



Flood Risk Management and Response



A report from Overview & Scrutiny





Contents

Preface	5
Summary	7
Summary of Recommendations	9
Glossary	11
1 Introduction	13
1.1 Purpose of the Review	13
1.2 Methodology	13
2 Flooding in Birmingham	15
2.1 Introduction	15
2.2 Understanding Flood Risk	16
2.3 Types of Flooding in Birmingham	17
2.4 Summary	23
3 Managing Flood Risk: Duties and Responsibilities	24
3.1 Introduction	24
3.2 National Policy Context	24
3.3 National Responsibilities and Duties	26
3.4 Regional Responsibilities and Duties	27
3.5 Local Responsibilities and Duties	30
3.6 Private Land Owners	32
3.7 Working with Partners	32
3.8 Summary	32
4 Managing Flood Risk: Technical Responses	33
4.1 Introduction	33
4.2 Maintenance	33
4.3 Flood Defences and Drainage Systems	35
4.4 Summary	40
5 Planning and Development	41
5.1 Introduction	41
5.2 Planning Policy Context	41



Flood Risk Management and Response

5.3	Development Control	44
5.4	Growth and Development in Birmingham	45
5.5	Summary	46
6	Response and Resilience	47
6.1	Introduction	47
6.2	In a Flooding Emergency	49
6.3	Community Preparedness	53
6.4	Recovery	54
6.5	Response to Flooding of Businesses	56
6.6	Summary	57
7	Scrutinising Flood Risk Management and Response	58
7.1	Introduction	58
7.2	Pitt Review	58
7.3	The Flood and Water Management Act	59
7.4	Scrutiny in Birmingham	59
7.5	Summary	61
8	Conclusions and Recommendations	62
8.1	Introduction	62
8.2	Flooding in Birmingham	62
8.3	The Flood and Water Management Act	63
8.4	Approach to Flood Risk Management	63
8.5	Changes to the Role of the City Council	64
8.6	Technical Solutions	69
8.7	Responding to Flood Risk	70
8.8	Progress with Implementation	72
	Appendix 1: Witnesses	73
	Appendix 2: The Organisations	75
	Birmingham City Council	75
	Department for Communities and Local Government (DCLG)	77
	Department of Energy and Climate Change (DECC)	77
	Department for the Environment, Food and Rural Affairs (DEFRA)	78



Environment Agency (EA)	78
Severn Trent Water (STW)	81
Ofwat (The Water Services Regulation Authority)	82
West Midlands Leaders Board (WLMB)	83
Riparian Ownership	84

Further information regarding this report can be obtained from:

Lead Review Officer: Name: Emma Williamson

Tel: 0121 464 6870

E-mail: emma_williamson@birmingham.gov.uk

Reports that have been submitted to Council can be downloaded from www.birmingham.gov.uk/scrutiny.

Front cover photograph: Dogpool Lane, September 2008; Copyright (c) John Clayton 2008



Flood Risk Management and Response



Preface

By Cllr Timothy Huxtable, Lead Member, Flood Risk Management and Response Review Group



A cross committee and cross party working group was set up to undertake this scrutiny review. This joint group made up of representatives of the former Transportation and Street Services and Regeneration Overview and Scrutiny Committees was set up to answer the question: What leadership role should the City Council take in both preventing flooding occurring, and responding to flooding when it occurs?

Birmingham may not have seen the sort of major river flooding that has dominated the headlines in recent years, however the city has experienced several large scale flooding events in recent years, most recently in September 2008.

It is important to highlight that we cannot eradicate flooding as “flooding is a part of nature”. However what ultimately can be achieved are actions to reduce flood risk and minimise and mitigate the harm caused by flooding, through a risk based approach based on a detailed understanding of where the flood risk is greatest.

It was important to gather the views and opinions from our key partners and most importantly from some of our residents who have been affected by flooding. Their input was invaluable and I would like to thank all those who contributed.

Significant changes to the management of flood risk and response will result from the recent Flood and Water Management Act. This should bring more sustainable management of these flood risks, with the clarification of institutional arrangements and improving an integrated approach to flood risk management.

The Flood and Water Management Act will have extensive and far-reaching consequences for the City Council, and funding issues have yet to be resolved. We have therefore requested the Executive report back as a matter of urgency on the proposed funding arrangements, officer capacity and expertise requirements for all the new City Council duties imposed by this legislation.

One of the most significant changes in the Flood and Water Management Act relates to reservoirs. In Birmingham, this means a possible 26 existing reservoirs and pools will be added to the 11 the City Council must currently maintain, including routine inspections and the establishment of emergency plans, and so we have recommended we have sufficient arrangements in place to meet these demands.

We have also requested that the option of using specific green space sites (with little or no amenity value) to mitigate the risk to residential areas or other high value economic land is investigated.

We were most impressed by the actions of local residents who had formed Flood Action Groups, to help mitigate and respond to flooding and we have recommended that the City Council ensure residents are kept fully informed, using Flood Action Groups where appropriate, and encourage those at risk to familiarise themselves with local plans and adopt household plans.



Flood Risk Management and Response

We were also most impressed by the way the City Council has taken the lead in relation to flooding issues, both mitigation and response within the area; and by the willingness of dedicated staff to give up their time to support residents when they need it most and they deserve our thanks. However we are mindful there is need for a system of “standby officers” to ensure we have the capacity to respond accordingly.

Our recommendations within this report will therefore assist the City Council in mitigating and responding to flooding and ultimately assist residents in being better prepared if flooding occurs. I look forward to receiving regular updates on this.

Finally I would also like to thank Members of the Review Group and Officers for all their support, hard work and commitment in particular Clive Wright, Emma Williamson, Baseema Begum and Amanda Simcox without whom this Review could not have taken place.

Justine Hurst



Summary

The Flood and Water Management Act received Royal Assent on the 8th April 2010. This has extensive and far-reaching consequences for the City Council in terms of how it must undertake flood risk management. Members of the Regeneration and Transportation and Street Services Overview and Scrutiny (O&S) Committees agreed that an early Scrutiny Review to examine the proposed changes and how well placed Birmingham is to respond to those changes was needed.

The Issue

In Birmingham, we have not seen the sort of major river flooding that dominated the headlines in recent years. However, a recent assessment of flood risk in the city states that "Birmingham is at considerable risk of flooding from Main River, Ordinary Watercourses, surface water, sewer flooding and groundwater". We visited three areas of the city that have illustrated the different problems faced in Birmingham: properties on a flood Plain, rivers re-routed and constricted by development and flood defences increasingly inadequate for the level and frequency of flooding we are experiencing. There is also evidence of an increasing problem with groundwater flooding.

Roles and Responsibilities

Responsibilities for water and flood related issues have become increasingly fragmented since 1974. However, the City Council has taken a lead, both in terms of flood risk management and in responding to flooding when it occurs. The Flood and Water Management Act 2010 aims to clarify arrangements and encourage greater co-operation. This means significant changes for the three key bodies involved in flood risk management: the Environment Agency, Severn Trent Water and the City Council.

The Flood and Water Management Act will make Birmingham City Council a Lead Local Flood Authority, responsible for strategies for local flood risk management dealing with surface runoff, groundwater and ordinary watercourses. Work has already begun on developing these strategies.

It is therefore critical that the City Council gives flood risk management the correct priority to ensure sufficient resources are available and that suitably qualified and experienced professionals are available to conduct that work. A clear direction from the City Council from a political level is needed, to ensure that available resources are invested wisely and to have a strong presence amongst our partners. For that reason, we recommend that there is political representation on the cross-agency Birmingham Water Group.

Resources

Land drainage functions have not always been a priority for capital funding. However, the Act will change this significantly. We have been advised on the cost implications of the changes, and that the Government assumes some of the work will be paid for in savings made elsewhere by the City Council – an assertion challenged by local authorities across the country. It is important to note that the costs would be balanced by the intangible benefits accruing from a proactive approach – i.e. reducing the number of people and properties affected by flooding, and assisting those that are affected to recover more quickly. However, these are difficult to measure.



Flood Risk Management and Response

The fact remains that resources to implement changes are far from clear. We therefore have asked the Executive to report back to the Transportation and Regeneration O&S Committee on how the new duties will be met, including the demands on officer capacity and capability.

Reservoirs

One of the biggest changes relates to reservoirs. The Bill widens the scope of the Reservoirs Act 1975 (which provides legal framework to ensure the safety of large raised reservoirs) to include reservoirs of 10,000 cubic metres capacity or more (currently 25,000 cubic metres capacity or more). This emphasises a risk based approach rather than a volume based approach. In Birmingham, this raises the number of reservoirs and pools covered by legislation from 11 to 26. Again, we therefore ask the Executive to set out how it will respond to this challenge.

Technical Solutions

We looked at the range of technical solutions used or proposed in the city. One of the key decisions to be made is around the use of public open space for water storage and recommend further investigative work on this. The new legislation encourages the use of Sustainable Urban Drainage Systems (SUDS) by giving them greater priority, as well as greater clarity on ownership of SUDS. However, there will be a need to ensure the City Council has capacity to meet the demands, although the workload is still unclear, as well as the expertise in both the Highways and Planning services.

Response to Flooding

We found that the response is generally well co-ordinated and characterised by dedicated staff willing to give up their time to support residents when they need it most. The City Council leads on the response, through the Birmingham Resilience Team and at a Constituency level. We heard about the many officers involved, and the hard work and long hours committed to helping people affected by flooding. However, there is obviously a huge reliance on staff volunteering, something which is increasingly under pressure.

One area that could usefully be clarified is the provision of sandbags. The City Council is not obliged to provide these, although it currently does to a limited degree. We have therefore recommended that a clear policy on the use of sandbags and other protective measures when flooding occurs is drawn up.

Regional Flood Defence Committee (RFDC)

We also examined the role of the RFDC and the contribution our involvement makes to the city. We ask the Executive to consider our membership of the RFDC and whether the benefits outweigh the costs.

Scrutiny of Flood Risk Management

The Act amends the Local Government Act 2000 to extend the powers of Overview and Scrutiny to "review and scrutinise the exercise by risk management authorities of flood risk management functions or coastal erosion risk management functions which may affect the local authority's area".¹ This remains a key part of the Transportation and Regeneration O&S Committee's work programme over the next year and beyond.

¹ The section applies to a local authority which is a lead local flood authority for an area in England.



Summary of Recommendations

	Recommendation	Responsibility	Completion Date
R01	That the Chairman of the Planning Committee reports back to the Transportation and Regeneration O&S Committee with a timetable for an early start on the Level 2 Strategic Flood Risk Assessment.	Chairman of the Planning Committee	September 2010
R02	That the Cabinet appoint an Elected Member to serve on the Birmingham Water Group.	Cabinet	September 2010
R03	That the Cabinet Member for Transportation and Regeneration reports back to the Transportation and Regeneration O&S Committee as a matter of urgency on proposed funding arrangements for all the new duties under the Flood and Water Management Act 2010.	Cabinet Member for Transportation and Regeneration	September 2010
R04	That the Cabinet Member for Transportation and Regeneration and Chairman of the Planning Committee prepare a report on the officer capacity and expertise required to meet the new obligations and how those will be matched.	Cabinet Member for Transportation and Regeneration Chairman of the Planning Committee	September 2010
R05	That the Cabinet Member for Transportation and Regeneration review membership and funding of the Regional Flood Defence Committee, noting the limited benefit to Birmingham currently; and explore opportunities to maximise spend on flood defence work in Birmingham.	Cabinet Member for Transportation and Regeneration	December 2010
R06	That the Cabinet Member for Leisure, Sport and Culture ensures that sufficient arrangements are in place to meet the demands regarding reservoirs, including <ul style="list-style-type: none"> • Officer expertise and capacity; • Capital and Revenue funding; • Green Infrastructure Technical Assessment. 	Cabinet Member for Leisure, Sport and Culture	September 2010
R07	That the Chair of Transportation and Regeneration O&S Committee pursue implementation of the new scrutiny powers with regard to flooding once guidance is published.	Chair of Transportation and Regeneration O&S Committee	September 2010



Flood Risk Management and Response

	Recommendation	Responsibility	Completion Date
R08	That the Cabinet Member for Leisure, Sport and Culture identifies specific green space sites (with little or no amenity value) whereby a change of use / land management should be recommended to mitigate the effects of future flooding (where this would reduce the risk to residential areas or other high value economic land and critical infrastructure); and that this assessment feeds into the City Council's Core Strategy Green Infrastructure Framework.	Cabinet Member for Leisure, Sport and Culture	December 2010
R09	That the Deputy Leader, in consultation with the Cabinet Members for Housing, Transportation & Street Services, Leisure, Sport and Culture, and the Chairman of Public Protection Committee, ensures appropriate arrangements are in place, in consultation with the Birmingham Resilience Team, for a system of "standby officers" within Fleet and Waste Management, Regulatory Services, Leisure services and Housing to respond in emergencies such as flooding.	Deputy Leader	December 2010
R10	That the Cabinet Member for Transportation and Regeneration report back to the Transportation and Regeneration O&S Committee with a clear policy on use of sandbags and other protective measures when flooding occurs. This should include: <ul style="list-style-type: none"> • Storage facilities; • Priorities for distribution; • Locations for distribution. 	Cabinet Member for Transportation and Regeneration	December 2010
R11	(a) That the Deputy Leader continues to support the establishment and maintenance of Flood Action Groups (or other relevant community groups) in relevant parts of the city; (b) That the Deputy Leader ensure residents are fully informed, using FLAGS where appropriate, and encourage those at risk to familiarise themselves with local plans and adopt household plans.	Deputy Leader	December 2010
R12	Progress towards achievement of these recommendations should be reported to the Transportation and Regeneration Overview and Scrutiny Committee in October 2010. Subsequent progress reports will be scheduled by the Committee thereafter, until all recommendations are implemented.	Cabinet Member for Transportation and Regeneration	October 2010



Glossary

ABI	Association of British Insurers
AEP	Annual Exceedance Probability
AWM	Advantage West Midlands
BRT	Birmingham Resilience Team
BLWM	Business Link West Midlands
CABE	Commission for Architecture and the Built Environment
CCA	Civil Contingency Act 2004
CECC	Council Emergency Co-ordinating Centre
CFMP	Catchment Flood Management Plan
CSV	Community Service Volunteers
DCLG	Department for Communities and Local Government
DECC	Department of Energy and Climate Change
DEFRA	Department for the Environment, Food and Rural Affairs
DWI	Drinking Water Inspectorate
EA	Environment Agency
EPDO	Emergency Planning Duty Officer
FLAGs	Flood Action Groups
GOWM	Government Office for the West Midlands
IDB	Internal Drainage Boards
LDA	Land Drainage Authority
LDF	Local Development Framework
LGA	Local Government Association
LRR	Large Raised Reservoirs
NAFR	National Assessment of Flood Risk for England (Environment Agency 2009)
Ofwat	Office of Water Services
O&S	Overview and Scrutiny
OSCs	Overview and Scrutiny Committees
PFI	Private Finance Initiative
PPS	Planning Policy Statement
PPS 25	Planning Policy Statement 25 – Development and Flood Risk
RFA	Regional Funding Advice
RFCC	Regional Flood and Coastal Committees (under the Flood and Water Management Act, these replace RFDCs)
RFDC	Regional Flood Defence Committee (under the Flood and Water Management Act these are replaced by RFCCs)
RFRA	West Midlands Regional Flood Risk Appraisal
RSG	Revenue Support Grant
RSLs	Registered Social Landlords



Flood Risk Management and Response

RSS	Regional Spatial Strategy
SAB	SUDS Approval Body
SFRA	Strategic Flood Risk Assessment
SMURF	Sustainable Management of Urban Rivers and Floodplains
SPD	Supplementary Planning Document
STW	Severn Trent Water
SUDS	Sustainable Urban Drainage Systems
SWMP	Surface Water Management Plan
WFD	Water Framework Directive
WMLB	West Midlands Leaders Board
WMRA	West Midlands Regional Assembly

Definitions of Flooding within the Flood and Water Management Act²	
Groundwater	All water which is below the surface of the ground and in direct contact with the ground or subsoil.
Sewerage System	Wholly or partly caused by an increase in the volume of rainwater (including snow and other precipitation) entering or otherwise affecting the system, or (b) a flood caused by a burst water main (within the meaning given by section 219 of the Water Industry Act 1991).
Surface run-off	Rainwater (including snow and other precipitation) which: (a) is on the surface of the ground (whether or not it is moving), and (b) has not entered a watercourse, drainage system or public sewer
Other Definitions of Flooding	
Fluvial	Rivers overflowing their banks
Pluvial	Excessive rainfall that leads to surface water flooding

² http://www.opsi.gov.uk/acts/acts2010/pdf/ukpga_20100029_en.pdf



1 Introduction

1.1 Purpose of the Review

- 1.1.1 The Flood and Water Management Act received Royal Assent on the 8th April 2010. This has extensive and far-reaching consequences for the City Council in terms of how it must undertake flood risk management.
- 1.1.2 The legislation followed devastating floods in 2007, in places such as South Yorkshire, Gloucestershire, Worcestershire and the Thames Valley, which led to a renewed national focus on flood risk management. Sir Michael Pitt was commissioned by the Government to undertake an independent review of the lessons to be learned from the summer floods of 2007, and following his recommendations the Flood and Water Management Bill was published in late 2008.
- 1.1.3 A draft Bill was published in April 2009 and at this early stage Members of the Regeneration and Transportation and Street Services Overview and Scrutiny (O&S) Committees agreed that a Scrutiny Review to examine the proposed changes and how well placed Birmingham was to respond to those changes was needed alongside the evolving legislation. It was also agreed that the Review should look beyond the legislation to examine what the right role for the City Council is in Birmingham. The key question we have therefore sought to answer is:

What leadership role should the City Council take in both preventing flooding occurring, and responding to flooding when it occurs?

- 1.1.4 During the course of the evidence gathering, it became clear that neither the City Council nor its partner agencies can *prevent* flooding, but we can work together to mitigate and manage the risk of flooding. Our report therefore focuses on how this can be best achieved.

1.2 Methodology

- 1.2.1 The Review was conducted by Members of both the Regeneration and Transportation and Street Services O&S Committees: Cllr Timothy Huxtable (Lead Member), Cllr Robert Alden, Cllr Mick Finnegan, Cllr Karen Hamilton, Cllr Kath Hartley and Cllr Robert Wright. Commencing our work prior to the publication of the Bill, we set out with the following key lines of enquiry:
- How the three key agencies – the City Council, Environment Agency (EA) and Severn Trent Water (STW) – work together and share information;
 - The co-ordination of civil resilience and flood risk management roles in the city;
 - The engagement of directorates across the City Council, particularly including the service areas of Planning, Building Control, Housing and Leisure Services;
 - The implications of the Pitt Review and future legislation, including implications for resources;



Flood Risk Management and Response

- The implications of the City Council adopting sustainable drainage infrastructure.

1.2.2 Evidence gathering sessions were held between July 2009 and February 2010 and included an introductory session held as part of a Regeneration O&S Committee meeting, Review Group meetings and a visit to flood-affected areas within Birmingham. A full list of witnesses is available in Appendix 1.

1.2.3 This report sets out our findings, with our recommendations and conclusions in Chapter 8. This is not intended to be a detailed technical report. For a more detailed understanding of this subject, the City Council's Strategic Flood Risk Assessment (SFRA), published in January 2010, should be read alongside this report. The report, produced in partnership with Atkins, assesses and maps:

all known sources of flood risk, including fluvial, surface water, sewer, groundwater and impounded water bodies, taking into account future climate change predictions, to allow the Council to use this as an evidence base to locate future development primarily in low flood risk areas.³

1.2.4 The SFRA is thorough and, whilst we will refer to it in this report, it contains comprehensive information which we will not repeat in detail here. There is also more information about each Constituency, which Members and residents may wish to consult for information about their local area.

