



Derby City Council

**Local Flood Risk Management Strategy
Consultation**

February 2016

Revision History

Report produced by: Tony Donaldson C.Eng MICE

SCHEDULE OF REVISIONS

REVISION	ISSUE DATE	DESCRIPTION
First Issue draft	20 th February 2015	For meeting with KT
2 nd issue	26 th March	<i>Amended in line with points raised in meeting 11/3/15</i>
3 rd issue	July 2015	
4 th issue	31 st July 2015	Plain English check, objectives simplified, section 3 amended, statutory duties added to action plan, appendix C amended.
5 th issue	7 th October 2015	General amendments.
6 th issue	18 th November 2015	General amendments.
7 th Issue	18 th January 2016	Updated Action Plan
8 th Issue	13 th October 2016	Updated Action Plan

Executive Summary

In recent years the UK has experienced many instances of flooding from rivers and from surface water that have caused much disruption and distress to people affected by this. In 2010 the Government brought in a new piece of legislation designed to enable the management and reduction of flood risk by all the organisations that could conceivably act together to reduce the risk of flooding. The Flood and Water Management Act 2010 (FWMA) placed responsibilities on upper tier local authorities including Derby City Council and required that they take action towards understanding the flood risk in their area and improve the management of their work in controlling the prevailing flood risk.

Clause 9 of the FWMA required Lead Local Flood Authorities to produce a Local Flood Risk Management Strategy for their area. This document forms that strategy.

The document describes the types of flood risk and provides information for people and businesses within Derby to manage the flood risk and prepare for flooding in order that they may recover more quickly if this occurs.

The document also describes the various organisations involved in managing the flooding risk in Derby and the relationships between the Environment Agency, Severn Trent Water, Derby City Council and other organisations that coordinate their efforts and exchange information in the management of flood risk.

This strategy briefly describes the flood risks to Derby but does not repeat the information in other documents including the Strategic Flood Risk Assessment, Surface Water Management Plan and Preliminary Flood Risk Assessment, all of which are available on the Derby City Council website and are updated periodically. Instead, this document states the objectives that form the basis for the strategy and also describes the actions that are currently being taken and will continue to be taken to manage the flooding risk.

The management of the risk includes amassing a detailed knowledge of the various flooding mechanisms in Derby and also the extent and condition of the assets (culverts, screens, watercourses, flood defences etc.). Derby City Council undertakes a continuous programme of maintenance of their assets and also the assessment and design of schemes to reduce the flooding risk. The budget costs associated with this work are included.

Finally, the review process for how the strategy is delivered is described. Derby City Council will be required to report on their progress in meeting the objectives in the strategy.

Table of Contents

Contents

1	Flood Risk Management by individuals, households and businesses	9
1.1	Introduction	9
1.2	Who to contact	9
1.3	How to find out if you are at risk of flooding	10
1.4	What can you do if you are at risk of flooding?	11
1.4.1	Preparation for flooding	11
1.5	Any questions?.....	13
2	The Local Flood Risk Management Strategy.....	14
2.1	Flood Risk Regulations 2009 & Flood and Water Management Act 2010 (FWMA) 14	
2.2	Definition of flooding.....	14
2.3	What is Local Flood Risk Management	14
2.4	Why is a Strategy needed?	15
2.5	Who needs to know about this Strategy?	16
2.6	What does the Strategy cover?	16
2.7	Legislative Framework	17
3	Roles and Responsibilities	18
3.1	Definition of Risk Management Authority and description of the Role	18
3.2	Additional Stakeholders in Risk Management.....	19
3.3	Governance and partnerships	21
4	Flood Risk in Derby	22
4.1	Overview of the city landscape	22
4.2	Specific local flood risks	24
4.2.1	Sources of Flooding	24
4.2.2	Priority Locations.....	28
5	Strategy for Managing Local Flood Risk in Derby	30
5.1	Introduction	30
5.2	Broad Objectives of the Strategy.....	31
5.3	Local Objectives mapped against National Objectives	32
5.4	General task areas to promote the objectives.....	32
5.4.1	Knowledge	32
5.4.2	Objectivity	32
5.4.3	Engagement.....	33
5.4.4	Planning Control.....	33
5.4.5	Sustainable Drainage.....	33
5.4.6	Integrated Approach.....	33
5.4.7	Environmental Awareness.....	34

5.4.8	Partnership.....	34
5.5	How the Strategy will be delivered.....	34
6	The Cost versus Benefit case.....	43
6.1	Planning the budget	43
6.2	Funding the expenditure.....	43
7	Monitoring and Review of the Strategy.....	45
7.1	Monitoring the strategy.....	45
7.2	Reviewing the Strategy	45
7.3	Review schedule and governance.....	45
8	Responding to the Consultation	46
8.1	Why consultation with stakeholders is required?	46
8.2	What needs to be responded to?.....	46
8.3	How long will the consultation be open for comment?	47
8.4	Where do I get more Information?	47
8.5	How do I respond to the consultation?.....	47
9	Appendices.....	48
9.1	AppendixA:RelevantLegislation &Guidance.....	48
9.2	Appendix B: Risk Management Authorities Flood Risk Management Roles and Responsibilities.....	49
9.3	AppendixC:Monitoring Progress&Success	50
9.4	Consultation Questions for the Flood Risk Management Strategy.....	51
9.5	Consultation Questions for the SEA Scoping Document	53

Table of Figures

Figure 1	Risk of flooding from rivers	10
Figure 2	Risk of surface water flooding.....	10
Figure 3	Legislative documentation used in writing and reviewing the Local Flood Risk Management Strategy	17
Figure 4	Risk Management Authorities working with Derby City Council	18
Figure 5	Map of Derby City ward boundaries.....	22
Figure 6	Map of main rivers and watercourses in Derby	23
Figure 7	Flood and Coastal Erosion Risk Management	30

Glossary of Terms

Attenuation	A device or system designed to store flows or flood waters thus reducing the downstream effects and increasing the duration of overall flows.
Catchment	The area of land contributing flow or runoff to a particular point or node on a watercourse system
Climate Change	Projected long-term variations in weather patterns, principally concerning extremes of temperature and rainfall intensity. Thought to be connected with the increasing global emissions of carbon dioxide.
DCC	Derby City Council
Defra	Department for Food and Rural Affairs
Drain	A private conduit used to convey storm or foul sewerage from a single point of origin to a point of disposal.
EA	Environment Agency
Filtration	The act of separating suspended solids from water by passing it through a filter membrane. Used to collect pollutants.
Flood Defence	Type of physical infrastructure such as walls or embankments, used to protect an area from flooding.
Flood Risk	The vulnerability of an area based upon the combination of probability and severity of flooding.
Flood Risk Assessment	A study to evaluate the potential for flooding, of a particular site, and the resulting impacts of such an event.
Flooding	This may be defined as the inundation of residential and commercial properties and infrastructure that causes damage and disruption.
FMfSW	Flood Maps for Surface Water – a GIS system designed to demonstrate the effects and flow paths of surface water flooding resulting from rainfall.
GIS	Geographic Information System
Groundwater	Water which occurs below ground level. The upper level of this is generally referred to as the Water Table and is often, but not always parallel to ground level.
Groundwater Flooding	When groundwater rises above ground level it may affect natural hollows or excavations.
Infiltration	The passage of water into the ground
LLFA	Lead Local Flood Authority
Main River	Any stream, brook or watercourse for which the Environment Agency is the managing authority

NPPF	National Planning Policy Framework
Ordinary Watercourse	Any stream, brook or river NOT considered to be main river – management of the banks will be by those people or companies whose land directly abuts the watercourse, called Riparian Ownership
Ordinary Watercourse	Any stream, brook or river NOT considered to be main river or private drain, lies under the direct control of the local drainage authority
Overland Flow	Water flowing over the ground. This may arise directly from rainfall or inundated underground drainage. Surface runoff will follow the easiest route to the lowest point.
Permeable Paving and Porous Surfacing	Surfacing which has perforations or gaps allowing the movement of surface water through to the layers below. This will then tend to flow through the granular base material to a suitable drainage system or will infiltrate into the soil below.
PFRA – (Preliminary Flood Risk Assessment)	A high level study to identify and assess the general flood risks affecting a given local authority administrative area. Driven by the EU.
Riparian Ownership	The ownership of land containing, or adjacent to, a watercourse. Riparian ownership conveys certain rights and responsibilities relating to the management of the watercourse in question.
RMA	Risk Management Authority
Runoff	Water flowing above ground before entering the local sewer system.
Severn Trent Water (STW)	Local sewerage undertaker for the Derby area. They are responsible for the treatment and disposal of foul and surface water from all adopted sewers.
Sewer	A pipe or conduit used to convey excess rainwater or sewerage from multiple sources to a point of disposal. Usually owned and managed by Severn Trent Water.
SFRA - (Strategic Flood Risk Assessment)	A high level study to identify and assess the definitive flood risks affecting a given local authority administrative area
STW	Severn Trent Water
SuDS	Sustainable urban Drainage System – an approach to the management of rainwater on new developments aimed at reducing the impact of the development on the existing drainage network and local environment.
Surface Water Management Plan (SWMP)	A high level framework agreement through which key local partners with responsibility for surface water and drainage can work together to understand the causes of surface water flooding and agree the most effective way of managing surface water flood risk.
Swale	A shallow trench or ditch with very gently sloping sides used to collect,

	convey and store runoff. An element of treatment and infiltration is also generally offered.
uFMfSW	Updated Flood Maps for Surface Water

Consultation

1 Flood Risk Management by individuals, households and businesses

1.1 Introduction

The following section details some of the types of flooding that could occur and who to contact about this. It also describes measures that can be taken by household to manage the flood risk to their property.

1.2 Who to contact

Type of flooding	Who to contact
River flooding from the River Derwent, Markeaton Brook, Hell Brook, Cuttle Brook, Chaddesden Brook, Cotton Brook or Wood Brook	Environment Agency Floodline 0800 807060 or 0345 9881188 www.gov.uk/government/organisations/environment-agency
Watercourse flooding from ordinary watercourses including Lees Brook, Bramble Brook, Littleover Brook, Thulston Brook, Chaddesden Brook (upstream of Lees Brook) or Cuttle Brook (upstream of Rabown Avenue	Derby City Council 'Projects, Water and Flood Risk Management Team' 01332 641789 8:30am to 5:00pm, Monday to Friday Or 0333 200 6981 for 'Streetpride', a 24 hour automated service
Flooding from public sewers	Severn Trent Water 0800 783 4444
Flooding from private drainage	You will need to contact a local drainage services company yourself
Flooding from highways and Derby city council land including blocked gullies, parkland or public amenity areas	Derby City Council – Streetpride 01332 293 111 8:30am to 5:00pm or 0333 200 6981 (24 hour automated service)

Table 1 Contact details for different types of flooding

1.3 How to find out if you are at risk of flooding

Go to the Environment Agency website and access the maps that display the risks of flooding from different sources. For example, here are the maps for flooding from rivers and surface water/rainfall for Derby city centre:

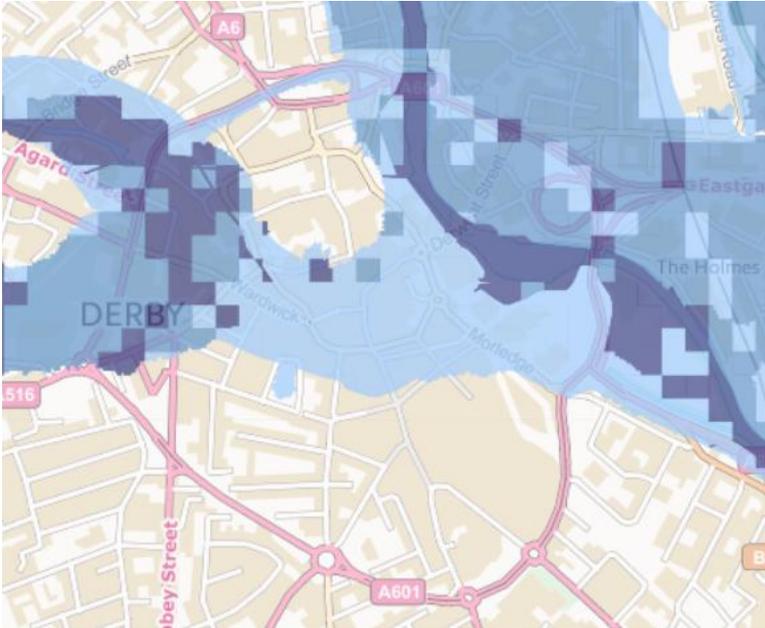


Figure 1 Risk of flooding from rivers

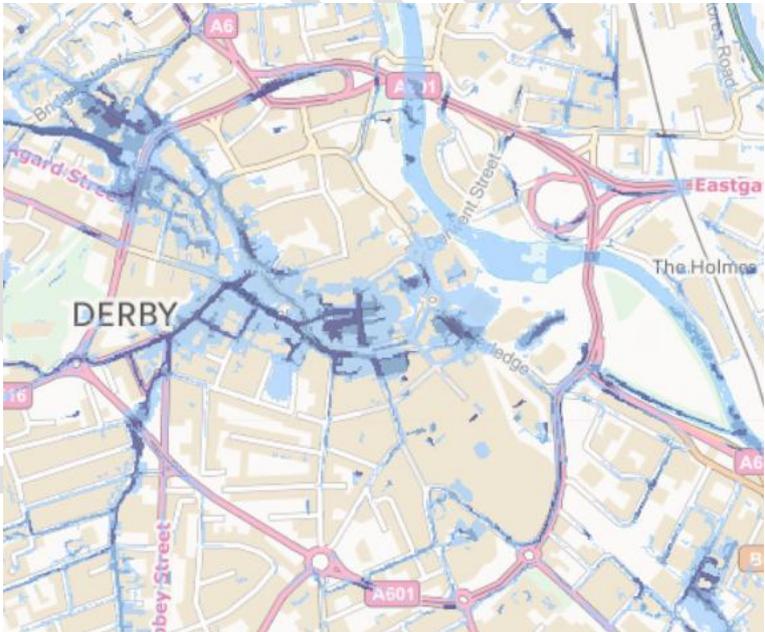


Figure 2 Risk of surface water flooding

1.4 What can you do if you are at risk of flooding?

1.4.1 Preparation for flooding

If your home or business is flooded it can be costly in terms of money and time, and also can cause emotional stress. It has been shown that it is more effective to take preventative action to protect against flooding, before flooding occurs rather than react to a flooding incident. The Environment Agency has advice on 'How to make a flood plan'¹

Derbyshire County Council have created a website which provides information and advice to help you better prepare for a flooding emergency in Derbyshire (Derbyshire Prepared²).

The Environment Agency offers guidance for householders and small businesses 'Prepare your property for flooding'³ and 'A guide to preparing your business for flooding'⁴

You can read online guidance on how to reduce the impact of flooding from groundwater⁵. Please refer to the 'Groundwater Guidance Notes'⁶

For guidance on how to prepare for/ protect yourself, from sewer flooding, please contact Severn Trent Water. There is also guidance material available online from Severn Trent Water⁷.

Table 2 illustrates some preparation techniques that can be employed to help you become more resilient to the impacts of flooding. For further information please refer to the 'Before, during and after a flood'⁸ and 'Self Resilience Guidance Notes'⁹.

¹<https://www.gov.uk/prepare-for-a-flood/make-a-flood-plan>

²<http://www.derbyshireprepared.org.uk/>

³<https://www.gov.uk/government/publications/sandbags-how-to-use-them-to-prepare-for-a-flood>

⁴<https://www.gov.uk/government/publications/preparing-your-business-for-flooding>

⁵<https://www.gov.uk/government/publications/flooding-from-groundwater>

⁶https://www.derbyshire.gov.uk/images/Guidance%20Notes%20-%20Groundwater_tcm44-267989.pdf

⁷<https://www.stwater.co.uk/waste-water-and-sewers/during-flooding/>

⁸https://www.derbyshire.gov.uk/images/Guidance%20Notes%20-%20Before,%20During%20and%20After%20a%20Flood_tcm44-267978.pdf

⁹https://www.derbyshire.gov.uk/images/Guidance%20Notes%20-%20Community%20Level%20Initiatives_tcm44-267981.pdf

	Sandbags, if laid correctly, offer some short term protection against flood water or can divert water away. The Environment Agency has produced guidance for 'How to use sandbags properly for flood protection' ¹⁰ . Derby City Council's current policy for sandbags is available online ¹¹ or hard copy provided on request. Advice on how to dispose of sandbags can be found on the 'Derbyshire Prepared' website ¹² or from Derby City Council environmental health department ¹³ .
	There are many alternative products to sandbags that may be easier to transport (lighter). These products have advantages and disadvantages compared to traditional sandbags. More information about these products can be found on the National Flood Forum website. ¹⁴
	There are number of products available on the market for property level protection, all of which offer more advanced protection than traditional sandbags. The National flood Forum offers an independent directory of flood protection products and services, as well as a wealth of other information and guidance. ¹⁵
	An individual property or business flood plan may include the location of gas taps or electricity supply, emergency numbers, information including emergency responders and your insurance company, preparation or emergencies supplies such as water and food. For guidance on how to complete a flood plan contact the Environment Agency or speak to a member of the Derby City Council 'Projects, Water and Flood Risk Management Team'.
	The Environment Agency offers a flood warning service to subscribers and a live flood warning map (updated every 15 minutes online) for large parts of the country particularly those areas affected by flooding from Main Rivers. You can sign up to the Environment Agency's Flood Warning Service ¹⁶ online or telephone 0345 988 1188.

Table 2 Guidance for helping you become more resilient to flooding

Insurance against flood damage

Derby City Council's 'Projects, Water and Flood Risk Management Team recommend that people take out flood protection insurance. They also encourage people to install property level protection and flood resilience measures which can sometimes help to reduce insurance premiums.

¹⁰https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297840/Sandbags_How_to_use_them_properly_for_flood_protection.pdf

¹¹<http://www.derby.gov.uk/transport-and-streets/roads-highways-pavements/roads-flooding/>

¹²http://www.derbyshireprepared.org.uk/files/uploads/Flood_Contingency_Plan_Jan_15_Public_Unrestricted_Version.pdf

¹³<http://www.derby.gov.uk/environment-and-planning/environmental-health/>

¹⁴<http://www.nationalfloodforum.org.uk/>

¹⁵<http://www.nationalfloodforum.org.uk/bluepages/>

¹⁶<https://fwd.environment-agency.gov.uk/app/olr/home>

If your property has suffered flood damage in the past, there is a history of flooding in your neighbourhood or you are located within an identified flood risk area, it can be difficult to find flood insurance cover. Defra has produced guidance for obtaining flood insurance in high risk areas which is available online¹⁷. The National Flood Forum has developed a Charter for Flood Friendly Insurance which promotes companies that demonstrate a fresh approach to flooded households¹⁸.

In June 2013, central government announced an agreement with the insurance industry to guarantee affordable flood insurance for people in high risk areas. 'Flood Re' stands for flood reinsurance and is a not-for-profit fund financed by insurers, which will cover the cost of flood claims from high risk homes. Please visit the Association of British Insurers website¹⁹ for further information about Flood Re.

If you have experienced flooding, you may be reluctant to report the incident to your insurer. However, it is important that you report any flooding to the relevant responsible organisation so that the data can support future work and guide any potential future investment for flood risk management. Please refer to 'Flood Reporting'²⁰ and 'Enquiries Investigation Guidance Notes'²¹.

Flood data currently held by insurance companies, the Environment Agency and the council provides information on the flood risk for a general location but does not identify individual properties. This data does not take into account of specific features of your home or business. You may be able to demonstrate that your property is at a much lower risk of flooding than the general area in which it is situated. Therefore, you may be able to increase your chances of obtaining a more competitive insurance quote.

1.5 Any questions?

Contact Kevin Tozer of Derby City Council's Projects, Water and Flood Risk Management Team on 01332 641789

¹⁷ <https://www.gov.uk/government/publications/obtaining-flood-insurance-in-high-risk-areas>

¹⁸ <http://www.nationalfloodforum.org.uk/>

¹⁹ <https://www.abi.org.uk/>

²⁰ http://www.derbyshire.gov.uk/environment/flooding/reporting_flooding/default.asp

²¹ https://www.derbyshire.gov.uk/images/Guidance%20Notes%20-%20Flood%20Reporting%20and%20Enquires%20Investigation_tcm44-267985.pdf

2 The Local Flood Risk Management Strategy

2.1 Flood Risk Regulations 2009 & Flood and Water Management Act 2010²² (FWMA)

Derby City Council has written this strategy in line with current legislation and guidance relating to flood risk management in England. Section 1.7 summarises the key legislation and guidance that relate to this document.

The European Union Floods Directive²³ (2007/60/EC) was made UK Law by the Flood Risk Regulations 2009. These regulations appointed the County Councils and Unitary Authorities as the 'Lead Local Flood Authorities (LLFAs)'.
Consultation

According to the regulations, Derby City Council has a duty to undertake a Preliminary Flood Risk Assessment (PFRA²⁴), which was completed in 2011.

Under Section 9 of the Flood and Water Management Act (2010), the LLFAs have a statutory duty to develop, maintain, apply and monitor a 'Local Flood Risk Management Strategy' ('from now on 'the Strategy').

This Strategy is therefore a **statutory document**.

2.2 Definition of flooding

Flooding is when dry land becomes covered by water that has come from surface water, groundwater, sewers, rivers, canals or reservoirs caused by weather events. It can have devastating effects on individuals, their property, the community, businesses and the quality of the environment.

The nature of the landscape affects the risk of flooding, for example, the type of soil, the amount of vegetation cover and paved surfaces. Watercourses, flood defences, drains and sewers must be maintained to reduce the chance of flooding and minimise the impact of any flood event.

2.3 What is Local Flood Risk Management

'Local' flood risk relates to flooding from surface run-off, ordinary watercourses and groundwater. These three sources are explained in more detail in section 3.2. This strategy does not include flooding from main rivers such as River Derwent. When flooding does occur it can be a combination of the above factors; therefore, local flood risk must take into account main rivers and the sewer network.

According to the definition²⁵ in the Flood and Water Management Act, 'Risk Management' means anything done for the purpose of

²²<http://www.legislation.gov.uk/ukpga/2010/29/contents>

²³http://ec.europa.eu/environment/water/flood_risk/

²⁴<http://tinyurl.com/nj23nnp>

- Analysing a risk
- Assessing a risk
- Reducing a risk
- Altering the balance of factors combined in assessing a risk
- Otherwise taking action in respect of a risk or a factor relevant to the assessment of a risk (including action for the purpose of flood defence)

An example of this is work done with Derbyshire County Council to assess surface water flooding risk and compare the accuracy of predicted information from the Environment Agency's Updated Flood Map for Surface Water²⁶ (uFMfSW) with work commissioned by Derbyshire County Council to produce their own flood mapping. This study evaluated the instances of reported flooding within the City and compared this to predicted areas. Derby City Council have concluded that the uFMfSW will be retained as the data source used to predict surface water flood risk as this correlates with the flooding from short-duration intense rainfall events that have occurred in Derby in the last five years.

