

Coventry Surface Water Management Plan



Revision History

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Executive Summary

Coventry has been affected by surface water flooding during storm events several times since 1998. Current surface water hazard mapping shows a significant number of homes to be at risk of surface water flooding.

The Surface Water Management Plan (SWMP) sets out the long-term plan for reducing the risk of surface water flooding throughout the city, including a methodology for the identification and assessment of risk and options for implementation of risk reduction methods.

The Preliminary Flood Risk Assessment undertaken in 2010 brought together many sources of information to form a single flood hazard map. This flood hazard mapping is updated periodically when new reports are received or when new modelled data is available from the Environment Agency.

The SWMP was written by Coventry City Council's Flood Risk Management and Drainage Team (FRM&D) and reviewed by the partners and stakeholders as the Risk Management Authorities in the region.

This SWMP has identified that more information is needed on flood risk. The options considered by the SWMP include improvements to the existing hazard mapping. Review of existing flood risk and the collation of more data will result in a robust catchment wide approach to surface water flood risk management. This data will expand the currently modelled catchments information.

In support of the Local Flood Risk Management Strategy (LFRMS), other key policy documents have been produced and these form part of the Surface Water Management Plan for the city. This update of the SWMP follows the latest update of the LFRMS which was undertaken in 2022.

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1 Introduction – living document

The 18th Recommendation of the Pitt Report endorsed Surface Water Management Plans (SWMP) as the basis for managing all local surface water flood risk. SWMP's outline the preferred surface water management measures in a given location. In this context surface water flooding describes flooding from sewers, drains, groundwater, runoff from land and ordinary watercourses that occurs as a result of heavy rainfall.

The Council was awarded funding to produce a SWMP as one of 77 local authorities receiving a share of £15 million to produce a SWMP on the basis of the cumulative number of properties deemed to be at risk from surface water flooding.

A SWMP is a framework through which key local partners who have responsibility for surface water and drainage in their area work together to understand the causes of surface water flooding and agree the most cost-effective way of managing surface water flood risk. The Plan should establish long-term actions to manage surface water flood risk and influence future investment, drainage maintenance, public engagement and understanding, land-use planning, emergency planning and future developments.

Under the Flood and Water Management Act 2010 (FWMA), the Council is designated as a Lead Local Flood Authority (LLFA) and as such, has statutory powers and responsibilities for co-ordinating local flood risk management (FRM). The SWMP is a key supporting document for the LLFA to lead on local FRM and fulfilling its statutory role.

The Council's updated Local Flood Risk Management Strategy (LFRMS) establishes an action for the Council to maintain and update the SWMP where necessary. The Plan will be regarded as a living document and updated accordingly, hence being reviewed and reissued every 3 years.

1.1 Legislative Background

Following the 2007 severe flood events, an independent review of the flood-related emergencies that occurred was undertaken by Sir Michael Pitt on behalf of the Government. One of the recommendations endorsed a SWMP as the basis for managing local flood risk. The FWMA revises, modernises and consolidates significant elements of existing legislation covering flooding, including putting into place the recommendations from the Pitt Review, land drainage, coastal erosion, and reservoir safety. The FWMA and Flood Risk Regulations 2009 (FRR) also details how Unitary Authorities have a leadership role in local FRM, with SWMPs providing a key document for local FRM.

The EU Floods Directive has requirements to meet relating to sources of flood risk. By completing flood risk assessments, identifying Flood Risk Areas (FRA) and preparing a SWMP for the Council, these requirements are being met.

1.1.1 Flood and Water Management Act 2010

The FWMA revises, modernises and consolidates existing legislation covering flooding, land drainage, coastal erosion and reservoir safety. It also strengthens and extends existing flood and water legislation including implementing appropriate recommendations from the Pitt Review following the floods of 2007. The FWMA created clearer roles and responsibilities including LLFA roles in managing local flood risk. It also includes a strategic overview role for all flood risk for the Environment Agency (EA) and retains their responsibility for main river flooding. The FWMA requires the EA to 'develop, maintain, apply and monitor a strategy for flood and coastal erosion risk management in England'. The EA's National Flood and Coastal Erosion Risk Management Strategy describes at a high level what needs to be done by all organisations involved in flood and coastal erosion risk management. These include Local Authorities, water and sewerage companies, Highway Authorities and the EA.

Under the FWMA, the Council in its role as LLFA has a duty to:

‘fulfil the requirements of the EU Floods Directive in relation to sources of flood risk by contribution to the completion of preliminary flood risk assessments, the identification of FRAs and preparing Surface Water Management Plans for the city’.

1.1.2 Flood Risk Regulations

The FRR brought into effect in 2009 incorporate the requirements of the European Floods Directive into national law in England and Wales. The FRR are concerned with identifying and taking action in relation to areas with the most significant flood risks across the country. During the first stage of implementation, the Preliminary Flood Risk Assessment (PFRA) was last updated in 2017 and used in support of the LFRMS update, and will be updated itself in 2023.

The Regulations:

- Give responsibility to the EA for the production of PFRAs, flood risk maps, hazard maps and Flood Risk Management Plans (FRMPs) for flood risk from the sea, main rivers and reservoirs.
- Give responsibility to the LLFAs to do the same for all other forms of flooding (excluding sewer flooding), including surface water run-off, groundwater flooding and flooding from ordinary watercourses.
- Require areas of nationally significant risk to be identified, and flood risk maps, hazard maps and management plans to be produced for those areas.

In Coventry, no areas were identified as meeting the significant flood risk criteria as set out by the FRR.

1.1.3 National Planning Policy Framework (NPPF)

The NPPF was updated in 2021 and outlines the core planning principles taking FRM into consideration and highlights the need for effective planning for flood risk infrastructure. The framework emphasizes that flood risk should be included in the environmental assessment of development and that Pre-application engagement and front-loading is essential for developers to understand what is required of them in relation to flood risk assessment, flood mitigation and water management. The framework also includes objectives to minimise the vulnerability to climate change and to manage the risk of flooding. The Planning Practice Guidance (PPG) supports the NPPF and indicates how it should be used in practice.

1.1.4 Coventry’s Local Flood Risk Management Strategy

LLFAs are required under the FWMA to produce a LFRMS consistent with the NFCERMS. It outlines how LLFAs manage surface water, groundwater, ordinary watercourse, and sewer flooding in their area. It is also an important tool to develop understanding of local risks to residents, neighbourhoods, and business communities within Coventry. The LFRMS for Coventry was updated in 2022, featuring a series of actions and objectives prioritised to manage flood risk, including a sustainable approach to FRM.

1.2 Surface Water Flood Risk in Coventry

Within Coventry, the 2011 Strategic Flood Risk Assessment (SFRA) identified approximately 10,600 properties are at risk from surface water flooding alone, not including the number of properties at risk from large fluvial systems in that figure.

In the context of this Plan, surface water flooding or pluvial flooding includes flooding from the drainage network, sewers, highways, ordinary watercourses and ditches.

- Pluvial flooding is defined as flooding that occurs when rainfall cannot soak into the ground, overwhelms the local drainage systems and flows across the ground in both urban and rural settings.

- Sewer flooding occurs when the capacity of Sewerage Undertaker owned underground systems is exceeded, resulting in internal and external flooding of buildings and also Highways. Normal discharge of sewers through outfalls may be impeded by high water levels in receiving waters.
- Watercourse flooding or flooding from small open channels or culverted watercourses occurs when the channel or culvert cannot contain the volume of water entering it.
- Highway flooding is caused when the drainage system capacity is overwhelmed by the amount of water draining into it. Normal discharge of highway drainage through outfalls may be impeded by high water levels in receiving waters and the capacity of downstream sewers being exceeded. This can result in highway drainage overflowing, causing water to pond on the Highway.

2 Aims and Objectives

Aims

- 1. To gain a comprehensive understanding of flood risk from surface water and other sources in the city, for the Council to meet their duties as LLFA.*
- 2. To understand the impact of current and future developments on flood risk and drainage provisions, and to subsequently agree planning mitigation measures.*

Objectives

- 1. Investigate the various sources of flooding which could affect Coventry, taking into account the impacts of other variables such as climate change, population change and increasing development.*
- 2. To identify and prioritise specific areas that are at greatest risk of surface water flooding, in locations with significant drainage problems.*
- 3. Undertake regular communication with partners and stakeholders to raise awareness of the flood risks throughout Coventry, and the ways in which flooding can be mitigated.*

Objectives Achieved:

The previous version of this SWMP outlined four main aims to establish the long-term plan for reducing the risk of surface water throughout the city. One aim outlined a need to pursue collaborative working: *'To establish a collaborative working relationship among partners and stakeholders'*. Collaborative working and co-ordination between partners, neighbouring Risk Management Authorities (RMAs) and stakeholders has been achieved through the Coventry Flood Risk Management Group's (FRMG) a bi-annual meeting of partners to discuss flooding and climate change adaptation. This way of working is encouraged through the LFRMS Aims and Objectives. All partners have embraced collaborative working in line with the duty to co-operate under the Pitt Review and the FWMA.

3 How to use this report

The SWMP production process comprises four main parts as shown on the 'wheel' diagram (figure 1 reproduced from the SWMP Technical Guidance March 2010). These four phases provide the framework to undertake a SWMP with each phase including a chapter that outlines specific processes involved in the Plan. The format of this SWMP will therefore follow these processes.

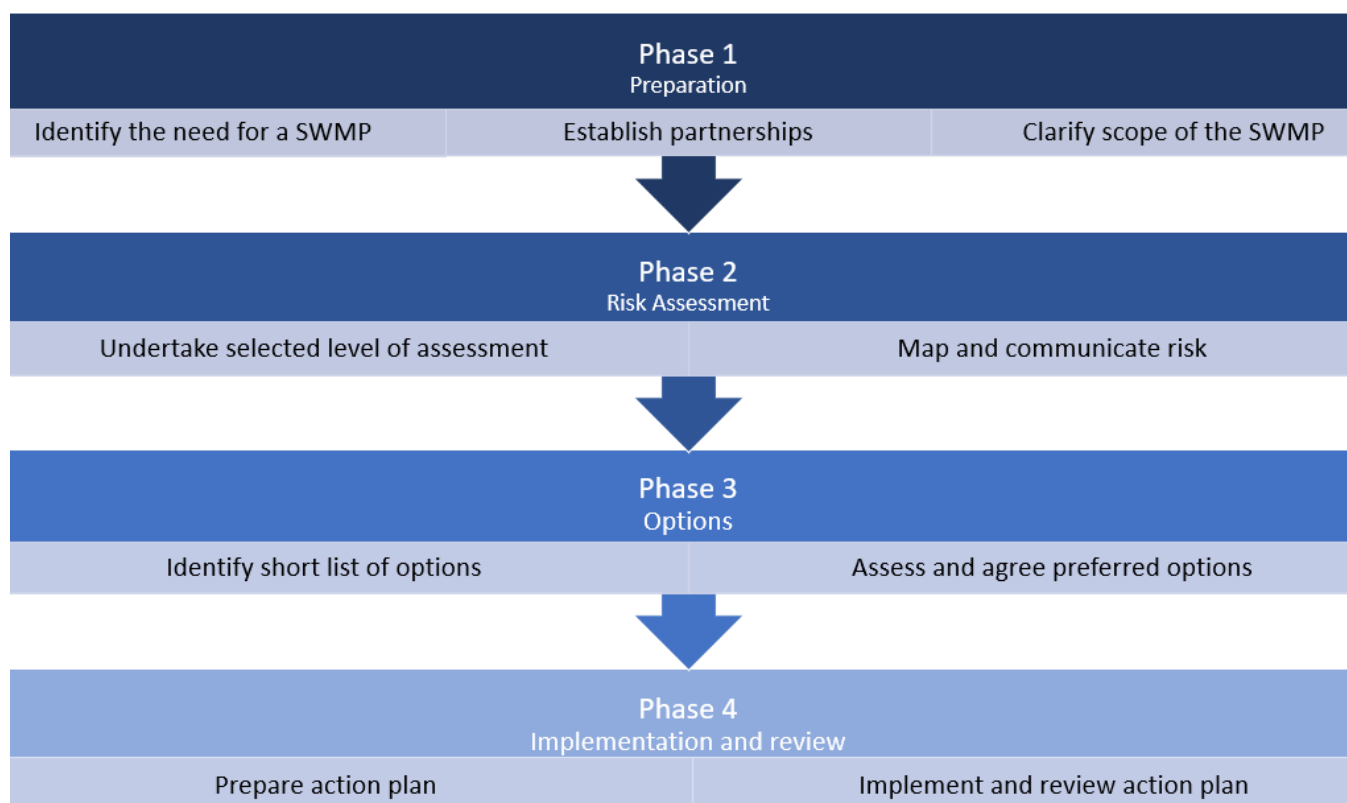


Figure 1 - SWMP Process chart

Preparation stage

The preparation phase of a SWMP focuses on preparing and scoping the requirements of the Plan. Partners should identify the need to undertake a SWMP and once identified, a partnership should be established and partners should work in collaboration to deliver the Plan. The aims and objectives of the study should be established, and in parallel the partnership will also decide how they will engage with stakeholders throughout the SWMP. Based on the defined objectives, current knowledge of surface water flooding, and the availability of information, partners should agree the level of assessment at which the Plan should start.