³ Birmingham City Council, *Level 1 Strategic Flood Risk Assessment*, January 2010. Electronic copies available at www.birmingham.gov.uk/corestrategy



2 Flooding in Birmingham

2.1 Introduction

- 2.1.1 The floods that hit the headlines in 2007 were not in Birmingham, however areas of the city have experienced severe flooding the last few years, most recently in September 2008. In fact, over the last 12 years, Birmingham has experienced large scale flooding events in September 1998, April 1999, June 1999, July 2000, June 2005, June 2007, July 2007 and September 2008.⁴
- 2.1.2 As part of the evidence-gathering, Members undertook visits across the city, including three areas where flooding had occurred in the last two years and which illustrate some of the problems faced in Birmingham.

Northfield – Middlemore Estate

- 2.1.3 In the Northfield Constituency there have been a number of roads where properties have been affected by flooding from rivers and surface water run-off. Since 1998, flooding has occurred in three areas: Middlemore Road, Frankley and Weoley Castle. Between 2002 and 2008, Northfield experienced 18 flood watches. We visited the Middlemore Road, including the sheltered housing complex, which sits on the floodplain of the River Rea.
- 2.1.4 After four devastating floods in the Middlemore estate, when 120 properties were flooded during September 1998 and July 2000, the City Council carried out major flood alleviation work including the River Rea Improvement Scheme 2000-02. This work was effective in enabling the River Rea to cope with larger flows of water. However, properties sit on a floodplain and Middlemore Road is marked as a 'Flood Area' on the Flood Zone map produced by the Environment Agency.

Selly Oak – Selly Park

- 2.1.5 Four areas within the Selly Oak Constituency had flooded in 2008 namely Stirchley, Selly Park North, Selly Park South and Lodge Hill. We visited the Selly Park area, where three roads are primarily affected by flooding: Cecil Road, Kitchener Road, Fashoda Road and Dogpool Lane. The flooding was primarily from the River Rea, which overtopped its banks due to heavy rainfall (flow was also restricted by the bridge at Dogpool Lane – two photographs overleaf show Dogpool Lane Bridge at normal flow and during the floods in September 2008) and flooded a route believed to be the original path of the river before it was modified by development.

⁴ Birmingham City Council, *ibid.* Appendix C



Review Group Visit on 19th November 2009



September 2008, Copyright (c) John Clayton 2008

Perry Barr – Witton

2.1.6 The flooding in Perry Barr Constituency occurred primarily in Witton. In 2007 flooding was caused by heavy localised rainfall – approximately 3 inches of rain in 6 hours – and increased runoff into the River Tame, which takes drainage from across the region. The flood defences at Brookvale Road (primarily channels and high walls) were eventually exceeded, yet no warning was given because Environment Agency monitoring was focused upstream where there were no apparent problems.

2.2 Understanding Flood Risk

2.2.1 The areas of Birmingham we describe above gave us some understanding of the types of flooding that has occurred in Birmingham. However, for a comprehensive picture we turned to the Strategic Flood Risk Assessment (SFRA), published by the City Council in January 2010. The SFRA provides a detailed overview of flood risk in Birmingham and clearly states:

Birmingham is at considerable risk of flooding from Main River, Ordinary Watercourses, surface water, sewer flooding and groundwater. There is also potential for canal and reservoir breach and overtopping.⁵

2.2.2 We will outline some of the key findings in the rest of this chapter. However, it is worth noting that whilst there are assessments of flood risk now available at a national, regional and local level,

⁵ Birmingham City Council, *ibid.* p 92



none will claim to be able to solve the problem completely. The National Assessment of Flood Risk for England (NAFR), published by the Environment Agency in 2009, states that:

Flooding is a part of nature. It is neither technically feasible nor economically affordable to prevent all properties from flooding.⁶

- 2.2.3 The Pitt Review report agreed, and we found similar agreement amongst the residents we met. What ultimately can be achieved are actions to reduce flood risk and minimise the harm caused by flooding through a risk based approach based on a detailed understanding of where the flood risk lies. This is a complex and time consuming process involving the assessment of flood risk through river modelling and mapping studies as evidence to identify options for future flood risk management. Any options recommended may be subject to government grant funding conditions.

2.3 Types of Flooding in Birmingham

- 2.3.1 Birmingham's location, as well as topographical and geological characteristics, makes it susceptible to different types of flooding – from rivers, surface water and groundwater – as well as risks from sewers, reservoirs and canals. We look at each of these in this section. A summary table (Table 1) shows the types of flooding that has occurred in each constituency since 1998 (1872 for canals).

Watercourse (Fluvial) Flooding

- 2.3.2 Flooding from rivers – called fluvial flooding – occurs during heavy or prolonged rainfall, or rapid snow melt, when a watercourse cannot cope with the water draining into it from the surrounding land. This can happen, for example, when heavy rain falls on an already waterlogged catchment. In the natural environment, flood plains are areas intended for overbank flow; however there are cases of building on flood plains in Birmingham (and across the country).
- 2.3.3 Urbanisation has a real impact, with faster run-off rates from upstream urban areas resulting in an increase in flow in the rivers downstream. Fluvial flooding can also cause sewers to back-up and flood households with sewage.
- 2.3.4 Nationally, fluvial flooding is a huge issue. The National Assessment of Flood Risk for England (NAFR)⁷ examined where flooding could occur in all 69 river catchments in England as well as the coastline around England using 39 weather patterns of varying severity and likelihood. It reported that there are 2.4 million properties at risk of flooding from rivers and the sea in England.
- 2.3.5 Birmingham does not have large rivers that result in the sort of dramatic flooding that attract national attention. There are however, 12 'Main' rivers in Birmingham with numerous ordinary watercourses and countless unnamed streams and ditches. These can result in significant localised flooding simultaneously at several locations throughout the city.

⁶ Environment Agency, *Flooding in England: A National Assessment of Flood Risk*, 2009, p5

⁷ Environment Agency, *Flooding in England: A National Assessment of Flood Risk*, 2009



Flood Risk Management and Response

Table 1: Historical Flooding by Constituency - Number of Incidents⁸

	Fluvial	Surface Water	Ground water	Sewer	Canal Breach	Unknown	Total
Edgbaston	13	15	2	17	1	3	51
Erdington	2	0	4	3	0	0	9
Hall Green	24	0	5	18	0	0	47
Hodge Hill	2	1	1	5	2	1	12
Ladywood	0	1	1	7	2	1	12
Northfield	61	40	2	13	0	6	122
Perry Barr	16	0	4	12	0	0	32
Selly Oak	35	5	2	22	2	4	70
Sutton Coldfield	19	0	4	21	0	1	45
Yardley	2	2	1	8	2	0	15
Total	<i>174</i>	<i>64</i>	<i>26</i>	<i>126</i>	<i>9</i>	<i>16</i>	<i>415</i>

Source: Strategic Flood Risk Assessment 2010

2.3.6 The river system largely falls within the following Main River Catchments:

- *River Tame* (through Perry Barr, Witton, Gravelly Hill, Bromford and Castle Vale);
- *River Rea* (from Frankley through Longbridge, Northfield, Kings Norton, Stirchley, Selly Park to Highgate, Digbeth, Duddeston and Nechells);
- *River Cole* (through Yardley Wood, Billesley, Hall Green into Sparkhill, Yardley, and Stechford).

2.3.7 Each of these have been heavily modified in places by human activity – some parts of these rivers now flow within engineered walls which have changed the shape, size and course of that river.

2.3.8 Riparian owners have responsibility for all rivers on or bordering their land (see Appendix 2), however the EA has powers to maintain and improve main rivers. Currently the Council is contracted by the EA to carry out maintenance in the River Rea catchment. This contract runs to

⁸ The data was gathered via a range a of methods and show reported incidents: fluvial and surface water incidents since 1998; sewer and ground water since 1993; and canal breaches since 1872. Each record represents flooding within a postcode polygon during a flood event (therefore this could be flooding to a single property or a number of properties). The data was created so that individual properties were not identified.



2012. The City Council, as the Land Drainage Authority (LDA), has permissive powers to undertake works on ordinary rivers and watercourses in the general public interest. There are 57,238 linear metres of brook courses managed through the City Council's Grounds Maintenance contracts.

- 2.3.9 The SFRA details historical locations of watercourse flooding.⁹ As our table above shows, 174 incidents of recorded fluvial flooding have occurred in the city since 1998, with most occurring in Northfield. The River Tame Flood Risk Management Strategy gives further detail about flooding and its impact along that river. Overall 3,100 properties are at risk of flooding along that river in a 1 in 100 year flood, or 1% probability flood.

Surface Water (Pluvial) Flooding

- 2.3.10 Surface water is rainwater which is on the surface of the ground and has not entered a watercourse, drainage system or sewer. Surface water flooding occurs where high rainfall exceeds the drainage capacity in an area. Surface water cannot then enter the system or the drainage network overflows, with manholes surcharging. It is more difficult to predict and pinpoint than river or coastal flooding. It is the responsibility of the owner of the land to accept and manage the surface water flows.
- 2.3.11 The majority of flooding experienced nationally in the summer of 2007 was caused by surface water flooding.¹⁰ The Environment Agency estimated that two thirds of the 55,000 properties affected were damaged as a result of surface water run-off overloading the drainage system.¹¹
- 2.3.12 A preliminary assessment of surface water flood risk conducted nationally, as part of the NAFR 2009, suggests that around 3.8 million properties are susceptible to surface water flooding. Figures provided by the Department for the Environment, Food and Rural Affairs (DEFRA) show Birmingham to have 25,100 properties at risk from surface water flooding (Table 2).
- 2.3.13 Again, the SFRA details historical locations of surface water flooding in Birmingham.¹² As Table 1 shows, 64 incidents of pluvial flooding have occurred in the city since 1998, with most again occurring in Northfield constituency.
- 2.3.14 One of the most obvious and immediate forms of surface water runoff is on the highway. Highway drainage is the responsibility of local authority as the highway authority. Generally highways are drained by means of traditional gullies (drains) at the side of the road which drain to combined sewers or watercourses via public sewers.

⁹ Birmingham City Council, *Level 1 Strategic Flood Risk Assessment*, January 2010, Table C.1 Appendix C

¹⁰ www.idea.gov.uk

¹¹ www.publications.parliament.uk/pa/cm200910/cmhansrd/cm091215/debtext/91215-0010.htm

¹² Birmingham City Council, *Level 1 Strategic Flood Risk Assessment*, January 2010, Table C.2 Appendix C



Flood Risk Management and Response

Table 2: Properties at risk of surface water flooding

Settlement Rank	Local Authority (county / unitary)	Estimated Number of Properties at Risk
1	City of Westminster London Borough	31,600
2	Birmingham City Council	25,100
3	Lambeth London Borough	21,400
4	Croydon London Borough	21,100
5	Kensington and Chelsea London Borough	20,800
6	Islington London Borough	19,800
7	Camden London Borough	19,700
8	Wandsworth London Borough	18,800
9	Lewisham London Borough	18,100
10	Southwark London Borough	17,800

Source: DEFRA

Groundwater Flooding

- 2.3.15 Groundwater flooding occurs when water levels in the ground rise above surface levels. It is most likely to occur in areas underlain by permeable rocks, called aquifers. These can be extensive regional aquifers, such as chalk or sandstone; or may be more local sand or river gravels in valley bottoms underlain by less permeable rocks.¹³
- 2.3.16 A geological fault crosses Birmingham from the north west to the south east, passing just to the south of the city centre. The underlying impermeable clay predominantly to the south traps water in the predominantly sandstone to the north. Historically this has been a source of water extraction mainly for industrial use. However extraction has reduced significantly with the decline in manufacturing industries, which is thought to be a contributory factor to rising groundwater levels in the city.
- 2.3.17 Some work has been done on understanding the nature of the groundwater problem in the city, including some research undertaken by University of Birmingham, and some predictions of future groundwater levels made. The Environment Agency reported that levels are stabilising, however, some property owners are unaware that there has always been water under floors or in cellars. More long term monitoring data is needed to assess the long-term implications for Birmingham.

¹³ Environment Agency, *Flooding in England: A National Assessment of Flood Risk*, 2009 Environment Agency



- 2.3.18 The SFRA notes 26 historical locations of groundwater flooding in Birmingham. Table 1 shows Hall Green has had the most incidents (5).
- 2.3.19 Management of groundwater does not currently form part of any agency's duties. However, the Flood and Water Management Act includes groundwater flooding within local authorities' duties.

Sewer Flooding

- 2.3.20 Sewer flooding occurs when sewers are overwhelmed by heavy rainfall or when they become blocked. The likelihood of flooding depends on the capacity of the local sewerage system. Land, property and rivers can be flooded with water contaminated with raw sewage as a result.
- 2.3.21 Severn Trent Water (STW) is responsible for public sewers, with standards governed by the water regulator, Ofwat (Office of Water Services). These include surface water sewers into which most surface water drains. Other sewers take surface water to local brooks and watercourses.
- 2.3.22 Details of historic locations of sewer flooding are protected under the Data Protection Act. However, the SFRA was able to collate some data: sewer flooding has occurred 126 times in Birmingham. Selly Oak had 22 incidents and Sutton Coldfield 21.¹⁴
- 2.3.23 Severn Trent Water maintain the "At Risk Flooding Register", for sewer flooding within their area. Members were advised that, as part of sewer management planning, 'hotspot' plans were produced. Work was prioritised and taken into account as part of the company's investment plan.
- 2.3.24 We were informed by STW that around 30% of the sewer floods in their area were due to hydraulic problems and 70% due to blockages (around 15,000 – 20,000 blockages), some resulting from customer abuse. In Birmingham, there are approximately 3,000 sewer blockages each year, accounting for 95% of incidents of flooding of customers' homes and gardens.
- 2.3.25 Severn Trent Water recognised the need for education of customers and this was addressed in a number of ways. There had been national campaigns and reference was made to the campaign to try to prevent the disposal of fat and grease into the drainage system.¹⁵ Additionally there was work with school children but the extent of that work was limited by the resources available as this work was not the company's core function. Some campaigns were targeted to hotspot areas, but it could be difficult to reinforce messages in areas where there was population change.
- 2.3.26 Individual property and land owners have responsibility for their own piped drainage infrastructure. Where piped drainage becomes part of the general shared infrastructure it is generally adopted as public and becomes the responsibility of Severn Trent Water. Water and sewerage companies do not have the power to rectify misconnections and whilst there had been proposals within the Bill to allow this those proposals had now been removed. However there is a major difficulty when pipes are not sewers and ownership is unclear.

¹⁴ For more detail see Birmingham City Council, *Level 1 Strategic Flood Risk Assessment*, January 2010, Table C.2 Appendix C

¹⁵ The "Grease Lightening" campaign/collection service run by Severn Trent and Community Service Volunteers (CSV)



Reservoirs and Pools

- 2.3.27 The failure of a reservoir can present a catastrophic or major flood risk. Large raised reservoirs (LRR) present a specific risk during times of heavy rainfall. Any overtopping can cause a threat to the stability of dams.
- 2.3.28 In England and Wales there are over 2,000 LRRs covered by the 1975 Reservoirs Act, of which 956 are categorised as posing a risk to life if they breach. There are 22 LRRs within Birmingham. The EA is the enforcement authority for all reservoirs; the City Council has responsibility for 11 of these as the owner. The remaining reservoirs are the responsibility of the Environment Agency (3), Severn Trent Water (5), British Waterways (1) and private companies (2).
- 2.3.29 There are no known incidents of reservoir breach and overtopping within Birmingham in recent history.¹⁶
- 2.3.30 The City Council's Leisure and Support services are the undertakers (i.e. the owner responsible for its maintenance) for the City Council reservoirs and the landowner for the three EA reservoirs. Leisure services are also responsible for 26 pools (10,000 – 25,000 cubic metres) and 11 pools (under 10,000 cubic metres). The City Council is the Trustee of parks and so responsible for the maintenance costs of pools within these parks.
- 2.3.31 The reservoirs owned by the City Council are designed to protect against a rainfall event that statistically should only occur once in 10,000 years. Over topping is permitted in certain cases and the dam has to be designed and maintained so that any erosion will not undermine the stability of the dam.
- 2.3.32 Significant changes with regards to reservoirs are contained in the Flood and Water Management Act which increase regulation for reservoirs and pools; this is discussed in the next chapter.

Canal Breach and Overtopping

- 2.3.33 The Birmingham Canal Navigations system extends for approximately 160 miles. The canals converge in the city centre at Gas Street Basin.
- 2.3.34 Canals can breach or overtop as a result of elevated water levels from heavy urban runoff. When the canal system is overtopping due to inundation there is little that can be done as the canals are designed to take set amounts of water. There are water control structures to assist in water management, however these are only designed for normal levels of water.
- 2.3.35 The historical locations of canal breach and overtopping were provided by British Waterways as part of the SFRA. There have been nine canal breaches in Birmingham since 1872 (Table 1).¹⁷

¹⁶ Birmingham City Council, *Level 1 Strategic Flood Risk Assessment*, January 2010

¹⁷ For more detail see Birmingham City Council, *Level 1 Strategic Flood Risk Assessment*, January 2010, Table C.3 Appendix C



2.4 Summary

- 2.4.1 The city is at considerable risk of flooding from a range of sources, mainly river (fluvial) flooding and surface water (pluvial) flooding. The city is part of a large conurbation at the top of a river catchment, unusually for a large European city, which tend to be located on the coast or on large developed rivers. This means that when heavy rain occurs, it reaches our city very quickly. Once there, urbanisation means there is little opportunity for the water to drain naturally.
- 2.4.2 Our case studies illustrate the different problems faced in the city: properties on a flood Plain (Middlemore Road), rivers re-routed or constricted by development (Selly Park) and flood defences increasingly inadequate for the level and frequency of flooding we now experience (Witton).
- 2.4.3 There is also evidence of an increasing problem with groundwater flooding, however this has yet to be fully investigated. A geological fault bisects the city, with impermeable clay generally to the south east and permeable sandstone to the north, trapping water in the sandstone to the north. Formerly a source of water extraction, the decline of manufacturing has seen evidence of increasing groundwater levels.
- 2.4.4 The Level 1 SFRA has made a significant contribution to our understanding of flood risk in the city, but more work is needed. A Level 2 assessment is needed to investigate the condition of flood defences, the flood risk benefit and residual flood risk these provide, and identify development sites adjacent to ordinary watercourses which may be at risk of fluvial flooding.
- 2.4.5 There are of course technical solutions to some of these issues (see Chapter 4). However, it is important to note that, whilst some flooding problems can be resolved, flooding cannot be eliminated altogether. The aim of flood risk management is to make best use of the available resources to manage that risk and to mitigate the impact where flooding does occur.



3 Managing Flood Risk: Duties and Responsibilities

3.1 Introduction

- 3.1.1 Responsibilities for water and flood related issues have become increasingly fragmented since 1974. The Pitt Review addresses this and the Flood and Water Management Act aims to clarify arrangements and encourage greater co-operation.
- 3.1.2 This chapter sets out the duties and responsibilities at a national, regional and local level as they currently stand, and discusses the implications of the changes contained in the Flood and Water Management Act.

3.2 National Policy Context

- 3.2.1 In response to the growing frequency of flooding across the country, the Government set up *Making Space for Water* in 2004. The programme was set up to manage the risks from flooding and coastal erosion to reduce the threat to people and their property; deliver the environmental, social and economic benefit; and secure efficient and reliable funding mechanisms that deliver the levels of investment required.
- 3.2.2 Following on from that, the Climate Change Act (2008) required a UK-wide climate change risk assessment every five years accompanied by a national adaptation programme that is also reviewed every five years. The Act has given the Government new powers to require public bodies and statutory organisations such as water companies to report on how they are adapting to climate change.
- 3.2.3 A further policy statement, *Future Water* (2008), set out the Government's overall strategy for water, focusing mainly on water supply and provision. It reaffirms *Making Space for Water* as the basis for managing river and coastal flooding and sets out a vision for better management of surface water to address the dual pressures of climate change and housing development.
- 3.2.4 Alongside this, planning policy developed to take account of flood risk. All planning issues relating to flooding are discussed in Chapter 5.
- 3.2.5 In 2008, the Government introduced a set of National Indicators, including one directly related to flood risk management: NI189 flood and coastal erosion risk management. The rationale for this indicator is "to record the progress of local authorities in delivering agreed actions to implement long term flood and coastal erosion risk management plans".



