

Flood & Water Management

Essex County Council Local Flood Risk Management Strategy

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Foreword



This is the first Essex Strategy for Flood Risk Management and it is a key step in making sure that the risk of flooding in Essex is dealt with as whole, joining up the work done by councils, government bodies and water companies with that of communities and individual households. It will consider how all sorts of activities can help manage flood risk, from better planning which makes sure new developments decrease rather than increase flood risk for its neighbours, to ensuring that emergency responses have a good understanding of where flood risk is greatest.

However the activities identified in this strategy can only manage flood risk. It would not be possible, even if we were not in an era of austerity, to protect all households from any flood risk. Instead efforts need to be made by all involved, organisations and householders, alike to reduce flood risk in practical ways. Sometimes this involves focussing not just on decreasing the probability of flooding but also its impact, making sure that properties and households can cope in the event of a serious flood.

We recognise that, in the past, the different organisations involved in risk management have not always worked together effectively enough in tackling the difficult problems that flood risk often creates. It is vital that organisations work better not just with each other but crucially with the public. This is why the strategy details the roles and responsibilities of all major stakeholders, including households and community groups, so that there is better clarity and understanding about when different stakeholders should be involved.

This strategy focuses on 'local flood risk' that is flooding caused by surface runoff, groundwater and ordinary watercourses (streams, ditches etc.) These types of flooding were the cause of most of the terrible damage of the 2007 floods and need to be taken as seriously as flooding from rivers or the coast. However it's not the source of flooding but the effects that matter, and we are keen to make sure that all forms are managed together and tackled according to level of risk rather than by what caused it or who shouts loudest.

Assessing levels of risk from flooding is a difficult task. With greater development and increasingly uncertain weather patterns, houses that have never been flooded in living memory may be at risk. We recognise householders may have concerns about using models to determine areas of flood risk, but they are crucial to making sure that limited resources are used most effectively to reduce the impact and probability of properties being flooded.

This strategy is our statement of intent as to what needs to be done to tackle flooding in Essex. We hope it will help you become better informed of everyone's responsibilities, how to find out your flood risk and what we can do to help you become safer.

Cllr John Jowers
Cabinet Member for Communities and Planning

Acknowledgements

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Capita Symonds
URS (Scott Wilson)
Anglian Water
Braintree District Council
Chelmsford City Council
Colchester Borough Council
Environment Agency (Anglian East and Thames Areas Offices)
Epping Forest District Council
Hertfordshire County Council
Natural England
Suffolk County Council
Tendring District Council
Thames Water
Rochford District Council
Uttlesford District Council

Executive Summary

The Essex Local Flood Risk Management Strategy (Local Strategy) is an important new tool to help understand and manage flood risk within the county. Flood risk management in Essex is beginning a new stage which will be marked by better knowledge of the risks in the county, better co-operation between organisations involved in flood risk management and better communication with the public about those risks and what can be done. This strategy will highlight the steps that are to be taken to ensure this happens.

It should be noted that Essex County Council, as a Lead Local Flood Authority, is only responsible for management of **Local Flood Risk**. Local Flood Risk is defined as surface water flooding, ordinary watercourse flooding and groundwater flooding. This area of responsibility is defined by the Flood and Water Management Act (2010). Therefore, this Local Flood Risk Management Strategy **only** address **Local Flood Risk** and the interactions it might have with other forms of flood risk. More households are at risk from this form of flooding than any other but until now there has been little co-ordinated work to address these forms of risk. The strategy will look to address this.

The Local Strategy is a statutory document required by the Flood and Water Management Act (2010) and therefore must address specific requirements. The overall structure and content of the strategy is summarised below:

1. Introduction - Purpose of strategy, background information and related documents
2. Local Flood Risk - Description of historic flood impacts and potential future flood risk in Essex
3. Roles and Responsibilities - Summary of organisations responsible for managing flood risk and their respective roles
4. Actions to Improve Flood Risk - Details of actions that Essex County Council and their partners are taking to reduce flood risk
5. Implementation and Funding - Details of how actions can be implemented and available funding sources
6. Environmental Assessment - Description of how the Local Strategy can be used to achieve wider environmental benefits
7. Next Steps - Summary of actions to deliver the Local Strategy and planned review / update frequency

The content under the following headings summarises the detail from each of the sections listed above.

Introduction

For those who suffer from flooding, it does not matter what type of flooding it is, and this strategy also provides information about other forms of flooding and the organisations involved. It explains the powers and responsibilities of all the major organisations involved in flood risk and provide advice on what householders and businesses need to do. It highlights and summarises the information available on flooding in Essex so that this information is more easily accessible for those trying to understand more about flood risk in Essex.

The following are the guiding principles which flood risk management in Essex will be based on:

1. Flooding is a natural event that will occur despite all efforts to prevent it. Hence it is important to focus as much on reducing the disruption that flooding causes as on measures to prevent it.
2. Flood damage from surface runoff, groundwater and ordinary watercourses creates both public and private financial costs. Effective flood risk management can reduce long-term flood damage costs to property and the impacts on human health and well being

3. Decisions on where local resources are focused should be evidence-based and made against clear criteria.
4. Improving the level of knowledge about flood risk across all stakeholders is a vital process which needs to be improved.
5. No organisation is able to ensure that all households and businesses are safe from flooding. Household holders and business holders have responsibility for protecting their households, but the relevant public organisation has a duty to inform households of their risk and advise what steps they can take to make their property more resilient
6. No single organisation can effectively manage flood risk across the whole of Essex, so co-operation among relevant public agencies is essential for the success of long-term comprehensive flood risk management.
7. New developments should look not only to ensure that there is no increase in flood risk but that it improves the flood risk that was already there. In accordance with National Planning Policy and emerging local plans new development should be directed away from areas of flood risk areas wherever possible.
8. The cumulative impact of small developments on flood risk is as significant as the impact of major developments, and so both must be managed in order to ensure the threat of flood risk does not grow.
9. Proposals / schemes likely to have a significant effect on a European site will only be approved if it can be ascertained, by means of an Appropriate Assessment, that the integrity of the European site will not be adversely affected.

Local Flood Risk

The nature of flood risk within Essex is extremely varied and widespread across the county. Essex has an extensive coastline and network of rivers and canals, combined with a large number of towns and urbanised areas, which means it is at risk of flooding from a range of different sources. The recent Preliminary Flood Risk Assessment (PFRA) for Essex County Council highlighted records of approximately 1,300 local flood events that have occurred across the county over the past fifteen years but it is believed that there are considerably more for which there are no official records.

The Local Strategy addresses **Local Flood Risk** only - this is defined below. Other sources of flood risk are considered by the Local Strategy, but only where they interact or are influenced by Local Flood Risk.

- **Surface water flooding** (form of local flood risk), also known as **pluvial flooding** or **flash flooding**, occurs when high intensity rainfall generates runoff which flows over the surface of the ground and ponds in low lying areas.
- **Ordinary watercourse flooding** (form of local flood risk) concerns flooding from any watercourse which is not designated by the Environment Agency as a main river. All other smaller watercourses, ditches and streams are classified as ordinary watercourses and there is a vast and unmapped network of watercourses in Essex.
- **Groundwater flooding** (form of local flood risk) occurs when water levels in the ground rise above the ground surface. Flooding of this type tends to occur after long periods of sustained heavy rainfall and can last for weeks or even months

Roles and Responsibilities

This section provides information about the roles and responsibilities of all the stakeholders involved with managing flood risk in Essex, including households and business. This is because flood risk management is not something that can be left solely in the hands of certain organisations and forgotten by everyone else. We all have our part to play. Even if this strategy was being devised at a time of substantial public sector budgets, the organisations would still not be able to prevent all floods or solve all concerns. It is crucial therefore that everyone is aware of what they can do, and are expected to do to help manage flood risk.

The key stakeholders in Essex County that have responsibilities around flooding are detailed below:

- Essex County Council (*as Lead Local Flood Authority*)
- Thames Water
- Basildon Borough Council
- Brentwood Borough Council
- Chelmsford City Council
- Epping Forest District Council
- Maldon District Council
- Tendring District Council
- Neighbouring Lead Local Flood Authorities (*Thurrock, Southend-on-Sea, Hertfordshire County, Cambridgeshire County and Suffolk County plus the London Boroughs of Havering, Redbridge, Waltham Forest and Enfield*)
- Highways Agency
- Anglian Water
- Braintree District Council
- Castle Point Borough Council
- Colchester Borough Council
- Harlow District Council
- Rochford District Council
- Uttlesford District Council
- Environment Agency (Anglian and South Eastern Regions)

All of these authorities are known as 'Risk Management Authorities' under the Flood and Water Management Act and have the following duties:

- Duty to be subject to scrutiny from Lead Local Flood Authorities' democratic processes.
- Duty to co-operate with other Risk Management Authorities in the exercise of their flood and coastal erosion risk management functions, including sharing flood risk management data.
- Power to take on flood and coastal erosion functions from another Risk Management Authority when agreed by both sides

Actions to Improve Local Flood Risk

The Local Strategy defines nine objectives for management of Local Flood Risk:

1. To provide a clear explanation of all stakeholder's responsibilities in flooding issues
2. To develop a clearer understanding of the risks of flooding from surface runoff, groundwater and ordinary watercourses and to consider how best to communicate and share the information that becomes available
3. To define and explain the criteria by which areas at risk of flooding from surface runoff, groundwater and ordinary watercourses are assessed and resources are prioritised.
4. To state how risk management authorities will share information and resources
5. To set out clear and consistent plans for risk management so that communities and businesses can make informed decisions about the management of the residual risk
6. To ensure that planning decisions are properly informed by flooding issues and the impact future planning may have.
7. To encourage innovative management of flood and coastal erosion risks, taking account of the needs of communities and the natural and built environment
8. To ensure that emergency plans and responses to flood incidents are effective and that communities are able to respond properly to flood warnings
9. To highlight where information regarding other forms of flooding can be found

The objectives detailed above will be delivered through a series of local measures and actions. Flood risk management actions included in the Local Flood Risk Management Strategy have been split into two categories:

- County-Wide Strategic Actions with the aim of following the guiding principles and meeting the overall objectives of this strategy and of the Environment Agency's national strategy; and
- Site level Specific Management Actions that could be implemented within locally important flood risk areas in order to translate the aims of the overall strategic actions onto a local scale.

The site level specific management actions will be decided through annual action plans which will be agreed at the spring meeting of the Essex Partnership for Flood Management.

Implementation and Funding

It is important that the Local Strategy sets out how the proposed actions and measures will be funded and resourced within Essex. It is also important to identify what funding mechanisms are available to Essex County Council to pay for the flood risk management measures that are set out in the strategy. Effective practical implementation of flood policy objectives requires adequate resources both for the management and response activities of lead local flood authorities as well as for capital projects.

This chapter looks at addressing the skills gap within risk management authorities in Essex. It is acknowledged that Lead Local Flood Authorities and other risk management authorities will need to expand their flood risk management skills and capacity in order to deliver their new responsibilities under the Flood and Water Management Act (2010). This local strategy will help to identify what skills will need to be targeted to ensure that the plans set out in this strategy can be delivered and implemented successfully.

This section also provides a summary of the new partnership funding mechanism for available forms of funding that are being considered by Essex County Council and will also help to identify any further actions that will be needed to ensure that particular funding alternatives are feasible.

Environmental Assessment

The implementation of flood risk management measures and actions within Essex provide a significant opportunity to improve the natural, rural and built environment across the county. This includes helping to provide better environments for residents and businesses as well as improving biodiversity and local habitats for wildlife. The Flood and Water Management Act states that the Local Strategy must specify how it will contribute to the achievement of wider environmental objectives and sustainable development.

Essex County Council is committed to protection and enhancement of locally, nationally and internationally recognised environmental sites. Environmental impacts will be considered by any flood risk management work carried out by the County Council. Appropriate assessment will be made at every stage and we will not pursue any activities which would have a negative impact on them.

Next Steps

As a result of this strategy, the annual action plans and other planned work by risk management authorities, there will be local plans and flood defence schemes to help manage flooding in parts of Essex. In all of these situations, the lead risk management authority should create an engagement plan to ensure that the affected communities are engaged early with the issues and are able to discuss it and share their concerns, interests and priorities.

It is important to understand that final decisions will still be made by the responsible risk management authority but those decisions must be informed by proper engagement with the affected residents. This engagement requires both the organisations and the households involved to work together to ensure that engagement events are well attended and local issues are properly understood and discussed.

This is the beginning of a new stage in flood risk management for Essex. There are going to be substantial changes in the next few years with changes to the planning system, sustainable drainage requirements and the provision of flood insurance as well as innovations in the funding and design of flood prevention schemes and improvements in the knowledge of where the greatest flood risk is. Some strategy supplements may need to be produced before the next review to recognise these changes.

It is proposed that a review should take place in 2015, to coincide with the production of the flood risk management plans legislated for in the Flood Risk Regulations. The strategy should then continue to be reviewed in conjunction with the production of the flood risk management plans or when the Essex Partnership for Flood Management deems it necessary.

To complement the Essex Strategy for Flood Risk Management, annual action plans will be put before the Essex Partnership for Flood Management. These will state:

- The newest information available about local flood risk, indicating where flood risk has decreased due to work done or where new information has changed prioritisation.
- Actions required to meet the Flood Risk Regulations in the coming year
- Projects which will be put forward to the Environment Agency for entry onto the medium term plan
- Actions from Surface Water Management Plans which will be delivered in the current year
- Other flood risk management activities which will be taken by Essex risk management authorities in the next year

The meeting to agree the annual plan will occur in early Autumn so as to be available for reference in budget discussions by risk management authorities. All annual plans will need to comply with the principles laid out in the both the Essex Strategy for Flood Risk Management and the National Strategy for Flood and Coastal Erosion Risk Management. These annual plans are to ensure operations are joined up across the different stakeholders in Essex and to ensure that decisions on resources are evidence-based.

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1. Introduction

1.1 Purpose of Strategy

The Essex Local Flood Risk Management Strategy is an important new tool to help understand and manage flood risk within the county. Flood risk management in Essex is beginning a new stage which will be marked by better knowledge of the risks in the county, better co-operation between organisations involved in flood risk management and better communication with the public about those risks and what can be done. This strategy will highlight the steps that are to be taken to ensure this happens.

It should be noted that Essex County Council, as a Lead Local Flood Authority, is only responsible for management of **Local Flood Risk**. Local Flood Risk is defined as surface water flooding, ordinary watercourse flooding and groundwater flooding. This area of responsibility is defined by the Flood and Water Management Act. Therefore, this Local Flood Risk Management Strategy **only** address **Local Flood Risk** and the interactions it might have with other forms of flood risk. More households are at risk from this form of flooding than any other but until now there has been little co-ordinated work to address these forms of risk. The strategy will look to address this.

However, for those who suffer from flooding, it does not matter what type of flooding it is, and this strategy will also look to provide information about other forms of flooding and the organisations involved. It will explain the powers and responsibilities of all the major organisations involved in flood risk and provide advice on what householders and businesses need to do. It will highlight and summarise the information available on flooding in Essex so that this information is more easily accessible for those trying to understand more about flood risk in Essex.

The Strategy will be supported annual action plans which will be approved by the Essex Partnership for Flood Management. These will give a more detailed understanding of what will be taking place each year to manage flood risk in Essex.

These plans will be used to inform and influence the Regional Flood and Coastal Committees (RFCCs). These bodies have medium term plans which state the intended capital projects which are planned for the region for improving flood risk from all sources. These capital projects are funded through a mixture of central government grant and locally raised funding (Refer Section 5.2 for further details). Influencing the RFCCs to make sure that Essex is fairly represented in the allocation of this funding is an important role of Essex County Council as the Lead Local Flood Authority and all the risk management authorities in Essex.

1.2 Guiding Principals

The following are the guiding principles which flood risk management in Essex will be based on:

1. Flooding is a natural event that will occur despite all efforts to prevent it. Hence it is important to focus as much on reducing the disruption that flooding causes as on measures to prevent it.
2. Flood damage from surface runoff, groundwater and ordinary watercourses creates both public and private financial costs. Effective flood risk management can reduce long-term flood damage costs to property and the impacts on human health and well being
3. Decisions on where local resources are focused should be evidence-based and made against clear criteria.

4. Improving the level of knowledge about flood risk across all stakeholders is a vital process which needs to be improved.
5. No organisation is able to ensure that all households and businesses are safe from flooding. Household and business holders have responsibility for protecting their households, but the relevant public organisation has a duty to inform households of their risk and advise what steps they can take to make their property more resilient
6. No single organisation can effectively manage flood risk across the whole of Essex, so co-operation among relevant public agencies is essential for the success of long-term comprehensive flood risk management.
7. New developments should look not only to ensure that there is no increase in flood risk but that it improves the flood risk that was already there. In accordance with National Planning Policy and emerging local plans new development should be directed away from areas of flood risk areas wherever possible.
8. The cumulative impact of small developments on flood risk is as significant as the impact of major developments, and so both must be managed in order to ensure the threat of flood risk does not grow.
9. Proposals / schemes likely to have a significant effect on a European site will only be approved if it can be ascertained, by means of an Appropriate Assessment, that the integrity of the European site will not be adversely affected.

1.3 Structure of Strategy

The table below summarises structure of the Local Strategy and the content within each section.

Table 1-1: Structure of Strategy

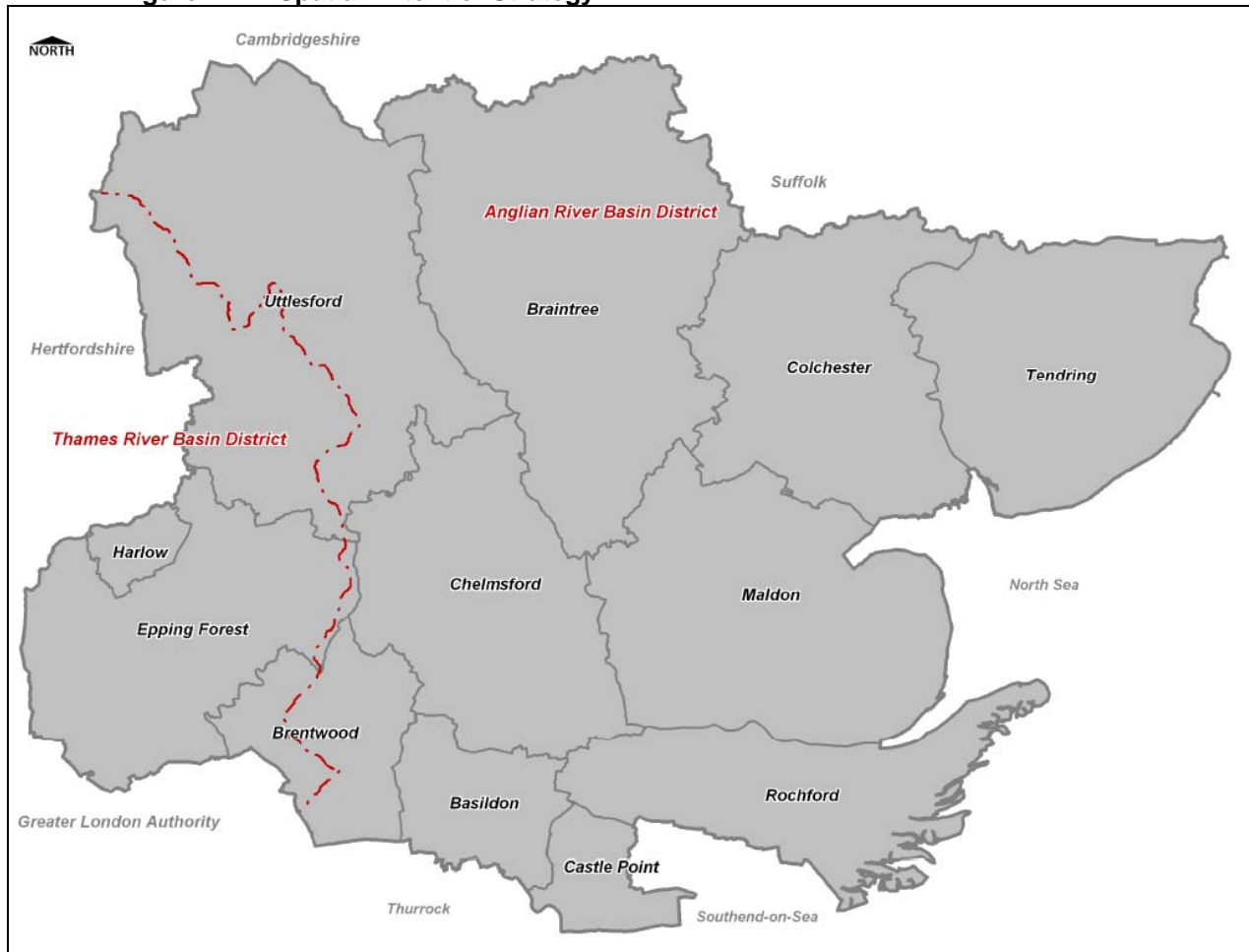
Section No.	Title	Summary of Content
1.0	Introduction	Purpose of strategy, background information and related documents
2.0	Local Flood Risk	Description of historic flood impacts and potential future flood risk in Essex
3.0	Roles and Responsibilities	Summary of organisations responsible for managing flood risk and their respective roles
4.0	Actions to Improve Flood Risk	Details of actions that Essex County Council and their partners are taking to reduce flood risk
5.0	Implementation and Funding	Details of how actions can be implemented and available funding sources
6.0	Environmental Assessment	Description of how the Local Strategy can be used to achieve wider environmental benefits
7.0	Next Steps	Summary of actions to deliver the Local Strategy and planned review / update frequency
8.0	References	Details of documents used to inform the Local Strategy
Appendix A	Index of Related Studies	Index of Strategic Flood Risk Assessments and Surface Water Management Plans in Essex with links to access them (where available)
Appendix B	Glossary	Glossary of technical terms and acronyms used within the Local Strategy
Appendix C	Detailed Roles and Responsibilities	Detailed descriptions of the legislated roles and responsibilities for organisations who manage flood risk in Essex
Appendix D	Guidance for Property Owners and Residents	Guidance for discovering more about flood risk and how it can be managed by individuals

Appendix E	Tier 3 Areas	Table of Tier 3 Areas (as defined in Section 2.5 – Prioritisation of Risk Areas)
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1.4 Strategy Spatial Extent

For the purposes of this strategy the spatial extent is defined by the administrative boundary of Essex County Council. This includes Braintree, Epping Forest, Harlow, Maldon, Rochford, Tendring and Uttlesford District Councils, Basildon, Brentwood, Castle Point and Colchester Borough Councils and Chelmsford City Council. This is illustrated in the figure below.

