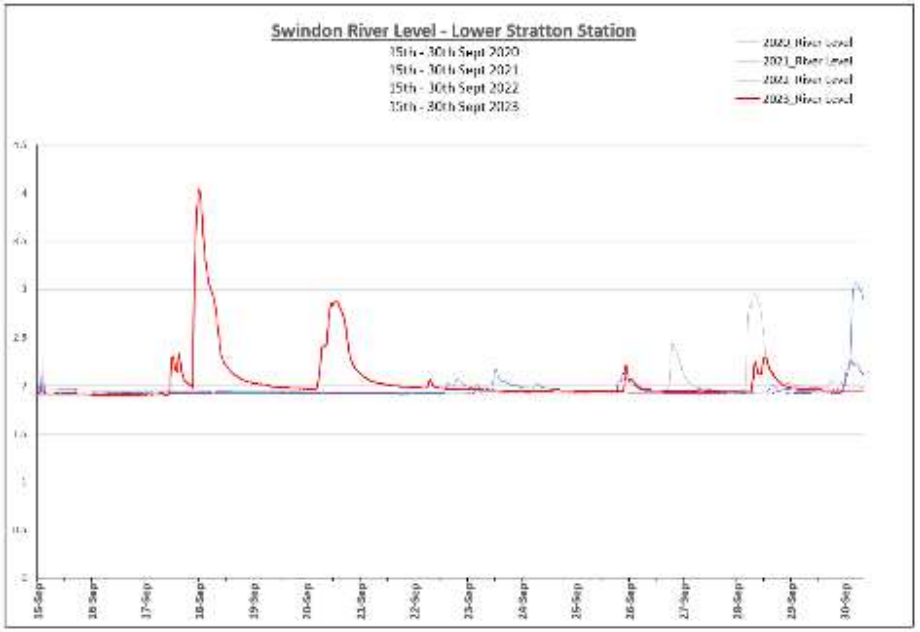


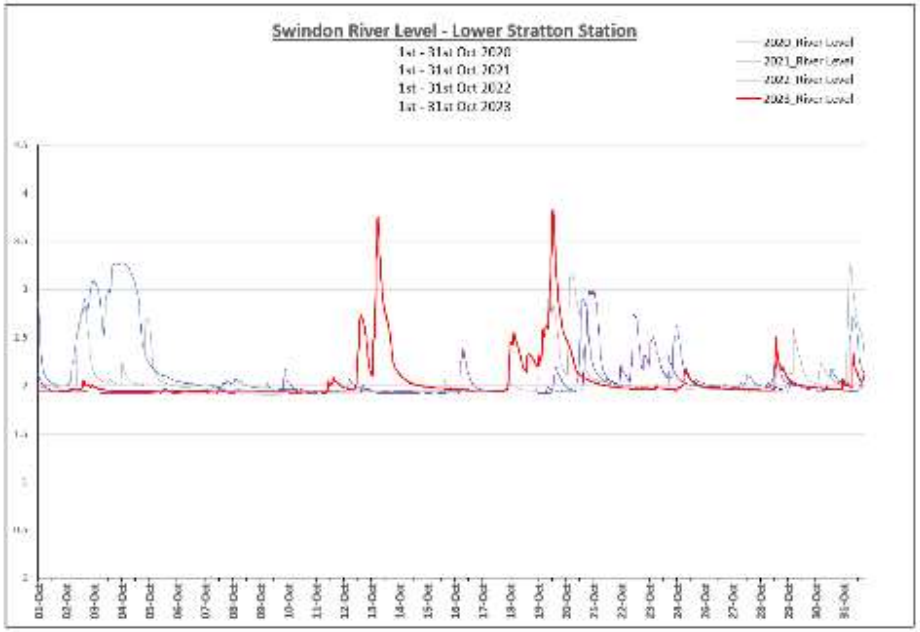
Figure 34 Graph to show rainfall records (Wootton Bassett Rg) (Shoothill)