Risk Assessment

The outputs from the preparation phase will identify which level of risk assessment will form the first stage of the study, which are all detailed below. The outputs from the Strategic, Intermediate and Detailed assessment should be mapped and communicated to all partners.

Strategic assessment: Conducted where little is known about the local flood risks, which focuses on identifying areas more vulnerable to surface water flooding for further study.

Intermediate assessment: Where required, this will identify flood hotspots in the study area, identify 'quick win' mitigation measures, and scope out requirements for a detailed assessment.

Detailed assessment: This level of assessment may be required to enhance the understanding of the probability and consequences of surface water flooding and to test potential mitigation measures in high-risk locations.

Options

In this phase a range of options is identified, through partner engagement, which should alleviate surface water flood risk in the study area. The options should go through a short-listing process to eliminate all that are unfeasible. The remaining options should be developed and tested using a consideration of their relative effectiveness, benefits and costs. The purpose of this assessment is to identify the most appropriate mitigation measures which can be agreed and taken forward to the implementation phase.

Implementation and Review

This phase assists the preparation of an implementation strategy or action plan to deliver the agreed actions and monitor the implementation of these actions. This can be done by developing coordinated delivery programme. Once the options have been implemented, they should be monitored to assess the outcomes and benefits, and where required, the SWMP should be periodically reviewed and updated.

Update

The production or review of the SWMP is heavily influenced by the PFRA and Level 1 and Level 2 SFRA; these documents are updated periodically, at least once every six years. These documents assess the risk and identify key locations at risk; the SWMP collates this information which is subsequently used to create a suitable action plan. At each review of these supporting documents, there is potential for a change in information.

The update of the SWMP follows a chain process of the preparation phase through to the implementation phase, and when the supporting documents are updated, this process needs to be followed through completely to ensure that the SWMP is a comprehensive plan.

3.1 Preparation Stage

Coventry's PFRA was completed in line with the requirements of the FRR which implement the EU Floods Directive in England and Wales. The PFRA is a high-level screening exercise to identify local sources of flood risk. It involved collecting information on historic and future potential floods, assembling it into a preliminary assessment report, and using it to identify FRA which are areas where the risk of flooding is significant. Although no nationally significant areas of flood risk were identified within the city area according to external criteria, the information gathered allowed the Council to identify areas of flood risk that are significant at a local scale.

The PFRA identified areas at high risk from surface water flooding as well as locations requiring hydraulic analysis. There is a large amount of new development planned throughout the city which presents a challenge to the existing drainage infrastructure. It is important that these challenges are management and that opportunities are taken to improve water issues in terms of both quantity and quality. This study provides an in-depth evidence base in relation to flooding issues in the city.

Scope of the study:

Coventry's administrative area covers approximately 98 square kilometres, with the River Sherbourne bisecting the city and the River Sowe flowing northeast to southeast close to the city boundary. These rivers are culverted for significant lengths through the city centre area. The Canley Brook and other tributaries feed into the two main rivers in the south of the city.

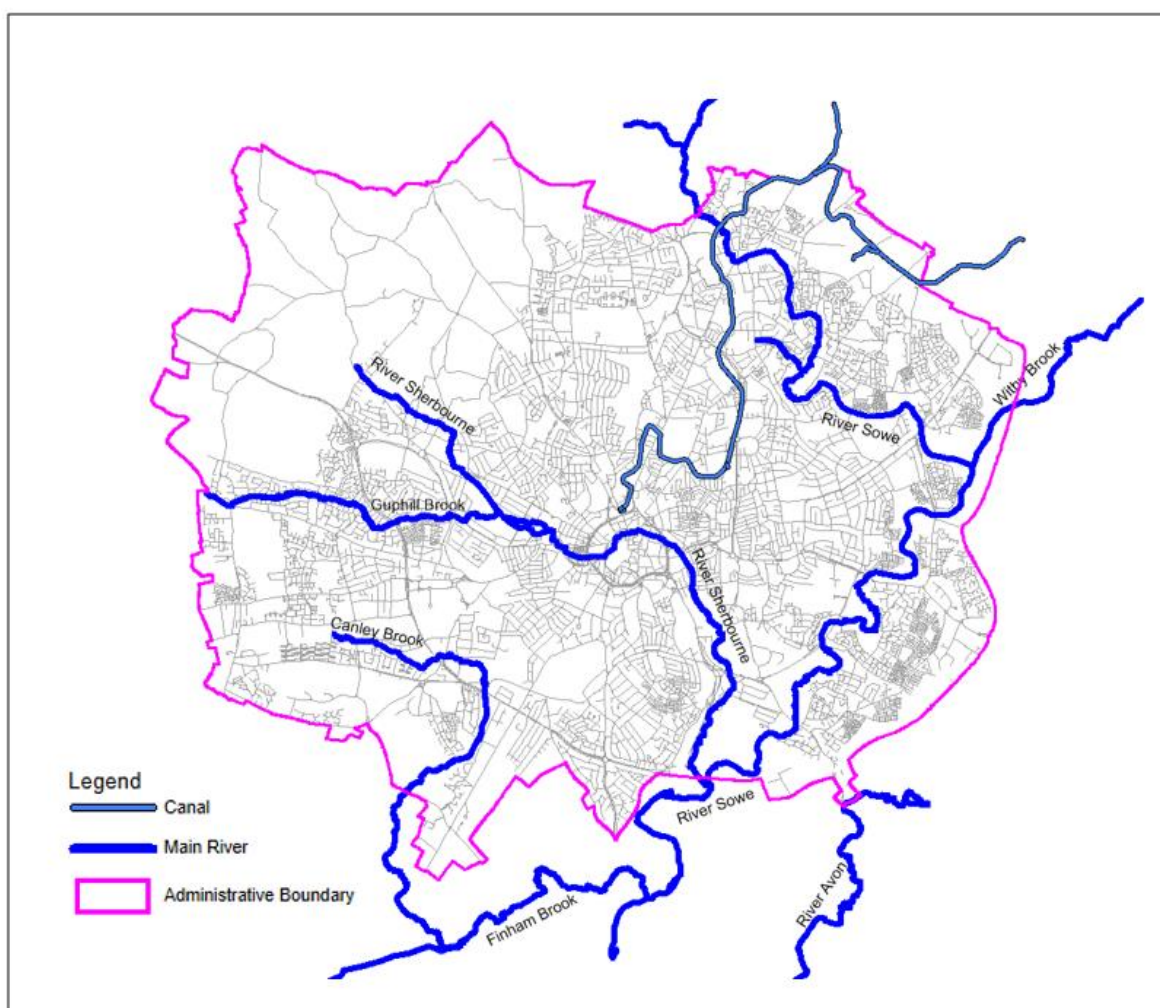


Figure 2 - Main river network in Coventry

The majority of Coventry’s administration area is a combination of flat or undulating terrain, with a few areas that are likely to experience high velocity flows of surface water. Many of the watercourses in Coventry are culverted at various points, particularly those in the centre of Coventry, and these channels have been extensively developed. In many cases, infrastructure has been constructed across the natural flow paths creating barriers which will increase the risk of potential deep ponding. This could cause significant damage to property and possibly a risk to livelihood.

The flat terrain in many areas also means that such areas can be susceptible to widespread shallow flooding as the surface runoff cannot easily drain. Whilst unlikely to pose a serious risk, these areas have the potential to cause minor risk to very large numbers of properties. Flooding in these areas is also often exacerbated by sewer flooding due to the flat gradients of the sewer systems that reduce the capacity of the system to deal with peak rainfall events.

Extent of surface water risk

Overall, approximately 10,600 properties (source : 2011 SFRA) may be at risk from surface water flooding alone, not including the additional risks from large fluvial systems. The sources are sewer flooding, overland flows, highway flooding and flooding from ordinary watercourses.

Some of the risk arises from interactions between sewers and large fluvial systems as combined sewer overflows and surface water outfalls into watercourses. These can be compromised when water levels in the receiving watercourses are too high, leading to a surcharged outfall and resulting in increased risk of flooding in the lower reaches of the sewer network.

Residents at risk from flooding can face high insurance premiums and excesses due to flood risk. The EA and National Flood Forum are working nationally to enable residents to be insured. Flood Re is a joint initiative between the Government and insurers to make flood cover for household insurances more affordable. It is expected to run for 25 years and began in 2015. Flood Re provides a fund for insurers to deliver affordable flood insurance, with cover at a capped price.

3.1.1 Partners

STW and the EA are the two Partner organisations that form the primary external sources of flood risk information available to the Council to use as a RMA. Internal FRM stakeholders include CSW Resilience, Planning (Development Management), Building Control, Highways (Development Management), Greenspaces, Legal Services and Communications team.

Table 1 - Partners Role and Responsibilities

Organisation	Roles and responsibilities
LLFAs (Coventry City Council, Solihull Metropolitan Borough Council, and Warwickshire County Council)	<ul style="list-style-type: none"> • Statutory role to develop, maintain, apply, and monitor a flood risk management strategy in the local area (LFRMS, FWMA and FRR). • Production of supporting documents including the SWMP. • Engage with national policy including the NPPF. • Must carry out works to decrease flood risk in their area. • Must maintain an asset register of all capital projects. • Must investigate significant flooding and publish the results of investigations. • Play a role in emergency planning and recovery after a flood event. • Responsible for addressing drainage and flooding issues on highways and roads, engaging with the relevant sewerage

	<p>company to remove surface water from properties for treatment using public sewers.</p> <ul style="list-style-type: none"> • Must regulate ordinary watercourses (Land Drainage Act 1991). • Work with the EA for Main Rivers to regulate reservoir safety and provide flood warnings. • Statutory role to provide technical advice on surface water drainage to developments and Local Planning Authorities. • Cooperate with other risk management authorities. • Play a role in emergency planning and recovery after flood events (Operational Flood Plan). • Provide a preapplication service- for specialist advice on surface water drainage. • Collaborating with other local RMAs through public consultation and delivery planning
Severn Trent Water Ltd.	<ul style="list-style-type: none"> • Monitors public sewer assets. • Responsibility to provide, improve and extend public sewers to ensure the public area is effectively drained (Section 94 of the WIA 1991). • Monitors performance of sewer systems and reduce the risk of sewer flooding with records on a sewer flood risk register.
Environment Agency	<ul style="list-style-type: none"> • Operational responsibility to manage flood risk from main rivers, reservoirs, and estuaries. • Cooperate with STW regarding river water levels and behaviour of both fluvial and sewer systems at interaction points to improve model accuracy. • Cooperate with the FRM&D team.
Canal and Rivers Trust	<ul style="list-style-type: none"> • Responsible for guardianship and maintenance of 2,000 miles of canal and rivers (includes Coventry Canal and Oxford Canal that run in or nearby Coventry). • Responsible for all assets, liabilities and responsibilities that were transferred from British Waterways in July 2012. • Must disclose information to Council's related to risk of flooding from canals.
National Highways	<ul style="list-style-type: none"> • Plans, designs, and maintains all motorways and major A-roads. • Must cooperate with RMAs with regards to minimising flooding in the wider drainage network and the location of assets.
CSW Resilience	<ul style="list-style-type: none"> • Obligated to produce frameworks for emergency response organisations to plan, prepare and recover from emergencies (Civil Contingencies Act 2004). • Work closely with the FRM&D team, preparing emergency response plans (Operational Flood Plan).
Coventry City Council - Building Control	<ul style="list-style-type: none"> • Enforcing Building Regulations to ensure the health and safety of everyone using commercial and residential infrastructure. • Monitoring and certificating building standards. • Cooperate with STW to inform their decision whether buildings can be built near to sewers.

Coventry City Council - Planning	<ul style="list-style-type: none"> • To liaise with the FRM&D team on specialist advice for planning application team. • Produce planning obligations (required under Section 106 of the 1990 Town and Country Planning Act).
Coventry City Council - Parks and Open Spaces	<ul style="list-style-type: none"> • Liaise with the FRM&D team with regards to the potential use of SuDS and / or the acceptable use of surface water disposal in green spaces.
Coventry City Council - Environmental Legal Services	<ul style="list-style-type: none"> • Engage with documents and inform businesses of the legal requirements in the management of surface water.

Data Sources

The Council, the EA, STW and Warwickshire Wildlife Trust presently have agreements in place to allow records to be shared. This covers mapped data such as the EA's Flood Mapping and STW sewer records. Through being able to access multiple data sources the FRM&D are able to quickly and effectively investigate flood reports and verify flood risk for proposed development sites. A decision was taken at the commencement of the SWMP to base the outputs on a Geographic Information System (GIS) platform. This would enable the indicative flood risk and asset database information to be readily available to assist multi discipline Council teams to achieve the One Coventry goal. In this respect, the data sources have been collated and transferred to the GIS database and will be updated on a periodic basis.

