Bromsgrove Flood Risk Management Plan

29/03/2021

Version Table

	Date	Updated by	Sign off
V1 - draft	07/06/2016	DD/FM	
V2 - draft	02/03/2017	ED	
V3 - draft	19/06/2017	ED	
V4 - draft	03/07/2017	ED/DD/BB	
V5- draft	17/07/2017	ED	
V6 - draft	20/07/2017	ED	
V7 – Final (live)	19/10/2017	ED	DD
V8 - Final	29/03/2021	FM	

Contents

Glossary

Term/Word	Definition
Act	A Bill approved by both the House of Commons and the House of Lords and formally agreed to by the reigning monarch (known as Royal Assent).
Catchments	An area that serves a river with rainwater. That is every part of land where the rainfall drains to a single watercourse is in the same catchment.
Catchment Flood Management Plan (CFMP)	A strategic planning tool through which the Environment Agency works with other key decision-makers within a river catchment to identify and agree policies for sustainable flood risk management.
Climate change	The change in average conditions of the atmosphere near the Earth's surface over a long period of time.
Defences	A structure that is used to reduce the probability of floodwater or coastal erosion affecting a particular area (for example a raised embankment).
Drainage authorities	Organisations involved in water level management, including IDBs, the Environment Agency, and RFCCs.
Flood	The temporary covering by water of land not normally covered with water.
Flood Risk Management	The introduction of mitigation measures (or options) to reduce the risk posed to property and life as a result of flooding. It is not just the application of physical flood defence measures.
Flood Risk Regulations	Legislation which transposed the European Floods Directive in 2009.
Fluvial flooding	Flooding caused by the overtopping of river or stream banks.
Groundwater flooding	Occurs when water levels in the ground rise above the natural surface. Low-lying areas underlain by permeable strata are particularly susceptible.
Lead local Flood Authority	Upper tier authorities with responsibility to coordinate the management of local flood risk from surface water, ground water and ordinary watercourses.
Main River	A watercourse shown as such on the Main River Map, and for which the Environment Agency has responsibilities and powers.
Mitigation	The management (reduction) of flood risk.
Model	A computer-generated representation of a system or process. An abstraction and usually represents a simplification of the processes involved.
Ordinary watercourses	All watercourses that are not designated Main River, and which are the responsibility of Local Authorities or, where they exist, IDBs.
Recovery	The process of rebuilding, restoring and rehabilitating the community following an emergency.
Reservoir	A natural or artificial lake where water is collected and stored until needed. Reservoirs can be used for irrigation, recreation, providing water supply for municipal needs, hydroelectric power or controlling water flow.
Resilience	The ability of the community, services, area or infrastructure to avoid being flooded or lost to erosion, or to withstand the consequences of flooding or erosion taking place.
Risk	The significance of a potential event in terms of likelihood and impact.

Risk assessment	A structured and auditable process of identifying potentially significant events, assessing their likelihood and impacts, and then combining these to provide an overall assessment of risk, as a basis for further decisions and action.
Risk Management Authorities (RMA)	Organisations that have a key role in flood and coastal erosion risk management as defined by the Flood and Water Management Act (2010). These are the Environment Agency, lead local flood authorities, district councils where there is no unitary authority, internal drainage boards, water companies, and highways authorities.
River flooding	Occurs when water levels in a channel overwhelms the capacity of the channel.
Strategic Environmental Assessment (SEA)	Arising from an EU directive and consistent with Government policies on the environment and sustainable development, with the objective of providing a high level of protection for the environment and contributing to the integration of environmental considerations into the preparation and adoption of plans and programmes.
Sewer Flooding	Occurs when sewers are overwhelmed by heavy rainfall or when they become blocked. The likelihood of flooding depends on the capacity of the local sewerage system. Land, property and rivers can be flooded with water contaminated with raw sewage as a result.
Strategic Flood Risk Assessment (SFRA)	The assessment of flood risk on a catchment-wide basis for proposed development in a District.
Sustainable Drainage Systems (SuDS)	Current best practice for new development that seeks to minimise the impact upon the localised drainage regime, e.g. through the use of pervious areas within a development to reduce the quantity of runoff from the development.
Surface water flooding	Flooding from rainwater (including snow and other precipitation) which has not entered a watercourse, drainage system or public sewer.
Sites of Special Scientific Interest (SSSI)	Wildlife and geological sites which are protected under the Wildlife and Countryside Act 1981, as amended by the CROW Act and NERC Act 2006.
Surface Water Management Plan (SWMP)	A study undertaken in a specified area, which looks at the risk associated with local flood risk, resulting in an action plan for managing future risk and resource allocation.
Voluntary organisations/groups	Self-governing organisations, some being registered charities, some incorporated non-profit organisations. They deliver work for the public benefit using volunteers.
Watercourse	A channel (natural or artificial) along which water flows.

Abbreviations

Acronym	Definition
CFMP	Catchment Flood Management Plan
Defra	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EU	European Union
FCERM	Flood and coastal erosion risk management
FMfSW	Flood Map for Surface Water (2nd generation EA surface water mapping)
FRM	Flood Risk Management
FRMSCG	Flood Risk Management Strategic Co-ordinating Group
FWMA	Flood & Water Management Act 2010
GIS	Geographical Information System
IDB	Internal Drainage Board
LDF	Local Development Framework
LFRMS	Local Flood Risk Management Strategy
LLFA	Lead Local Flood Authority
LNP	Local Nature Partnership
LPA	Local Planning Authority
LRF	Local Resilience Forum
NFU	National Farmers Union
NPPF	National Planning Policy Framework
NRD	National Receptor Database
PFRA	Preliminary Flood Risk Assessment
RBD	River Basin District
RFCC	Regional Flood and Coastal Committee
RMA	Risk Management Authority
SAB	SuDS Approving Body
SEA	Strategic Environmental Assessment
SFRA	Strategic Flood Risk Assessment
STW	Severn Trent Water
SuDS	Sustainable Drainage Systems
SWMP	Surface Water Management Plan
uFMfSW	Updated Flood Map for Surface Water
WCC	Worcestershire County Council
WLDG	Worcestershire Land Drainage Group
WLEP	Worcestershire Local Enterprise Partnership
WMP	Water Management Plan

1. Preparation

1.1. Need for a Surface Water Management Plan

Flooding has the ability to significantly affect properties, businesses, infrastructure and the environment. Therefore, Local Authorities aim to maintain and over time improve standards of protection against flooding where it is feasible and affordable to do so.

As part of the Flood and Water Management Act 2010 it is a statutory requirement of the Lead Local Flood Authority (LLFA) to produce a Local Flood Risk Management Strategy (LFRMS). Furthermore, it is recommended that each LLFA produces a Surface Water Management Plan (SWMP) although not a statutory requirement.

A SWMP is a study which assesses drainage and surface water, water quality, environmental and economic issues and highway impacts and its spatial distribution at a set scale; this could be strategic, intermediate or detailed. A SWMP will facilitate for the distribution of resources by determining priority locations most at risk. The study is undertaken in consultation with partner Risk Management Authorities (RMAs).

Defra released guidance on producing a SWMP. The SWMP dial (Figure 1) lays out the process to follow when creating a SWMP including which level of assessment would be required for the area in question. Table 1 below shows the three levels of assessment as defined by Defra and how these relate to the Worcestershire area.

Level of Assessment	Local to Worcestershire
Strategic	Countywide SWMP
Intermediate	Local SWMPs
Detailed	Sub-areas within each local SWMP

Table 1 – Levels of SWMP Assessment in Worcestershire

During the Countywide SWMP, the LLFA gathered reports of flood incidents across the County and recorded these as a floodspot with some background attribute data such as source of flooding and the impact. Floodspots included all sources of flooding including those managed by other RMAs.

The countywide SWMP identified several areas suitable for an intermediate level of assessment, one of which was Bromsgrove.

The Bromsgrove Flood Risk Management Plan (BFRMP) will report upon eleven priority locations within the town which have been identified as areas of high impact. Throughout Bromsgrove there is a cluster of floodspots from a variety of flooding sources and, therefore, a partnership approach is necessary to work with RMAs in understanding and reducing flood risk.