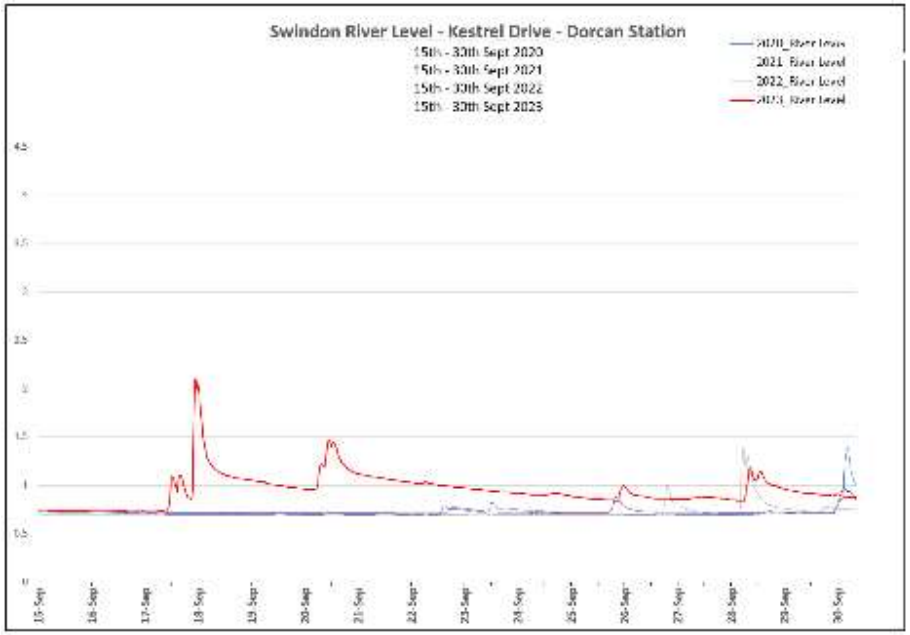
The above graphs demonstrate that the most significant event for Swindon was 17th/18th September 2023. The majority of rain fell between midnight and 5am which correlates with information received from residents.

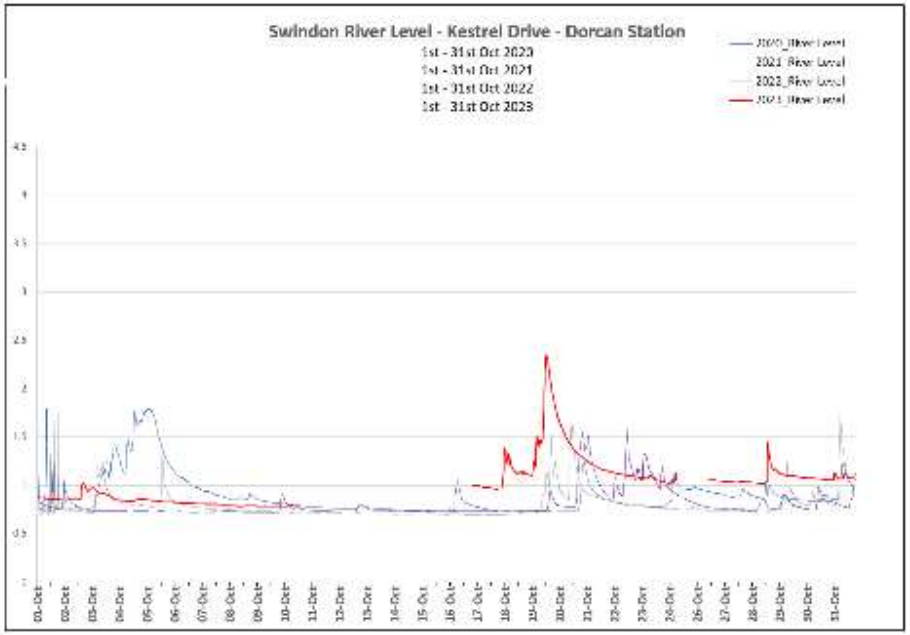
C.2 Rivers Levels at various measuring stations within Swindon