- 3.2.6 EC Floods Directive and Flood Risk Regulations 2009 is a key piece of EU legislation which places duties on local authorities and other agencies. The Directive required member states to develop and update a series of tools for managing flood risk, in particular:
- Preliminary flood risk assessments;
 - Flood risk and flood hazard maps;
 - Flood risk management plans;
 - Coordination of flood risk management at a strategic level;
 - Improved public participation in flood risk management; and
 - Coordination of flood risk management with the Water Framework Directive".
- 3.2.7 The Flood Risk Regulations 2009 transposed the EC Floods Directive into domestic law and to implement its provisions as above.
- 3.2.8 The floods of 2007 raised the profile of flooding again, and in response the Department for Environment, Food and Rural Affairs (DEFRA), along with the Department for Communities and Local Government (DCLG), commissioned Sir Michael Pitt to undertake an appraisal of all aspects of flood risk management in England.

The Pitt Review

- 3.2.9 The Pitt Review took a comprehensive look at what went well and badly during the exceptional flooding that took place in the summer of 2007. The Review looked at how the risk of flooding can be reduced, the response to flooding when it occurs and how agencies can help people recover more quickly from flooding.
- 3.2.10 Pitt recognised the multiplicity of Acts relating to flood risk management and called for a single Act to unify all previous flood risk Acts. He looked at the organisational structures. One of his main recommendations was that local government should play a central role and establish local partnerships to manage flooding, especially surface and groundwater flooding.
- 3.2.11 Critically, Pitt emphasised the importance of working in partnership and that there should be a duty to cooperate and share information. These partnerships should be accountable and therefore proposed that Overview and Scrutiny Committees play a key role (see Chapter 7).
- 3.2.12 The report also highlighted the benefits of community resilience and recommended that the Government establish a programme to support and encourage individuals and communities to be better prepared and more self reliant during emergencies, allowing the authorities to focus on those areas and people in greatest need.
- 3.2.13 The report also looked more generally at flooding and made the point that the extreme flooding events are part of the climate change debate and that the government should consider adaptation to climate change as well as mitigation. The Review contained 92 recommendations, many of which are reflected in the Floods and Water Management Act.



The Flood and Water Management Act

3.2.14 The Flood and Water Management Bill, published by government in November 2009, gained Royal Assent in April 2010 and is intended to create more sustainable management of flood risks. It aims to clarify institutional arrangements and improve integrated approaches to flood risk management. In summary the Act:

- Requires the Environment Agency (EA) to create a National Flood and Coastal Erosion Risk Management Strategy, which a number of organisations will have to follow;
- Requires Leading Local Flood Authorities (i.e. local authorities) to create local flood risk management strategies for surface water, groundwater and ordinary watercourses;
- Enables the EA and local authorities to carry out flood risk management works more easily;
- Introduces a more risk-based approach to reservoir management;
- Enables water companies to offer concessions to community groups for surface water drainage charges;
- Requires the use of sustainable drainage systems in certain new developments for which the local authority would be the approving and adopting body;
- Introduces a mandatory building standard for sewers.

3.2.15 However, the Bill was shortened from that originally proposed, and whilst it transfers some responsibilities it does not amend existing Acts as needed. It is therefore not the single unifying Bill that Pitt called for. This means further legislation is likely in the future. There are also some major concerns around the funding assumptions, particularly for local authorities.

3.3 National Responsibilities and Duties

3.3.1 The **Department for Environment, Food and Rural Affairs** (DEFRA) has national policy responsibility for flood and coastal erosion risk management and provides funding through grant in aid to the Environment Agency. DEFRA sets targets and criteria but does not build or manage flood defences nor direct the authorities on which specific projects to undertake.

3.3.2 Operationally, the **Environment Agency** (EA) has an overall responsibility for land drainage and direct responsibilities for certain watercourses. The agency has 13,500 employees and an annual budget of more than £1.1bn¹⁸ and protecting people from flooding is one aspect of their work. The EA has powers and duties relating to:

- The drainage, maintenance and operations of main rivers;
- Maintenance of their flood defences;

¹⁸ www.environment-agency.gov.uk/aboutus/work/35696.aspx; 23rd February 2010



- Producing flood risk maps and issue flood warnings.

3.3.3 The EA is a statutory consultee to the development planning process and planning applications that affect its interests. The EA administer grants for capital projects to local authorities. A more detailed description of the powers and responsibilities of the EA can be found in Appendix 2.

3.3.4 The Environment Agency produces Catchment Flood Management Plans (CFMP) for 68 main catchments in England. These are high-level planning tools and set out objectives for flood risk management across each river catchment and estuary. A draft CFMP for the River Trent has been prepared. The EA is also producing Flood Risk Management Strategies for the River Tame (see box on page 31), the River Rea (modelling work is underway with publication scheduled for Summer 2010) and the River Cole (for which prefeasibility work has been undertaken but funding is not available to take this forward until 2012/13). These examine flood risk and proposed solutions along the Rivers.

3.3.5 Whilst this is a national organisation, they are structured on a regional basis. There are eight regions – Southern, Thames, South West, Midlands, Anglian, Wales, North West and North East – each with a Regional Office. The Midlands region extends from the Humber to the Severn Estuary, including Birmingham, Nottingham, Derby, Leicester, Stoke on Trent, Coventry, Shrewsbury, Stratford on Avon, Worcester and Gloucester, as well as the Peak District, Shropshire, Warwickshire and Worcestershire.

3.3.6 The new Act gives the Environment Agency the strategic overview role at a national level covering all aspects of flood and coastal risk management in England; they will need to produce a National Flood and Coastal Erosion Risk Management Strategy. The EA retain their operational powers relating to main rivers and the sea; however, they lose any powers over ordinary watercourses.

3.3.7 The Act also makes provisions to update the existing reservoir safety legislation. The proposed changes to the Reservoirs Act 1975 would:

- Require all reservoirs above a minimum volume capacity (10,000 cubic metres above the natural level of any part of the surrounding land) to be included on an EA register;
- Require the EA to classify each reservoir over 10,000 cubic metres according to whether they pose a threat to human life, or meet technical conditions which reduce risk to a negligible level.

3.4 Regional Responsibilities and Duties

3.4.1 The **West Midlands Leaders Board** (WMLB) is the regional decision making body for local government in the West Midlands and is responsible for regional planning. The **West Midlands Regional Flood Risk Appraisal** (RFRA) is a strategic assessment undertaken to inform planning, giving a better understanding of flood risk, particularly with regards to future development. It includes river flow (fluvial), non-river flow, surface drainage and reservoirs.



Flood Risk Management and Response

- 3.4.2 The EA are directed at a regional level by Regional Flood Defence Committees: statutory, executive committees which provide the democratic input into the EA's activities. The **Midlands Regional Flood Defence Committee** (RFDC) is responsible for:
- Maintaining or improving any watercourses which are designated as main rivers;
 - Maintaining or improving any tidal defences;
 - Installing and operating flood warning systems;
 - Controlling actions by riparian owners which might interfere with the free flow of watercourses;
 - Supervising Internal Drainage Boards (IDB).
- 3.4.3 Although most works are undertaken in accordance with national criteria there is some flexibility to meet local needs. The RFDC is made up of elected members of local authorities in the area¹⁹ and representatives of DEFRA and the Environment Agency. Members are kept fully informed of all flood risk management activities, however their influence is restricted as the Committee no longer provides the bulk of the funding for flood defence and flood risk management.
- 3.4.4 Resources for the Committee largely come from two sources: grant in aid received from the Government out of general taxation; and the local levy. The latter is an additional, locally-raised, source of income²⁰ and is used to fund projects that might not be eligible for national funding. The Midlands region raised £3 million in 2008/09, from 32 County and District Councils. The city's contribution has been set by the Environment Agency as £314,037 for the 2009/10 financial year. The levels of levy for the Midlands are broadly similar to other Regional Flood Defence Committees, being based on the number of band 'D' properties for each Authority. The local levy is included in the final settlement for the calculation of the Revenue Support Grant (RSG). Spend is based on a positive cost benefit ratio.
- 3.4.5 During our discussion with the Lead Member for the city on the RFDC, we considered the value of our contribution, both in terms of participation in the RFDC and in paying the local levy. The highest priorities have not been in the city where flooding problems have been less severe in comparison to other parts of the Midlands region. That has meant the City Council pays more than other local authorities, but does not see a return within the city's boundaries.
- 3.4.6 The Act would replace the existing Regional Flood Defence Committees (RFDCs) with Regional Flood and Coastal Committees (RFCCs). The Environment Agency would be required to obtain the consent of the RFCC for the regional programme. The committees will retain responsibility for raising the local levy, and the consent of the RFCCs will continue to be needed for the EA to raise funds through the local levy, and for spending this and other money raised locally.

¹⁹ At the time of writing, the City Council's representative is Councillor Len Clark.

²⁰ The Environment Agency have powers to raise local levies set out in the National Rivers Authority [Environment Agency] Regulations 1993 whereby, under regulation 4, they must notify Councils of levies before 15 February preceding the year to which the levies relate. The EA levy programme for all regions in 2008/09 was £27.4M



3.4.7 The Act provides for regulations to be made on the membership and functioning of the committees. It is intended to continue to require a majority of local authority representatives for decisions to raise the local levy. However, there will be potential for making changes in these arrangements if the role of the RFCCs evolves, without the need for primary legislation.²¹

Severn Trent Water

3.4.8 **Severn Trent Water** (STW) has responsibilities as the sewerage company and is responsible for the maintenance of the public sewerage system to standards agreed with the water regulator (Ofwat).

3.4.9 To prevent further flooding, water and sewer companies have a responsibility to:

- Monitor the levels;
- Prevent overloading sewer systems;
- Maintain and repair pipes to prevent further flooding.

3.4.10 Where there is frequent and severe sewer flooding, sewerage undertakers are required to address this through their capital investment plans which are regulated by Ofwat. A more detailed description of the powers and responsibilities can be found in Appendix 2.

3.4.11 The Flood and Water Management Act transfers ownership of private drains and sewers to water and sewerage companies. Severn Trent Water noted that this would significantly increase their asset base and assist the company in planning for future flood risks.

Advantage West Midlands (AWM)

3.4.12 Advantage West Midlands (the regional development agency) spent £3.5 million on a flooding recovery programme in 2007, assisting the West Midlands economy in those areas worst affected to become operational as soon as possible, raising awareness that the wider region was open for business and visitors, as well as assisting businesses establish individual recovery plans.

3.4.13 AWM informed us that they were working on a number of regional studies which are aimed at minimising the impact of flooding. They would work closely with colleagues at the Environment Agency along with the Government Office for the West Midlands (GOWM), Natural England and the Forestry Commission to map regional investment priorities (including the four Regional Funding Advice (RFA) Impact Investment Locations in Birmingham-New Street, Longbridge, Icknield Port Loop and Eastside) against flood risk to identify areas most at risk and potential opportunities for joint working to mitigate this risk.

²¹ www.defra.gov.uk/environment/flooding/documents/policy/fwmb/factsheet-rfcc.pdf; accessed 30 March 2010



3.5 Local Responsibilities and Duties

- 3.5.1 When flooding occurs, or is threatened, people often look to the local authority to take responsibility and take steps to prevent or reduce flooding. However, local authorities do not have a statutory duty to prevent properties from flooding. The powers are largely “permissive” – i.e. local authorities can undertake works in the general public interest but are not obliged to act.
- 3.5.2 In reality, most local authorities recognise the benefits of some flood defence activity. The City Council has published a Policy Statement to provide a public statement of the approach to flood and coastal defence in its area in 2003. The statement sets out a promise to “provide an adequate, economically, technically and environmentally sound approach to providing the flood defence services.”²²
- 3.5.3 In summary, the **City Council** has responsibilities encompassing a range of duties as:
- Land Drainage Authority (LDA): responsibility for natural drainage and ordinary watercourses; permissive powers associated with the prevention, mitigation and remedying of flood damage;
 - Relevant operating authority for flood defences on ordinary watercourses;
 - Highway Authority: responsible for highways drainage by means of road gullies which take surface water from roads to public sewers and culverts under roads;
 - Planning Authority: preventing development in more vulnerable areas and also in controlling flows from developments that increase general flood risk (see Chapter 5 for more detail);
 - Emergency response: the Civil Contingencies Act 2004 places statutory duties on the City Council to assess the risk of emergencies, develop emergency/contingency plans, warn the public and provide advice and assistance (see Chapter 6).
 - Land and Property owner (including owner of reservoirs, pools, brooks and watercourses) and riparian owner (i.e. owner of land bounding a river).
- 3.5.4 A more detailed description of the powers and responsibilities can be found in Appendix 2.
- 3.5.5 Under the Flood and Water Management Act, the City Council becomes a **Lead Local Flood Authority** and responsible for strategies for local flood risk management dealing with surface runoff, groundwater and ordinary watercourses. Work has commenced on these strategies, the first step being the Level 1 Strategic Flood Risk Assessment, developed in consultation with the EA, Severn Trent Water and British Waterways. The SFRA is a living document and will be reviewed in response to significant changes in planning policy or flooding data. It is publicly available and is owned by the Planning service.

²² Birmingham City Council, Policy Statement On Flood And Coastal Defence; Available at www.birmingham.gov.uk/drainage



- 3.5.6 The Act also enacts Pitt's recommendation that "Local Surface Water Management Plans (SWMP) should provide the basis for managing all local flood risk",²³ and the next step for the City Council is to draw up its SWMP. Plans to do this have been developed and £300,000 has been allocated from DEFRA for this purpose.
- 3.5.7 Operational powers in these areas would be exercised by the City Council, which would also acquire powers to carry out flood risk management work relating to surface runoff and groundwater (no organisation has these powers at present).
- 3.5.8 One of the most significant changes in the Act relates to reservoirs. Currently, the Reservoirs Act 1975 ensures that all dams with a capacity greater than 25,000 cubic metres are inspected and examined frequently. The Flood and Water Management Act widens the scope of the 1975 Act to include reservoirs over 10,000 cubic metres. This was in part prompted by the danger posed by some reservoirs falling outside the scope of the 1975 Act. For example, in June 2007 cracks were found in the walls of Ulley Reservoir (near Rotherham), prompting the evacuation of the three villages and the closure of the part of the M1 motorway. Residents from 700 homes were evacuated.²⁴
- 3.5.9 The new Act therefore revises the existing provisions in the 1975 Reservoirs Act to improve the design, construction, maintenance and inspection of all reservoirs that pose risks to human life if the reservoir or supporting dam were to fail. The Act also improves the level of inspection, design, construction, maintenance and monitoring of reservoirs on a risk based approach. In Birmingham, that means an additional 26 reservoirs and pools may be added to the 11 the City Council must currently maintain under the 1975 Act.
- 3.5.10 Funding for all these proposals remains a real concern. The City Council currently has three flood risk management budgets. The first, the Rivers and Brooks Revenue budget, was £491,063 in 2008/09. The second is the local levy payment as referred to in paragraph 3.4.4. Both of these budgets are included in the final settlement for the calculation of Birmingham's Revenue Support Grant (RSG). The third budget is the EA contract under which we carry out maintenance for Main Rivers (paragraph 2.3.8). This contract generated receipts of £380,000 in 2008/09.
- 3.5.11 An audit of the Leisure Directorate's portfolio of pools and reservoirs has resulted in a 10 year plan which identifies capital investment needs of over £5m over the next 10 years in order to keep in line with legislation. Some critical works are already being undertaken, for example at Cannon Hill Park pool to introduce flood mitigation measures at a cost of around £85,000.
- 3.5.12 There are no plans from Government to increase the RSG allocation in line with the new duties. The Government is currently relying on local authorities saving money as the sewers they currently manage pass to water companies. However, that does not take into account that fact that these

²³ A Surface Water Management Plan is a framework through which local partners with responsibility for surface water in their area work together to understand the causes of surface water flooding and agree the most cost effective way of managing the risk. DEFRA, Surface Water Management Plan Technical Guidance (2009)

²⁴ Yorkshire Post 26 June 2007; BBC News Online 26 June 2007



Flood Risk Management and Response

savings are, at best, difficult to identify, and in practice have already been made – in other words, local authorities have not tended to have a budget for this for many years and little maintenance is currently carried out. These concerns have been raised with the Government. However, the latest indications from the Government seem to be that it is for local authorities to determine what their priorities are and direct spend accordingly. This will be a major challenge for local authorities across the country. Since the Act gained Royal Assent, the Government agreed with the Local Government Association (LGA) to look again at funding.

3.6 Private Land Owners

3.6.1 **Land owners**, both public and private, have duties and responsibilities for land drainage including maintenance of watercourses as riparian owners (owners of the banks of watercourses). Riparian owners are often unaware of their responsibilities (which include maintaining river beds and banks; allowing the flow of water to pass without obstruction; and controlling invasive alien species such as Japanese knotweed) and reluctant to accept them in many cases. **Individual property owners** have responsibility for their own piped drainage infrastructure.

3.6.2 It is important to note that the City Council do not normally accept responsibility for the maintenance of flood defences on private land, this is the responsibility of the landowner.

3.7 Working with Partners

3.7.1 Overall, both Pitt and the new Act place an emphasis on co-operation and data sharing. Birmingham is already making some progress in this area, particularly with the formation of the Birmingham Water Group, which brings partners together to co-ordinate flood risk management within Birmingham.

3.7.2 The main members are City Council Drainage Engineers, Severn Trent and the Environment Agency, along with officers from Planning, BRT and Be Birmingham (climate change, adaptation). Others are involved depending on the issue at hand, for example the River Cole Flood Risk Management Plan involves Solihull MBC. Terms of reference are currently being developed.

3.8 Summary

3.8.1 The Flood and Water Management Act aims to clarify the duties and responsibilities around flood risk management. However, the Act does not fully codify flood risk management legislation nor capture all the issues raised by Pitt, and it is widely expected that further legislation will be brought in the future to unify all previous Acts.

3.8.2 The proposed changes do give a much stronger and clearer role for local authorities. However, the additional responsibilities, along with the apparent lack of funding, will require the City Council to look again at the priority flood risk management receives and how these challenges will be met.



4 Managing Flood Risk: Technical Responses

4.1 Introduction

4.1.1 There are many ways in which flooding in an area can be prevented or alleviated. Local flooding may be dealt with by means of traditional drainage techniques such as embankments. However, there are also drawbacks to some of these methods, and increasingly the emphasis is on sustainable drainage techniques and other methods of managing water overflows. This chapter will look at how both approaches are being used in Birmingham.

4.2 Maintenance

4.2.1 In looking to reduce the risk of flooding, we should not overlook the obvious: the city's numerous watercourses, culverts and sewers need regular maintenance to ensure water can flow through freely, as intended.

4.2.2 The City Council undertakes maintenance of watercourses and culverts, including:

- Removal of silt, vegetation and urban debris and other routine maintenance works to culverts;
- Removal of vegetation from dam embankments and overflows;
- Fabrications of new grill structures, steel walkways and handrails; repairs to retaining walls, footbridges, sluices and fences; plus other minor flow improvement works.

4.2.3 The entrances to culverts are generally protected by metal grills to prevent debris from entering. Without the grills there is the possibility of a major internal blockage that could, even with a small watercourse, cause significant local flooding. These do however present an inherent risk and there is a programme of inspection and maintenance of the grills. The frequency of inspection is quarterly, monthly or weekly dependent upon vulnerability to blockage and resultant flood risk.

4.2.4 The City Council is currently contracted by the Environment Agency (EA) to undertake maintenance of some main rivers, including the removal of debris and encroaching trees and bushes.

4.2.5 Within Leisure services, Grounds Maintenance staff work to keep brooks free from litter to allow water to flow, at a cost of approximately £551,000.²⁵

4.2.6 The City Council as the Highway Authority has a duty to maintain the public highway and this includes highway drainage, via gullies which drain into the sewer. These are checked and cleansed

²⁵ During 2008/09; Evidence presented to Review Group by Environment and Culture Directorate on 21st January 2010



Flood Risk Management and Response

at regular intervals, a minimum of once per annum but more frequently in roads taking higher levels of traffic. Often this is made difficult by residents parking along the road.

