BEDFORD BOROUGH COUNCIL

# Local Flood Risk Management Strategy 2022

*In fulfilment of the Flood and Water Management Act 2010*

**APRIL 2022**

*Environment Directorate*

# Contents

## 1. Executive Summary

As a Lead Local Flood Authority under the Flood and Water Management Act 2010 Bedford Borough Council is required to lead the coordination of flood risk in their local area and therefore develop, implement and maintain a strategy for local flood risk management in the area. This Strategy supersedes the Local Flood Risk Management Strategy (LFRMS) of 2015 and provides a revision of how the Borough and its partners will manage flood risk within the Borough over the next 5 years.

The revised LFRMS seeks to build on the challenges already known to us and take forward the new challenges we face today and in the future. Climate change is considered to be one of the most significant future pressures in terms of flood risk. It is a significant challenge for our generation and has already began to cause impacts to the planet, people and way of life. Since the development of the last Strategy, we have seen many changes, not only in the new legislation and polices but also physical changes and impacts. The flooding in December 2020 reached levels not experienced since the Easter flooding of 1998. 65 properties were flooded internally from both surface water and fluvial flooding across 27 different locations. The impact of surface water flooding appears to be increasing over time, as catchments become saturated with intense rainfalls, overland flows form quickly causing widespread impacts that are often difficult to predict. Improved land management, drainage and riparian ownership responsibilities is increasingly important with the changing climate.

Changes in legislation and policies also call for a change in the way we face and deal with flood risk management. The revised National Flood and Coastal Erosion Risk Management Strategy for England, sets the vision of a nation ready for, and resilient to, flooding and coastal change – today, tomorrow and to the year 2100.

Local Authorities face continued pressures on resources, as a result we need to ensure we think innovatively and look carefully at what we already know, what works and what small changes we can make to have the most impact. This includes making the best land use and development choices, protecting people and places, responding to and recovering from flooding and coastal change and adapting to climate change. The strategy will also explain the different funding streams available and the importance of local partnerships and contributions in delivering actions.

The revised strategy has built on what we have learnt since 2015 to include the December 2020 flood event. It takes on the visions and aspirations of new and emerging policies and legislation to create a strategy which will inform local flood risk management into the next 5 years. The aim of the strategy is therefore to:

***To ensure the Council and its partners work to achieve a Borough that is prepared and resilient to flooding for those who live, work and visit our vibrant communities***

The LFRMS aligns to the vision of the National Strategy which seeks to build a nation of people who understand their (individual) risk to flooding and know their responsibilities and how to take action. It seeks to make a more resilient Borough who are ready to respond to continue to work together to better understand, manage and mitigate flood risk across the Borough. The Strategy therefore has 5 objectives to achieve this aim:

1. ***Understand and, where possible, Mitigate Flood Risk across the Borough***

2. ***Build Climate resilience into the Borough, communities and residents***

3. ***Ensuring appropriate development by promoting appropriate land use and development choices of future development, considering areas at risk of flooding and ensuring Sustainable Drainage Systems are appropriately designed into developments taking account of relevant technical standards and best practice***

4. ***Work in partnership with other Risk Management Authorities to understand and where possible mitigate flood risk across the catchment***

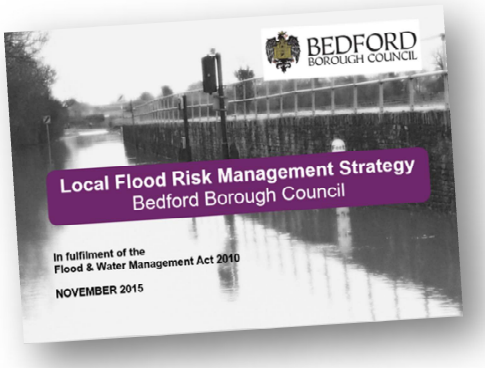
5. ***Continue to raise awareness of Flood Risk across the Borough from all sources of flooding including fluvial and surface water***

Climate change is upon us, by reflecting the governments digital agenda and benefits of working strategically across boundaries to take a more 'catchment-based approach, to build resilience, to think smarter, to be more innovative, to manage and reduce flood risk across the Borough and the catchment. The Action Plan included within the Strategy sets out how the Council and its partners will work over the next 5 years to deliver the objectives embedded within this document. The actions set out how the Council and its partners will work to achieve a Borough that is ready and resilient to flooding.

## 2. Introduction

### 2.1. Background

Since the Local Flood Risk Management Strategy (LFRMS) was produced in 2015 Bedford Borough Council has been working to ensure flood risk is more effective across the Borough. The Strategy in 2015 set out a series of objectives and actions to determine how the Borough and its partners worked to meet the strategy objectives.




The LFRMS 2015 was an important new tool to help understand and mange flood risk within the Borough. Its aim was to ensure the necessary mechanisms were in place to provide knowledge of the risks in the Borough, better co-operation between organisations involved in flood risk management and better communication with the public about those risks and what can be done to manage them. The LFRMS 2022 continues to build on the previous work of the Council and progress the new challenges we face today and into the future.

Bedford Borough Council is a Lead Local Flood Authority and as such has a duty to develop, maintain and monitor a local strategy for local flood risk management in its area as prescribed under the Flood and water Management Act 2010.

Since the first Strategy was produced Bedford Borough Council has been subject to widespread flooding across the Borough due to significant rainfall events. With each rainfall event we learn in order to assist communities to better prepare for flooding and look for new ways to become more flood resilient.

The Borough has also seen significant growth and development over recent years with new developments such as Wixams, Fields Road Wootton, Great Denham, Cemetery Road Kempston, land north of Bromham Road and Land south of Paula Radcliffe Way, with growth predicted to continue into the future years.

**The National Flood & Coastal Erosion Risk Management Strategy** was also revised in 2020-21 and sets the long term vision for a nation ready for and resilient to flooding and coastal change today, tomorrow and to the year 2100.

Bedford Borough Council is a Lead Local Flood Authority and is therefore responsible for the management of 'Local Flood Risk'. Local Flood Risk is defined as surface water flooding, ordinary watercourse flooding (outside the Internal drainage district district) and groundwater flooding, defined by the Flood and Water Management Act 2010. Therefore, this LFRMS 2022 continues to addresses Local Flood Risk and the interactions it might have with other forms of flood risk. More households are at risk from this form of flooding than any other, so this revision will continue on the works set out previously to address them. The LFRMS covers the Bedford Borough area only. Our neighbouring authorities are also Lead Local Flood Authorities and have their own LFRMS in place.

Although this Strategy focuses on managing local sources of flooding, details are also provided about other flood sources and the organisations who lead on managing flood risk from these. The Strategy explains the powers and responsibilities of all the major organisations involved in flood risk management. It also highlights and summarises the information available on flooding in Bedford Borough so that this information is more easily accessible for those trying to understand more about flood risk in Bedford Borough.

### 2.2. Strategic Context

Past flood events have shaped legislation on how England approaches flood risk management, with more emphasis is being put on the increasing flood risk associated with climate change. This means addressing how flood risk is managed now and, in the future, taking into account effects of climate change, such as sea level rise and increased frequency and intensity of rainfall events.

Following the nationwide flooding in England in 2007, it became clear that risk management authorities were under prepared and equipped to deal with flood events. Therefore, since 2007, UK legislation has focused on identifying responsibilities specifically for flood risk management. Policy and Legislation has developed as we learn how humans and the natural environment interact.

As the population of England has increased and land used for development has expanded, legislation has been introduced to improve the way water is used as a natural resource and the way the water environment is managed.

The following legislation, polices and plans depicts the approach of this revised Strategy. Additional relevant legislation can be found within Appendix A.


Figure 1.0 Legislative drivers to develop the LFRMS

### 2.2.1. The Pitt Review 2008

The Pitt Review that was undertaken in 2007 following the major summer flooding in the same year. The review put forward 92 recommendations covering prediction and warning of flooding, prevention, emergency management, resilience and recovery. Many of the recommendations were far-reaching and called for a radical reshaping of our flood risk management practice. The review defined the need to address surface water and set out the roles and responsibilities of risk management authorities, as a result, two key pieces of legislation were brought in:

- The Flood Risk Regulations 2009
- The Flood and Water Management Act 2010

### 2.2.2. The Flood Risk Regulations 2009

The Flood Risk Regulations 2009 translate the EU Floods Directive into UK law. The Regulations require all Lead LLFA's to complete a Preliminary Flood Risk Assessment (PFRA), which is a high level screening exercise used to determine if there is a significant flood risk in the area and identify these areas as flood risk areas.

**Preliminary Flood Risk Assessment (PFRA)**

Bedford Borough Council undertook its first PRFA in 2011 as outlined in the previous LFRMS 2015. PRFA's are required to be reviewed and updated every 6 years and as such in 2017 the Council carried out its second review.

No defined Flood Risk Areas (FRA) were identified within the Borough as prescribed under the Flood Risk Regulations 2009. The PFRA informs the Environment Agency's (EA) Flood Risk Management Plans (FRMP) which set out how risk management authorities are working together, with communities, to manage flood and coastal risk over the next 6 years.

**Flood Risk Management Plans (FRMP)**

The production of a Flood Risk Management Plan is a requirement of the Flood Risk Regulations (2009), which set out a statutory process for flood risk planning over a 6-year cycle. The Environment Agency (EA) and Lead Local Flood Authorities (LLFA) are required to:

- Assess the risk of flooding to people, the economy, and the environment.
- Identify areas where the risk of flooding is considered to be significant. These are designated flood risk areas (FRAs), which were identified through Preliminary Flood Risk Assessments (PFRAs) in 2018.
- Prepare flood hazard maps which highlight the risk of flooding to receptors within FRAs.
- Prepare FRMPs that set objectives and identify measures, which are actions to manage flood risk within the FRAs and the wider River Basin District (RBD).

The first cycle Anglian FRMP was published in 2015 and covers the period from 2015-2021. The second cycle plan is currently being developed and will cover the period from 2021-2027. The Final FRMP will have two main parts:

- A series of reports providing an overview of the Anglian RBD, a review of progress made during the first cycle, and an Environmental Report.
- A live online mapping tool which will display the measures across the RBD. The tool will be updated during the lifecycle of the plan to ensure that information is up to date.

Although Bedford Borough Council did not have any identified FRA we continued to work with the EA through the development of the FRMP to show what is happening to manage flood risk across the Anglian River Basin District.

### 2.2.3. The Flood and Water Management Act 2010

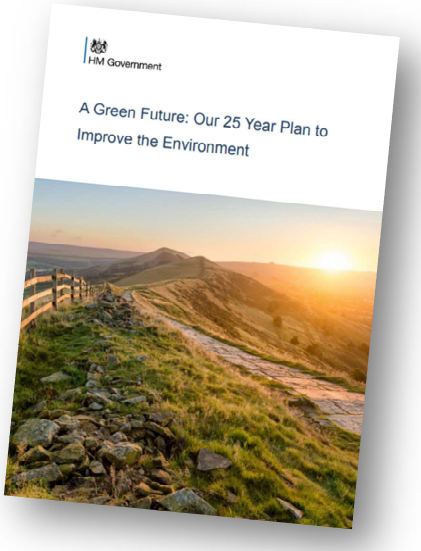
The Flood and Water Management Act 2010 brings together the recommendations of the Pitt Review to create a comprehensive risk based regime for managing flood risk from all sources of flooding, by defining 'Risk Management Authorities' and formalising the flood risk management role and responsibilities of each. It is that Flood and Water Management Act 2010 that places a statutory duty on Bedford Borough Council, as a Lead Local Flood Authority, to develop, maintain and monitor a local strategy for local flood risk management in its area.

The legislation states and therefore this strategy will specify:

- the risk management authorities in the Local Authority (Council) area
- the flood and coastal erosion risk management functions that may be exercised by those authorities in relation to the area
- the objectives for managing local flood risk
- the measures proposed to achieve those objectives
- how and when the measures are expected to be implemented
- the costs and benefits of those measures, and how they are to be paid for
- the assessment of local flood risk for the purpose of the strategy
- how and when the strategy is to be reviewed, and how the strategy contributes to the achievement of wider environmental objectives

### 2.2.4. 25 Year Environment Plan 2018

In 2018 the Government published its 25 Year Environment Plan to Improve the Environment. The plan also gives some direction to national and local flood risk management strategies. It recognises the implications of future climate change on flood risk and outlines sustainable measures to reduce the risk from flooding. The plan also sets out is aspiration to be the first generation to leave the environment in a better state than when we found it.




The plan promotes expanding the use of natural flood management solutions, creating sustainable drainage systems designed to mitigate 'at risk' properties to increased events, and making them more resilient to flooding.

Our revised Strategy will therefore align with the goals of the 25-year plan including raising awareness of flood risk in communities and working with them to increase resilience, through increased preparedness and implementing flood alleviation schemes. It also highlights the importance of influencing decisions on land use and development, achieved through our role as a statutory consultee and through our involvement with Natural Flood Management initiatives.

### 2.2.5. The National Flood Risk Management Strategy 2020

The new National Flood and Coastal Erosion Risk Management Strategy for England was published in July 2020. It calls for a nation to embrace a broad range of resilience actions including better protection to flooding and coastal change.

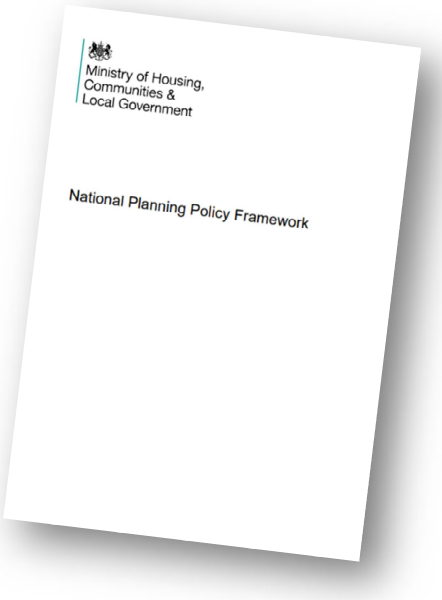
The Strategy's long-term vision is for: a nation ready for, and resilient to, flooding and coastal change – today, tomorrow and to the year 2100. It has three long-term ambitions, underpinned by evidence about future risk and investment needs. They are:

- *Climate resilient places:* working with partners to bolster resilience to flooding and coastal change across the nation, both now and in the face of climate change
- *Today's growth and infrastructure resilient in tomorrow's climate:* making the right investment and planning decisions to secure sustainable growth and environmental improvements, as well as infrastructure resilient to flooding and coastal change
- *A nation ready to respond and adapt to flooding and coastal change:* ensuring local people understand their risk to flooding and coastal change, and know their responsibilities and how to take action.