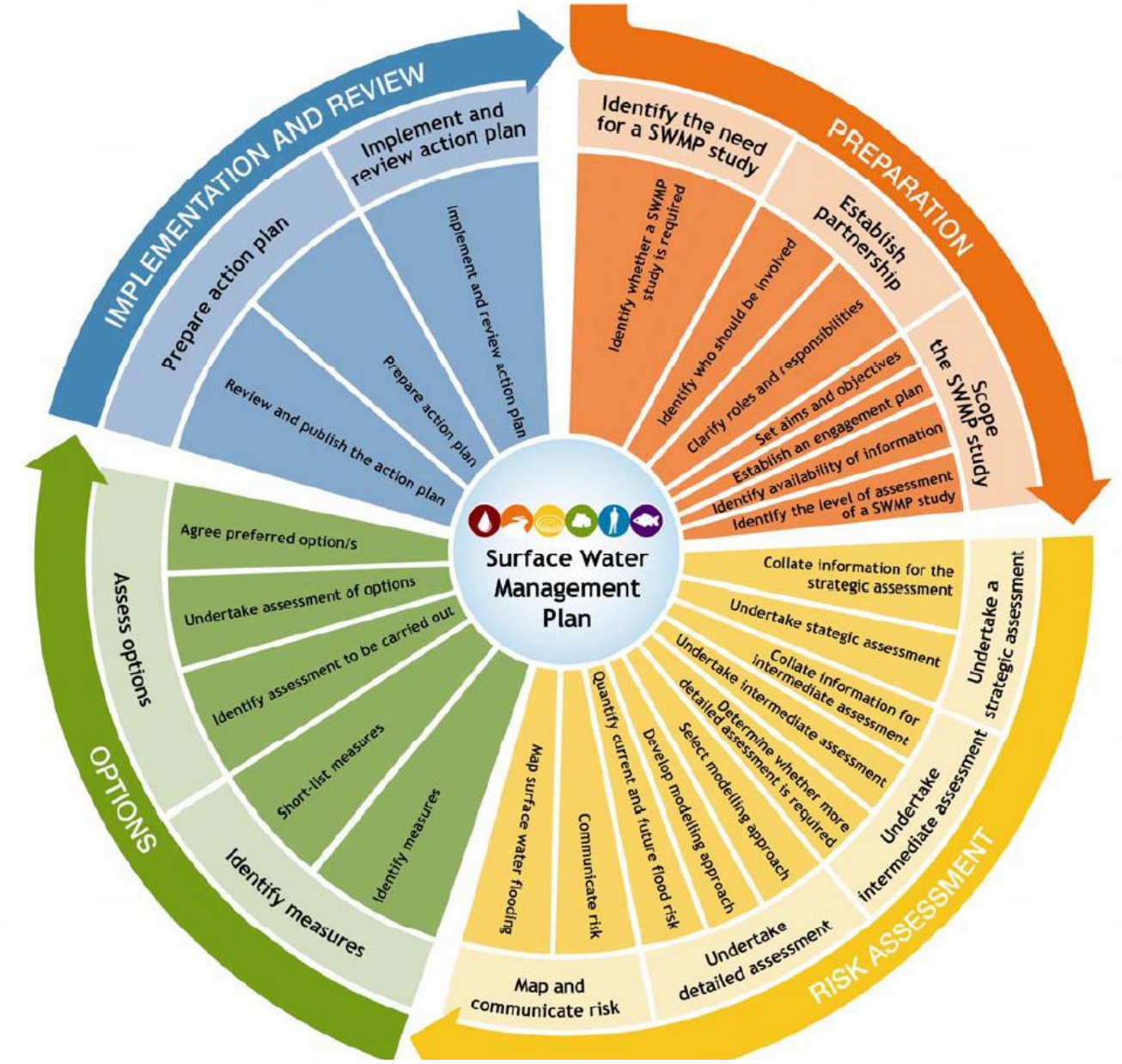

Figure 1 - SWMP wheel from Defra guidance.

1.2. Partnership

Working in partnership is fundamental to being able to reduce flood risk as it allows for knowledge to be shared and resources to be coordinated amongst RMAs and partners. This approach will provide an opportunity to carry out modelling, share any data held and give a greater understanding of flood risk. This will produce the most effective flood alleviation measures for a given budget. Table 2 shows a list of all the partners involved in the BFRMP.

These partnerships are necessary to oversee all sources of flooding as the complex interaction of flooding sources requires all partners to take a holistic approach, assess the viability of a scheme and see if multiple issues can be dealt with at the same time. This also provides the opportunity to split funding. Partnership funding is often a key requirement when bidding for grants and consequently is a top priority for many partners.

Partners Involved
Worcestershire County Council (LLFA, Highways & Ecology)
North Worcestershire Water Management
Bromsgrove District Council
Severn Trent Water Ltd
Environment Agency
Highways England
Worcestershire Wildlife Trust

Table 2 – Partners involved in BFRMP

1.3. Scope

The partners will meet at approximately 6-month intervals to discuss progress and update actions. The BFRMP Report will be reviewed at each meeting and updated accordingly. The Report will be re-published following significant changes to the main document and not after each meeting.

The BFRMP will consider the impact of future growth. It must be ensured that future developments will not increase flood risk for existing locations and not be of high risk themselves. Any plans for development must adequately accommodate surface water and ensure there is as low risk of flooding as possible.

This FRMP is considering eleven sites within Bromsgrove, which are discussed below in Section 2.3. The meetings held between partners will provide the partners with updates on the progress of projects and discuss any actions that may need to be carried out.

1.4. Aims and Objectives

Aims	Objectives
1. To understand flood risk	1.1 To gather and assess the extents and impacts of reports of flood events
	1.2. To assess and map all known flood extents and impacts (floodspots, updated flood map for surface water and flood zones)
	1.3. To identify, map and investigate future potential floodspots
2. To communicate flood risk	2.1 To inform and seek engagement with and views from partners, stakeholders and impacted communities
3. To minimise flood risk	3.1 To monitor and communicate water course levels
	3.2 To monitor weather events
	3.3 To develop, maintain and implement severe weather/flood event policies
	3.4 To implement flood alleviation schemes
	3.5 To keep a register of and manage existing assets

Table 3 – Aims and Objectives

1.5. Engagement Plan

Key	
✓	Types of communication that will work
✓	Types of communication that will be used

Potential Audience	Type of Communication									Preferred Comms?	Why?
	Meetings	Website	Press Releases	Leaflets	Radio	TV	Exhibitions	Newsletter	Emails		
County, District & Town Councillors	✓	✓	✓				✓	✓	✓	Emails; Meetings	more direct; contacts already established
County & District Council Officers	✓	✓	✓				✓	✓	✓	Emails; Meetings	more direct; contacts already established
Community/Members of the Public		✓	✓	✓	✓	✓	✓	✓		Website; Newsletters	website for generic info, newsletters for specific locations
Businesses		✓	✓	✓	✓	✓	✓	✓		Website; Newsletters	website for generic info, newsletters for specific locations
Parish Council	✓	✓	✓	✓		✓	✓	✓	✓	Emails; Meetings	more direct; contacts already established
Funders	✓	✓	✓					✓	✓	Emails	more formal; contacts unlikely to be established
Land owners		✓	✓	✓	✓	✓	✓	✓		Website; Newsletters	website for generic info, newsletters for specific locations
Highways Agency	✓	✓	✓				✓	✓	✓	Emails; Meetings	more direct; contacts already established
Environment Agency	✓	✓	✓				✓	✓	✓	Emails; Meetings	more direct; contacts already established
Severn Trent Water	✓	✓	✓				✓	✓	✓	Emails; Meetings	more direct; contacts already established
North Worcestershire Water Management	✓	✓	✓				✓	✓	✓	Emails; Meetings	more direct; contacts already established
Lead Local Flood Authority	✓	✓	✓				✓	✓	✓	Emails; Meetings	more direct; contacts already established
Worcestershire Wildlife Trust	✓	✓	✓				✓	✓	✓	Emails; Meetings	more direct; contacts already established
Developers, officers (public)	✓	✓	✓	✓	✓	✓	✓	✓	✓	Emails; Website	website for generic info, emails for site specific issues
NFU	✓	✓	✓	✓	✓	✓	✓	✓	✓	Emails; Website; Newsletters	website for generic info, newsletters for specific locations

Table 4 – Engagement Plan

1.6. Available Information

Owner	Information and/or data available
Worcestershire County Council	Floodspots Highway infrastructure plans Historical flood reports Officer knowledge
North Worcestershire Water Management & Bromsgrove District Council	Strategic Flood Risk Assessment Historical flood reports Officer knowledge
Environment Agency	Detailed watercourse modelling updated Flood Map for Surface Water Flood zones map Historical flood reports Officer knowledge
Severn Trent Water	Infrastructure plans DG5 register Historical flood reports Officer knowledge
Local Community	Community knowledge

Table 5 – Available Information & Owners

2. Risk Assessment

2.1 Strategic Assessment

A top-down, county-wide assessment was carried out of all past and future potential flooding, from all sources, in order to:

- form a thorough and robust flood risk evidence base;
- identify locations which require attention;
- prioritise the locations which require attention;
- record locations which have already received attention.

Flooding has the ability to significantly impact property, businesses, infrastructure and the environment and, therefore, fundamentally important strategic issues such as health, wellbeing, and the economy.

An extensive evidence base was compiled comprising over 1,700 known floodspots across Worcestershire and a wealth of information about each of them. Figure 2 illustrates the countywide floodspots which the LLFA have a record of.

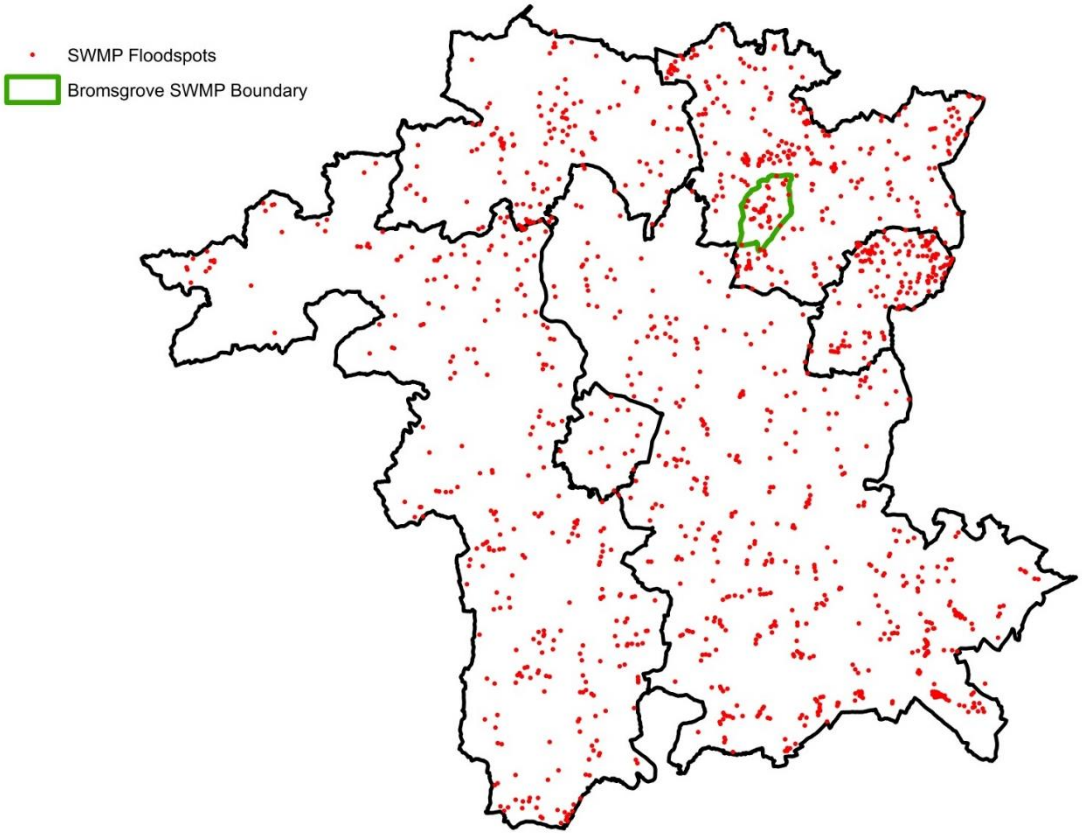

Figure 2 - Countywide SWMP floodspots at the strategic level.