Figure 1—1: Spatial Extent of Strategy



The administrative area of Essex County Council covers approximately 3,700 km² and includes 12 lower tier District and Borough authorities which vary greatly both in terms of geographical area and organisational size.

Essex falls across the Anglian River Basin District and the Thames River Basin District and is served by two water and sewage companies, Anglian Water and Thames Water, as well as three water supply companies, Northumbrian Water (formally Essex & Suffolk water), Veolia East Water Ltd (formally Tendring Hundred Water) and Veolia Central Water Ltd (formerly Three Valleys Water). It is also served by two Environment Agency regions, South Eastern and Anglian regions. The South Eastern Region covers Harlow, Epping Forest and parts of Uttlesford and Brentwood. The Anglian Region is split into three areas (Eastern, Central and Northern). Most of the rest of Essex is in Anglian Eastern. However some of Uttlesford is in Anglian Central.

Essex is bordered to the east by the North Sea and to the south by the two unitary councils of Southend-on-Sea and Thurrock, as well as the River Thames estuary. To the north are the counties of Suffolk and Cambridgeshire; to the west is the county of Hertfordshire; and to the south-west the Greater London area, specifically the London boroughs of Enfield, Waltham Forest, Redbridge and Havering.

1.5 The Essex Partnership for Flood Management

The Essex Partnership for Flood Management was formed in order to ensure that there is effective co-operation between the risk management authorities in Essex and that democratically elected members are fully involved in the decision making process.

The partnership is chaired by the Essex County Council cabinet member responsible for flooding and has elected members from each of the 12 district and borough councils. These members are either the most appropriate cabinet member or in those councils which do not have cabinets, a senior representative from the appropriate committee. It also has representatives from Anglian Water, Thames Water, the Environment Agency, Essex Fire and Rescue Service, Thurrock Council, Southend-on-Sea Council and the Country Land and Business Association.

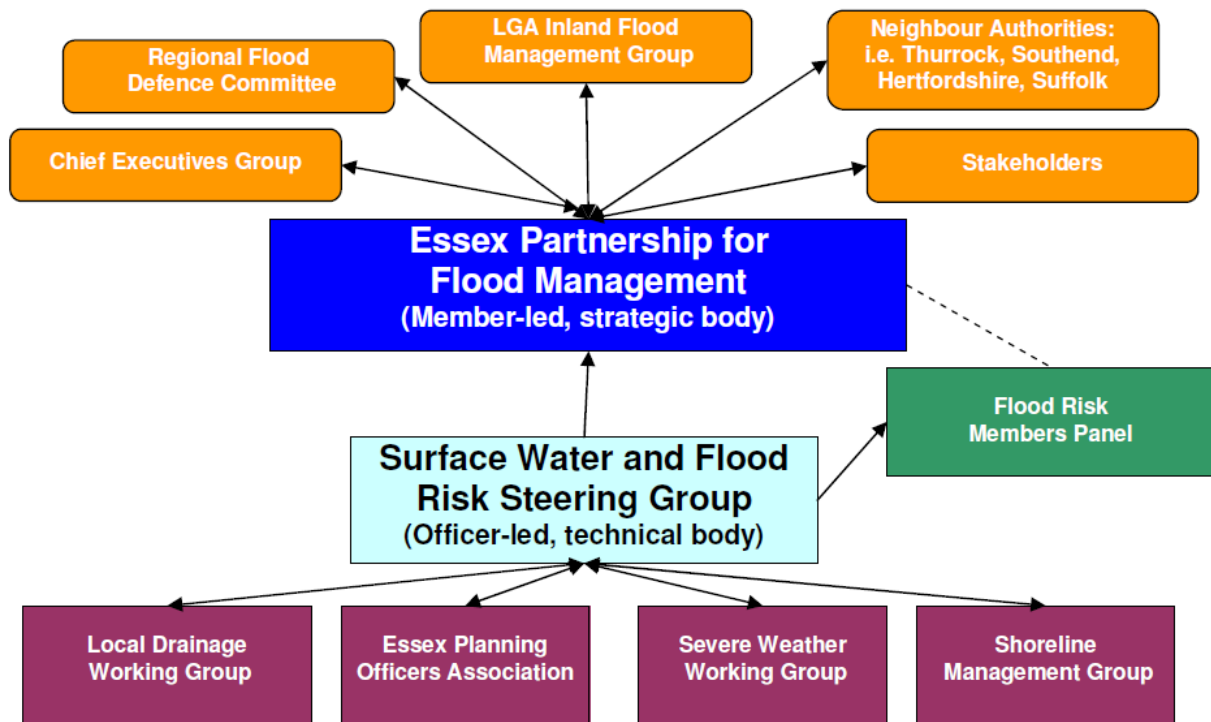
As well as the listed partners there will be a number of stakeholders who will be kept aware of the decisions and activities of the group and brought in to discuss issues where appropriate. These include the Highways Agency, Network Rail, the water supply companies, the primary care trusts and Essex Police.

The objectives of the partnership include:

1. To provide a co-ordinated approach to flood risk management within the county of Essex
2. To develop public communications strategies on issues concerning flooding
3. To collectively lobby central government where appropriate to ensure that the resources required to meet new obligations are provided.
4. To scrutinise the development and implementation of the Local Flood Risk Strategy and ensure all members meet their responsibilities.
5. To agree Annual Action plans to tackle local flood risk management in Essex
6. To look at how all risk management authorities can help the public manage drought
7. To scrutinise issues and resolve problems brought to it by groups that report to the partnership
8. To approve and scrutinise relevant policy and guidance produced by the Lead Local Flood Authority
9. To assist in the raising of local contributions for projects to be put on the Regional Flood and Coastal Committees Medium Term Plan

The meeting is clerked and organised by the Essex County Council Flood Partnership Manager and supported by an officer steering group which has representatives from Essex County Council, District and Borough Councils, the Environment Agency and Anglian Water. Officers from other organisations attend when appropriate. It reports to the Essex Partnership for Flood Management and is responsible for delivering reports and policies to the Essex Partnership for Flood Management. The figure below shows the overall structure of the Essex Partnership and how it interacts with other stakeholders.

Figure 1—2: Essex Partnership for Flood Management



1.6 Essex County Council Flood and Water Management Team

As part of their duties under the Flood and Water Management Act, Essex County Council has created a Flood and Water Management Team. The responsibilities of the team include:

- Delivery of Lead Local Flood Authorities duties and responsibilities (Refer Section 3.1.1)
- Coordination and leadership of the Essex Partnership for Flood Risk Management
- Interaction with the Regional Flood and Coastal Committee to secure support and funding for flood risk management initiatives (Refer Section 4.3.6)
- Creation and implementation of SuDS Guidelines and the SuDS Approval Body (Refer Section 3.1.1)

1.7 Legislative Context

1.7.1 Historic Legislation

The responsibility for flood risk management within Essex has changed considerably over the past 30 years. Prior to 1989, the regulation of national environmental issues (including flood risk management, drainage and water quality) was carried out by ten Regional Water Authorities (RWAs). Two of them, the Thames Water Authority and the Anglian Water Authority covered parts of Essex. In 1989 a new Water Act was passed by Government in 1989 which privatised the Water Supply and Sewerage functions of the Water Authorities with Anglian Water and Thames Water becoming Public Limited Companies (PLCs). The functions of flood risk management, land drainage, fisheries and water quality in rivers, streams and inland waters were transferred by statute to the newly created National Rivers Authority.

In December 1991, a number of pieces of legislation were enacted which aimed to consolidate existing water legislation. Most relevant in terms of flood risk management were the Land Drainage Act, which outlined the duties and powers to manage land drainage for a number of bodies including internal drainage boards and Local Authorities, and the Water Resources Act, which outlined the roles and responsibilities of the National Rivers Authority.

The Statutory Water Companies Act and the Water (Consequential Provisions) Act were also enacted at the same time.

The Environment Agency was established by the Environment Act in 1995. The Environment Agency came into existence on 1st April 1996 and took over the roles and responsibilities of the National Rivers Authority and also the responsibility for issuing flood warnings, a role previously held by the police. The management and operation of the Environment Agency is divided into a number of regions across the country; the county of Essex falls across two regions, Anglian and South Eastern Region and therefore the responsibility is split between both Environment Agency regional teams.

Within England and Wales, flood risk management policy changes were accelerated by major flood events in 1998 and 2000, which led to the release of *Planning Policy Guidance 25 (PPG25): Development and Flood Risk* in 2001. PPG25 aimed to strengthen development planning with regard to flood risk. Importantly, it was the first attempt to introduce sustainable surface water management into the planning process. *Planning Policy Statement 25 (PPS25)* superseded PPG25 in 2006 and reinforced the requirement for sustainable surface water management in new developments in England and Wales. This has now been replaced by the National Planning Policy Framework which looks to rationalise the amount of planning legislation and bringing it all together in one coherent document (Refer Section 1.7.2 for more details).

1.7.2 *Current Legislation*

Following the extreme floods of 2007, the Pitt Review (2008) stressed the importance of implementing better legislation for the effective management of surface water, with increased responsibilities for upper tier local authorities such as Essex County Council. Many of the recommendations from the Pitt Review have been implemented through the Flood and Water Management Act (2010), which places a greater responsibility on upper tier local authorities, particularly for surface water management issues, under their new role as a Lead Local Flood Authority. A summary of key recent legislation and associated documents are included below.

The Pitt Review (2008)

Sir Michael Pitt carried out an independent review of national flood risk management practices after the widespread and catastrophic floods during the summer of 2007, in which over 50,000 households were affected and damages exceeded £4billion. The Pitt Review was published in June 2008 and called for urgent and fundamental changes to the way flood risk was being managed. The report contained 92 recommendations for the Government, local authorities, Local Resilience Forums and other stakeholders which were based around the concept of local authorities playing a major role in the management of local flood risk, through coordinating with all relevant authorities.

The Flood and Water Management Act (2010)

The Flood & Water Management Act (FWMA) gained royal assent on the 8th April 2010 and provides legislation for the management of risks associated with flooding and coastal erosion. Many of the recommendations contained in the Pitt Review have been enacted through the Flood and Water Management Act.

The Act reinforces the need to manage flooding holistically and in a sustainable manner and places a number of roles and responsibilities on councils such as Essex County Council, which is designated a Lead Local Flood Authority. The preparation of this Local Flood Risk Management Strategy is just one of the duties placed upon Essex County Council under this piece of legislation.

The Act defines various bodies which are ‘risk management authorities’ and lists them as the following

- a Lead Local Flood Authority
- the Environment Agency
- a district council
- an internal drainage board
- a water company
- a highway authority

The Flood Risk Regulations (2009)

The Flood Risk Regulations (FRR) came into force in December 2009 and transpose the EU Floods Directive into law for England and Wales. The Flood Risk Regulations require three main pieces of work:

1. *Preliminary Flood Risk Assessment (PFRA)* – This involves collecting information on past and future floods from surface water, groundwater and small watercourses, assembling the information into a PFRA report and identifying Flood Risk Areas. Within Essex, one Flood Risk Area was identified in South Essex (covering Basildon, Castle Point, Rochford and Southend-on-Sea). The PFRA for Essex has been completed and can be found on the Essex County Council website¹. The Environment Agency must also produce Preliminary Assessment Reports for England in relation to flooding from the sea, main rivers and reservoirs which identifies indicative flood risk areas from these forms of flooding.
2. *Flood Hazard and Flood Risk Maps* – Following the identification of Flood Risk Areas, the Environment Agency and Essex County Council are required to produce hazard and risk maps for Flood Risk Areas by 22nd December 2013.
3. *Flood Risk Management Plans* – The final stage is for Essex County Council to produce a Flood Risk Management Plan for the Flood Risk Areas by 22nd December 2015. It is likely that Surface Water Management Plans (SWMPs) undertaken in the area, as well as this Local Flood Risk Management Strategy, will contribute significantly to the preparation of a Flood Risk Management Plan for the South Essex area.

National Planning Policy Framework

The National Planning Policy Framework (NPPF) was issued in March 2012 and outlines the national policy including on development and flood risk assessment. This replaced with immediate effect national policy including Planning Policy Statement 25 – Development and Flood Risk.

The NPPF requires Local Plans to be supported by a Strategic Flood Risk Assessment and develop policies to manage flood risk from all sources. Advice should be sought from the Environment Agency and other relevant flood risk management bodies, such as Lead Local Flood Authorities (LLFAs) and Internal Drainage Boards (IDBs). In developing policies, Local Plans should apply a sequential, risk-based approach to the location of development in order to avoid flood risk to people and property, to manage any residual risk, and to take account of the impacts of climate change. More information on the effect of the National Planning Policy Framework can be found in the strategic actions under “Adapt spatial planning policy to reflect local flood risk” (Refer Section 4.3.2).

¹ <http://www.essex.gov.uk/Environment%20Planning/Environmental-Issues/local-environment/flooding/Flood-water-management-strategies/Pages/Preliminary-Flood-Risk-Assessment.aspx>

National Strategy for Flood and Coastal Erosion Risk Management

The Flood and Water Management Act 2010 requires the Environment Agency to develop, maintain, apply and monitor a strategy for flood and coastal erosion risk management in England. The National Strategy² states that Government will work with individuals, communities and organisations to reduce the threat of flooding and coastal erosion by:

- Understanding the risks of flooding and coastal erosion, working together to put in place long-term plans to manage these risks and making sure that other plans take account of them
- Avoiding inappropriate development in areas of flood and coastal erosion risk and being careful to manage land elsewhere to avoid increasing risks
- Building, maintaining and improving flood and coastal erosion management infrastructure and systems to reduce the likelihood of harm to people and damage to the economy, environment and society
- Increasing public awareness of the risk that remains and engaging with people at risk to make their property more resilient
- Improving the detection, forecasting and issue of warnings of flooding, planning for and co-ordinating a rapid response to flood emergencies and promoting faster recovery from flooding

The Flood and Water Management Act states that Local Strategies must be consistent with the National Strategy. Being consistent with the national strategy means acting in accordance with the overall aims and objectives as detailed in Section 4.1.

Other Legislation

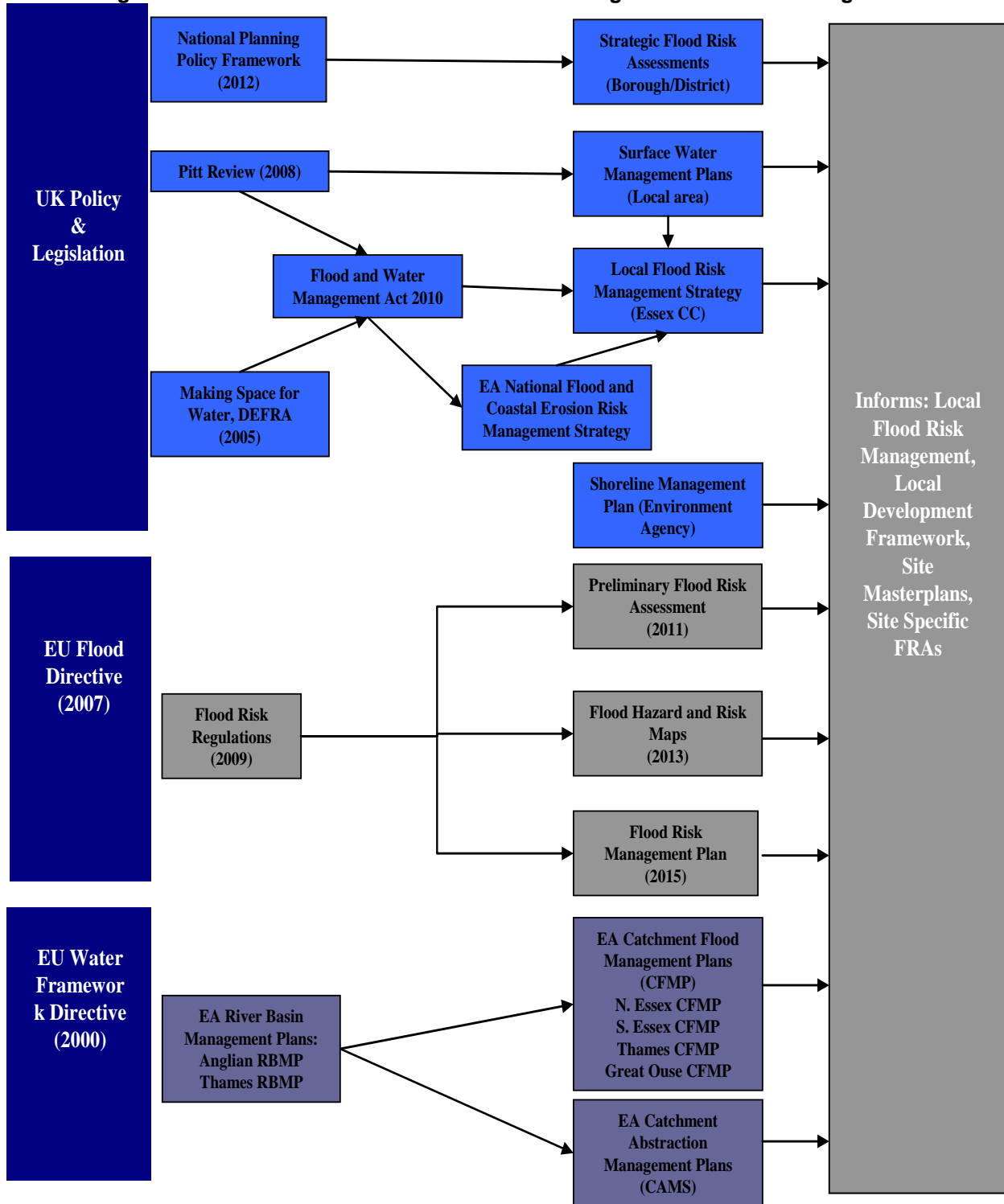
Flood Risk Management is affected by a range of other legislation and guidance. These include:

- The Climate Change Act (2008)
- The Conservation of Habitats and Species Regulations (2010)
- The Civil Contingencies Act (2004)
- The Strategic Environmental Assessment (SEA) Directive (2001)
- The Land Drainage Act (1991)
- The Water Framework Directive (2007)
- Wildlife and Countryside Act (1981)
- Countryside and Rights of Way Act (2000)
- Public Health Act (1936)
- Highways Act (1980)
- Reservoirs Act (1975)

The figure below provides a summary of European, national and local policies concerning flood and water management that are of relevance and importance to flood risk management within Essex and provides an overview of the linkages between legislation, policy and strategy documents that relate to flooding and the management of flood risk. The documents listed in the figure are described in further detail in Section 1.8.

² <http://publications.environment-agency.gov.uk/dispay.php?name=GEHO0711BTZE-E-E>

Figure 1—3: Overview of Current Flood Risk Management Drivers and Legislation



1.8 Related Documents

1.8.1 Essex Preliminary Flood Risk Assessment

The Essex Preliminary Flood Risk Assessment (PFRA) was published in December 2011 as per the Flood Risk Regulations 2009. The PFRA is aimed at providing a high level overview of flood risk from local flood sources, including surface water, groundwater and ordinary watercourses. It combines modelling of rainfall events produced by the Environment Agency with locally collected information to explain the local flood risk across the 12 districts of Essex.