- 4.2.7 The City Council will enter into a 25-year contract for highway maintenance and management services from June 2010 (the 'Highway Maintenance and Management Private Finance Initiative (PFI)'). This means that maintenance of the city's highway infrastructure (including highway drainage) will be carried out by a private sector partner (Amey plc). This contract specifies standards to be met, including maintenance responsibilities for network drainage. For example, the contract requires that the road network should be 'free from standing water'. This means that highway drainage should be clear and functioning properly under normal conditions. To achieve this, Amey have committed to:
- A programme of cleaning gullies to a certain frequency – the same or better than currently provided;
 - Having staff on hand to resolve problems with drainage;
 - A periodic inspection regime to identify problems before they occur.
- 4.2.8 Responsibility for street cleansing will remain with the City Council. The City Council will remain as the Highway Authority and Land Drainage Authority.
- 4.2.9 Other areas of the City Council are also involved in clean-ups, such as the Constituencies, often with the support of the local community. Maintenance is also carried out by private landowners and Registered Social Landlords (RSLs), for example the Bournville Village Trust have routine inspections of the three streams on their land every two or three weeks depending on the location and clear any debris and blockages.
- 4.2.10 Blockages and debris in watercourses are often the result of fly-tipping and littering. The City Council and the EA have powers to investigate and prosecute fly-tippers.
- 4.2.11 The SFRA reports that Severn Trent Water reported that they will be undertaking a five year capital investment programme to resolve known sewer flooding problems.

Capacity of Infrastructure

- 4.2.12 Capacity of sewers and storm drains can also be an issue. Many drains and culverts are original and not designed to cope with the intensity/frequency of rainfall that is often now experienced. There is a recognised practical standard of design capacity for highway drainage. These can however be exceeded for short periods, and sometimes the receiving public sewers have inadequate capacity, both of which cause flooding.
- 4.2.13 It is argued that it is neither practical nor desirable in many cases to increase the rate of runoff from highways as the increased flows will simply add pressure to sewer networks and/or flows to watercourses increasing the risk of river flooding. Diffuse short term storage of heavy rainfall on the highway may be desirable in many cases (in flood defence terms) provided that it drains away under normal circumstances.



4.3 Flood Defences and Drainage Systems

4.3.1 Although the focus of flood risk management is now shifting from traditional flood defence measures to other sustainable methods, there are many that have been built in the past and cases where it is appropriate to build more. The SFRA states:

Flood defence embankments are in place along some of the rivers and in some places provide protection from flooding up to an annual probability of 1 in 100 Year (1% AEP). The majority of the flood defences only offer a standard of protection of 1 in 50 Year (2% AEP) or less. In addition to the formal defences there are numerous informal defences in private ownership where responsibility for maintenance lies with the riparian owner and the standard of protection and maintenance regimes are unknown.²⁶

4.3.2 Defences include man-made channels or culverts to increase flow, walls to stop water over-topping onto the street, embankments to restrict flood water flow and inlet weirs. These are maintained either by the EA, such as the Brookvale Road wall or the City Council, such as the bund along the River Rea at Middlemore Road (as riparian owner).

4.3.3 The City Council is responsible for ensuring that appropriate maintenance regimes are in place for flood defences for which the City Council takes responsibility.²⁷ Where the responsibility for maintenance rests with a landowner, the City Council will aim to secure co-operation in ensuring appropriate maintenance takes place, drawing on enforcement powers if necessary.

4.3.4 The City Council has recently completed flood alleviation works on the River Rea between Tessall Lane and the Worcester and Birmingham Canal downstream of Pershore Road in the south of Birmingham. In the maintenance programme the City Council has given priority to essential repairs to structures and clearing excess silt in the Rivers Rea and Cole.

4.3.5 Flood Risk Management Strategies are being developed to gain agreement on how existing flood defences will be repaired and improved to reduce flood risk. The most advanced of these is for the River Tame and details are set out in the shaded box (page 38).

²⁶ Birmingham City Council, *Level 1 Strategic Flood Risk Assessment*, January 2010, p92

²⁷ Birmingham City Council, *Policy Statement On Flood And Coastal Defence*



Flood Risk Management and Response

Case Study: Transforming Spark Brook²⁸



Spark Brook was one of the most polluted stretches of water in the city. The problems with the brook were typical of issues afflicting waterways in many cities. Household water had entered the brook from kitchen appliances, showers and toilets which were connected to the wrong drain pipes allowing foul water to enter the brook through surface water sewers. Also blockages caused by fly-tipping, litter and debris prevented the brook from flowing freely, aggravating the decline in water quality and creating stagnant water that produced a noxious smell.

Birmingham's Environmental Partnership (EA, Severn Trent Water, CSV Environment and the City Council) together with the help of local agencies has transformed the brook, which is now healthier and become a popular recreation area for local residents.

This was achieved by focusing on clearing the brook of debris, rubbish and polluting sludge to allow the water to flow freely – measures which also help to reduce flood risk, distributing leaflets, and contacting householders and businesses that had misconnected their drainage pipes urging them to correct this.

Storing Water

- 4.3.6 Another form of flood defence is to have facilities for the temporary storage of flood water during high flows. These can either be underground storage facilities or using parks or other open spaces where minimal damage would be caused by standing water.
- 4.3.7 Both options would provide space for flood water to drain to an area in order to mitigate the impact of flooding on surrounding and/or downstream properties. In the case of using open spaces, such alterations could also be used to improve the amenity and environmental value of the remaining open space.
- 4.3.8 One example of this in the city is the use of Perry Hall Playing Fields to reduce the risk of flooding downstream of the River Tame. This area is designed to enable it to hold up to 156,000m³ of water during extreme rainfall events, and the EA plan to make improvements under the River Tame Flood Risk Management Strategy.
- 4.3.9 Another example is Wychall Reservoir, which is used to take increased flow from the River Rea. It has been adopted by the City Council, along with the nearby Merecroft Pool, as a local nature reserve. A low level of water is maintained with the drained area a combination of meadow, woodland and reedbed. The Friends of Kings Norton Nature Reserve act as an informal pressure group to lobby for environmental improvements in and about the reserve.
- 4.3.10 Other areas of the city are also looking to create wetlands. In Hall Green Constituency, there is a disused allotments site which is being considered. Although a recent bid for European funding was not successful, the Constituency is continuing to work with partners (including the EA and Natural England) to pursue the scheme.

²⁸ www.lga.gov.uk/lga/core/page.do?pageId=8814575



River Tame Flood Risk Management Strategy

The River Tame Flood Risk Management Strategy splits the catchment area into “flood cells”. Those that are within Birmingham’s boundaries will be subject to the following defences:

- Maintain existing flood defences to achieve current flood risk management;
- Optimise existing storage areas;
- Localised improvements (e.g. raising existing defences).

These include maintaining channels; amending storage areas to make them more effective; and raising some defences, for example around Brookvale Road in Witton.

The Strategy looks at four areas within the city:

- Newtown and Hamstead: currently no properties at risk of flooding from a flood event with a 1% annual probability of occurrence
- Perry Barr and Witton: existing defences currently reduce the risk of flooding for 151 properties. The EA’s proposals will reduce the flood risk for a further 864 properties. These proposals include:
 - A new flood embankment defences (replacing those that need improving) on the left (north) bank in the Regina Drive area of Perry Barr;
 - Replacement of existing flood walls along the Tameside Drive area of Witton with new walls of increased height (approximately 1 metre high) and along the Brookvale Road area of Witton with new, higher walls, between 1 metre and 2.5 metres high;
 - Removal of restrictions at Brookvale Road and in Meteor Park (Nechells), including investigating whether we can remove or alter key bridges.
- Gravelly Hill and Bromford: existing defences currently manage the risk of flooding for 2,160 properties in Gravelly Hill and Bromford, with proposals to reduce the flood risk for a further 1,239 properties. These include:
 - Remove flow restrictions at Star City;
 - Raising the height of existing defences on the right bank to manage flood risk in Bromford;
 - A series of flood walls and an embankment to protect the area of Castle Vale on the left bank of the River Tame.

The Tame Strategy has now been adopted. Work is underway to produce Project Appraisals for the individual projects within the strategy with a view to spending £50m over the next 5 years to reduce risk of flooding from the Tame. It is not yet possible to split this down into how much will be spent within Birmingham City but with works planned to optimise existing storage areas and improve defences to the Perry Barr, Witton, Bromford and Castle Vale areas spend in Birmingham will clearly be a significant part of the £50 million.



- 4.3.11 A further scheme is being explored in Stirchley: to create a “wetland” area to enhance the environment and divert water as an overflow or emergency reservoir for excess water which would otherwise enter the River Rea and has resulted in serious flooding in Ripple Road and Selly Park. Funding options are being explored but the strategy for the River Rea awaits the results of EA modelling.
- 4.3.12 Underground storage is another option. Increased flow of water could be directed to, and stored in, oversized pipes or tanks which use a flow control mechanism to discharge to an agreed rate once the main hazard has passed. However, these should be approached with some caution. Severn Trent Water made reference to the use of storage tanks for overflows and it was pointed out that there were costs associated with water treatment and energy use. The impact of this approach on carbon emissions was an issue being raised nationally.

Sustainable Urban Drainage Systems (SUDS)

- 4.3.13 These latter methods are some of the options available when considering installing Sustainable Urban Drainage Systems (SUDS). SUDS are a sequence of management practices and control structures designed to drain surface water in a more sustainable manner. They aim to “mimic the natural drainage processes by reducing the quantity and improving the quality of surface water before it enters a watercourse; and may also be used to provide opportunities to improve local biodiversity and amenity”.²⁹
- 4.3.14 The SFRA sets out the benefits of SUDS as against traditional drainage and these are summarised in Table 3.

Table 3: Traditional Drainage and Sustainable Urban Drainage Systems

Traditional Drainage	SUDS
Run-off from hard paving and roofing can increase the risk of flooding downstream, as well as causing sudden rises in water levels and flow rates in watercourses	Reducing peak flows into the receiving watercourse / sewer, and potentially reducing downstream flood risk
	Reducing the volume of water flowing directly to the receiving watercourses / sewer from the development
Surface water run-off can contain contaminants such as oil, organic matter and toxic metals	Improving water quality through the removal of pollutants from diffuse pollutant sources
By diverting rainfall to piped systems, water is stopped from soaking into the ground, depleting groundwater and reducing flows in watercourses in dry weather	Reducing potable (drinking) water demand through rainwater harvesting
	Replicating natural drainage patterns including the recharge of groundwater
Many urban watercourses are lifeless and unattractive, and are often hidden in culverts under the ground	Improving amenity through the provision of public open space and habitat

²⁹ Birmingham City Council, *Level 1 Strategic Flood Risk Assessment*, January 2010, p.89



4.3.15 Measures that could be used include:

- Swales and basins, including infiltration trenches, basins and filter drains;
- Permeable pavements; depending on ground conditions the water may infiltrate directly into the underlying subsoil, or be drained through into a sub-surface storage area;
- Pond and wetlands;
- Rainwater harvesting, water butts and other green roof drainage and technology;
- Using urban trees in the urban hydrological cycle and where integrated into a SUDS scheme may contribute to minimising the size of features such as ponds;

4.3.16 Retro-fitting of SUDS to existing drainage systems may also need to be considered, particularly for brownfield sites where existing site constraints may be restrictive. The City Council had retrofitted sustainable urban drainage systems (SUDs) in some areas of the city, for example in allotment gardens and to urban fringe areas in response to flooding problems.

4.3.17 It is important to consider the use of SUDS at an early stage of any development, particularly as the options available will depend upon soil conditions and hydrology of the site.

4.3.18 Whilst the desirability of these schemes is clear, we did receive some words of warning. Firstly, these are difficult to retro-fit in dense urban areas. It is also the case that not all areas in the city would be suitable due to the underlying geology. Maintenance costs should also be considered early on.

4.3.19 There has not as yet been a huge take-up of SUDS, and the Flood and Water Management Act seeks to address this by clarifying responsibility for the adoption and maintenance of SUDS. The new Act includes the provision that the SUDS 'approving body' (SAB), which will generally be the local authority, will be required to approve most types of rain-water drainage systems before work can start. There is also provision to enable the relevant Minister to make regulations about the timing and procedure for determining applications for approval, and to specify what should happen if the timetable set is not complied with. This is to ensure that the SUDS approval process is fully in line with the timetable for determining planning applications. The SAB must then adopt any drainage system which satisfies the conditions set within the Act.

Property Level Protection

4.3.20 There are areas where we know flooding may occur and householders are encouraged to protect their properties. Property owners at risk of flooding may protect their properties by installing flood resistance measures – for example in Ripple Road in Stirchley, where there is a recurring problem with surcharging sewers when rainfall is high, Severn Trent Water have fitted sealable gates (where residents have agreed) to prevent water entering front gardens. The City Council has been involved in providing property level protection: for example national grants were received to install door stops and air brick covers in Northfield and Witton (which the City Council bid for and then delivered).



- 4.3.21 Owners can also make their properties more resilient by ensuring electrical sockets and wires are above expected water height and concrete floors are used which would not need replacing. It should be noted that most of the resistant measures require active deployment and therefore a Flood Warning. Many homes at risk of flooding in Birmingham are not covered by EA warnings.

4.4 Summary

- 4.4.1 Traditional drainage is designed to move rainwater as rapidly as possible from the point at which it has fallen to a discharge point, either a watercourse or soakaway. The move to SUDS means more account will be taken of the natural flow of water – which as we saw in Selly Park can be critical. The approach also takes account of the environmental and amenity benefits to be gained. Sustainable drainage methods do not simply move the problem elsewhere.
- 4.4.2 However, traditional drainage techniques are still a valuable tool and improved flood defences and watercourse maintenance will always be necessary.
- 4.4.3 All these approaches can involve difficult decisions, such as sacrificing land to water storage, such as has happened in Perry Hall Park. As we have already mentioned, protecting all properties from all flood water all the time is not a realistic expectation and so we must accept that some areas will flood and prepare accordingly. We will look at some of these issues in Chapter 6. In the next chapter, we will consider some of the decisions that must be taken at the first stage when planning developments.



5 Planning and Development

5.1 Introduction

5.1.1 To protect communities and properties from flooding, consideration of flood risk to developments is taken into account as part of the planning process. This can mean deciding not to build on a piece of land, designing appropriate drainage systems or building in alleviation measures. This chapter looks at national, regional and local planning policy in relation to flood risk management.

5.2 Planning Policy Context

National Planning Policy

5.2.1 National planning policy is set out in a series of Planning Policy Statements (PPS). The key PPS relating to flooding is Planning Policy Statement 25 – Development and Flood Risk (PPS 25). Published in 2006 (and updated in March 2010), this intends to ensure that “flood risk is taken into account at all stages of the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. However, where new development is necessary, the policy seeks to mitigate the risks of flooding and where possible, reduce the overall flood risk.”³⁰ This includes stronger guidance on Flood Risk Assessments, including the mapping of areas of ‘low’, ‘medium’ and ‘high’ risk (see Table 4), and two tests:

- A Sequential Test: a risk based approach that aims to steer new development or redevelopment to areas at the lowest probability of flooding (Flood Zone 1);
- An Exception Test: A requirement for justification for a development application within Flood Zones 2 and 3, which could include instances where a blanket ban on development would cause extensive social and economic blight.

5.2.2 Two other PPS’s related to managing flood risk are:

- Planning Policy Statement 1 – *Delivering Sustainable Development*: includes the principle that sustainability is considered for the lifetime of new development, taking account of the physical environment and impacts of climate change. This means identifying any natural hazards in an area being considered for development, and ensuring the design accommodates these;
- Planning Policy Statement 3 – *Housing*: encourages local authorities to take account of the constraints of the physical environment and natural hazards, such as flooding, when identifying broad locations for housing development.³¹

Table 4: Flood Zones (PPS 25)

³⁰ Birmingham City Council, *Level 1 Strategic Flood Risk Assessment*, January 2010

³¹ Information from Birmingham City Council, *Level 1 Strategic Flood Risk Assessment*, January 2010



Flood Risk Management and Response

Flood Zone	Objectives
Flood Zone 1 - Low Probability	Area with less than a 1 in 1000 annual probability of flooding in any year (<0.1% annual exceedance probability (AEP))
Flood Zone 2 - Medium Probability	Area having between a 1 in 100 and 1 in 1000 probability of flooding in any year (1% -0.1% AEP) annual
Flood Zone 3a - High Probability	Area with an annual probability of less than or equal to 1 in 100 annual probability of flooding in any year (>1% AEP)
Flood Zone 3b - Functional Floodplain	An area of floodplain connected to the river and therefore can provide storage and/or a flow route for floodwaters. Land which would flood with an annual probability of 1 in 20 or greater in any year (5% AEP).

West Midlands Regional Spatial Strategy (RSS)

- 5.2.3 The **West Midlands Leaders Board** (WMLB) is the regional decision making body for local government in the West Midlands and responsibility for regional planning and the RSS. The RSS is the key over-arching regional document, which provides a long term land use and transport planning framework for the region. The RSS has policies on climate change, vibrant urban villages/sustainable communities, and sustainable design and construction.
- 5.2.4 The RSS sets out proposed development, with proposed housing allocations. Birmingham (with Solihull) is one of nine Growth Points in the West Midlands. Since the RSS was agreed in 2007, the Government have put forward proposals for an additional 12,500 to 80,000 houses in the region.
- 5.2.5 Whilst some reference is made to flood risk management within the document, the West Midlands RSS was the only RSS in the country that did not contain a Flood Risk Policy, despite local authorities' requests for that to be included. This was addressed as part of the Examination in Public, held between 28th April and 24th June 2009.
- 5.2.6 During this, the Environment Agency argued strongly that "new water-related policies were needed now to support the level of development proposed in Phase 2 and that without this the RSS would be unsound". A policy was therefore inserted as follows:

Fluvial and Surface Water flooding is a significant risk across the West Midlands Region. Groundwater flooding will be an increasing risk in the future. Policies should aim to ensure that new developments and residential properties are located where there is no or little risk from all potential sources of flooding as far as possible unless there is overwhelming technical evidence to support an alternate approach.³²

³² West Midlands Regional Spatial Strategy Phase Two Revision, Report of the Panel: Volume 1 - Report September 2009, Examination in Public, 28th April – 24th June 2009.



5.2.7 The **West Midlands Regional Flood Risk Appraisal (RFRA)**, undertaken in 2007 and updated in 2009, is the strategic risk assessment undertaken to inform the RSS, and is intended to give a better understanding of flood risk, particularly with regards to future development. It includes river flow (fluvial), non-river flow, surface drainage and reservoirs.

Local Development Framework

5.2.8 The RSS sets the direction for local planning policy, which is contained within the **Local Development Framework (LDF)** documents. This includes the **Core Strategy**, which will set the vision and objectives for the future of the city and will be a city-wide spatial strategy.

5.2.9 The Core Strategy is under development. The Issues and Options Paper has been published, which sets out a vision of the city with objectives for the growth of Birmingham over the next twenty years. This will provide the foundation to develop the "Preferred Option" and to guide the development of the policies which will make up the Core Strategy. Further details will be published during this summer for consultation.

5.2.10 The Issues and Options Paper set out the following different levels of growth:

- Option 1 – 50,000 dwellings: this involves a continuation of existing policy approaches.
- Option 2 – 55,000 - 60,000 dwellings: a more radical change in certain areas in particular the 'Eastern Corridor'; a more relaxed approach to existing policies protecting employment land, open space and mature suburbs; and the development of three suburban centres;
- Option 3 – up to 65,000 dwellings: including extensions of the urban area into areas currently designated as Green Belt, possibly including areas within Worcestershire and Staffordshire.³³

5.2.11 In early 2007 the City Council, through the Birmingham Prospectus, proposed the City's "Growth Agenda" – the proposal that the city's population should grow by up to 100,000 over the subsequent twenty years. The Co-ordinating O&S Committee completed a Scrutiny Review of that work in 2009, focusing on the need to ensure quality of life alongside growth. That report made it clear that quality of housing will be important. The first report on progress against implementation was presented to the Co-ordinating O&S Committee in April 2010, and reported that policies for inclusion in the Core Strategy are currently being drafted to meet these demands.