All locations which were known to have flooded in the County at some point in the past were identified and mapped through:

- an extensive series of workshops with experienced and knowledgeable officers from a range of disciplines within the RMAs;
- a thorough examination of flood reports and records including district council Strategic Flood Risk Assessments and reports produced after the severe 2007 flooding event.

For the first time, the detailed floodspot attribute data allowed the many locations which are at risk to be put into a consistent, criteria-based priority order which would facilitate properly informed strategic decisions about the management of flood risk in the future.

Every floodspot was given a simple mitigation status as follows:

- red – not yet investigated;
- amber – being investigated or a scheme being developed / implemented;
- green – mitigation work complete.

It should be noted that a 'Green' status does not necessarily mean that flooding will not re-occur. Rather it means that the likelihood and/or severity of any future potential flooding has been reduced as far as is practicable.

In addition, it is very likely that a 'Green' floodspot will have infrastructure which needs to be regularly monitored and maintained.

The status of the floodspots is dynamic and the attribute data will be regularly updated accordingly as 'Reds' become 'Ambers' and Ambers' become 'Greens'.

2.2 Intermediate Assessment

Following a brief assessment of the areas at risk of flooding in Worcestershire and looking at the EA's communities at risk dataset, it quickly became apparent that there were a number of issues concentrated around the town of Bromsgrove. It was therefore decided to use the physical boundaries of the M5, M42 and the railway line to the West, North and East respectively, as indicated in Figure 3, to set the boundaries of the BFRMP area.

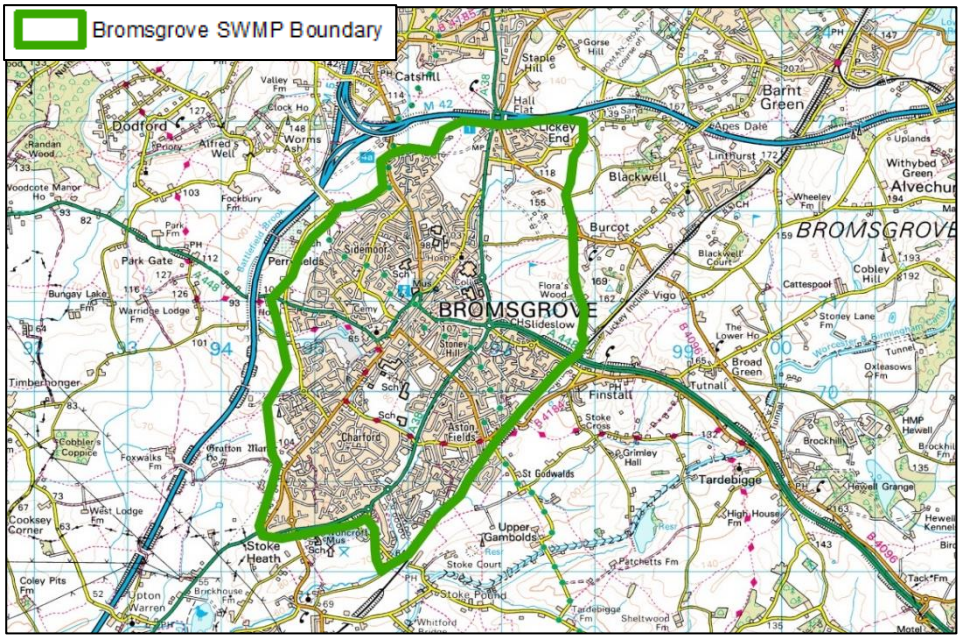

Figure 3 – The area chosen for the Bromsgrove FRMP

2.3 Detailed assessment

Within the intermediate assessment area, 11 sub-locations have been identified (Table 6) – either because of a cluster of floodspots in one location or due to a more complex nature of flood risk – each of which have been deemed to require further investigation and resource input. These sub-areas are illustrated in Figure 4.

Table 6 and Figure 4 below show, in alphabetical order, the eleven locations within Bromsgrove where the floodspots are situated. These floodspots are centroid points with a host of attribute data and are not representing flooding of specific properties but instead an area where flooding has occurred. Due to The Data Protection Act (1998) individual properties cannot be identified, and therefore the images within this document are purely illustrative.

The updated Flood Map for Surface Water (uFMfSW) is also shown on the following maps, this models surface water flooding at three return periods: 1 in 30 year, 1 in 100 year and 1 in 1,000 year.

Detailed Assessment Areas
1. All Saints Road and Birmingham Road
2. Aston Fields Recreation Area
3. Brook Road, Watt Close and Sanders Park
4. Charford Road
5. Grayshott Close and Perryfields Road
6. High Street and Crown Close
7. Lickey End
8. Old Burcot Lane
9. Stoke Road
10. The Strand
11. Warwick Avenue and Bant Mill Road

Table 6 – Detailed Assessment Areas

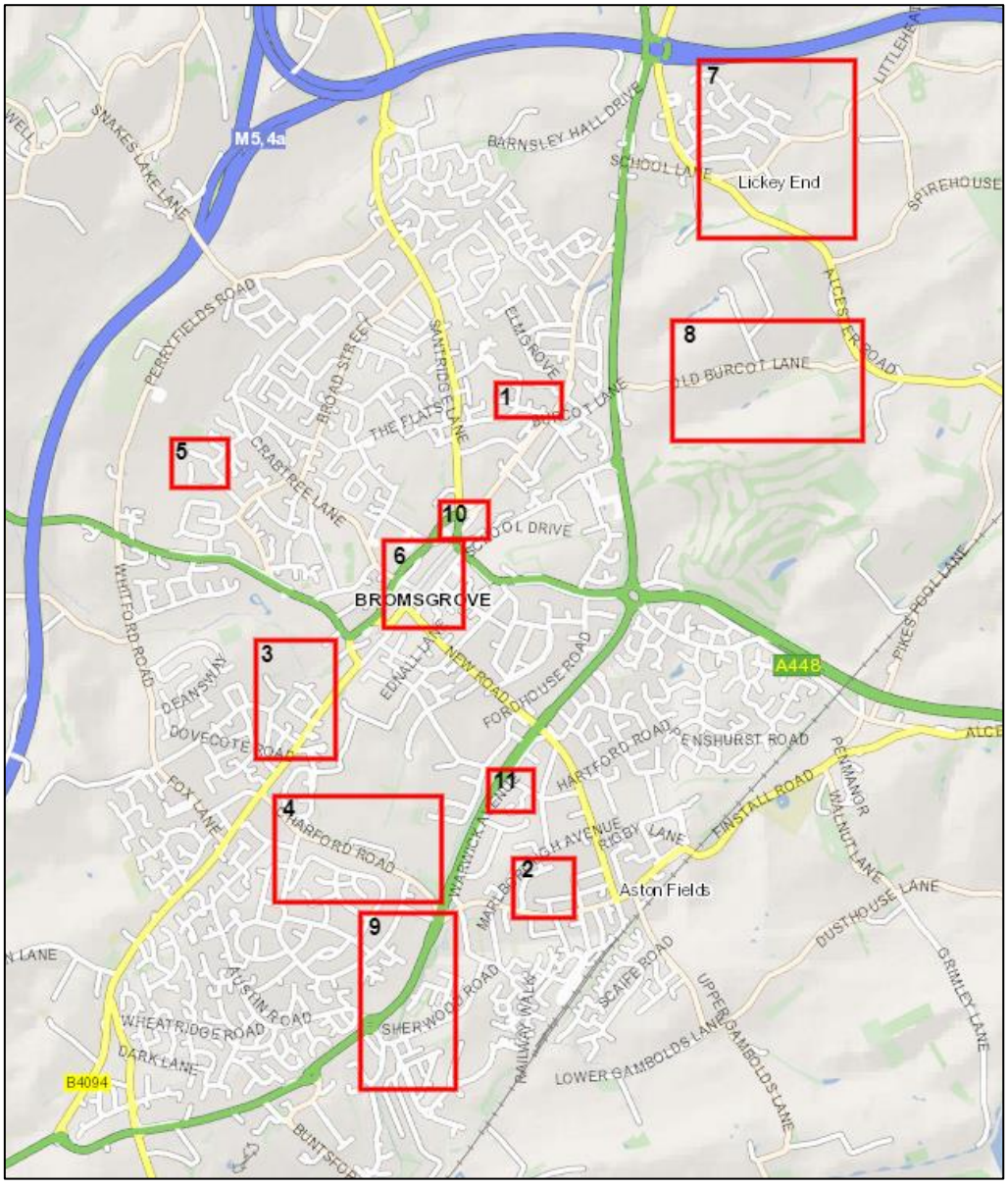

Figure 2 - Map showing the 11 sub locations for detailed assessment.