There is a large variation in the number of recorded historical flood events within each District and Borough council. However, it must be noted that this variation is due as much to differences between different council authorities in recording and storing flood event data as to the range in frequency or severity of flood risk across the Essex County Council administrative area. Because of these discrepancies, the information from the PFRA should be considered as indicative and will be improved upon in future.

The Environment Agency has used a national methodology, which has been set out by DEFRA (Department for Environment, Fisheries and Rural Affairs), to identify Flood Risk Areas across England. The Environment Agency and Essex County Council agree that the Flood Risk Areas should not be used to determine flood risk for individual households. It should not be presumed that being in a Flood Risk Area (as defined for the purposes of the PFRA) necessarily means that flood risk is higher for any individual property and the area should not be used for insurance or other valuation purposes.

One of the ten Flood Risk Areas that have been identified nationally is located within Essex County Council's administrative boundary as shown in the figure below. The 'South Essex' Flood Risk Area is situated in the south of the county and covers parts of Basildon, Castle Point and Rochford, as well as a large part of Southend-On-Sea. Southend-on-Sea is a unitary authority and therefore is a LLFA and will prepare a separate PFRA³.

Essex County Council have released information about the flood risk area which can be found alongside the PFRA on the Essex County Council website⁴. The Flood Risk Regulations require further action to be taken on the Flood Risk Area (as described in Section 1.7.2).

Figure 1—4: 'Flood Risk Areas' in Essex



1.8.2 Surface Water Management Plans

A Surface Water Management Plan (SWMP)⁵ is a plan produced by a LLFA which details the preferred surface water management strategy in a given location. In this context surface water flooding describes flooding from sewers, drains, groundwater, and runoff from land, small water courses and ditches that occurs as a result of heavy rainfall.

³ <http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/flho1111bvbv-e-e.pdf>

⁴ <http://www.essex.gov.uk/flooding>

⁵ Surface Water Management Plan Technical Guidance - <http://www.defra.gov.uk/publications/2011/06/10/pb13546-surface-water-guidance/>

SWMP studies are undertaken in partnership with key local stakeholders who are responsible for surface water management and drainage within the study areas – generally including Water Companies, Internal Drainage Boards and the Environment Agency. The Partners work together to understand the causes and effects of surface water flooding and agree the most cost effective way of managing surface water flood risk for the long term.

Essex County Council is taking a risk based approach to producing SWMPs in the areas of highest surface water flood risk. SWMPs completed to date are summarised in Appendix A and the methodology used to prioritise areas for study is detailed in Section 2.5.

1.8.3 *Strategic Flood Risk Assessments*

The National Planning Policy Framework requires that all Local Plans should be supported by a strategic flood risk assessment. In a two-tier system such as Essex, these local plans are delivered by the Local Planning Authorities (i.e. the district and borough councils). The strategic flood risk assessments enable councils to select and develop sustainable site allocations away from vulnerable flood risk areas. The assessment focuses on the existing site allocations within the district but also sets out the procedure to be followed when assessing additional sites for development in the future. Further information on how Strategic Flood Risk Assessments will be delivered in the future can be found in the 'Adapt spatial planning policy to reflect local flood risk' (Refer Section 4.3.2).

Strategic Flood Risk Assessments are largely done at a district level but some councils have combined to produce an SFRA for a particular area. A full list of SFRAs within Essex can be found in Appendix A.

1.8.4 *Catchment Flood Management Plans*

Catchment Flood Management Plans (CFMPs) give an overview of the flood risk across each river catchment. They recommend ways of managing those risks now and over the next 50-100 years.

CFMPs consider all types of inland flooding at a strategic level, from rivers, ground water, surface water and tidal flooding, but not flooding directly from the sea, (coastal flooding), which is covered in Shoreline Management Plans. They also take into account the likely impacts of climate change, the effects of how we use and manage the land, and how areas could be developed to meet present day needs without compromising the ability of future generations to meet their own needs.

The Essex County area intersects with four CFMPs as listed below. Further information on each of these can be found in Appendix A.

- North Essex Catchment Flood Management Plan
- South Essex Catchment Flood Management Plan
- Thames Catchment Flood Management Plan
- Great Ouse Catchment Flood Management Plan

1.8.5 *River Basin Management Plans*

The River Basin Management Plans (RBMPs) are plans for protecting and improving the water environment and have been developed in consultation with organisations and individuals. They contain the main issues for the water environment and the actions we all need to take to deal with them. Two RBMPs intersect with the Essex County area – Thames and Anglian. Summaries of both RBMPs can be found on the Environment Agency website⁶.

⁶ <http://www.environment-agency.gov.uk/research/library/consultations/114614.aspx>

1.8.6 *Shoreline Management Plans*

The Essex and South Suffolk Shoreline Management Plan looks at the coastline from the Stour and Orwell Estuaries in Suffolk to Two Tree Island near Southend-on-Sea. It covers the Hamford Water, Colne, Blackwater, Roach and Crouch estuaries. The plan covers 550km of coast, including 440km of sea defences. As well as considering the risk to these coastal communities of flooding it also considers questions of coastal erosion, natural environment, historic environment and the economy.

Much of the shoreline is made up of embankments that protect low-lying land against flooding. There are also a number of stretches of higher, soft-eroding cliffs and these are generally undefended, with the exception of the cliff frontages of Southend and the Tendring Peninsula which are defended against coastal erosion. Many of the coastal and estuary defences are in good condition. However, some locations are under increasing pressure from natural changes (waves, tidal currents, surge tides). These natural processes are already eroding beaches and salt marshes, leaving defences vulnerable to over-topping by waves and tides or the undermining of defence foundations. At these locations, there is an increased risk of flooding or erosion to local people and property now and in the future.

For many of those areas managed realignment has been identified as the preferred coastal management policy option. Managed realignment allows the shoreline to control or limit the effect on land use and environment. This policy is mainly used where there are no significant communities and in largely rural areas. This is currently happening in areas around Kirby-le-Soken and Wallasea and could happen in the future in areas including Paglesham, Canewdon, Burnham-on-Crouch to Bridgemarsh, St. Lawrence to Bradwell-on-Sea, North Mersea, Brightlingsea, Inner Colne, Westmarsh Point and St Osyth Creek.

1.8.7 *Multi Agency Flood Plan*

The multi-agency flood plan outlines the arrangements that should be put in place to ensure an efficient and effective multi-agency response to major flooding emergencies in Essex. It is produced by the Essex Resilience Forum which brings together agencies involved in preparing for and responding to emergencies in the county to develop effective responses to a range of situations. The forum provides links to many partner agencies such as other Category 1 Responders (Police, Fire, Ambulance, Health, Environment Agency, Coastguard and Local Authorities) which give advice on flooding, business plans in the event of a disaster and safety advice for all.

1.8.8 *Water Cycles Studies*

Water Cycle Studies consider three elements of water management for an area: the provision of clean water for drinking and washing; the safe disposal of wastewater; and protection from flooding. It identifies water cycle planning policies and a water cycle strategy to help all partners plan for a sustainable future water environment. Like Strategic Flood Risk Assessments, they are produced at district, borough or city council level.

1.8.9 *Statutory Development Plans*

The Localism Act (2011) substantially restructured the statutory planning system. As part of this restructure, East of England Plan was revoked on 3rd Jan 2013. Statutory Development Plans system now consists of the NPPF and Local Plans produced by City / Borough / District Councils. The Essex Spatial Planning team works very closely with city, district and borough councils to ensure that their Local Plans are in line with Essex County Council priorities and the delivery of services. All Local Plans will need to reflect the objectives and actions of this Local Strategy.

1.8.10 Strategic Environmental Assessment (SEA)

It is a legal requirement in the UK for certain plans and programmes stipulated by the SEA Directive (2001/42/EC), to undergo Strategic Environmental Assessment (SEA). The SEA Directive is implemented in Wales by the Environmental Assessment of Plans and Programmes (Wales) Regulations 2004.

The purpose of SEA is to provide for a high level of protection of the environment, by ensuring the integration of environmental considerations into the preparation of the Local Strategy and to contribute to the promotion of sustainable development and environmental protection.

The SEA for the Essex Local Strategy has been completed as a stand-alone study and can be downloaded from the Essex County Council website for reference purposes. The outcomes of the SEA are reflected in Section 6.2 of this document where there is a summary of how the Local Strategy contributes to achievements of wider environmental objectives.

1.8.11 Habitats Regulations Assessment (HRA)

In England, the Conservation of Habitats and Species Regulations (2010) implements the EU 'Habitats Directive' and some elements of the 'Birds Directive'. This legislation provides the legal framework for the protection of habitats and species of European importance in Wales and England.

The Habitats Regulations require that a Local Authority to consider the requirements of the Habitats Directive in exercising any of its functions. This includes any plans, projects or strategies that potentially affect European sites. The outcomes of the HRA will be reflected in Section 6.2 of this document where there is a summary of how the Local Strategy contributes to achievements of wider environmental objectives.

2. Local Flood Risk

2.1 Types of Flood Risk

The nature of flood risk within Essex is extremely varied and widespread across the county. Essex has an extensive coastline and network of rivers and canals, combined with a large number of towns and urbanised areas, which means it is at risk of flooding from a range of different sources.

The recent Preliminary Flood Risk Assessment (PFRA) for Essex County Council highlighted records of approximately 1,300 local flood events that have occurred across the county over the past fifteen years but it is believed that there are considerably more for which there are no official records. The main sources of flood risk within Essex are listed below:

- **Surface water flooding** (form of local flood risk), also known as **pluvial flooding** or **flash flooding**, occurs when high intensity rainfall generates runoff which flows over the surface of the ground and ponds in low lying areas. It is usually associated with high intensity rainfall events (typically greater than 30mm/hr) and can be exacerbated when the ground is saturated or when the drainage network has insufficient capacity to cope with the additional flow. Until recently, the risk from surface water was poorly understood, with little information available about the mechanisms of surface water flooding and the associated risks.
- **Ordinary watercourse flooding** (form of local flood risk) concerns flooding from any watercourse which is not designated by the Environment Agency as a main river. All other smaller watercourses, ditches and streams are classified as ordinary watercourses and there is a vast and unmapped network of watercourses in Essex. Flooding to an ordinary watercourse occurs when a watercourse cannot accommodate the volume of water that is flowing into it or when there is significant impedance to the passage of flow within the channel of the watercourse to the extent that it causes flows to come out of its banks
- **Groundwater flooding** (form of local flood risk) occurs when water levels in the ground rise above the ground surface. Flooding of this type tends to occur after long periods of sustained heavy rainfall and can last for weeks or even months. The areas at most risk are often low-lying areas where the water table is more likely to be at a shallow depth and flooding can be experienced through water rising up from the underlying aquifer or from water flowing from springs. The Essex PFRA has identified areas susceptible to groundwater flooding across the county; this information will be used to assist with the prioritisation of flood risk areas within this document.
- **Main River flooding**, also known as **fluvial flooding**, concerns those watercourses designated by the Environment Agency as a main river. Main rivers are usually large watercourses but also include smaller watercourses of strategic drainage importance. The Environment Agency's powers to carry out flood defence works apply to main rivers only. Essex has a number of large main rivers and associated tributaries including the River Chelmer, River Blackwater, River Colne, River Cam and River Stour in the north, the River Crouch and River Roach in the south and the River Roding and River Lea in the east, which all pose a threat of river flooding.
- **Coastal flooding** usually occurs during **storm surges** when there is an increased risk of high sea levels causing overtopping or breaching of coastal flood defences leading to flooding inland. The greatest risk of coastal flooding is experienced when there is a combination of high tides and a storm surge, which is when a low pressure system causes a localised rise in sea level and wave height. It can also occur when a coastal defence breaches. Essex has an extensive coastline, along the Thames Estuary and the North Sea, and is prone to coastal flooding (especially in undefended areas) from these bodies of water and through a number of large estuaries and tidal rivers which transmit this risk to areas of Essex inland from the coast.
- **Reservoir flooding** results from the complete or partial failure of a reservoir structure. It may be caused by erosion due to seepage, overtopping of the dam beyond its design level or through accidental damage to the structure. There are three large reservoirs in Essex (Abberton, Ardleigh and Hanningfield) that would pose the greatest risk, in addition to the risk from around fifteen smaller reservoirs. However, it must be noted that reservoir failure is extremely rare.

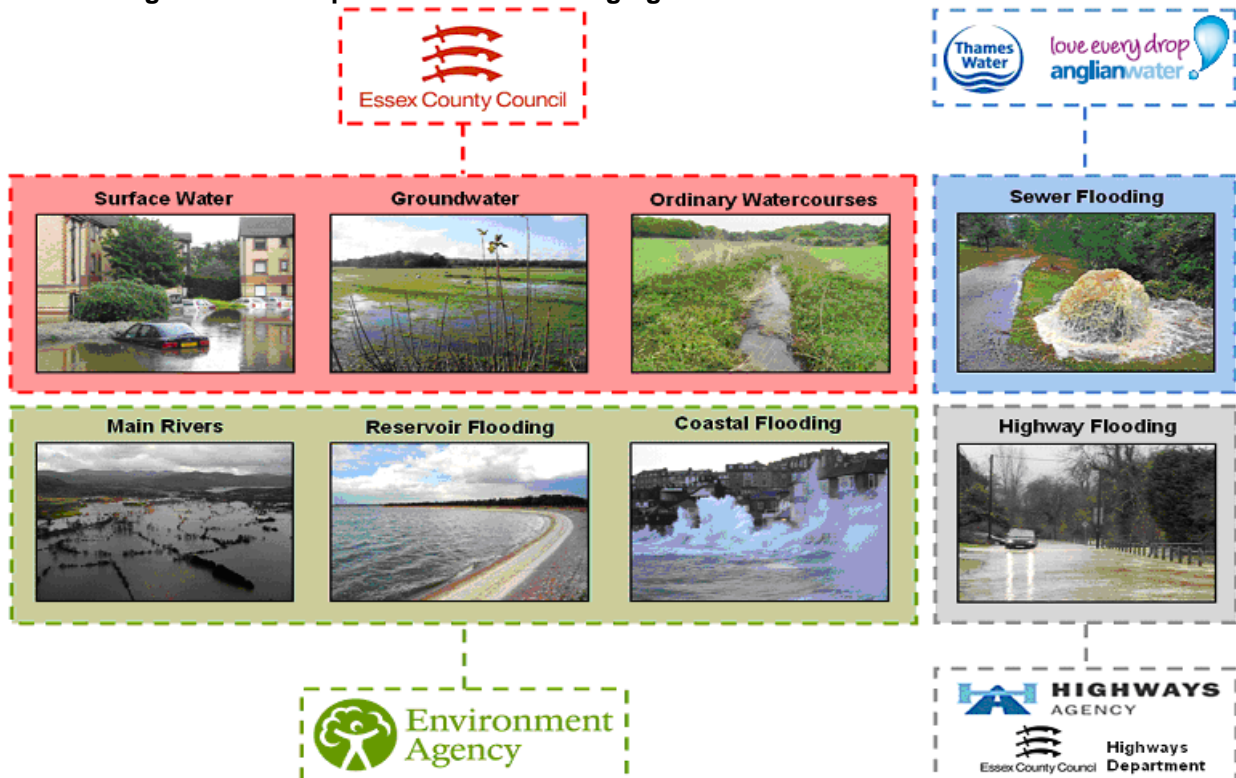


- **Sewer flooding** occurs when the sewer network cannot cope with the volume of water that is entering it. It is often experienced during times of heavy rainfall when large amounts of surface water overwhelm the sewer network causing flooding. Temporary problems such as blockages, siltation, collapses and equipment or operational failures can also result in sewer flooding.
- **Highway flooding** can be defined as flooding caused by heavy rainfall or overflowing from blocked drains and gullies causing water to pond within the highway network – it is essentially a subset of surface water flooding, but responsibility for management depends on the ownership of the highway being flooded. During the PFRA process, highway flooding reports were collected from around 150 different locations and this data is included in the overall evidence base of flood information.

Responsibilities for managing each of these types of flooding are detailed in Section 3 and are summarised in the figure below. Although these organisations are responsible for managing these forms of flood risk this does not mean they are liable for damage caused by flooding of this sort. Property owners have responsibility for protecting their property and for clearing watercourses and rivers where they are the Riparian Owner (Refer Section 3.2.2 and Appendix C).

It should be noted that Essex County Council, as a Lead Local Flood Authority, is only responsible for management of **Local Flood Risk**. Local Flood Risk is defined as surface water flooding, ordinary watercourse flooding and groundwater flooding. This area of responsibility is defined by the Flood and Water Management Act. Therefore, this Local Flood Risk Management Strategy **only** address **Local Flood Risk** and the interactions it might have with other forms of flood risk. Other information of the remaining forms of flood risk is outlined in Section 2.6.

Figure 2—1: Responsibilities for Managing Flood Risk



2.2 Historic Flooding

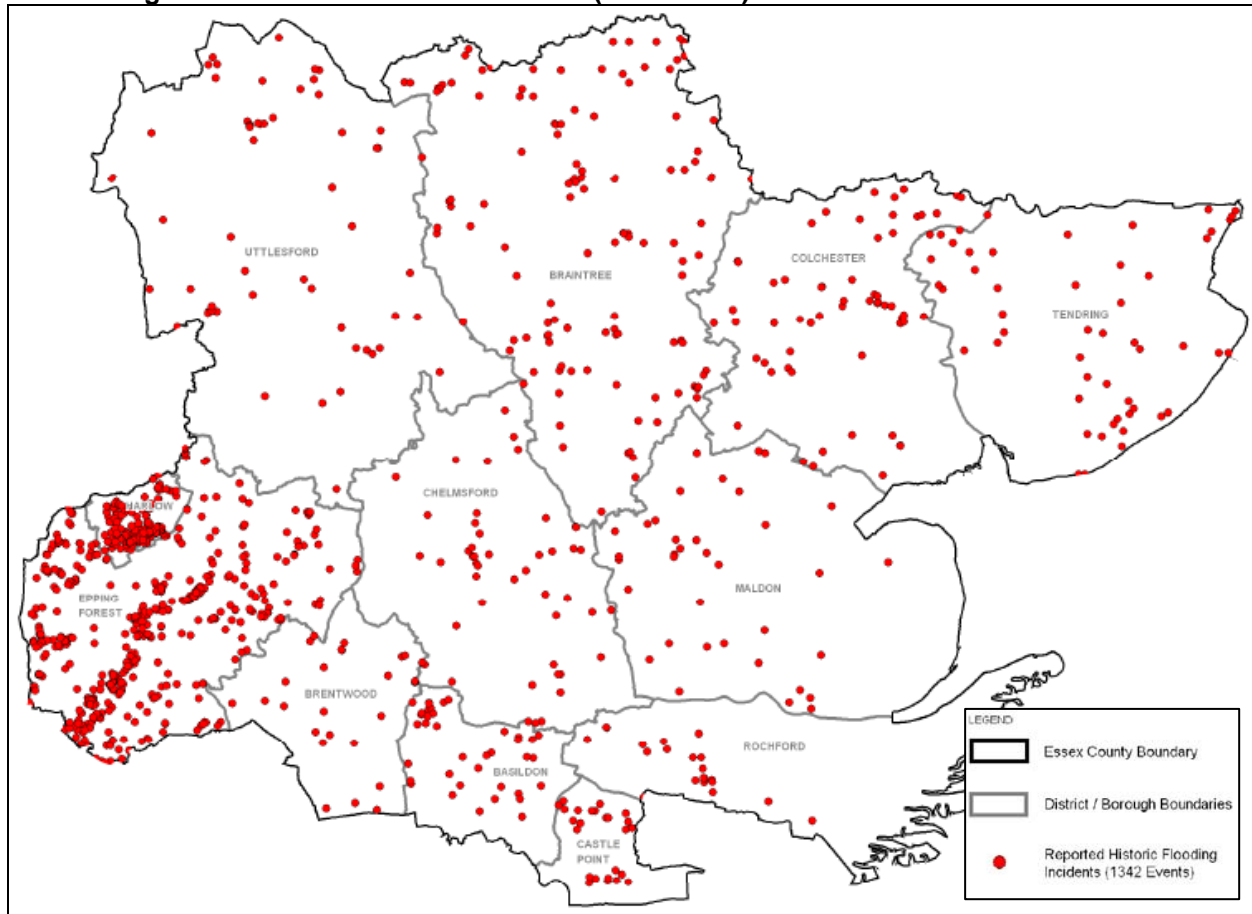
Flood records across Essex were collected as part of the Preliminary Flood Risk Assessment (PFRA). Records of 1342 historical flood events and flooding hotspots were

collected across Essex County Council’s administrative area. The locations of these recorded flood events are shown in Figure 2—2 overleaf.