The Strategy seeks to build a nation of people who understand their risk to flooding and coastal change, and know their responsibilities and how to take action. Over 5.2 million homes and properties in England are at risk from flooding and coastal erosion. Yet only a third of people who live in areas at risk of flooding believe their property is at risk. Many more people are affected when transport services, energy or water infrastructure are damaged or disrupted. (Environment Agency 2020).

### 2.2.6. National Planning Policy Framework 2021

The National Planning Policy Framework was revised on 20 July 2021 and sets out the government's planning policies for England and how these are expected to be applied. This revised Framework replaces the previous National Planning Policy Framework published in March 2012. The National Planning Policy Framework (NPPF) outlines the national policy on development and flood risk assessment. It supports the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change.




The framework sets strict tests to protect people and property from flooding which all local planning authorities are expected to follow. Where these tests are not met, national policy is clear that new development should not be allowed. The tests are designed to ensure that if there are better sites in terms of flood risk, or a proposed development cannot be made safe it should not be permitted.

### 2.2.7. Bedford Borough Council's Strategic Flood Risk Assessment

As part of the evidence base for the Local Plan 2040 a Strategic Flood Risk Assessment (SFRA) level 1 was completed in November 2020. This SFRA established the fluvial flood zones in Bedford Borough as well as other sources of flood risk, and aided in the application of the sequential test when assessing potential development sites for allocation. An SFRA level 2 is currently being prepared, which will identify flood risk and mitigation solutions for sites considered suitable of allocation in the Local Plan 2040. This will aid in the application of the exception test, which ensures development on those sites will be safe for its lifetime whilst providing the opportunity for wider sustainability benefits.

### 2.2.8. Oxford to Cambridge Growth Arc

Several initiatives have started to prepare for the planned new development, examples of this include the OxCam Local Natural Capital Plan, a strategic review of flood risk known as the Great Ouse Strategic Interventions Study and a government commitment to develop a Spatial Framework to cover the Arc. A three stage OxCam Integrated Water Management Framework (IWMF) is underway to consider flooding, water management and related nature recovery holistically at the OxCam scale. A Flood Risk Investment Study will consider the optimum level of flood infrastructure investment for a range of growth and climate change scenarios. Together, these studies are expected to identify strategic adaptation and resilience approaches, and ways of working to bring them about.

## 3. Aim of the Bedford Borough Local Flood Risk Management Strategy 2022

The revised LFRMS is built on what we have learnt since 2015. It takes on the visions and aspirations of new and emerging policy (both local and national) and legislation to create a strategy which will take flood risk management into the next 5 years. The aim of the strategy is therefore to:

*To ensure the Council and its partners work to achieve a Borough that is prepared and resilient to flooding for those who live, work and visit our vibrant communities*

### 3.1. Objectives of the Strategy

The LFRMS follows the vision of the National Strategy which seeks to build a nation of people who understand their (individual) risk to flooding and know their responsibilities and how to take action. It seeks to make a more resilient Borough who are ready to respond to continue to work together to better understand, manage and mitigate flood risk across the Borough.

The objectives in the Strategy include statutory requirements from legislation, complementary objectives stated in relevant plans and strategies and preferences expressed, or known, within local communities. We have also ensured they are consistent with the objectives and guiding principles within the National Flood & Coastal Erosion Risk Management Strategy:

| | |
|---|---|
| 1 | • *Understand and, where possible, Mitigate Flood Risk across the Borough* |
| 2 | • *Build climate resilience into the Borough, communities and residents* |
| 3 | • *Ensuring appropriate development by promoting appropriate land use and development choices of future development, considering areas at risk of flooding and ensuring Sustainable Drainage Systems are appropriately designed into developments taking account of relevant technical standards and best practice* |
| 4 | • *Work in partnership with other Risk Management Authorities to understand and where possible mitigate flood risk across the catchment* |
| 5 | • *Continue to raise awareness of Flood Risk across the Borough from all sources of flooding including fluvial and surface water* |

## 4. The Catchment

Bedford Borough Council is part of the Anglian (Great Ouse) Catchment. There are 134,894 properties at direct risk of fluvial and tidal flooding within the Great Ouse catchment, of these 7,382 are at high risk of flooding.

Bedford Borough Council is a Lead Local Flood Authority and is responsible and accountable for the management of 'Local Flood Risk'. Local Flood Risk is defined as surface water flooding, ordinary watercourse flooding (outside the Internal drainage district district) and groundwater flooding, defined by the Flood and Water Management Act 2010.

The LFRMS 2022 covers the Bedford Borough area only. Our neighbouring authorities are also Lead Local Flood Authorities in their own right and as such have the same responsibilities for producing their own Local Flood Risk Management Strategies. Further roles and responsibilities can be found in Appendix B. The LFRMS 2022 sets out how the Borough Council will continue its partnership working with Risk Management Authorities (RMAs) across the catchment to better manage the increasing risk faced by us all. Risk Management Authorities include:

- Neighbouring LLFA's
- Bedfordshire & Ivel Group of Internal Drainage Boards (IDB)
- Environment Agency (EA)
- Bedford Borough Highways Authority (HA)
- Anglian Water (AWS)

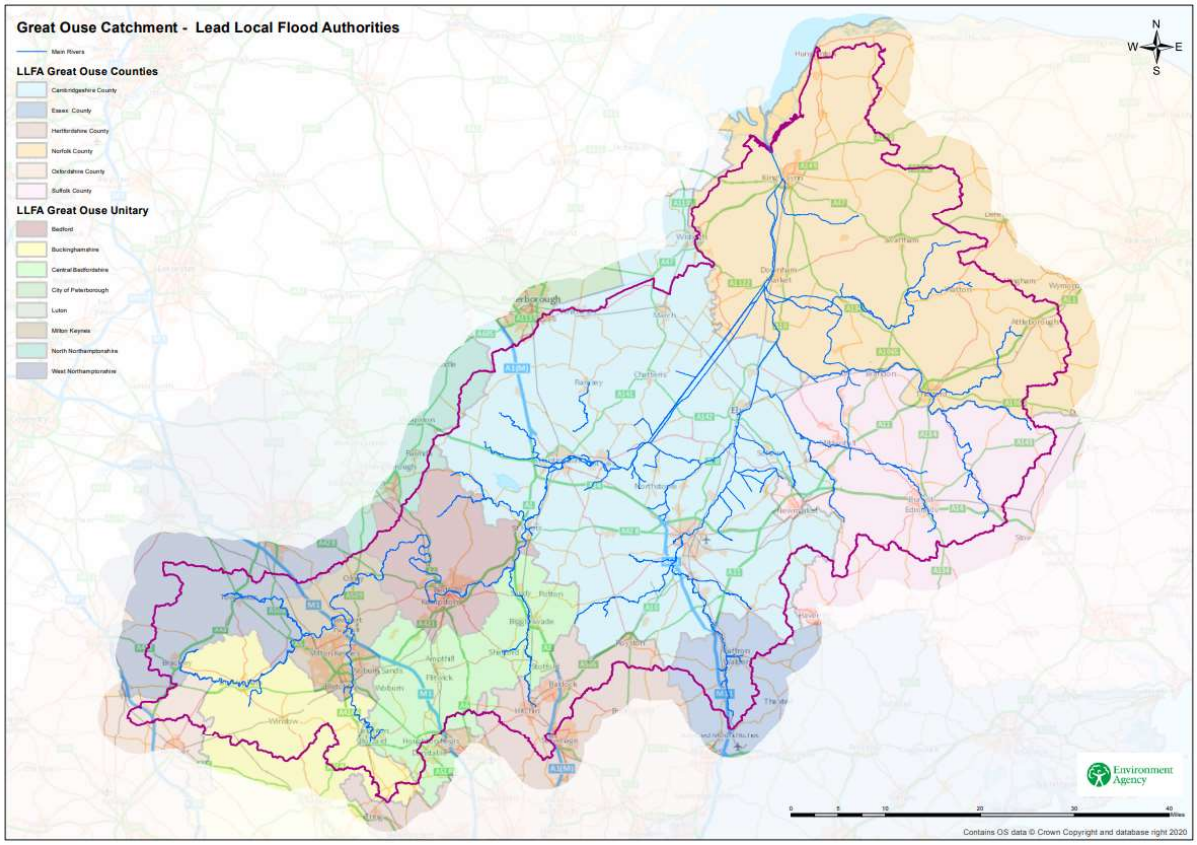


Figure 2.0 Lead Local Flood Authorities across the Anglian Catchment

### 4.1. Regional Flood and Coastal Committee

The Regional Flood and Coastal Committee (RFCC) is a committee established by the Environment Agency under the Flood and Water Management Act that brings together elected members appointed by Lead Local Flood Authorities (LLFAs) and independent members with relevant experience. The Anglian (Great Ouse) RFCC covers the locality of Bedford Borough:

- to ensure there are coherent plans for identifying, communicating and managing flood and coastal erosion risks across catchments and shorelines

- to promote efficient, targeted and risk-based investment in flood and coastal erosion risk management that optimises value for money and benefits to local communities

- to 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 risks in its area

- The RFCC also acts as a link between the Environment Agency, LLFA and other Risk Management Authorities and are responsible for promoting efficient and risk based investment in flood risk management and coastal erosion.

The RFCC committed to ensuring that flood and coastal risks within the catchment are left in a better place in 25 years' time (2043) than they are today. The RFCC acknowledge that there is an extraordinary scale of housing and infrastructure growth forecast within the catchment over the next 30 years, coupled with the strategic conveyance challenge, long term uncertainty within the flood and drainage infrastructure within the Fens and the increasing threat of pluvial and surface water within this growing catchment.

It is facing these challenges proactively, positively and boldly that provides the best way to reduce flood risks at a catchment scale for existing and new communities, businesses and infrastructure. Due to the mix of authorities across the catchment the RFCC will as act the glue, instilling collaboration and partnership (RFCC Position Statement 2022).

### 4.2. Water Resources East (WRE)

Water Resources East (WRE) was formed in 2014 by Anglian Water, to learn best practice on how to develop a more collaborative approach to water resource management planning in a region under significant pressure due to population growth and economic ambition, the need for enhanced environmental protection and significant climate change impacts.

This region is characterised by its diversity of water use, including very significant non-public water supply users, irrigated agriculture, food production and energy, and WRE's focus since 2014 has been on multi-sector water resource planning. Instead of the traditional approaches, in which water companies look at water resource planning for their respective areas in isolation, WRE brought together local councils, companies, retailers, regulators and individuals in the water, agriculture, power and environmental sectors. It looked at the needs and potential trade-offs across all these organisations and balanced considerations of customers, agriculture, the economy and the environment.

There are intrinsic links between the visions and work undertaken by WRE and that within flood risk management. These include the promotion for need for additional storage of water, increasing resilience for all water users and seeking to identify multi-sector opportunities to link water scarcity with flood risk management solutions. These are the work streams and objectives that we are already aligning to and set out within this strategy.

Working to create flood risk improvements across the catchment by using upstream storage and Natural Flood Risk Management and with additional development coming to the Borough,

it is ever more important that we utilise the existing water bodies to enhance our storage options, linking in with the needs and water scarcity work of WRE and the environmental benefits of habitat creation. There are also links to land and water management understanding how key ecosystem services could be provided by land use change at local and landscape level.

Following the widespread flooding in December 2020 and pressures of climate change and growth it is important that land and water management is linked more effectively, increasing resilience and restoring and enhancing natural systems, and understand the priorities of WRE in how they move more water in and around the region from areas of surplus to areas of deficit.

### 4.3. Bedford and Milton Keynes Waterway Trust

The Bedford and Milton Keynes Waterway Park will establish a new waterway, within a multifunctional green corridor, linking the Grand Union Canal at Milton Keynes with the River Great Ouse in Bedford.

It will close a small but very significant gap in the UK waterway network, enhancing opportunities for flood risk management in the upper Ouse catchment area and for water transfer between the main network and the drier areas of East Anglia.

It will build on the achievements of the Marston Vale Community Forest in regenerating parts of the corridor and creating new habitats between Bedford and Milton Keynes. It will set the context for, and embed new natural capital into, new and expanding communities. The Bedford and Milton Keynes Waterway Trust acts as an advocate for the project and believes the Waterway Park can provide water services infrastructure, incorporating nature-based solutions, supporting nature recovery and providing opportunities for biodiversity net gain.

The Trust is working with a wider Consortium of partners. The Consortium includes, Bedford Borough Council, Central Bedfordshire Council, Milton Keynes Council, the Environment Agency, Water Resources East, SEMLEP, The Forest of Marston Vale Trust, Milton Keynes Parks Trust, The Canal and River Trust and the B&MK Waterway Trust. to establish clear governance structures for this unique project and to develop a strategy which will bring together both public and private sector investment. Its aim is to deliver an exemplar environmental project which can contribute towards the Government's commitment to leave the environment in a better state for future generations.

The Trust and Consortium partners are gathering evidence to demonstrate that the Waterway Park will

- Improve resilience to future risks of flooding and contribute towards the challenges of climate change
- provide a mechanism for the transfer water to areas of drought when required

In addition to helping to improve water resilience and reduce flood risk, the Waterway Park is essentially a multifunctional resource and this deserves recognition in its own right as it can play a role in developing a nature-based solution which brings with it a wide range of benefits.

The Council's Local Plan including the other local authorities within the consortium have polices in place to protect and support the Waterway Park and protect its route.

https://bmkwaterway.maps.arcgis.com/apps/webappviewer/index.html?id=efcf058ca4734a5eb06d77d31f30f121

### 4.4. Upper Catchment Partnership

As part of continued partnership working LLFA's within the upper reaches of the catchment have also formed a partnership, as a means of sharing best practice and understanding of each other's role in addressing flood risk management. The partnership also allows for flood risk management schemes to be addressed jointly to ensure projects can make efficiencies and open up additional funding streams.

### 4.5. Local Partnership

Bedford Borough Council established a Local Flood Risk Steering Group in the development of the first Strategy. The steering group was formed to ensure that there is a strategic approach to flood risk management in the Bedford Borough area and includes all departments of the Council that may have an impact or input into flood risk management. The Steering Group feeds back into the Partnership meetings.

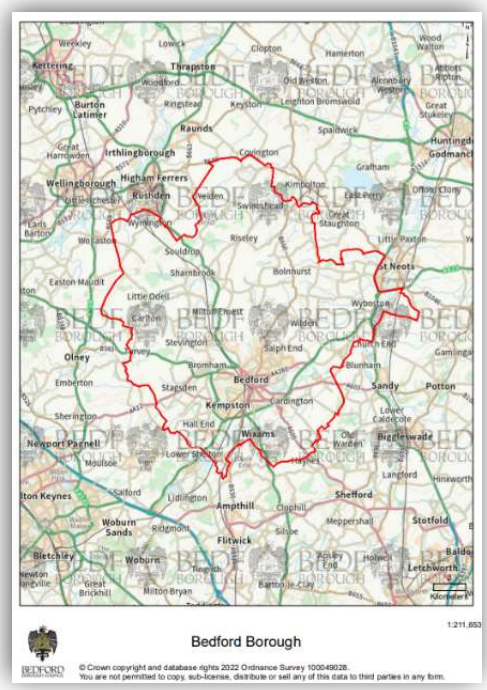
In 2021 Bedford Borough Council established a Flood Forum to bring together multiple stakeholders to discuss flood risk in the Borough area. These Forum meetings will be held at regular intervals on an annual basis (subject to circumstances and flood events).