2.3.1 All Saints Road & Birmingham Road

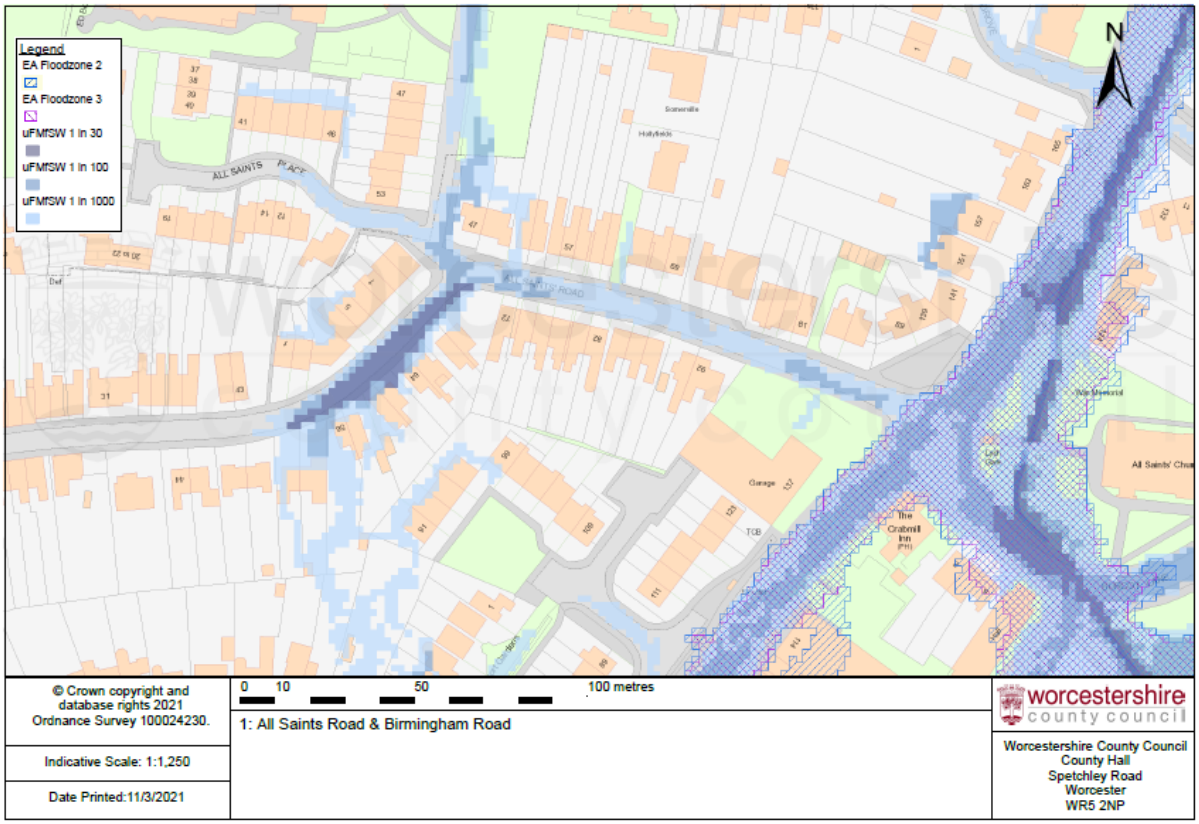

Figure 3 - All Saints Road

Parts of All Saints Road flood as a result of surface water flowing from adjacent land (such as parts of the hospital car park) affecting multiple properties internally and externally; the most severe flooding at this location in recent years was in 2012. North Worcestershire Water Management (NWWM) and the Highways Authority (WCC) have been involved by providing information on property level resilience to residents and undertaking highway drainage improvements, respectively. In addition, an approved planning application on the hospital site has potential to better manage and reduce runoff from the site towards All Saints Road.

2.3.2 Aston Fields Recreation Area

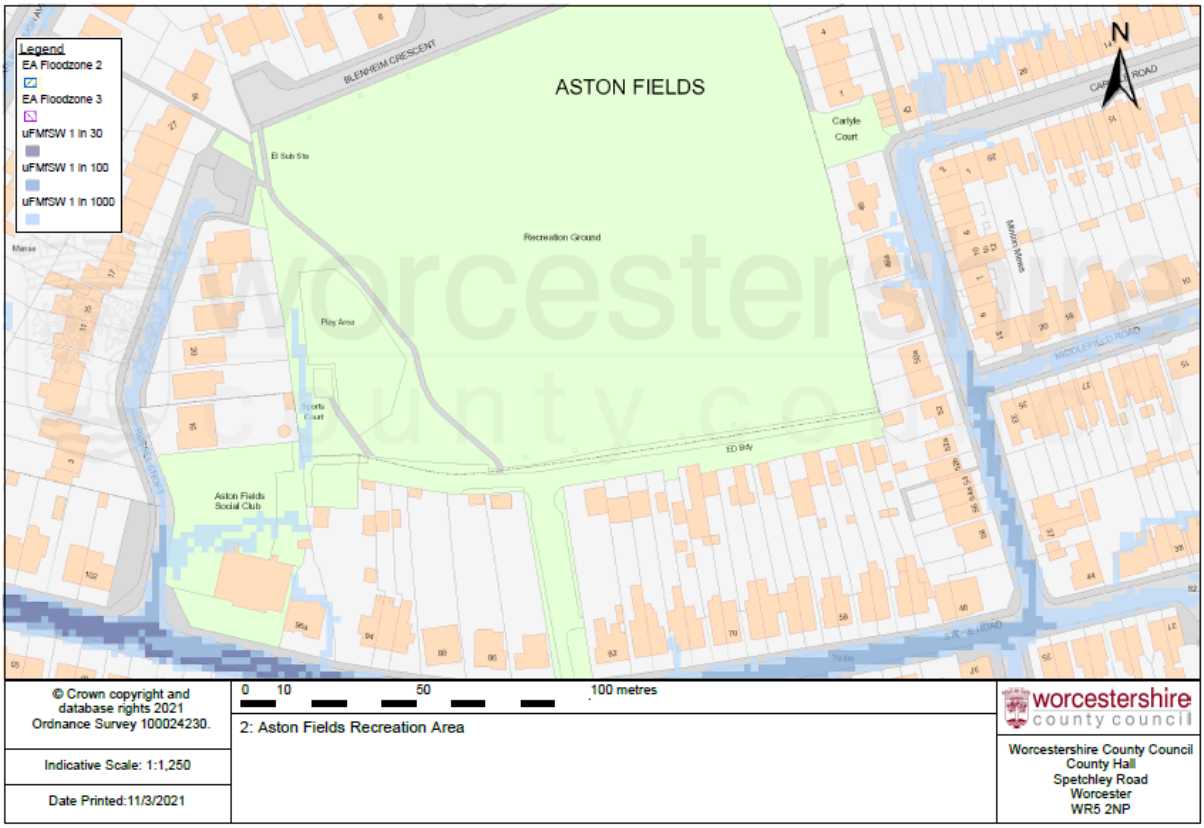

Figure 4 - Aston Field Recreation Area

The recreation area off Russel Croft in Aston Fields conveys surface water flows across the field as the South West corner is some 10m lower than the North East. It is understood that two dwellings and a business are at risk of flooding in this area. The lead RMA is NWWM as surface water is the sole cause of flooding. Infiltration is not an option here as the soil is comprised of clay, therefore attenuation is a preferred option. A ditch has been dug along the Western boundary of the field to capture run-off which is working well. It was hoped that a small balancing area could be created in the lowest corner of the field. However, neither STW nor WCC Highways were prepared to allow a connection into their drainage systems due to already being at capacity therefore this option was not progressed.

2.3.3 Brook Road, Watt Close and Sanders Park

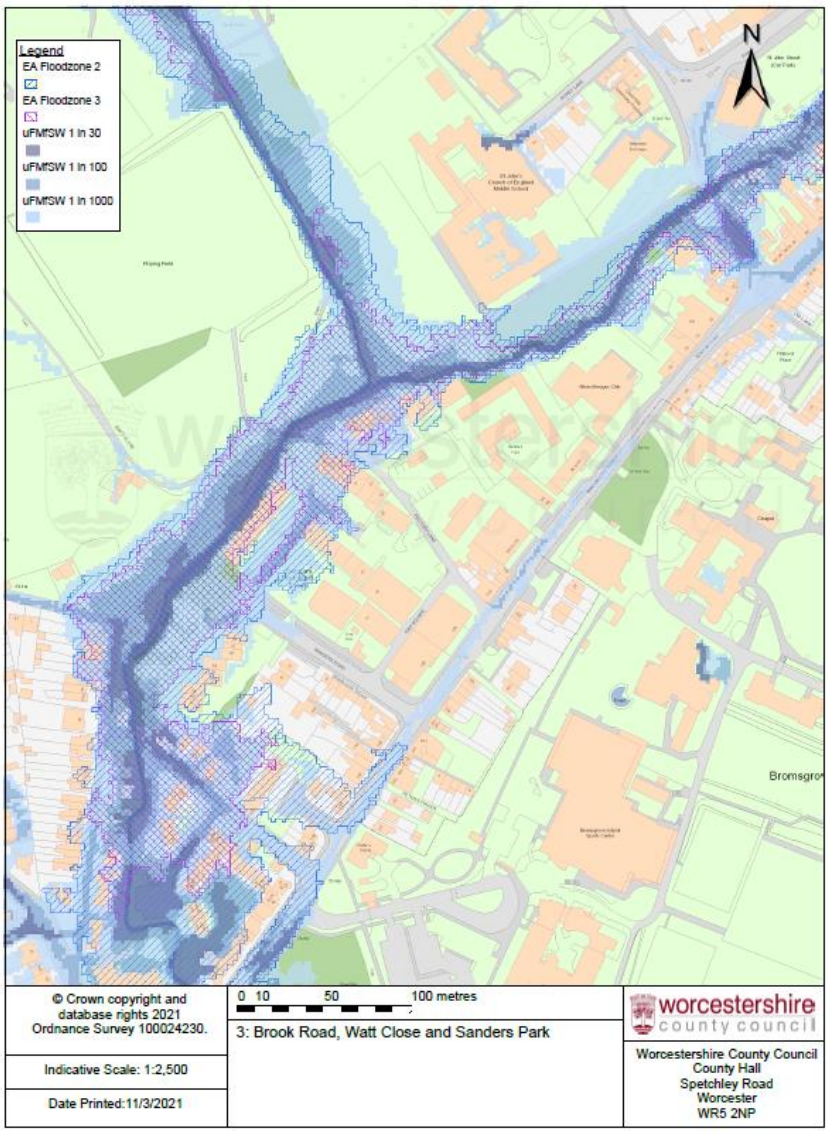

Figure 5 – Brook Road and Sanders Park

Fluvial flooding from the Battlefield Brook main river is the primary issue on Brook Road with the Ford Road bridge creating a throttle which can cause the water to back up and overflow. Surface water flooding through Sanders Park also occurs. Historically the canalisation of the Sanders Park section of the Battlefield Brook resulted in faster flows, a lack of capacity and reduced infiltration rates. However, in recent years this has been naturalised as part of a major scheme in partnership with Severn Trent Water, the Environment Agency, BDC and the Wildlife Trust. The key RMA here is the Environment Agency, with BDC the landowner of Sanders Park. This area floods frequently and has impacted several garages and properties as well as flooding the footpath running through the park.