These flood events came from a range of flood sources, and in many cases the source of flooding was unknown or not recorded. A summary of information specific to each source of local flooding is shown below:

- **Surface Water and Ordinary Watercourses:** Key sources of surface water records were the 12 District and Borough Councils, Essex Fire and Rescue Service, Essex Highways department and a number of Catchment Flood Management Plans (CFMPs).
- **Groundwater:** Groundwater flooding is known to occur in areas underlain by major aquifers, although increasingly it is also being associated with more localised floodplain sands and gravels. The geology of Essex County is dominated by the London Clay Formation in the southern and eastern areas. However, the Chalk outcrops in the northwest with a southwest to northeast trending outcrop boundary. The London Clay Formation is an aquitard and does not allow significant movement of groundwater. The Chalk is classified by the Environment Agency as a Principal Aquifer and is utilised for public water supply. Only two incidences of groundwater flooding were recorded; one at Debden Green (water in pit in garden, 01/05/2000) and one at Hatfield Broad Oak (clay and London Clay Drainage problem, 11/10/2001).
- **Interactions with Main River and Coastal Flooding:** Insufficient data was available to draw definitive conclusions at this point. However, there is anecdotal evidence to suggest that surface water flooding is exacerbated in some areas, such as Colchester, during high tidal cycles when gravity drains and outfalls are blocked with high tidal waters.

Figure 2—2: Historic Flood Incidents (from PFRA)



2.3 Factors Increasing Flood Risk

Flood risk is a combination of probability and consequence; as there are a number of factors which will lead to higher probability of flooding in the future and more serious potential consequences, this will result in an increase in the risk of flooding across Essex.

The factors leading to an increase in flood risk include:

- New development and changes in land use may lead to an increase in impermeable surfaces and therefore cause increased levels of runoff during heavy rainfall events
- Development may also lead to deforestation and general loss of vegetation cover, also causing increased levels of runoff during heavy rainfall events
- Lack of maintenance on open watercourses and small culverts
- Cumulative impact of un-consented minor development and changes to watercourses
- Over time deterioration in the condition and performance of existing drainage infrastructure and flood defence structures will increase future flood risk
- It is predicted that climate change and severe weather events will lead to more frequent and more severe extreme weather and therefore to more extreme floods with more serious consequences
- Damage to higher value property and contents may lead to increased cost of damages
- Continuing rises in sea levels are likely to impact adversely on the effectiveness of gravity drainage systems that outfall to tidal waters

2.4 Potential Future Risk of Flooding

As Lead Local Flood Authority, Essex County Council is responsible for flooding from surface water, groundwater and ordinary watercourses, as well as where there is an interaction between these sources and main rivers or the sea (in collaboration with the Environment Agency).

2.4.1 *Local Flood Risk – Surface Water and Ordinary Watercourses*

As part of the Preliminary Flood Risk Assessment process, Lead Local Flood Authorities were required to determine which available datasets best represented local flooding. This 'locally agreed surface water information' for Essex County is defined as the Environment Agency's 'Flood Map for Surface Water' (FMfSW) for the 1 in 200year return period event and is shown in the figure below. The FMfSW represents flood risk from surface water and ordinary watercourse flooding.

The FMfSW shows 'shallow' (predicted depth of >0.1m) and 'deep' (predicted depth of >0.3m) surface water flooding for a rainfall event with a 1 in 200 chance of occurring in any year. It should be noted that the FMfSW was produced on a national scale (England and Wales) and is therefore only appropriate for strategic level assessment of flood risk – it should not be used to assess risks at the individual property level.

Figure 2—3: Surface Water Flood Impact Map

2.4.2 *Local Flood Risk – Groundwater*

There is no available information on future groundwater flood risk across Essex. The Environment Agency's national dataset, Areas Susceptible to Groundwater Flooding, has been used to form the basis of the assessment of future flood risk from groundwater. This dataset is illustrated in Figure 2—4. It should be noted that the dataset presented in Figure 2—4 is primarily derived from national level geological information and should only be used as a general guide on possible groundwater flooding vulnerability.

We will be monitoring and recording any changes in groundwater flood risk as part of our role as a LLFA. Future improvements to understanding of groundwater flood risk will be incorporated in future editions of the Local Strategy and used to inform management objectives / actions where relevant.

Figure 2—4: Areas Susceptible to Groundwater Flooding Impact Map

2.5 Prioritisation of Risk Areas

Flood risk within Essex comes from a number of different sources and is extremely varied and widespread across the county. It is not technically or financially possible to alleviate all risk of flooding across the county. It is therefore important to take a risk-based approach and prioritise areas that are at greatest risk and will provide the most benefit from flood risk management work. The following sections describe the method used to prioritise areas within Essex County for future work based on known historic and predicted future risks of local flooding.

2.5.1 County Wide Prioritisation Methodology

The table below shows the consideration given to various flood risk data sources in the prioritisation process. The evidence base essentially consists of historic flood information (where available) and Environment Agency data to provide a consistent approach across the county.

Table 2-1: Information used to Prioritise Areas of Locally Important Flood Risk

Consideration	Source of Information
Flood risk from surface water	Flood Map for Surface Water and Areas Above Flood Risk Threshold (EA datasets)
Flood risk from groundwater	Areas Susceptible to Groundwater Flooding (EA dataset)
Flood risk from ordinary watercourses	Flood Map for Surface Water, Detailed River Network (EA datasets), local knowledge
Interactions with main rivers and the sea	Flood Map (EA dataset)
Flood history across Essex	Local knowledge, evidence base from PFRA (collected from a range of sources)

Prioritisation of areas was completed using a three stage process:

Stage 1 The EA 'Areas above Flood Risk Threshold' dataset was created by placing a 1km square grid across England and Wales, then calculating the consequences of surface water flooding in each square. The consequence assessment was done by counting how many residential buildings, non-residential buildings (any buildings that are not residential or critical services) and critical services (including schools, hospitals, nursing homes, power and water services) intersected with the predicted FMfSW 'Deep' flood extent for the 1 in 200yr rainfall event.

Where the 1km grid square consequence assessments exceed the criteria set below, they were classified as 'an area where flood risk is an issue'. There are 239 grid squares that meet the criteria below within Essex (these are mapped on Figure 2—5).

- More than 200 people at risk (2.34 x no. of residential buildings); or
- More than 20 non-residential properties at risk; or
- More than 1 critical service at risk.

Stage 2 In order to further consolidate and prioritise these areas, the next step was to cluster groups of adjacent grid squares in order to identify areas where the risk is concentrated. Where five or more 'areas where flood risk is an issue' are touching within a 3km by 3km square, these are joined to create a 'cluster'. Where clusters were adjacent to each other, they were grouped together to form bigger clusters. The clusters were then ranked based on the criteria detailed in the table below.

Table 2-2: Ranking Criteria used to Establish Prioritisation of Locally Important Flood Risk Areas

Ranking	Criteria
Tier 1	More than 1000 people predicted to be at risk
Tier 2	Between 1000 and 500 people predicted to be at risk
Tier 3	Less than 500 people predicted to be at risk

Stage 3 The three tiers within Essex were then manually adjusted based on consideration of flood history (collected through the PFRA process), risk of groundwater flooding, risk of flooding from ordinary watercourses and possible interactions with main rivers or the sea.

For example, Maldon, which was originally in Tier 2 due to the predicted consequences of surface water flooding, was moved into Tier 1 based on an assessment of flood history, risk from groundwater flooding and possible interactions with the Blackwater River (a main river).

2.5.2 *Prioritisation of County Wide Important Flood Risk Areas*

Based on the methodology described in the previous section, 18 areas within Essex have been identified and classified as locally important flood risk areas within Tiers 1 and 2 (not including smaller settlements in Tier 3). The table below lists the Tier 1 and Tier 2 flood risk areas based on the methodology described above and also outlines the primary drivers for the selection of each location. Tier 3 areas are detailed in Appendix F. The areas referenced are generally the urban settlements, not entire district, borough or city council areas.

Of the Tier 1 areas that have been selected, Basildon (including Wickford and Rayleigh), Billericay, Rochford and Hockley are all included within the South Essex Flood Risk Area as defined under the EU Floods Directive and the Flood Risk Regulations.

This area has been assessed as part of the PFRA, and a further level of detail is currently being added through the South Essex Surface Water Management Plan (SWMP). The SWMP for South Essex covers the districts of Basildon, Castle Point and Rochford, and will provide the best mechanism for assessing the risk from surface water flooding and establishing possible mitigation measures in these districts.

In addition, the SWMP will provide surface water flood depth and hazard mapping. It is anticipated that data contained within the SWMP report will be used to provide flood risk and flood hazard mapping required for the South Essex Flood Risk Area under the Flood Risk Regulations by December 2013. The SWMP will also provide a basis for the Flood Risk Management Plan which will be required for the South Essex Flood Risk Area by December 2015.

Outside of the South Essex Flood Risk Area, there are eight areas of locally important flood risk in Tier 1 and six areas in Tier 2, along with a large number of smaller areas with a lower level of risk. These areas are mapped on Figure 2—5 to give an indication of the spatial distribution of locally important flood risk areas within Essex.

Table 2-3: Prioritisation of locally important flood risk areas

Category	Area or Settlement	Primary Drivers for Selection
Tier 1	Basildon (including Wickford and Rayleigh)	Surface water risk, groundwater risk, flood history
	Harlow	Surface water risk, flood history
	Chelmsford	Surface water risk, groundwater risk, possible interactions with main river, flood history
	Brentwood	Surface water risk, flood history
	Colchester	Surface water risk, groundwater risk, possible interactions with main river, flood history
	Loughton	Surface water risk, possible interactions with main river, flood history
	Billericay	Surface water risk, flood history
	Braintree	Surface water risk, flood history
	Rochford	Surface water risk, flood history
	Witham	Surface water risk, groundwater risk, flood history
	Hockley	Surface water risk, flood history
	Maldon	Surface water risk, groundwater risk, possible interactions with main river, flood history
Tier 2	South Woodham Ferrers	Surface water risk
	Waltham Abbey	Surface water risk, flood history
	Saffron Walden	Surface water risk, flood history
	Halstead	Surface water risk, flood history
	Steeple Bumpstead	Flood history, surface water risk
	Castle Hedingham and Sible Hedingham	Flood history, surface water flood risk

Figure 2—5: Map of Tiered Areas of Surface Water Flood Risk in Essex

2.5.3 *Prioritisation within Locally Important Flood Risk Areas*

Where SWMP studies are undertaken for Locally Important Flood Risk Areas, a key output is identification of Critical Drainage Areas (CDA). A CDA is defined as:

A discrete geographic area (usually a hydrological catchment) where multiple and interlinked sources of flood risk (surface water, groundwater, sewer, main river and/or tidal) are predicted to cause flooding in one or more local locations during severe weather thereby affecting people, property or local infrastructure.

To assist with prioritisation of work within Locally Important Flood Risk Areas, CDAs are defined using local flood risk information developed as part of the SWMP 'Risk Assessment' process and prioritised using a range of criteria appropriate to local conditions. The local criteria for prioritisation may include the historic and / or predicted impact of flooding on the parameters detailed in the table below. A list of completed SWMPs is included within this Strategy in Appendix A – Each SWMP details and justifies the local parameters used for CDA prioritisation.

Table 2-4: Local Prioritisation Parameters

Impact	Parameter
Human Health	Number of People
	Critical Services
Economic Activity	Non Residential Properties
	Agricultural Land
	Roads and Rail
Environment	Internationally or nationally designated site
	Number of nationally / internationally important heritage features

2.5.4 *Limitations of Data*

The assessment of flood risk within Essex has been completed using the best information that is currently available. However, there are inherent limitations that come with using this information and it is important that these are identified. The table overleaf lists the main limitations to the data used and possible future improvements that could be made to improve the understanding of flood risk across Essex.

Table 2-5: Limitations of main datasets used to prioritise locally important flood risk areas

Dataset	Main Limitations	Future Improvements
Flood Map for Surface Water	Modelling used a national methodology with a standard set of assumptions (such as storm duration, sewer loss allowance, etc) which may not be suitable for the whole of Essex.	Detailed surface water modelling within locally important flood risk areas will provide a better understanding of flood risk, mechanisms and consequences.
Areas Susceptible to Groundwater Flooding	This is a very high level dataset describing the proportion of each grid square that may be susceptible to groundwater flooding. It does not show the likelihood of groundwater flooding occurring.	Obtain the complete British Geological Survey (BGS) 'Susceptibility to Groundwater Flooding' dataset for key areas, which provides a more accurate overview of areas where geological conditions suggest groundwater might emerge.
Flood history across Essex	Flood history collected through the PFRA is generally poor and inconsistent. It is difficult to make a fair and accurate assessment of flood risk across Essex based on this alone.	More comprehensive flood recording and flood investigation in the future is essential (this is currently underway, as a requirement of the FWMA and will provide a better level of flood history in the future).

2.6 Management of Other Sources of Flood Risk

2.6.1 *Main Rivers*

As noted earlier in this section, flooding caused by Main Rivers is the responsibility of the Environment Agency. The Environment Agency produces Catchment Flood Management Plans (CFMPs) to give an overview of the Main River flood risk across each river catchment. They recommend ways of managing those risks now and over the next 50-100 years.

CFMPs consider all types of inland flooding, from rivers, ground water, surface water and tidal flooding, but not flooding directly from the sea, (coastal flooding), which is covered in Shoreline Management Plans (refer Section 2.6.2). They also take into account the likely impacts of climate change, the effects of how we use and manage the land, and how areas could be developed to meet our present day needs without compromising the ability of future generations to meet their own needs. The CFMPs relevant to Essex County are summarised in Appendix A and the flood risk areas associated with Main Rivers is summarised in Figure 2—6.

2.6.2 *Coastal*

Management of coastal flooding in the Essex is led by the Environment Agency and delivered by through the Essex and South Suffolk Shoreline Management Plan (SMP). The SMP looks at the coastline from the Stour and Orwell Estuaries in Suffolk to Two Tree Island near Southend-on-Sea. The SMP is summarised in Section 1.8.6 and the risk areas associated with coastal and tidal flooding is shown in Figure 2—6.

Figure 2—6: Main River and Coastal Flood Risk

2.6.3 *Sewer Flooding*

Water and sewerage companies are responsible for making appropriate arrangements for the drainage of foul water, the treatment of waste, surface water sewers and combined sewers. They have primary responsibility for floods from water and sewerage systems, which can include sewer flooding, burst pipes or water mains or floods caused by system failures. In the Essex County area, the water and sewerage companies that provide this function are Thames Water Utilities Ltd (TWUL) and Anglian Water Services (AWS).

A key distinction between the responsibility for surface water and sewer flooding between TWUL / AWS and Essex County Council is that TWUL / AWS are only responsible for sewer capacity up to a certain level of service. For example, a combined sewer system in a village may have been designed to convey flows resulting from a 1 in 30 year rainfall event, if a 1 in 50 year event occurs, then the sewer system will not be able to cope with the excess flows and flooding may result. Building a sewer system that is large enough to cope with flows generated by a 1 in 50 year event is not cost effective, so the excess flows will result in surface water flooding in this situation.

TWUL and AWS are responsible for internal and external property flooding caused by sewer systems operating under their normal design conditions. Causes for flooding under normal design conditions may include blockage or other operational problems with the sewer network. When flooding occurs during these conditions, TWUL / AWS are required to maintain a register of locations that incur damage from the flooding and prioritise funding for works to alleviate the problem. Funding priorities are defined using a five year cycle called Asset Management Plans (AMP). The AMP is the programme of work agreed with the Regulator (Ofwat) for a specified 5-year period. TWUL / AWS are currently in the AMP5 period (2010 – 2015).

2.6.4 *Reservoir Flooding*

There are three large reservoirs in Essex (Abberton, Ardleigh and Hanningfield) that would pose the greatest risk, in addition to the risk from around fifteen smaller reservoirs. However, it must be noted that reservoir failure is extremely rare.

The risk of reservoir breach or failure of these structures is managed by the Environment Agency. The Environment Agency has completed a study to estimate the largest area that might be flooded if a reservoir were to fail and release the water it holds. The study does not address the probability of failure – only the potential consequences. The probable extents of flooding caused by a reservoir failure are available from the Environment Agency website along with relevant guidance on what to do in the unlikely event of a failure.

3. Roles and Responsibilities

This section provides information about the roles and responsibilities of all the stakeholders in managing flood risk in Essex, including households and business. This is because flood risk management is not something that can be left solely in the hands of certain organisations and forgotten by everyone else. We all have our part to play. Even if this strategy was being devised at a time of substantial public sector budgets, the organisations would still not be able to prevent all floods or solve all concerns. It is crucial therefore that everyone is aware of what they can do, and are expected to do to help manage flood risk.

3.1 Key Stakeholders – Risk Management Authorities

The Flood and Water Management Act identifies certain organisations as ‘Risk Management Authorities’. The Authorities have responsibilities around flooding, both new ones from the Flood and Water Management Act and longstanding ones from previous legislation. The Risk Management Authorities in Essex are:

- Essex County Council (*as Lead Local Flood Authority*)
- Thames Water
- Basildon Borough Council
- Brentwood Borough Council
- Chelmsford City Council
- Epping Forest District Council
- Maldon District Council
- Tendring District Council
- Neighbouring Lead Local Flood Authorities (*Thurrock, Southend-on-Sea, Hertfordshire County, Cambridgeshire County and Suffolk County plus the London Boroughs of Havering, Redbridge, Waltham Forest and Enfield*)
- Highways Agency
- Anglian Water
- Braintree District Council
- Castle Point Borough Council
- Colchester Borough Council
- Harlow District Council
- Rochford District Council
- Uttlesford District Council
- Environment Agency (Anglian and South Eastern Regions)

Figure 3—1 shows the spatial coverage of each of these authorities. All of these authorities have the following duties and powers:

- Duty to be subject to scrutiny from Lead Local Flood Authorities' democratic processes.
- Duty to co-operate with other Risk Management Authorities in the exercise of their flood and coastal erosion risk management functions, including sharing flood risk management data.
- Power to take on flood and coastal erosion functions from another Risk Management Authority when agreed by both sides

All Risk Management Authorities have a duty to be subject to scrutiny from the Lead Local Flood Authorities' democratic processes. The key committee is the Safer and Stronger Communities Policy and Scrutiny Committee. However, District, City and Borough councils must also inform their own Cabinets and Committees about the progress and implications of flood risk management work in the area.