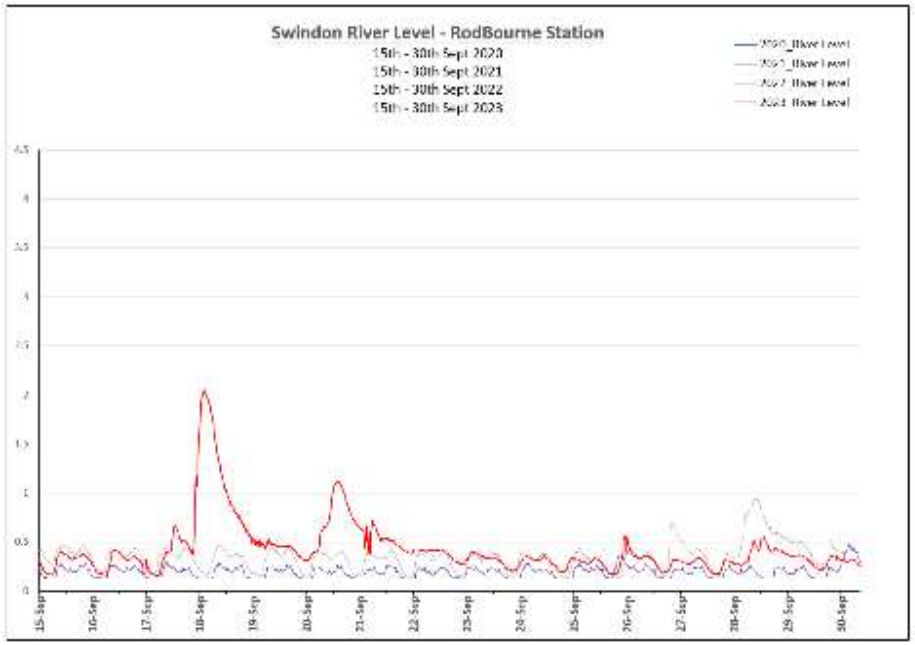
(Data collected from the Environment Agency main river gauge records)