2.3.4 Charford Road

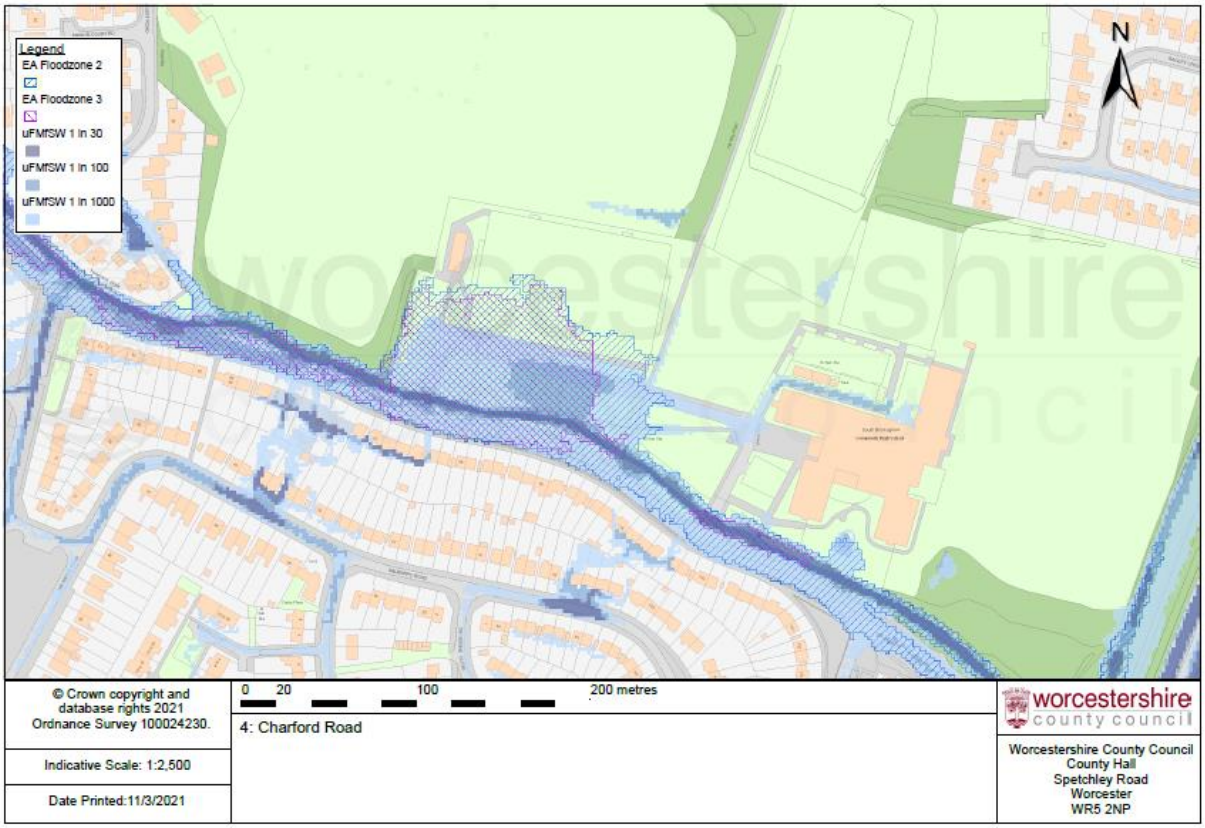

Figure 6 - Charford Road

Along Charford Road there is a low bridge connecting the main highway to the school car park which forms a throttle on the Spadesbourne Brook, which is not helped by the lack of maintenance along the length of the brook. At this point water backs up and floods onto the school car park. This was the case in 2012 where several cars were damaged and written off. Furthermore, outfalls of the car park block due to debris being caught up in the bridge, which stops the water from the car park draining properly. It may be possible to create a designated overflow route for water to prevent it flowing across the carpark causing potential damage to vehicles. The Spadesbourne Brook is a main river at this point and therefore is under the jurisdiction of the Environment Agency. The school is the riparian landowner thus having responsibilities regarding flooding, obstruction and pollution.

2.3.5 Grayshott Close & Perryfields Road

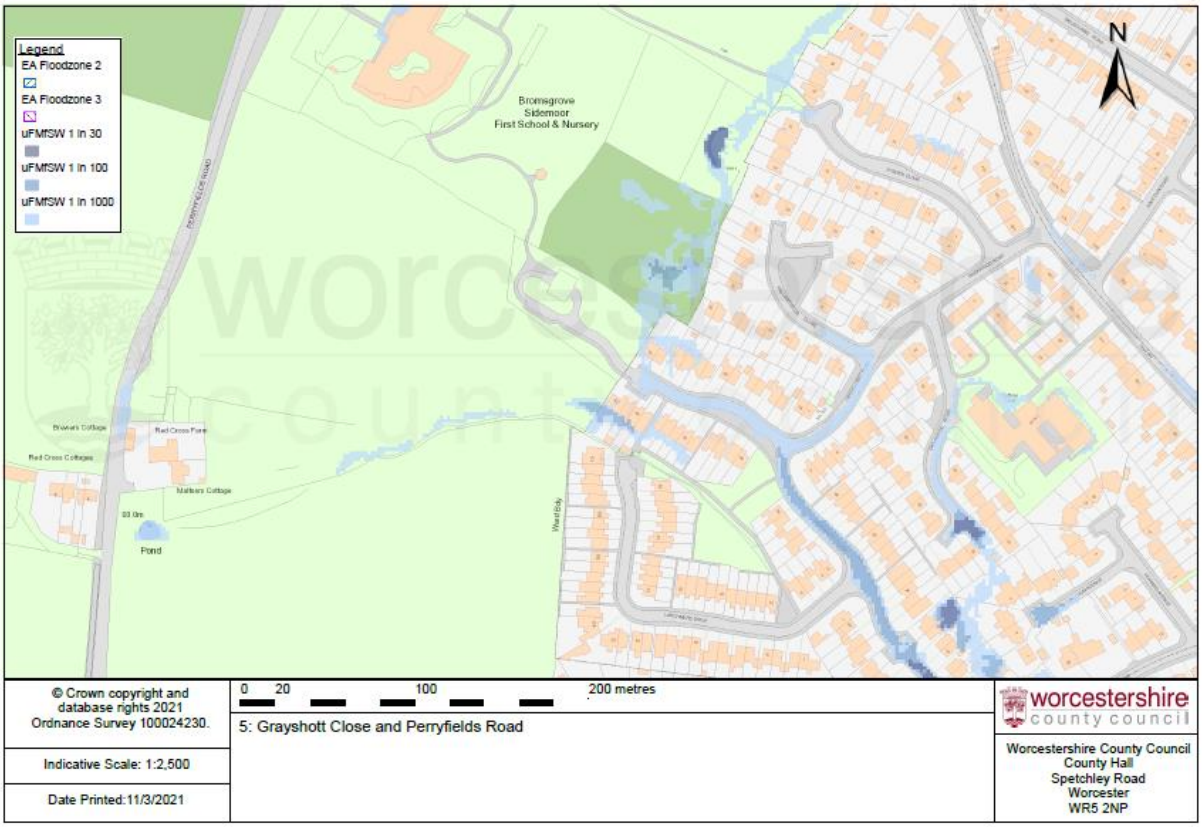

Figure 7 - Grayshott Close

Flooding in the area of Grayshott Close is associated with surface water and the overflowing of minor boundary ditches on the land of the school causing water to collect in a number of gardens. NWWM have worked with a facilities management company on behalf of the school to improve the conveyance of water through the school site to minimise the potential for flooding of land elsewhere. Flooding on Perryfields Road has, in recent years, caused a number of road closures, but riparian owners have undertaken ditch and watercourse maintenance to help maintain the flow of water in the area thereby reducing flood risk. In addition, the major development site on Perryfields Road, if planning permission is granted, has potential to improve the overall drainage of the area.