Co-operation with other Risk Management Authorities includes the following:

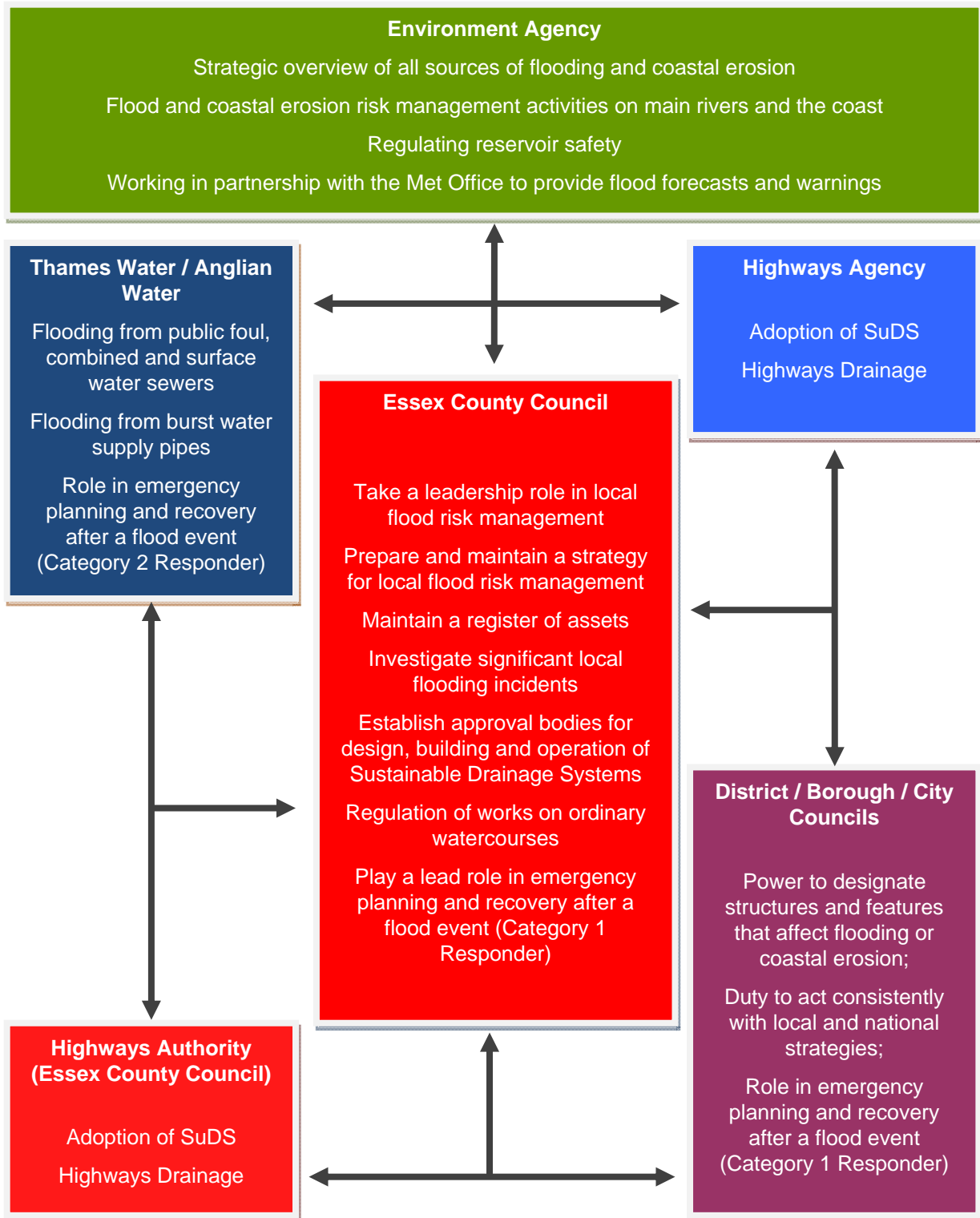
- Membership of the Essex Partnership for Flood Management (Refer Section 1.5) with an elected member from each council and a senior representative from other organisations attending each meeting
- Discuss with other Risk Management Authorities before designating structures and features to ensure consistency
- Report local flooding incidents to the Essex County Council Flood and Water Management Team on a monthly basis
- Report flood assets, as defined by agreed criteria, as and when they are revealed to Essex County Council Flood and Water Management Team.
- Assist with Flood Investigation Reports where required
- Provide local knowledge to SuDS Approval Officers regarding applications in their area.
- Ensure that members of the public who are trying to contact another organisation are swiftly put through to the appropriate organisation
- Easy sharing of information and data

This list is not exhaustive but if there is any dispute about whether an activity can reasonably be expected from a Flood Risk Management Authority, the issue will be brought to the Essex Partnership for Flood Management.

The figures below summarise spatial extent, roles and responsibilities of each of the Risk Management Authorities under the Flood and Water Management Act. Further detail is provided in the following sections and in Appendix C including related duties under other associated legislation.

Figure 3—1: Risk Management Authorities

Figure 3—2: Flow Chart to show linkages between RMAs



3.1.1 Essex County Council

Essex County Council has a range of different roles that are important for flood risk management. These include:

- Lead Local Flood Authority
- SuDS Approval Body
- Emergency Planning
- Highways Authority
- Historic Environment
- Planning Authority

Lead Local Flood Authority

The Flood and Water Management Act 2010 identified Essex County Council (ECC) as the Lead Local Flood Authority for the administrative county of Essex. This gave ECC a strategic role in overseeing the management of local flood risk (flood risk from surface water runoff, groundwater and ordinary watercourses such as streams and ditches). It gives ECC the following powers:

- Power to do works to manage flood risk from surface runoff or groundwater (but not of ordinary watercourses);
- Power to designate structures and features that affect flooding;
- Powers to request information from any person in connection with the authority's flood and coastal erosion risk management functions;

It also gives the Lead Local Flood Authority responsibilities which can be divided into the following areas:

- Strategic Leadership
- Meeting the Flood Risk Regulations
- Flood Investigation Report
- Register and Record of Assets
- Designating Assets
- Reporting Flood Incidents
- Ordinary Watercourse Regulation

Actions to deliver these responsibilities are described in Section 4.3. Further information on each of these responsibilities is provided in the sections below and in Appendix C.

SuDS Approval Body (SAB)

N.B. This area of responsibility is subject to change due to expected new guidance.

Sustainable Drainage Systems (SuDS) are a crucial mechanism in ensuring that development can take place without causing drainage problems for existing or future development. SuDS slow down and provide treatment of surface water within developments and are a change in approach from conventional drainage which aimed to convey water as quickly as possible from a development, often with the consequence of overloading watercourses downstream and potentially causing surface water flooding. SuDS are also an opportunity to ensure that amenity and biodiversity are considered with the same importance as managing volumes of water. In this respect, sustainability and consideration of biodiversity and natural habitat issues can become an integral part of the design and development process.

The Flood and Water Management Act 2010 assigns Essex County Council the role of a SuDS Approval Body (SAB) which must:

- Assess the drainage design for all construction work which has drainage implications
- Adopt all SuDS schemes which connect more than one property
- Ensure that all adopted SuDS schemes are properly maintained

An important provision in the Flood and Water Management Act includes the removal of the automatic right to connect to surface water sewer systems; instead connection to an existing sewer network is conditional on the SAB approving the drainage system. In addition, it is also likely that this role will be phased in so that larger developments will require SAB approval initially, incorporating smaller developments in time.

At the time of writing the Local Strategy, this component of the Flood and Water Management Act had not been enacted and was not expected to be enacted until April 2014. Section 4.3 details the interim actions being undertaken by Essex County Council in preparation for this new responsibility.

Emergency Planning

Essex County Council Emergency Planning is managed in partnership with Essex Fire and Rescue Service. It has responsibility for planning for and responding to local flood risk (i.e. groundwater, surface water runoff and ordinary watercourse flooding). The Essex Fire and Rescue Service are not a flood risk management authority and do not have any specific mandated responsibilities around flood emergencies. However, as part of the service they offer, they are often involved in flood emergencies.

The roles of the emergency planning team include:

- Receipt of and monitoring of Flood Guidance Statement and Extreme Rainfall Alerts.
- Internal and external communication of Flood Guidance Statements and Targeted Flood Warning Service directed by ECC Referral Officer.
- Deployment and facilitating of ECC Director and support personnel to Strategic Co-ordinating Group, Essex Police HQ
- Maintain emergency resource database
- Maintain GIS with surface water mapping
- Maintain GIS with data on vulnerable locations
- Liaison / Support with members of the Essex Resilience Forum (these include British Transport Police, Environment Agency, Essex Ambulance Service, Essex County Fire & Rescue Service, Essex Police, Health Protection Agency, Maritime & Coastguard Agency, the 2 Primary Care Trusts, Thurrock Council, Southend-on-Sea Borough Council and the 12 district and borough councils).
- Co-ordinate role and deployment of the Voluntary Sector to emergencies.
- Warning and Informing under the Civil Contingencies Act
- Provision of a 24/7 Duty Officer system
- Maintenance of the County Emergency Response Centre
- The preparation of flood contingency plans which detail the arrangements for responding to a disaster or major flood incident in Essex.
- Working with communities to ensure that they are informed and prepared for civil emergencies such as flooding, and are able to recover following an emergency
- The production of the Community Risk Register (CRR) is a list of the risks (including flooding) that could affect areas within Essex. The Risk Register details both the likelihood and impact of such events and is the baseline for considering the production of hazard specific emergency plans.

Highways Authority

The Highways Authority for all highways in Essex apart from those managed by the Highways Agency is the County Council. Highways Authorities are Risk Management Authorities in their own right according to the Flood and Water Management Act and must adhere to all the responsibilities of risk management authorities. Highways Authorities also have further responsibilities:

- Responsibility to maintain the Highways – *Highways Act (1980) – Sections 41 and 291*
- Responsibility to drain the highway – *Highways Act (1980) – Sections 100, 101 and 299*
- Responsibility to protect the highway against hazards of nature – *Highways Act (1980) – Section 102*
- Responsibility as an undertaker – *Reservoirs Act (1975)*
- Adoption of SuDS – *Highways Act (1980) – Section 38 and Flood and Water Management Act (2010)*
- Delivery of Works – *Highways Act (1980) – Sections 108, 109 and 110*
- Response in an Emergency Flooding Event

Details of the Highways Authority roles summarised above are provided in Appendix C.1.2.

Historic Environment

The historic environment comprises historic landscape, historic built environment and buried archaeological deposits. The Historic Environment Branch advises on planning and other land management decisions such as flooding to avoid or mitigate damage to the historic environment.

The Branch maintains the Historic Environment Record which is the most complete record of all historic environment assets within the County (and Thurrock unitary), and ensures that the advice provided by the Branch has a sound knowledge base. The branch then uses this knowledge to advise on the impact of proposed schemes including for instance flood storage areas, swales and SUDS.

Planning Authority

N.B. This area of responsibility is subject to change due to expected new guidance.

ECC Planning Authority responsibilities are similar to District and Borough Councils planning functions, albeit restricted to County Matters (all Minerals & Waste related developments and the determination of county council planning applications). These affect Flood Risk Management in three key ways:

1. Considering flooding concerns in developing local plans – namely the Essex Minerals Development Plan and the Joint Essex and Southend Waste Development Plan
2. Working with the SuDS Approval Body in ensuring that planning applications and drainage applications are complementary – Namely the determination of Minerals and Waste planning applications and the County Council's own developments (schools, roads etc.)
3. Considering flood risk assessments submitted in support of applications on which the Environment Agency do not require to be consulted

3.1.2 *District and Borough Councils*

For District and Borough councils the key areas where they have responsibilities can be identified as follows:

- Responsibilities under the Flood and Water Management Act 2010
- Responsibilities under the Land Drainage Act 1991
- Responsibilities as a Planning Authority
- Responsibilities for maintenance of public spaces
- Responsibilities as a coastal erosion risk management authority
- Responsibilities for emergency planning

The responsibilities relating to the Flood and Water Management Act and Land Drainage Act are most relevant to the Local Strategies. These are summarised in the sections below. The remaining responsibilities are detailed in Appendix C.

Flood and Water Management Act

District and Borough Councils have the universal responsibilities under the Flood Water Management Act. They also have the following responsibilities:

- Power to designate structures and features that affect flooding or coastal erosion;
- Duty to act consistently with local and national strategies;

Information on 'power to designate structures and features that affect flooding or coastal erosion' can be found in Appendix C. Information on the National Strategy can be found on Section 4.1. In addition to the above, District and Borough Councils may also be delegated any of the Lead Local Flood Authority duties or responsibilities. This is through mutual agreement between the District / Borough Council and Essex County Council.

Land Drainage Act

District and Borough Councils have the following powers and responsibilities under the Land Drainage Act:

- Power to carry out flood risk management work provided that it is consistent with the local flood risk management strategy and is either to manage flood risk from an ordinary watercourse or to maintain or operate existing works to deal with flood risk from the sea.
- Advise the Lead Local Flood Authority on any land drainage consent applications in their areas
- In those districts where powers have been delegated from the Lead Local Flood Authority (refer Appendix C), powers to serve notice requiring them to undertake the necessary works. Failure to comply with such a notice may result in the Council undertaking the work and recharging the owner the costs of so doing.
- They also have the responsibilities of a riparian owner for any land they own.

3.1.3 *Environment Agency*

The Environment Agency has both a national strategic role and local operational roles in the context of flood risk management.

National Strategic Role

The Environment Agency is required to publish the National Strategy (Refer Sections 1.7.2 and 4.1) which seeks to provide a clear national framework for all forms of flood and coastal erosion risk management. It aims to achieve balance between using a risk-based approach and allowing local responsibility and decision-making where appropriate. Like the local strategy, it looks to define and understand the roles and responsibilities of risk management authorities and to provide information to communities at risk, know what they need to do.

The National Strategy identifies the following strategic roles and responsibilities for the Environment Agency:

- Use strategic plans like the Catchment Flood Management Plan and the Shoreline Management Plan to set the direction for Flood Risk Management
- Support the creation of Flood Risk Regulations by collating and reviewing the assessments, plans and maps that Lead Local Flood Authorities produce.
- Providing the data, information and tools to inform government policy and aid risk management authorities in delivering their responsibilities.
- Support collaboration, knowledge-building and sharing of good practice including provision of capacity-building schemes such as trainee schemes and officer training.
- Manage the Regional Flood and Coastal Committees (RFCCs) and support their decisions in allocating funding for flood defence and flood resilience schemes.
- Report and monitor on flood and coastal erosion risk management.
- Provide grants to risk management authorities to support the implementation of their incidental flooding or environmental powers.

Local Operational Role

The Environment Agency's Local Operational Role includes being a coastal erosion risk management authority, emergency planning, advising on the planning process and managing flooding from main rivers, reservoirs and the sea (the 'non-local' sources of flood risk). Further details on these roles are provided in Appendix C.

3.1.4 Water Companies

There are two types of water companies serving Essex. Veolia Water East, Veolia Water Central and Essex & Suffolk Water are water supply companies, while Anglian Water and Thames Water are water and sewage companies providing both water supply and wastewater services.

Water Supply Companies

Water supply companies are not Risk Management Authorities and do not have the same obligations to co-operate and be subject to scrutiny by Lead Local Flood Authority committees. However, they will be required to provide information related to flood risk to Essex County Council and the Environment Agency. This may include information about reservoirs or water treatment facilities.

Water and Sewerage Companies

The water industry is highly regulated. The quality of customer service and the prices they are able to charge their customers are regulated by the Water Services Regulation Authority (WSRA), commonly known as Ofwat. The water industry operates on five-yearly funding cycles called Asset Management Plan (AMP) periods. Prices are set by Ofwat at the beginning of each period, following submissions from each company about what it will cost to deliver their business plans.

When determining price limits Ofwat determines how much water companies can charge its customers to:

- finance its day to day spending
- finance its capital investment programme
- reward outperformance in the previous five-year period
- continue to finance previous capital investment through the return the company earns on its regulatory capital value (RCV)
- pay tax it is liable for

Water and sewage companies have the following responsibilities around flood risk management:

- Respond to flooding incidents involving their assets.
- Maintenance of a register of properties at risk of flooding due to a hydraulic overload in the sewerage network (DG5 register).
- Undertake capacity improvements to alleviate sewer flooding problems on the DG5 register.
- Provide, maintain and operate systems of public sewers and works for the purpose of effectually draining an area.
- Have a duty to co-operate with other relevant authorities in the exercise of their flood and coastal erosion risk management functions.
- Must have a regard to national and local flood and coastal erosion risk management strategies.
- May be subject to scrutiny from lead local flood authorities' democratic processes.
- Have a duty for the adoption of private sewers.
- Statutory consultee to the SAB when the drainage system is proposed to connect with a public sewer.

Further information on the mechanisms and abilities of water and sewerage is provided in Appendix C.

3.1.5 *Highways Agency*

The Highways Agency is an Executive Agency of the Department for Transport (DfT). It is responsible for operating, maintaining and improving the strategic road network in England on behalf of the Secretary of State for Transport. It acts as the Highways Authority for four major highways in Essex:

- M11
- M25
- A12
- A120

As a Highways Authority, the Highways Agency has the same obligation to co-operate on flood risk issues as the other risk management authorities. It also has the following responsibilities under other legislation – these responsibilities are further explained in Appendix C.

- Responsibility to maintain the Highways
- Powers to deliver works
- Adoption of SuDS

3.1.6 *Neighbouring Lead Local Flood Authorities*

Neighbouring Lead Local Flood Authorities (LLFAs) have the same roles and responsibilities as Essex County Council for their respective areas. Neighbouring LLFAs include:

- Thurrock
- Southend-on-Sea
- Hertfordshire County
- Cambridgeshire County
- Suffolk County
- London Boroughs of Havering, Redbridge, Waltham Forest and Enfield

While these are politically and administratively separate areas, local flood risk is often a cross boundary issue as the topography will direct where local flooding occurs. Flooding occurring in Essex County may have its ultimate source in one of the neighbouring authorities and visa-versa. Therefore, it is in the best interest of Essex County Council and the neighbouring authorities to communicate regularly and collaborate on cross boundary flood risk management activities.

3.2 Local Communities (Parish Councils / Businesses / Community Groups)

3.2.1 *Property Owners and Residents*

It is the responsibility of householders and businesses to look after their property, including protecting it from flooding. While in some circumstances other organisations or property owners may be liable due to neglect of their own responsibilities, there will be many occasions when flooding occurs despite all parties meeting their responsibilities. Consequently it is important that householders whose homes are at risk of flooding, take steps to ensure that their house is protected. These steps include:

- Check whether their household is at risk from flooding from the river, coast or local flood sources
- Ensure that preparations have been made in the event of a flood
- Take measures to ensure that their house is protected from flooding
- Take measures to make sure the house is resilient to flooding so that if it does occur it does not cause too much damage

Guidance on completing the above steps is provided in Appendix E.

3.2.2 *Riparian Owners*

Householders or businesses whose property is adjacent to a river, stream or ditch are likely to be riparian owners with associated responsibilities. If your property backs out onto a river or stream then you are likely to be a riparian owner and own the land up to the centre of the watercourse. Your land registry details should confirm this but you may need to discuss it with the local authority to ensure it matches their details.

Riparian owners have a right to protect their property from flooding and erosion but in most cases will need to discuss the method of doing this with the Environment Agency and Local Authority. They also have responsibility for maintaining the bed and banks of the watercourse and ensuring there is no obstruction, diversion or pollution to the flow of the watercourse. Full details can be found in the EA document 'Living on the edge'⁷.

3.2.3 *Parish Councils and Communities*

Flooding events can affect whole communities with households which do not suffer from internal flooding still potentially being trapped as roads are blocked or having to help support and provide shelter to their neighbours who have suffered from flooding. Communities have vital knowledge about the history of flooding in their areas and can make important contributions to helping manage the levels of flood risk.

Officers from risk management authorities are not in a position to know about every flooding incident that occurs, particularly those which do not lead to flooding within buildings. However, records of flooding incidents which affected roads or entered peoples houses are important to record. They can indicate that there has been extensive flooding in relatively regular rainfall events which would warn that the properties are at risk in more extreme rainfall events. This information is crucial in building up cases for flood defence and flood resilience schemes which will require strong evidence of the flood risk to properties.

⁷ <http://www.environment-agency.gov.uk/homeandleisure/floods/31626.aspx>

Parish Councils and community groups in areas which suffer from local flooding (i.e. surface runoff, groundwater and ordinary watercourses) should contact the Flood Investigation Officer at Essex County Council to discuss how best they should record and report flooding incidents when they occur. Flooding incidents caused by main rivers or the coast should be reported to the Environment Agency through their emergency “**Floodline**” **0800 807060**.

Appendix E provides further guidance and information on how Parish Councils and communities can improve their knowledge and more effectively manage local flood risk.

3.3 Utility and Infrastructure Providers

Utility and infrastructure providers such as Network Rail, energy companies and telecommunication companies are not risk management authorities. However they have a crucial role to play in flood risk management as their assets can be important consideration in planning for flooding. Moreover they may have assets such as culverts which it is important to share with flood risk management authorities.

They already maintain plans for the future development and maintenance of the services they provide and it is important that they factor in flood risk management issues into this planning process. This will ensure that their assets and systems are resilient to flood and coastal risks and that the required level of service can be maintained in the event of an incident. Utility and infrastructure providers may wish to invest time and resources into working with the LLFA and other risk management authorities to deliver and develop the local flood risk management strategy, to realise the significant benefits for them and their customers that follow from flood risks being effectively managed.

3.4 Regional Flood and Coastal Committee

Regional Flood and Coastal Committees (RFCCs) are Environment Agency committees which consist of elected members from the relevant Lead Local Flood Authorities (LLFAs) and independent members with relevant experience appointed by DEFRA. They have three key purposes:

- To ensure there are coherent plans for identifying, communicating and managing flood and coastal erosion risks across catchments and shorelines
- To promote efficient, targeted and risk-based investment in flood and coastal erosion risk management that optimises value for money and benefits for local communities. This includes managing the spending of both central government Flood Defence Grant in Aid (FDGiA) and Local Levy paid by Lead Local Flood Authorities (refer Section 5.2)
- To provide a link between the Environment Agency, LLFAs, other risk management authorities, and other relevant bodies to engender mutual understanding of flood and coastal erosion risks in its area.

Essex is split between three different Regional Flood and Coastal Committees as shown in Table 3-1 overleaf. The table also shows the membership of each of these committees. Each committee has elected Essex County Councillors representing Essex’s interests. The chair of the Essex Partnership for Flood Management sits on the Anglian Eastern Regional Flood and Coastal Committee. Committee members are expected to report to the Essex Partnership for Flood Management and changes of representative should be agreed by the partnership.