Table 2 - Data sources for the SWMP

Data source	Data description including confidence level.	Coverage	Updates
Environment Agency	Fluvial flood risk maps. Flood Zones 2 & 3.	100%	Quarterly
Environment Agency	Historical risk maps	Available for main rivers	Quarterly
Environment Agency	Pluvial flood risk maps – assess flooding scenarios as a result of rainfall with the following chance of occurring in any given year: <ul style="list-style-type: none"> • 1 in 30 • 1 in 100 • 1 in 1000 They also provide extent, depth, velocity, and hazard data for each flooding scenario	City wide	Maps date from April 2013. Risk of Flooding from Surface Water maps, referred to in EA documentation as the 'updated Flood Map for Surface Water' (uFMfSW)
Environment Agency	The National Receptor Dataset – a spatial dataset which contains several layers categorised into themes of buildings, transport, utilities, land use, agriculture, heritage, environment and miscellaneous	City wide	Maps date from 2011
Environment Agency	Surface elevation data and DTM from LIDAR surveys. Raster elevation model	>88% of England at 1m spatial resolution, with areas flown over and imaged in the last 5 years	Last updated in 2020
Severn Trent Water Ltd	Records of flooding incidents that they are aware of (postcode level only)	City Boundary	The sewer flooding register is an ever-changing register of current known flooding issues that have not yet

			been resolved. (Correct for 2015)
Severn Trent Water Ltd	Drainage asset database covering pipes, manholes etc under STW assets	City wide	Correct for 2013
Coventry City Council	Flooding records – highway, garden, and domestic known flooding incidents	City Boundary Approx. 100% complete	Live data
Coventry City Council	GIS data including historical maps showing areas pre-development, ordnance survey base mapping for intakes, headwalls, and culverted watercourses	City Boundary approx. 75% complete	Live data

3.2 Risk Assessment

For a SWMP, a risk assessment of surface water is required to determine areas at risk. There are three levels of assessment: Strategic, Intermediate, and Detailed. The 2016 SWMP utilised the SFRA Level 1 and 2, as well as the PFRA to identify areas at risk and implement a suitable action plan. In 2022, JBA Consulting (JBA) consulted on the draft Level 1 SFRA for the Council and neighbouring authorities. The PFRA is due its next update in 2023. Although these documents were completed over different time frames, their data supports the SWMP. The SWMP will therefore provide updates on the previous action plan for the areas identified at high risk from the PFRA and options moving forward.

3.2.1 Sources of flood risk

Main Rivers

Main Rivers are usually larger watercourses or streams but include all watercourses of significance that are designated as a Statutory Watercourse by the EA. Flooding from main rivers occurs when a river cannot hold the volume of water that drains into it from the surrounding catchment. Where designated a main river, the EA is responsible for this watercourse and associated flood risk.

Ordinary Watercourse

Watercourses which are not designated as Main Rivers are known as '*ordinary watercourses*' and are the responsibility of the LLFA. They could be any channel that isn't part of the Main River network, a stream, ditch, drain or brook. Under common law, ordinary watercourses maintenance is the responsibility of the riparian landowners. As LLFA, the Council is responsible for flood risk governance in relation to ordinary watercourses within its area.

Surface Water

Surface water flooding can often be amplified by multiple sources of flooding at any one time, including groundwater, overland flow routing and main river flooding. It is often but not exclusively associated with high intensity rainfall and occurs very quickly during or after a heavy rainfall event. This can also occur following a prolonged period of low intensity rainfall when ground conditions are nearing saturation. Surface water flooding is often quite localised and is much more difficult to predict than river flooding, often resulting in limited advanced warning.

Groundwater

Water held within permeable rocks and soils beneath the surface of the ground is known as groundwater. This typically can cause flooding when the water levels rise above the ground or building basement level. Levels of groundwater tend to respond to rainfall at a slower rate than water levels in rivers or on the surface. Groundwater flooding issues associated with increased rainfall patterns due to progressive climate change are becoming increasingly more common.

STW Sewers

Flooding from sewers can be a result of blocked drains or the sewer network being unable to convey all the water flowing into it. This often occurs at the same time as other types of flooding, particularly surface water flooding. Sewer flooding is the responsibility of STW, within their regional admin area. Coventry has an extensive network of sewers that are separated into foul, combined and surface water sewers. Sewer flooding risks arise from:

- Rainfall events of a severity that exceeds the design performance criteria.
- Older sewer systems that do not meet performance requirements.
- Blockages and damage that may occur to a sewer system.
- High water levels in watercourses preventing outfalls from functioning correctly.

- “Urban creep” is a term used to describe the increase in impermeable areas connected to the sewers due to infilling of urban green spaces, the construction of additional driveways, building extensions, conservatories, garages and patios. This can add 25% or more to the areas draining to the sewers and poses a serious risk to properties downstream.

Historical Flood Data

Historical data is critical to understanding where flooding has occurred in the past. As much information as possible is collated on previous flood incidents, where possible including the source, depth, severity and frequency. Partners and stakeholders may hold records of flood data for their drainage assets, although it can often be difficult to discern the cause of flooding, and therefore the cause can be determined during community consultation and household flood surveys to provide additional knowledge including if and how flooding problems may have been rectified. Local historic data such as this is used as a critical source of information in order to understand flood hotspots, as well as how flooding patterns can change over time.

Historical flood records are collated for the Council's GIS which are then transposed electronically onto an OS map with other asset datasets. This assists the FRM&D team to identify and assess frequency, severity and locations of flood risks at different areas, as well informing desktop studies to investigate causes of flood events.

It is important to note that historical data only represents past incidents and does not provide a comprehensive assessment of all likelihoods and consequences of future flooding. It is possible that current records are not a full representation of all properties that have flooded historically or are simply not yet on record.

Case Study: Bowness Close Trash Screen

The Hall Brook is an ordinary watercourse tributary of the River Sowe, and is culverted along much of its length. Through the asset management programme, the LLFA identified a poorly designed screen at the culvert opening, which increased the chances of blockage and consequent flooding. This was observed in May 2018 when the screen blocked, and the brook overtopped onto surrounding highway. Emergency works were required to remove the blockage.



Before



After

Following an external application by the LLFA, funding was secured to replace the screen with one less likely to block, reducing the risk of flooding to an estimated 37 properties.

More frequent and extreme events can cause flooding issues at locations not previously recorded. This increased risk is inevitable due to climate change and mitigation measures must be considered.

Highway drainage

Coventry has approximately 44,000 road gullies with connections into STW owned sewers, Coventry owned dedicated highway drainage systems or directly to waterbodies. Highway flooding can result in drains becoming blocked with debris and where outfalls are overwhelmed, can cause water to either pond on the Highway or emerge from the connecting sewers onto the Highway. Sewer related flooding is dealt with by STW, through reactive jetting and engineering repair works. Where flooding is associated with the highway drainage system, the Council undertake necessary reactive jetting / gully cleansing and engineering repair works on a priority basis.

The performance of the highway drainage system often determines whether properties adjacent to highway flood in heavy rainfall events. The highway drainage system may be compromised in a number of ways that increases the flood risk as follows:

- Gully grates becoming blocked by leaf litter or the gully chamber filling with silt from the road surface.
- The gully pipework connections may fail either due to collapse or root ingress.
- The Highway drainage system is designed to drain the adopted Highway areas only however in some instances, it has been determined that frontage developments or driveways off the Highway slope towards the footway / verge / road but do not have any intercepting drainage system to prevent flows entering the dedicated highway drainage system. In some cases this can cause overloading of this highway drainage. Under Section 163 of the Highways Act 1980¹, the Local Authority may take action to prevent water flowing directly onto the Public Highway

Case Study: Binley Road

Binley Road is an area that has been subject to flooding in the past. As part of the Binley Road Cycleway Scheme, gullies have been added in areas identified as low spots where localised flooding reoccurs.



Asset information

The asset information relating to the condition, capacity and dimensions of drainage systems operated and maintained by STW is generally informative, although there are some gaps in this knowledge following the vestment of lateral drains with STW. Information regarding highway drainage assets regulated by the Council has been developed since the last SWMP, as the Council has been building its asset register of this information to develop a more detailed data set. This has been shared with partners for the updated SFRA. The Council plans to continue the delivery of a comprehensive programme of work to grow the asset database and also identify any shortfalls in performance and reduce the risk of flooding, where achievable.

3.2.2 Specific areas of flood risk

The PFRA identified the following sites to be “areas within Coventry which are most susceptible to surface water flooding.” Since the publication of the PFRA, work has progressed to better understand the flood risk at these locations and this data has been included here.

- City Centre
 - Due to the high density of businesses and offices, widespread flooding would result in significant damages.
- Sherbourne Fields
 - Located adjacent to a flood plain area of the River Sherbourne at a low topographical location within the residential area.
- Kingfield Road
 - Highway flooding which in severe cases can result in internal flooding. This is a complex case with multiple sources of flooding.
- Bennetts Road
 - Highway flooding due to the topography of the area as well as culvert flooding.
- Hen Lane
 - Surface water flooding occurs underneath the railway bridge due to the gradient of the highway and it is believed that the local drainage systems are overwhelmed during intense rainfall events.
- Duggins Lane
 - Surface water accumulates both sides of the highway.

Future Project: The Riddings

The Riddings is a future project in the southwest of Coventry. Historical flooding is known to affect 3 properties in this location, and there are a further 19 properties at risk from overland flows that originate in the ordinary watercourse that runs to the rear of Ainsbury Road. The watercourse has a known restriction on the channel which is compounding issues. The area is also at high risk from Main River flooding.

Options for consideration in the Business Case will include Upstream Storage, Increased Watercourse Capacity and Property Flood Resilience. If the Business Case is accepted, then this will be ranked against the national competing priorities for funding in the current six-year programme.



3.3 Options

The Council continue to produce drainage schemes as part of the Capital Works Programme, reducing flood risk to many properties and improving highway drainage features.

Data has been gathered through improved flood incident recording and asset inspections.

Investigations into flood events have also improved the knowledge of Flood Risk throughout the city.

Table 3 - Table of Actions

Option	Timescale	Stakeholders
Asset Register	On-going programme of CCTV surveys and logging of assets	CCC
Planned Maintenance For Highway Drainage	On-going capital works programme including city wide gulley repairs	CCC
Reactive Maintenance For Highway Drainage	On-going commitment to cyclic cleansing and to reactive cleansing, responding to flood incidences either by clearing screens and delivering sandbags, where possible	CCC
Hazard Mapping	A living document supported through data gathering and improvements in flood models. The Hazard mapping will develop greater confidence levels in data.	CCC EA
Areas of Critical Drainage Problems	A living document highlighting areas with critical drainage problems as identified by the on-going Hazard Mapping work and other data sources	CCC
SuDS Policy and Design Guide	The LLFA is statutory consultee on the management of surface water and groundwater as part of the planning permission process. This includes the assignment of robust planning conditions and the assessment of drainage solutions allowing for the promotion of SuDS to reduce flood risk.	CCC
Community Engagement Plan	This plan supplements the LFRMS and forms a strategy for public engagement for subsequent years.	CCC
Flood Register	The flood register continues to be populated and data gathered for future events will be more detailed.	CCC
External Funding Bids	Partners will work together to deliver robust business cases to bid for Flood Defence Grant in Aid and Local Levy funding to develop and deliver FRM Schemes.	CCC EA STW WWT