Through the work of the steering group, the Council are working to ensure that there is a joint understanding of local flood risk and that our priorities are aligned. The Environment and Sustainable Communities Overview and Scrutiny Committee (ESCOSC) provides scrutiny to flood and water management activities of Bedford Borough Council as necessary.

## 5. Flood Risk in the Borough

### 5.1. Characteristics of the Area

Bedford Borough is a unitary authority located in the county of Bedfordshire in the east of England. Bedford was founded at a ford on the River Great Ouse. The name of the town is believed to derive from the name of a Saxon chief called Beda, and the ford crossing the River Great Ouse. Bedford forms the principal urban area in an otherwise largely rural borough.




Bedford Borough has 174,687 residents according to the Office of National Statistics 2020 estimate, with two-thirds living in urban areas and one-third in rural. The Borough has a rich diversity with 28.5% non-White-British (compared to 20.2% nationally) comprising at least up to 100 different ethnicities and our local schools report that there are 149 spoken languages.

Bedford Borough covers 47,641 hectares. The majority of our population live in the urban centres of Bedford and Kempston, but we also have a significant number of areas covered by parish councils. The Borough sits within the important innovation corridor between London, Oxford and Cambridge.

The Borough is bound by North Northamptonshire and West Northamptonshire Council's, Huntingdonshire District Council, Central Bedfordshire Council, Milton Keynes Council and Cambridgeshire Country Council. Predominately watercourses in the southern locality of the Borough are managed by the Internal Drainage Board (IDB). Bedford Group of IDB's are an integral part of managing flood risk and land drainage within the areas of special drainage need. Bedford Borough Council is also covered solely by Anglian Water as a water and sewerage provider.

### 5.2. Geology of the Area

A large proportion of the Borough is situated on Oxford Clay and Kellaways Beds, the Great Oolitic Group and glacial till. None of these are major aquifers, that is they lack the potential to store and transmit large quantities of water and consequently the risk of groundwater flooding is considered to be low. The area where groundwater flood risk is considered higher is where the river terrace deposits are present in the river valley, as within these sands and gravels high water tables can be experienced.

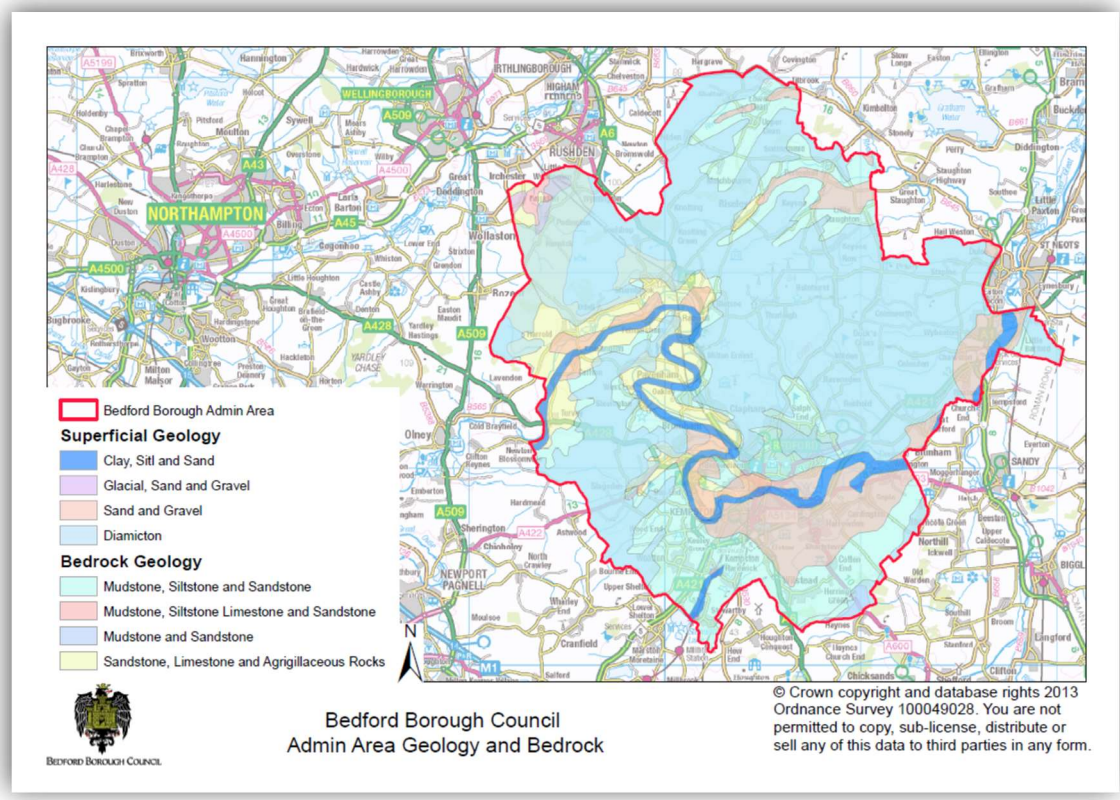



Figure 3.0 Geology and Bedrock in the Borough

### 5.3. Flooding Characteristics

There are many sources of flooding in England. A joined-up approach across all sources of flooding by risk management authorities and other partners is needed to help create resilient places. Throughout this LFRMS, when we refer to flooding we mean from all sources, which within the Borough includes rivers (fluvial), surface water (pluvial), groundwater, reservoirs and sewers

Bedford Borough is affected by fluvial flooding associated with the River Great Ouse, Riseley Brook/Pertenhall Brook and River Til (designated a main river); ordinary watercourses maintained by the Bedfordshire & Ivel Internal Drainage Boards (IDB) and the Council as the Lead Local Flood Authority as well as surface water and/or foul sewer flooding.

The River Great Ouse starts in Northamptonshire near Brackley and passes through several towns including Bedford before it crosses the Fens and flows into The Wash downstream of King's Lynn. The Great Ouse catchment covers some 8,596 Km² and is the fifth largest river catchment in England.

The River Great Ouse enters the Borough to the west after flowing through the Milton Keynes area. The Great Ouse flows east through Bedford with several tributaries joining it before flowing out of the Borough to the east, where it is joined by the River Ivel, and continues north into Cambridgeshire.

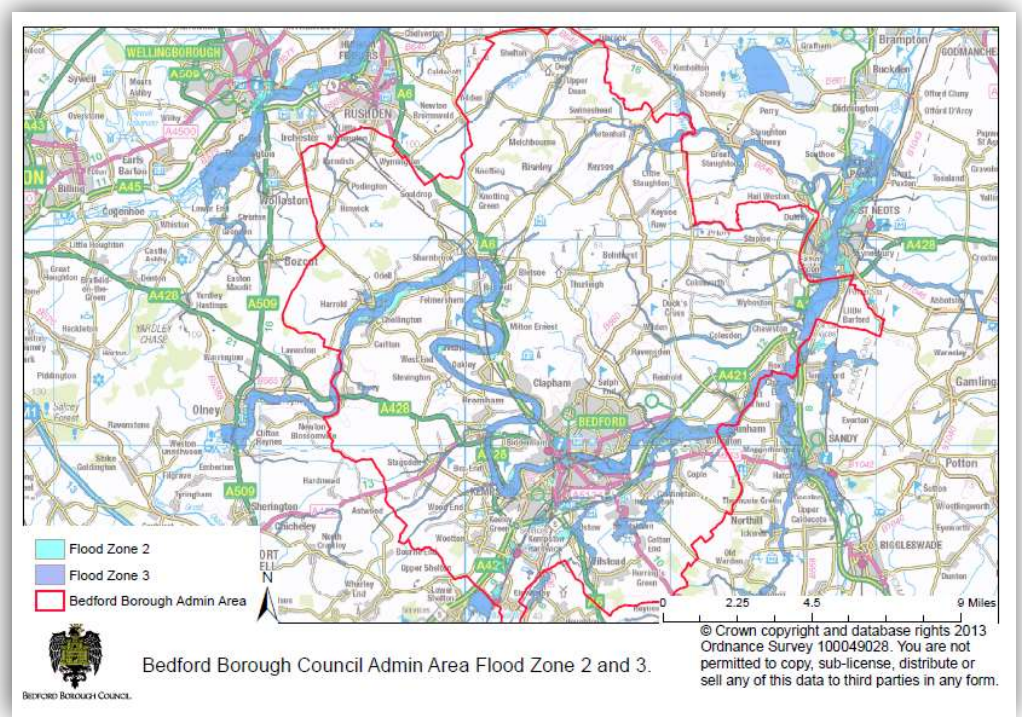



Figure 4.0 Flood zone 2 and 3 across the Borough

The Riseley Brook rises in the north of the Borough in Riseley, flowing north through Pertenhall where it becomes Pertenhall Brook, flowing out of the Borough where it joins the River Kym.

The River Til is located to the northwest of Riseley Brook and enters the Borough near Yelden. The Til flows north-east through Lower Dean and out of the Borough near Tilbrook where it flows into the River Kym.

There are several notable minor rivers and brooks within Bedford borough, including Renhold Brook which flows through Salph End alongside Norse Road, before entering the River Great Ouse at Castle Mill, the Elstow Brook which enters the Borough from the south, following a similar route to the A421 north-east until it joins the River Great Ouse near Willington. Bromham Brook, known locally as River Stag which runs through Bromham and outfalls into the River Great Ouse by Bromham Mill. The Elstow Brook and Harrowden Brook are identified as presenting a flood risk, it is classed as a Category 1A (high risk) watercourse according to the Bedfordshire & Ivel Group of IDBs categorisation system, with maintenance operations on this watercourse seen as a priority for the Board as a flood risk mitigation measure.

Although the risk of flooding from groundwater is considered to be low, re-development or altering the old mineral workings within Bedford Borough may give rise to changes in groundwater flow, which may increase the risk of groundwater flooding.

In a valley setting, groundwater flooding and fluvial flooding are likely to be linked if water in the sands and gravels of the river terrace deposits is in hydraulic connection with the river. Groundwater is not thought to have a noticeable influence on fluvial flooding in the Anglian (Great Ouse) Catchment. It is more likely to affect low lying areas of land and urban areas where there are cellars and basements. The risk of groundwater flooding is typically highly variable and heavily dependent upon local geological, topographical and weather conditions as well as local abstraction regimes.

Historically, the primary source of flooding in the Borough has been fluvial, however since the development of the last LFRMS the Borough has seen an increase in surface water flooding events. With the most recent flood event being in December 2020 from both fluvial and surface water flooding.

A total of 5,834 properties have been identified as being at risk of *surface water flooding* in the Borough, with 1424 of these properties being in Bedford town. Compared to 4097 properties being at risk from *fluvial flooding* across the Borough and 1916 being within Bedford Town.


Surface Water flooding can be particularly problematic in urban areas where rapid runoff from impermeable surfaces (roofs, pavements etc), exceeds the drainage capacity of that area leading to flooding in locations that are difficult to predict. The impacts are not restricted to water volume; the quality of water in receiving watercourses can also be compromised by pollutants entrained in run-off water and sewage contamination derived from Combined Sewer overflow surcharging. However, in recent years when catchments are saturated across the Borough, following prolonged rainfall, surface water across the rural areas of the borough can cause even greater issues as over land flows form. December 2020 saw some of the most widespread flooding from surface water sources that the Council has recorded.

Formal flood defences within Bedford Borough are located within the urban areas of Bedford along the banks of the River Great Ouse, predominantly on the south side of the river in the 'Embankment' and 'Cardington Road' area. The Environment Agency own and maintain the majority of these defences and the IDB are responsible for maintaining defences along their watercourses. However, there are also a number of flood storage areas within Marston Vale, Great Barford and from Turvey to Bedford Town (designated flood plains). The Great Barford flood storage reservoir is a designated flood defence funded by the IDB with Defra Grant in Aid, to protect existing communities who have flooded.

The other flood storage areas have been developed to reduce catchment flood risk, such as improvements to Stewartby Lake, which is operated as a reservoir to attenuate flood risk downstream to areas such as Interchange Retail Park and the Abbyfields area. More recently flood storage areas have also been built by developers for developments such as Wixams, Marsh Leys and Cardington so are more typically development specific Sustainable Drainage Systems (SuDS)

## 6. Flooding from different Sources

The impacts of flooding and coastal change on people and the environment can be devastating, no matter where the water comes from. Flooding in Bedford Borough can occur for a variety of reasons due to the characteristics of the Borough including a large main river/large river network, heavy clay soils impeding infiltration and contributing to overland flow and a high groundwater level in saturated conditions.

As most floods are often caused by the interaction of different sources of flooding it is important that we consider all types of flooding and work with those organisations responsible for their management.