5.2.12 The Core Strategy will be subject to a sustainability appraisal and a strategic environmental assessment. At this stage a Sustainability Appraisal Scoping Report and an Interim Sustainability Appraisal of the Core Strategy Issues and Options will be completed. The SFRA is an important part of the evidence base for the preparation of the LDF and the Core Strategy. The Level 2 SFRA will look at proposed development sites in locations with identified flood risk issues.

³³ Report to Birmingham City Council Cabinet, 28th July 2008



5.3 Development Control

- 5.3.1 The City Council, as the Planning Authority, will determine planning applications in line with planning policy. Planning permission can be refused if development increases the risk of flooding.
- 5.3.2 We received evidence from the City Council's Planning Management function. They informed us that all planning applications are assessed on their individual merit, against national and local policies, and where appropriate on the basis of public participation comments, and expert opinion from consultees, either statutory or non-statutory.
- 5.3.3 For flood risk matters, the City Council will consult the Environment Agency (EA). The EA provide all local authorities with a plan indicating flood risk areas. This plan is included within the electronic geographical mapping information, and flood risk is automatically identified when applications are registered. The EA are then consulted as a statutory consultee for applications according to the guidance in PPS 25. This can be summarised as all applications within flood risk areas 2 and 3, and for developments of over a hectare in flood risk zone 1. In addition, there are requirements for any application of over 10 houses, and in critical drainage areas.
- 5.3.4 For applications with flood risk potential, there is a requirement through the validation criteria for the applicants to submit a flood risk assessment. This will be supplemented by a sequential test assessment in high risk cases (usually for residential development), and will be considered by the EA (see paragraph 5.2.1).
- 5.3.5 We were informed that the City Council has not approved any applications where there is an objection from the EA. If an application was recommended for approval against the advice of the EA, it would first have to be referred to the Secretary of State, and the EA could advise a "Call In". The Secretary of State could grant planning permission, overruling the EA advice, although the city has not been in that position.
- 5.3.6 Also, when new developments are proposed or sites are to be redeveloped, planning officers ensure that the level of flood risk in the area was reduced by promoting good practices, such as rainwater harvesting.
- 5.3.7 New planning regulations have been introduced specifically to address some issues of runoff from hard surfaces. From October 2008, an application must be made for planning approval for any proposed new impermeable driveway that will drain to the highway.

Supplementary Planning Guidance on Flooding

- 5.3.8 The City Council has developed a Supplementary Planning Document (SPD) for development in flood plains as an outcome of the Sustainable Drainage infrastructure and Sustainable Management of Urban Rivers and Floodplains (SMURF) research project undertaken with the EA and other parties. This was adopted on the 25th June 2007 by the City Council's Cabinet following extensive public consultation. The purpose of the document is:



- To provide guidance for developments located within river corridors and brook courses in Birmingham;
- Provide policies that will encourage land-use planning to be better linked with water management, access and the visual amenity of river corridors;
- To manage development on bank-side locations in a sustainable way for both the community and river ecology;
- Be consistent with the objectives of the Water Framework Directive (WFD).³⁴

Building Standards and Retro-fitting

- 5.3.9 Building standards are also important, to ensure new developments enhance water management, rather than harm it. There are initiatives within the industry to address this. For example, Building for Life is a partnership between several national agencies. It is led by CABI (the Commission for Architecture and the Built Environment) and the Home Builders Federation. The Building for Life national standard has twenty criteria, including "*Does the development have any features that reduce its environmental impact?*" This includes measures for sustainable homes including using sustainable drainage systems.
- 5.3.10 The City Council is on target to deliver 95% of its 65,000 properties to the Decent Homes standard; however this does not refer to flood prevention measures. Nevertheless, the Urban Design service (within the City Council) has been retro-fitting council housing stock to make them more sustainable, including better insulation, links to sustainable heat and power sources but also taking into account water management (in areas at risk of flooding).

5.4 Growth and Development in Birmingham

- 5.4.1 We have seen in earlier chapters how decisions about development can have a serious impact both on the vulnerability of that development to flooding, for example Middlemore Road in Northfield. However, we should remember that not all development is bad in this context: the development at Longbridge following the closure of the MG Rover plant, is, in the words of the Area Action Plan "the biggest regeneration scheme in the West Midlands and one of the largest in England". It involves the re-development of over 140 hectares of land, aiming to yield up to 10,000 jobs across a wide range of sectors.
- 5.4.2 The development itself will include Sustainable Urban Drainage Systems (SUDS) and the re-design of the River Rea corridor to minimise flood risk, as well as maximising the opportunity for ecology and habitat creation and leisure use.

³⁴ Birmingham City Council, *Sustainable Management of Urban Rivers and Floodplain Supplementary Planning Document*, June 2007



Flood Risk Management and Response

- 5.4.3 Both the emphasis on SUDS in the new legislation and the detailed information contained within the SFRA will assist future developments to take a similar approach. The SFRA identifies a number of development sites at risk of flooding.
- 5.4.4 In total, there are 862 potential development sites within the city boundary, and these were analysed to identify which flood zone they fall within, to identify which types of development would be appropriate and ascertain where an Exception Test would be required. Of these, 554 were found to be at risk of either fluvial, surface water or groundwater flooding, or were located within 250 metres of an historic flooding record.
- 5.4.5 There are also “windfall sites” (potential development sites which have not yet been determined) and these were not considered as part of the SFRA. The Sequential Test will need to be carried out for windfall sites and, if necessary, the Exception Test at the planning application stage.
- 5.4.6 This was a major concern. During the course of our evidence gathering we did learn of one site offered for development within the city being rejected because of flood risk. This will be of major concern for both public and private sector bodies looking to locate in the city.

5.5 Summary

- 5.5.1 PPS 25 now ensures flood risk is considered at all stages of the planning and development process from regional plans, to local plans and individual site development. In flood-risk areas, the City Council now has a duty to consult the EA (the body with statutory responsibility for flood management and defence) on all planning applications in areas of flood risk and where critical drainage problems exist.
- 5.5.2 The local authority as planning authority has an important role in understanding flood risk and gauging the constraints that places upon development, preventing development in more vulnerable areas and also in controlling flows from developments that increase general flood risk.
- 5.5.3 The importance of flood risk management is therefore well established throughout the development process. This does create further pressures on resources as drainage experts spend more time with planning officers and developers to ensure issues are dealt with at an early stage.
- 5.5.4 Understanding flood risk in the city is advancing, with the publication of the Level 1 Strategic Flood Risk Assessment (SFRA) and the proposed level 2 SFRA will look primarily at proposed development sites in locations with identified flood risk issues.
- 5.5.5 It was noted during our evidence gathering that guidance and policy tends to focus on single developments or single applications but a key issue is the cumulative effect of growth and urbanisation on the natural landscape. However, we have also seen that not all development is bad; it can bring real benefits to an area, reducing flood risk, providing measures are taken at the earliest stage.



6 Response and Resilience

6.1 Introduction

6.1.1 The Civil Contingencies Act 2004 (CCA) is the key piece of legislation relating to emergency situations and this places statutory duties on the City Council, along with other agencies, to:

- Assess the risk of emergencies occurring and use this to inform contingency planning;
- Put in place emergency plans and Business Continuity Management arrangements;
- Put in place arrangements to inform the public about civil protection matters and maintain arrangements to warn, inform and advise the public in the event of an emergency;
- Share information with other local responders to enhance co-ordination;
- Co-operate with other local responders to enhance co-ordination and efficiency; and
- Provide advice and assistance to businesses and voluntary organisations about business continuity management (Local Authorities only).³⁵

6.1.2 The City Council has an Emergency Response Plan that specifies how the City Council will respond to any incident. This is prepared, maintained and activated by the Birmingham Resilience Team (BRT). There are a number of other plans for dealing with specific emergencies/elements of response including the Multi Agency Plan for dealing with Flooding Incidents and Rest Centre protocol. The BRT also leads on Multi-Agency Recovery planning.

6.1.3 The City Council maintains a number of duty officers across Directorates which ensures services can respond to emergencies occurring out of hours.

The Birmingham Resilience Team (BRT)

6.1.4 The BRT was established to provide professional corporate support to ensure organisation-wide compliance with the CCA. BRT activities include:

- Ongoing development of emergency and contingency plans (including the generic City Council Major Emergency Plan) and a wide range of specific plans and procedures, including Business Continuity and Recovery Plans;
- Development and delivery of a comprehensive training and exercising programme for City Council officers and with emergency response partners, business communities, voluntary sector and community representatives;
- Provision of a 24/7 emergency duty officer system to provide a single point of contact for emergency services and other responders (for minor and major emergencies);

³⁵ www.cabinetoffice.gov.uk/ukresilience/preparedness/ccact.aspx



Flood Risk Management and Response

- Maintenance of a well developed response capability in terms of equipment and resources (CECC, mapping, contingency communications systems, etc);
 - Development of an extensive programme of activities to engage communities and promote preparedness to staff and citizens;
 - Partnership liaison and co-operation with resilience colleagues from other agencies.
- 6.1.5 The BRT currently has 12 members of staff which includes officers from the City Council, the Police and Fire Services, and the National Health Service (NHS) hosted and based in the Council House.
- 6.1.6 The BRT have also engaged a wider group of officers from agencies that have a role to play in emergency planning, response and recovery. These include government agencies, transport providers, voluntary groups and community and faith groups.
- 6.1.7 Advice and guidance to communities and businesses on specific risks including flooding is available on the BRT website www.birminghamprepared.gov.uk. This includes advice on preparing emergency kits and the Environment Agency's flood warning system.

Constituencies

- 6.1.8 Following the floods in 2008 steps were taken to develop the Constituency role regarding flooding in consultation with the Birmingham Resilience Team (BRT) and other partners to provide for:
- A nominated Lead Officer with responsibility for flood planning co-ordination across the Constituency or within a specific area;
 - Constituencies to have responsibility for engaging with communities and developing and sustaining, where appropriate, flood plans and arrangements.
- 6.1.9 More recent revised arrangements require Constituencies to have dedicated officers to respond to flooding emergencies by having Constituency officers work alongside Forward Emergency Control Officers at the scene and have a link officer working within the Council Emergency Coordinating Centre. This approach ensures there is appropriate Command and Control with the benefit of local knowledge, contacts and experience.
- 6.1.10 The Constituencies also have a key role to play in supporting the recovery, after a flood, including co-ordinating clean-ups, assisting vulnerable residents and providing advice and information.

Role of West Midlands Police and West Midlands Fire Service

- 6.1.11 Both the Police and Fire Service play significant roles in the multi-agency response to emergencies. In a flood emergency the Police, unless otherwise agreed locally, will co-ordinate the multi-agency response. Both agencies second officers into the Birmingham Resilience Team.
- 6.1.12 In major flood events, emergency services resources can be stretched. As "blue light" services, the Police and Fire Service priority will be to save life and maintain their core business. Therefore, resources will be prioritised based on need i.e. it is unlikely that Police Officers will be available to police road closures due to flooding. Similarly, resources for flood rescue by the West Midlands



Fire Service are limited. Clarity for the public about the emergency services role in a flooding emergency is therefore critical, for example we were told that pumping out water from basements was outside the remit of the emergency services.

Role of the Environment Agency

- 6.1.13 The Environment Agency is largely involved in strategic planning which involves consultation with local residents and Elected Members, for example the River Tame Flood Risk Management Strategy.
- 6.1.14 At a local level the EA also contribute to Flood Action Groups (FLAGs) and have been involved in promoting the flood alert service. Examples of local support also include supporting the Constituencies with flood awareness days (Perry Barr and Northfield).
- 6.1.15 The primary areas of responsibility with regards to responding to flooding are:
- Flood forecasting and the issue of flood warnings from the Area Incident Room, a 24/7 service, including monitoring of river levels and river flows, monitoring of predicted and actual rainfall and monitoring of soil moisture deficit in the catchment (i.e. the amount of rain the catchment can absorb before becoming saturated);
 - Ensuring that Emergency Services and other professional partners are well briefed on the likelihood and implications of flooding;
 - By local agreement, once it has ensured that its own systems and defences are secure, can then support the Emergency Services and Local Authority;
 - The Floodline service – a 24 hour helpline providing general information and advice on flooding, as well as registration to the Floodline Warnings Direct Service and information on the flood warnings currently in force.

6.2 In a Flooding Emergency

- 6.2.1 On Friday 5th September 2008, heavy rain was forecast and flood warnings were received. Over the course of that weekend, the City Council and emergency services received calls about flooding in 17 wards:

Bartley Green	Hall Green	Selly Oak	Tyburn
Billesley	Harborne	Shard End	Weoley
Bordesley Green	Kings Norton	Sparkbrook	
Bournville	Longbridge	Springfield	
Brandwood	Northfield	Stechford and Yardley North	



Flood Risk Management and Response

Table 5: Events over the weekend of 5th September 2008

Friday 5th September	
<ul style="list-style-type: none">• Emergency Planning Duty Officer (EPDO) monitoring;• 16:00 hours: BRT staff briefed and rota confirmed;• Warnings:<ul style="list-style-type: none">○ 2 x Flash Warning of Heavy Rain;○ 1 x Extreme Rainfall Early Alert ;○ 2 x Flood Watches for River Tame;○ Environment Agency Incident Room Open at 17:29 hours.	
Saturday 6th September	
03:42hrs	Flood Watch for the Rivers Rea and Cole;
12:18hrs	All Clear for the Upper Tame;
14:00hrs	EPDOs receive initial calls reporting flooding;
14:45hrs to 18:00hrs	Flash Warning of Heavy Rain;
15:45 - 19:00hrs	EPDO attended flooded residential areas known and liaised with Emergency Services;
16:30hrs	Council Emergency Co-ordinating Centre (CECC) open – BRT Officers only;
17:06hrs	Flood Warning for the River Tame at Water Orton area;
17:29hrs	Flood Watch for the Upper Tame area (Black Country to Water Orton);
18:27hrs to 21:00hrs	Flash Warning of Heavy Rain;
04:00hrs	CECC closed and EPDOs continue to monitor situation.
Sunday 7th September	
08:00 hours: Personnel from BRT/Housing/Northfield Constituency (Advice and Information Officer) deployed to Frankley and Weoley Castle to provide newsletter, guidance and advice to residents;	
BRT collated information on affected residents;	
BRT maintained contact with utility companies, Environment Agency etc;	
Fleet and Waste Management clearing street debris and providing bulk waste collection for residents;	
Housing provided emergency accommodation and ensured electrical safety checks were undertaken in Council properties;	
Environment Agency undertook flood survey over the following days.	



- 6.2.2 Table 5 sets out the actions taken over the weekend by BRT and other staff. As can be seen, the need to be able to deploy staff and resources quickly is critical. In order to assist with this, the BRT would activate the Council Emergency Coordinating Centre. The BRT have established a Council Emergency Information Line facility which will be initiated to provide additional support to residents, where appropriate. City Council teams also go door to door providing advice and gathering information.
- 6.2.3 Arrangements worked well on this occasion – as on others – and debriefs were held internally, multi-agency and with the community to identify areas for future improvements. To assist in future flooding events, BRT has developed a Multi-Agency Flood Plan based on new national guidance to ensure an effective and co-ordinated response to flooding.
- 6.2.4 Our discussions with the BRT and the Constituencies did raise some issues:
- Emergencies such as flooding require staff – from BRT, the Constituencies and other service areas – to put in long hours during a flooding emergency to assist residents.
 - Although there are good working relationships with other departments, getting hold of officers from some services out of hours was often difficult and created problems as a range of services are required when flooding occurs: for example to gain access to land or property, or to clean up. There is an agreement with the housing contractor at the Middlemore Complex in Northfield that they will respond with Damfast boards (which seal gateways and doors) and sandbags when warnings are received, however this is not replicated across the city;
 - Whilst there are a number of Cabinet Members whose portfolios include responsibility for service areas that may have a role in emergency response, it is the Deputy Leader that has overall responsibility for the corporate emergency response and contingency arrangements;
 - It is preferable for residents to leave their homes to go to a rest centre before flooding occurs rather than later when they need rescuing, however it is often a challenge to persuade residents to leave their homes, which may be due to a lack of understanding of the risks of flood water, such as contamination or unseen hazards;
 - The need to ensure that good practice and ideas were shared was highlighted; for example in Selly Park South, badges for display in properties where elderly and vulnerable residents might need assistance in the event of emergencies were funded. Other areas could adopt this.
- 6.2.5 Two key aspects emerged from our discussions: rest centres and sandbags.

Rest Centres

- 6.2.6 BRT initiate the setting up of rest centres when required and ensure availability of rest centre staff. This includes having such staff on stand-by should a developing emergency necessitate an evacuation and welfare facilities for the public. Rest centres provide a range of City Council services including provision of food and refreshments, crisis support, sleeping accommodation. Transport to and from Rest Centres may also be provided. Where numbers are small it may be more cost effective to make alternative arrangements to large scale transport and rest centre



Flood Risk Management and Response

facilities i.e. a family may be transported by taxi to a hotel/B&B for the night. Where residents are Council tenants and their homes are flooded, Housing may make arrangements, as appropriate.

6.2.7 Often numbers of people requiring rest centre accommodation are lower than the numbers evacuated. Experience has shown that some residents are reluctant to leave their homes during flooding or prefer to stay with friends and family. In relation to recent flooding events:

- June 2007: three Rest Centres put on stand-by (Great Barr Leisure Centre, Handsworth Leisure Centre, Ladywood Arts and Leisure Centre) – none opened as no-one required accommodating;
- July 2007: two Rest Centres were opened: Great Barr Leisure Centre (for Witton evacuees as a precautionary measure) – 10 persons attended; and Birmingham Sports Centre (for Sparkhill evacuees) – 35 persons attended although a further 12 attended from New Street Station.

6.2.8 The Corporate Emergency Response Plan details a number of welfare assistance options that ensures the response meets a wide range of needs created by different emergency circumstances. Provision of a rest centre facility is a last resort whereby individuals who are evacuated have no appropriate, alternative shelter. The BRT encourages individuals and communities to make their own arrangements as part of their preparation for emergencies. Consequently, whilst resources may be activated, take up by individuals at rest centres can be relatively low. In the initial stages of an emergency, a Reception Centre – rather than a Rest Centre - may be opened to provide an immediate place of shelter and information as close to the affected neighbourhood as possible.

6.2.9 Each FLAG have their own local arrangements for opening up local centres as either reception centres for displaced people and/or coordination centre for their activities i.e. to provide immediate shelter if required and/or act as an information point.

Sandbags

6.2.10 There is no duty on the City Council to protect properties with sandbags. However we heard that there was an expectation from the community that sandbags would be distributed and it helped the confidence of the residents.

6.2.11 The City Council has provided a limited amount of sandbags in the past to residents. The Council has a number of routes for obtaining sandbags. The Highways and Housing Departments maintain different stocks and arrangements for their own purposes and responsibilities, which can be distributed in a civil emergency such as flooding.

6.2.12 It has been emphasised through-out the evidence gathering that sandbags are not a panacea to flooding as there are limitations, for example it is not the easiest of material to work with, they only divert shallow flowing water if it has somewhere to go and it may not always be possible to get them delivered where needed in time. Other measures such as airbrick covers and floodgates can be more effective.



- 6.2.13 Not all Councils provide sandbags to individuals, such as Bristol City Council who state: "the council does not provide sandbags or assistance on an individual basis to protect properties in times of emergencies; all efforts of the council will be directed at protecting the public at large".³⁶
- 6.2.14 The Environment Agencies leaflet 'Sandbags and how to use them properly for flood protection' provides information on sandbags, including the warning:
- Your local council may have some sandbags ready to deploy at times of flooding, but their priority is to protect the public at large. You should check with your own local authority in advance to find out what their policy is and how you can get access to sandbags before flooding starts.
- 6.2.15 The City Council's website does provide some guidance on using sandbags, stating "In the event of a flooding emergency the City Council will if possible respond to requests for sandbags". However, it points out that roads may become blocked so deliveries may not be possible, or flooding may occur very quickly leaving the City Council little time to deliver.