3.3.1 Ongoing Actions

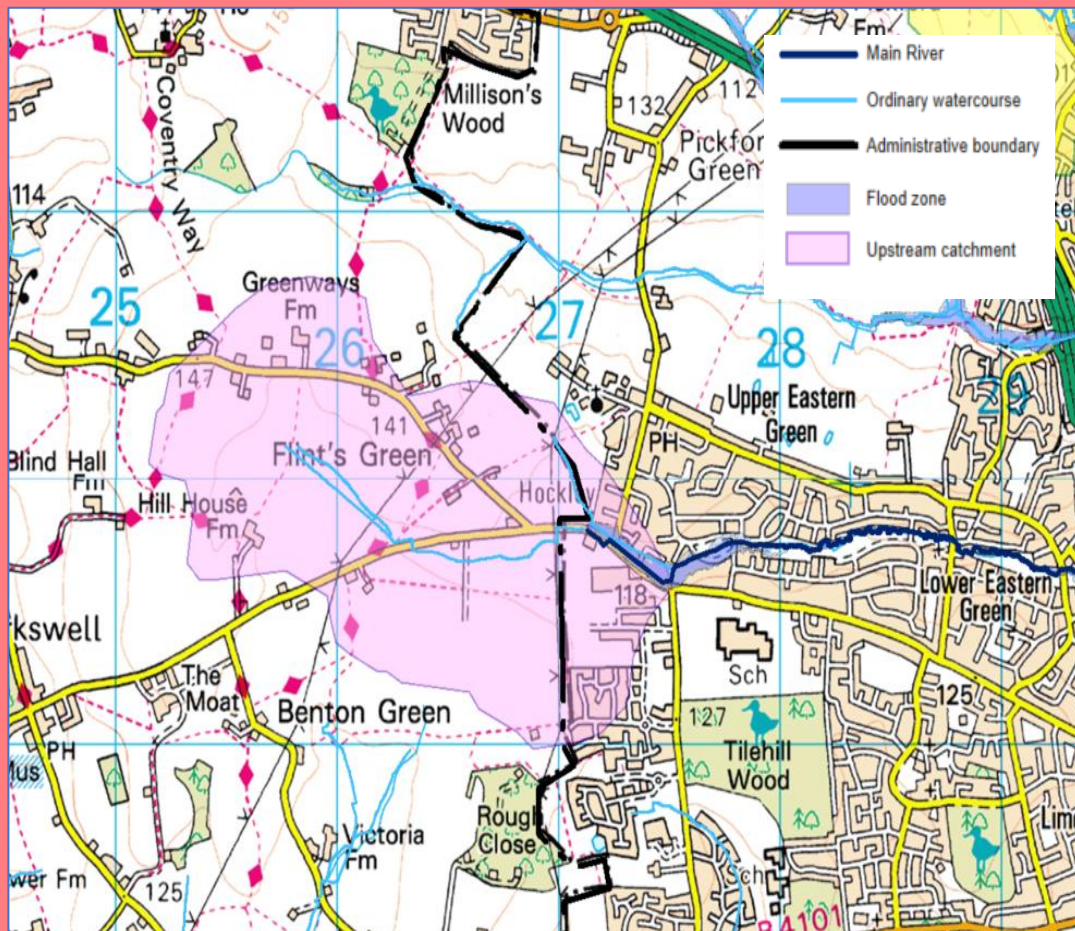
Engage with professional partners to develop flood alleviation schemes

The 15th Recommendation of the Pitt Review is a requirement for all LLFAs to work with all interested parties to positively tackle local flooding issues, establish ownership and legal responsibility. This was transposed into the FWMA.

The annual capital works programme delivers drainage repairs within the Council's admin area. This programme is an on-going list of prioritised projects deliverable according to annual funding allocations. Collaborative working with Risk Management Authorities (EA, neighbouring LLFAs, STW and the National Highways) is achieved through the Coventry FRMG and other partnership meetings. All partners have embraced collaborative working in line with the duty to co-operate under the FWMA.

Future Project: Brookstray Flood Alleviation Scheme

The Brookstray flows into the River Sherbourne to the east of the City Centre. In Eastern Green, it flows beside Broad Lane before passing under the road through a culvert at the junction of Banner Lane. Flooding occurs regularly due to a combination of factors; associated with intensity and duration of rainfall, river channel and sewer and drainage capacity. Approximately homes are at increased risk of flooding.



To reduce the risk of flooding, the most viable solution is upstream catchment slowing-the-flow and flow reduction. Collaborative working between RMAs to achieve this is required at a number of levels.

Funding has been secured for a flood alleviation scheme and includes NFM and Property Flood Resilience (PFR), This project has been developed in partnership with the EA and Warwickshire Wildlife Trust, and collaboration with Solihull Metropolitan Borough Council.

Following a successful Business Case, project delivery is aimed for Spring 2024.



The image above shows leaky barriers being installed as part of the Brookstray NFM measures.

Planning and Development Controls

The Coventry SFRA was most recently published in 2015 and outlined key requirements for surface water management, providing a framework for future flood risk analysis, including sources of fluvial, surface water and groundwater, sewer, and reservoir flooding. These requirements place emphasis on developments to manage surface water locally and minimise the risk to properties on site or downstream. The requirements enable future developments to be more sustainable, consequently having a lower impact on existing drainage systems and flood risk. The SFRA also includes potential solutions to minimise flood risk, such as the introduction of SuDS and the re-naturalisation of watercourses.

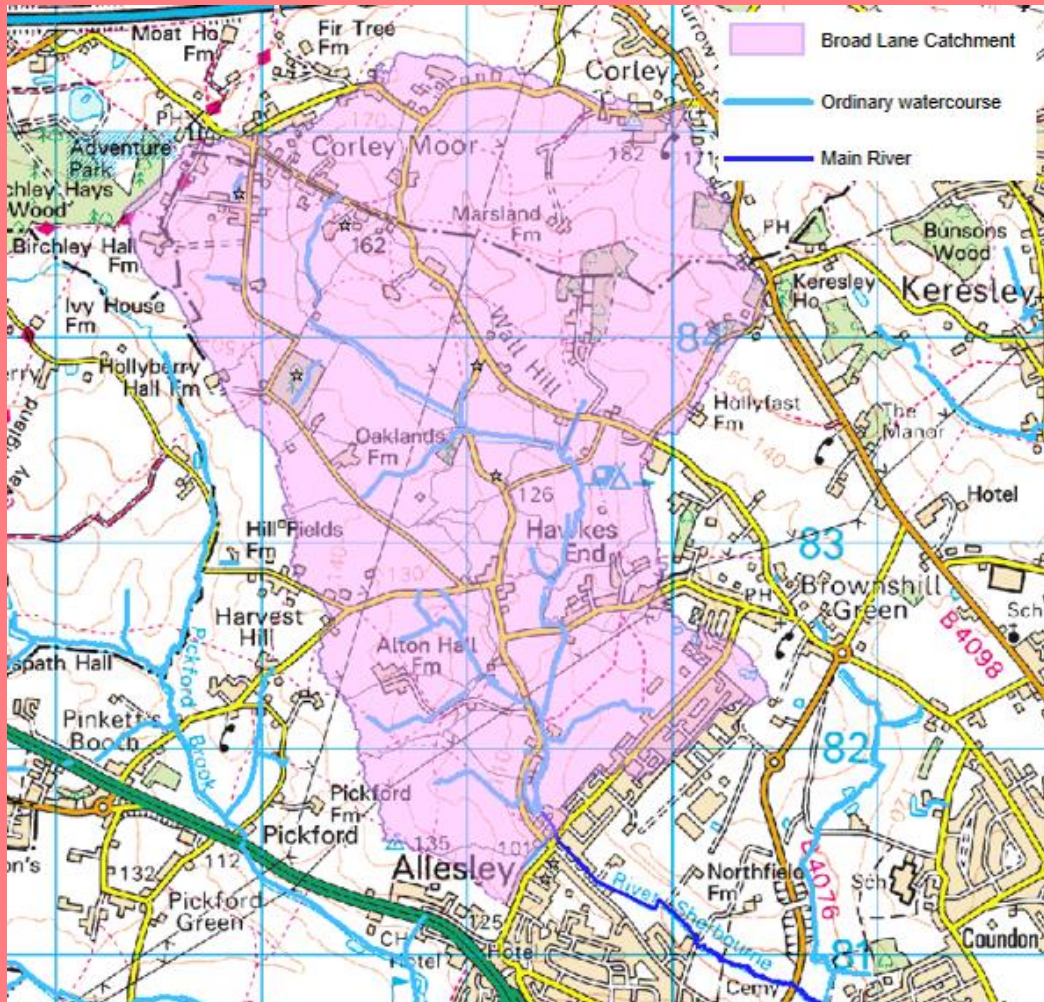
The following requirements were featured in the SFRA and form a framework with the LFRMS and SWMP.

- All sites (including Flood Zone 1) will be considered as Qbar greenfield, even those that were previously developed.
- All flood flows will need to be controlled through SuDS to Qbar, for all storm events up to the 100 year + climate change event.
- All SuDS features must deliver improvements in water quality and reduced peak flow volumes.
- All developments and redevelopments must seek to not culvert watercourses within site and where possible restore culverts to a natural water course status.
- All new developments will require an appropriately scaled Flood Risk Assessment.

In 2022 JBA consulted on the draft Level 1 SFRA for the Council and neighbouring authorities and will be published in 2023.

Future Project: Allesley Flood Alleviation Scheme

The Allesley Flood Alleviation Scheme project is a collaboration with WWT and the EA, aiming to deliver flood risk reduction through the utilisation of NFM, further supported by capital drainage works and PFR measures.



The dominant source of flooding in the area is the River Sherbourne, which flows through Allesley alongside Washbrook Lane and Butt Lane. NFM helps to slow and attenuate flood peaks, therefore reducing the likelihood of flooding to at risk communities downstream, whilst restoring floodplain connectivity as it mimics natural processes.

The Allesley scheme will see 43 homes and businesses better protected from flooding, predominantly using PFR measures and NFM. Over 50 leaky barriers have already been installed, along with 5 retention pools, 70 trees and over 1500m of hedgerow has been planted.

Asset Register

A programme of surveying the significant drainage assets is being undertaken to identify assets and locate them on the mapped database. The survey programme is necessarily limited by the access to the drainage assets as follows:

- Permission to access land outside the ownership of the Council will be required
- Vegetation may need to be cleared in order to provide adequate and safe access to the asset
- For assets under carriageways, access to these must include suitable traffic management
- Debris and accumulated silt may need to be removed prior to undertaking CCTV surveys of highway drains and culverted watercourses.

Case Study: Canberra Road

The Council was made aware of the high flood risk associated with the Trash Screen at the rear of Canberra Road following the 2016 publication of the LFRMS. The old Trash Screen consisted of vertical bars against a brick culvert, overlaid with concrete slabs, which when impeded with the accumulation of debris, flow into the culvert was significantly reduced, causing water levels to rise and exceed the channel capacity. The culvert was constructed sometime in the 1960's, to facilitate the housing development.

Over the Christmas period of 2017, following a heavy rainfall event, the trash screen became blocked and caused external flooding to a large number of properties in Canberra Road.

The Trash Screen was replaced in 2020 with a new Screen designed to minimise the risk of blockage, resulting in 28 properties being better protected from flooding. The work included an extension of the culvert, constructing retaining walls and a new Trash Screen, which totalled approximately £66,000.

Before



After



This project followed the successful Bowness Close Trash Screen Replacement project delivered by the Council in 2018. These projects have provided a framework for a review of other trash screens within Coventry, which is anticipated to result in further similar projects in the future.

3.3.2 Planned Maintenance

The philosophy behind the planned maintenance regime should be to minimise the flood risk from all sources. At the present time, there are many discrete flood risk areas shown on the 'Risk of Flooding from Surface Water' (ROFSW) however many of these lie within private properties and the flood paths are outside the control of the Council. The flood risk to many other areas might be reduced through a planned maintenance regime that interrupts the source-pathway-receptor mechanism (how a hazard progresses from its source, via a route to a potential consequence, e.g. an entity that may be harmed), preventing flooding of a property from a particular source.

The most practical and efficient ways in which the Council can act to manage the flooding risk at the present level and / or reduce this where possible are:

- Encouraging a reduction in the run-off from development areas,
- Ensuring the maintenance of appropriate flood relief pathways and intercepting features to convey floodwater away from vulnerable properties.

Historic work has tended to be reactive in response to service requests rather than being based on an overarching FRM strategy. The SWMP aims to guide work away from being predominantly reactive and instead move to deliver intelligent and directed maintenance with minimal intervention.

Some examples of how this would be achieved are:

- Using the asset records and survey information, where available, to schedule work to manage intakes, outfalls and other flood defence features with a priority list being established based upon the consequences of failure or under-performance of an asset.
- Planned maintenance to substantially repair or replace failing assets including intakes, outfalls. Improvements to flood defence assets could also include measures to enable remote monitoring of performance, such as water level gauges with a telemetry link to a mobile phone or a central control. These devices can be used to identify when a critical trash screen is becoming blocked or where the onset of 'out of bank' flows is imminent.

3.3.3 Highway Drainage Maintenance

The clearing of the gullies needs to be efficient and well planned, and coordinated with STW who are the surface water sewer asset owner. Schedules should also be aligned with street cleansing to reduce the frequency of blockages from leaf litter and other debris. Issues will be investigated when gullies become blocked in order to establish the theme and nature of the problem, and if it requires further intervention. The Council now uses a specialist system to deliver a more intelligent gully cleansing service that helps target resources to priority areas of the Highway network.

3.3.4 Reactive maintenance and emergency response

LLFA responsibility requires the Council to actively manage the flood risk within Coventry and some of this work would inevitably involve reacting to forecasts of severe rainfall that may affect the flood risk to properties or critical infrastructure. The FRM&D team currently does not operate or maintain a 24-hour callout facility, but the Council does have an "Out of Hours" response service to assist those subject to flooding. Historically, reported incidents also include collapsed highway culverts, blocked trash screens and grills, property flooding and debris in watercourses.