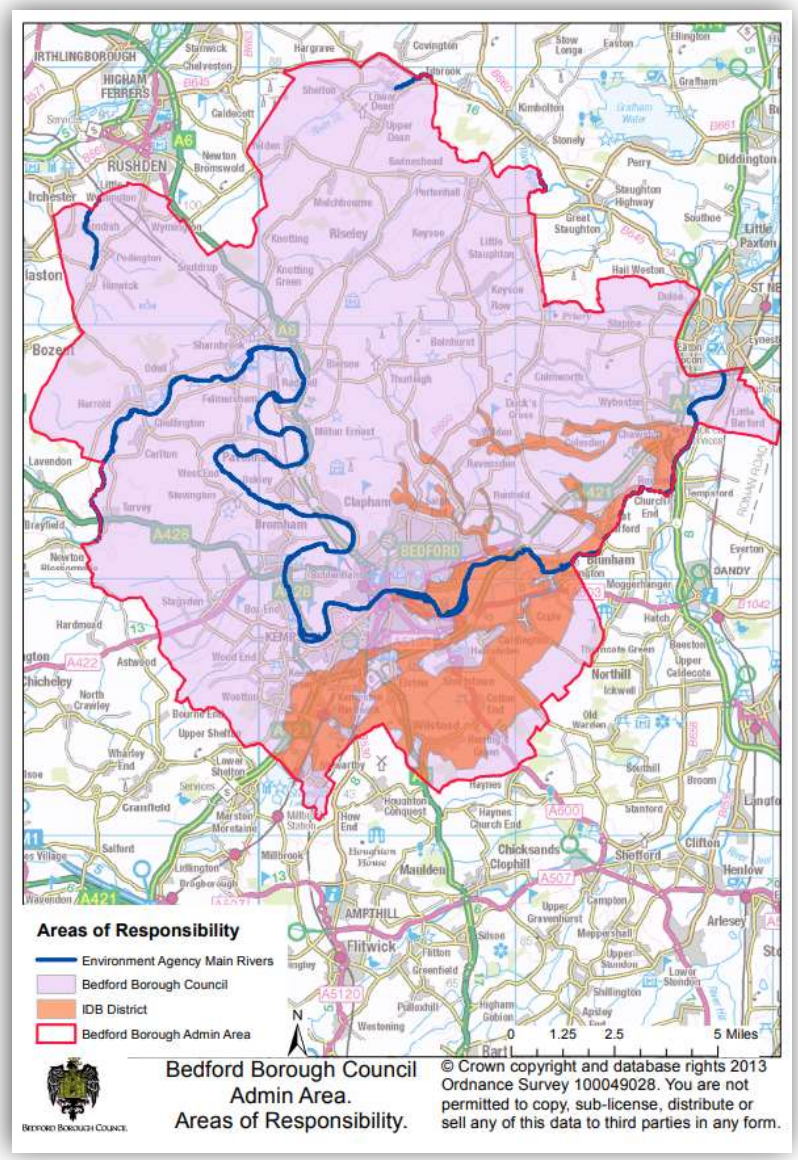



Figure 3.0 Areas of Responsibility

### 6.1. Fluvial Flooding

Fluvial flooding (or river flooding) occurs when the water levels in a Main River or Ordinary Watercourse rises and overflows onto the neighbouring land. Fluvial flooding is caused when the volume of flood water exceeds the capacity of the watercourse and spills over into the floodplain. The Environment Agency is responsible for the enforcement on Main Rivers, this includes the River Great Ouse, Riseley/Pertenhall Book and the River Til.

The Environment Agency maps and models flood risk on Main Rivers as the basis for predicting the likely impact of flood incidents. The Flood Map for Planning (rivers and the sea) uses data from modelling and past flood events to map flood extents and is publicised to help increase awareness of flood risk. It is used by a range of organisations, including local authorities, insurers and developers.

The Environment Agency Flood Map for Planning identifies areas at risk of river flooding across the Borough. The mapping is a useful visual tool to identify areas at risk of river flooding:

https://flood-map-for-planning.service.gov.uk/.

All other smaller watercourses, ditches and streams are classified as ordinary watercourses, these contribute to a vast and unmapped network of watercourses in the Borough. The IDB has mapped a strategic network of ordinary watercourses in its drainage district. Evidence suggests that all flooding is exacerbated in areas adjacent to main rivers and ordinary watercourses, as elevated water levels in the watercourse also elevate levels in the adjoining systems which cannot discharge. Peaks in watercourses can sometimes coincide, exacerbating flood impact, and if water levels are high in a receiving watercourse, feeder watercourse can back up due to the reduced hydraulic gradient. It is therefore difficult to compartmentalise flooding when a local community floods from a combined event.

To report flooding from a main river, contact the Environment Agency incident floodline on 0345 988 1188 or the incident hotline on 0800 80 70 60

### 6.2. Surface Water

Surface water flooding occurs when natural and engineered systems lack capacity to manage the volume or intensity of rainfall. Surface water flooding can occur during high intensity rainfall events which overwhelm the local surface water drainage systems, or during lower intensity but longer duration events where saturated ground conditions prevent infiltration. The flood water is then conveyed via overland flow routes dictated by the local topography and contributes to overwhelming the capacity of local drainage ditches and drainage features.

Surface water flooding is most problematic when catchments are already saturated or frozen, and in urban areas where a substantial proportion of the land surface is impermeable. This is due to the presence of houses and other buildings, roads and pavements.

Flooding associated with the highway network is the most visible form of localised flooding and occurs during or immediately after heavy storms. It is most commonly caused by blocked gullies or lack of capacity in the surface water sewers.

The mapping is a useful visual tool to identify areas at risk, although this is produced nationally so does not always correctly represent the local nuances in topography and drainage systems. This can be obtained through this link: www.flood-warning-information.service.gov.uk/long-term-flood-risk

To report surface water flooding contact the Council's Flood Risk Team at floodrisk@bedford.gov.uk

### 6.3. Groundwater Flooding

Flooding can occur as a result of high groundwater levels if the water table rises above the ground level. Groundwater flooding is difficult to predict and challenging to mitigate. Even with a carefully monitored network of boreholes, it can be difficult to tell when and where groundwater flooding will occur.

The majority of the underlying geology in the area is Oxford Clay, a non-aquifer, however, the Oxford Clay has been eroded in some areas of the River Great Ouse valley exposing the underlying Great Oolite deposits, which have significant groundwater resources. The exposure of these deposits could cause groundwater flooding.

The Environment Agency, Bedford Borough Council and the IDB have no records of historical groundwater flooding incidents in the Bedford Borough. The Great Ouse Catchment Flood Management Plan (CFMP) also did not identify any groundwater flooding within the Bedford Borough area.

It has been highlighted by the IDB that the ground conditions of the villages of Wilstead, Cotton End and Cardington lie very wet and it is considered that this is possibly due to high water tables. The Environment Agency monitors groundwater levels and provides a groundwater alert or warning service for some areas that have historically experienced groundwater flooding. The groundwater vulnerability maps for England were produced in 2013 and are available on Defra's MAGIC map service.

To report groundwater flooding contact the Council's Flood Risk Team at floodrisk@bedford.gov.uk

### 6.4. Sewer Flooding

Sewer flooding occurs when the sewer network cannot cope with the volume of water that is entering it. It is often experienced during times of heavy rainfall when large amounts of surface water overwhelm the sewer network causing flooding. Temporary problems such as blockages, siltation, collapses and equipment or operational failures can also result in sewer flooding. Anglian Water maintains a DG5 register (Anglian Water's indicator for flooding from sewers in respect of internal sewer flooding of properties). The DG5 register is a list of properties which experience flooding (both internal and external) from rainfall events of less than a 1 in 30 chance of occurring due to hydraulic incapacity.

Any flooding from sewers should be reported through to Anglian Water
Report an issue (www.anglianwater.co.uk) **03457 145 145**

### 6.5. Highway Flooding

Highway flooding can be defined as flooding caused by heavy rainfall or overflowing from blocked drains and gullies causing water to pond within the highway network – it is essentially a subset of surface water flooding.

The Highway Authority are responsible for flooding from the Highway and have a duty to ensure the highways are kept drained and clear. Since the last LFRMS the Resilience Team and Highways Team within the Council have worked extremely closely to identify and rectify problem areas, ensuring enhanced maintenance regimes on the highest risk flood areas. Maintenance of gullies and Highways systems will continue to be a high priority for the Council to ensure resilience is maintained across the Borough.

Any flooding to the Highways should be reported through to the Council's Report it online service Drains and ditches
https://www.bedford.gov.uk/parking-roads-and-travel/roads-and-pavements/drains/
or through the Highways Helpdesk
highways.helpdesk@bedford.gov.uk

## 7. Historic Flood Risk

The mapping provided by the Environment Agency can only go so far in managing flood risk across the Borough. Historic flood locations and flood events provides a vast amount of information on locations at 'risk' and where better we can manage and improve flood risk management into the future.

Following the last LFRMS the Borough has experienced several more flood events. The most recent and most significant being December 2020, where river levels reached records set in the 1998 flood event. The Flood event lead to the production of our Section 19 Flood Investigations which are a Statutory Duty for all LLFA following such a flood event. The Investigations detail how and why the flooding occurred and list a series of recommendations which the Council and its Stakeholders will work towards to reduce and manage the flood risk.

The Section 19 Investigation for the December 2020 Flood Event and all over Section 19' Investigations carried out by the Council can be found here.

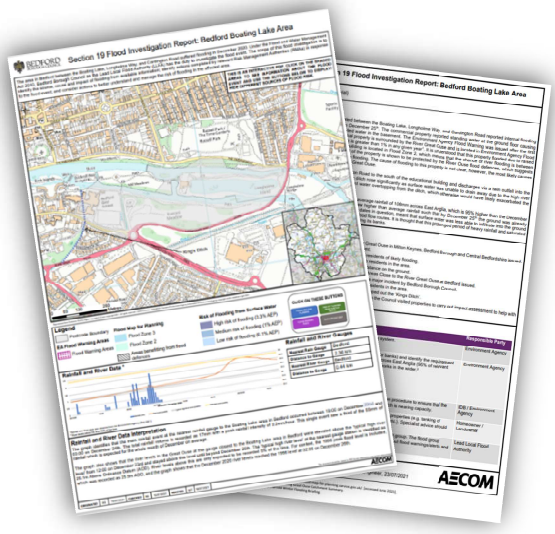
Investigating flooding · Bedford Borough Council
https://www.bedford.gov.uk/environmental-issues/flood-risk-management-in-bedfr/investigating-flooding/

### 7.1. December 2020 Flood Event

From the 23rd December – 26th December 2020 the Borough experienced widespread flooding to a level not reached since the flooding of 1998. Flooding came from both surface water off the fields and from the River Great Ouse. 65 properties were reported as flooding internally across 27 different locations across the Borough.

The month leading up to the flooding saw an exceptionally high amount of rainfall and was the second wettest December across East Anglia since records began in 1981, the ground was already saturated. River levels were already high and ditches and watercourses were already working at full capacity.

On the 23rd – 24th December a further 20 – 30mm of rainfall fell, with some areas experiencing even more and recording greater than 50mm falling within a 24-hour period. The catchment could not cope causing huge overland flows and surface water flooding the majority of the villages to the north of Bedford within several hours.




Since the flood event the Council's Resilience Team has proactively engaged with affected communities, building on previous good practice of establishing local Flood Groups, by working with the community to establish further Flood Groups over four locations, with more interest and support being shown in other locations.

In total the flood investigations have identified 141 specific actions over short to long timeframes, which the Resilience Team alongside RMAs will work towards to manage and reduce the future flood risk of Bedford Borough Council.

## 7.2. Summary of local flood events within the catchment

**1980**
- In August 1980 Bromham Brook flooded 62 homes and caravans.

**1983**
- On the 1st May 1983 the Bromham Brook overtopped its banks and flooded seven properties; six on Brook Way, one at Wick End. A peak flow was estimated at 24m3/s based upon water marks, and a peak flow of 18m3/s was estimated using the Flood Studies Report (FSR) method. The preceding rainfall event was found to have a return period of 10% AEP

**1987**
- In October 1987 moderately high rainfall fell over the catchment with 20-40mm in 24 hours. This rainfall combined with a Soil Moisture Deficit (SMD) which had reached zero, flooded a number of areas; the road between Kimbolton to Stonely became impassable for 24 hours.

**1992**
- In 1992 the Bedford Ouse catchment was subjected to intense rainfall, between 40-80mm in 24 hours, with SMD values marginally above zero. Flood waters affected the Riseley Brook with 18 properties in Riseley affected. Two industrial developments in Riseley were also flooded.
- In Bedford, one property was flooded. The B660 at Kimbolton had a depth of water of 250mm; on the A45 water depths reached 450mm. A public house in Turvey (a known flood risk area) flooded during this event. Properties were also flooded in Kimbolton, Great Staughton and Bedford. Sharnbrook Road was also inundated by flood waters.

**1998**
- In Easter 1998, the River Great Ouse in Bedford overtopped its banks on Saturday 11th April. Many homes in the North of Bedfordshire and Bedford were flooded and more than 500 homes in Bedford had their electricity supply cut off as electricity supplies were impacted.

**2003**
- In 2003 the IDB instigated a closure of the A1 (southbound) at Sandy due to flooding, however this was in the Mid Bedfordshire district and there was no reports of flooding within Bedford Borough.

**2012**
- In May 2012 the basement of one property in Sharnbrook was flooded with sewage and surface water.
- In July 2012 a care home was flooded with surface water in Bedford and the ground floor of one property flooded in Great Barford to a depth of 500mm.
- In November 2012 one property was flooded in Keysoe Row West due to Surface water runoff / groundwater.
- In December 2012 one property flooded in Upper Dean from the nearby watercourse and a commercial property in Oakley flooded from groundwater.

**2013**
- In Carlton the school was flooded in one room and the basement.

**2015**
- In May 2015 a school flooded from a burst water main in Queens Park.

**2016**
- In March 2016 Fluvial flooding and surface water flooding to 12 properties in Riseley, Yelden and Upper Dean and Wymington
- In June 2016 4 Properties flooded from Surface water along High Street Kempston

**2020**
- In June 2020 1 property flooded from surface water from the Highway along Cardington Road
- August 2020 1 property flooding internally from surface water from the Highway in Sharnbrook
- In December 2020 65 properties flooded accross the Borough from surface water and fluvial flooding on a saturated catchment after 20 - 40 mm of rain in 24 hours

The flood records have come from a range of sources, and in many cases the source of flooding was unknown or not recorded, possibly due to the nature of the interaction and inter-dependencies of our local system of main rivers, ordinary watercourses, public and private sewers, and highway drainage. In addition, there are the complexities of flooding caused by asset failures, exceedance, obstruction from blockages and capacity issues, which may have subsequently been alleviated with maintenance, emergency measures or capital works.

Bedford's Strategic Flood Risk Assessment, also contains extensive information regarding historic flooding, including the 1947, 1980, 1983, 1987, 1992, 1998 and 2003 events.

## 8. The Changing Landscape for flooding

The Borough has experienced a long history of flooding, and climate change will mean these events will increase in frequency and as a result the way we manage the risk will need to change as well.

Government policy and evidence has also continued to evolve. The government's 25 Year Environment Plan published its ambition to be the first generation to leave the environment in a better state than when we found it. In 2019 the government set a new target requiring the UK to bring all greenhouse gas emissions to net zero by 2050. The government's Environment Bill and Agriculture Bill recognise that we need to make nature's power part of our solution as well as supporting farmers and land managers to help reduce flood risk through the Environmental Land Management scheme (National Flood Risk Strategy 2020). Therefore, we need to think smarter and be even bolder in our approach to flood risk management in the Borough.

### 8.1. Flood Risk Management

Flood risk management has developed across the Borough since the last LFRMS was produced, but the Council is still aware of the continuing changes that need to occur to keep up with the climate we face today and pressures of development. The schemes below highlight some of the work the Council and its partners have completed since the last strategy.

- **Development of the Council's SuDS Supplementary Planning Document (SPD)** – The SPD addresses sustainable development across Bedford Borough by defining the requirements for the implementation of SuDS as part of future local development. The SPD provides a framework to promote sustainable development within Bedford Borough through planning standards and objectives set out in the document.