2.3.6 High Street & Crown Close

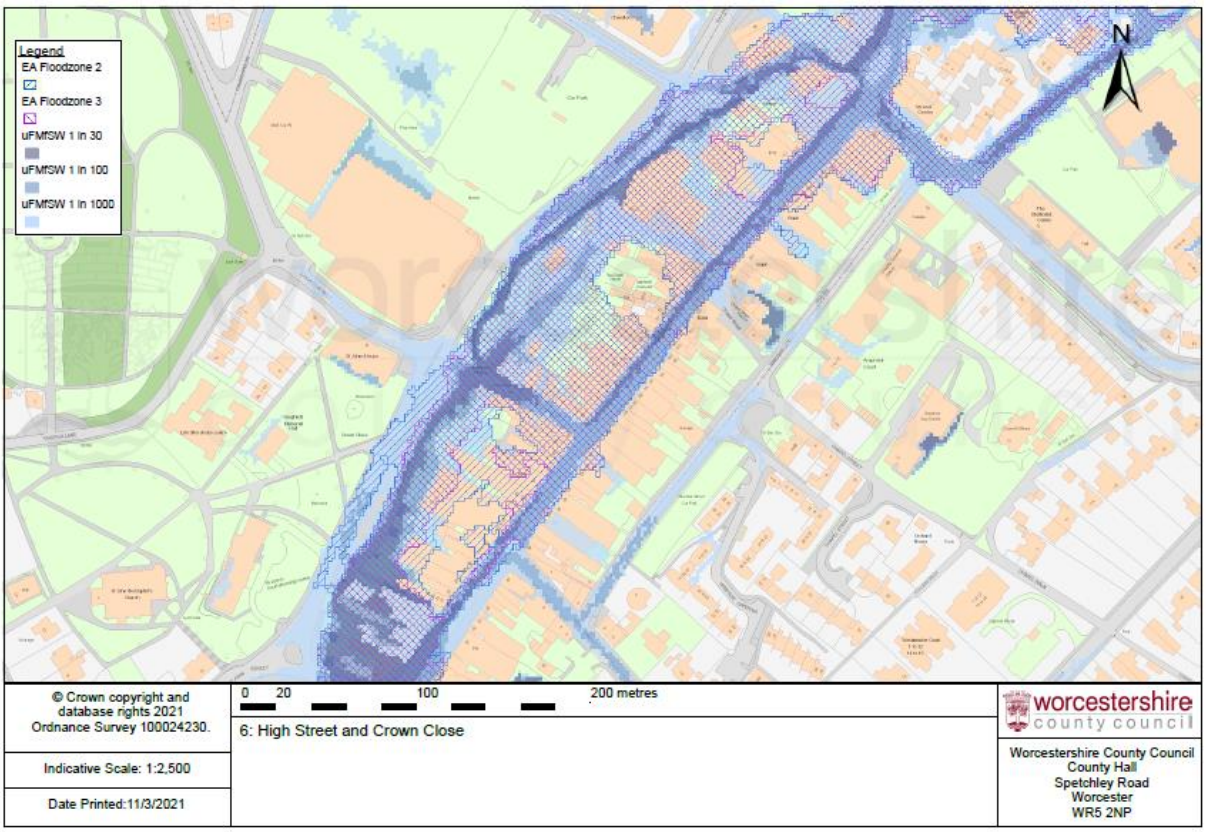

Figure 10 – High Street and Crown Close

Historically the High Street and Crown Close areas were subjected to surface water flooding, but as part of the town centre regeneration in recent years the high street surface and camber were altered to reduce the risk of surface water flowing towards businesses. More recently businesses towards St John Street were affected by internal surface water flooding – this is the subject of ongoing investigations. In 2015 Repair and Renew Grants were issued to businesses on Church Street for property level resilience measures.

2.3.7 Lickey End

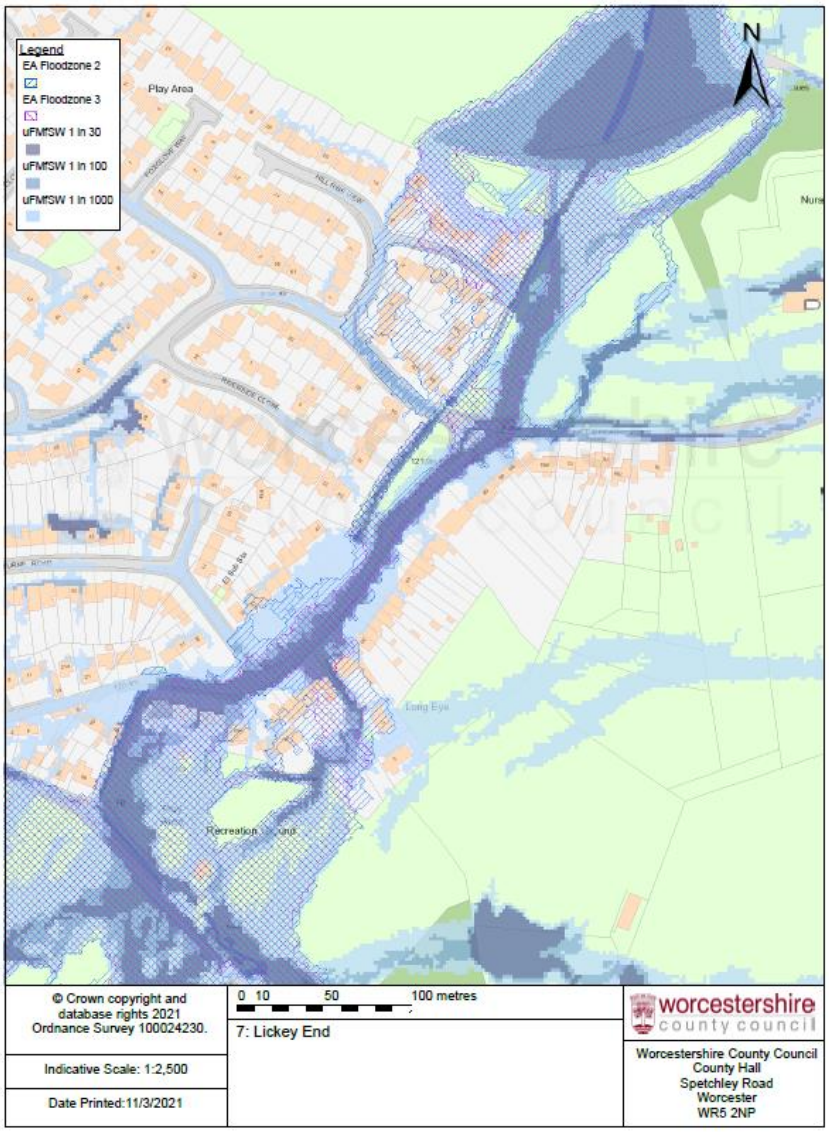

Figure 11 – Lickey End

Flooding in the Lickey End area is the result of surface water and the overtopping of the Spadesbourne Brook adjacent to the recreation ground on the Alcester Road. Upstream of Lickey End there is a large balancing area owned by Highways England; this has been the subject of investigation in recent years as there is a possibility that the area does not store the volumes of water that it is intended to; the Environment Agency are leading on investigations, in partnership with NWWM, to identify measures which may be suitable for storing additional water within the balancing area. Further minor attenuation measures may be possible around the recreation area on Alcester Road as part of a Natural Networks funded scheme. Ongoing maintenance is key to ensuring the proper flow of water is maintained; it is hoped that a community group will be formed here to help manage the growth of invasive plants within and along the watercourse.

2.3.8 Old Burcot Lane

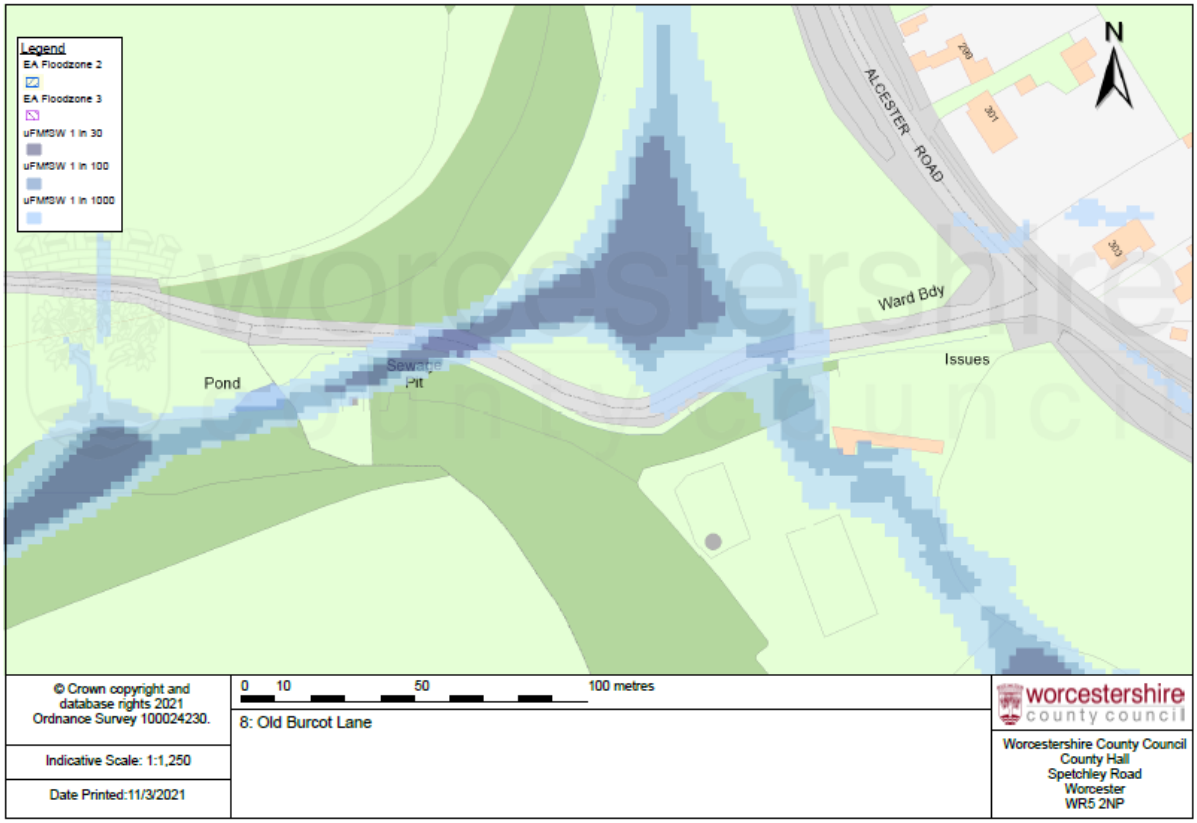

Figure 12 – Old Burcot Lane

Until recently Old Burcot Lane suffered frequent highway flooding from both surface water runoff and the overtopping of the Burcot Brook. The channel downstream through private land was poorly maintained reducing the efficiency of water flow. In 2020 WCC Highways undertook a major drainage improvement scheme, reinstating the Burcot Brook and laying a new culvert beneath the highway while the downstream landowner also undertook significant maintenance. It is important that maintenance continues along here to ensure flood risk remains reduced.