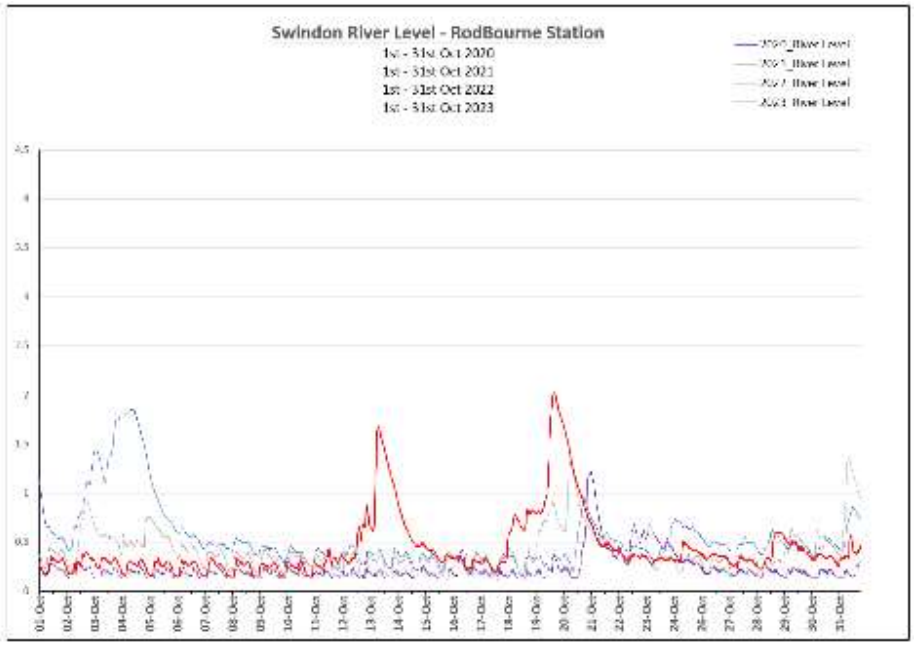


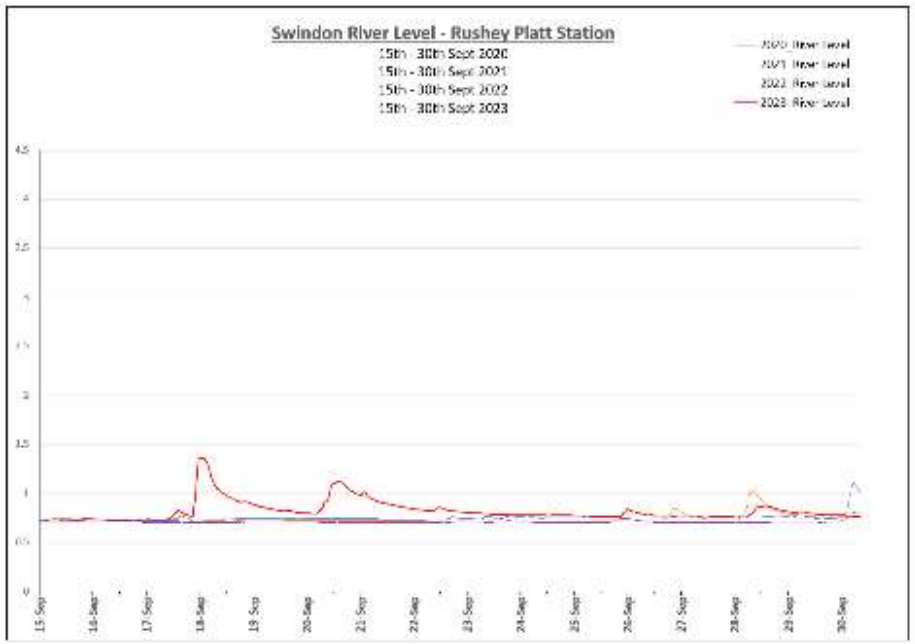


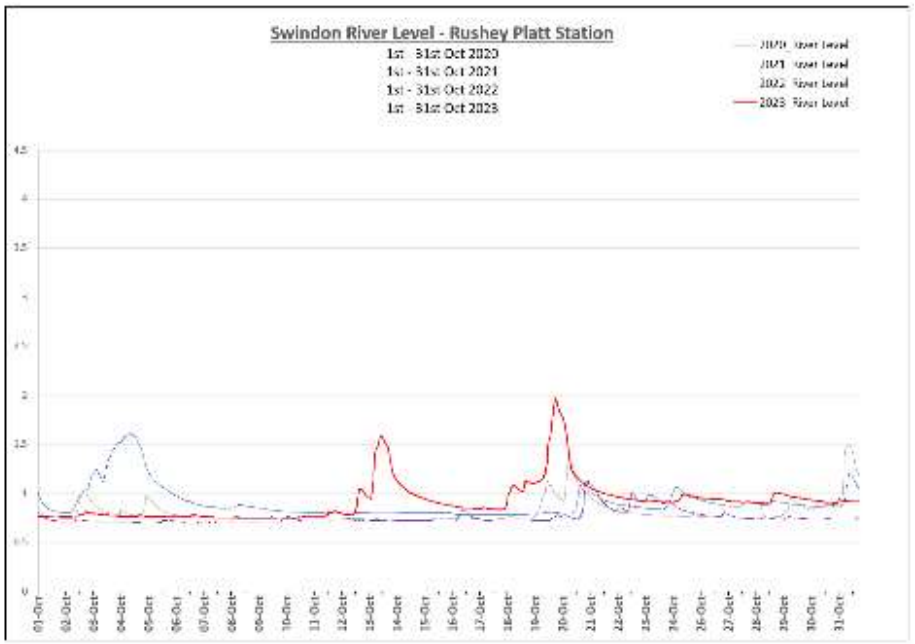


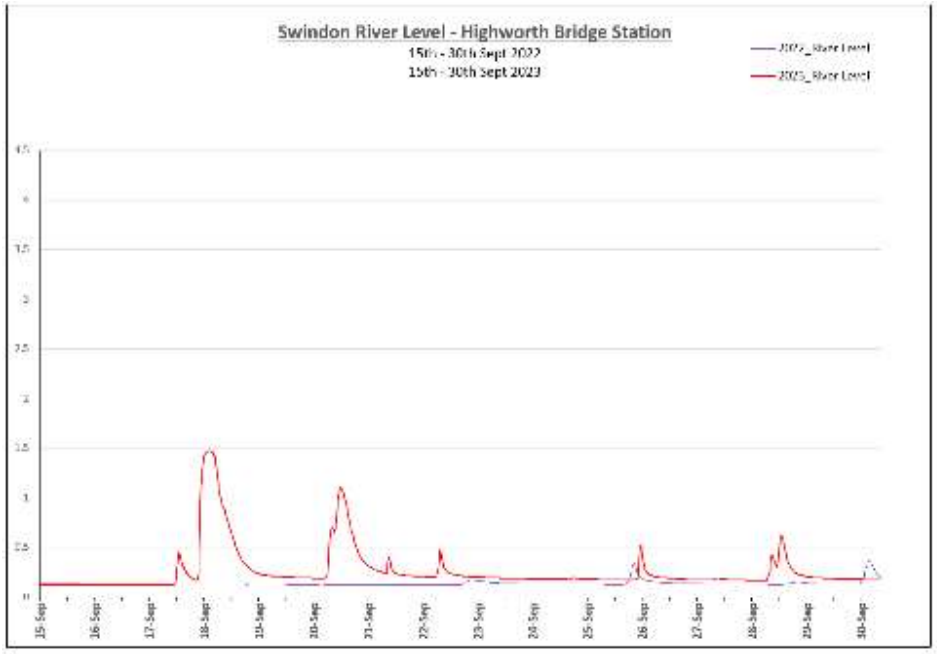


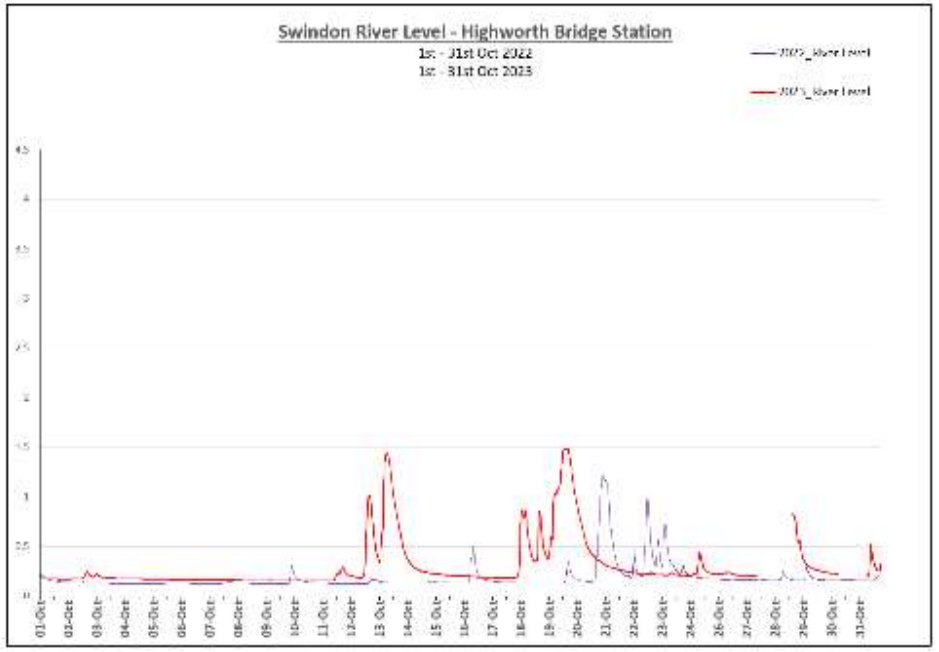

Swindon River Level - RodBourne Station
15th - 30th Sept 2020
15th - 30th Sept 2021
15th - 30th Sept 2022
15th - 30th Sept 2023


Swindon River Level - RodBourne Station
1st - 31st Oct 2020
1st - 31st Oct 2021
1st - 31st Oct 2022
1st - 31st Oct 2023


Swindon River Level - Rushey Platt Station
15th - 30th Sept 2020
15th - 30th Sept 2021
15th - 30th Sept 2022
15th - 30th Sept 2023


Swindon River Level - Rushey Platt Station
1st - 31st Oct 2020
1st - 31st Oct 2021
1st - 31st Oct 2022
1st - 31st Oct 2023


Swindon River Level - Highworth Bridge Station
15th - 30th Sept 2022
15th - 30th Sept 2023


Swindon River Level - Highworth Bridge Station
1st - 31st Oct 2022
1st - 31st Oct 2023