6.3 Community Preparedness

- 6.3.1 The extent of the September 2008 flooding showed how widespread and how quickly flooding can occur in the city. We cannot therefore rely on the emergency services or City Council staff being available at all times. It is important that communities understand how they can help themselves, by:
- Reporting issues such as blocked drains or debris in watercourses to help prevent flooding;
 - Knowing what to do and where to go if homes are flooded;
 - Helping out neighbours in an emergency.
- 6.3.2 The BRT is putting an emphasis on encouraging communities and businesses to make preparations before an event, such as signing up for flood warnings or other forms of community alerting, ensuring emergency numbers are at hand and having a bag packed ready to leave the house quickly.
- 6.3.3 For areas where there is on-going population change it was suggested that there could be a need for education on flood risks to be repeated. It was also important that elected members had a clear understanding of the roles and responsibilities of the different agencies. Work on preparedness could be undertaken in schools and whilst resources to support this do not exist within the BRT, opportunities exist through vehicles such as the Safeside (the West Midlands Fire Service's educational resource) and this is currently being developed.

³⁶ Bristol City Council Flood Plan – February 2010



Flood Risk Management and Response

Flood Action Groups (FLAGS)

- 6.3.4 One of the best ways a neighbourhood can prepare for flooding is to set up a Flood Action Group. These are community led groups, led by volunteers that help residents in the flood watch area prepare and cope with incidents of flooding. FLAGS have designated Flood Wardens who monitor local conditions and facilitate two way communication with the Council Emergency Co-ordinating Centre (CECC). Volunteers support the warning of residents, identification of vulnerable people and ensure property-level flood defence products (where available) are deployed in an emergency.
- 6.3.5 There are a total of four FLAGS/arrangements in place in the city supported by officers from the BRT and constituency staff. These are:
- Witton Flood Action Group;
 - Selly Park South Neighbourhood Forum Flood Action Group;
 - Rea Valley Residents Environment and Flood Action Group, and
 - Frankley Neighbourhood Forum. The Frankley Group has developed a Neighbourhood Flood Plan (in partnership with the City Council and in conjunction with the New Frankley Parish Council).
- 6.3.6 We visited three areas (see Chapter 2), where FLAGS are established (see Chapter 2). In Middlemore Road there is a well-established FLAG of over 10 years standing. The recent flooding in Selly Park South has resulted in a FLAG with a core of 25 volunteers providing help and support in a flood situation.
- 6.3.7 Also, following the recent incident in Witton, a FLAG was set up. Funding was secured from the National Flood Recovery Grant and from Aston Pride Regeneration Programme to enable some actions to be implemented. Through that funding a Flood Co-ordinator was seconded to work with the Flood Action Group to ensure that appropriate systems were put in place for the future as the area is at risk of flooding. This money was also used to help residents back into their homes.
- 6.3.8 Whilst the City Council, through the work of BRT and Constituency staff, encourages the development of Flood Action Groups, not all residents at risk of being flooded are involved in a FLAG. The response from the community varies in different areas of the city. Anecdotal evidence suggests engagement may be driven by a previous history or experience of flooding or the level of anxiety about the prospect.
- 6.3.9 It is increasingly recognised that communities developing emergency response arrangements are likely to be more sustainable where the role of the FLAG is undertaken by residents drawn from existing neighbourhood groups.

6.4 Recovery

- 6.4.1 During our evidence-gathering, we heard that there is a preference for the Constituencies to co-ordinate the recovery on behalf of the City Council. Recovery would be supported by the BRT



which has produced a generic City Council Recovery Plan under the national guidance and which recommends that local authorities are best placed to lead recovery efforts. However, there is continuing uncertainty as to whether any Constituency resources used would be recovered from the Corporate Centre or through national grants.

- 6.4.2 It was reported that there are limited resources available in the Constituencies for recovery and clear up work especially if a large number of properties had been affected. However, it was important to provide this support as residents wanted continuity of support throughout an event. There was generally an increased demand for neighbourhood office services to assist residents with practical advice and information, including providing contact numbers.
- 6.4.3 One issue where we heard residents were getting mixed messages was around Council Tax: we heard that this issue particularly concerned residents when they were flooded out of their homes. As an example, during the 2007 floods, the council tax office was informed, via the Birmingham Resilience Team, of properties and areas subject to local flooding. Relevant application forms and information leaflets were distributed to local neighbourhood managers.
- 6.4.4 At the same time, call centre staff were briefed regarding the process for applying for the relevant relief. Under section 13a of the Local Government Finance Act 1992, local authorities can grant discounts of up to 100% relief of council tax for households affected by flooding (which must be found from the Local Authority budget). Householders can also claim six months relief on Council Tax if the property is being repaired and so cannot be lived in. However, there does seem to be a lack of clear information setting out householders rights and entitlements.
- 6.4.5 Where individual properties are vulnerable to flooding, householders can take measures to minimise the damage and speed up their recovery, recovery to any future event by installing flood resistant products (e.g. air brick covers, flood gates) and/or flood resilience measures, e.g. such as ensuring electrical sockets and wires are above expected water height; concrete floors which would not need replacing and adequate insurance.
- 6.4.6 Insurance is a key issue here, with some residents and business owners telling us that insurance companies were either not willing to insure their property, or would only do so at exorbitant prices, where the area is prone to flooding. This is an issue being addressed nationally, with an agreement with the Association of British Insurers (ABI) and the Government. The City Council has also done some work with companies to ensure cover is provided in some areas. However, this continues to be a significant problem.
- 6.4.7 The Government and the insurance industry have agreed a revised Statement of Principles on the provision of flood insurance. The conditions should be in place to enable the insurance market to be able to provide flood insurance to the vast majority of households and small businesses. This commitment will continue until 30 June 2013. ABI members are committed to:
- Continue to make flood insurance for domestic properties and small businesses available as a feature of standard household and small business policies if the flood risk is not significant (this is generally defined as no worse than a 1.3% or 1 in 75 annual probability of flooding);



Flood Risk Management and Response

- Continue to offer flood cover to existing domestic property and small business customers at significant flood risk providing the Environment Agency has announced plans and notified the ABI of its intention to reduce the risk for those customers below significant within five years. The commitment to offer cover will extend to the new owner of any applicable property subject to satisfactory information about the new owner.

6.4.8 This commitment does not apply to any new property built after 1 January 2009. It is important to note that the SFRA identifies many areas in Birmingham which are protected to only a 1 in 50yr (or less) standard and with climate change this is likely to increase risk.

6.5 Response to Flooding of Businesses

6.5.1 We also received evidence of the response to flooding in Hall Green in 2007 regarding businesses in the area. In all, 24 business premises were affected. Most premises were freehold, largely consisting of manufacturing, retail and services. The majority of firms had full insurance but without business interruption cover, however a few firms had either no contents or buildings cover and one firm had no insurance.

6.5.2 In terms of employment, the affected businesses employed people in 158 full time jobs (of which 110 lived in the district) with eight part-time jobs. After the floods, 17 people were laid off. Over half the number of businesses declared that there was a reduction in the number of customers and a reduction in their takings. Estimated loss of takings varied from £350 to £100,000, totalling to £270,350. Of the nine businesses, seven were forced to close and five later re-opened. Businesses were affected by vermin and rubbish, loss of electricity, gas, water supply and sewerage and damage to furnishings, signage and fascia and stock.

6.5.3 The City Council, through the Creative Development Team in the Development Directorate:

- Contacted some of the affected businesses to get a feel for the nature and extent of the problems to inform what type of and principles of intervention was required;
- Identified the type of problems experienced by affected businesses;
- Liaised with the relevant agencies and individuals working on the ground;
- Co-ordinated the overall response involving the East Regeneration Team, Enterprising Communities, Business Link West Midlands (BLWM) and City Council Departments e.g. the rates department;
- Helped BLWM to enhance their package of support to include a booklet of contact information and advice about what and how to take action;
- Re-assessed the crisis from an interventionist perspective and prioritised 'gap' funding issues to make up insurance shortfalls, cash flow difficulties and council rates.

6.5.4 A number of lessons were learned from this experience, and following on from that incident, in future where significant numbers of businesses are affected the Council response structure will



include either formal activation of a businesses recovery cell led by the Development Directorate or identified officers will liaise with Business Link as part of their recovery activities.

6.6 Summary

- 6.6.1 It is understandable that residents want continuity of support throughout a flooding event. This is a very distressing time and a sensitive customer focused service needs to be provided. However there are limited resources in the Constituencies with BRT support to provide this and resident's expectations may be unrealistic.
- 6.6.2 The Birmingham Resilience Team leads on the response to a flooding emergency, with the Constituencies generally co-ordinating the recovery. In both cases, we were told about teams of dedicated staff who work long hours in an emergency, willing to give up their own time, to support the City Council's response.
- 6.6.3 We also heard about community volunteers, who similarly put in a considerable amount of time to support their communities, particularly the most vulnerable in those communities. This is necessary – in flooding incidents such as we saw in September 2008, the emergency services and City Council cannot be everywhere. People and businesses at risk of flooding must have an understanding of what to do and where to go.
- 6.6.4 The establishment of community led Flood Action Groups to assist with future incidents is therefore of great importance. This can support communities in a self help approach but also make them integral to multi agency response, including communication and information sharing. Where possible, basing FLAGS on existing neighbourhood organisations would help maintain their sustainability.



7 Scrutinising Flood Risk Management and Response

7.1 Introduction

- 7.1.1 The Pitt Review of 2007 proposed a greater role for Scrutiny in flood risk management and response. The Government carried this forward into the Flood and Water Management Act.
- 7.1.2 This chapter sets out Pitt's proposals and details of the provisions in the Act. It also sets out how the City Council's Scrutiny Committees have responded to similar challenges in other areas, and sets out some key principles.

7.2 Pitt Review

- 7.2.1 The Pitt Review contains a range of recommendations to improve oversight of flood risk management and response both nationally and locally. In local oversight, the report considers that "there is a role for scrutiny committees of local councillors."³⁷
- 7.2.2 Sir Michael Pitt's report stated that holding scrutiny meetings in flood risk areas "would send a powerful leadership message", giving elected members the opportunity to examine decisions made by a range of bodies and in a range of regional and local documents. He cited successful examples of Scrutiny Reviews held in relation to flooding from East Riding of Yorkshire, Gloucestershire, Doncaster and Berkshire. What made these effective was that a public report was produced, and specific actions identified:
- Local authority scrutiny has the benefit of giving greater impetus to ensuring that risk-based actions, once decided, actually take place.
- 7.2.3 The report therefore concludes:
- Oversight and Scrutiny Committees will be the major route through which effective change in the management of flood-risk by public sector bodies and essential service providers will be monitored and driven.
- 7.2.4 The following recommendations were made:
- All local authorities³⁸ should establish Oversight and Scrutiny Committees to review work by public sector bodies and essential service providers in order to manage flood risk, underpinned by a legal requirement to cooperate and share information (recommendation 90);

³⁷ Sir Michael Pitt, *The Pitt Review: Lessons learned from the 2007 floods*, June 2008



- Each Oversight and Scrutiny Committee should prepare an annual summary of actions taken locally to manage flood risk and implement this Review, and these reports should be public and reviewed by Government Offices and the Environment Agency (recommendation 91).

7.2.5 The Government concurred with these findings and the first of these recommendations now appears in the Flood and Water Management Act.

7.3 The Flood and Water Management Act

7.3.1 The Act amends the Local Government Act 2000 to extend the powers of Overview and Scrutiny to “review and scrutinise the exercise by risk management authorities of flood risk management functions or coastal erosion risk management functions which may affect the local authority’s area”.³⁹

7.3.2 Risk management authorities⁴⁰ must comply with requests for information and respond to reports. Regulations will follow later this year to govern notice periods, exemptions, requirement to attend to give information orally, the nature of information and responses that may be required, and publication.

7.3.3 Following the publication of a Scrutiny report, the risk management authority must “have regard” to that report and the recommendations.

7.4 Scrutiny in Birmingham

7.4.1 Scrutiny in Birmingham is well-placed to respond to these new powers. Firstly, the procedures in place for conducting day-to-day scrutiny business correspond with Sir Michael Pitt’s views of effective scrutiny: publishing reports with SMART⁴¹ recommendations and tracking progress on implementation are well-established processes. Engaging and building relationships with external partners is also a key component of scrutiny work.

7.4.2 Secondly, Birmingham has led the field in implementing new scrutiny powers: the Health provisions introduced in 2003; the Councillor Call for Action in 2008 and the powers to scrutinise crime and disorder reduction partnerships. A protocol governing relations with the Safer Birmingham Partnership for the latter was agreed by the Local Services and Community Safety O&S Committee in January 2010.

³⁸ The report specifies “upper tier” authorities, of which Birmingham is one.

³⁹ The section applies to a local authority which is a lead local flood authority for an area in England.

⁴⁰ The Environment Agency; the lead local flood authority (Birmingham City Council); water companies (Severn Trent Water); the highway authority (Birmingham City Council)

⁴¹ Specific, Measurable, Achievable, Realistic and Timely



Flood Risk Management and Response

7.4.3 Whilst the legislative provisions for this latest set have yet to be clarified by guidance and regulation, the experience of both partnership scrutiny and undertaking this Scrutiny Review suggests a number of key principles.

- **Making use of existing structures:** it would not be necessary to create a new committee to undertake these actions; rather an existing Committee should be designated under the Constitution as having these powers. It is suggested that, in the current configuration, those powers should lie with the Transportation and Regeneration Overview and Scrutiny Committee.
- **Ensuring Members have clear, comprehensive information, co-operation from partners and tools to scrutinise effectively:** partly this is about timely and comprehensive information and attendance at meetings, the detail of which will be governed by Government regulations; it is also about ensuring appropriate support and expertise is available to the Committee. The question of "expertise" was discussed in the Pitt Report: witnesses to the Pitt Review raised the issue of specialist and technical expertise to scrutinise emergency and business continuity plans. It was suggested that some training or a certain level of background knowledge. However, Pitt concluded that:

One of the great strengths of [Oversight and Scrutiny Committees] OSCs is that they are able ask the questions a layman would ask, representing the public's concerns and providing a reality check for the 'experts'. Gloucestershire's positive experience in the summer demonstrates that technical expertise is not a pre-requisite for meaningful scrutiny.

- **Clarity and fairness:** we need the co-operation of our partners and will be clear about reporting processes. When seeking improvements which require changes in partners' services, these partners will be involved before taking issues to Committee; and that partner representatives will be aware of and able to participate in any relevant discussions at an O&S Committee. It is also worth noting that scrutiny can be a mechanism whereby external partners can secure changes in the City Council's operation – a "two way street".

7.4.4 There are still some issues to be resolved:

- **Resourcing:** concerns were expressed to Pitt that engaging with scrutiny is resource-intensive for partners. It should be recognised that the key agencies – Environment Agency and Severn Trent Water – will be answerable to more than one local authority under these arrangements. However, Pitt equally recognises that "infrastructure providers now need to make sure they are resourced to manage more complex relationships with the local level." Equally, scrutiny need not be onerous and local government itself will be under pressure "to keep its scrutiny activity at an efficient level".
- **The need to balance privacy and security concerns:** Pitt stated that "the balance between public good and security threats should be redressed. While recognising the legitimacy of security and commercial concerns, we note that such plans have been



successfully discussed at Scrutiny Committees in the past. Scrutiny committees can take evidence in private if necessary, and final reports do not need to contain the detail of specific sites or assets.”

- **Expectation management:** as in other areas, Scrutiny Committees will not have the power to compel partners or the Council’s Executive to act, although they can put considerable pressure on them to resolve problems. This must be balanced with partners’ “realities of limited resources and existing priorities or statutory commitments”. However, Pitt noted that:

The scrutiny enquiries which followed the summer floods asked hard questions of key organisations, but accepted practical programmes of work rather than pushing for unrealistic improvements. Guidance from the Government on how the process should work would be appropriate.

7.5 Summary

- 7.5.1 Sir Michael Pitt promoted the role of Scrutiny in relation to flood risk management in order to gain greater transparency for the public:

Scrutiny enables authorities to ensure that national policy is complied with at the local level. It holds companies who deliver essential public services to account – helping to ensure vital services are correctly maintained for the good of the local community and that robust plans are put in place for potential failure.

- 7.5.2 Implementation of these new powers is yet to be scheduled and the detail will depend on regulations yet to be published. However, the Chair of the Transportation and Regeneration O&S Committee will pursue early discussions with the key partners to prepare for the changes.



8 Conclusions and Recommendations

8.1 Introduction

8.1.1 Flood risk management is currently undergoing great change in this country, following major flooding around the country in 2007. Sir Michael Pitt's Review into the lessons to be learned from the summer floods of 2007 put forward proposals to address the fragmentation of responsibilities between several organisations operating in the same geographical area, and gaps in flood risk management. Some of his recommendations have subsequently been enacted in the Flood and Water Management Act, which gained Royal Assent in April 2010.

8.2 Flooding in Birmingham

8.2.1 The National Assessment of Flood Risk for England summarised the national problem:

- Around 5.2 million properties in England, or one in six properties, are at risk of flooding;
- The expected annual damages to residential and non-residential properties in England at risk of flooding from rivers and the sea is estimated at more than £1 billion.

8.2.2 The Environment Agency also reported that "a sizeable part" of infrastructure – energy, water, communications, transport and other public services – are in flood risk areas.⁴²

8.2.3 However, national assessments have tended to focus on large scale river and coastal flooding. As the National Assessment of Flood Risk admits: "our understanding of river and tidal flooding is stronger than that from other sources".⁴³ In addition, these are generally the most devastating and high-profile floods, and as such has tended to mean Birmingham does not attract a high level of national attention nor additional funding.

8.2.4 However, Birmingham's Strategic Flood Risk Assessment states:

Birmingham is at considerable risk of flooding from Main River, Ordinary Watercourses, surface water, sewer flooding and groundwater. There is also potential for canal and reservoir breach and overtopping.⁴⁴

8.2.5 River and surface water flooding in Birmingham tends to result from heavy and localised rainfall; there is also increasing evidence of groundwater flooding.

⁴² Environment Agency, *Flooding in England: A National Assessment of Flood Risk*, 2009

⁴³ Environment Agency, *Flooding in England: A National Assessment of Flood Risk*, 2009

⁴⁴ Birmingham City Council, *Level 1 Strategic Flood Risk Assessment*, January 2010



8.2.6 Whilst roles are fragmented between agencies – in particular the City Council, Environment Agency and Severn Trent Water – the City Council has taken a lead within the area, both in terms of flood risk management and in responding to flooding when it occurs.

8.2.7 The Flood and Water Management Act aims to address these issues to a degree. It does give a stronger and clearer role to local authorities, to some degree answering our key question in this Scrutiny Review:

What leadership role should the City Council take in both preventing flooding occurring, and responding to flooding when it occurs?

8.2.8 However, there is much that is still unclear and there is still the opportunity for the City Council to show itself to be a leader in this area. We have historically been ahead of the game and better resourced than many other local authorities. In our recommendations, we seek to address how we can continue to lead in this area within the new parameters set by Government.

8.3 The Flood and Water Management Act

8.3.1 The Flood and Water Management Act, which received royal assent on Thursday 8th April 2010, has a number of themes but most pertinent to this Review are:

- Emphasising flood management as opposed to flood elimination;
- A clearer, stronger role for local authorities to lead on flood risk management in the area;
- Improving partnership working on both flood risk management and response.

8.4 Approach to Flood Risk Management

8.4.1 The Flood and Water Management Act puts the emphasis on flood management as opposed to flood elimination. Historically it had been the policy to solve or eliminate fluvial flooding by increasing the capacity of watercourses through widening and straightening and building greater flood defence, i.e. passing flows on. This is recognised as no longer sustainable and the only way forward is to manage and control flooding – it is not practicable to attempt to eliminate flooding.