- **PLR Project** – Property Level Resilience Project, part of a partnership project with the Environment Agency where we are able to offer and install resilience measures to properties at risk of flooding in Riseley, Yelden and Upper Dean. Funding was sought from Grant in Aid, Local Levy and the Councils own contributions.


- **Automatic sign project** – Telemetry on the causeways of Radwell, Felmersham, Harrold and Oakley, detect when water in on the road and allow visual display signs to advise road users on the state of the road. Again this project was funded through Local Levy and the Councils Highways Department.

- **Rain gauge project** – The Council is part of a project across the Anglian Catchment installing rain gauges at key locations. Partnership funding by Anglian Water and Local Levy, the initiative again bringing additional resilience into the Borough by creating additional warning and data on the ever changing catchment.

- **Kings Ditch Project** – A partnership project lead by the IDB, where the Council contributed along with the EA, Anglian Water and Bedford Girls School, where a permanent pump has been installed to reduce the flood risk from the Kings Ditch.

- **Creation of Flood Groups and Issuing of Flood Kits** – The Resilience Team has been working with communities across the Borough to encourage the uptake of Community Flood Groups. Since the last LFRMS in 2015. There are now 7 Flood groups set up across the Borough with several more being developed. These groups provide additional resilience to the communities. All groups have been issues with 'Flood kits' as part of a joint project with the EA through Local Levy Funding.

## 9. Climate Change

Climate change is considered to be one of the most significant future pressures in terms of flood risk. It is one of the biggest challenges of our generation and has already began to cause irreversible damage to our planet and way of life. Under a 2°C by 2100 warming scenario annual damages from flooding for non-residential properties across the UK is expected to increase by 27% by 2050 and 40% by 2080. (Technical Report for the CCRA3 https://www.ukclimaterisk.org/independent-assessment-ccra3/technicalreport/).

The government's 25 Year Environment Plan states that current global commitments under the Paris agreement are insufficient to limit the average temperature rise to well below 2°C.

Other projections from the report highlight that daily rainfall is projected to increase by 25%, there also new evidence on the frequency of rainfall exceeding 30mm/hour for some UK cities, showing that such events are twice as likely by 2080 (Technical Report for the CCRA3 https://www.ukclimaterisk.org/independent-assessment-ccra3/technicalreport/).

This highlights the likely impacts we could see on the catchment, the borough and our communities. The National Strategy is seeking to better prepare us for 2°C warming in global temperatures as well as planning for higher scenarios, such as a 4°C rise in global temperatures.

There are two main ways we can tackle climate change, mitigation so reducing and limiting the effects of greenhouse gasses and adaptation, changing our lifestyles, infrastructure to make us more resilient and adaptable to future consequences.

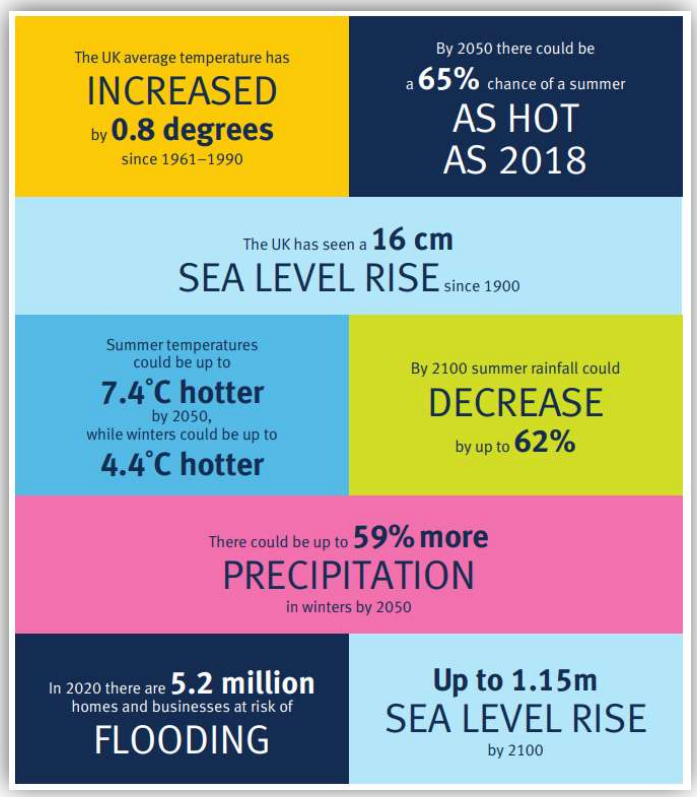



Figure 4.0 National Flood Risk Management Strategy 2020

### 9.1. The Council's Commitment to Climate Change

In March 2019, Bedford Borough Council declared a Climate Emergency and has pledged to become Carbon Neutral by 2030. As part of the Council's commitment to become carbon neutral by 2030, the Carbon reduction strategy has been developed with the departments within the Council and focuses on the Council's carbon emissions. Future climate adaptation

and achieving net zero will be key for the whole water environment as pressures are already being felt on water supply and flooding.

As part of this strategy the Council has pledged to incorporate the carbon neutral ambition into all Council strategies, including the Local Plan 2040. Future development will need to incorporate different features to not only reduce their carbon emissions but also to be resilient to the climate change already happening. This will include more efficient building, flood resilience, the incorporation of renewable energy sources and to allow the means for communities to shift their methods of travel.

The role of the Local Plan in affecting climate change is one of facilitating the right environment for measures to be included in existing and future development. It will take the combined efforts of communities, residents, businesses and the development industry in the borough to embrace those measures

A Council's Sustainable Development and Environmental Efficiency Strategy and Action Plan has also been produced which sets out through a series of key strategic priorities, how the Borough will achieve its ongoing vision for the Council and the wider Borough.

You can find these strategies here: www.bedford.gov.uk/environmental-issues/sustainability2/sustainability-strategies-and-policies/

An annual Greenhouse gas report is also produced by the Council to report on the Council's emissions from owned building, fleet and business mileage. The reports can be found here: www.bedford.gov.uk/environmental-issues/sustainability2/energy-management-and-sustainability-reports/

### 9.2. Future Flood Risk Management

The National Strategy calls for the nation to embrace a broad range of resilience actions including better protection to flooding. We therefore need to think differently about our approach to future flood risk management. With the continued pressures faced by local authorities concerning resources we need to ensure we think innovatively and look carefully at what we already know, what works and what small changes we can make to have the most impact. This includes making the best land use and development choices, protecting people and places, responding to and recovering from flooding and coastal change whilst all the time adapting to climate change. There are 4 approaches from the National Strategy highlighted below:

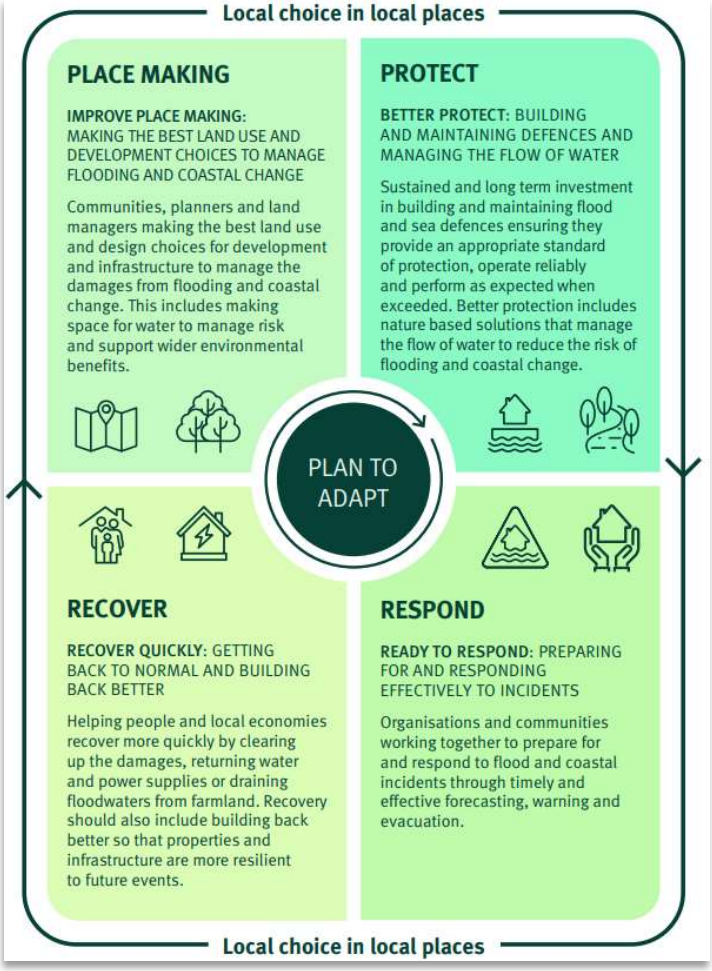



Figure 5.0 National Flood Risk Management Strategy 2020

This LFRMS 2022 seeks to take on those approaches through the aim and objectives set out at the beginning. This approach also ties in from the lessons we have learnt following the flood events we have seen. We need to ensure we know our flood risk, as a Borough, as a community and residents and homeowners. With this information we then need to make ourselves, the Borough and our communities as resilient as possible in dealing with the future flood events and we need to ensure we are building a more resilient future to take on board these challenges.

### 9.3. Community Flood Groups

We need to ensure our communities are informed, aware and more resilient to flooding so that when flooding does occur it causes much less harm to people, does much less damage, and ensures life can get back to normal much quicker.

The concept of community Flood Groups is one the Council has prioritised over the last few years. Since the last Strategy was published in 2015, 2 flood groups existed the Council now have 7 community flood groups across the Borough with more at the initial stage of uptake.

These are located in **Riseley, Yelden, Clapham, Harrold, Carlton, Odell and Turvey**. The locations are at risk from both surface water and fluvial flood risk. All the flood groups have, with the Council's support, written Flood Plans detailing the flood risk to their community and the steps the flood group will take when a flood event occurs. We have also provided the groups with aqua sac training in conjunction with Bedfordshire Fire & Rescue Service and have issued Flood Groups with a 'flood kit', including aqua sacs, radios, hi vis jackets and radios from funding available through a partnership scheme with the EA through Local Levy.

During the last flood event in the Borough in December 2020 the work of the Flood Groups was invaluable. They aided in setting up assistance centres, giving out aqua sacs, helping those who required more help, passing on information when we received it within the Council and linked in with the emergency services for up to date local knowledge.

Four community Flood Groups have been set up following the flooding which highlights the importance and multitude of benefits they provided ensuring their community is as resilient as possible to face the next flood event.

If you would like more information on setting up a flood group refer to **Appendix C** or please contact us: floodrisk@bedford.gov.uk

### 9.4. Land Management

It is also important to recognise the role the natural environment places in protecting peoples home and it can be one of the most cost effective ways to manage water. Not only is it paramount that we ensure the features already in places like ditches and watercourses, are maintained and running effectively to hold, convey water efficiently, but we need to look how else we can turn to our natural world to store flood water. There raingardens, wet woodlands, leaky dams, ponds and creating upstream storage areas that will all go towards reducing flood risk with wider environmental benefits including tree planting, habitat creation and carbon sequestration in re-wetted areas.

By using natural flood management measures in the built and natural environment we can enhance people's wellbeing, Bedford and the local economy through improved water quality, enhanced visual amenity and increased biodiversity.

Flood resilience is closely linked to climate resilience. Open space and grasslands also has the potential to store more carbon than trees and grasslands could also be used as water storage areas in times of flood.

We need to raise awareness of the importance of land management techniques. Some of the most productive agricultural land is in on the flood plain. Flooding is a significant impact for famers and agricultural productivity. But farming can also contribute to increasing flood risk through poor land use and management practices. We need to raise this awareness and work with landowners and farmers to explore techniques that help store excess water whilst improving resilience to droughts and improving biodiversity and water quality. It is also important that landowners maintain their responsibilities in relation to the maintenance of ditches/watercourses on or abutting their land – see also 9.7.1 Riparian Responsibilities.

This has been recognised by the government who are currently developing and will pilot a new Environmental Land Management scheme to be launched in 2024 (National Strategy 2020) The Future of food, farming and the environment. It will be the cornerstone of future agricultural policy. Founded on the principle of 'public money for public goods', the Environmental Land Management scheme is intended to provide a powerful vehicle for achieving the goals of the 25 Year Environment Plan and commitment to net zero carbon emissions.

Biodiversity net gain (BNG) is also an approach to development and/or land management, that aims to leave the natural environment in a measurably better state than it was beforehand. National policy sets out that planning should provide biodiversity net gains where possible. The Government's 25 Year Environment Plan sets out the aspiration to mainstream biodiversity net gain in the planning system and move towards approaches that integrate natural capital benefits.

### 9.5. Future development

It is possible that long term developments might affect the occurrence and significance of flooding. However current planning policy aims to prevent new development from increasing flood risk. The National Planning Policy Framework (NPPF) regulates the assessment of flood risks and their appropriate mitigations through the planning process.

The NPPF sets out strict tests to protect people and property from flooding which all local planning authorities are expected to follow. Where these tests are not met, national policy is clear that new development should not be allowed. The tests are designed to ensure that if there are better sites in terms of flood risk or a proposed development cannot be made safe, it should not be permitted.

Without effective planning policy, there is a risk that the increase in impermeable surfaces associated with new developments will increase surface water runoff and, consequently, the risk of flooding. It is therefore vital that flood risk to, and caused by, a new development is fully assessed as part of the consideration of any planning applications.

It is also important that the impact of climate change is considered when planning new developments to ensure they are sited in areas which will not increase flood risk to the development or surrounding areas in the future.

In England, the National Planning Policy Framework and supporting technical guidance will ensure that *"inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flooding risk elsewhere".*

Bedford Borough Council is preparing a new Local Plan 2040. The Council has an up to date local plan that makes provision for growth to 2030. Normally local plans are reviewed every five years but this update is required sooner in order to reflect emerging national policies for the Oxford to Cambridge Arc.

The Oxford-Cambridge Arc is a globally significant area between Oxford, Milton Keynes and Cambridge and home to nearly 3.3 million people. Too much and too little water, alongside ageing infrastructure, are key considerations in the proposals for future sustainable growth across the area.

It will require long-term commitments to provide the enabling infrastructure and to deliver that ahead of the arrival of new communities, and to meet economic and housing ambitions while overall improving rather than degrading the environment in the Arc, in line with commitments in the government's 25 Year Environment Plan.

The new Local Plan states that based on the latest government methodology, the Council needs to plan for an average of 1,355 dwellings to be built in Bedford Borough every year over the 20-year period 2020 to 2040; a total of 27,276 homes. With existing completions and commitments already contributing towards this amount, the new Local Plan needs to allocate land for a minimum of 12,276 additional new dwellings.