Table 3-1: Membership of Regional Flood and Coastal Committees

RFCC	Essex Representatives	Districts Covered	Other LLFAs
Anglian Eastern	Essex has 4 representatives.	Braintree, Maldon, Basildon, Castle Point, Rochford, Colchester, Chelmsford, Tendring and parts of Uttlesford	Suffolk, Thurrock, Southend-on-Sea and Norfolk
Anglian Central	Essex shares 1 representative with Suffolk.	Parts of Uttlesford	Cambridgeshire, Suffolk, Norfolk, Central Bedfordshire, Bedford Borough, Buckinghamshire, Hertfordshire and Milton Keynes
Thames	Essex shares 1 representative with Thurrock.	Epping Forest and Harlow	All the London Boroughs, Surrey, Hertfordshire, Thurrock, Oxfordshire, Buckinghamshire, Luton, Slough, Central Bedfordshire, Bracknell Forest, Hampshire, Reading, West Berkshire, Swindon, Warwickshire, Gloucestershire, Northamptonshire, Wiltshire and Windsor & Maidenhead.

Regional Flood and Coastal Committees are the key decisions making body for attributing funding from both the central government Flood Defence Grant in Aid (FDGiA), local levies which are raised from Lead Local Flood Authorities and general drainage charge which are raised from landowners (in Anglian Eastern and Anglian Central only).

These are the key streams of funding for flood defence schemes from fluvial, coastal and local flooding and an important one for flood resilience schemes. Consequently these committees have a hugely important bearing on which areas receive support for flood defences. Essex representatives should look to ensure that Essex's priorities are met but the influence of one shared representative, as is the case in Thames and Anglian Central, can be limited.

4. Actions to Improve Flood Risk

4.1 National Objectives

The overall aim of the National Strategy is to ***ensure the risk of flooding and coastal erosion is properly managed by using the full range of options in a co-ordinated way.*** The risk management authorities and other organisations involved in flood and coastal erosion risk management will take forward the objectives set out below:

- **Understanding and Working Together:** Understanding the risks of flooding and coastal erosion, working together to put in place long-term plans to manage these risks and making sure that other plans take account of them
- **Development Control:** Avoiding inappropriate development in areas of flood and coastal erosion risk and being careful to manage land elsewhere to avoid increasing risks
- **Reducing Risk:** Maintaining and improving FCERM systems to reduce the likelihood of harm to people and damage to the economy, environment and society
- **Improve Public Awareness:** Building public awareness of the risk that remains and engaging with people at risk to encourage them to take action to manage the risks that they face
- **Improved Emergency Planning and Recovery:** Improving the detection, forecasting and issue of warnings of flooding, co-ordinating a rapid response to flood emergencies and promoting faster recovery from flooding

4.2 Local Objectives and Actions

A key aim of the Local Flood Risk Management Strategy is to establish a series of local objectives that can be taken forward in line with the overall Guiding Principles (Refer Section 1.2) and deliver effective risk management through local measures and actions. The local objectives of the strategy are detailed below and the table shows how they are aligned with the National Strategy.

It should be noted that Essex County Council, as a Lead Local Flood Authority, is only responsible for management of **Local Flood Risk**. Local Flood Risk is defined as surface water flooding, ordinary watercourse flooding and groundwater flooding. This area of responsibility is defined by the Flood and Water Management Act. Therefore, the local objectives and actions **only** address **Local Flood Risk** and the interactions it might have with other forms of flood risk.

Table 4-1: Local Strategy Objectives

No.	Local Strategy Objective	National Strategy Objectives				
		Understanding and Working Together	Development Control	Reducing Risk	Improve Public Awareness	Improved Emergency Planning and Recovery
1	To provide a clear explanation of all stakeholder's responsibilities in flooding issues	✓			✓	✓
2	To develop a clearer understanding of the risks of flooding from surface runoff, groundwater and ordinary watercourses and to consider how best to communicate and share the information that becomes available	✓			✓	✓
3	To define and explain the criteria by which areas at risk of flooding from surface runoff, groundwater and ordinary watercourses are assessed and resources are prioritised .	✓		✓		
4	To state how risk management authorities will share information and resources	✓		✓		✓
5	To set out clear and consistent plans for risk management so that communities and businesses can make informed decisions about the management of the residual risk	✓		✓		✓
6	To ensure that planning decisions are properly informed by flooding issues and the impact future planning may have.		✓	✓		
7	To encourage innovative management of flood and coastal erosion risks , taking account of the needs of communities and the natural and built environment	✓	✓	✓	✓	
8	To ensure that emergency plans and responses to flood incidents are effective and that communities are able to respond properly to flood warnings			✓		✓
9	To highlight where information regarding other forms of flooding can be found	✓			✓	

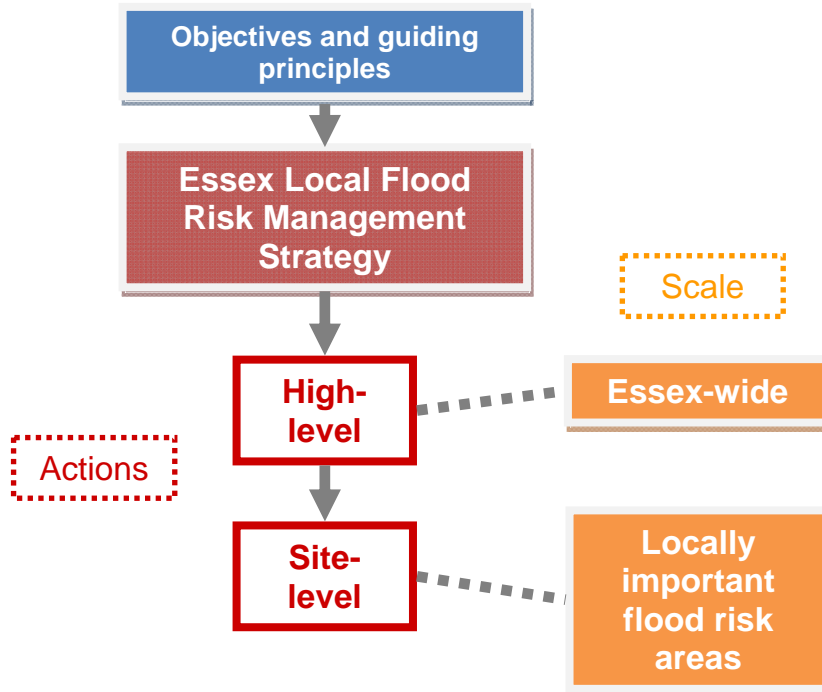
Note: Bold highlighting has been used to abbreviate the objectives for use in later sections

The objectives detailed above will be delivered through a series of local measures and actions. Flood risk management actions included in the Local Flood Risk Management Strategy have been split into two categories:

- **County-Wide Strategic Actions** with the aim of following the guiding principles and meeting the overall objectives of this strategy and of the Environment Agency's national strategy; and
- **Site level Specific Management Actions** that could be implemented within locally important flood risk areas in order to translate the aims of the overall strategic actions onto a local scale.

The site level specific management actions will be decided through annual action plans which will be agreed at the spring meeting of the Essex Partnership for Flood Management. The figure below shows the linkages between the National Strategy, Local Strategy and local actions.

Figure 4—1: Framework for Actions Delivered Through the Local Strategy



When compiling the measures and actions to deliver the Local Strategy Objectives, three generic options were considered:

- **Do nothing** – potentially more properties will flood and for those already at risk of flooding they will potentially flood to a greater depth and/or more frequently.
- **Maintain** – keep pace with climate change so that there is no net increase in flood risk; existing flood infrastructure will need to be improved over time and all new development will need to take climate change into account.
- **Improve** – take action to reduce the number of properties that would potentially flood and the potential impacts of that flooding.

Essex County Council has elected to pursue measures and actions that **improve** current flood risk management practices within the County to achieve an overall reduction in the potential impacts of flooding over time. This is aligned with the guiding principles of the National and Local Strategy. The measures and actions are

4.3 County Wide Strategic Actions

Table 4-2 provides a summary of the County Wide Strategic Actions that will be undertaken by Essex County Council to deliver the objectives detailed in the previous section. The table also shows how the actions align and link with the Local Strategy Objectives.

Table 4-2: County Wide Strategic Actions

No.	County Wide Strategic Actions	Local Strategy Objectives								
		1	2	3	4	5	6	7	8	9
		To provide a clear explanation of all stakeholder's responsibilities	To develop a clearer understanding of the risks of flooding	To define and explain the criteria by which areas at risk are prioritised.	To state how risk management authorities will share information and resources	To set out clear and consistent plans for risk management	To ensure that planning decisions are properly informed	To encourage innovative management of flood and coastal erosion risks	To ensure that emergency plans and responses to flood incidents are effective	To highlight where information regarding other forms of flooding can be found
1	Improve understanding of local flood risk		✓		✓			✓		✓
2	Adapt spatial planning policy to reflect local flood risk (<i>including development of guidance for implementation of SuDS</i>)					✓	✓	✓		
3	Raise community awareness	✓	✓	✓					✓	✓
4	Establish a working framework between Risk Management Authorities	✓						✓	✓	✓
5	Provide a policy for regulation of works on Ordinary Watercourses	✓				✓	✓			
6	Proactively seek funding to deliver capital works schemes to mitigate local flood risk		✓					✓		
7	To address the skills gap in Local Authorities	✓	✓			✓				✓

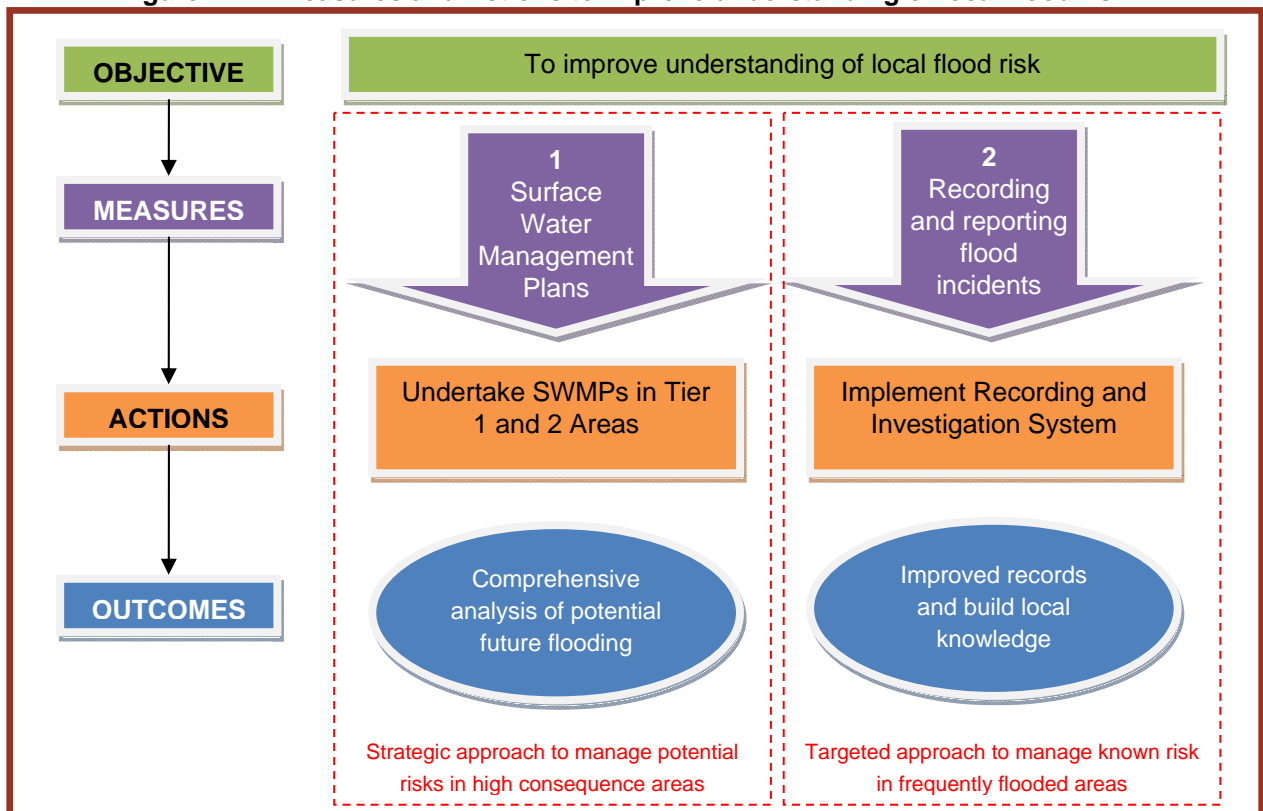
4.3.1 *Improve understanding of local flood risk*

One of the key findings of the Pitt Report into the causes of the 2007 floods was that there was insufficient understanding about the nature of surface water flooding in most parts of the country. This is true for Essex and building up this understanding is a key priority of the risk management authorities.

It is only through a better understanding of where the greatest local flood risks are, what their causes are and who will need to be involved in the solution that it will be possible to accurately identify and assess feasible measures that could be implemented to reduce the risk of flooding in locally important flood risk areas.

Once these measures have been identified and assessed it may be possible to apply for funding either through the Flood Defence Grant in Aid or through local funding. But until those measures have been assessed, effective measures cannot take place. To build up this understanding requires taking proactive measures to investigate areas of flood risk as well as building up the systems and mechanisms so that future information is recorded and managed. The figure below shows how this will be achieved in Essex County and further detail is provided later in this section.

Figure 4—2: Measures and Actions to improve understanding of local flood risk



1. Surface Water Management Plans

One of the most effective measures for increasing knowledge of local flood risk is to commission Surface Water Management Plans (SWMPs). A SWMP was produced for Basildon, Castle Point and Rochford in 2012. While this was a large-scale project covering different local district councils, further SWMPs will be focussed on the locally important flood risk areas within Essex identified in Section 2.5. Carrying out “mini-SWMPs” for these areas, including detailed surface water modelling and an assessment of site specific mitigation measures, will provide a cost effective way of further assessing local risk in these areas and establishing feasible measures to mitigate the risk in specific locations.

As described in Section 2.5.3, further works (investigation, capital works or other mitigation measures) will be prioritised using Critical Drainage Areas (CDA). Where further funding is required, Essex County Council plan to pursue Flood Defence Grant in Aid (FDGiA) funding – further detail on this funding stream is provided in Section 5.2.1. A key output of SWMPs and CDA processes will be outputs aligned with FDGiA funding applications to streamline the process as much as possible. Any schemes proposed in Surface Water Management Plans and Critical Drainage Areas must not have an adverse effect on the integrity of European sites.

When identifying critical drainage areas or significant features, it is important to consider and record the demographics of the area. This will be important when considering how to communicate the risk to residents and what steps it would be appropriate for residents to take to improve their own resilience.

If Essex County Council wishes to do works to prevent flood risk which involve changes to an ordinary watercourse, they will normally have to consult with the Environment Agency. However actions identified within a Surface Water Management Plan do not need consultation as the consultation will be deemed to have occurred as part of the Surface Water Management Plan.

2. Recording and investigating flood incidents

Historically, there has not been a system for recording local flood incidents within Essex. Essex County Council has produced a database for recording information about flood incidents. However for this to become an effective database, all risk management authorities need to commit to reporting incidents of 'local flood risk' that they become aware of. This process should be extended to parish councils in areas where there is significant flood risk as they can often provide quicker and more thorough information than any risk management authority. There should also be further work done on how members of the public can easily and effectively report flood incidents.

One of Essex County Council's main responsibilities under the Flood and Water Management Act (described in Section 19 of the Act) is to investigate flooding incidents within Essex and publish details of the investigation. The investigation must identify which risk management authorities have relevant flood risk management functions and whether each of those risk management authorities exercised those functions appropriately in response to the flood.

The processes implemented at Essex County Council to deliver the recording and investigation functions described above are summarised as follows:

- **Recording** - This will be achieved using a Flood Incident Record Sheet which includes fields for rainfall and flood information, as well as additional columns for the nature and cost of any damage and Officer notes. An agreement is in place with the 12 District and Borough Councils of Essex that this record will be completed each time an incident occurs, and that all records will be sent through to Essex County Council at the end of every calendar month.
- **Investigation** - Investigations will involve consultation with the relevant risk management authorities, landowners and private organisations involved, all of whom we expect to cooperate with us and provide comments.

The aim is for Flood Investigation Reports to bring all useful information together in one place, providing an understanding of why situations are how they are and outlining possible causes of flooding and potential long-term solutions. Further recommendations will also be made to highlight potential flood risk management actions. Reports will provide a clear and thorough understanding of flooding situations, but our duty to investigate does not guarantee

that problems will be resolved and cannot force other authorities into action. Decisions about next steps must be made by the parties involved.

The decision whether to investigate a flood or not is ultimately at the discretion of the Lead Local Flood Authority. Current policy is that an investigation should be carried out where the following eligibility criteria are met, or it is in the public interest to do so:

- where there is ambiguity surrounding the source or responsibility of a flood incident; AND
- where internal flooding of one property has been experienced on more than one occasion; OR
- where internal flooding of five properties has been experienced during one single flood incident; OR
- where there is a risk to life as a result of flooding.

Flood Investigation Reports (FIRs) should be published within 3 months of an incident being reported to Essex County Council. However, there are cases where this timeframe will be extended (e.g. widespread flooding across the County).

During widespread flooding, the method for prioritising flood investigation will initially be based on the following flood characteristics; this information is deemed the most likely to be available:

- the number of properties flooded internally;
- the frequency of flooding (based on the number of incidents in the last 10 years).

If after considering the above there remains no clear priority, characteristics such as the flood source, flood depth and velocity, rate of onset and duration will be taken into account if known.

Once completed the FIRs will be published on Essex County Council's website at www.essex.gov.uk/flooding

It is important that this process is maintained and improved in the future in order to build up an accurate understanding of which areas frequently experience flooding and therefore should be investigated in more detail to understand why and what can be done.

It is proposed to utilise the mechanism for flood investigation reporting to further investigate flooding and look into potential mitigation measures in key risk areas, as well as those that experience regular flooding problems. Although the funding for a large number of schemes may not be available, by taking the flood investigation one step further than is required under the Flood and Water Management Act, it could help support local buy-in and also possibly encourage a level of fundraising or community involvement in any proposed schemes. This will enable Essex County Council to increase their understanding of flood risk and current issues and be in a better position to implement improvement works.

4.3.2 *Adapt spatial planning policy to reflect local flood risk*

It is vital that local planning decisions consider risk from surface water, ground water and ordinary watercourses during the planning process, in a similar way to how fluvial and tidal flood risk is currently assessed. The overall aim of this, linking in with a key aim of the national strategy, is to ensure that inappropriate development is avoided in areas where there is significant flood risk from local sources.

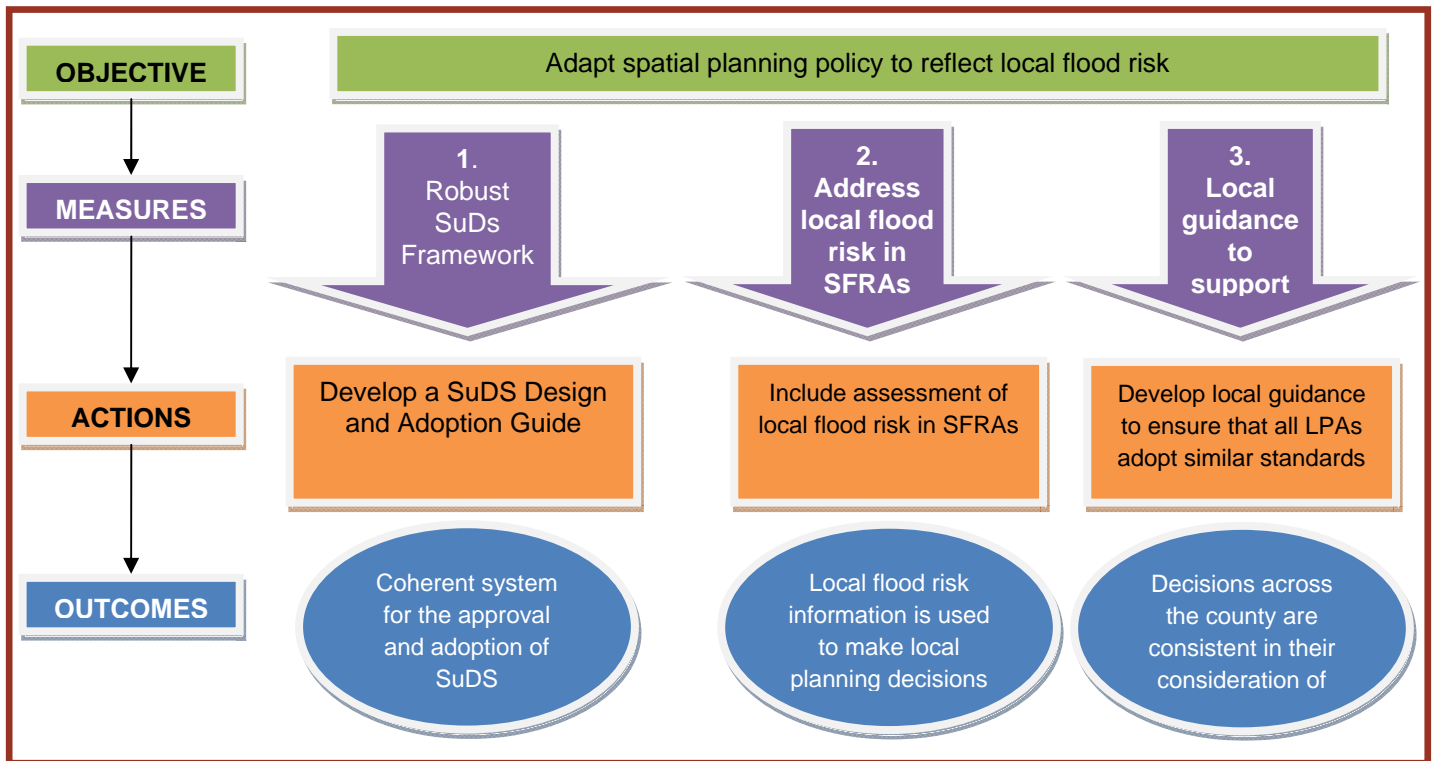
There are three key ways in which spatial planning policy should be adapted to reflect local flood risk. These are:

- Introduction of a robust Sustainable Drainage System (SuDS) framework

- Inclusion of local flood risk concerns in all future Strategic Flood Risk Assessments
- Provision of new guidance to supplement the NPPF provisions for flood risk management

Local planning policy should place emphasis on the requirement for appropriate measures to reduce surface water runoff from all new development. Site specific Flood Risk Assessments should inform the detailed design of surface water systems for new development, particularly within those areas that have been identified at high risk of flooding (Tier 1 and Tier 2 areas).