8.4.2 The new emphasis in flood risk management is on sustainable drainage, looking at a range of measures and how they work together. This requires, as a first step, clear information to enable better understanding of how areas are threatened by flooding. The Level 1 SFRA is a significant step forward in this, but it is critical that the Level 2 SFRA is undertaken, particularly as a significant number of the development sites need further investigation. Surface Water Management Plans will also be critical.

8.4.3 Throughout our evidence gathering, it was acknowledged that a build up of small developments over a period of time has a cumulative effect and that the impact on flood risk management needs



Flood Risk Management and Response

to be considered as a complete picture. It is not just new developments which play a significant role in exacerbating flooding; paved driveways and front gardens also have an impact.

	Recommendation	Responsibility	Completion Date
R01	That the Chairman of the Planning Committee reports back to the Transportation and Regeneration O&S Committee with a timetable for an early start on the Level 2 Strategic Flood Risk Assessment.	Chairman of the Planning Committee	September 2010

8.5 Changes to the Role of the City Council

8.5.1 The Act aims to clarify arrangements for flood risk management and encourage greater co-operation. In doing so, it places additional responsibility on the City Council, with strong indications that additional funding will be limited. On the positive side, giving local authorities a stronger remit will mean that the City Council's actual role will better meet the expectation of the public.

8.5.2 The City Council needs to be clear about how it will respond to these new powers. In particular, the City Council must be prepared to give flood risk management sufficient priority; to ensure sufficient resources are available to undertake the necessary actions; and to ensure that suitably qualified and experienced professionals are available to conduct that work.

Flooding as a Corporate Priority

8.5.3 As the above section makes clear, the Flood and Water Management Act will raise the status of flood risk management within local authorities by attributing additional responsibilities to the current system of permissive powers. Thus flood risk management will be competing with other statutory duties placed on local authorities for profile and resources.

8.5.4 The city has a good history of carrying out strategic flood defences and to a large extent it is thanks to our forebears that Birmingham city centre has remained free from flooding for so long. More recently, the Birmingham Water Group has been established. Birmingham City Council chairs the Group, which is attended by the Environment Agency, Severn Trent Water and council officers representing drainage, planning, BRT and sustainability. This group seeks to co-ordinate activities and provide a holistic approach to flood risk management across the city. The Group has recently jointly funded a study for the Wood Brook and River Cole catchments in the city. It will also be responsible for monitoring progress of the SFRA and the SWMP.

8.5.5 However, the Group currently lacks political representation. This is vital to ensure the issues raised within the Group receive sufficient profile within the City Council. It is also critical to have clear direction from the City Council from a political level to ensure that available resources are invested wisely and to have a strong presence amongst our partners.



- 8.5.6 This would assist the City Council's efforts to respond as one organisation, rather than dividing the issue into corporate silos as can currently happen. Clear mapping of roles and responsibilities across the City Council is required. As flood risk management becomes more prominent, the need for co-ordination across Directorates, particularly as the City Council agrees how to meet the massive financial implications.
- 8.5.7 It is also important to establish clear leadership to give greater weight to our discussions with partners. Data sharing for example is an issue, and whilst some sharing is already in place a Memorandum of Understanding is required for the Birmingham Water Group to clarify any agreements.

	Recommendation	Responsibility	Completion Date
R02	That the Cabinet appoint an Elected Member to serve on the Birmingham Water Group.	Cabinet	September 2010

Resources

- 8.5.8 As we have noted, land drainage functions have to date been carried out using permissive powers. As such they have not been a priority for limited capital funding. However, this will change significantly. We have been advised on the cost implications of the changes, and the fact that the Government assumes some of the work will be paid for in savings made elsewhere by the City Council. However, since the Act received Royal Assent, the Government has undertaken to work with the LGA to look again at the costs and how these might be met.
- 8.5.9 The increase in costs will be significant and will include the costs of establishing a SUDS Approval Body (SAB); the assessment, recording and designation of ownership of 'private' assets (and dealing with consequent legal issues); the inclusion of groundwater in the City Council's remit and the general costs of leadership, mapping and working with communities.
- 8.5.10 We have already noted that additional funding is rarely available to the city, with expenditure weighted to fluvial flood defence work. However, DEFRA are currently looking at the balance of expenditure across the sources of flooding to get the balance right for the future.
- 8.5.11 Some early money was made available to help local authorities' co-ordinate and lead local flood management work. Ministers announced a national sum of £15 million, of which Birmingham received £300,000, recognising the city's vulnerability to flooding by surface water. Plans have been drawn up to develop a SWMP for the city.
- 8.5.12 It is important to note that the costs would be balanced by the intangible benefits accruing from a proactive approach – i.e. reducing the number of people and properties affected by flooding, and assisting those that are affected to recover more quickly. However, these are difficult to measure.
- 8.5.13 It is not uncommon during evidence-gathering for a Scrutiny Review to be told that the resources available to deal with the problem are inadequate. However, in this case it is clear that the new



Flood Risk Management and Response

responsibilities increase both the cost of the City Council's maintenance work and the exposure to risk, and that the funding to support this is at best uncertain.

8.5.14 We are conscious of the economic context and the role of scrutiny in ensuring efficiencies across the City Council are achieved. This is not a good time to be asking that more resources ought to be considered. However, our interest is in efficiencies not false economies. This is an area where spending money pro-actively will not only save money in the long term but will also improve the quality of life for residents now and in the future.

	Recommendation	Responsibility	Completion Date
R03	That the Cabinet Member for Transportation and Regeneration reports back to the Transportation and Regeneration O&S Committee as a matter of urgency on proposed funding arrangements for all the new duties under the Flood and Water Management Act 2010.	Cabinet Member for Transportation and Regeneration	September 2010

Capacity and Capability

8.5.15 Perhaps in part due to its size, Birmingham is fortunate in still having experienced drainage engineers when many local authorities lost most of theirs. However, the new arrangements will clearly require enhanced technical capabilities across the City Council and additional staff to support the changes. Extra responsibilities would fall on Planning Officers and Engineers and there would need to be a multi-disciplinary approach across partner bodies. There are also additional work implications for emergency planning staff.

8.5.16 Again, the City Council is making progress here. Provision of training and support is being considered as part of the City Council's Performance Development Review process, including looking at what the Environment Agency's Local Authority River and Coastal Engineering Foundation Degree course can offer.

8.5.17 The Birmingham Water Group encourages the key agencies to work together and the Group is committed to joint working and training arrangements. Further steps may be needed to ensure the right expertise is held within the right organisation and unnecessary duplication is avoided – for example using secondment arrangements. Clear mapping of roles is needed, and there is room for some piloting.

8.5.18 Staff retention and recruitment will become an increasing problem. There is a recognised national shortage of drainage engineers and competition for qualified staff will increase, particularly as other local authorities and consultants catch up with Birmingham. A number of papers were made available to the Cabinet Member for Transportation and Street Services and the Chief Executive on pressures and potential technical resource implications.



8.5.19 Capacity is an issue also as more demands on drainage engineers to get involved in for example planning applications, developments. These additional demands on the service should be recognised.

	Recommendation	Responsibility	Completion Date
R04	That the Cabinet Member for Transportation and Regeneration and Chairman of the Planning Committee prepare a report on the officer capacity and expertise required to meet the new obligations and how those will be matched.	Cabinet Member for Transportation and Regeneration Chairman of the Planning Committee	September 2010

Regional Flood Defence Committee (RFDC)

8.5.20 We also examined the role of the RFDC and the contribution our involvement makes to the city. One benefit of membership of the RFDC is the working relationships formed, however as the City Council has already undertaken much of this anyway and indeed is obliged to under the Flood and Water Management Act, it could be argued that the imperative does not appear to be there. However, there could well be value in having an advocate for Birmingham at these meetings to ask the right questions and to direct work to the city. As the city develops its modelling work – via the SFRA and the forthcoming SWMP – there will be more scope to justify flood defence work in Birmingham pro- actively.

8.5.21 The Environment Agency has powers to raise a local levy under the National Rivers Authority [Environment Agency] Regulations 1993. Birmingham does contribute a significant amount to this local levy, without seeing any of that money spent back in the city. The amount contributed as part of the local levy does form part of the Government’s annual revenue support grant (RSG) to the city, so simply not paying the levy could mean that that money is deducted from the RSG, so yielding no benefit to the city.

8.5.22 For clarity we therefore need to understand why so little funding from the RFDC is spent in Birmingham and whether, if the City Council did not pay the local levy, the city could retain that money to spend on flood defences within its own boundaries. We therefore ask the Executive to consider our membership of the RFDC and whether the benefits outweigh the costs.

	Recommendation	Responsibility	Completion Date
R05	That the Cabinet Member for Transportation and Regeneration review membership and funding of the Regional Flood Defence Committee, noting the limited benefit to Birmingham currently; and explore opportunities to maximise spend on flood defence work in Birmingham.	Cabinet Member for Transportation and Regeneration	December 2010



Flood Risk Management and Response

Reservoirs

- 8.5.23 One of the most significant changes in the Act relates to reservoirs. Currently, the Reservoirs Act 1975 ensures that all dams with a capacity greater than 25,000 cubic metres are inspected and examined frequently. The Flood and Water Management Act reduces the capacity threshold for “large” reservoirs to 10,000 cubic metres.
- 8.5.24 This was in part prompted by the danger posed by some reservoirs falling outside the scope of the 1975 Act. For example, in June 2007 cracks were found in the walls of Ulley Reservoir (near Rotherham), prompting the evacuation of the three villages and the closure of the M1 motorway between junctions 32 and 36. Residents from 700 homes were evacuated.⁴⁵
- 8.5.25 The Act is therefore aimed at revising the existing provisions in the 1975 Reservoirs Act to improve the design, construction, maintenance and inspection of all reservoirs that pose risks to human life if the reservoir or supporting dam were to fail. The Act also seeks to improve the level of inspection, design, construction, maintenance and monitoring of reservoirs on a risk based approach.
- 8.5.26 In Birmingham, this means a possible 26 existing reservoirs and pools will be added to the 11 the City Council must currently maintain under the 1975 Act. The extended requirements include routine inspections and the establishment of emergency plans. These in turn will lead to a need for safety works to be carried out and thus capital expenditure. The BRT have responsibilities to prepare off-site reservoir inundation plans where the risk assessment requires it and irrespective of ownership, they will take the lead. However, the undertaker, i.e. Leisure Services, have responsibility for producing on-site reservoir inundation plans for all City Council owned reservoirs. However given the current economic climate these resources are not readily available and the financial implications therefore need to be considered corporately.
- 8.5.27 It should also be remembered that the City Council will still have a duty of care relating to the pools and other bodies of water less than 10,000 cubic metres. Ideally, we should also assess any risk from these bodies of water.

	Recommendation	Responsibility	Completion Date
R06	That the Cabinet Member for Leisure, Sport and Culture ensures that sufficient arrangements are in place to meet the demands regarding reservoirs, including <ul style="list-style-type: none"> • Officer expertise and capacity; • Capital and Revenue funding; • Green Infrastructure Technical Assessment. 	Cabinet Member for Leisure, Sport and Culture	September 2010

⁴⁵ Yorkshire Post 26 June 2007; BBC News Online 26 June 2007



Scrutiny of Flood Risk Management

8.5.28 The Act amends the Local Government Act 2000 to extend the powers of Overview and Scrutiny to “review and scrutinise the exercise by risk management authorities of flood risk management functions or coastal erosion risk management functions which may affect the local authority’s area”.⁴⁶ Risk management authorities must comply with requests for information and respond to reports. Following the publication of a Scrutiny report, the risk management authority must “have regard” to that report and the recommendations.

	Recommendation	Responsibility	Completion Date
R07	That the Chair of Transportation and Regeneration O&S Committee pursue implementation of the new scrutiny powers with regard to flooding once guidance is published.	Chair of Transportation and Regeneration O&S Committee	September 2010

8.6 Technical Solutions

8.6.1 In Chapter 4 we looked at the range of technical solutions used or proposed in the city. One of the key decisions to be made is around the use of public open space for storage. This is already happening, for example in Perry Hall Park, and can help protect properties by holding flows back. However, it does mean that at times public space would be out of use.

8.6.2 It seems clear that where an appropriately located piece of land is not in use, and where work to create a water storage space would also improve the amenity value of the space, this option can bring benefits. The tougher decisions are to be made where land is already in use but would be less damaging and less costly to flood than residential areas or high value economic land, such as golf courses or school playing fields.

8.6.3 More controversially, the cost of defending some properties on flood plains may become very high indeed. In some areas, it is acknowledged that not all properties in flood risk areas can be defended, meaning it may be appropriate in some cases for some properties to either be abandoned or have greater property level protection and adaptation, accepting that flooding will be a regular event.

⁴⁶ The section applies to a local authority which is a lead local flood authority for an area in England.



Flood Risk Management and Response

	Recommendation	Responsibility	Completion Date
R08	That the Cabinet Member for Leisure, Sport and Culture identifies specific green space sites (with little or no amenity value) whereby a change of use / land management should be recommended to mitigate the effects of future flooding (where this would reduce the risk to residential areas or other high value economic land and critical infrastructure); and that this assessment feeds into the City Council's Core Strategy Green Infrastructure Framework.	Cabinet Member for Leisure, Sport and Culture	December 2010

Sustainable Urban Drainage Systems (SUDS)

- 8.6.4 There has been a poor uptake of SUDS nationwide, primarily due to the lack of compulsion. However, the Act does give greater priority to SUDs and assists in giving clarity on ownership and responsibility of SUDS. The Floods and Water Management Act provides for SUDs Approval Bodies (SABs) be set up by local authorities to approve, adopt and maintain sustainable urban drainage elements of new developments. National standards for the construction and operation of SUDs are being developed by the Government. There are legal implications too that must be resolved – for example, SUDS could include third party rights over private land in perpetuity.
- 8.6.5 This remedies the current impasse on adoption and puts the responsibility clearly with the local authority. However, there is still little detail on how SABs will work. There will be a need to ensure the City Council has capacity to meet the demands, although the workload is still unclear, as well as the expertise in both the Highways and Planning services. Any guidance must provide for not only design and construction of SUDS but also long term operation and maintenance.

8.7 Responding to Flood Risk

- 8.7.1 In Chapter 6 we looked at the role of the City Council and its partners when an area of the city floods. We found that the response is generally well co-ordinated and characterised by dedicated staff willing to give up their time to support residents when they need it most.
- 8.7.2 The City Council leads on the response, through the Birmingham Resilience Team and at a Constituency level. We heard about the many officers involved, and the hard work and long hours committed to helping people affected by flooding. These officers, in BRT, the Constituencies, Neighbourhood offices and other departments deserve our thanks for all their hard work. They have recognised that people in this situation need more than leaflets and a phone line, that they feel powerless and anxious, and have provided that support.
- 8.7.3 However, there is obviously a huge reliance on staff volunteering for this sort of work, something which is increasingly under pressure. It also leaves open the probability of gaps in the system,



which can add to distress. We noted that not all services have standby-officers – i.e. someone for BRT to contact out of hours when needed. We also heard that Constituencies have to find the money to respond to emergencies such as flooding and would suggest that central contingency reserves should be considered in these circumstances.

- 8.7.4 The importance of flood warnings should also be noted. These should be linked to community resilience and Flood Action Groups to be successful. However, currently these warnings are not available to any groups at risk of river flooding beyond the main rivers of the Cole, Tame or Rea.
- 8.7.5 One area that could usefully be clarified is the provision of sandbags. The City Council is not obliged to provide these, although it currently does to a limited degree. The website currently states: “in the event of a flooding emergency the City Council will if possible respond to requests for sandbags”.⁴⁷
- 8.7.6 Residents and business owners often want sandbags to protect their property and they are a visible sign of the City Council’s support. However, in reality they are of little benefit, except in specific circumstances and only if used correctly. The cost of delivery and collection is high. Often, money is better spent on other prevention measures such as sealable gates or brick ventilation covers. Should the City Council take a stronger view and restrict the supply of sandbags, perhaps to FLAGS? That is a decision for the Cabinet Member for Transportation and Regeneration, and so we ask that clear guidance is provided to officers and residents on sandbag usage including when they are to be used, who gets priority and where are they stored.
- 8.7.7 One idea suggested was that sandbags could be distributed to FLAGS. These are the hard working community volunteers who work with the BRT and the Constituencies to prepare themselves and their neighbours for any flooding. Setting up FLAGS can require a lot of time and help from City Council staff, but the benefits are that there are residents in the flood watch area able to prepare and cope, and help others cope, with incidents of flooding. Anecdotal evidence suggested that it is easier to engage with people immediately after a flood, however any area vulnerable to flooding would benefit. Other community groups could also be encouraged to get involved: on the Pershore Road corridor, the Friends of Cannon Hill Park and Selly Park South FLAG co-operate on flooding related issues.
- 8.7.8 There is also a role for these groups in helping keep people informed once plans are developed. Particularly important where properties are at risk of flooding is to have a “household plan” whereby all members of the household know what to do when a flood alert is received – where to go and what to take, where to park the car, where to take any pets and who to contact.

⁴⁷ www.birmingham.gov.uk; 17 March 2010



Flood Risk Management and Response

	Recommendation	Responsibility	Completion Date
R09	That the Deputy Leader, in consultation with the Cabinet Members for Housing, Transportation & Street Services, Leisure, Sport and Culture, and the Chairman of Public Protection Committee, ensures appropriate arrangements are in place, in consultation with the Birmingham Resilience Team, for a system of "standby officers" within Fleet and Waste Management, Regulatory Services, Leisure services and Housing to respond in emergencies such as flooding.	Deputy Leader	December 2010
R10	That the Cabinet Member for Transportation and Regeneration report back to the Transportation and Regeneration O&S Committee with a clear policy on use of sandbags and other protective measures when flooding occurs. This should include: <ul style="list-style-type: none"> • Storage facilities; • Priorities for distribution; • Locations for distribution. 	Cabinet Member for Transportation and Regeneration	December 2010
R11	(a) That the Deputy Leader continues to support the establishment and maintenance of Flood Action Groups (or other relevant community groups) in relevant parts of the city; (b) That the Deputy Leader ensure residents are fully informed, using FLAGS where appropriate, and encourage those at risk to familiarise themselves with local plans and adopt household plans.	Deputy Leader	December 2010

8.8 Progress with Implementation

8.8.1 To keep the Transportation and Regeneration O&S Committee informed of progress in implementing the recommendations within this report, the Cabinet Member for Transportation and Regeneration is recommended to report back on progress periodically. This will be carried out through the established tracking process.