Maintaining existing facilities and building new infrastructure is a very important component of risk management. People living in Derby who are at risk of flooding can also take sensible actions to limit the damage that a flood might cause to their property. Actions to reduce the risk of flooding can also be taken by Water Service Companies and Local Planning Authorities.

2.4 Why is a Strategy needed?

Derby City Council has written this Local Flood Risk Management Strategy to fulfil statutory duties and to help reduce flood risk to the residents, businesses and organisations based in Derby. The council will understand risk and form objectives for using the available recourses most effectively to reduce the risk.

The strategy is required to:

- Identify Risk Management Authorities (RMA) in each area of Derby and define their function
- Create objectives for managing local flood risk and define how these will be measured
- Draw up timescales for implementing objectives
- Identify costs of implementing objectives and the benefits
- Assess local flood risk
- Achieve wider environmental benefits in flood risk management

Climate change is resulting in more intense rainfall events that place greater stress on the capacity of drainage systems across the UK. Flood risk in England is increasing due to this climate change and also due to development taking place in areas where there is already a risk of flooding. Development in cities tends to fill in spaces where floodwater can flow leading to more properties at risk of flooding during intense rainfall events. In

²⁵<http://www.legislation.gov.uk/ukpga/2010/29/section/3>

²⁶<http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?topic=ufmfsw#x=357683&y=355134&scale=2>

the past, new developments have tended to dispose of surface water by connecting directly to local drainage systems, which has sometimes led to overloading of the drains and flooding.

It is not possible to prevent all flooding, but there are actions that can be taken to manage these risks and reduce the impacts that they may have on communities.

2.5 Who needs to know about this Strategy?

The strategy is for all people, businesses and organisations at risk of flooding in Derby. It is also an information source for other organisations with risk management functions, other partners and stakeholders.

2.6 What does the Strategy cover?

The strategy covers the following requirements in sections 2 - 7, as stipulated in Section 9 of the Flood and Water Management Act 2010²⁷. The guidance in section 1 is an additional source of information aimed at local people and businesses in Derby.

Title	Section of this report
Guidance to residents on Flood Risk Management	Section 1
The risk management authorities (RMAs) in the Derby City area	Section 3
The flood and coastal erosion risk management functions that may be exercised by those authorities in relation to the area	Section 3
The assessment of local flood risk for the purpose of the strategy	Section 4
The objectives for managing local flood risk (including any objectives included in the authority's flood risk management plan prepared in accordance with the Flood Risk Regulations 2009)	Section 5
How the strategy contributes to the achievement of wider environmental objectives	Section 5
Mapping of the strategy objectives to national objectives	Section 5
The costs and benefits of those measures and how they are to be paid for	Section 6
The measures proposed to achieve these objectives	Section 6
How and when the measures are expected to be implemented	Section 6
How and when the strategy will be reviewed	Section 7
How to respond to the consultation	Section 8

Table 3 Contents of the strategy and the respective sections of this document

²⁷<http://www.legislation.gov.uk/ukpga/2010/29/contents>

2.7 Legislative Framework

Diagram of documents that feed into this document (reference listed in AppendixA):

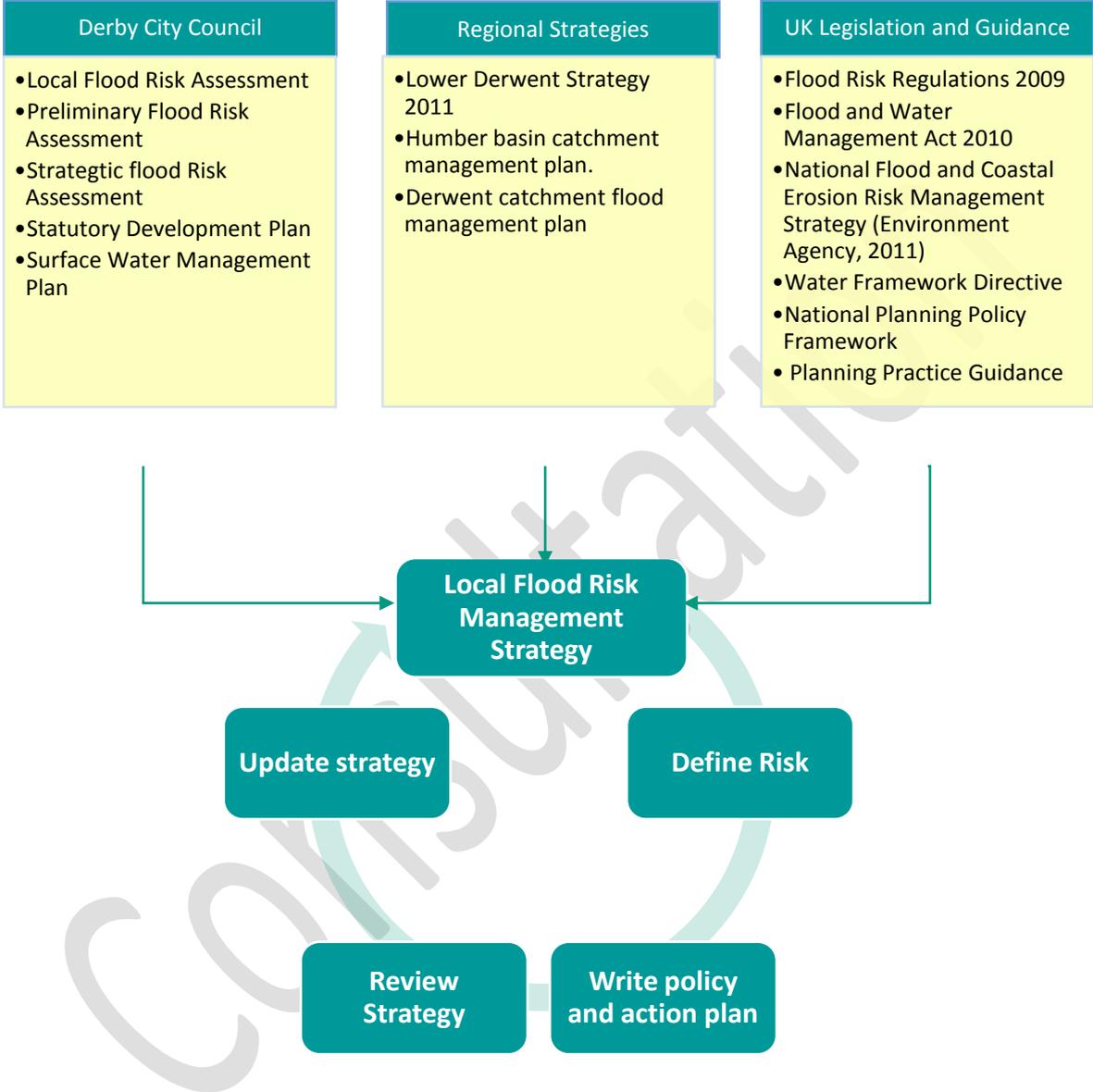


Figure 3 Legislative documentation used in writing and reviewing the Local Flood Risk Management Strategy

3 Roles and Responsibilities

3.1 Definition of Risk Management Authority and description of the Role

A Risk Management Authority (RMA) is defined by the Flood & Water Management Act as an organisation with flood management functions and responsibilities. In Derby the RMAs are:

- Lead Local Flood Authority – Derby City Council
- Highway Authority – Derby City Council and Highways England (for trunk roads, i.e. the A38, A50, A52 (east of the A5111), A516, A5111 and southern part of A6)
- Water and Sewerage Company – Severn Trent Water
- The Environment Agency.

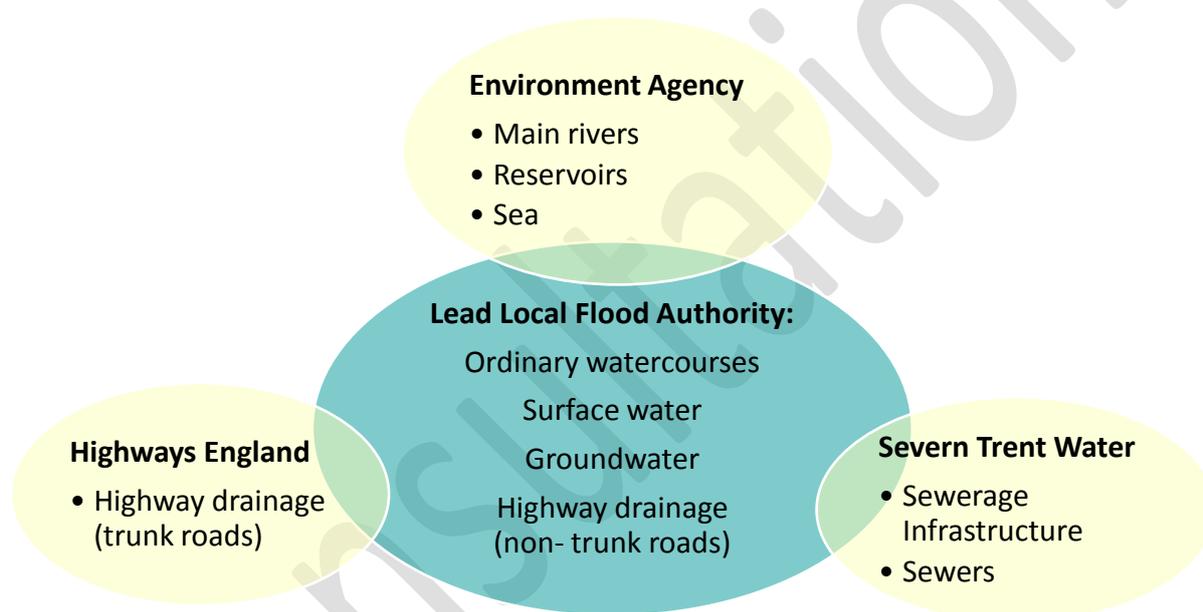


Figure 4 Risk Management Authorities working with Derby City Council

Derby City Council have developed this strategy in consultation with the above organisations. RMAs have a duty to act consistently with the National Flood and Coastal Erosion Risk Management Strategy, Environment Agency, 2011²⁸ and local Flood Risk Management Strategies. Water and Sewerage Companies must act consistently with the National Strategy and have regard to the local strategy when carrying out their flood risk management functions.

²⁸https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228898/9780108510366.pdf

This table summarises the roles of the RMAs (for more detail see Appendix B)

Risk Management Authority	Flood Risk Management Functions	Responsibilities
Lead Local Flood Authority: Derby City Council	Surface run-off Groundwater Ordinary Watercourses	Preliminary Flood Risk Assessment Surface Water Management Plan Local Flood Risk Management Strategy
Highway Authorities: Highways England (trunk roads A38, A50, A52 (east of the A5111), A516, A5111 and southern part of A6) and Derby City Council	Highways Drainage	Highway Drainage Policy and Planning
Severn Trent Water	Sewers Sewerage Infrastructure	Asset Management Plans
Environment Agency	Main Rivers Estuaries and the sea Reservoirs	Strategic overview of all sources of flooding National Flood and Coastal Erosion Risk Management Strategy
Lead Local Flood Authority: Derbyshire County Council	Surface run-off Groundwater Ordinary Watercourses	For areas outside but bordering the Derby City area. Preliminary Flood Risk Assessment Surface Water Management Plan Local Flood Risk Management Strategy

Table 4 Functions and responsibilities of Risk Management Authorities

3.2 Additional Stakeholders in Risk Management

The following stakeholders are not statutory Risk Management Authorities but are important partners to Derby City Council.