Figure 4—3: Measures and Actions to adapt spatial planning policy to reflect local flood risk



1. Introduction of a robust Sustainable Drainage System (SuDS) framework

The Flood and Water Management Act gives Essex County Council new responsibilities as a SuDS Approval Body (SAB). A SAB has the following duties for SuDS systems **that serve more than one property**:

- Review and approval of SuDS designs submitted as part of planning applications
- Supervision of SuDS construction
- Adoption and ongoing maintenance of SuDS systems

However, the date for these duties to be commenced has not been agreed and an interim policy for dealing with SuDS is necessary. For both the interim and once the new SuDS regime is in place it is crucial that there is a clear vision for how SuDS should be provided within Essex.

To explain this vision, Essex County Council has produced a draft SuDS Design and Adoption Guide⁸. This guide is primarily intended for use by developers, designers and

⁸ http://www.essex.gov.uk/Environment%20Planning/Environmental-Issues/local-environment/flooding/Documents/suds_design_adoption_guide.pdf

consultants who are seeking guidance on the County Council's requirements for the design of sustainable surface water drainage in Essex.

It provides information on the planning, design and delivery of attractive and high quality SuDS schemes and how they should offer multiple benefits to the environment and community alike. It also shows that meeting these requirements need not be an onerous task and can help add to development. Developers are encouraged to contact the SAB team at a very early stage of development to discuss their plans.

The standards set out within the Essex SuDS Design and Adoption Guide take into account the local conditions, detail contained in development documents and Strategic Flood Risk Assessments. Different standards apply to Greenfield sites and previously developed Brownfield sites, and SuDS must be designed to accommodate for climate change and likely future changes in impermeable area. Similarly, ground conditions will govern the suitability of certain SuDS techniques. For example, Figures 4-4-1 to 4-4-4 provide the summary outputs of the Infiltration SuDS Map across Essex County Council. Clarification of each summary map can be obtained from the British Geological Survey.

The requirement for SuDS will ensure that any redevelopment or new development does not negatively contribute to the surface water flood risk of other properties and instead provides a positive benefit to the level of risk in the area. It will also ensure that appropriate measures are taken to increase the flood resilience of new properties and developments in surface water flood risk areas, such as those identified as being locally important flood risk areas within this strategy document.

Interim Policy

The new SuDS regime has not yet been commenced into law. However SuDS are already being developed and it is important that there is clarity about what occurs in the interim. The Environment Agency will retain its statutory consultee role on planning applications. Essex County Council has written to all the District and Borough Councils requesting that the SuDS Approval Body team are consulted where there is a proposal for a SuDS scheme on developments over one hectare. They will advise Local Planning Authorities whether SuDS schemes would have met the required standards to be adopted under the new regime.

Developers have no obligation until the new SuDS regime begin to produce SuDS to required standard but, if they do, then Essex County Council is willing to adopt them using a commuted sum. Once both a drainage application and planning application have been approved, construction can take place. A non-performance bond will be taken out which will be repaid on confirmation that the SuDS has been constructed as agreed in the drainage application. There will then be a trial period to ensure that SuDS function fully before adoption takes place. Once adoption has taken place, maintenance will be the responsibility of ECC and will be done either by ECC itself or by a contracted provider.

Figure 4—4: Infiltration SuDS Map

2. Inclusion of local flood risk concerns in Strategic Flood Risk Assessments

Strategic Flood Risk Assessments (SFRAs) looks at flood risk at a strategic level on a local planning authority scale. In Essex this means that they are produced by the 12 district and borough councils and by the Minerals and Waste team at Essex County Councils.

SFRAs are used to inform the Sustainability Appraisal of Local Plans by identifying where development will be acceptably safe from flood risk throughout the lifetime of the proposed development. By preparing SFRAs, local planning authorities will be able to undertake the sequential test, identify the level of detail required for individual Flood Risk Assessments (FRAs) and assess the response required for emergency planning purposes.

Because of the lack of information previously available, SFRAs have previously included very little about Local Flood Risk from surface water, groundwater or ordinary watercourses. SFRAs in future will refer to flooding concerns identified in the Preliminary Flood Risk Assessment, further analysis produced by an Essex Flood Risk Management Authority and the record of flood incidents managed by Essex County Council to ensure that local flood risk, which threatens more home than either fluvial or costal flood risk, is fully considered in deciding where is appropriate for development and where requires specific flood risk assessments.

3. Provision of new guidance to supplement the NPPF provisions for flood risk management

The National Planning Policy Framework is supplemented by Technical Guidance which relates how a Sequential test and Exception test should be delivered. The National Planning Policy Framework states that Local Planning Authorities as part of their local plans, should take account of advice from all relevant flood risk management bodies. In its technical guidance it also recognises that “areas at risk of flooding” should consist of:

- Land within Flood Zones 2 and 3;
- Land within Flood Zone 1 which has critical drainage problems and which has been notified to the local planning authority by the Environment Agency;

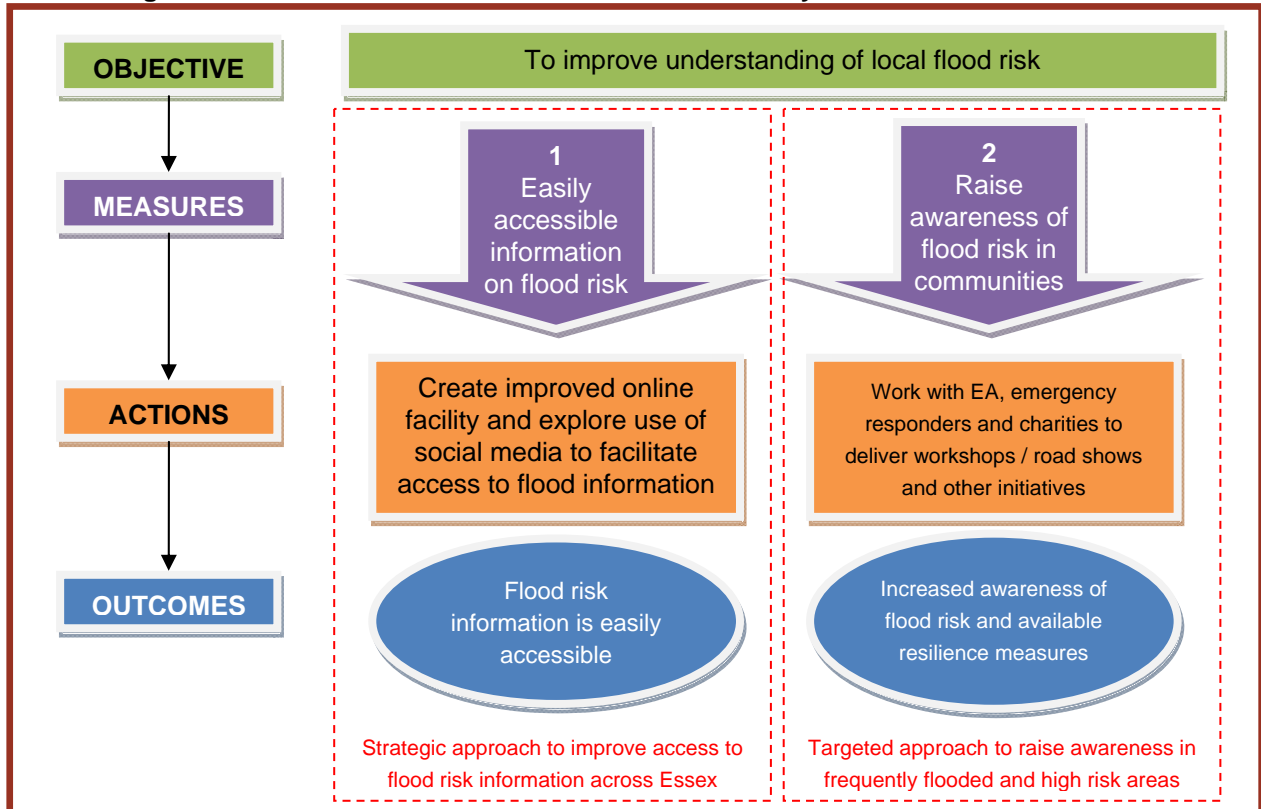
Responsibility for identifying Critical Drainage Problems rests with the Lead Local Flood Authority rather than the Environment Agency. It is recommended that joint letters are sent from Environment Agency and Essex County Council to Local Planning Authorities when they are developing Local Plans stating what critical drainage problems have been identified and what Flood Zone these critical drainage areas should be treated as for the purpose of the Sequential Test. This policy may be overridden by further clarification from DEFRA or CLG or from a different method endorsed by the Essex Partnership for Flood Management.

4.3.3 *Raise community awareness*

Raising community awareness of flooding and local flood risk, particularly within locally important flood risk areas (Tier 1, Tier 2 and Tier 3 areas), should be initiated as a priority. It is important to be able to communicate effectively and engage with local communities, parish councils and members of the public in order to set realistic expectations and achievable outcomes of local flood risk management.

The aims of this should tie in with the aims and objectives of the Essex County Council Communications Strategy, but the overarching objective would be increasing knowledge and understanding of flooding and flood risk and informing residents how they can contribute to the effective management of flood risk. This follows one of the overall objectives of the local strategy of ensuring communities are aware of the level of risk that they face and the steps they need to take to manage the risk and also ties in with the objectives of the national strategy.

Figure 4—5: Measures and Actions to raise community awareness



Communicating the risk of flooding and raising awareness within local communities can be implemented in the short-term. This will mean residents are more aware of the flood risk across Essex and can encourage people to become more proactive within their community. Increasing awareness can be achieved in a number of different ways including public consultation events, newsletters and online resources such as council websites and social media. Essex County Council will ensure that all learning from the project will be incorporated into the communications strategy and other work to help improve understanding and awareness of flood risk.

Communication activities should convey the following key messages:

- Flood risk is not new, there will always be a risk of flooding and this will change through the influence of factors including climate change, the way we live, management of assets etc.
- Recent legislation has given Essex County Council new responsibilities to manage flood risk and it is taking a proactive approach, aiming to reduce the risk posed to local communities;
- Flood risk stems not just from coastal and main river sources but also from surface water and groundwater. While the nature of flooding varies, the potential impact on local communities is the same;
- Properties and businesses which have never suffered from flooding before may still be at significant risk when there is exceptional rainfall;
- Organisations involved in flooding (including local authorities, the Environment Agency, Thames Water and Anglian Water) have a duty to work and communicate together. The Essex Partnership for Flood Management will facilitate this communication;
- Stakeholders must work together to protect the local communities; this includes householders and businesses who can be pro-active and implement property protection measures themselves;

Awareness needs to be raised across different groups within Essex. The following audiences have been identified:

1. High awareness, direct risk
2. Low awareness, direct risk
3. Low awareness, indirect risk
4. Low awareness, no risk

Those sitting in the high awareness, direct risk (Group 1) include communities or individuals who have suffered from, or come close to flooding in the past and are fully aware of the risks posed to their properties and themselves. This group require information about what steps are being taken and assurances that the organisations involved in addressing flood risk management are working together effectively to reduce the dangers.

Low awareness, direct risk (Group 2) includes communities or individuals which are identified at risk of direct and potentially serious flooding. These people may not have experienced flooding recently and are unlikely to be aware of the risk, and are potentially concerned that being informed of the risk will increase their insurance premiums unnecessarily. This group requires careful consultation to ensure that they understand the levels of risk, what is being done about it and what they can do to help themselves.

Low awareness, indirect risk members (Group 3) are not identified as being at risk of direct flooding to their properties. However, they may still be affected by flooding due to it restricting access to property and local services. This group does not require any specific actions, but it would be beneficial to have a general awareness of flooding and flood risk.

Low awareness, no risk members (Group 4) are at low risk of flooding. However, their actions may increase flood risk to others, for example through the obstruction of watercourses or paving over parts of their property which increases runoff to downstream areas. This group would also benefit from general awareness of flooding, but do not require any specific actions.

In addition it is important to consider, particularly with regards to Groups 2 and 3, the demographics of the communities and individuals identified as at risk. Consideration must be made of whether communications will need to vary to reach hard to reach groups and whether different advice would be appropriate to vulnerable groups in terms of actions they can take to make themselves more resilient. Consideration will also need to be made on what communications to make to those renting from private landlords who will have less ability to build up resilience in rented accommodation.

Raising awareness is primarily the responsibility of Essex County Council as the Lead Local Flood Authority who will lead on the production and implementation of a full communications strategy to deliver the actions and measures defined earlier in this section.

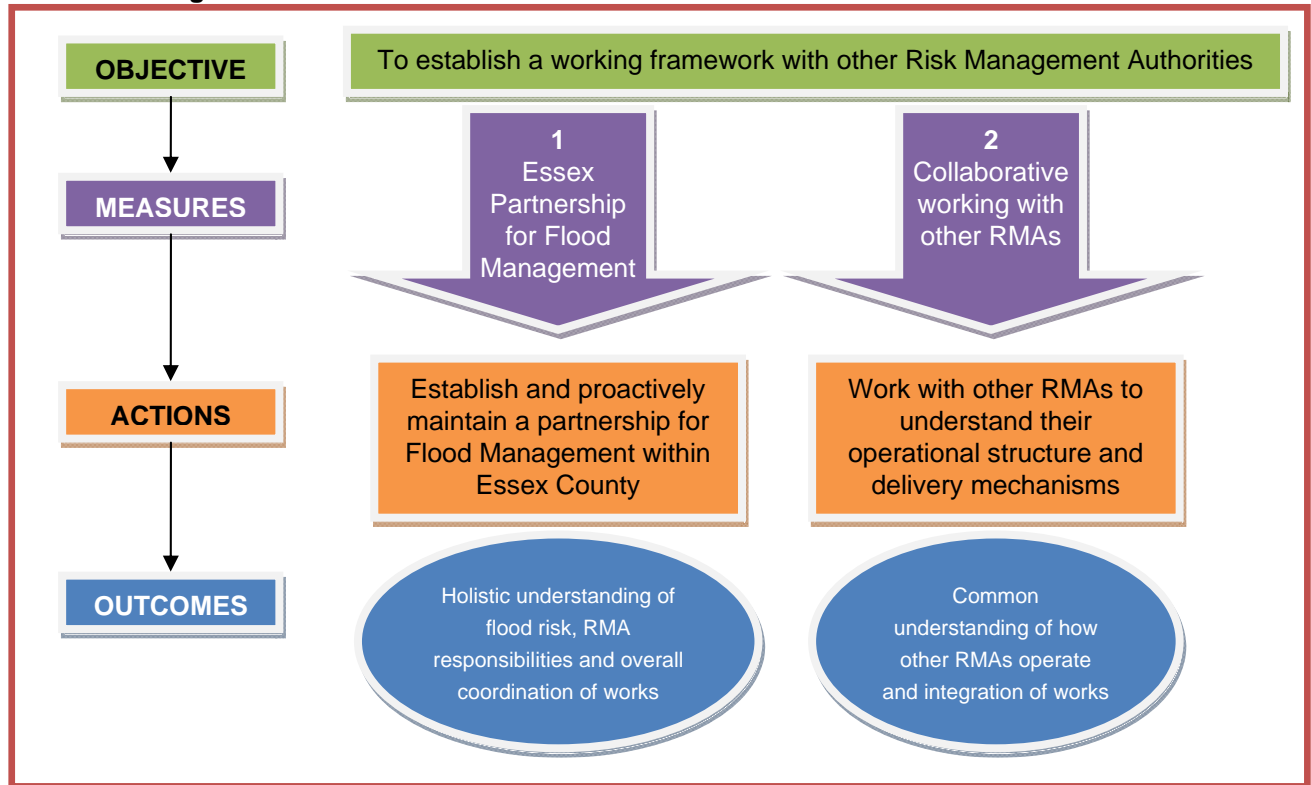
“Floodcom” EU Interreg Project

Essex County Council is the lead partner on an Interreg 2 Seas project called Floodcom with partners from the Netherlands, Belgium and France as well as Chelmsford City Council. Activity 3 of Floodcom looks to tackle the issue of how to raise awareness of flooding for those who are at risk but have not yet suffered in a flooding incident. While it is relatively easy to engage residents who have suffered from flooding or have had a near miss, it is extremely difficult to engage those who modelling shows to be at risk but have not suffered from flooding.

4.3.4 *Establish a working framework with other Risk Management Authorities*

As well as engaging with local communities and members of the public, it is also important to engage effectively with other Risk Management Authorities (defined under the Flood and Water Management Act).

Figure 4—6: Measures and Actions to establish a working framework with other Risk Management Authorities



1. Essex Partnership for Flood Management

As part of this process the Essex Partnership for Flood Management has been developed. There are also important scrutiny arrangements for the actions of risk management authorities through Essex County Council's Safer and Stronger Communities Policy and Scrutiny Committee and the Environment Agency's Regional Flood and Coastal Committees. External relations should also be maintained with the authorities involved in the South East Local Enterprise Partnership, the Anglian Group of LLFAs and the LGA Inland Flood Group. Section 1.5 contains further information on the Partnership

2. Collaborative Working with other RMAs

Two key behaviours of collaborative working are 'looking for common ground' and 'learning about others'. In the framework of flood risk management, the initial common ground will likely be the need to manage flood risk – but the organisational operational methods and approaches by which this is achieved can be quite different.