Emergency reactive works includes:

- Check and clear trash screens in advance of forecast heavy rainfall.
- Responding to reports of pollution incidents in watercourses.

- Responding to reports of fly-tipping affecting a drainage or flood-defence asset including removal of the debris.
- Coordination of other parties to manage a flooding incident.
- Surveys of flooded areas.
- Works to investigate the cause of the flooding incident and suggest mitigation measures to reduce the likelihood of recurrence.

Further information on the response of the Council is outlined in the Operational Flood Plan. This document also signposts the Council's sandbag policy. The sandbag policy outlines the circumstances for the Council to distribute sandbags to residents.



Effective deployment of sandbags on Butt Lane, Allesley

3.3.5 Hazard Mapping

Under the FRR, LLFAs need to produce flood hazard and risk maps where appropriate. A detailed assessment of flood risk within Coventry is contained in the PFRA and is the basis for the live hazard mapping document held by the Council. The Council now has a mapped database which shows flood risk from different sources. This data is based on a national mapping exercise undertaken by the EA, these flood maps do not take into account local drainage systems, however. The capacity and performance of the drainage assets should be assessed to investigate and ascertain where flooding might occur either because surface water cannot enter the drainage network or where water leaves the network due to a reduction in capacity and localised blockage scenarios. The amount of flooding at the various surface water network junctions may then be considered in its own right to assess whether this accumulates or flows overland towards vulnerable properties. The hydraulic assessment could require the use of detailed ground models and contemporary flood risk simulation software therefore, it is likely that this phase of work where internal resources are limited this would be undertaken by external consultants.

Utilising flow monitors and localised rainfall data, areas of risk can be mapped and linked to rainfall data. This will allow predictions of where flooding could occur during an event. This will act as an early warning system to allow the Council to respond with targeted clearance and inspections.

3.3.6 Significant Drainage Problems

Using indicative mapping showing predicted surface water flooding issues, the FRM&D team will be able to assist in the identification of areas with significant drainage problems. These are areas outside the fluvial Flood Zones 2 and 3 which are at risk of flooding from other sources. Through the identification of these areas, it will be necessary for developers to produce appropriately scaled Flood Risk Assessments which include the potential surface water, sewer and land drainage issues at the site. Identifying areas with significant drainage problems will also highlight inlet structures and culverts which are critical in reducing local flood risk.

3.3.7 Flood Investigation and Allocation of Responsibility

The LLFA investigates all flood incidents reported on a priority basis, investigations which follow a set format. The investigations start with initial desktop studies of the area flooded. Following these, site investigations are conducted and partners are informed and engaged as appropriate. Once the evidence has been gathered, responsibility for the flooding is assigned. The Council conducts formal investigations in line with S19 of the FWMA when the incident exceeds the thresholds below:

Table 4 - S19 Criteria

Significant harmful consequences' defined as greater than...	Description
200 people or	<i>Flooded to a depth of 0.3m during a rainfall event with a 1 in 200 chance of occurring (or 0.5%)</i>
20 businesses or	
1 critical service	

The LLFA is not obliged under the FWMA to resolve the flooding, however they will investigate the cause and assign responsibility to any relevant authority or individual. The LLFA will seek to conduct informal investigations on all flood events where appropriate. These informal investigations will be shared with the other relevant RMAs and their resulting action plans will be shared with the LLFA.

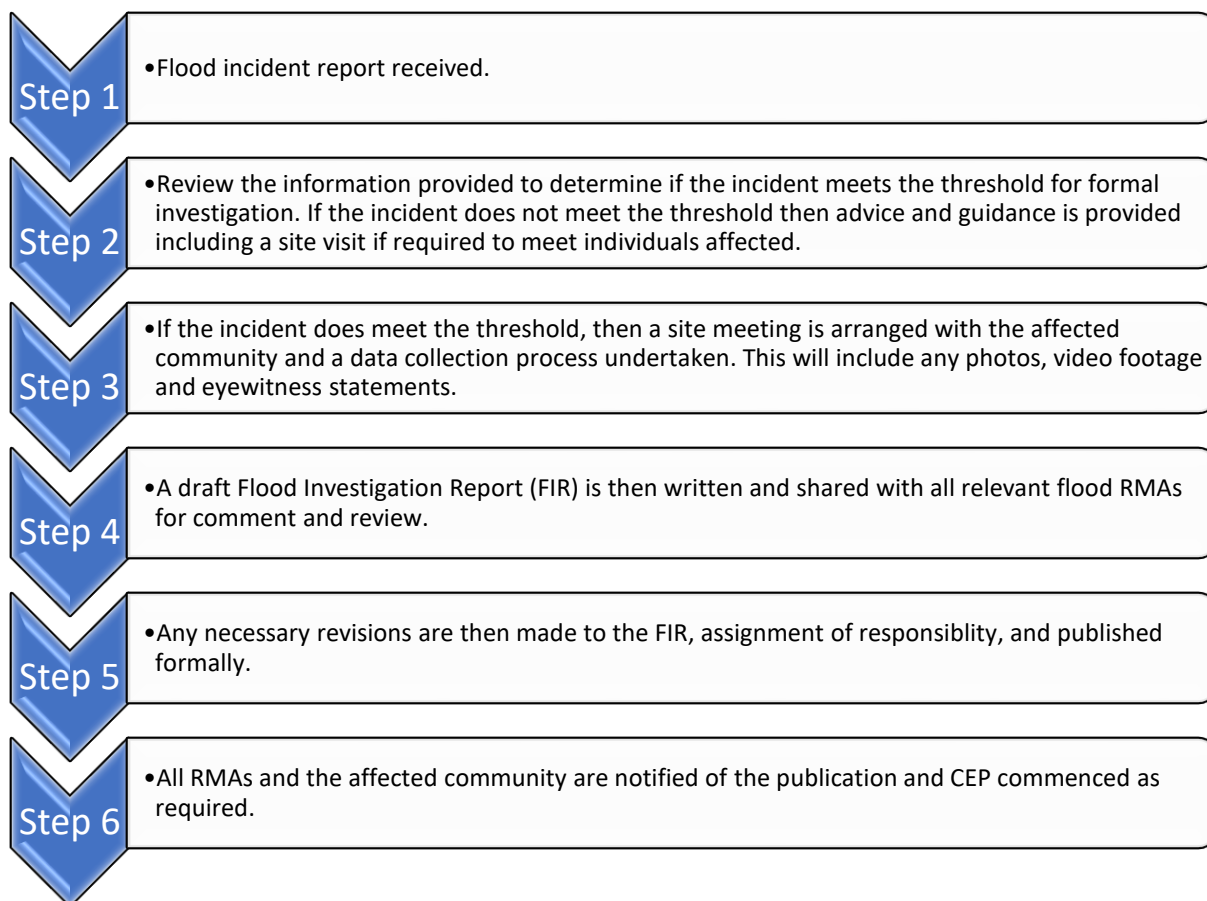


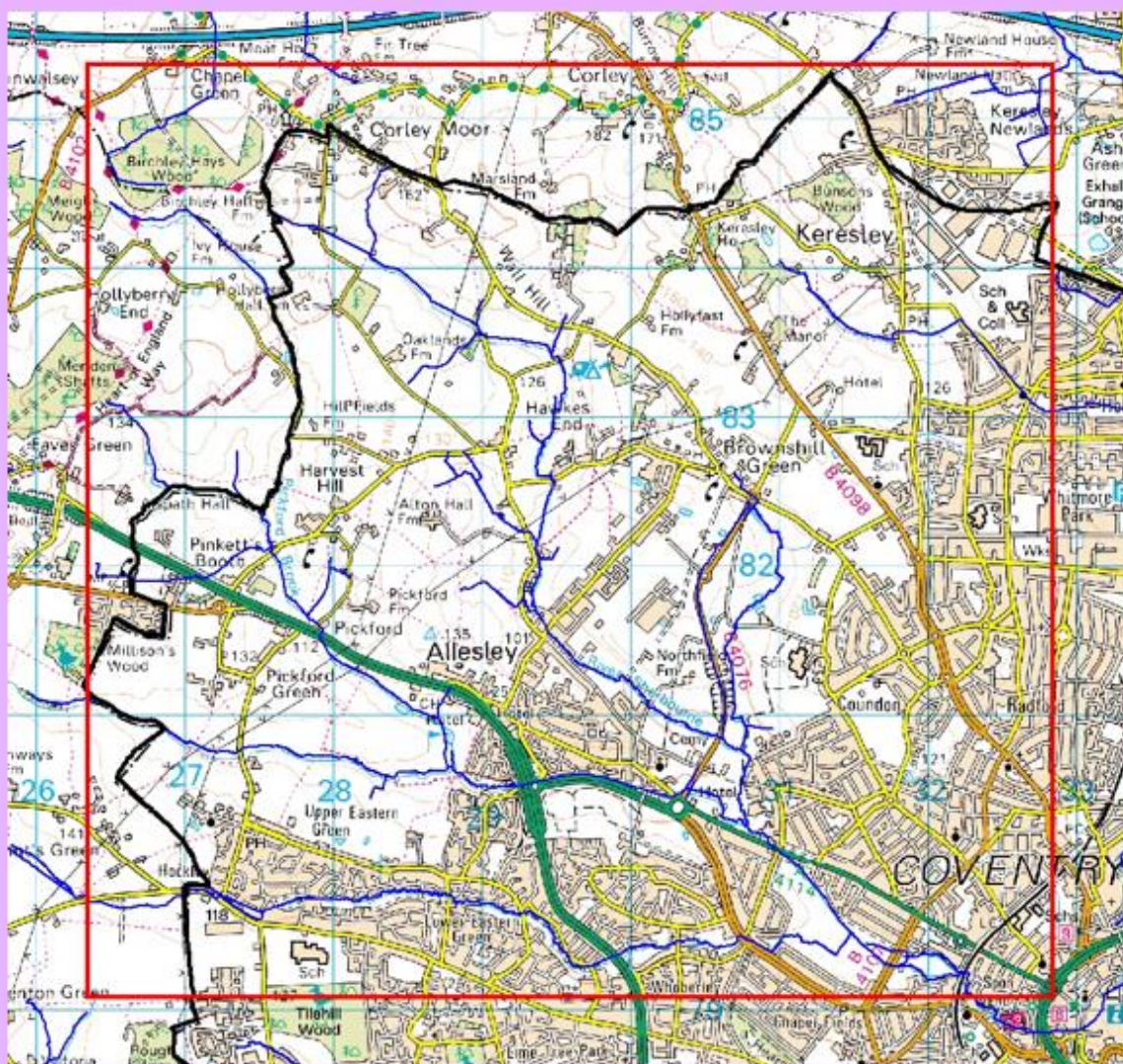
Figure 3 - Step by step guide of the process for Formal Investigations

Internal flooding is defined as flood water which enters a building; it can also be flooding that passes below a suspended floor. For these purposes, 'living accommodation' refers to domestic dwellings and not gardens or outbuildings such as sheds, garages etc.

Close proximity is where it is reasonable to assume that the affected properties were all flooding from the same source or the same interaction of sources.

Case Study: Bablake Ward Development Management

It is likely that over the next few years, a large amount of new development will occur in the Northwest of the city, which is an area identified for future economic growth. Although crucial to the city's sustainability, the topography of the area falling towards the city increases flood risk and the necessity of surface water management. Managed urbanisation can cause an increase in the flood risk downstream. Mitigation works employed on new developments should be monitored closely to ensure adequate functionality. This work needs to identify the surface water flood risk this development will create and should identify strategic flood risk and surface water management solutions to facilitate sustainable development.



3.3.8 Floods Register & Database

As identified earlier in this document the logging of historic flood reports had been inconsistent. To ensure that all floods are logged in the same manner the FRM&D Team have developed a form for data collection for these occasions. Strengthening the existing data capture systems to identify themes and issues either for the Council or other RMAs to address. The team will also log the results of any investigations in GIS so that the reports can be mapped by source.

3.4 Future Actions

3.4.1 SuDS Design Guide

As an outcome of the Sustainable Drainage consultation in 2014, the ministerial decision was that Local Planning Authorities (LPAs) will approve sustainable drainage solutions similar to all other elements of building projects. The LLFA is statutory consultee on the management of surface water for major development and non-statutory consultee and technical advisor to the LPA for minor development. This includes assessment of drainage solutions allowing for the promotion of SuDS to reduce flood risk.

The implementation of SuDS is critical to deliver managed run off from all new and re-development sites, to ensure that new or re-developments do not increase flood risk to the site, off site and may mitigate existing flood risk issues. SuDS also help to deliver improved water quality, water quantity, potential habitat improvements and enhancement of amenity value. This will ensure the Council complies with the Water Environment Regulations (WER).

The Council's guide will be published in 2023, and documents specific SuDS requirements in the city of Coventry, and outlines maintenance requirements.

The guide highlights the need for new developments to include and incorporate effective surface water management strategies to help with the management of surface water flooding.