Organisation	Responsibilities
South Derbyshire District Council ²⁹	District and borough councils working with Derbyshire County Council in planning flood risk management, emergency planning and flood recovery at a district and borough level. They also sometimes investigate and land drainage and ordinary watercourse flooding issues. District councils are also the local planning authority and are responsible for authorising most planning applications in Derbyshire. Flood risk assessments are an
Erewash Borough Council ³⁰	
Amber Valley Borough Council ³¹	

²⁹http://www.south-derbys.gov.uk/council_and_democracy/emergencies/flooding/

³⁰<http://www.erewash.gov.uk/your-council/emergencies/civil-emergencies-flooding.html>

³¹<http://www.ambervalley.gov.uk/transport-and-streets/flooding.aspx>

	integral part of planning policy.
The Trent Regional Flood and Coastal Committee	Brings together key stakeholders from LLRAs and other organisations to ensure effective communication plans exist, facilitate sharing of information to increase understanding of flood risk.
Derbyshire Local Resilience Forum	Provides information on risk and advice for dealing with emergencies ³²
Riparian Land Owners	Must maintain free passage of water through their section of the watercourse. They must maintain river beds and banks, controlling invasive species and disposing of litter or animal carcasses. ³³
Derbyshire Wildlife Trust	Consultee
Natural England	Consultee
Heritage England	Consultee
Derbyshire Constabulary	First Responder
Derbyshire Fire and Rescue Service	First Responder
East Midlands Ambulance Service	First Responder
Derby Emergency Planners	Maintain the emergency plan that is used to respond to civil emergencies, including flooding
The Council's Derby Spatial Planning Teams and Development Control	Use the strategy to help inform decisions on planning and development

Table 5 Stakeholders involved in Flood Risk Management in Derby

³²<http://www.derbyshireprepared.org.uk/>

³³<https://www.gov.uk/government/publications/riverside-ownership-rights-and-responsibilities>

3.3 Governance and partnerships

As LLFA, Derby City Council works in partnership with Risk Management Authorities and other relevant partners. The flood risk management roles and functions are shown here:



The Regional Flood and Coastal Committee (RFCC) is a committee established by the Environment Agency under the Flood and Water Management Act 2010 that brings together members appointed by Lead Local Flood Authorities (LLFAs) and independent members with relevant experience for 3 purposes:

- to ensure there are coherent plans for identifying, communicating and managing flood and coastal erosion risks across catchments and shorelines
- to encourage efficient, targeted and risk-based investment in flood and coastal erosion risk management that represents value for money and benefits local communities
- to provide a link between the Environment Agency, LLFAs, other risk management authorities, and other relevant bodies to build understanding of flood and coastal erosion risks in its area

Severn Trent Water operates under a framework established by the 1991 Water Industries Act. It has a duty to cooperate with other risk management authorities according to section 13 of the Flood Water Management Act. It is not under a duty to act in accordance with the LFRMS, but must have regard to the National Flood and Coastal Erosion Strategy³⁴. Severn Trent Water is nevertheless a key partner in the overall aim of managing local flood risk.

³⁴<https://www.gov.uk/government/publications/national-flood-and-coastal-erosion-risk-management-strategy-for-england>

4 Flood Risk in Derby

4.1 Overview of the city landscape

Derby covers an area of some 30 sq. miles and has a population of approximately 248,700³⁵. It is situated on the banks of the River Derwent, north of the confluence with the River Trent. The River Derwent enters the city from the north in a steep sided relatively narrow valley. As it passes through the city centre the river veers to the east and the valley broadens as it approaches its confluence with the River Trent. The area south of the City is generally flat with marshy land lining the banks of the River Trent and the adjacent Trent and Mersey Canal. The wards of Alvaston, Boulton and Sinfinare particularly notable for this land feature and are known to have high groundwater levels throughout.

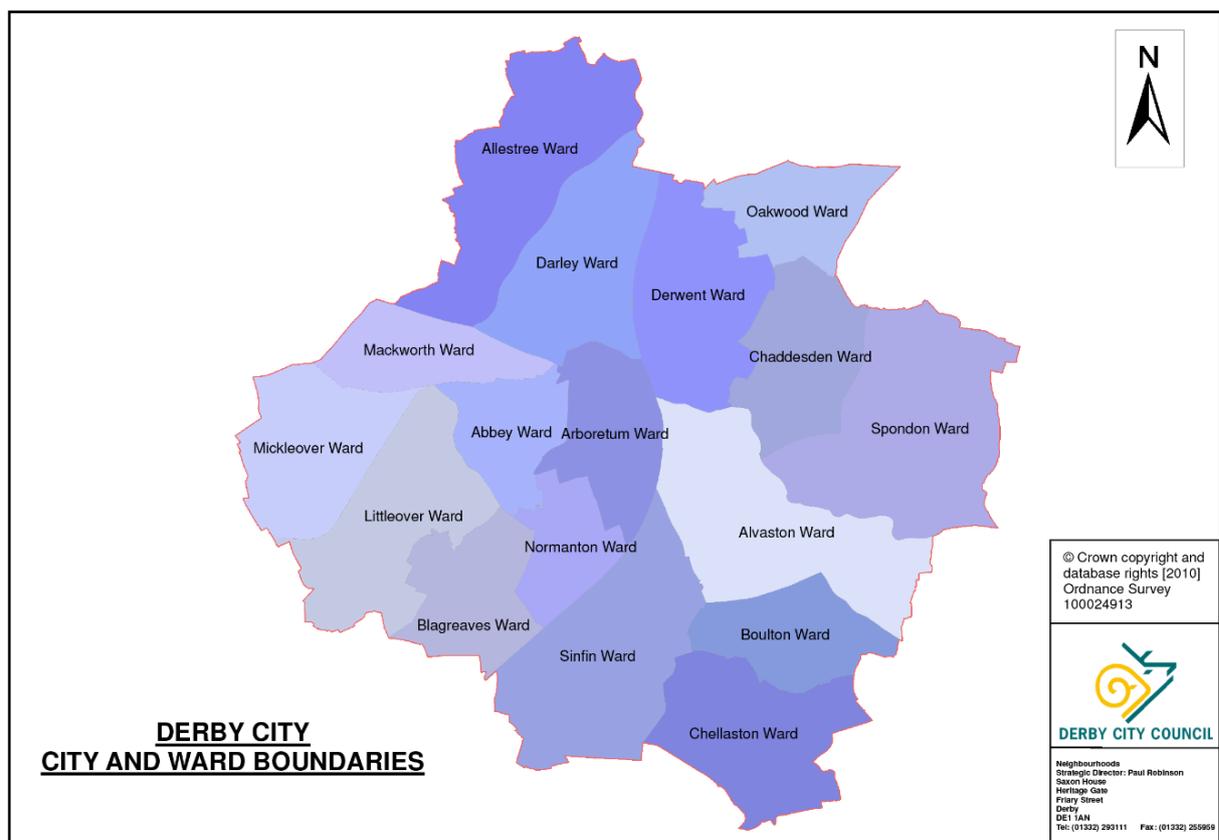


Figure 5 Map of Derby City ward boundaries

There are several ordinary watercourses included in the scope of this strategy that Derby City Council are wholly or partially responsible for managing:

- Markeaton Brook (part main river)
- Bramble Brook
- Littleover Brook
- Hell Brook (part main river)
- Cuttle Brook (part main river)

³⁵ 2011 Census

- Thulston Brook
- Cotton Brook (part main river)
- Lees Brook
- Wood Brook (part main river)
- Chaddesden Brook (part main river)

Map showing the watercourses in Derby, with the brooks that are partly main-river annotated.

Not all ordinary watercourses may be mapped.

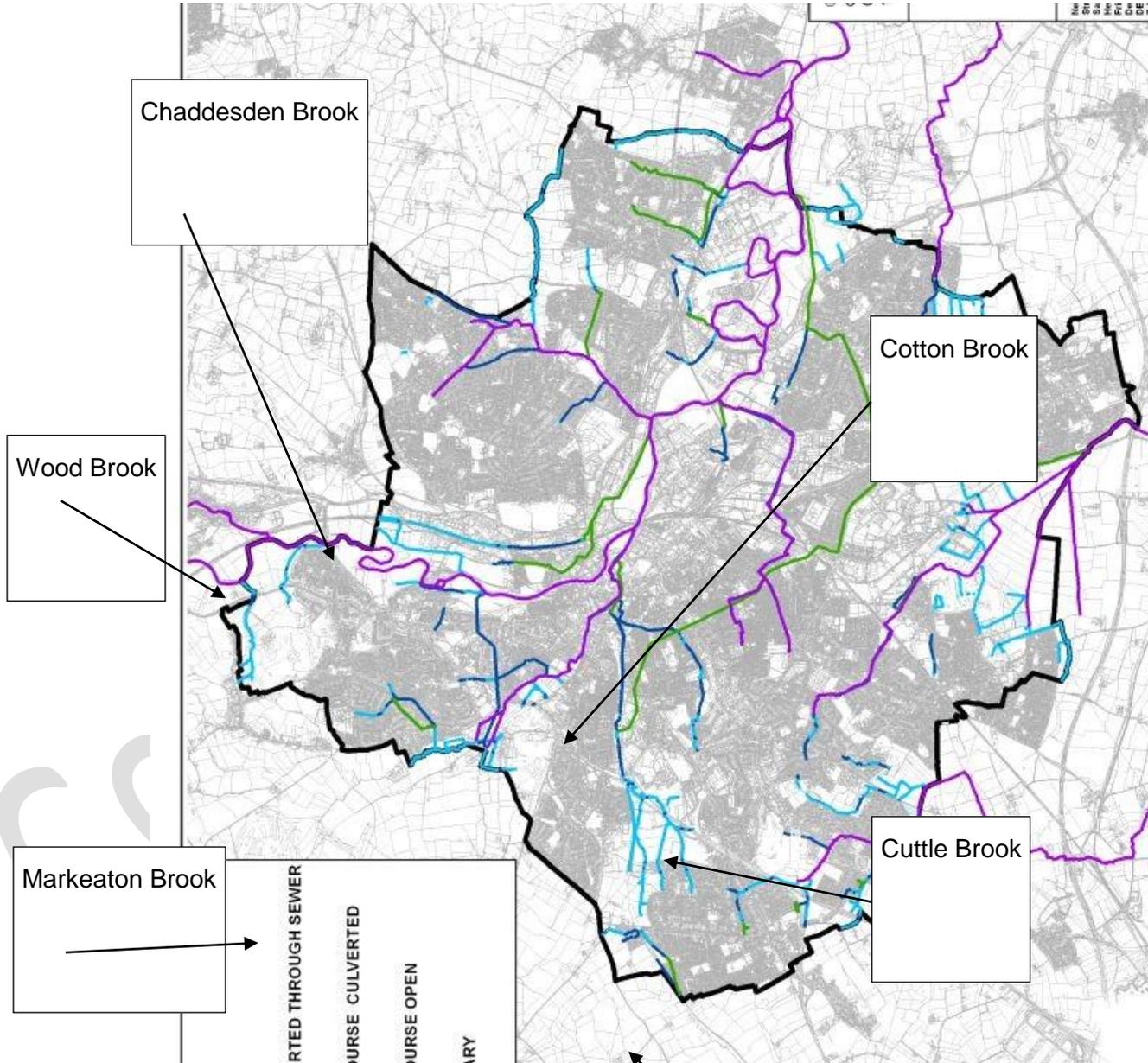


Figure 6 Map of main rivers and watercourses in Derby

Hell Brook

4.2 Specific local flood risks

4.2.1 Sources of Flooding

Flooding can occur from individual sources or a combination of sources.

4.2.1.1 River Flooding

This varies, depending on the nature of the river. Large rivers such as the River Derwent tend to respond slower than urban watercourses.

For information on flood risk contact the following organisations

Main rivers: Call the Environment Agency on 03708 506 506 or go to their website to find maps and other information on risk³⁶

Ordinary watercourses: Contact the Derby City 'Projects, Water and Flood Risk Management Team' (see section 1 for contact details).