2.3.9 Stoke Road

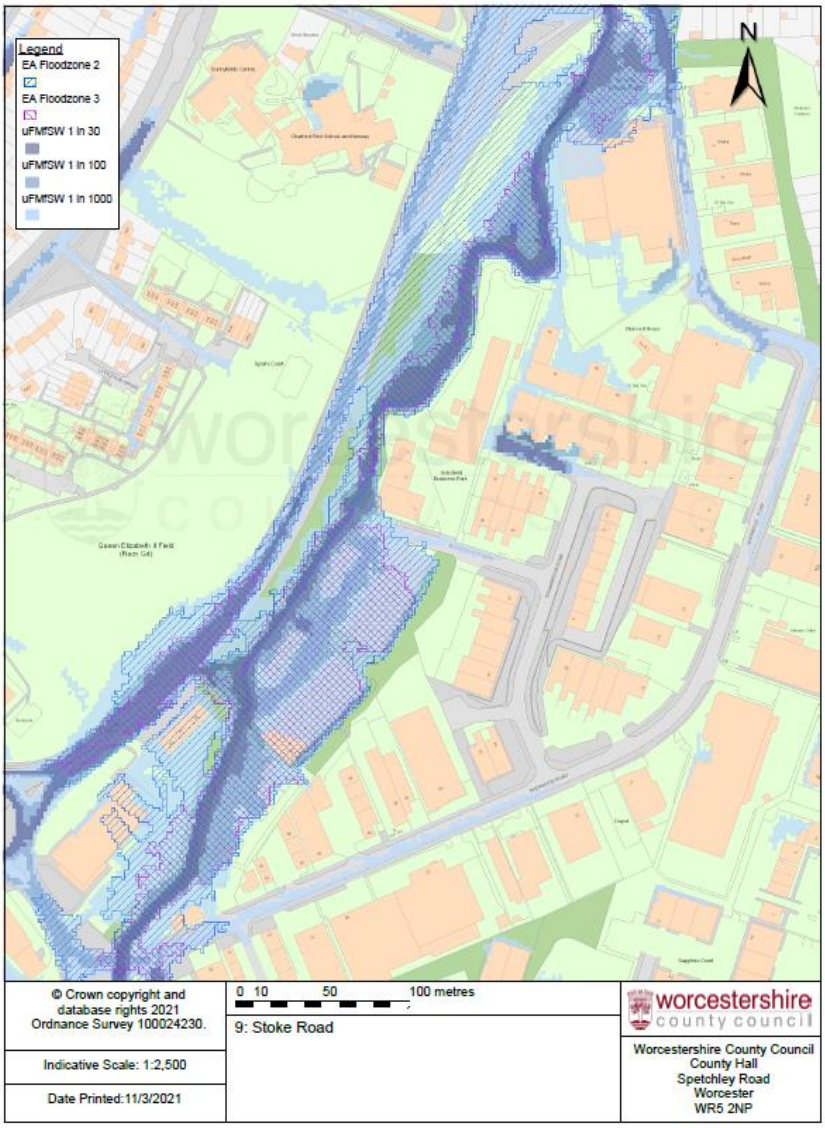

Figure 13 – Stoke Road

Stoke Road (the A38) is an important transport link locally but is subjected to frequent flooding which often results in the road being closed. In 2012, along with the road, three businesses and a number of properties flooded both internally and externally.

Flooding here is the result of a combination of storm and foul systems surcharging onto the road during intense rainfall, the high water levels in the Sugar Brook preventing surface water drains outfalling effectively, and surface water accumulation on the highway surface. Investigations are continuing, led by STW and WCC Highways with Severn Trent Water Ltd, working on a feasibility study to identify measures which may be considered to reduce flood risk in the area.

2.3.10 The Strand

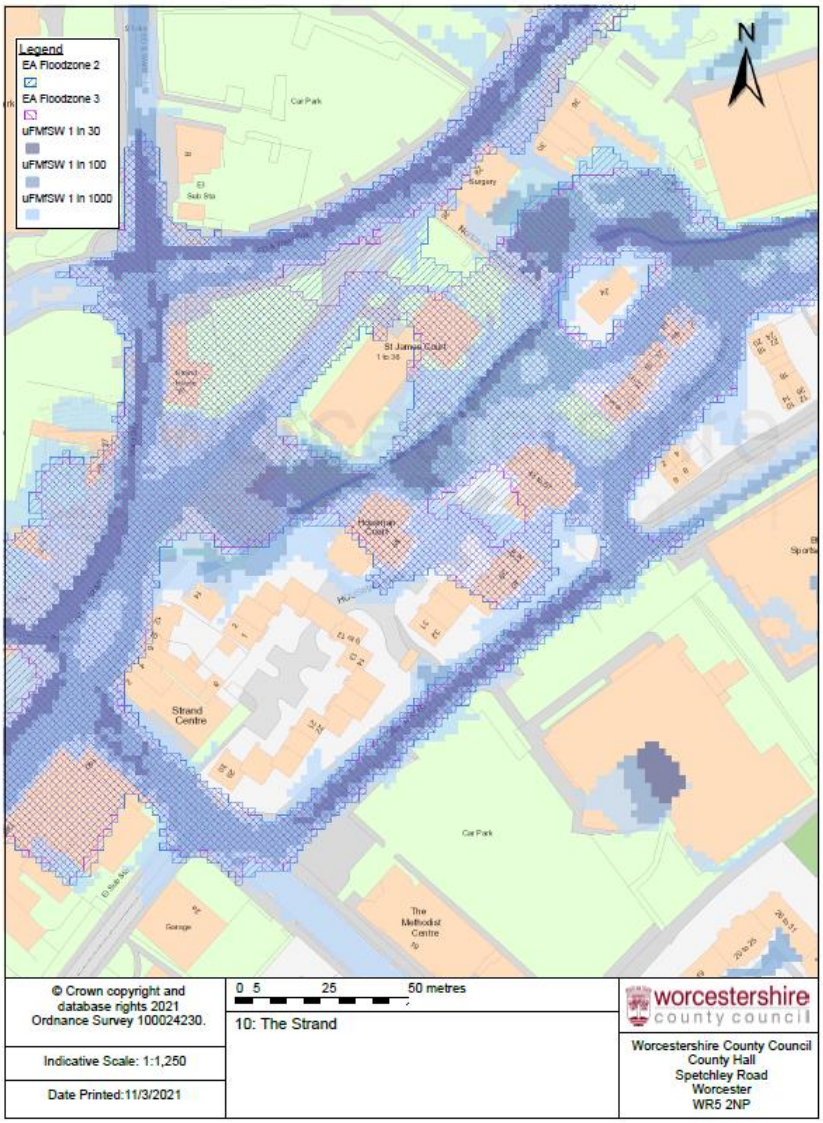

Figure 14 - The Strand

The Strand flooded badly in 2007 and 2012 from both surface water and the overtopping of the Spadesbourne Brook affecting several businesses both sides of the road. Due to issues regarding debris within the culvert in the past, NWWM had a trash screen installed (designed and installed to EA guidance standards). Three businesses on The Strand obtained a variety of property level protection measures as part of Defra's "repair & renew" scheme following the flooding over the winter of 2014. Regular inspections are undertaken at this location as maintenance of the grid is a top priority.

2.3.11 Warwick Avenue and Bant Mill Road

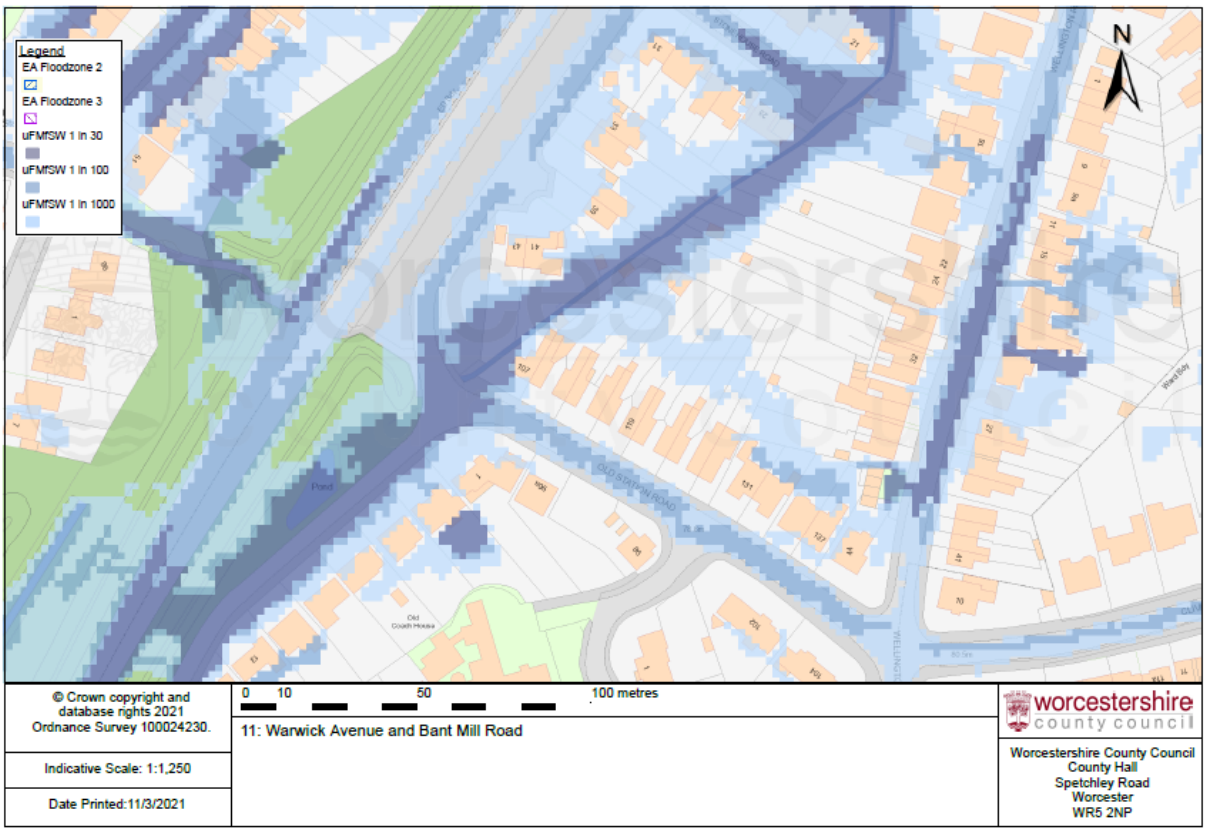

Figure 15 - Warwick Avenue and Bant Mill Road

Flooding at Warwick Avenue is due to a combination of fluvial flooding (from the Warwick Brook) and surface water overwhelming the highways drainage system. In 2012 several properties flooded, and as a result WCC Highways department undertook a flood alleviation scheme which involved diverting a number of gullies into a new balancing area and creating an overflow route from the culverted watercourse into this new flood storage area.