The Local Plan uses evidence from the Strategic Flood Risk Assessment to inform where development is best placed. This goes towards reducing flood risk from new and existing developments, whilst allowing for climate change across the Borough. Sustainable development and drainage, including the use of Sustainable Drainage Systems (SuDS), will also help to adapt to climate change and manage the risk of damaging flooding in the future. There is a need to build a more forward looking flood risk evidence base, particularly with climate change. The evidence base should support future water and flood risk policies, and to identity opportunities to deliver multiple benefits as well as used to look at and safeguard land for flood risk reduction / future schemes.

We know growth will not be sustainable if its net impact is to harm our natural environment, therefore the National Planning Policy Framework is clear that planning policies and decisions should contribute to and enhance the natural, local and historic environment in various ways, including by protecting and enhancing valued landscapes, and minimising impacts on and providing net gains for biodiversity.

In practice these gains could be secured using planning contributions to invest in sustainable drainage systems or natural flood management linked to the design of new development. In many places, there may also be opportunities for integrating benefits for the local, natural, built

or historic environments and their use and enjoyment by people (National Flood Risk Strategy 2020).

### 9.6. Flood Awareness

Across the Borough 5,834 properties are at risk or surface water flooding and 4097 risk of fluvial flooding. We need to ensure not only these residents are aware of the flood risk their property faces, but surrounding residents, communities' businesses and schools. Not only is it paramount that people understand their own flood risk it is even more important that they understand their responsibilities and the role they play, to understand how they can help, mitigate and influence their risk and their risk around them. We can then build in resilience into homes, business, communities and the Borough. Further advice on flooding can be found in **Appendix D**.

Many areas affected by fluvial flooding are located within Environment Agency Flood Warning and Alert areas. Environment Agency Flood Warnings/Alerts are issued by phone, email or text message to people who have signed up to get warnings if a flood event is predicted.

There are three levels of flood warning:

- 

  **Flood Alert – Prepare:** Prepare a bag that includes medicines and insurance documents. Check Flood Warnings.

- 

  **Flood Warning – Act:** Turn off gas, water and electricity. Move things upstairs or to safety. Move family, pets and car to safety.

- 

  **Severe Flood Warning– Survive:** Call 999 if in immediate danger. Follow advice from emergency services. Keep yourself and your family safe

Environment Agency

You can sign up to the EA's Flood Waning Service

Sign up for flood warnings - GOV.UK (https://www.gov.uk/sign-up-for-flood-warnings)

You can also check if you are at risk from surface water flooding or fluvial flooding using the Gov. UK website on the links below:

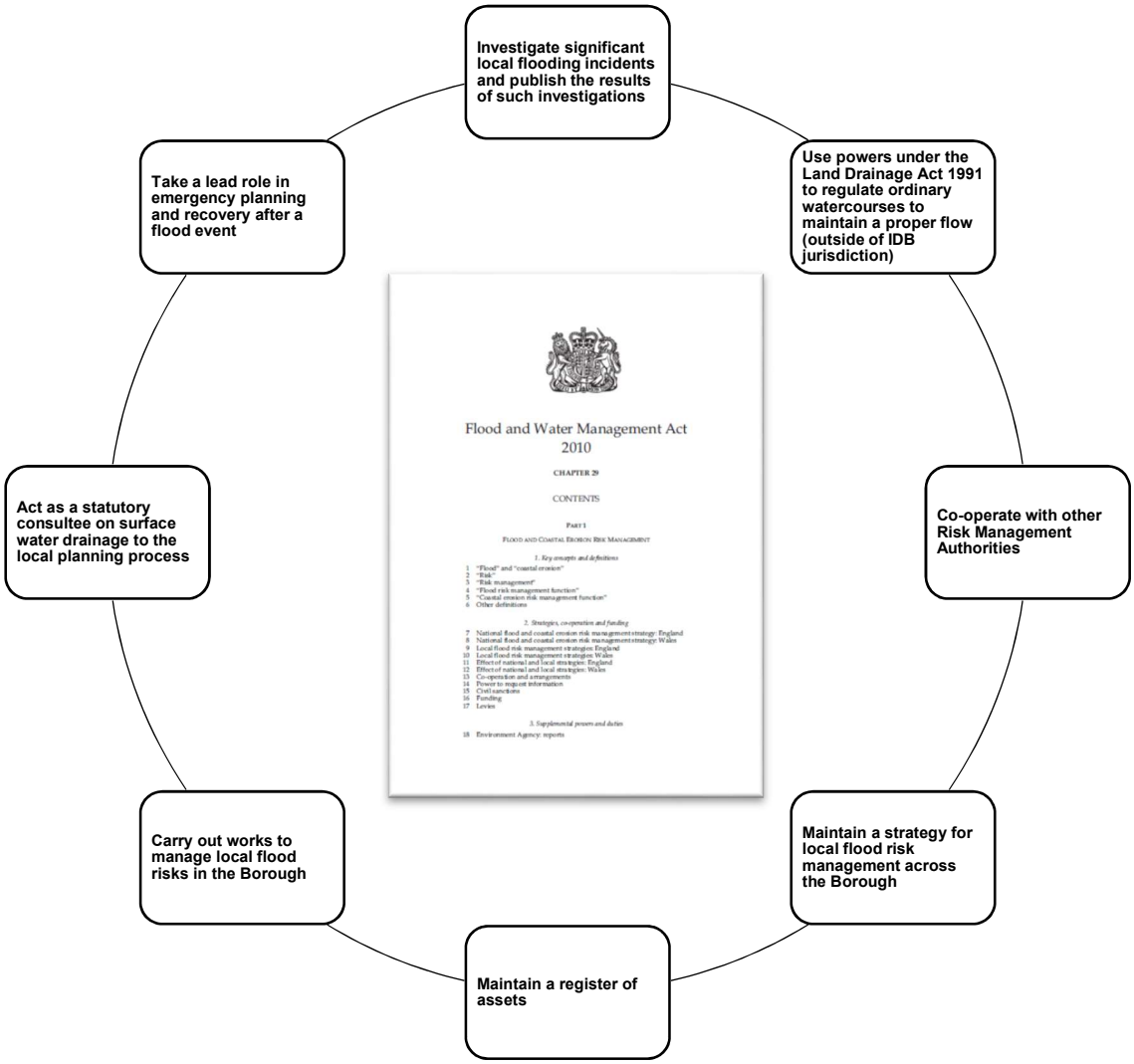
Learn more about flood risk - GOV.UK (www.check-long-term-flood-risk.service.gov.uk)

### 9.6.1. Property Level Resilience

Property owners at risk of flooding also need to be proactive in obtaining resilience measures and where appropriate more robust products such as flood gates and flood doors. There are many types of these alternative products available depending on the nature of the flooding and requirements of temporary defences. Further information on these products is available from the National Flood Forum and the Blue Pages directory.

## 9.7. Responsibilities

As a Lead Local Flood Authority Bedford Borough Council has a series of legal duties and obligations. These are prescribed under the Flood and Water Management Act 2010. The Council's responsibilities and the responsibilities of other risk management authorities are set out in **Appendix B.**




Bedford Borough Council is also designated a Category 1 Responder under the Civil Contingencies Act 2004. The Council's Resilience Team ensures the Council is able to respond swiftly and proportionately to an emergency across the Borough as part of an integrated emergency response whilst continuing to delivery key services and developing a more resilient community as required by the Civil Contingencies Act 2004.

The Council is also part of the Bedfordshire Local Resilience Forum (BLRF). It brings together the emergency services, local authorities, Health Services and other agencies, all of whom are required to respond to any major emergency in Bedfordshire.

A Local Resilience Forum (LRF) is a statutory body covering a police force area, designed to bring together category 1 and 2 responders for multi-agency co-operation and information sharing. The role of third sector agencies such as Midshires Search & Rescue, St. John's Ambulance, Beds & Cambs 4x4 etc, provide an important supporting role for Category 1 and 2 responders during an emergency incident. Under the Civil Contingencies Act (2004) every part of the United Kingdom is required to establish a Local Resilience Forum.

### 9.7.1. Riparian Responsibilities

Under the Land Drainage Act 1991 there exists 'riparian owners' of any watercourse within or adjacent to the boundaries of a property and as such owners/occupiers have certain rights and responsibilities concerning watercourse management. If a watercourse forms a boundary between properties, owners/occupiers are generally responsible up to the centre of the watercourse.

Maintenance and management of roadside ditches (to the Highway) is in the majority of cases the responsibility of adjacent land owners as the riparian owner of the ditch which provides drainage for both the land and the highway.

Watercourses that have been enclosed underground (culverted) are still considered to form part of an ordinary watercourse or main river and it is still the responsibility of a riparian owner if it runs through their land. Highway drainage, gullies and culverts that pass under a road are the responsibility of the Highways Authority. Figure 6.0 provides further clarification of riparian owners and who is responsible.


Figure 6.0 Riparian Responsibilities explained

In many cases riparian owners are not aware of their responsibilities which can result in poor maintenance or obstruction of the flow of water. See **Appendix B**. To build resilience into the Borough we need to ensure everyone is aware of their riparian responsibilities and there is enough capacity in the catchment to be able to cope with the more frequent and intense rainfall events that are expected.

Information is also available on the GOV.UK website on owning a water.

Owning a watercourse - GOV.UK (www.gov.uk)

The EA are responsible for any enforcement works along main river and ensuring riparian owners carry out their duties. Any issues can be reported through to the EA on the details below.

Enquiries_EastAnglia@environment-agency.gov.uk

## 10. Strategy Actions

Since the development of the last LFRMS, we have seen many changes, not only in the new legislation and polices but physically as well. The flooding in December 2020 reached levels not reached since the Easter flooding of 1998, climate change is upon us and as such we must continue to work in partnership, to build in resilience, to think smarter, be more innovative to manage and reduce flood risk across the Borough and the catchment. The actions below set out how the Council and its partners will work to achieve a Borough that is ready for and more resilient to flooding for those who live, work and visit. It follows the objectives set out at the beginning of the Strategy both statutory and complementary objectives based on the National Strategy.

### 10.1. Funding

Not all the actions developed within the LFRMS Action Plan have been identified as being able to be funded through existing resource, as such external funding will need to be sought. This will be undertaken through partnership funding where applicable. The UK Government through HM Treasury committed to spending £5.2 billion on flood risk management between 2021 – 2027 in England, with the aim of reducing flood risk to communities and businesses. This information set out how the Council will manage the funding gap between existing resource within the Council and government funding available.

### 10.2. Flood defence grant in aid (FDGiA)

This is the main source of funding for flood risk management schemes, which is available to LLFA's. It is distributed by the EA on behalf of DEFRA.

- RMAs must apply to the Environment Agency for the funding through a partnership funding approach.
- LLFAs can apply for funding to cover or contribute towards the cost of capital schemes for surface water, ordinary watercourses and groundwater flood risk management.
- To qualify for FDGiA, a project proposal must demonstrate that it is good value for money. For example, for every £1 spent on flood infrastructure protecting communities, £5 worth of damages must be avoided.

### 10.3. Environment Agency revenue funding

The Environment Agency run a maintenance programme for the assets they are responsible for managing. The EA do not offer funding for the maintenance of assets that are managed by other RMAs.

### 10.4. Local Levy – Regional flood and coastal committee (Great Ouse RFCC)

Local Levy can fund lots of different types of flood risk management projects. It is not calculated based on the same outcome measures as FDGiA and so it can be used as an alternative funding source to FDGiA. Local Levy is funded by contributions from all LLFAs within a RFCC area (the Anglian Catchment). The amount of local levy contributions is decided and voted on each year by LLFA voting members of the RFCC.

### 10.5. Water Company funding

Funding from water companies work on a 5-year investment cycle called asset management periods (AMP). The current cycle is AMP7 and runs from 2020 until 2025. A key part of AMP7 is to reduce the risk of sewer flooding.

## 11. Strategy Action Plan

| Strategic Objective | Action to deliver Objective | Timescale (2022 – 2027) | Resource Requirement | Lead and Partners | Priority (H/M/L) |
|---|---|---|---|---|---|
| ***1. Understand and, where possible, mitigate Flood Risk across the Borough*** | A. Ensure rivers, watercourses and ditches are maintained | Ongoing | Within existing staff resource | Resilience and Highways Team BBC, Environment Agency, IDB | H |
| | B. Review the feasibility of nature based solutions to reduce flood risk and improve the surrounding area across the Borough | 2022 - 2023 | Partnership funding through Local Levy | Resilience Team BBC and Environment Agency | H |
| | C. Continue development of the Kempston NFM/Nature based solution scheme to reduce and mitigate flood risk in Kempston West | 2022 - 2024 | BBC and Section 106 Funding | Resilience Team, Anglian water, Environment Agency and consultants | H |
| | D. Work with catchment partnerships, land managers and communities to encourage the uptake of nature based solutions | Ongoing | Within existing staff resource | Resilience Team BBC | M |
| | E. Work with the Bedford and Milton Keynes Waterway Trust to consider the opportunities the Waterpark may present | Ongoing | Within existing resource | Resilience Team BBC, Bedford and MK Waterway Trust | M |
| | F. Work with Natural England, farmers and land owners to encourage land use and land management practices that help contribute to greater resilience to flood risk | 2025 -2029 | Within existing staff resource | Resilience Team BBC, Natural England, Environment Agency | M |
| | G. Work with partners and land owners to ensure assets are managed and maintained. | Ongoing | Within existing staff resource | Resilience Team BBC, Highways, Environment Agency, IDB | H |
| | H. Work alongside Highways to look for ways to improve maintenance of Highway gullies/culverts. | Ongoing | Within existing staff resource/Partnership Funding/Local Levy | Resilience Team and Highways BBC | H |
| | I. Assess potential improvement schemes needed through Highways structures for funding through the Capital program. | Ongoing | Within existing staff resource | Resilience Team and Highways BBC | M |
| ***2. Build climate resilience into the Borough, communities and residents*** | A. Set up further Flood Groups across the Borough as appropriate | Ongoing | Within existing staff resource | Resilience Team | H |
| | B. Provide training and flood kits to new Flood Groups | Ongoing | Within existing staff resource | Resilience Team and Highways BBC | H |
| | C. Provide ongoing training and support to existing flood groups | Ongoing | Within existing staff resource | Resilience Team and Highways BBC | H |
| | D. Look to gain support from Parish Councils to build resilience into communities. | Ongoing | Within existing staff resource | Resilience Team and Highways BBC | H |