Information on action to take in the event of a flood or to reduce flood risk is described in section 1 of this document.

4.2.1.2 Surface water flooding

This could occur when the drains and sewers cannot accommodate the overland flow. It can be caused by the build-up of water on surfaces because it cannot soak into the ground due to it being hard paved, frozen, baked solid, saturated etc., due to the lay of the land, or where rainfall exceeds the infiltration capacity of the soil. It often occurs during intense or prolonged rainfall events. There are various parts of Derby with a high risk of surface water flooding. There are several ways that flooding can occur:

- Sometimes properties interfere with natural overland flow routes leading to flooding of these properties when the water level builds up in gardens or against the property
- Properties constructed in low lying areas that accumulate surface water run-off until this can be drained away later. The accumulated water then exceeds the threshold level of the house leading to flooding.

The areas of Derby with the greatest risk of flooding have large urbanised upstream areas that generate significant volumes of surface water.

For information on flood risk contact from ordinary watercourses: Contact the Derby City 'Projects, Water and Flood Risk Management Team' (see section 1 for contact details).

4.2.1.3 Highway flooding

This occurs when heavy rainfall overwhelms the capacity of gullies or highway drains, or if the sewers or watercourses they connect into are blocked - by silt or leaves - or are full. Derby City Council has a schedule for cleaning the gullies that is based on the risk of flooding. For most of the roads within Derby, surface water falls to the channel line next to the kerb and then flows towards the nearest down-slope gully. These gullies drain the water

³⁶http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&lang=_e

into the highway drainage pipes, watercourses or directly to Severn Trent sewers under the highway. The clearing of debris from the gratings and gully pots is scheduled on the basis of flood risk with the highest risk areas that may experience highway or property flooding, or where flooding would present major safety hazards, receiving more frequent visits than lower priority areas. The following table is an example of a progress record on gully clearing routes within Derby.

Table showing gully routes completion dates

	Date Commenced	Date Completed	Date Next Due
Route 1 Two Yearly (9082 Gullies) NE	28/3/12	3/10/14	Sept 2016
Route 2 Two Yearly (6249 Gullies) NW	23/2/15	In Progress	
Route 3 Two Yearly (7994 Gullies) SW	August 2014	In Progress	
Route 4 Two Yearly (8245 Gullies) SE	18/6/11	27/3/12	March 2014
Route 5 Annual (954 Gullies) City Centre	29/4/14	5/8/14	August 2015
Route 6 Annual (1411 Gullies) High Speed Roads	15/11/13	30/6/14	June 2015
Route 7 Annual (5054 Gullies) Main Roads	3/10/14	In Progress	
Route 8 Two Yearly (138 Gullies) Hand pots	12/11/14	30/11/15	Nov 2015

Table 6 Example schedule for gully cleaning in Derby

4.2.1.4 Groundwater flooding

This occurs when dry land becomes flooded by water contained in rocks and soils below ground level. Derby City Council has no specific records of problems with ground water flooding, other than reports of cellar flooding, which can be caused by high ground water levels. The Preliminary Flood Risk Assessment (PFRA June 2011³⁷) indicated that certain areas of Derby had a greater susceptibility based on the underlying geology and also depending on how flat the surface of the ground is. The areas of greatest risk on the plan coincide with the broad river valley where the underlying materials are river deposits of sands, gravels and silts. The flood risk map is quite coarse, and within Derby the historical records and reports of groundwater flooding do not appear to support the extent of risk shown.

River terrace deposits alongside the River Derwent are made up of sands and gravels; these are highly porous and highly permeable. This means that they can hold a large volume of water, the distribution of which can influence how the river flows and how much water the bank stores, which can influence the flood resilience of a location.

³⁷<http://tinyurl.com/nj23nnp>

Cellar flooding may occur due to:

- Rising groundwater levels.
- Broken or defective foul and surface water drainage pipes, gutters and rainwater downpipes.
- Water flowing from highways and gardens as overland flows.
- Local water supply pipes leaking.

Note: Cellars were often built as part of residential and other developments as storage for fuel and other belongings. They are often of a simple brickwork construction and in many cases were not designed or built to be waterproof.

Derby City Council holds data on groundwater flooding risk and also has access to the datasets produced by British Geological Survey.

For information on risk of flooding from groundwater contact the 'Projects, Water and Flood Risk Management Team' at Derby City Council (see section 1 for contact details).

4.2.1.5 Sewer flooding

This could occur when the capacity of the sewerage network is overwhelmed or when there is a blockage in the sewerage network. During a prolonged wet weather period on November 2000 when the main river levels were rising, the Markeaton and Mackworth Brooks breached their banks. This event resulted in sewer flooding to 10 properties on Stenson Road. Many of the sewers within Derby were constructed in Victorian times and have performed better than expected. However, as the city has become developed, the spare capacity in sewer pipes has been taken, leading to a system with a greater risk of flooding during heavy rainfall. Pipe drainage systems in some older parts of Derby tend to flood more frequently.

4.2.1.6 Reservoir flooding

This is very unlikely but could occur when part of a reservoir dam structure fails. The Environment Agency is responsible for managing flood risk from reservoirs; it holds and maintains reservoir records. Risk of failure is rare and inspection regimes are in place for the reservoirs upstream of Derby under the Reservoirs Act 1975.

The three main reservoirs on the upper Derwent catchment lie outside the jurisdiction of Derby City Council; however their operation and condition would have an impact on the river as it flows through the city. In the event of a dam failure in the upper reaches of the Derwent valley, the flood water would follow the path of the river and flooding may occur as shown within the Preliminary Flood Risk Assessment report and on the Environment Agency Flood Map Portal³⁸.

Within Derby lie Allestree Lake, Markeaton Lake and immediately to the north of Derby lies Kedleston Lake. These all have potential effects on the local flood risk so are regularly inspected by Derby City Council to comply with the 1975 Reservoirs Act.

4.2.1.7 Integrated flooding

This could occur when two or more sources interact. For example, when highways drain into sewers. If the sewers are full then the water may back up and flood onto the highway. Or

³⁸<http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?topic=reservoir#x=357683&y=355134&scale=2>

highway drainage may not be able to discharge properly leading to flooding on the highway. Likewise sewers that are unable to discharge into a watercourse, may flood into basements or up through gullies.

Consultation

4.2.2 Priority Locations

4.2.2.1 DEFRA Criteria for flood risk areas

During the Preliminary Flood Risk Assessment process undertaken by Derby City Council in 2011, maps were produced and distributed on behalf of the Environment Agency that showed locations based on a 1km² grid cell that were at risk of flooding.

Where a cluster of adjacent cells contains 30,000 people, or more, at risk from surface water flooding, this has been classified by the UK Government (via DEFRA and the Environment Agency) as an 'indicative Flood Risk Area'³⁹.

Indicative Flood Risk Areas are defined by the Environment Agency as resulting in at least 30,000 people or 3,000 non-residential properties or 150 critical services at risk of flooding during an approximately 1 in 100 year event. Indicative Flood Risk Areas were provided by the Environment Agency. The Derby PFRA⁴⁰ document contains more detail on the methodology.

Derby does not currently fall within any nationally defined Indicative Flood Risk Areas.

It is unlikely that this would change under the present assessment criteria since the total estimated number of people at risk of flooding for a 0.5% (1 in 200 probability) event in Derby is only 13,600 for the greater than 0.3 m depth range, and does not reach the minimum requirement of 30,000 per 5km square cluster.

4.2.2.2 Defining flood risk areas specific to Derby

Despite falling outside the national definition of 'indicative Flood Risk Areas', there are several areas which are prone to flooding that are considered suitable for the definition of Local Flood Risk Areas.

In order to prioritise the efforts to manage and reduce flood risk in Derby it is necessary to define locations and also to decide what level of risk should be considered as the threshold above which some action should be taken to reduce the flood risk. For example, if a very rare but extremely intense rainfall event results in the flooding of a large number of properties in one location that has not otherwise suffered from flooding, how should this be viewed in comparison with a location where a much smaller number of properties are at risk of flooding more frequently?

DEFRA and the UK Government Treasury have produced documents and guidance to enable the appraisal and comparison of publicly funded flood-risk-reduction projects with the aim of allocating resources to the most deserving projects. This Project Appraisal Report⁴¹ (PAR) process is designed to assess the technical, environmental and financial viability of a project. Derby City Council has benefitted from this system in the past and received over £2million in 2005 for works to improve the flood defences at Markeaton Park and also within

³⁹https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/236385/flood-risk-method.pdf

⁴⁰<http://tinyurl.com/nj23nnp>

⁴¹<https://www.gov.uk/flood-and-coastal-defence-appraisal-of-projects>

Darley Park. More recently, the City Council has been working with the Environment Agency to progress the 'Our City Our River' strategic project to manage the flood risk from the River Derwent.

We consider two principal factors when we are defining a priority location for the management of flood risk:

Factor 1: Magnitude of the Flood Risk

The extent and severity of the flood risk to verify whether a particular location is above the threshold for action to be considered. To make this evaluation in a robust and objective way requires:

- An understanding of the source and rate of onset of flooding.
- Knowledge of the extent, condition and flow capacity of the local drainage infrastructure.
- Understanding of the topography – direction and steepness of the fall of the ground.
- Knowledge of the threshold levels of the houses compared to the surrounding levels of gardens, roads and other external areas.

Once this information is known, the performance limitations of the drainage infrastructure can be established and the possible effects of this capacity being exceeded. The depth of flooding can be compared to the levels of properties to determine if a particular flood event could be damaging to properties.

Factor 2: Defining the economic feasibility of managing the flood risk.

The economic and environmental factors that are used in the process defined in the Project Appraisal Report (PAR) are important to verify whether a proposed action plan is a reasonable and justifiable use of public money. In this part of the process we use:

- The baseline Strategic Environmental Assessment document produced as part of the Local Flood Risk Management Strategy.
- The financial appraisal of the potential flood risk reduction scheme based on the long-term benefits compared to the costs of implementing a scheme.

A baseline 'do nothing' approach is the starting point for the financial and environmental appraisal and each option of 'do something' is compared against this.

5 Strategy for Managing Local Flood Risk in Derby

5.1 Introduction

There are various ways to reduce flood risk. The construction of new drainage infrastructure or improvements to flood defences is not necessarily the best or most sustainable approach. Likewise a locally preferred solution to reduce the flood risk to a particular group of vulnerable properties may not meet the public funding criteria without third party funding from private sources being made available to supplement the public funding. So, flood risk management is a wide ranging process that requires involvement from many different sources to arrive at a solution.

The following section describes the flood risk management objectives of Derby City Council, some of the ongoing task areas and also some of the items of work to be taken forward over the next few years as an action plan to promote the objectives.