	Recommendation	Responsibility	Completion Date
R12	Progress towards achievement of these recommendations should be reported to the Transportation and Regeneration Overview and Scrutiny Committee in October 2010. Subsequent progress reports will be scheduled by the Committee thereafter, until all recommendations are implemented.	Cabinet Member for Transportation and Regeneration	October 2010



Appendix 1: Witnesses

Organisation	Names	Written	Verbal
AWM	Mick Lavery, Chief Executive Daniel Boden, Natural Assets and Infrastructure Manager	√ √	
Birmingham City Council: Environment and Culture Directorate	Penny Smith, AD, Leisure and Support Services		√
Birmingham City Council: Housing and Constituencies Directorate	Saima Ali, Ward Support Officer, Selly Oak Constituency Bob Brown, AD, Asset Management and Maintenance Chris Jordan, Constituency Director, Selly Oak Jan Kimber, Constituency Director, Perry Barr Danny Ryan, Ward Support Officer, Perry Barr Constituency Steve Salt, Acting Constituency Director, Perry Barr Vicky Smith, Former Flood Co-ordinator, Perry Barr Bret Willers, Constituency Director, Hall Green Ivor Williams, Constituency Director, Northfield Gary Withington, Environmental Manager, Northfield Constituency	√	√ √ √ √ √ √ √ √ √ √
Birmingham City Council: Development Directorate	Richard Goulborn, Head of Service Development Suresh Patel, Business Innovation Manager Clive Wright, Senior Drainage Engineer	√ √ √	√ √
Birmingham City Council: Resources Directorate	Chris Gibbs, Assistant Director, Revenue and Benefits	√	
Birmingham Resilience Team	Steve Grogan, Head of Resilience Team Melanie Dinnis, Partnership Emergency Planning Officer Inspector Karl Agg, Operations, West Midlands Police Area Commander Dave Walton, Head of Emergency Response, West Midlands Fire Service	√ √ √ √	√ √
British Waterways	Ian Lane, Principal Waterway Engineer		√
Environment Agency	John Buckingham, Flood Risk Manager Pete Coxhill, Asset Systems Management Team Leader Laura Palmer, Flood Incident Management Team		√ √ √
Local Residents: visits	Norma Boyd, Chair of Northfield FLAG John Clayton, Chair of Selly Park FLAG Ray Nicholls, Chair of Witton FLAG		√ √ √
Midlands Regional Flood Defence Committee	Cllr Len Clark, Lead Member for the City Council		√
Registered Social Landlords	Carol Priest, Director of Estates, Bournville Village Trust Nick Woods, Housing Management Team Leader, Bromford Living Chris Cartwright, Head of Business Development, Asset Investment, Sales and Marketing, Family Housing Association Jonathan Driffill, Managing Director, Friendship Care and Housing Michelle Musgrave, Customer and Communities Director, Midland Heart Dave Cusack, Chief Executive, Moseley and District Churches Housing Association Ltd Bridget Callaghan, Office Support Manager, Optima Housing Association	√ √ √ √ √ √ √ √	



Flood Risk Management and Response

	Mary Longmore, Director of Neighbourhoods and Services, Trident Housing Association Ltd	√	
	Karen McDowall, Assistant Director, West Mercia Housing Group Ltd	√	
Severn Trent Water	Andrew Marsh, Public Affairs Manager	√	√
	Phil Gelder, Sewerage Asset Manager	√	√
	Dave Terry, Waste Water Infrastructure Manager	√	√
West Midlands Regional Assembly (WMRA)	Chris Blakeley, Strategic Advisor (Regional Planning, Climate Change, Environment and Waste Planning)		√



Appendix 2: The Organisations

Birmingham City Council

A number of departments within the City Council are involved in flood risk management and response, either because they are the landowners with a watercourse, responsible for land drainage, provide an emergency response and/or work with the community to assist and enable them to prepare for and respond to an emergency:

- Land Drainage Authority (LDA): the Highways Department within the Environment and Culture Directorate has responsibility for natural drainage and ordinary watercourses; permissive powers associated with the prevention, mitigation and remedying of flood damage; the City Council take responsibility for certain significant watercourses where it is to the general benefit of the area and builds and maintains flood defences;
- Land Owner/ Trustee of Parks: the Housing and Constituencies Directorate owns land with watercourses; Leisure and Support services within the Environment and Culture Directorate is responsible for 26 pools (10,000 – 25,000 cubic metres) and 11 pools (under 10,000 cubic metres) within parks;
- Reservoir Undertakers / Landowners: Leisure and Support Services within the Environment and Culture Directorate are the undertakers for the City Council owned reservoirs and the landowner of three reservoirs (for which Environment Agency are undertakers);
- Highway Authority: the Drainage Service, Highways Department within the Development Directorate is responsible for highways drainage; Street Maintenance, Highways within the Development Directorate has responsibility for maintenance and Fleet and Waste Management within the Environment and Culture Directorate has responsibility for cleaning;
- Planning Authority: the Planning Management service within the Development Directorate has responsibility for restricting development in more vulnerable areas and also in controlling flows from developments that increase general flood risk;
- Emergency Response and Community Resilience: the Birmingham Resilience Team (BRT) within the Environment and Culture Directorate; the Constituencies (e.g. Ward Support Officers) within the Housing and Constituencies Directorate and other departments such as Fleet and Waste Management (for street cleansing after flooding) and Neighbourhood Staff within the Housing and Constituencies Directorate (provides advice and assistance after flooding);
- Riparian owner, i.e. owner of land bounding a river.



Flood Risk Management and Response

Reservoir Name	Undertaker / Land Owner
Bartley	Severn Trent Water
Blackroot Pool	Birmingham City Council
Bracebridge Pool	Birmingham City Council
Edgbaston Pool	Edgbaston Golf Club Ltd
Erdington Service	Severn Trent Water
Frankley Balancing Reservoir	Environment Agency / Birmingham City Council is the landowner
Frankley Pure Water	Severn Trent Water
Frankley Raw Water	Severn Trent Water
Lifford Reservoir	Birmingham City Council
Longmoor Pool	Birmingham City Council
Penns Hall Lake	Jarvis Hotels Penns Hall Ltd
Perry Barr	Severn Trent Water Authority
Perry Hall Playing Fields Controlled Washlands	Environment Agency / Birmingham City Council is the landowner
Perry Pool	Birmingham City Council
Powells Pool	Birmingham City Council
Rotton Park	British Waterways
Salford Reservoir	Birmingham City Council
Swanshurst Pool	Birmingham City Council
Trittiford Mill Pool	Birmingham City Council
Witton Lake	Birmingham City Council
Wychall	Environment Agency / Birmingham City Council is the landowner
Wyndley Pool	Birmingham City Council

Governance

The various Directorates involved in flood risk management and response come within different Cabinet Members portfolios:

- Deputy Leader: responsible for climate change (flooding in its wider context) and the Birmingham Resilience Team;
- Cabinet Member for Housing: Landowner with watercourse, pools, brooks, reservoirs and lakes etc;
- Cabinet Member for Leisure, Sport and Culture: landowner with watercourse, pools, brooks, reservoirs and lakes etc; trustee of parks and responsible for maintaining 26 pools;
- Cabinet Member for Local Services and Community Safety: Constituencies;
- Cabinet Member for Transportation and Regeneration: Highways and street cleansing;
- Chair of Planning: Planning management

The key City Council documents relevant to this Scrutiny Review are:

- Level 1 Strategic Flood Risk Assessment, January 2010;
- LDF: Core Strategy – Issues and Options Paper report to Cabinet on 28th July 2008;
- Policy Statement on Flood and Coastal Defence;



- Sustainable Management of Urban Rivers and Flood Plans (SMURF) Supplementary Planning Document (SPD).

Main Changes included in the Floods and Water Management Act for Local Authorities

The main changes in the Floods and Water Management Act for Lead Local Authorities and therefore Birmingham City Council are:

- Lead Local Flood Authorities will be responsible for strategies for local flood risk management dealing with surface runoff, groundwater and ordinary watercourses, under which operational powers in these areas will be exercised by Local Authorities and Internal Drainage Boards;
- Lead Local Flood Authorities would acquire powers to carry out flood risk management work relating to surface runoff and groundwater (no organisation has these powers at present);
- Internal Drainage Boards (IDBs) and District Councils would retain their present powers to carry out flood risk management work relating to ordinary watercourses;
- Introduces a more risk-based approach to reservoir management including to widening the scope of the Reservoirs Act 1975 Act to include reservoirs over 10,000 cubic metres (previously only applied to those over 25,000 cubic metres).
- Local authorities for the area to be the SUDS Approving body (requiring the use of SUDS in certain new developments).

Department for Communities and Local Government (DCLG)

DCLG sets policy on local government, housing, urban regeneration, planning and fire and rescue.⁴⁸

The key DCLG publication relevant to this Scrutiny Review is Planning Policy Statement 25 – Development and Flood Risk (PPS 25).

Department of Energy and Climate Change (DECC)

DECC was created in October 2008, to bring together:

- Energy policy (previously with BERR, which is now BIS - the Department for Business, Innovation and Skills);
- Climate change mitigation policy (previously with Defra - the Department for Environment, Food and Rural Affairs).

The key DECCs legislation relevant to this Scrutiny Review is the Climate Change Act (2008).

⁴⁸ www.communities.gov.uk/corporate/about/



Department for the Environment, Food and Rural Affairs (DEFRA)

The Department for the Environment, Food and Rural Affairs' (DEFRA) purpose is "to secure a healthy environment in which we and future generations can prosper" and is responsible for overall policy and funding relating to flood risk management.

Defra helps people adapt to the changes involved in building a low-carbon, resource-efficient economy, dealing with environmental risks and working towards a sustainable society and a healthy environment.

The key DEFRA documents / policy statements relevant to this Scrutiny Review are:

- Climate Change Impacts on the Safety of British Reservoirs, 2002;
- Making Space for Water (2004);
- Future Water, The Government's water strategy for England, February 2008;
- The Pitt Review: Lessons learned from the 2007 floods, June 2008;
- Flood and Water Management Act 2010;
- Regional Flood and Coastal Committees factsheet.

Environment Agency (EA)

The Environment Agency (EA) delivers overall policy set by DEFRA and is directly responsible for the main rivers and has certain regulatory responsibilities. The EA replaced the National River Authority in 1996.

The Environment Agency employs 13,500 people and has an annual budget of more than £1.1bn a year, with around 60% of the funding coming from government, and most of the rest comes from various charges schemes.

Role and Responsibilities

The Environment Agency is responsible for protecting and improving the environment of England and Wales. The Environment Agency also has responsibility for protecting communities from the risk of flooding and managing water resources.

The Environment Agency principal aims are to protect and improve the environment, and to promote sustainable development, playing a central role in delivering the environmental priorities of central government and the Welsh Assembly Government through their functions and roles.

The Environment Agency's strategy for the next five years is 'Creating a Better Place 2010 – 2015' sets out how the Environment Agency – working with others – will bring pace and ingenuity to the challenge of a changing environment.

The primary areas of responsibility with regards to flooding issues are:

- Flood prediction and the issue of flood warnings from the Area Incident Room;



- Monitoring of river levels and river flows. These are monitored remotely by telemetry from river levels and river flow stations;
- Monitoring of predicted and actual rainfall. Timely forecasts are obtained from the Met Office, and input into models to enable the Agency to provide a flood forecasting service. Rainfall amounts are also monitored remotely by telemetry from rain gauges;
- Monitoring of soil moisture deficit in the catchment (i.e. the amount of rain the catchment can absorb before becoming saturated). The Met Office provides this information;
- Maintenance and operation of vital flood defences on Main River to mitigate the impact of flooding (some of this work is contracted back to Birmingham City Council);
- Ensures that Emergency Services and other professional partners are well briefed on the likelihood and implications of flooding;
- Check EA flood defences for breaches and clear blockages on Main River bridges and culverts (some of this work is contracted back to Birmingham City Council);
- By local agreement, once it has ensured that its own systems and defences are secure, can then support the Emergency Services and Local Authority;
- Offers the Floodline service – a 24 hour helpline providing general information and advice on flooding, as well as registration to the Floodline Warnings Direct Service and information on the flood warnings currently in force;
- As the enforcement authority for England and Wales, the EA is responsible for establishing compliance with the Reservoirs Act 1975, which includes maintaining a register of reservoirs;
- As a reservoir undertaker the EA has responsibility for the safety of the reservoirs under its ownership.

Governance

Split between Bristol and London, the head office is where the Environment Agency set national policy. The Environment Agency's chief executive and directors are based there, and they are responsible for making sure their policies are carried out consistently across the country, taking into account the environmental, social and economic differences in each region. The Environment Agency also support the work of their Regional offices from there.

The Environment Agency is divided into eight regions – Southern, Thames, South West, Midlands, Anglian, Wales, North West and North East – each of which has a Regional Office, run by a Regional Director. They support the area offices and help co-ordinate their activities.

There are 22 area offices across England and Wales. The people who work in these offices are responsible for the day-to-day management of the area and for making sure that the needs of the local community are met. The Environment Agency responds to emergencies and incidents from here.



Flood Risk Management and Response

Birmingham has the Midlands Regional Office with the areas covered extending from the Humber to the Severn Estuary, it includes Nottingham, Derby, Leicester, Stoke on Trent, Coventry, Shrewsbury, Stratford on Avon, Worcester and Gloucester, as well as the wild uplands of the Peak District and the agricultural plains of Shropshire, Warwickshire and Worcestershire.

The key EA documents / policy statements relevant to this scrutiny review are:

- Catchment Flood Management Plans (CFMP) - River Tame Flood Risk Management Strategy;
- Flooding in England: A National Assessment of Flood Risk, 2009;
- Sandbags and How to Use them Properly for Flood Protection leaflet.

Main Changes under the Floods and Water Management Act for the Environment Agency

The main changes in the Floods and Water Management Act for the Environment Agency are:

- The Environment Agency will be given the Strategic Overview role at a national level covering all aspects of FCRM in England;
- The Environment Agency will need to provide, consult on, publish a summary of, and submit to the Secretary of State for approval, the National Flood and Coastal Erosion Risk Management Strategy, which a number of organisations will have to follow and under which the Environment Agency will be able to exercise operation powers relating to main rivers and the sea;
- To reflect the new Environment Agency role in relation to coastal erosion the present Regional Flood Defence Committees would be replaced with Regional Flood and Coastal Committees (the RFCC would retain the executive role for the local level and other sources of funding that are raised locally);
- A permissive power for the Environment Agency and other authorities to designate assets (e.g. walls and earth banks) with an important flood risk management function. The owners could not then remove, alter or replace these assets without prior consent;
- All reservoirs with a minimum volume capacity above 10,000 cubic metres to be included on the Environment Agencies register – to allow the Environment Agency to classify relevant reservoirs according to whether they pose a threat to human life, or meet technical conditions which mean that the risk is negligible, introducing a more risk-based approach to reservoir management;
- The Act amends the Environment Act 1995 to permit the Environment Agency to introduce charging schemes. This can only cover the administrative costs of the Environment Agency meeting its statutory duty. For owners of high risk reservoirs it is anticipated that the annual charge could be between £800 - £1,000;



- Retain powers to carry out flood risk management work relating to main rivers and the sea, and would acquire powers to undertake coast protections work (not applicable in Birmingham);
- Powers in relation to ordinary watercourses are generally removed.

The Environment Agency's new duties include the need to:

- Comply with any request made by a Local Authority Overview and Scrutiny Committee for information or a response to a report, and to have regard to reports and recommendations of such a committee;
- To establish, consult with, and take into account any representations made by the Regional Flood and Coastal Committees.

Severn Trent Water (STW)

Severn Trent was formed in 1974 as a regional, state-owned water authority based in Birmingham and responsible for water management and supply, and waste water treatment and disposal, in the catchment areas of two of Britain's greatest rivers - the Severn and the Trent.

By the mid 1980's, however, Government had decided to privatise the water industry. This enabled the private sector to inject much needed cash into the industry through loans and the issue of private shares. The ten water authorities (including Severn Trent) were sold as water service companies and passed into private ownership in 1989.

1989 also saw the formation of Severn Trent Plc⁴⁹, the parent company for Severn Trent Water.

The water industry is regulated by Ofwat (Office of Water Services) and controlled by other bodies such as the Environment Agency (EA) and the Drinking Water Inspectorate (DWI).

Severn Trent Water employs 5,624 people and had a turnover of £1,324.9m in 2008/09 up 4.7% on 2007/08. Profit before tax was £281.6m, up 17.2%⁵⁰.

Role and Responsibilities

Severn Trent Services is one of the world's leading suppliers of water and waste water treatment solutions. Headquartered in the US, it has a growing presence in Europe, the Middle East and Asia. The business has three main divisions: Water Purification, Operating Services and Analytical Services.

Severn Trent Water provides water and sewerage services in the Midlands and mid Wales (stretching from the Bristol Channel to the Humber and from mid-Wales to the East Midlands) covering around 21,000 km²:

- Provide water to 7.4 million people;
- Provide sewerage services to 8.5 million people.

⁴⁹ a leading FTSE 100 company focusing on the provision, removal and treatment of water in the UK and internationally

⁵⁰ Annual Report and Accounts 2009



Flood Risk Management and Response

In 2007, each water company was required by Ofwat to produce a 25 year strategic direction statement for the years 2010-2035. This forms the key foundation for the long term direction and development for Severn Trent.

Governance

Severn Trent Plc is the ultimate holding company of Severn Trent Water Limited. Since March 2007, as part of the strategy of focusing on water, the boards of directors of Severn Trent Plc and Severn Trent Water Limited have been identical.⁵¹

The relationships between Severn Trent Water Limited, the regulated entity, and the non regulated companies such as Severn Trent Services are monitored and controlled to ensure that they comply with Ofwat obligations on arm's length transactions.

The board has ultimate responsibility for ensuring that the company is properly managed and achieves the strategic objectives it sets.

The Group Chief Executive is responsible for the executive management of all of the group's businesses and for implementing board strategy and policy within approved budgets and timescales. The Group Chief Executive is supported by the Executive Committee.

Main Changes in the Floods and Water Management Act for Severn Trent Water

New powers in the Floods and Water Management Act for Severn Trent Water are:

- Help water companies better control non-essential domestic uses of water during periods of water shortage, such as the use of hosepipes;
- Enables water companies to offer concessions to community groups for surface water drainage charges;
- Changes the arrangements that would apply should a water company go into administration.

Ofwat (The Water Services Regulation Authority)

Ofwat is the economic regulator of the water and sewerage sectors in England and Wales, ensuring water companies provide household and business customers with a good quality service and value for money. It is a non-ministerial government department independent of the water industry, Government and other stakeholders, working within the framework of national policy.

The Secretary of State for the Environment, Food and Rural Affairs and the Welsh Assembly Government are responsible for the development of policy for the water and sewerage sectors in England and Wales respectively. 'Ofwat's strategy – taking a forward look' sets out how Ofwat intend to regulate the water and

⁵¹ Annual Report and Accounts 2009



sewerage sectors over the long term⁵². Ofwat are financed by water and sewerage customers through an annual licence fee, which is recovered from the companies.⁵³ Expenditure in 2008-09 was £14.9million.⁵⁴

Ofwat are based in Birmingham and employ around 200 people.

Role and Responsibilities

Ofwat ensures that water companies provide a good quality service at a fair price by:

- Keeping bills for consumers as low as possible;
- Monitoring and comparing the services the companies provide;
- Scrutinising the companies' costs and investment;
- Encouraging competition where this benefits consumers.

If a company falls short of what Ofwat or customers expect Ofwat take the action necessary to protect consumers' interests, which may include legal steps such as enforcement action and fines.

Ofwat have a Board structure. The Board comprises a Chair, Chief Executive, two executive Board members and five non-executive directors. Board members are appointed by the Secretary of State in consultation with the Welsh Assembly Government.

West Midlands Leaders Board (WMLB)

The West Midlands Leaders Board (WMLB) is the new regional decision making body for local government in the West Midlands. The WMLB has taken over the role formerly undertaken by the West Midlands Local Government Association and brings together the leaders of all 33 local authorities in the West Midlands.⁵⁵

It represents the broad range of local government interests at a regional level. This means both promoting and supporting its member authorities as democratic bodies providing public services, as well as influencing regional policies which affect the 'economic, social and environmental well being' of their communities.

The Leaders Board is responsible for developing regional strategy, particularly in relation to planning and environment, transport, housing and regeneration, following the abolition of the West Midlands Regional Assembly (WMRA) in 2010.

The key WMLB documents relevant to this Scrutiny Review are:

- West Midlands Regional Spatial strategy Phase Two Revision (RSS), Report of the Panel: Volume 1 – Report to September 2009, Examination in Public, 28th April – 24th June 2009;
- West Midlands Regional Flood Risk Appraisal (RFRA).

⁵² www.ofwat.gov.uk/aboutofwat/reports/forwardprogrammes/rpt_fwd_ofwatstrategy.pdf

⁵³ www.parliament.uk/documents/upload/Ofwat.pdf

⁵⁴ Ofwat Annual Report 2008-09

⁵⁵ www.wmleadersboard.gov.uk



Riparian Ownership

Landowners who own land bounding upon a lake, river, or other body of water are, under common law, riparian owners. Riparian owners have the right to receive a flow of water in its natural state, and the right to protect their property against flooding from the watercourse and also to prevent erosion of the watercourse banks or any structures. Responsibilities include the maintenance of the bank and bed of that section of watercourse, in order to avoid any obstruction of flow in the watercourse.