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|---|---|---|---|---|---|
| | E. Build on the voluntary sector capability to support communities before during and after flooding. | Ongoing | Within existing staff resource | Resilience Team and Highways BBC | L |
| | F. Work with the EA to look at communities where CCTV schemes could improve local resilience and warning. | 2023 - 2024 | Local Levy Funding | Resilience Team and Environment Agency | M |
| | G. Continue to work closely with Emergency Planning and BLFF to continue to improve the Council's Flood Response | Ongoing | Within existing staff resource | Resilience Team and Highways BBC | H |
| ***3. Ensuring appropriate development by promoting appropriate land use and development choices of future development, considering areas at risk of flooding and ensuring Sustainable Drainage Systems are designed into developments as appropriate*** | A. Advise on inappropriate development in flood risk areas | Ongoing | Within existing staff resource | Resilience Team and Planning Department | H |
| | B. Work with developers and planners to maximise the opportunities to reduce flood risk and for flood resilience as part of contributing to environmental net gain for development proposal. | Ongoing | Within existing staff resource | Resilience Team and Planning Department | M |
| | C. Seek to support investments to manage flooding that enables growth in a sustainable and climate resilient way. | Ongoing | Within existing staff resource | Resilience Team and Planning Department | M |
| | D. Encourage flood resilient building standards | Ongoing | Within existing staff resource | Resilience Team and Planning Department | M |
| | E. Seek to identify how investments in flooding can minimise the local economic impacts of flooding and coastal change, improve investor confidence and enable sustainable growth. | 2025 - 2026 | Through Local Levy | Resilience Team and Planning Department | L |
| | F. Ensure all development have full consideration of the Council's SuDS SPD as appropriate | Ongoing | Within existing staff resource | Resilience Team and Planning Department | H |
| | G. Review the feasibility of retro fitting sustainable drainage systems in urban areas where appropriate | Ongoing | Within existing staff resource | Resilience Team and Planning Department | H |
| | H. Utilise BBC Local Plan and Strategic Flood Risk Assessment to inform on where new development occurs | Ongoing | Within existing staff resource | Resilience Team and Planning Department | H |
| | I. Influence land decision in the Local Plan using best available information to identify appropriate development potential | Ongoing | Within existing staff resource | Resilience Team and Planning Department | H |
| | J. Work alongside planning to provide opportunities for potential projects in flood risk schemes through government grants. | Ongoing | Government Grants | Resilience Team and Planning Department | H |

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| | K. Review the current SUDS SPD and updated where necessary. | 2022 - 2023 | Within existing staff resource | Resilience Team and Planning Department | H |
| ***4. Work in partnership with other Risk Management Authorities to manage and mitigate flood risk across the catchment*** | A. Work with other RMA's to help places plan and adapt to flooding for a range of climate scenarios. | 2025 - 2027 | Local Levy | Resilience Team and RMAs | L |
| | B. Develop a programme of schemes to be funded through Local Levy and partnership funding to improve flood risk across the catchment | Ongoing | Local Levy/GiA | Resilience Team and RMAs | H |
| | C. Work with RMAs' to develop a project to install PLR measures more cost effectively across the Borough in appropriate locations | 2024 - 2025 | Through partnership funding, Local Levy/GiA | Environment Agency and Resilience Team | M |
| | D. Work with RMAS's to identify evidence and locations for upstream storage and improved conveyance | 2023 - 2027 | Through partnership funding, Local Levy/GiA | Environment Agency and Resilience Team | M |
| | E. Work with the EA to improve/inform the maintenance regimes and awareness of riparian ownership along the River Great Ouse to improve the maintenance of the Upper Catchment and preventative maintenance | Ongoing | Within existing staff resource | Resilience Team BBC, Environment Agency | H |
| | F. Work in Partnership with Anglian Water through the development of the Kempston NFM Scheme | 2022 - 2024 | BBC and Section 106 Funding | Resilience Team, Anglian water, Environment Agency and consultants | H |
| | G. Look at future partnership work that can provides benefits to flood risk across the catchment including the Upper & Bedford Ouse Catchment Partnership | Ongoing | Within existing staff resource | Resilience Team BBC, Environment Agency | H |
| ***5. Continue to raise awareness of Flood Risk across the Borough from all sources of flooding*** | A. Promote with residents of the Borough to understand the potential impact of flooding on their lives and actions to be taken to reduce that impact | Ongoing | Within existing staff resource | Resilience Team BBC, Environment Agency | H |
| | B. Hold regular Flood Forums to provide a platform to inform the public on Flood Risk Management across the Borough | Ongoing | Within existing staff resource | Resilience Team BBC | H |
| | C. Promote Flood Alerts and Warnings and up to date information on flood events through the Council's social media | Ongoing | Within existing staff resource | Environment Agency | H |
| | D. Promote the uptake of people signed up to the Environment Agency's Flood Warning Service | Ongoing | Within existing staff resource | Resilience Team BBC, Environment Agency | H |

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| | E. Improving the flood warning service to better target local areas at risk | Ongoing | Within existing staff resource | Environment Agency | H |
| | F. Assess the feasibility of installing additional gauges to feed into the Flood Warning Service | 2022 – 2023 | Within existing staff resource | Resilience Team BBC, Environment Agency | H |
| | G. Raise awareness of riparian responsibilities and the importance of maintenance across the Borough | Ongoing | Within existing staff resource | Resilience Team BBC | H |
| | H. Raise awareness of utilising upland water storage and better land management techniques. | Ongoing | Within existing staff resource | Resilience Team BBC, Environment Agency | H |
| | I. Improve information available interactively on Council's website for flood risk | 2023 - 2024 | Within existing staff resource | Resilience Team BBC | H |
| | J. Work with education providers to encourage opportunities for ongoing learning and understating of flood risk within schools | 2025 - 2026 | Within existing staff resource | Resilience Team BBC | H |

## 12. Review of the Strategy

The Council has a duty to maintain and monitor the strategy. The Strategy provides a high level framework for the Council's delivery of its flood risk responsibilities. The Strategy will be monitored by the Council and progress against the measures will be reported to the Chief Officer for Regulatory Services & Culture and relevant Portfolio Holders on an annual basis.

The strategy has been developed to deliver a short-to-medium term improvement plan to establish a sound evidence and knowledge base. The responsibility for maintenance, review and updating of the Strategy and provision of an annual progress report, for authorisation by the Chief Officer, it will be the responsibility of the Senior Flood Risk Officer to:

- Review and update the Action Plan annually.
- Review the annexes annually and update as appropriate.
- Review the main strategy document every five years, and update as appropriate.
    - Updates may be more frequent, the following may prompt earlier review:
        - Legislation changes that may result in changes to policy, which could affect roles and responsibilities.
        - Alterations to the understanding or nature of local flood risk.
        - A significant flood event.

## 13. Next Steps

The LFRMS 2022 provides a strategic overview of the commitment the Council will be taking to reduce and manage flood risk across the Borough over the next 5 years through delivery and implementation of the Action Plan.

The LFRMS 2022 continues to provide a delivery vehicle for improved flood risk management across the Borough.

The Strategy supports the visions and approaches of national policy and legislation by ensuring resilience is built into the Borough so we are in a better position to adapt and manage flood risk with the pressures faced by climate change.

The Council will continue to work with our partners and RMA's to be more innovative and bold in our approach to face and tackle the challenges upon us today.

# Appendices

**APPENDIX A**

## A1 Legislation and Policies

Flood Risk Management is affected by a range of other legislation and guidance; these include:

- The Water Framework Directive
- UK Climate Change Risk Assessment 2017
- River Basin Management Plans (RBMP)
- Drainage and Wastewater Management Plans (DWMP)
- Bedford Borough Council's Water Cycle Study 2012
- The Climate Change Act (2008)
- The Conservation of Habitats and Species Regulations (2010)
- The Civil Contingencies Act (2004)
- The Strategic Environmental Assessment (SEA) Directive (2001)
- The Land Drainage Act (1991)
- The Water Industries Act (1991)
- Wildlife and Countryside Act (1981)
- Countryside and Rights of Way Act (2000)
- Public Health Act (1936)
- Highways Act (1980)

## A2 Marston Vale Surface Waters Plan

The Marston Vale Surface Waters Plan is a key Strategy for the growth area of Bedford Borough Council and established the framework for development where aspiration and delivery are aligned with the provision of strategic, integrated and maintainable SuDS. This was established by the Marston Vale Surface Waters Group, which was established in 1997 and Bedford Borough Council is a key partner. It has been instrumental in delivering significant development such as Wixams, Marsh Leys Land, West of Kempston, Wootton and Cardington. The Surface Waters Plan was part of 15 pilot studies being carried out by Defra to examine a range of different approaches to develop a more integrated urban drainage approach.

The Surface Waters Plan for Marston Vale relates directly to flood risk and supports local planning policies. The Surface Waters Plan seeks to encourage landholders, developers and planners to work with the drainage authorities and the Community Forest team to devise strategic lasting solutions, generating a diverse array of benefits including increased amenity and conservation value for the management of flood risk and surface water drainage in Marston Vale.

## A3 Sustainable Drainage System Supplementary Planning Document

The Supplementary Planning Document (SPD) addresses sustainable development across Bedford Borough by defining the requirements for the implementation of SuDS as part of future local development. The SPD provides a framework to promote sustainable development within Bedford Borough through planning standards and objectives set out in the document.

The aim of the SPD is to outline the requirement of SuDS within developments, identify the information required to validate and support a planning application, and provide a benchmark for Bedford Borough Council to assess such applications against the standards contained within the SPD.

The Sustainable Drainage System (SuDS) SPD was adopted by the Council's Executive on 13 February 2018.

**APPENDIX B**

## Roles and Responsibilities

### B1 Responsibilities

Flood events are often a complex interaction of flood sources, pathways and receptors, the responsibility for managing these can lie with a number of different organisations. The Flood and Water Management Act 2010 and Flood Risk Regulations 2009 expect that LLFAs will form partnerships with other risk management authorities in their area in order to manage local flood risk. Risk Management Authorities (RMA), defined under the Flood and Water Management Act 2010 are the Environment Agency, lead local flood authorities, district councils and county councils for areas where there is no unitary authority, Internal Drainage Boards, Water Companies and Highway Authorities.

Bedford Borough Council as a Lead Local Flood Authority has a series of legal responsibilities highlighted below:

- duty to cooperate with other risk management authorities.
- duty to act consistently with national and local strategies.
- powers to take on flood risk functions from another risk management authority.
- duty to contribute towards the achievement of sustainable development.
- The Environment Agency has responsibility for main river watercourses, and oversees the activities of Local Authorities with respect to minor water courses.
- Canals and River Trust has responsibility for canals.
- Local authorities have a mixture of responsibilities. Unitary and County Councils are highway drainage authorities, whilst Unitary and District Councils are planning authorities with responsibility for ensuring satisfactory drainage for developments and for compliance with building standards.
- Main roads are managed by the Highways Agency and other roads by Local Authorities. The Highways Agency receives most of its funding from central government. The local highways authority is part of the Local Authority
- Internal Drainage Boards (IDBs) manage all water courses in an IDB area, which is usually an area of high flood risk.
- Riparian owners are required to maintain the free flow of water

Roles and Responsibilities of RMA's

| Risk Management Authority | Roles and Responsibilities |
|---|---|
| Bedford Borough Council | ○ Manage the risk of flooding from surface water, groundwater and ordinary watercourses<br>○ Manage drainage of surface water from local highways, adopted Highways and residential streets (excluding private roads).<br>○ Maintaining the road drains on minor roads, including kerbs, road gullies, ditches and the pipe network which connects to the Anglian Water Services sewer.<br>○ Routine highway gulley emptying and emergency clearance of highway gullies and drainage when flooding occurs<br>○ Emergency road closures and diversions<br>○ Develop and implement an emergency plan, contingency plan and business continuity plan.<br>○ Ensure flood risk is considered in the Local Plan.<br>○ Inspect watercourses on BBC land and maintain Council owned assets such as ditches, gullies, trash screens and culverts which have a role in flood risk management.<br>○ Enforce owners of private watercourses to undertake maintenance to reduce flood risk. |

| | |
|---|---|
| | ○ Making decisions on planning applications which may be at risk of flooding or increase flooding elsewhere.<br>○ Statutory consultee to the planning department for planning applications with surface water drainage and local flood risk implications.<br>○ Seek funding for flood protection installation, flood alleviation studies and construction.<br>○ Powers to request a person to provide any information relating to flood management responsibilities<br>○ Powers to take enforcement action where third parties obstruct the flow in, or fail to maintain, an ordinary watercourse.<br>○ A duty to investigate significant flood incidents and determine and allocate responsibilities<br>○ A duty to maintain a register of structures or features likely to have a significant effect on flood risk<br>○ Powers to designate structures and features relating to flood risk, other than from 'main river'.<br>○ Development of a Local Flood Risk Management Strategy (LFRMS).<br>○ Consenting works on ordinary watercourses outside the Internal drainage board district. |
| Environment Agency | ○ Monitoring and reporting on flood and coastal erosion risk management. This includes reporting on how the national FCERM strategy is having an impact across the country.<br>○ Risk based management of flooding from 'main rivers'.<br>○ Strategic overview of all sources of flooding<br>○ Advice on planning and development<br>○ Develop a National Flood Risk Management Strategy<br>○ Coordination of Regional Flood and Coastal Committees<br>○ Consenting on main river<br>○ Powers to request information relating to flood management responsibilities<br>○ Powers to designate structures and features relating to 'main rivers'<br>○ Risk based management of flooding from 'main rivers' - management of flood risk on Main Rivers and the sea, and regulating reservoir safety<br>○ Advice on planning and development – advice to planning authorities on development within Flood Zones 2 and 3, critical drainage areas and adjacent to Main Rivers. |
| Anglian Water | ○ A duty to effectively drain their area, in accordance with section 94 of the Water Industry Act 1991.<br>○ Responsible for flooding from foul and surface water sewers and from burst water mains.<br>○ Maintain a register of properties at risk of flooding due to a hydraulic overload in the sewerage network<br>○ Undertake capacity improvements to alleviate sewer flooding problems on the DG5 register during the current Asset Management Period<br>○ A duty to register all reservoirs above ground level with a capacity greater than 25,000 $m^3$ with the Environment Agency<br>○ Encouraging the use of Sustainable Drainage Systems (SuDS)<br>○ Act in a manner consistent with the National Strategy and Local Flood Risk Management Strategy<br>○ A duty for the adoption of private sewers |
| Bedfordshire & Ivel Internal Drainage Board (IDB) | ○ Provide local water level management by undertaking watercourse maintenance and improvement.<br>○ Adoption and maintenance of Sustainable Drainage Systems (SuDS)<br>○ Provision of advice and direction to local authorities and developers as part of the Town and Country planning procedure<br>○ Consenting and enforcement of ordinary watercourses within the drainage district.<br>○ Building of new flood defenses infrastructure<br>○ Support in flooding emergencies.<br>○ Act in a manner consistent with the National Strategy and Local Flood Risk Management Strategy |

## B2 Internal Drainage Boards

The internal drainage board is a public body that manages water levels in an area known as an internal drainage district, where there is a special need for drainage. As LLFA's IDB's undertake works to reduce flood risk to people and property and manage water levels for agriculture and environmental needs within their district.