The Derby City Council objectives have been defined to support the National Flood Risk and Coastal Erosion Risk Management Strategy⁴²

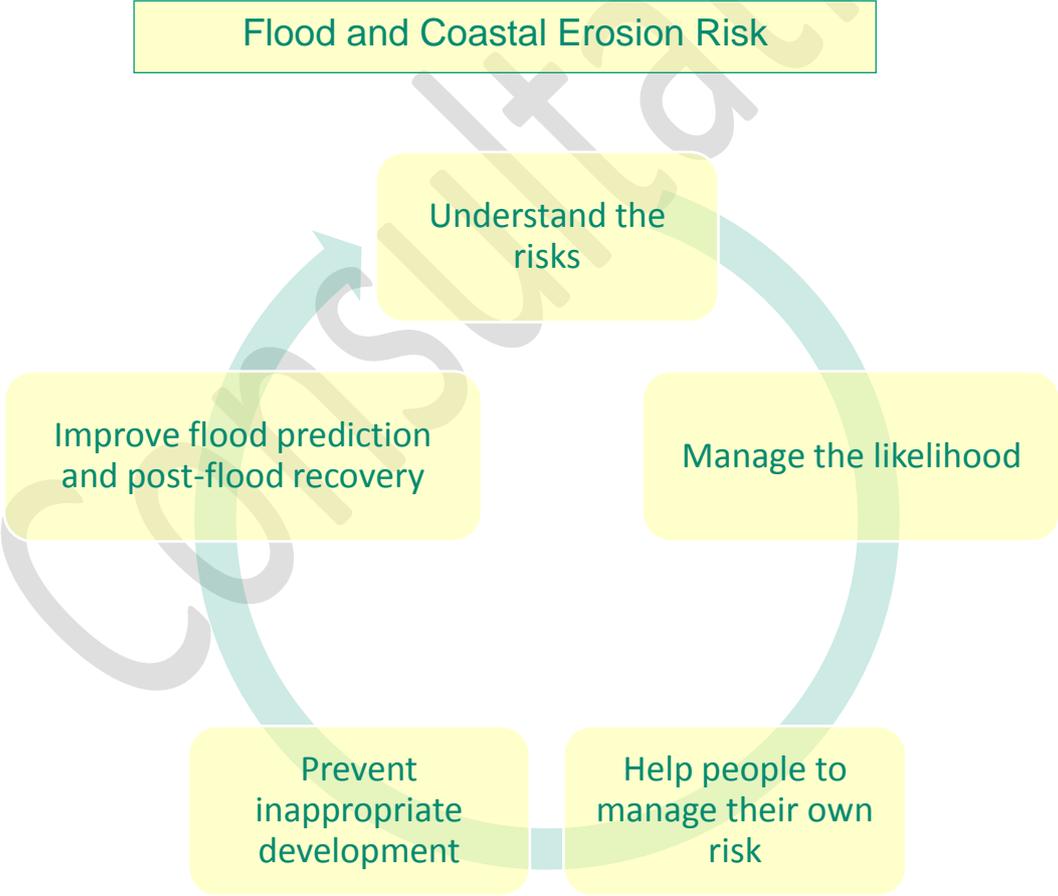


Figure 7 Flood and Coastal Erosion Risk Management

⁴²https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228898/9780108510366.pdf

5.2 Broad Objectives of the Strategy

Objective 1	<ul style="list-style-type: none">• Improve our knowledge of existing Flood Risk Management Assets.
Objective 2	<ul style="list-style-type: none">• Develop economical, risk-based flood risk management schemes and infrastructure maintenance regimes that form a sustainable approach to reducing flood risk.
Objective 3	<ul style="list-style-type: none">• Educate and engage with communities and elected Derby City Council members to raise awareness of flood risk.
Objective 4	<ul style="list-style-type: none">• Minimise the risk of flooding from new developments.• Avoiding development that puts more people at risk of flooding
Objective 5	<ul style="list-style-type: none">• Promote flood risk management activities that consider climate change, enhance the natural environment, improve water quality and provide amenity benefits.
Objective 6	<ul style="list-style-type: none">• Work in partnership with Risk Management Authorities and other key stakeholders to share a common understanding of flood risk.
Objective 7	<ul style="list-style-type: none">• Promote riparian responsibilities for the maintenance of watercourses.

Table 7 Derby City Council objectives for Flood Risk Management

5.3 Local Objectives mapped against National Objectives

	National Objectives	Derby Local Objectives						
		1	2	3	4	5	6	7
1	Ensure the risk of flooding and coastal erosion is properly managed by using the full range of options in a co-ordinated way.	✓	✓	✓	✓	✓	✓	✓
2	Understand the risks and work together to put in place long-term plans to manage these risks ensuring all plans take account of the aims and objectives of the national strategy.	✓	✓	✓		✓	✓	
3	Control development in areas of flood and coastal erosion risk to avoid increasing risk.				✓			
4	Reduce the risk of harm to people and damage to the economy, environment and society by building, maintaining and approving flood and coastal erosion management infrastructure and systems.	✓	✓		✓	✓		✓
5	Improve public awareness of the risks related to flooding and engaging with people at risk to make them more resilient.			✓			✓	✓
6	Improve emergency planning and recovery by improving the detection, forecasting and issue of warnings of flooding, planning for and co-ordinating a rapid response to flood emergencies and promoting faster recovery from flooding.						✓	

✓ = illustrates tie in between local and national objectives

Table 8 Mapping of local objectives to national objectives

5.4 General task areas to promote the objectives

5.4.1 Knowledge

Derby City Council will improve our knowledge of existing Flood Risk Management Assets using a risk-based approach to gather data on existing infrastructure, and knowledge of current and future flood risk. The works will follow the asset register and risk-based approaches taken by the Environment Agency⁴³. We will define a database of contact details to be used for communication with riparian owners. They will be categorised by catchment basin and be prioritised by proximity to critical watercourses.

5.4.2 Objectivity

⁴³https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/338462/SC110008_R2_report.pdf

Develop cost-effective, risk-based flood risk management schemes and maintenance regimes. See the detailed action plan for examples of where this approach will be applied.

5.4.3 Engagement

The Council will engage with and educate Derby communities, businesses and politicians to raise awareness of flood risk, resilience measures, preparedness and riparian responsibilities to contribute to keeping risk of disruption to communities at a minimum.

Work with riparian owners to inform, educate and advise them on maintaining their stretch of watercourse to manage flood risk.

5.4.4 Planning Control

The Derby City Council 'Projects, Water and Flood Risk Management Team' will ensure new developments have drainage designs that are sustainable, are not at risk of flooding, do not increase risk of flooding elsewhere and require minimal maintenance. The aim is for new developments to be designed in line with the National Planning Policy Framework⁴⁴ and accompanying planning practice guidance. Flood risk will be considered throughout the planning process, starting with the Council's Statutory Plan and through the Development Management process. If new development cannot be sited outside of flood risk areas, suitable mitigation and resilience measures should be included in the design to reduce risk to people and property - new and already in existence.

Contemporary drainage design standards require the management of flows in piped drainage systems to reduce the risk of flooding from developed sites to less than a 1% annual average probability, approximately equal to a 1 in 100 year event. Although the sewers may flood, the water should be contained within the site on roads and in open spaces rather than flowing towards houses.

5.4.5 Sustainable Drainage

Promote the use of SuDS (Sustainable Drainage Systems). The use of Sustainable Drainage Systems (SuDS) is favoured over conventional piped drainage systems which can be vulnerable to flash flooding. Examples of SuDS features include soakaways, permeable paving, swales and attenuation ponds. Lead Local Flood Authorities became statutory consultees to local planning authorities from April 2015. In this role, they will be more able to promote SuDS for new developments.

5.4.6 Integrated Approach

⁴⁴https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

Derby City Council aim to reduce the risk of flooding in a number of ways starting with measures at the upstream ends of a drainage system and also throughout the length of the drainage system. This is often termed 'an integrated, catchment-based approach to flood risk management'.

The 'source-path-receptor' approach is advocated by DEFRA to encourage the management of rainwater at source where possible through recycling and infiltration. However, the latter two stages of managing and improving the conveyance of floodwater away from vulnerable 'receptors' and avoiding the siting of new development in flood-prone areas are also important considerations.

Finally, where measures to reduce the flows into the drainage system have been done and conveyance of water through the catchment has been optimised, the remaining option is to examine where property-level protection against flooding may prove beneficial or where the wider implementation of flood defences may achieve a reduction in flood risk to vulnerable properties.

5.4.7 Environmental Awareness

Derby City Council will manage flood risk with a holistic approach; consider climate change, improve water quality, enhance the natural environment and provide amenity benefits. All future schemes will undertake a check against the Baseline Strategic Environmental Assessment to understand and define the impact on the local and wider environment.

5.4.8 Partnership

The Council will work in partnership with Risk Management Authorities and other key stakeholders to share a common understanding of flood risk, ensure effective maintenance is delivered, invest jointly in schemes and share expertise.

5.5 How the Strategy will be delivered

The action plan to satisfy the above objectives is described overleaf. The timescales are provisional and subject to further consultation with stakeholders. It is an indication of the priorities identified by the Derby City Council 'Projects, Water and Flood Risk Management Team'.

Urban Environment								
No.	Flood risk Management Action	Associated Strategy Objectives	Priority	Timescale	Lead & Partner organisations	Estimated Cost	Potential Funding Sources	Funding Status
U1	Identify areas where disconnections of highway drainage can provide benefit to the STW network – reduction of flood risk during intense rainfall events (Highways maintenance, green spaces for off-line rain gardens and verge swales/ storage)	2, 3	High	0-5 years	DCCPWFRM STW	Investigation £25k (£5k pa) £25k for business case and costed estimates (£5k pa) Implementation £250k	DCC, EA	Current Revenue Funding (CRF) / Int/ Ext Capital (I/E C)
U2	Identify areas where DCC can accommodate exceedance flows (e.g. flood flows in to public open spaces, reduce combined sewer overflow)	1,2,5	High	0-5 years	DCCPWFRM STW	Investigation £25k Implementation £250k	DCC, EA	(CRF) (I/E C)
U3	Complete Integrated Urban Drainage Model(IUD)	1,2,3,	Medium	0-2 years	DCCPWFRM, STW, EA	£30k / yr	DCC, EA	(CRF / I/E C)
U4	Promote de-paving of front gardens	1,5	Med	0-10 years	DCC ALL	1 week/yr £8k	DCC, EA / Households	(CRF)

Highway Drainage								
No.	Flood risk Management Action	Associated Strategy Objectives	Priority	Timescale	Lead & Partner organisations	Estimated Cost	Potential Funding Sources	Funding Status
H1	Work towards locating, recording and investigating highway drainage asset	1,2	Med	0-10 years	DCCPWFRM	£50k/yr	DCC	(CRF)
H2	Identify areas where separation from STW system is a potential benefit	1,2,4,5	Med	0-10 years	DCCPWFRM	Investigation £25k (£5k pa) £25k for business case and costed estimates (£5k pa)	DCC	(CRF)
H3	Implement regime of regular highway drainage Cleansing & CCTV inspection (10 yearly cycle)	1,2	High	0-10 years	DCCPWFRM	£250k/yr Not drainage	DCC	(CRF)
H4	Promote use of sustainable drainage for all new highway drainage schemes where practicable (Water Framework Directive)	1,2,4	High	0-10 years	DCCPWFRM / Developers	£15k/yr	DCC	(CRF)
H5	Develop an approach to rationalise the highways drainage gully cleansing routes - prioritise areas at greatest risk. Identify hotspot areas which need to be cleansed more regularly	1,2	High	0-2 years	DCC Highways Maintenance DCCPWFRM	£5k	DCC	(CRF)
H6	Seek opportunities to future proof highways drainage network (provide storage to accommodate climate change increase)	1,2,4,5	Med	0-10 years	DCCPWFRM	£10k/yr investigation	DCC	(CRF)

Highway Drainage (continued)								
No.	Flood risk Management Action	Associated Strategy Objectives	Priority	Timescale	Lead & Partner organisations	Estimated Cost	Potential Funding Sources	Funding Status
H7	Identify locations where SuDS systems could be retrofitted to cleanse highway drainage discharges (Water Framework Directive)	1,5	Med	0-10 years	DCCPWFRM	£10k/yr investigation	DCC	(CRF)
H8	Asset management – Update and enhance flood defence asset register and publish. Identify, record, condition and report on all known highway drainage assets.	1	High	0-10 years	DCCPWFRM	£30k/yr for ongoing investigation and recording	DCC	(CRF)
H9	Identify defective (non-maintainable) gullies and promote scheme of capital replacements	1,2	High	0-25 years	DCC Highways Maintenance/ DCCPWFRM	£10k/yr investigation £25k/yr Capital	DCC	(CRF / I C)
H10	Identify bridge drainage location extent and condition	1,2	Med	0-10	DCCPWFRM	£50k/yr Investigation, locate, cleanse	DCC	(CRF / I C)
H11	Review and report on measures which can be implemented to best achieve a resilient transport network and mitigation measures / plans, which could be implemented to reduce the impact of significant flooding to the transport network	1,2,5,6	High	0-5	DCCPWFRM	£30k/yr	DCC	(CRF / I C)