3.4.2 Community Engagement Plan

An action for the Council from the LFRMS 2015 was to develop a Community Engagement Plan (CEP) to achieve the strategy's objectives and support effective community engagement in the city. The CEP sets out objectives for involving the community in helping reduce local flood risk and increase flood resilience across the city. The CEP is to work in conjunction with existing policy and will be a living document.

CEP Objectives:

- *Actively encourage community involvement*
- *Be transparent in the decision-making process*
- *Use information*
- *Build sustainable relationships with communities*
- *Make communication accessible*
- *Encourage community resilience to local flood risk*

A publication date for the Community Engagement Plan will be on the Council's website.

3.4.3 SuDS Retrofit

SuDS should be retrofitted throughout the city where possible. The Council will be looking to deliver retrofit programmes throughout the city. These programmes will ensure that where there are known flooding or system capacity issues the flows are managed down both within highway and within development. This management should include the use of water storage to balance flows and reduce the peak discharges from domestic and commercial properties.

3.4.4 Paving Front Gardens

The historic drainage systems within the city were not designed to cope with ever increasing rainfall due to climate change and are under significant pressure from the rainfall volume draining into them. Paved front gardens increases further the additional rainwater entering the drainage system instead of infiltrating into the soil naturally where not paved. Where additional driveway space is permitted, then permeable paved driveway construction is encouraged. Permeable driveways include using gravel, reinforced grass, permeable hard surfaces with a permeable sub-base, rain gardens or drainage to soakaways. Impermeable paving raises pollution concerns where areas of hard standing collect pollutants such as oils, petrol, and brake dust, which are then washed into the drainage system. Encouraging the use of porous surfaces for paving front gardens is a city-wide interest throughout Coventry.

The Council encourages the implementation of SuDS including permeable paving, as outlined in Council Policy and can be viewed on the Councils website.

The Council are collaborating with partners to increase the uptake of permeable paving materials throughout the city, including working with the EA and STW.

Further information can be found on the Council's website:

<https://www.coventry.gov.uk/permeablepaving>

4 Specific Sites at risk

The Coventry PFRA identified the following sites to be “...areas within Coventry which are most susceptible to surface water flooding.” Since the publication of the PFRA work has progressed to better understand the flood risk at these locations.

4.1 City Centre

The city centre is the heart of Coventry with high densities of businesses and offices. It generally has no major flow paths that could result in deep, fast flowing water but the existence of undulating terrain, basements, under storey car park means that during intense rainfall, some flooding at those underground zones might occur. Widespread flooding could result in significant damages to business and private properties. Improvements continue to be made and a regime of cyclic cleansing and inspections target resources where needed.

4.2 Kingfield Road

Council flood records shows that there have been more than 6 historical flood events at 74-86 Kingfield Road since 1980.

Flooding occurs in the highway and in extreme circumstances can enter private property. Investigations suggest that the water is arriving from multiple sources.

- The Springfield Brook culvert runs across the highway at this location.
- The Severn Trent Water Surface Water sewer network has 2 discharges into the Springfield Brook Culvert.
- The topography of the surrounding area channels surface water onto the highway at this location.



Figure 4 - Flooding of Kingfield Road

The exact mechanism of the flooding is unclear and is likely to be due to the interaction of all three sources of flow. Further study is required in partnership with STW to better understand this flooding. An assessment of risk and a future business case is being considered.

4.3 Sherbourne Fields

Sherbourne Fields School is located adjacent to a floodplain area of River Sherbourne to the West of the city centre. It is at the lower end of a gentle sloping hill within a residential area. Tiverton School and Kingsbury Road experience sewer flooding in 2001.

There is localised surface water flooding to Sherbourne Fields School and the neighbouring residential properties, including The Poplars. Properties to the south of Holyhead Road are shown to be at risk on the EA's ROFSW mapping from overland flow routing, and the cause of this is being investigated.

4.4 Bennetts Road

Council flood record shows that there have been four historical flood events at Watery Lane and Penny Park Lane since 1980.

Penny Park Lane and the school are located within lower end catchment zone with flat gradient. At this area, relatively shallow depths of surface water are likely to cause traffic problems and pedestrian access for school children could become difficult.

Flooding also regularly occurs on Bennetts Road approximately 200m north of the junction with Fivefield Road. This flooding is caused by the poor repair of a culvert running under private properties and the highway. Work to improve the highway drainage has already been undertaken and further measures continue to be investigated to improve the flood risk to this site. It is believed that there is a historical connection from the Bennetts Road Culvert to Watery Lane however it is unclear if this connection still exists across Prologis Park.

The location that frequently floods is in a depression in the topography of the wider landscape, and as a consequence, runoff is directed there. CCTV surveys have revealed that the culverts and drainage assets in the area are damaged and in poor condition. A recent scheme to restore the culvert and approach channel has been implemented, and as a result, there has been a reduction from 14 dwellings at significant or very significant risk down to no more than 3 properties at risk. Further works are being undertaken in the area to ensure that the flood risk remains minimal and to provide more robust measures.

Additional developments are being constructed in the area, and future phases to a Flood Alleviation Scheme are being considered to manage the greater volume of runoff that will result from the developments.

4.5 Hen Lane

Council flood record shows that there have been 5 historical highway flood events at Hen Lane since 1980. The flooding takes the form of an accumulation of water underneath the railway bridge close to the junction with Winding House Lane. The Wyblynd Brook runs along Hen Lane at this location and is the receptor for all surface water drainage. It is likely that the 900mm culvert is running at full capacity in high intensity rainfall events. It is unclear whether the main cause of the flooding is surcharge from the culvert, surcharge from public sewers unable to discharge to the culvert or inefficient highway drainage causing a build-up of water on the surface.

Due to the moderate to steep gradient at Hen Lane, during intense rainfall events, surface water flowing through Hen Lane at high velocities towards the bridge and roundabout could be a risk factor. Any flood events at the bridge are likely to cause of traffic delays if vehicles have to slow down through standing water, which causes congestion and increases the risk of collisions.

4.6 Duggins Lane

In 2008, there was a recorded flood event in which 25 properties were affected. Records show that surface water accumulated at the junction of Duggins Lane / Station Avenue. Surface water is collected both sides of the carriageway with few road gullies. There is an electricity substation located between 31 and 33 Duggins Lane.

Due to the potential damage caused to private residents and the critical infrastructure of the substation a scheme of flood mitigation works was undertaken in 2014 / 15. Thresholds to the properties were raised and extra highway drainage provided to offer enhanced protection when flooding occurs.

As part of continued monitoring, CCTV surveys and flooding questionnaires were conducted in this location in 2022.

5 Action Plan and Implementation

It is part of the Council's statutory duty as LLFA to co-ordinate flood risk. To steer the Council's activities towards this, included in the SWMP as a set of aims and objectives, which are aligned with the objectives in the recently updated LFRMS (2022). These aims have been developed and refined to guide and support the Council in reducing the risk of flooding

Aims

1. *To gain a comprehensive understanding of flood risk from surface water and other sources in the city, for the Council to meet their duties as LLFA.*
2. *To understand the impact of current and future developments on flood risk and drainage provisions, and to subsequently agree planning mitigation measures.*

Objectives

1. *Investigate the various sources of flooding which could affect Coventry, taking into account the impacts of other variables such as climate change, population change and increasing development.*
2. *To identify and prioritise specific areas that are at greatest risk of surface water flooding, in locations with significant drainage problems.*
3. *Undertake regular communication with partners and stakeholders to raise awareness of the flood risks throughout Coventry, and the ways in which flooding can be mitigated.*

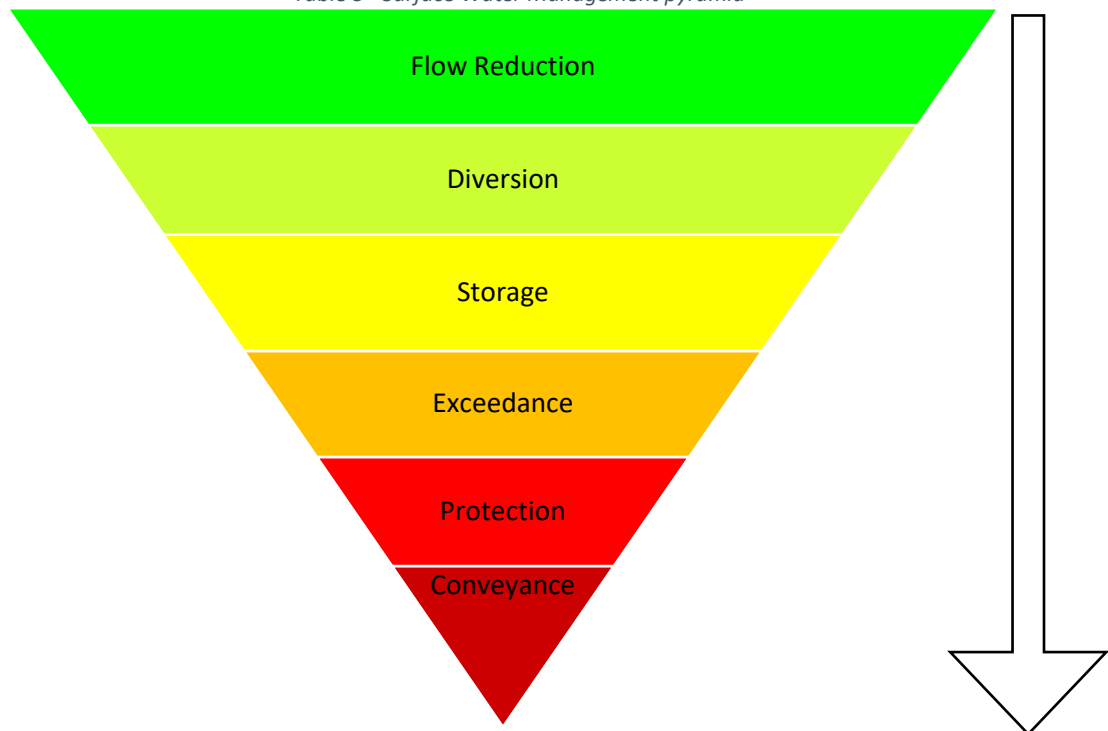
The SWMP links in with the LFRMS's first objective to **"Understand Local Flood Risk" (Develop a greater understanding of local flood risk by improving the awareness and understanding of historic and future flood risks from all sources)**, and the actions and options detailed below link to this and the other objectives of the strategy. It is the first aim of this SWMP 'to gain a comprehensive understanding of flood risk from surface water and other sources in the city, for the Council to meet their duties as LLFA'.

The LFRMS objectives and actions that are relevant to this SWMP are outlined in Appendix 3.

5.1 Surface Water Management Concept

The management of surface water will follow the hierarchy of risk decisions set out in the Surface Water Management pyramid below:

Table 5 - Surface Water Management pyramid



- **Flow Reduction:** Reducing the flows arriving at, or leaving, the site, consequently reducing flood risk. If a new development upstream of a flooding hotspot reduces discharge from site, downstream flood risk is reduced.
- **Diversion:** By routing watercourses and flood flow routes safely past developments and to open greenspaces, residual flood risk can be minimized. Flows can also be diverted by utilizing hard infrastructure such as footways and carriageways, which offers a level of protection to property by diverting flows away.
- **Storage:** By storing the flood flow volumes in purpose-built areas the risk of flooding to properties is reduced. Open storage ponds and surface drainage features have secondary advantages to boost biodiversity and improve habitats too.
- **Exceedance:** Planning for system exceedance is vital. When a system fails, the flows often result in damage to property, damage which can be avoided by proper modelling. New developments can utilize carriageway and footway features to divert flows away from properties and into public open spaces.
- **Protection:** Property level protection can reduce the impact flooding has by preventing property damage. In situations where none of the above can be applied a last line of defense is often to install property level protection. This can vary from door and air brick guards to passive systems such as doors with built in flood barriers.
- **Conveyance:** By enlarging the watercourses or sewers the flood flows can be removed from an area where it causes flooding. This flow may then cause additional flooding elsewhere so should only be used in extreme cases where no other options are applicable.

This methodology applies to the management of surface water by design for new development and interventions for surface water management for existing development. At its highest level in the hierarchy, surface water will be managed at source to reduce discharge and the risk associated with

surface water flooding. As intervention decisions pass down the hierarchy, risk is increased and inverse benefits emerge. It should be noted that the lowest level in the hierarchy will be as a last resort as there is an elevated risk of surface water flooding being conveyed to others downstream. The Surface Water Management Pyramid forms the basis of surface water management within Coventry.