Within the Borough Bedfordshire & Ivel Internal Drainage Boards are responsible for the area predominantly to the South of the Borough. The Bedford Group of Drainage Boards comprises of three Internal Drainage Boards which are situated in the upper reaches of the Great Ouse river catchment.

The Boards with locally elected members in place have the knowledge to ensure that their communities are as safe as possible, able to prosper and enjoy the amenity and biodiversity benefits that are available in well-managed lowland areas.

## B3 Responding to a Flood Event

### Roles and Responsibilities of Emergency Responders

The table below sets out the roles and responsibilities for responders during and after a flood emergency. The Council's Resilience Team ensures the Council is able to respond swiftly and proportionately to an emergency in the community as part of an integrated emergency response whilst continuing to delivery key services and developing a more resilient community as required by the Civil Contingencies Act 2004.

The Bedfordshire Local Resilience Forum (BLRF) was formed in 2004, bringing together the Emergency Services, Local Authorities, Health partners and other agencies who are all required to respond to any major emergency in Bedfordshire. Details of the emergency response are set out in the BLRF Multi-Agency Flood Plan.

Roles and Responsibilities of Emergency Responders

| EMERGENCY RESPONDER | RESPONSIBILITY |
|---|---|
| **Local Authority (Category 1 Responder)** | Monitor advice from the Environment Agency<br>Set up assistance centres if required<br>Standby or activate the Flood Response Team<br>Consider setting up a Command and Control with BLRF partners<br>Identify vulnerable people who may be affected by potential flooding<br>Put out 'Road Closed' signs and liaise with the Police<br>Liaise with Community Flood Groups<br>Lead on the recovery process |
| **Police Force (Category 1 Responder)** | Save life<br>Coordination and communication between emergency services and organisations providing support<br>Coordinate the preparation and dissemination of emergencies |
| **Fire and Rescue Service (Category 1 Responder)** | Save life<br>Carry out other specialist work including flood rescue services |
| **Ambulance Service (Category 1 Responder)** | Save life<br>Provide treatment, stabilisation and care at the scene<br>Liaise with BLRF partners regarding vulnerable people who may be affected |
| **Environment Agency (Category 1 Responder)** | Respond to requests for flooding information and updates<br>Issue flood alerts and warnings and ensure systems display current flood information<br>Provide information to the public on what they can do before, during and after a flood event<br>Monitor river levels and flows and tidal conditions<br>Receive and record details of flooding and related information<br>Operate water level control structures within its jurisdiction and in line with permissive powers<br>Flood event data collection<br>Respond to pollution incidents and advise on disposal<br>Assist with the recovery process, for example, by advising on the disposal of silt, attending flood surgeries. |
| **Utility Providers (Category 2 Responder)** | Attend emergencies relating to their services putting life at risk<br>Assess and manage risk of service failure<br>Work and communicate with Category 1 responders<br>Assist with recovery process, that is, water utilities manage public health considerations |
| **Bedfordshire & Ivel Internal Drainage Board (Category 2 Responder)** | Work and communicate with Category 1 responders<br>Local statutory water level management body actively engaged in land drainage and reduction of flood risk.<br>Monitor water levels in the IDB drainage system<br>Address any operational problems in the IDB drainage system<br>Mobilise temporary pumps as necessary<br>Monitor and operate the flood storage reservoirs<br>Use of byelaws to control storm water discharge into watercourses |
| **Voluntary Services** | Provide support to the Local Authorities and other BLRF partners through the provision of support including:<br>- Assistance at rest centres<br>- Door knocking<br>- 4x4 support<br>- manpower to assist with monitoring areas of concern |

## B4 Bedford Borough Council's Role as a Lead Local Flood Authority (LLFA)

Bedford Borough Council has a number of duties and discretionary powers as the LLFA. Including:

### I. SuDS Statutory Consultee

Sustainable Drainage Systems (SuDS) are an approach to managing rainwater and surface water that replicates natural drainage, the key objective being to manage flow rate and volume of runoff to reduce the risk of flooding. They also aim to protect water quality, first by managing the pollutant load at source and secondly by reducing the volumes of surface water reaching combined sewers which may directly overflow into watercourses. At a holistic level, SuDS increase the amenity and aesthetic value of urban areas and improve wildlife habitats and opportunities for biodiversity The systems can take a variety of forms including rainwater re-use, storage or infiltration to the ground, via systems as simple as a water butt or as complex as a multistage system designed to remove pollutants and sediments before allowing direct infiltration to the subsurface.

Since April 2015 SuDS proposals have been required for planning applications for major developments. Bedford Borough Council, as the LLFA also became a Statutory Consultee and is now consulted on all major planning applications in relation to surface water drainage to ensure they conform to the necessary national and local standards. Bedford Borough Council has produced an adopted SuDS Supplementary Planning Document which provides guidance and specific standards for schemes that the Council would expect a developer to deliver within the Borough. All SuDS proposals should be in accordance with the adopted SuDS Supplementary Planning Document.

### II. Duty to Investigate and Report on Flood Incidents

On becoming aware of a flood in its area, the LLFA must undertake an investigation to the extent that it considers necessary or appropriate. This investigation must set out which risk management authority is responsible and whether they have responded appropriately to the flood. The results of the investigation must be published. In Bedford an initial investigation will be carried out in any circumstance of internal property flooding or of key infrastructure flooding. A number of criteria will then determine whether a full investigation is undertaken and which risk management authority leads on producing it. The results of a formal flood investigation will be published on the Bedford Borough Council website.

Investigating flooding · Bedford Borough Council
https://www.bedford.gov.uk/environmental-issues/flood-risk-management-in-bedfr/investigating-flooding/

### III. Bedford Borough Council's Role as the Regulator of Ordinary Watercourses

Under the Land Drainage Act 1991, the Council has permissive powers to consent and designate structures on Ordinary Watercourse

### IV. Power to Designate Structures

The power to designate structures that have an effect on flood risk commenced in 2012. Bedford Borough Council and the Environment Agency are now able to designate natural or

artificial features that are important for flood or coastal erosion risk management. A feature can be designated if:

- The existence or location of the feature affects flood risk.
- The designating authority has responsibility for the risk that is affected.
- The feature has not been designated already (including by another authority).
- Is not owned by another designating authority.

Designation means that a feature may not be altered, replaced or removed without consent. Designated features will be added to the asset register.

## V. Powers to Consent

The Borough Council is responsible for the consenting of works to ordinary watercourses and has powers to enforce unconsented and non-compliant works. This includes any works, including temporary, that affect flow within the channel of any ordinary watercourse, such as in-channel structures or diversion of watercourses. Consent is refused if the works would result in an increase in flood risk, a prevention of operational access to the watercourse and/ or they pose an unacceptable risk to nature conservation. Bedford Borough Council has an internal consenting process that it will follow to ensure consistency.

As LLFA and local highway authority, Bedford Borough Council has cause to undertake works on ordinary watercourses. This can include:

- work in relation to upgrading of roads.
- work in relation to inspections of culverts.
- structural improvements to structures such as culverts.
- works associated with development of waste and mineral sites and their own sites such as libraries or schools.

In line with the aims of this strategy, such works must mitigate local flood risk. As with any other proposals they must ensure the proper flow of water in a watercourse. As LLFA, Bedford Borough Council does not have to seek approval from external bodies for their own flood risk management activities. However, the works must be undertaken in a manner that complies with the requirements of all relevant legislation.

Consents for culverts · Bedford Borough Council
https://www.bedford.gov.uk/environmental-issues/flood-risk-management-in-bedfr/consents-enforcement/consents-for-culverts/

## VI. Bedford Borough Council's Role as a Land Owner and Asset Owner

Bedford Borough Council is responsible for the maintenance of Council owned assets which have a role in flood risk management. The Council is also required to maintain a register of structures or features that, in the opinion of the authority, are likely to have a significant effect on flood risk. In Bedford the register contains key flood risk assets, such as culverts, bridges and pipes that have the possibility to cause the flooding of properties, critical infrastructure or block major roads when the asset is not functioning to an adequate level. Information is also held on ownership and state of repair.

## VII. Bedford Borough Council's Role as a Category 1 Responder

Bedford Borough Council has statutory duties under the Civil Contingencies Act 2004 to ensure that the Borough Council is prepared and able to respond to an emergency in the Borough. The Resilience Service works closely with members of the Bedfordshire Local Resilience Forum (BLRF), which includes the emergency services, various health organisations, Environment Agency, voluntary and private organisations to integrate and co-ordinate a suitable response to any major incident in Bedfordshire.

During a flooding incident, Bedford Borough Council's support for emergency services and other organisations could potentially take the form of arranging emergency shelter, arranging emergency transport, provision of information and coordinating services such as emergency housing, social care and highways.

## VIII. Bedford Borough Council's role as Planning Authority

The Borough Council will not permit development where:

- It would intensify the risk of flooding, or
- It would be at an unacceptable risk from flooding, or
- It would prejudice existing flood defences or interfere with the ability to carry out flood control and maintenance work or it would adversely affect wildlife habitat in the floodplain.

Unless the Council, in consultation with the Environment Agency and Internal Drainage Board, is satisfied that the developer will provide appropriate mitigation, protection and compensatory measures will development be permitted.

## IX. Bedford Borough Council as a Highway Authority

Bedford Borough Council is designated a Highway Authority under the Highways Act 1980 and as such is responsible for the management of the Highways including its drainage. They are responsible for routine highway gully emptying and emergency clearance of highway gullies, bridges, culverts and drainage when flooding occurs. The Highways Authority are also responsible for emergency road closures and diversions when flooding takes place such as on river causeways etc.

Roadside ditches are not the responsibility of the Highways Authority unless specifically put in place. The Highways Authorities also have powers to ensure ditches/culverts are kept maintained and free flowing to prevent the highway from flooding.

## X. As a Riparian Owner

Riparian owners have the responsibility to manage their own flood risk. Anyone who owns land adjoining a watercourse, or owns land with a watercourse running through it is a riparian owner and has certain legal responsibilities. It includes all natural or artificial channels through which water flows (such as streams, ditches and river channels). It presumes the riparian owner owns the land up to the centre line of the water course. In many cases riparian owners are not aware of their responsibilities which can result in poor maintenance or obstruction of the flow of water.

For more information, please use the link below:
https://www.bedford.gov.uk/environmental-issues/flood-risk-management-in-bedfr/riparian-owners/

**C1 Community Flood Groups**

# Setting up Community

# Flood Groups:

## Flood Groups are made up of a group of volunteers from the local community who:

- Are a representative voice for their community on flood related issues
- Raise awareness of flood risk in the area and promote resilience
- Are equipped with the knowledge and resources to help prepare their community before, during and after flooding
- Work with Bedford Borough Council and partners to minimise flood risk, ensure preparedness and help identify recovery issues.

## Benefits of having a Community Flood Group:

- Community Flood Groups often have better local knowledge of their community
- Your local community can become better prepared and more resilient during flood events helping to reduce the impact of flooding on the community
- Direct communication with Bedford Borough Council before, during and after flood events
- Provision of flood kits to be used in local community

## Process of setting up a Flood Group:

You will need a small handful of willing volunteers in the community. Bedford Borough Council will work with you and provide support and advice in writing a Community Flood Plan before, working with our partners to provide training and exercising. Flood equipment will also be provided to the Community Flood Group including aqua sacs, high viz waistcoats and radios.

### Contact:

If you are interested in setting up a Flood Group in your community, or have any questions then please get in touch at **floodrisk@bedford.gov.uk**

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**Appendix D**

**D1 Flood Advice**

# Be Flood Aware
## advice to residents

### Before a Flood / If a Flood Has Been Forecast:

- Prepare a flood kit: Pack a small bag with essential belongings and warm clothes, torch, mobile phone and charger, any medicines you need to take and any important documents. Keep this bag easily accessible.
- Find out where and how to turn off your gas and electricity. Ensure that you switch them off before evacuating your home.
- If possible, move electrical equipment and furniture upstairs. Any furniture that you cannot move upstairs, try to raise off the floor. Consider moving vehicles to areas away from risk of flooding.
- Block doorways, low windows or air bricks.
- Where safe to do so, help neighbours who may need assistance
- Keep up to date with information through local radio, the Environment Agency Floodline Service (**0345 988 1188**), the Met Office or Bedford Borough Council.
- Put flood protection equipment into place. Visit the Blue Pages for flood protection products - **www.bluepages.org.uk**

### During a Flood

- Do not walk or drive through floodwater
- Move your family, pets and flood kit to a high place with a means of escape.
- Where safe to do so, help neighbours who may need assistance
- Identify friends or family who you may be able to stay with if you are required to evacuate.
- Stay safe, listen to the advice of the Emergency Services and evacuate if told to do so.
- Call 999 if you are in immediate danger

### If Evacuation Becomes Necessary:

- Try to stay calm and listen to the advice being given by the official telling you about the evacuation.
- If possible, stay with friends or family. However, you will be informed of an open Assistance Centre run by Bedford Borough Council which will offer a safe location where information and shelter will be provided.
- If you are going to the Assistance Centre or alternative location let family/friends know that you have evacuated and where you are going.
- Take your prepared flood kit with you where possible
- Ensure that any pets are put into pet carriers or use leads where possible.

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## After a Flood / Returning Home:

- Make sure it is safe to return to your property
- Contact your insurers as soon as possible and follow their advice. Most insurers have a 24 hour helpline. Do not throw away damaged goods until your insurer has authorised you to do so. It is a good idea to take photos of the damage.
- Check the safety of electricity and gas before use. A qualified electrician / gas engineer needs to check any electrical equipment and circuits that have been exposed to floodwater.
- Avoid contact with any remaining floodwater or items that have had contact with floodwater unless wearing protective gloves / clothing.
- Dispose of any contaminated food, including tinned, defrosted and packaged foods that have been exposed to floodwater.
- Ventilate your property but keep security in mind.
- During these hard time, bogus or cowboy builders and traders often offer their services. Make sure you get a written quotation that is on letter headed paper with a landline contact number and address.

## Aqua Sacs / Sandbags:

- Homeowners are ultimately responsible for protecting their property from flooding.
- The Council, will of course be on hand during flood emergencies, and whilst responsibility lies with the homeowner, the Council do have a limited stock of aqua sacs which are prioritised for properties at imminent risk of internal property flooding and for those who are particularly vulnerable residents / premises.
- Homeowners are therefore encouraged to make provisions for flood protection such as the use of sandbags and aqua sacs.

## Further Information:

- Environment Agency Floodline Service: **0345 988 1188**
- Bedford Borough Council website: **www.bedford.gov.uk/flood**
- Bedford Borough Council contact number: **01234 267422**
- General Flood Information (including advice with insurance) - National Flood Forum: **www.nationalfloodforum.org.uk**

**www.bedford.gov.uk/flood**

For further assistance please call **01234 267422**