Watercourse								
No.	Flood risk Management Action	Associated Strategy Objectives	Priority	Timescale	Lead & Partner organisations	Estimated Cost	Potential Funding Sources	Funding Status
W1	Walkover inspection of all open watercourses at least once per year	1,3,6,7	High	Yearly	DCCPWFRM	£25k/yr	DCC	(CRF)
W2	CCTV /Survey watercourse asset to prevent building over or encroachment	1,3,5,7	Med	1-5 years	DCCPWFRM	£25k/yr (repeat 5 yearly)	DCC	(CRF)
W3	Identify critical trash screens and implement critical path cleansing procedure	1,2,3	High	1-5 years	DCCPWFRM	£10k/yr inspection and maintenance	DCC	(CRF)
W4	Implement a regime of regular Culvert CCTV inspection (5 yearly cycle)	1,2,3,7	Med	1-5 years	DCCPWFRM	£40k/yr	DCC	(CRF)
W5	Survey and record the condition of the existing assets	Links to W1, W2, W3, W4	Med	1-10 years	DCCPWFRM	£20k/yr	DCC	(CRF)
W6	Identify areas where de-culverting can provide bio-diversity or flood risk benefit (CFMP)	1,2	Low	1-10 years	DCCPWFRM / Parks	£5k/yr	DCC	(CRF)
W7	Identify areas where a watercourse can be protected from discharge of pollutants (WFD)	4,5	Med	1-10 years	DCCPWFRM	£5k/yr	DCC	(CRF)
W8	Work with friends of groups and Community Action groups to remove invasive species. (CFMP)	3,7	Low	1-10 years	DCCPWFRM	£5k/y	DCC, EA	(CRF)
W9	Investigate methods to reduce or prevent siltation of watercourses (MMB Project)	4,6,7	Low	1-10 years	DCCPWFRM / EA	£10k/y	DCC, EA	(CRF)
W10	Flood Risk. Investigate how Biodiversity might be enhanced through flood risk management	3,5,7	High	0-10 years	DCCPWFRM	£15k/yr	DCC	(CRF)

Planning								
No.	Flood risk Management Action	Associated Strategy Objectives	Priority	Timescale	Lead & Partner organisations	Estimated Cost	Potential Funding Sources	Funding Status
P1	Promote sustainable drainage for ALL new developments	4	High	0-5years	DCCPWFRM	£30k/yr	DCC	(CRF)
P2	Encourage developers to offer up development sustainable drainage features for adoption by DCC for developments with 10 properties or more. (Dependent on securing adequate commuted sum)	4,5	High	0-2 years	DCC	£15k/yr	DCC / Developer	(CRF)
P3	Update Level 1 Strategic Flood Risk Assessment	1,3	High	0-5 years	DCC	£20k	DCC	(CRF)
P4	Update Preliminary Flood Risk Assessment	1,3	Med	0-2 years	DCC	£20k	DCC	(CRF)
P5	Develop a five year programme of flood risk management projects	2,5	Med	0-5 years	DCC	£20k/yr investigation and planning £100k Local Transport Plan £250k Capital	DCC / EA	(CRF / I C)
P6	Maintenance of existing flood risk management assets including watercourses, screens, headwalls attenuation ponds	1,2,5,6,7	High	0-10 years	DCC	£45k/yr Third parties £40k Derby City Council staff £15k/yr desilting	DCC / EA	(CRF / I C)
P7	Promulgate local drainage byelaws under the provisions of section 66 of the 1991 Land Drainage Act to prevent watercourse encroachment	1,2,5,6,7	Med	0-2 years	DCC	£25k to undertake the required consultation. £15k/yr enforcement	DCC	(CRF)

Environment Agency								
No.	Flood risk Management Action	Associated Strategy Objectives	Priority	Timescale	Lead & Partner organisations	Estimated Cost	Potential Funding Sources	Funding Status
E1	Work with EA to identify communities most at risk from flooding from all sources	1,2,6	Med	0-5 years	DCC/EA	£2k	DCC	(CRF)
E2	Liaise with the Environment Agency to promote capital flood risk management schemes for Cuttle Brook, Littleover Brook, Cotton Brook	1,2,6	High	0-5 years	DCC/EA	£25k/yr	DCC / EA	(CRF)
E3	Work in partnership with the Environment Agency to deliver the OCOR project.	1,2,6	High	0-5 years	DCC/EA	Under Review	DCC / EA	Under Review

Emergency Planning								
No.	Flood risk Management Action	Associated Strategy Objectives	Priority	Timescale	Lead & Partner organisations	Estimated Cost	Potential Funding Sources	Funding Status
EP1	Install and maintain flow gauges and establish automatic flood warnings to residents nearby critical watercourses	1,3	Med	0-5 years	DCC/EA	£4k per location 2 locations/yr	DCC	(CRF / I C)
EP2	Participate in EP exercises	3,6	Med	0-5 years	DCC/EA & others incl Emergency Planning	£10k/yr	DCC	(CRF)
EP3	Raise public awareness – Organise and attend flood fairs, produce/publish/distribute Public information leaflet, Update web page (EP response; also planning, watercourse info, duties etc., Links to outside agencies, self-help info pages)	3,6	Med	0-5 years	DCC/EA	£5k	DCC	(CRF)
EP4	Ensure responsible staff, have knowledge of emergency event procedures. Implement training and evaluations schemes	3,6	High	0-1 yr	DCC/ EA/ Emergency Planning	£10k/yr	DCC	(CRF)
EP5	Develop local tactical emergency procedures and drill and exercise (especially when the new Our City Our River defence scheme is completed.)	3,6	High	0-1 yr	DCC/ EA/ Emergency Planning	£10k/yr	DCC	(CRF)

Statutory Duties under Flood and Water management Act 2010 and subsequent legislation and Statutory Instruments								
No.	Flood risk Management Action	Associated Strategy Objectives	Priority	Timescale	Lead & Partner organisations	Estimated Cost	Potential Funding Sources	Funding Status
	FWMA Clause							
SD1	cl. 9 Develop maintain, apply and monitor a local flood risk management strategy	1,2,3,4,5,6,7	high	Now and ongoing	DCC	£20k/y	DCC revenue	(CRF)
SD2	cl. 13 Coordinate activities with other relevant authorities	1,2,3,4,5,6,7	high	Now and ongoing	DCC	£5k/y	DCC revenue	(CRF)
SD3	cl. 19 Duty to investigate flooding incidents	1,6	high	Now and ongoing	DCC	£15k/y	DCC revenue	(CRF)
SD4	cl. 21 Duty to maintain a register of flood defence assets	1, 2, 4	high	Now and ongoing	DCC	£0k/y Covered elsewhere	DCC revenue	(CRF)
SD4	Statutory Instrument 595 (From April 2015) Duty to comment on planning applications	1,2,3,4,5,6,7	high	Now and ongoing	DCC	£100k/y	DCC revenue	(CRF)

6 The Cost versus Benefit case

6.1 Planning the budget

The above action plan budget has been estimated and produced by the Projects, Water and Flood Risk Management Team at Derby City Council.

6.2 Funding the expenditure

As a risk management authority, Derby City Council can apply for a grant in aid (GiA) to carry out flood and coastal erosion risk management (FCERM). Details about what can and cannot be funded plus instructions on how to apply can be found on this website:

<https://www.gov.uk/guidance/flood-and-coastal-defence-funding-submit-a-project>

A project appraisal would always be required in order to assess the 'value for money' of a particular scheme and enable a comparison against other projects, in order to allocate resources most effectively. The Environment Agency has produced a series of documents⁴⁵ to assist this process and enable comparisons to be made against authorities around the UK. Ultimately a project would need to be able to reduce the flood risk to domestic properties and enable re-categorisation of these from one flood risk zone to a lower zone.

In partnership with Risk Management Authorities, the City Council will continue to explore all opportunities for funding flood alleviation schemes. The main sources of funding that contribute to flood risk management activities are shown on the following page.

⁴⁵<https://www.gov.uk/flood-and-coastal-defence-appraisal-of-projects>

Main sources of funding that contribute to flood risk management activities			
Name of fund	Description	Administration	Qualifying Activities
Flood and Coastal Erosion Risk Management (FCERM) Grant in Aid (GiA)	Central government funding for flood and coastal risk management projects. The funding mechanism was recently revised to encourage a partnership funding approach. No schemes are fully funded by central Government under this funding stream and other beneficiaries are expected to contribute towards the scheme.	Environment Agency	Medium to large capital flood risk management projects.
Local Levy	All Lead Local Flood Authorities within a Regional Flood and Coastal Committee area contribute to the Local Levy fund. The allocation of funds is more flexible than FDGiA regarding the type, size and benefits.	Trent RFC / Environment Agency	Smaller flood risk management projects or as a contribution to partnership funding.
Private Contributions	Voluntary funding from beneficiaries of projects, such as businesses or householders, could improve the economic case for schemes. Contributions can be financial or 'in kind' (e.g., land, plant, labour).	Derby City Council	All projects.
Water and Sewerage Company Investment	Water and Sewerage Company Investment is regulated by OFWAT and the number of properties on the flooding registers. Companies aim to reduce the risk of flooding to properties that have suffered flooding historically by investing in the sewer network and undertaking proactive cleansing.	Severn Trent Water	Areas with a history of sewer flooding / projects that help remove surface water from combined sewers.
Section 106 contributions (Town and Country Planning Act)	Contributions from developers, linked to specific development sites where off-site improvements to infrastructure are required to ensure proposals are acceptable.	Derby City Council	Larger development sites.
Council Capital Funding	There is no specific budget for flood risk management capital schemes. However, in some situations there may be funding available from Area Capital funds.	Derby City Council	Small sized flood risk management capital projects or partnership funding contribution

			ns.
Council Revenue Funding	The Council currently funds maintenance of existing assets via the revenue budgets of the relevant department. Defra funding has been provided to finance the execution of the Council's new duties as Lead Local Flood Authority. Funding at this level is expected to continue until 2015. Beyond this date the funding will be subject to government spending review. The City Council allocates annual revenue budget to maintain highway drainage systems and to clear trash screens on culverted water courses.	Derby City Council	Measure s requiring officer time and/or maintenance activity.

7 Monitoring and Review of the Strategy

7.1 Monitoring the strategy

The Strategy is a Living Document and will be monitored to ensure that progress is being made against the strategic objectives and the Strategy Action Plan.

The monitoring process will involve measuring actions against indicators for each objective. Progress against each action in the Action Plan will also be monitored. The indicators for monitoring progress are included in Appendix C.

7.2 Reviewing the Strategy

The review process will ensure that the Strategy document remains up-to-date and relevant to flood risk management in Derby.

7.3 Review schedule and governance

Monitoring the progress and success of the Strategy will take place annually. An annual update of the Action Plan will be undertaken and published on the Derby City Council website.

The City Council will update the Strategy every three years from the date of final approval. The most up-to-date version of the Strategy will be available for download from the Derby City Council website.

Derby City Council may choose to update the document more frequently outside these timescales, for example, if there is a change in legislation or if a major flood event occurs.