5.2 Actions and Options

Table 6 - Tables of Actions

Option	Timescale	Stakeholders
Asset Register	On-going programme of CCTV surveys and logging of assets	CCC
Planned Maintenance For Highway Drainage	On-going capital works programme including city wide gulley repairs	CCC
Reactive Maintenance For Highway Drainage	On-going commitment to cyclic cleansing and to reactive cleansing, responding to flood incidences either by clearing screens and delivering sandbags, where possible	CCC
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Areas of Critical Drainage Problems	A living document highlighting areas with critical drainage problems as identified by the on-going Hazard Mapping work and other data sources	CCC
SuDS Policy and Design Guide	The LLFA is statutory consultee on the management of surface water and groundwater as part of the planning permission process. This includes the assignment of robust planning conditions and the assessment of drainage solutions allowing for the promotion of SuDS to reduce flood risk.	CCC
Community Engagement Plan	This plan supplements the LFRMS and forms a strategy for public engagement for subsequent years.	CCC
Flood Register	The flood register continues to be populated and data gathered for future events will be more detailed.	CCC
External Funding Bids	Partners will work together to deliver robust business cases to bid for Flood Defence Grant in Aid and Local Levy funding to develop and deliver FRM Schemes.	CCC EA STW WWT

5.2.1 Asset Register

It is an action of the LFRMS that *“The LLFA will maintain an asset register and record of structures and features with a significant effect on local flood risk in Coventry, and take a risk-based approach to their management”*. This is part of Objective 5 in the LFRMS; *“Achieve an economically sustainable approach to managing risk - Utilise partnership funding and collaborative working to find ways to reduce the economic impact of flood defences, asset operation and maintenance”*.

The Pitt Report recommended that local authorities should collate and map the main flood risk management and drainage assets, including a record of ownership and condition (Recommendation 16), allowing the development of effective maintenance regimes. This recommendation was taken up in Section 19 of the FWMA *“Lead local authorities: duty to maintain a register”*.

The NFCERMS recommends assets are maintained appropriately, consider the impacts of climate change upon the standard of protection provided; and consider the design life of assets and when they will require refurbishment or maintenance. As assets age, they are likely to deteriorate and may become less able to perform their original flood risk management function. The impact on flood risk will vary depending on the type of asset. Routine inspection and maintenance can mitigate this risk and extend the lifetime of assets. However, without this regular maintenance, the potential failure of assets could increase flood risk. The increase in risk would depend on the significance of the asset and what is protected by the asset. All RMAs within the Coventry area have a responsibility to maintain their own assets to ensure that flood risk within the city is not increased.

Under Section 21 of the Act, each LLFA in England and Wales has a statutory duty to establish and maintain:

- *A register of structures or features which, in the opinion of the authority, are likely to have a significant effect on a flood risk in its area*
- *A record of information about each of those structures or features, including information about ownership and state of repair.*

Work is well progressed on the asset register and an annual CCTV programme is underway to identify where dedicated highway drainage runs to increase the knowledge of highway drainage.

SuDS act as flood risk management assets and therefore the location, information regarding ownership, and state of repair should also be included in the Asset Register. Assets on ordinary watercourses will also be identified and included in the Asset Register. Due to the size of the city and the number of ordinary watercourses throughout, this will have to be undertaken on a priority-based approach.

The Asset Register will be made available for inspection at all reasonable times.

5.2.2 Planned Maintenance for Highway Drainage

Annual Capital Programme

The Council has an annual Capital Programme for drainage maintenance and flood risk reduction schemes, including major and minor repairs to the highway drainage system. This is an ongoing action from the LFRMS *“the council will deliver a capital programme of improvements to the drainage infrastructure”*. The funding for this comes from an annual budget for small scale flood risk management schemes, and the money is allocated based on a risk-based approach. The work includes:

- Improvement of drainage assets.
- Introduction of new drainage assets into the highway drainage system.
- Pipework lining to address regular tree root intrusion.
- Gully, connection and pipe infrastructure cleansing.
- Trash screen cleansing.
- Culvert condition surveys.

The cleansing of gullies needs to be efficient and coordinated with STW who are the sewer asset owners. Issues will be investigated when gullies become blocked in order to establish the nature of the issue and if further investigation is required. This coordinated response is achieved through the specialist gully cleansing application that the Council uses to deliver planned maintenance.

5.2.3 Reactive Maintenance for Highway Drainage

A responsibility of the LLFA requires the Council to actively manage flood risk within its admin area, which inevitably involves reacting to forecasts of severe rainfall that can impact flood risk to properties and / or critical infrastructure. Whilst the FRM&D does not operate a 24-hour work pattern, the Council has an 'Out of Hours' response team to assist with flooding.

Reactive works includes:

- Check and clear trash screens in advance of forecast heavy rainfall.
- Responding to reports of pollution incidents in watercourses.
- Coordination of other parties to manage a flooding incident.
- Works to investigate the cause of the flooding incident and suggest mitigation measures to reduce the likelihood of recurrence.
- Responding to reports of blocked Highway Drainage.

Further information on the response of the Council is outlined in the Operational Flood Plan.

5.2.4 Hazard Mapping

It is an action of the LFRMS that *"the LLFA will continue to develop and maintain local flood risk hazard mapping"*. It achieves this by utilising national datasets produced by the EA, including Fluvial Flood mapping, RoFSW mapping and Areas Susceptible to Groundwater Flooding (AStGWF), which are outlined in greater detail in the most recent publication of the LFRMS.

A detailed assessment of flood risk within Coventry contained in the PFRA is the basis for the live hazard mapping document held by the Council. This data is based on a national mapping exercise undertaken by the EA. The capacity and performance of the drainage assets should be assessed to ascertain where flooding might occur either because surface water cannot enter the drainage network or where water leaves the network due to a reduction in capacity and localised blockage scenarios. The amount of flooding at the various surface water network junctions may then be considered in its own right to assess whether this accumulates or flows overland towards vulnerable properties.

Utilising flow monitors and localised rainfall data, areas of risk can be mapped and linked to rainfall data. This will allow predictions of where flooding could occur during an event. This will act as an early warning system to allow the Council to respond with targeted clearance and inspections.

5.2.5 Areas of Critical Drainage Problems

Areas of Critical Drainage Problems are locations around the city that are known for flood risk issues from multiple sources. These areas are subject to investigation by the LLFA. There are several areas identified within Coventry that are Areas of Critical Drainage Problems.

Completed Scheme	Ongoing Scheme	Future Scheme
Bowness Close	Bennetts Road*	Duggins Lane*
Canberra Road	Brookstray*	The Riddings
Rowley's Green Lane	Butt Lane / Washbrook Lane	Binley Road

* indicates Specific Site at risk as identified in the PFRA

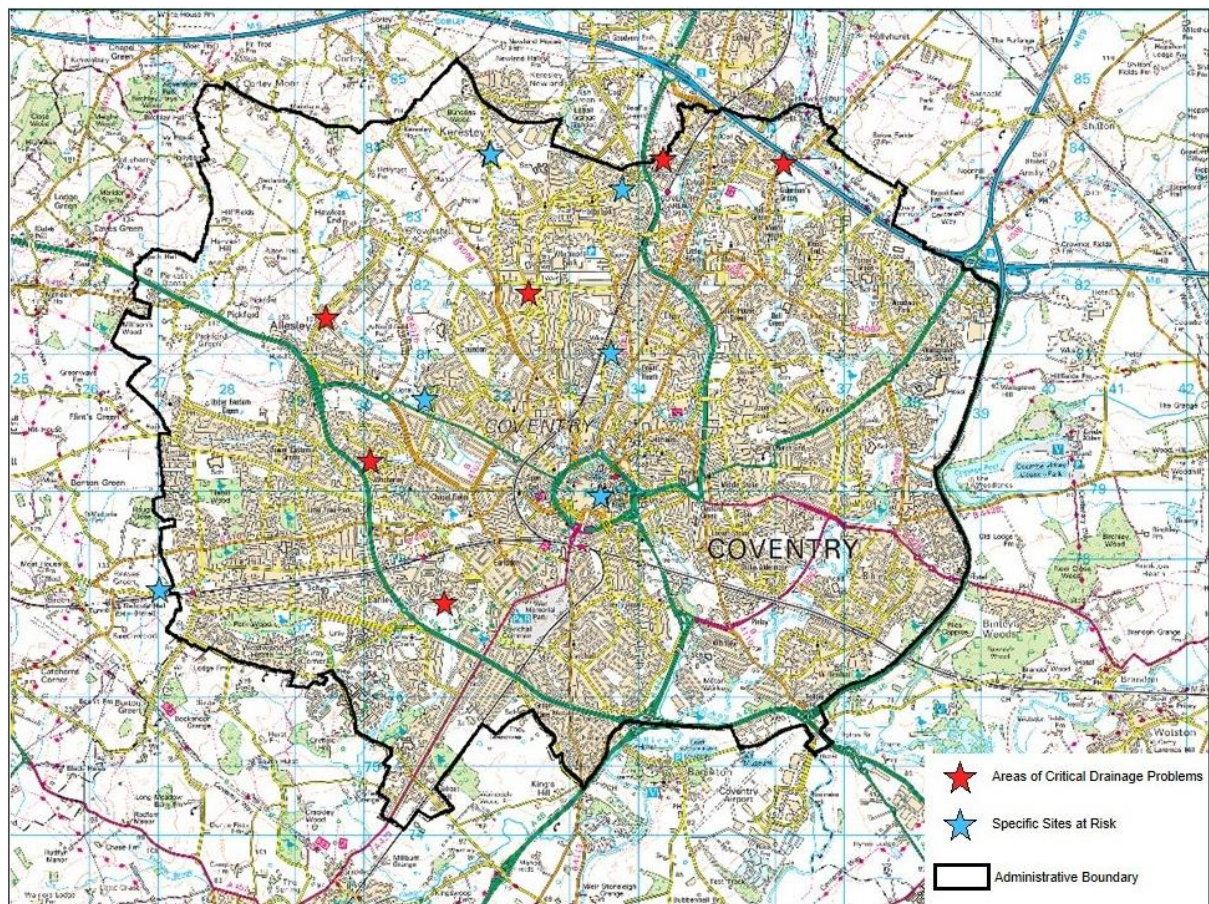


Figure 5 – Map of Coventry highlighting the Areas of Critical Drainage Problems and Specific Sites at risk

5.2.6 SuDS Policy and Design Guide

The SuDS Design Guide updated publication will be published in 2023, it documents specific SuDS requirements in the city. The guide highlights the need for new developments to include and incorporate effective surface water management strategies to help with the management of surface water flooding.

It is an action of the LFRMS (2022) that *'the LLFA will maintain the Coventry SuDS Design Guide'*. Using this guide to direct the Council's work will ensure that the Council complies with the WER.

The current Local Plan has strengthened requirements for SuDS in Coventry, stated in policy EM5(1), ensuring that SuDS are incorporated, and surface water is managed as close to the source as possible. The publication of the guide fulfils this policy.

5.2.7 Community Engagement Plan

The CEP supplements the LFRMS and forms a strategy for public engagement for subsequent years.

It was an action from the 2015 CEP to develop a CEP to achieve the strategy's objectives and support effective community engagement in the city. The CEP sets out objectives for involving the community in helping reduce local flood risk and increase flood resilience across the city. The CEP works in conjunction with existing policy and is a living document.

5.2.8 Flood Register

To ensure that all floods are logged consistently, the FRM&D Team have developed a form for data collection; the Flood Database which is a Geographic Information System layer of historical flood events, which the Council uses to guide policy related to surface water management. The database is continually updated and forms a vital part of the asset register, which the Council is responsible for maintaining.

5.2.9 External Funding Bids

Local authorities have the opportunity to apply for funding from the EA for capital investment, to create new or improved flood risk and coastal erosion management infrastructure and tackle groundwater and surface water issues.

Defra provides the majority of funding for flood and coastal erosion risk management schemes. Increasing numbers of applications has led to an increase in priority for eligibility, leading to the funding being calculated based on the benefits of each scheme being delivered; this is the Flood and Coastal Resilience Partnership Funding.

In 2011, Defra announced how funding is allocated to flood and coastal defence projects; resulting in potentially providing government money towards the costs of any worthwhile scheme. Funding levels are based on the number of households protected, the amount of damage being reduced or prevented as well as other project benefits. This process provides greater opportunity for local areas to have a say in what schemes are done to protect them, and puts a greater emphasis on supporting those more at risk and those in the most deprived parts of the country.

Regional Flood and Coastal Committee (RFCC)

There are currently 11 RFCCs in England, which are divided by river catchment(s). They are represented by appointed members of each LLFA within the catchment and a number of independent members with relevant experience within the industry. The Coventry area is almost

entirely located within the English Severn and Wye RFCC catchment, the geographic area is shown in Figure 6. The Council contribute annually to the English Severn and Wye RFCC.

The purposes of the RFCC are to:

- Ensure there are coherent plans for identifying, communicating and managing flood and coastal erosion risks across catchments and shorelines;
- Promote efficient, targeted and risk-based investment in flood and coastal erosion risk management that optimises value for money and benefits for local communities;
- Provide a link between the Environment Agency, LLFAs, other risk management authorities and other relevant bodies to engender mutual understanding of flood and coastal erosion risk in its area.