Flooding on Bant Mill Road is associated with surface water flowing off the adjacent school site. As part of a recent development within the school's grounds, surface water attenuation has been vastly improved and this, in combination with maintenance of the watercourse downstream of Bant Mill Road, has meant the risk of flooding in the area is believed to have been reduced.

3. Options

3.1 Menu of measures

- Property Level Protection
- Maintenance of Watercourse
- Maintenance of Asset(s)
- Removal of Obstruction(s)
- Highways Drainage Improvements
- Improvements via Development
- Minor scheme (unique to site)
- Major scheme (unique to site)

3.2 Assessment of measures and preferred measures

Key	
✓	Types of measures that will work
✓	Types of measures that will be used

	All Saints Road	Aston Fields Recreation Area	Brook Road & Sanders Park	Charford Road	Grayshott Close	Lickey End	Stoke Road	The Strand	Warwick Avenue & Bant Mill Road
Property Level Protection	✓	✓	✓				✓	✓	✓
Maintenance of Watercourse			✓	✓	✓	✓	✓	✓	
Maintenance of Asset(s)	✓		✓	✓		✓	✓	✓	
Removal of Obstruction(s)			✓	✓		✓		✓	
Highways Drainage Improvements	✓						✓		✓
Improvements via Development	✓				✓				✓
Minor scheme (unique to site)		✓		✓	✓				✓
Major scheme (unique to site)			✓			✓	✓		

Table 7 – Assessment of Measures and Preferred Measures

4. Action Plans

This action plan was last updated on 15/12/2020.

Key	
Status	**Meaning**
Red	**Off Target**
Amber	**On Target/issues**
Green	**On Target, no issues**

All Saints Road & Birmingham Road

Action	Lead Authority	Other Authorities	Date Complete (or due)	Cost	Status (date)
Investigate access chambers	WCC Highways		2016-17 - complete	£5,000	Complete
Monitoring of access chambers	WCC Highways		Ongoing	n/a	Complete
Drainage improvements on hospital car park	NWWM (via BDC Planners)	WCC Highways	TBC	n/a	Amber
Maintenance of the watercourse downstream	NWWM	WCC Highways	Ongoing		Complete
Installation of water level alarm / flood warning system	EA	NWWM	2021		Green
Shenstone Close natural networks scheme to attenuate flood water	NWWM	BDC, Police, BDHT	2019	£9,000	Complete

Aston Fields Recreation Area

Action	Lead Authority	Other Authorities	Date Complete (or due)	Cost	Status (date)
Ditch along Western boundary to be dug	BDC	NWWM	Complete (25/06/2014)		Complete
Drainage to be installed on the access road South of the playing field	BDC	NWWM	Complete (2020)		Complete
Natural Networks wetland with flood alleviation benefits	NWWM	BDC	Summer 2021		Green

Brook Road, Watt Close & Sanders Park

Action	Lead Authority	Other Authorities	Date Complete (or due)	Cost	Status (date)
Maintenance of Watercourse	EA		Ongoing		Complete
Removal of obstructions from below Ford Road bridge	EA		2018		Complete
Advise residents of property level protection measures	EA	NWWM	2016-17	n/a	Complete
Naturalisation of concrete channel and works to improve the Battlefield Brook	STW	EA, BDC, WWT, NWWM	2017-18		Complete
Ongoing discussions regarding altering abstraction volumes – Has appreciation been given to flood risk issues?	STW	EA, WCC Highways, NWWM, WWT	2017-18		Complete
Investigate potential problems to alleviate Kidderminster Road flooding	WCC Highways	NWWM	2017-18		Complete
A448 drainage improvements	WCC		2019		Complete
Installation of water level alarm / flood warning system	EA	NWWM	2021		Green
St Johns School drainage investigation & advice	WCC, NWWM		2020		Complete
Investigating flood alleviation measures around the confluence with the Battlefield & Spadesbourne Brooks	EA	NWWM, BDC, WCC			

Charford Road

Action	Lead Authority	Other Authorities	Date Complete (or due)	Cost	Status (date)
Maintenance of Watercourse along Charford Road	EA		Ongoing		Green
Correspondence to advise land owners of their responsibility of watercourse	EA		2017-18		Green
Provide recommendations to school regarding watercourse maintenance and improvements to outfalls from car park areas.	EA		2022		Green
Watercourse maintenance upstream (Crown Close)	NWWM		2017		Complete
Removal of willow trees along Charford Road	WCC Highways	EA	Completed (2015 & 2019)		Complete
Investigate issues at Pig Alley	WCC Highways	NWWM	2016-17		Complete
Works to improve drainage at Pig Alley	WCC		2019		Complete

Potential for a volunteer day to clear the brook & NFF education programme with school.	ALL		2022		Green

Grayshott Close & Perryfields Road

Action	Lead Authority	Other Authorities	Date Complete (or due)	Cost	Status (date)
Liaise with school regarding the removal of unconsented culvert and re-profiling of ditches	NWWM		06/01/2017		Complete
Improvements through the Perryfields development – DOC and condition applied?	NWWM	BDC Planning	2017-20	n/a	Green
Ditch maintenance through PoS	BDC	NWWM	Due 21/2/20		Complete
Maintenance of watercourse through private land	NWWM	WCC	2020		Complete

High Street & Crown Close

Action	Lead Authority	Other Authorities	Date Complete (or due)	Cost	Status (date)
Drainage improvements as part of high street regeneration	WCC	BDC	2013		Complete
Grid replacement at Crown Close	NWWM		11/06/2014	£5200	Complete
Investigations into issues around St John Street	NWWM	WCC	2021		Green

Lickey End

Action	Lead Authority	Other Authorities	Date Complete (or due)	Cost	Status (date)
Maintenance of watercourse downstream of Alcester Road bridge	NWWM		26.04.16	n/a	Complete
Removal of fallen tree downstream of Alcester Road bridge, and maintenance of wetland area in park to improve attenuation	NWWM		2019		Complete
Maintenance of watercourse through PoS	BDC	NWWM	14/12/2020		Complete
Integrated scheme for Bromsgrove & updated model	NWWM	EA, WCC Highways, BDC, STW, WWT	2019-21		Green

Temporary water level sensor installed within the balancing area	NWWM	HE	2020	n/a	
Inspection of brook through Balancing Area, and maintenance where necessary	NWWM	HE	2020		Complete
Details of M42 drainage outfall locations to be provided to NWWM	HE	NWWM	2021	n/a	Amber
Natural Networks scheme to provide flood storage and biodiversity improvements in the area	EA	NWWM, WCC, BDC, STW, HE	2021		Green

Old Burcot Lane

Action	Lead Authority	Other Authorities	Date Complete (or due)	Cost	Status (date)
Watercourse maintenance on private land	NWWM		2020	n/a	Complete
Channel restoration along the lane	WCC	NWWM	2020		Complete
Highway drainage improvements including new culvert under the lane	WCC		2020		Complete

Stoke Road

Action	Lead Authority	Other Authorities	Date Complete (or due)	Cost	Status (date)
Feasibility study into options for flood alleviation	STW	EA, WCC	2021		Green
Report incidents of flooding to STW & EA, and copy details to FM (NWWM)	ALL		Ongoing	n/a	Green
Maintenance of Watercourse	EA		Ongoing		Green
Sewer models to be updated	STW		Complete		Complete
Report previous incidents of flooding to EA & STW	NWWM	EA, STW	Complete (16.05.2016)		Complete
Working Group meeting	NWWM	EA, STW, WCC Highways, WWT	2017 & 2019	n/a	Complete
Replacement manhole covers for safety of road users	STW		2019		Complete
Drainage survey as part of A38 works	WCC		2020		Complete
Flood alleviation scheme	ALL	STW, WCC, EA	AMP7		Green

The Strand

Action	Lead Authority	Other Authorities	Date Complete (or due)	Cost	Status (date)
Installation of trash screen	NWWM	BDC, WCC Highways	11/06/2014	£5200	Complete
Provision of PLR to businesses on The Strand (subject to Repair & Renew conditions)	NWWM		October 2015	£12,000 – Bromsgrove Whole	Complete
Maintenance of Watercourse (or correspondence to advice land owners of their responsibility)	NWWM		2016	n/a	Complete
Monitoring of the grill	NWWM	WCC, BDC	Ongoing	TBC	Green
Update details of system at Stratford Rd/School Drive	STW	WCC Highways	2017-18		Complete
Comms with the Cllr	WCC Highways	NWWM	Ongoing	n/a	Green
Comms with the local businesses	NWWM		2016-17	n/a	Complete
Installation of a water level monitor	NWWM		30-04-2018	£3,000	Green

Warwick Avenue & Bant Mill Road

Action	Lead Authority	Other Authorities	Date Complete (or due)	Cost	Status (date)
Creation of flood storage area and highways drainage improvements	WCC Highways	NWWM	February 2014		Complete
Working with residents to improve maintenance and capacity of the watercourse	NWWM		September 2013		Complete
Advice on PLP for residents	NWWM		September 2013		Complete
Advice on development on school site to improve attenuation and reduce surface water runoff to Bant Mill Road	NWWM	BDC Planning	2016		Complete
Check maintenance of the swale and watercourse	WCC Highways		2016-17	n/a	Complete
Maintenance of Burcot Brook at Harvington Road	NWWM	WCC	2018		Complete