8 Responding to the Consultation

8.1 Why consultation with stakeholders is required?

A requirement of 'the regulations' is that the proposed FRMS is widely consulted on to ensure that the strategy addresses localised flood risk issues in a manner consistent with local and national priorities.

The FRMS should be accompanied with a Strategic Environmental Assessment 'the SEA' as soon after the adoption of the FRMS Action Plan.

The SEA is a document which considers the environmental impact of the proposed works to be undertaken as part of the FRMS. The SEA Regulations recommend that the statement contain the following:

- The reasons for choosing the strategy as adopted, in the light of other reasonable alternatives;
- How environmental considerations have been integrated into the strategy;
- How consultation responses have been taken into account; and
- Measures that are to be taken to monitor the significant environmental effects of the strategy.

With this in mind, the council's FRMS document currently under consultation will be accompanied by a scoping SEA.

The purpose of the scoping SEA is ensure that the council considers and addresses stakeholder concerns in relation to any perceived detrimental impacts which the proposed FRMS action plan may have.

The final SEA will be published after adoption of the FRMS by the council.

8.2 What needs to be responded to?

The public consultation period for the FRMS and the scoping SEA will run jointly for a six week period commencing Monday the 12th December 2016, with the closing date on Sunday the 22nd of January 2017.

The FRMS consultation questions are listed in Appendix 9.4, with the accompanying SEA Scoping document questions being listed in Appendix 9.5 below, and after each section of the SEA document.

8.3 How long will the consultation be open for comment?

The consultation period for the FRMS and the scoping SEA will run jointly for a six week period, commencing from Monday the 12th December 2016, and closing on Sunday the 22nd of January 2017.

8.4 Where do I get more Information?

The FRMS and supporting documents can be viewed www.derby.gov.uk/yourcityyoursay Copies are also available by contacting the Projects, Water and Flood Risk Management Team at:

Email: flooddefence@derby.gov.uk or telephone 01332 641789

8.5 How do I respond to the consultation?

You can take part online at www.derby.gov.uk/yourcityyoursay and give your feedback electronically. If you would like a paper questionnaire you can download this from the website and send back to the freepost address provided, or please contact (your number if you are ok to be the contact Kevin) and we will arrange to post this out to you. Responses will need to be received by the Council before 5pm on Monday 23 January 2017.

9 Appendices

9.1 AppendixA:RelevantLegislation &Guidance

Nationallegislationandguidance

Department forCommunitiesandLocal Government (2013)National Planning Policy Frameworkand Planning Practice Guidance⁴⁶

Department forCommunitiesandLocal Government (2012) National Planning Policy Framework⁴⁷

Environment Agency (2011)National FloodandCoastal ErosionRiskManagement Strategy⁴⁸

HM Government (2010) Flood and WaterManagement Act⁴⁹

HM Government (2009) Flood RiskRegulations⁵⁰

TheSuDS Manual (C697)⁵¹

EuropeanUnion (2001) Strategic Environmental AssessmentDirective⁵²

EuropeanUnion (2000) Water FrameworkDirective⁵³

Regional Documents

Environment Agency Lower Derwent Strategy 2011

Environment Agency (2009) Humber River Basin Management Plan⁵⁴

Environment Agency (2009) River Derwent Catchment Flood Management Plan⁵⁵

Localpolicyandguidance

DerbyCity Council (2011)DerbyCity Surface WaterManagement Plan (SWMP)

DerbyCity Council (2011) Local Transport Plan 3⁵⁶

DerbyCity Council (2011) Preliminary FloodRisk Assessment⁵⁷ (PFRA)

Derby's ClimateChange Strategy2013⁵⁸

Derby City Council Draft Infrastructure Plan (October 2013)⁵⁹

DerbyCityCouncil (2010)Level 1 Strategic Flood Risk Assessment⁶⁰ (SFRA)

Derby City Local Plan – Draft Core Strategy October 2013⁶¹

⁴⁶<http://planningguidance.planningportal.gov.uk/>

⁴⁷https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

⁴⁸https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228898/9780108510366.pdf

⁴⁹<http://www.legislation.gov.uk/ukpga/2010/29/contents>

⁵⁰http://www.legislation.gov.uk/uksi/2009/3042/pdfs/uksi_20093042_en.pdf

⁵¹http://www.ciria.org/Resources/Free_publications/the_suds_manual.aspx

⁵²<http://ec.europa.eu/environment/eia/sea-legalcontext.htm>

⁵³http://ec.europa.eu/environment/water/water-framework/index_en.html

⁵⁴https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297488/gene0910bsqr-e-e.pdf

⁵⁵https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/289419/Derwent_Catchment_Flood_Management_Plan.pdf

⁵⁶<http://www.derby.gov.uk/transport-and-streets/transport-policy/planning-transport-policy/>

⁵⁷<http://tinyurl.com/nj23nnp>

⁵⁸<http://www.derby.gov.uk/media/DerbyCityCouncil-Derbys-Climate-Change-February-2014.pdf>

⁵⁹<http://www.derby.gov.uk/media/derbycitycouncil/contentassets/documents/policiesandguidance/planning/Draft%20Infrastructure%20Delivery%20Plan.pdf>

⁶⁰http://www.derby.gov.uk/media/derbycitycouncil/contentassets/documents/policiesandguidance/planning/report%20rev%20C%20May%202010%20_EA%20COPY%2013-09_.pdf

⁶¹<http://www.derby.gov.uk/media/derbycitycouncil/contentassets/documents/policiesandguidance/planning/Full%20doc%20complete%20compressed.pdf>

9.2 Appendix B: Risk Management Authorities Flood Risk Management Roles and Responsibilities

Derby City Council is a Lead Local Flood Authority (LLFA) under the Flood Risk Regulations 2009. As LLFA, the City Council is responsible for managing flood risk from surface runoff, groundwater and Ordinary Watercourses.

In addition to the responsibilities as an LLFA, the City Council is the Highway Authority and must provide and manage highway drainage and roadside ditches under the Highways Act 1980.

The City Council is also the Local Planning Authority and responsible for ensuring sustainable development on flood risk grounds.

The **Environment Agency** (EA) has a 'strategic overview' role for flood and coastal erosion risk management in England. The EA has developed a National Flood and Coastal Erosion Risk Management Strategy, which provides a framework for their strategic overview role. The EA is responsible for managing flood risk from Main Rivers, estuaries, the sea and reservoirs. Flood risk management from rivers and the sea must be risk based and the EA has a regulatory role for all reservoirs over 25,000 m³.

Severn Trent Water Ltd (STW) is the Water and Sewerage Company (WaSC) covering the Derby City area. Flood risk management functions of ST are to ensure that their assets are resilient to flood risks and that the required level of service can be maintained in the event of a flood. They must plan the future development and maintenance of services and take account of Local FRM Strategies in their own planning process. STW is required to have regard to Local Flood Risk Management Strategies.

9.3 Appendix C: Monitoring Progress & Success

Summary Objective		Measure of Success
1	Improve our knowledge of existing Flood Risk Management assets using a risk-based approach to gather data on existing infrastructure and knowledge of current and future flood risk	Target a 10% increase in areas covered year on year and assets recorded. Meterage of drainage conduit and number of assets.
2	Develop economical, risk-based flood risk management schemes and infrastructure maintenance regimes that form a sustainable approach to reducing flood risk	Produce a list of potential problem areas and schemes by March 2016. Complete highway drainage appraisal report by March 2017.
3	Educate and engage with communities and politicians to raise awareness of flood risk, resilience measures, preparedness and riparian responsibilities to contribute to minimising risk to community disruption.	Organise or attend 2 community engagement events annually
4	Minimise the risk of flood from new developments. Produce guidance for planning, promote the use of SuDS (Sustainable Drainage Systems) and discourage possible surface water run-off in new developments.	Supplementary guidance for developers to be developed, agreed and adopted by DCC by March 2017.
5	Promote flood risk management activities that consider climate change, enhance the natural environment, improve water quality and provide amenity benefits	Produce evidence of 3 schemes annually.
6	Work in partnership with Risk Management Authorities and other key stakeholders to share a common understanding of flood risk, ensure effective maintenance is delivered, invest jointly in schemes and share expertise	Evidence required to show coordination and adoption of best practice.
7	Promote riparian responsibilities for the maintenance of watercourses. Work with owners to inform, educate and advise them on maintaining their stretch of watercourse to manage flood risk.	Aim for 20% of owners/occupiers to be contacted annually. Produce a database of all riparian owners for each watercourse in Derby by March 2017. Produce and distribute riparian ownership rights/responsibilities document. Aim to contact every occupier at least once every 5 years.

Consultation Questions for the Flood Risk Management Strategy

Please consider the following statements about the Flood Risk Management Strategy. Do you feel that..... please select one option on each row.

	Yes	No	Don't know
1a. the roles and responsibilities of the risk management authorities are clearly defined in the strategy?			
1b. it is clear what the Council's responsibilities are?			
1c. the objectives of the strategy are clearly defined in the document?			
1d. the strategy provides a clear direction on how the council intends to manage local flood risk?			
1e. It is clear what actions will be taken by the council to manage local flood risk in the next few years?			
1f. Is it clear how the council will fund the actions in the strategy?			

Routed questions will be shown if 'no' is responded to at the appropriate question:

2a. Please tell us why you do not think the roles and responsibilities are clearly defined.

2b. Please tell us why you do not think the Council's responsibilities are clear?

2c. Please tell us why you do not feel the objectives are clearly defined?

2d. Please tell us why you do not feel the strategy provides a clear direction on how the council intends to manage local flood risk.

2e. Please tell us how the actions could be made more transparent?

2f. Please tell us how the way the Council funds actions could be made more transparent?

If there are any other actions you think the council could take to address flood risk in the city, please tell us below?

As a result of limited funding the council has to prioritise measures to manage flood risk.

Below are 7 actions we have identified and we would like you to rate them in your preferred order of priority with 1 as rated as the least priority and 7 as the highest in priority.

	1	2	3	4	5	6	7
3a. Investigating predicted flood risk areas							
3b. Investigating existing small-scale flooding problems							
3c. Enhanced maintenance and improvement of the drainage network							
3d. Encourage private landowners and householders to be responsible for preventing flooding to their property?							
3e. Encourage individuals to take small steps such as depaving to help reduce flood risk							
3f. Encourage new developments to incorporate measures to reduce flood risk in surrounding areas.							
3g. Council to work in partnership with new developers for solutions to affordable drainage							

Consultation Questions for the Strategic Environmental Assessment (SEA) Scoping Document

Do you agree or disagree with the following when considering the Strategic Environmental Assessment Scoping Document?

	Agree	Disagree	Don't know
1a. the items outside of the scope			
1b. the air quality baseline items for consideration			
1c. the biodiversity baseline items for consideration			
1d. the cultural, archaeological and architectural baseline items for consideration?			
1e. the human health baseline items for consideration			
1f. the material assets baseline items for consideration			
1g. the landscape baseline items for consideration			
1h. the population baseline items for consideration			
1i. the water baseline items for consideration			
1j. the proposed methodology of comparison of options and effects			

Routed questions will be shown if 'disagree' is responded to at the appropriate question.

2a. Please tell us why you disagree with the items outside of the scope?

2b. Please tell us why you disagree with the air quality baseline?

2c. Please tell us why you disagree with the biodiversity baseline?

2d. Please tell us why you disagree with the cultural, archaeological and architectural baseline?

2e. Please tell us why you disagree with the human health baseline?

2f. Please tell us why you disagree with the material assets baseline?

2g. Please tell us why you disagree with the landscape baseline?

2h. Please tell us why you disagree with the population baseline?

2i. Please tell us why you disagree with the water baseline?

2j. Please tell us why you disagree with the proposed methodology of comparison of options and effects?

Consultation