The RFCC sanctions the delivery of flood alleviation projects across the English Severn and Wye.

[Flood Defence Grant in Aid \(FDGiA\)](#)

FDGiA is Government funding to better protect the country from flooding and coastal erosion. The Council, as an RMA can apply for funding from this source to fund flood and coastal erosion risk management (FCERM) projects. Funding is allocated based upon national priorities.

[Local Levy](#)

Local Levy is generated through Local Authorities who are levied by the EA under the Environment Agency Regulations (2011). This funding is specifically allocated at the discretion of the Regional Flood and Coastal Committee who determine its use. The purpose of Local Levy funding is to financially support important schemes that have either not been granted funding or require additional funding to make them viable on a national scale.

**ENGLISH SEVERN AND WYE
REGIONAL FLOOD AND COASTAL COMMITTEE
BOUNDARY MAP**



Figure 5 - English Severn and Wye RFCC Boundary map

5.3 Implementation

Under the FWMA, local authorities have a responsibility for monitoring and reporting on the implementation of the action plan from the SWMP. Progress on the SWMP action plan should be regularly reviewed to check whether the proposed actions are being completed / undertaken.

The action plan should be reviewed and updated once every six years as a minimum, with some circumstances that will trigger an interim update. These circumstances include:

- Flooding incident
- Additional data or modelling being made available
- Outcome of investment decisions by partners is different to the preferred option which may require a revision of the action plan
- Additional development or other changes in the catchment which will affect surface water flood risk.

Appendices

Appendix A – Abbreviations

Appendix B – Glossary

Appendix C – Strategic Objectives, actions and measures

Appendix A – Abbreviations

Abbreviation	Stands for:
AStGWF	Areas Susceptible to Groundwater Flooding
CabA	Catchment Based Approach
CCAAP	City Centre Area Action Plan
CEP	Community Engagement Plan
CHSR	Conservation of Habitat and Species Regulations
CSWR	Coventry Solihull Warwickshire Resilience team
EA	Environment Agency
FDGiA	Flood Defence Grant in Aid
FRA	Flood Risk Area
FRM	Flood risk management
FRMG	Flood Risk Management Group
FRMP	Flood Risk Management Plan
FRR	Flood Risk Regulations
FWIS	Flood Warning Information Service
IDB	Internal Drainage Board
LASOO	Local Authority SuDS Officer Organisation
LFRMS	Local Flood Risk Management Strategy
LLFA	Lead Local Flood Authority
LPA	Local Planning Authority
LRF	Local Resilience Forum
MAFP	Multi Agency Flood Plan
NFCERMS	National Flood and Coastal Erosion Risk Management Strategy
NFEF	National Flood Emergency Framework
NFM	Natural Flood (Risk) Management
NPPF	National Planning Policy Framework
OFP	Operational Flood Plan
PFRA	Preliminary Flood Risk Assessment
PPG	Planning Practice Guidance
RBD	River Basin District
RBMP	River Basin Management Plan
RFCC	Regional Flood and Coastal Committee
RMA	Risk Management Authority
ROFSW	Risk of Flooding from Surface Water
SEA	Strategic Environmental Assessment
SFRA	Strategic Flood Risk Assessment
SPD	Supplementary Planning Document
STW	Severn Trent Water Ltd.
SuDS	Sustainable Drainage Systems
SWMP	Surface Water Management Plan
WACP	Warwickshire Avon Catchment Partnership
WER	Water Environment Regulations 2017

Appendix B – Glossary

Term	Meaning for the purposes of the SWMP
AAP	Annual average probability – the chance of a flood event occurring in any given year. Normally expressed as a percentage, e.g. 2% AAP event means an event with a 2% chance of occurring in a year.
Administrative Area	The area for which the LLFA is responsible.
Adopted Sewer	A surface water, foul or combined sewer that is maintained by Severn Trent Water. A developer will often design and construct sewers in accordance with Sewers for Adoption 7 th Edition in order that these may be adopted by Severn Trent Water.
Attenuation	System to reduce the flow and increase the duration of a flood.
Balancing Pond	A pond designed to attenuate flows by storing rainwater run-off during a storm and releasing the water slowly at a controlled rate over an extended period of time. Also known as a <i>detention basin</i> .
Brownfield Site	A piece of land or a site that has previously been developed.
Catchment	The area contributing flow or run-off to a particular point on a watercourse system.
Climate Change	Long-term variations in weather patterns, particularly temperature and rainfall, thought to be a result of an increase in carbon dioxide emissions.
Combined Sewer	A public sewer used to convey both surface water and sewage.
Commuted Sum	A single payment made at the beginning of an adoption agreement to cover maintenance of the drainage system in future years.
Culvert	Covered channel or pipe that forms a watercourse below ground level.
Design Criteria	A set of standards agreed by the developer, planners and regulatory bodies that the proposed system should satisfy.
Design Event	A historic or notional regular flood, against which the suitability of a proposed development is assessed and for which mitigation measures may be designed.
Design Flood Level	The maximum estimated water level during the design event.
Detention Basin	A basin in the landscape that is normally dry, except during heavy rain. Used to store rainwater run-off to attenuate flows. May also enable infiltration.
Development	Works resulting in a change of use or character of a piece of land.

Discharge rate	Rate of flow of water out of a pipe system into another drainage system.
Field or Land Drainage	A drainage system to control the water table in agricultural land.
Filter Drain or Filter Trench	A linear drain consisting of a trench filled with a permeable material, often with a permeable pipe in the base of the trench. Used to store and infiltrate water into the ground. May also act as a conduit to collect and transfer water through a drainage system.
Filter Strip	A vegetated area of gently sloping or flat ground designed to collect water from impermeable areas and convey it to a filter drain.
Filtration	The act of removing particles from fluid by passing it through a filter.
First Flush	The initial run-off from a site or catchment following rain. The initial run-off tends to collect the pollutants on the ground and may be contaminated.
Flap Valve	A simple form of non-return valve, with a hinged flap to prevent reverse flow from a fluvial system into a piped drainage system.
Flood Defence	Infrastructure such as flood walls and embankments to protect an area against flooding to a specified standard of protection.
Flood Defence Crest Level	The top of the walls or embankments, expressed as a level relative to Ordnance Survey Datum.
Flood Event	A flood characterised by its severity.
Flood Risk	Assessed by a combination of the flood probability and the potential consequences of a flood.
Flood Risk Assessment	A study to assess the risk of a site or area flooding. Used to assess the impact a development might have on the site or area's flood risk.
Flow Control Device	A mechanical device to limit or manage flow.
Fluvial Flooding	Flooding from a river or watercourse.
Freeboard	The difference between the flood defence crest level and the maximum envisaged design flood level.
Greenfield Run-off Rate	The rate of runoff of water from a piece of land in an undeveloped or natural state.
Groundwater	Water within the ground - often referred to as the water below the <i>water table</i> . May exist at a number of different levels underground, depending on the types of material in the ground. The water table often lies parallel to the ground surface.

Groundwater Flooding	When the water table rises above the surface. A common feature of this type is a spring line.
Hydrograph	A graph showing the variation in water flow in a watercourse.
Impermeable Surface	An artificial surface that water can't pass through.
Infiltration	The passage of water through the surface and into the ground.
Infiltration Basin	A dry basin designed to help infiltrate surface water into the ground.
Infiltration Capacity	A characteristic of soil that determines the rate at which water enters the ground.
Infiltration Trench	A trench excavated in permeable ground and filled with permeable granular material. Used to help the infiltration of water into the ground.
Land Drain	Drain used in agriculture to control to level of the local water table and reduce waterlogging.
Local Development Documents	Documents and plans that set out the development strategy for the <i>Local Planning Authority</i> .
Local Planning Authority	Body with responsibility for planning and controlling development through the planning application system.
Mitigation Measure	An aspect of the design of a development that reduces the impact on the local environment, particularly on the flood risk.
Ordinary Watercourse	A watercourse that falls under the control of the local drainage authority and is neither a private drain nor a main river.
Overland Flow	A situation that arises when the ground surface becomes saturated and can't hold any more rain. The rainwater then collects on the surface and flows in the direction of the steepest gradient. May result in <i>pluvial flooding</i> .
Permeable Surface & Permeable Paving	Material that allows water to pass through gaps between the constituent materials into the layers below.
Pluvial Flooding	Flooding generated when floodwater hasn't entered any watercourse or sewer system. It is a particular problem in dense urban areas, although it may occur in rural areas.
Storage Pond	A permanently wet feature used to store water in times of heavy rainfall. Can be home to wildlife.
Rainwater recycling	Systems that collect and enable the redistribution or re-use of rainwater on roofs or pavements. Can include water butts, underground tanks and pumping systems.

Retention Pond	A pond where water stays long enough to allow settlement of suspended solids and possibly biological treatment of some pollutants.
Riparian Ownership	The ownership of land next to or containing a watercourse. The rights and responsibilities of the landowners are often referred to as riparian rights and responsibilities.
Run-off	Water flow over-ground to the local drainage system. This occurs if the ground is impermeable or saturated, or if rain is heavy. It might be thought of as the remainder of the rainfall that neither get absorbed into the ground nor evaporates back into the atmosphere.
Sewerage Undertaker	The organisation responsible for the maintenance of the sewer systems and the treatment and disposal of surface water and foul sewage.
Sewer System	The private and public network of drainage used to convey surface water and foul sewage from roads and buildings.
Soakaway	An underground structure into which surface water is conveyed to allow it to infiltrate into the ground
Source Control	The control, attenuation and/or treatment of runoff or pollution near to its source or origin.
Standard of Protection	Refers to the lowest probability flooding at a particular site due to the extent of the mitigation measures in place. Often referred to as '25, 50 or 100 year protection'.
Sustainable Drainage Systems	An approach to the management of rainwater to reduce the flood risk impact of new developments on the surrounding areas.
Swale	A shallow linear trench used to convey and store runoff, particularly from car parks, roads and other paved areas. May also incorporate infiltration.
Treatment	Improving the quality of water by biological, chemical or physical means.
Urban Creep	The increase in impermeable area resulting from planned and unplanned urban expansion. This includes infill developments and also small domestic works (extensions, conservatories, drive widening, hard paving of gardens). Results in increased run-off and rate of run-off
Water Table	The level of groundwater in soil and rock below which the ground is saturated.
Watercourse	Any natural or artificial channel that conveys surface water.

Washland	An area subjected to frequent flooding at least every 20 years and used to store, attenuate or convey floodwater.
Wetlands	An area where the natural saturation of the ground is the determining factor for the particular biodiversity of the area.
Whole Life Costing	An approach to the accounting of the cost of a particular flood risk reduction scheme or other system that includes all the costs of the construction, operation and maintenance and eventual decommissioning. These costs are usually referenced to a 'present day' cost to enable the comparison between different alternatives.

Appendix C – Strategic Objectives, Actions and Measures

Objectives	Actions to fulfil the Objectives	Relevant Measures (if any)
<i>Understand flood risk: Develop a greater understanding of local flood risk by improving awareness and understanding of historic and future flood risks from local sources.</i>	The LLFA will continue to develop and maintain local flood risk hazard mapping	
<i>Manage local flood risk sustainably: Utilise a more sustainable approach to reducing flood risk to deliver environmental enhancement as well as benefits to public health and open space</i>	The LLFA will maintain the Coventry SuDS Design Guide	
<i>Support resilient communities: “Engage with communities to improve community awareness of flood risk and preparing communities for flooding in order that the impact of flooding is reduced and aids recovery; and to enhance planning policy to reduce flood risk from new developments, delivering improvements through smarter design and planning.”</i>	Risk Management Authorities will promote community resilience to flooding from local sources and produce community engagement plan	Risk Management Authorities to provide an initial response to all routine customer enquiries related to local flood risk management within 10 days
	The Council will fulfil its role as statutory consultee for local flood risk on all major applications.	Provide a consultation response to the Local Planning Authority for all major applications
<i>Achieve an economically sustainable approach to managing risk: Utilise partnership funding and collaborative working to find ways to reduce the economic impact of flood defences, asset operation and maintenance.</i>	The LLFA will maintain an asset register and record of structures and features with a significant effect on local flood risk in Coventry, and take a risk-based approach to their management.	The LLFA will develop and maintain a register of structures or features which, in the opinion of the authority, are likely to have a significant effect on flood risk in Coventry
		The LLFA will develop and maintain a record of information about each of those structures or features, including information about ownership and state of repair.

<i>Additional, Stand-alone Actions and measures</i>	The LLFA will maintain and update where necessary the Surface Water Management Plan for Coventry	Maintain the Surface Water Management Plan as a living document; update and reissue every 3 years.
	The LLFA will maintain and lead on delivery of the Coventry Operational Flood Plan	
	The LLFA will maintain the Coventry Sandbag Policy	