Essex County intends to work with other RMAs to highlight where common ground and benefits exist for both organisations. Examples of these include:

- Better collective organisational understanding of skills and perspectives
- Better common understanding of flooding
- Shared understanding of flood risk responsibilities
- Efficiency of coordinated capital works activities between organisations
- Greater certainty for developers concerning appropriate drainage and flood risk

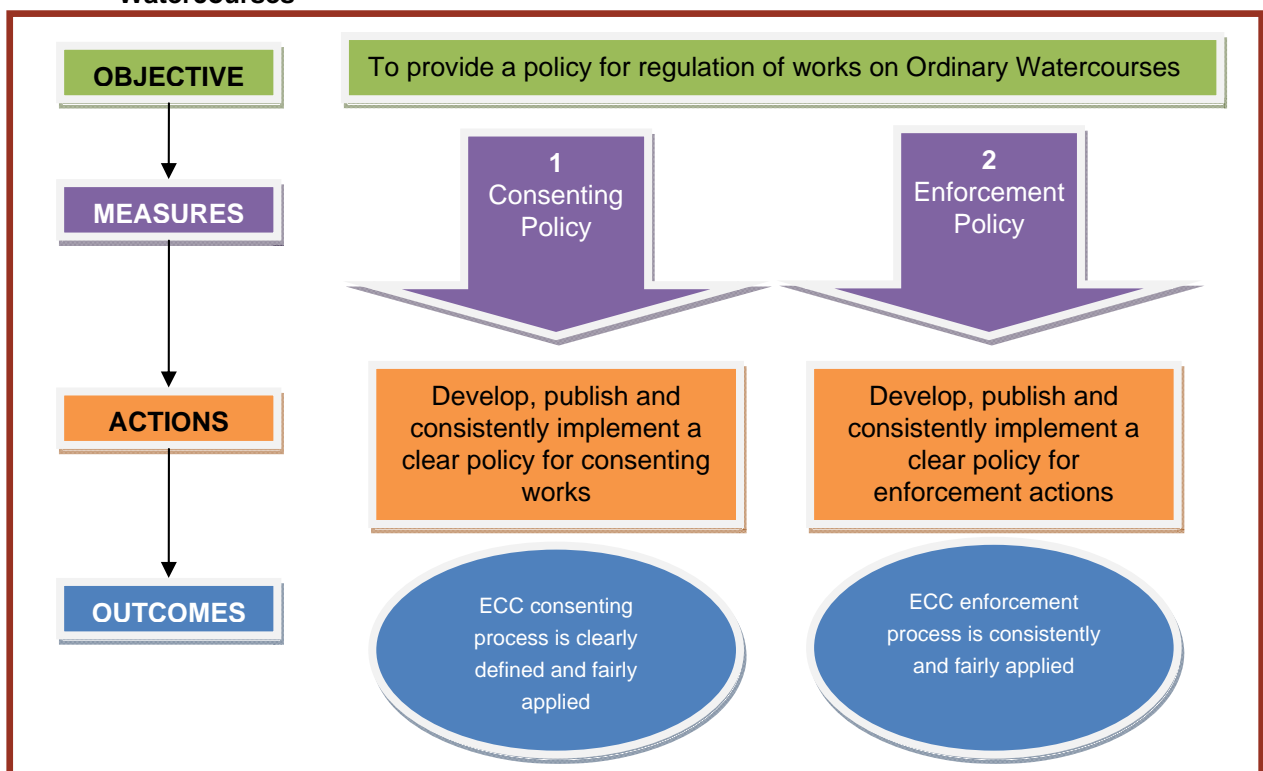
- Faster and higher certainty decisions regarding development proposals
- Better management of flood risk, leading to
- Overall reduction in existing and future flood risk

4.3.5 Provide a policy for regulation of works on Ordinary Watercourses

The Flood and Water Management Act transferred the responsibility of regulation of works on Ordinary Watercourses from the Environment Agency to Lead Local Flood Authorities. The purpose of ordinary watercourse regulation (consenting and enforcement) is to control certain activities that might have an adverse flooding impact. 'Regulation of works' includes two key activities:

- Consenting of works before they are constructed
- Enforcement actions to remediate or remove un-consented structures or obstructions

Figure 4—7: Measures and Actions to implement a policy for works on Ordinary Watercourses



As the Environment Agency has historically undertaken this role and subsequently has a considerable knowledge base and established skills to deliver the associated duties of regulation. To aid Lead Local Flood Authorities adopt this role, the Environment Agency have produced Advice Notes for consenting and enforcement of works on Ordinary Watercourses⁹. These Advice Notes are the result of numerous years of experience in the regulatory role and Essex County Council intends to make best use of this experience by closely aligning its own policies with these Advice Notes. The following two sections outline the general policies implemented by Essex and they will be supplemented by a specific Ordinary Watercourse Consent and Enforcement Policy.

1. Consenting

Essex County Council will adopt the following approach to consenting:

⁹ <http://cdn.environment-agency.gov.uk/geho0112bvyf-e-e.pdf>

- A risk based proportionate approach to requiring consent for activities impacting the watercourse
- Encourage early discussions in advance of consent application. Pre-application discussions may be able to identify an alternative approach that does not require consent.
- Establish a consent fee application system that is compliant with legislation
- Create consent application forms and associated guidance documents to ensure applicants provide all required information at the start of the process and minimise delays
- Publish application response times and mechanisms that trigger extensions to these response times.
- Create standardised letters and consent documentation (including conditions of consent) to ensure consistent application of the consent process within the County
- Have regard to other legislative constraints and consultation with third parties as required – including, but not limited to:
 - Habitats Regulations
 - Wildlife and Countryside Act
 - Water Resources Act
 - Land Drainage Act
 - Water Framework Directive
- Make clear to applicants that a consent for works does not imply a approval of the overall design of the proposed structure / modification to channel. It will be the applicants' responsibility to comply with the latest Construction (Design and Management) Regulations in this respect.

2. Enforcement

The aims of enforcement in this context are to:

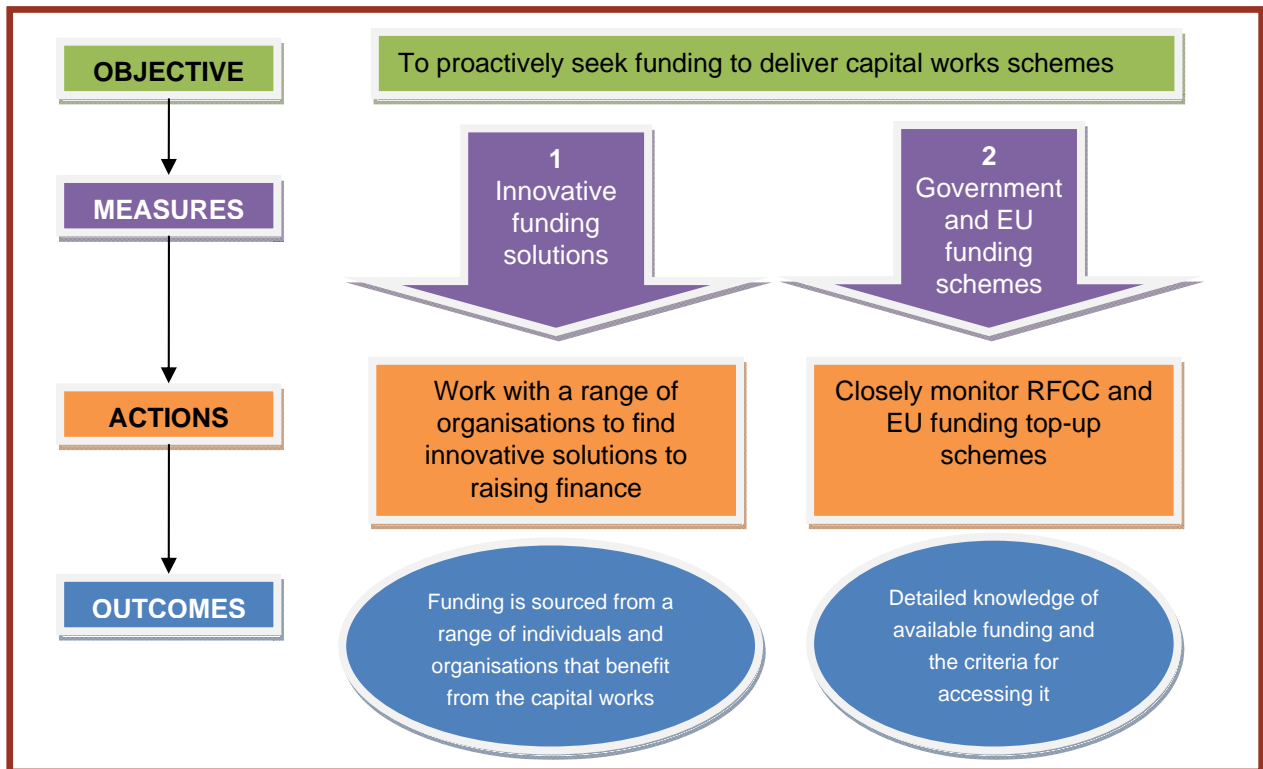
- Ensure the proper flow of water in a watercourse and over the flood plain
- Control of water levels
- Ensure security of existing assets

To achieve these aims, enforcement action can be used to rectify unlawfully and damaging or potentially damaging work. Enforcement action may be taken where damaging or potentially damaging works (or lack of works) have been undertaken without consent or are in contravention of an issued consent. Some are sufficiently serious to require immediate action to mitigate the risk. Others may only require a letter to the offender to ensure the requirements are clear. ECC will develop a clear policy that defines the conditions under which enforcement action can be taken under the Land Drainage Act (1991) and the type of action permitted under the Act.

4.3.6 *Proactively seek funding to deliver capital works schemes*

Delivery of capital works schemes is a key part of flood risk management. However, sourcing of funds is challenging in a time of austerity. Essex County will proactively seek funding for capital schemes through the measures and actions defined in the figure below.

Figure 4—8: Measures and Actions to proactively seek funding to deliver capital works schemes



1. Innovative Funding Solutions

Essex County will work with a range of private and local organisations to find innovative solutions to raising finance. This process will require staff to work closely with communities, taking up a large part of their time and will require local households, businesses and communities to invest their own time and resources. However it will allow for a far greater range of flood defence schemes to be delivered and will provide the greatest relief from flood defence possible, given the current austere times.

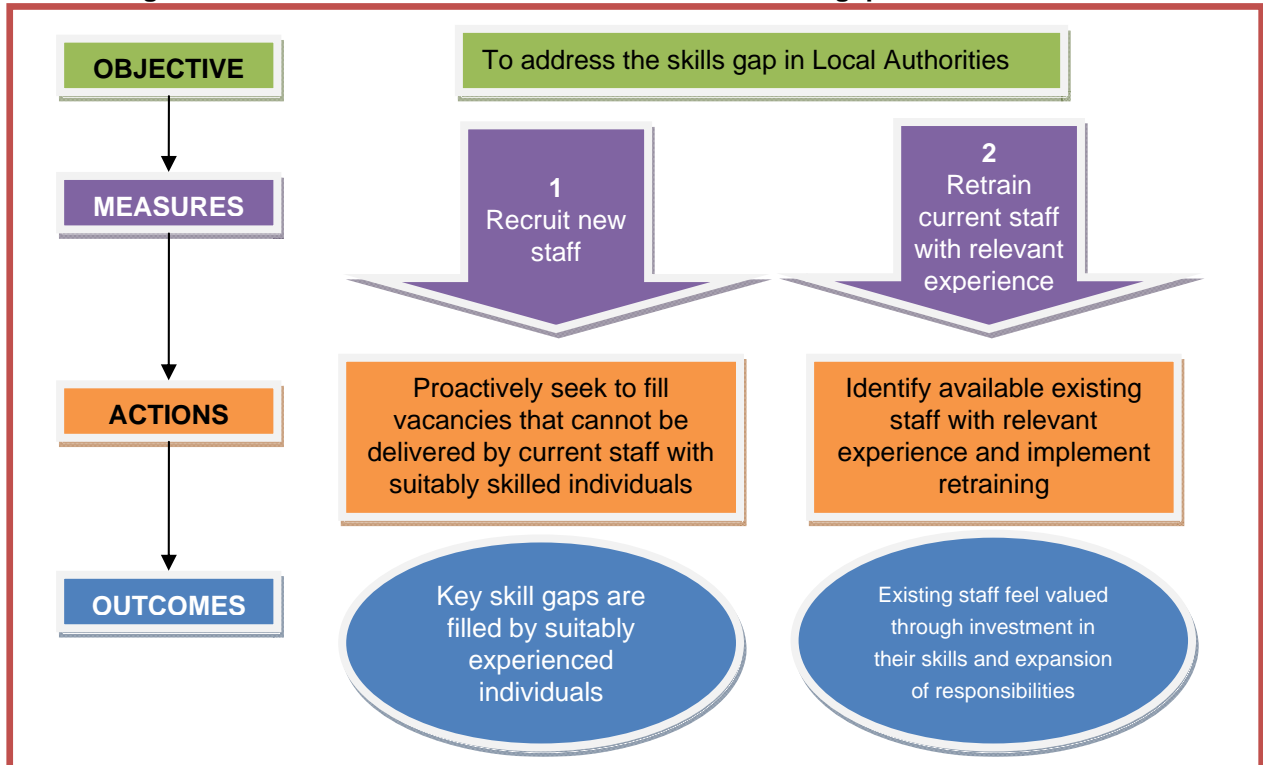
2. Government and EU Funding Schemes

Monitor and apply for schemes relying on Flood Defence Grant in Aid (FDGiA), local levy and European funding to top-up schemes. This action will reduce the need for funding to be raised locally as it can be taken from existing public sector pots. However, the funding available this way may be limited and will only be available to schemes meeting specific criteria (refer Section 5 for further information on funding).

4.3.7 To address the skills gap in Local Authorities

Staff resources at Essex County Council with suitable skills and experiences to deliver flood risk management functions are essential. The figure below shows the actions and measures implemented by Essex County to ensure suitable skills and resources are available.

Figure 4—9: Measures and Actions to address the skills gap in Local Authorities



Through recruitment and retraining of staff at County Council, this will ensure that Essex County Council are able to meet their responsibilities. This will require commitment of resource from managers and officers to ensure that flood management is embedded throughout the organisations. By providing training opportunities and platforms to share best practice and ensure that the correct people are contacted, a fully functioning and joined-up service can be provided.

4.4 Site Specific Actions

The table below provides a summary of the Site Specific Actions that will be **supported** by Essex County Council to deliver the objectives detailed in the previous section. It is anticipated that these actions will be primarily delivered by District / Borough Councils and local communities with background support provided by Essex County Council. The table also shows how the actions align and link with the Local Strategy Objectives.

Table 4-3: Site Specific Actions

No.	Site Specific Actions	Local Strategy Objectives								
		1	2	3	4	5	6	7	8	9
		To provide a clear explanation of all stakeholder's responsibilities	To develop a clearer understanding of the risks of flooding	To define and explain the criteria by which areas at risk are prioritised.	To state how risk management authorities will share information and resources	To set out clear and consistent plans for risk management	To ensure that planning decisions are properly informed	To encourage innovative management of flood and coastal erosion risks	To ensure that emergency plans and responses to flood incidents are effective	To highlight where information regarding other forms of flooding can be found
1	Implement sustainable drainage and source control measures							✓		
2	Manage overland flow paths		✓					✓	✓	
3	Review land management methods		✓					✓	✓	
4	Review asset management and maintenance methods		✓					✓	✓	
5	Achieve wider environmental benefits							✓		
6	Investigate local flooding issues and identify significant features		✓				✓			
7	Implementation of surface water flood forecasting and flood warning systems	✓	✓						✓	

As Essex County Council intends to only **support** delivery of these actions, the Local Strategy only gives general guidance on how these actions could be implemented. Interpretation of local delivery method is left open to those leading specific projects to encourage innovation and flexibility in how the actions are approached.

4.4.1 Implement sustainable drainage and source control measures

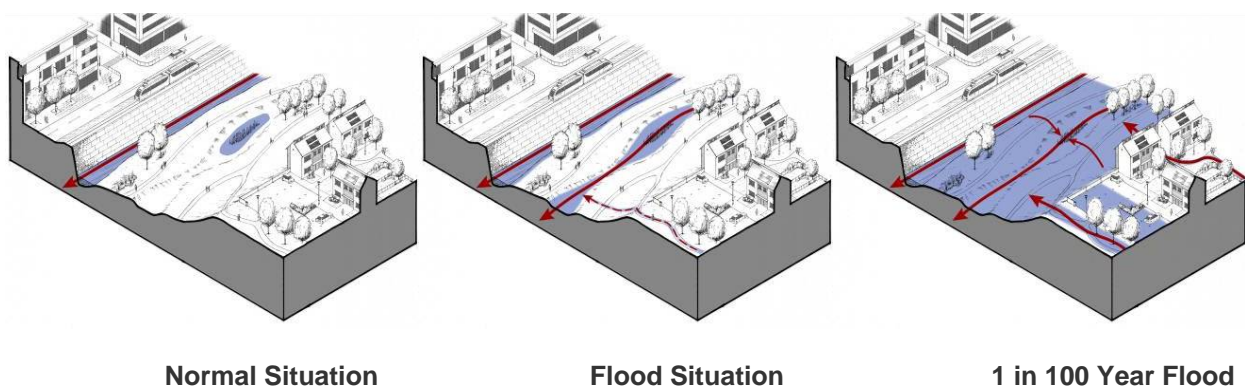
The implementation of sustainable drainage and source control measures should be encouraged, particularly within locally important flood risk areas. For example, encouraging the installation of permeable paving or other SuDS measures in key risk areas, as an alternative to traditional impermeable surfaces, will act as a source control measure to reduce the amount of runoff entering the drainage network, and therefore reducing the overall risk of flooding from an extreme rainfall event. There are also environmental benefits that come with the installation of these systems, such as a reduction in diffuse pollution reaching watercourses.

This ties into the planning policy county wide objective (refer Section 4.3.2), as requirements for these systems could be encouraged as part of the planning process. Raising awareness of simple measures and systems that can be installed at their homes is another way of improving the resilience of local communities to flooding. Local residents and property owners may, for example, be encouraged to install simple systems such as water butts to capture roof runoff which would reduce the amount of surface water entering the drainage system.

4.4.2 Manage overland flow paths

The flow of surface water can be managed through the designation of parts of the existing environment as Urban Blue Corridors. This concept aims to manage the conveyance of surface water across an area of the catchment through the redesign of the urban landscape to create specific channels to convey surface water. For example, this can be achieved through increasing kerb heights and property thresholds to retain water on designated sections the highway. This action could be combined with existing highways maintenance and improvement projects and funding which would make it more cost-effective.

Figure 4—10: Functionality of Urban Blue Corridors under different flood conditions



Source: *Developing Urban Blue Corridors Scoping Report March 2011*

Further investigation, most likely through a SWMP or similar study, will be required in order to ascertain details of flood depths and extents in key areas which can be used to support and inform the implementation of this concept within Essex. Further support and guidance on the use of 'Urban Blue Corridors' can be sought from Defra¹⁰.

¹⁰ Developing Urban Blue corridors – Scoping Study - FD2619:
<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=16218>

4.4.3 *Review land management methods*

There is a need to review land management methods and provide guidance to land-owners and land-users on methods of land management that will help reduce the flood risk in key areas. The generation of surface water runoff can be reduced through the implementation of certain agricultural practices. For example, land can be ploughed perpendicular to the slope of the land, reducing the effect of channelling of water over the land when it rains. Other land management strategies could also be adopted such as increasing tree coverage, which is known to delay the flow of water through a catchment.

In addition, the reduction of runoff from agricultural surfaces may reduce the diffuse pollution flowing down into watercourses, and on into the sea, which will help to meet Water Framework Directive requirements for water quality standards. Liaison with the National Farmers Union, the Country and Land Association and others will help the council and farmers work together on this common aim, as runoff from farmland is also detrimental to the farmers due to loss of nutrients.

4.4.4 *Review asset management and maintenance methods*

It is important to review the maintenance and management of drainage infrastructure and assets. This will happen for significant flood risk asset (such as culverts, weirs, etc) through the development of a county wide Asset Register to meet the requirements of the Flood and Water Management Act.

It is also very important that this is completed for ordinary watercourses within Essex in order to ensure that responsibility for maintaining them is undertaken. Currently the ownership, management and maintenance of ordinary watercourses is unclear and many ordinary watercourses within the county are overgrown and generally in poor condition.

It is also particularly important that assets within the highways network, especially those within locally important flood risk areas, are maintained efficiently. This will require close collaboration with the highways department within the county and riparian owners (in the case of private roads) in order to manage this.

4.4.5 *Achieve wider environmental benefits*

It is important that actions that are taken forward from this strategy also focus on achieving wider environmental benefits, in addition to the social and economic benefits of reducing flood risk. Environmental benefits could include supporting Water Framework Directive targets, improving particular environmental features within Essex, ensuring that flood defences are in keeping with the existing townscape, and, where appropriate, to ensure the protection of built heritage. More information on environmental objectives and how benefits can be achieved is included in the Environmental Objectives Section (refer Section 6).

4.4.6 *Investigate local flooding issues and identify significant features*

In areas where a SWMP may not be justified, other activities can be taken to improve understanding. For instance the lead local flood authority and the relevant district/borough council can work together to look at doing an investigation of all the significant features in the areas so that these can be recorded and their condition and owner identified. This information will help identify what features must be kept as they currently are to prevent an increase in flood risk.

4.4.7 *Implementation of surface water flood forecasting and flood warning systems*

Improving community resilience can also be linked to establishing a flood warning system and improving emergency planning procedures as well as a broad effort to raise community awareness and increase understanding of local flood risk issues. It can also tie in to the planning policy measure, as requirements for flood resilience could link in to planning policy in flood risk areas.

4.5 Residual Flood Risk Management Actions

As noted previously in this study, it is not economically feasible to protect everyone and everything from flooding all of the time. Even with a flood mitigation scheme in place, there will be a residual risk of failure of the scheme or a flood event exceeding the design standard of the scheme. Similarly, a cost effective mitigation schemes may not be practical in all locations due to local technical constraints or availability of funding. Measures can be implemented to reduce the impact of flooding when it does inevitably occur in certain locations and support recovery following flooding – these include:

- Property level protection and resilience schemes
- Community Flood Groups

The following sections outline how Essex County Council will support management of residual flood risk through these two measures.

4.5.1 *Encourage implementation of flood resilience measures and property protection schemes*

It is recommended that a general approach to improving community resilience is adopted across the study area, particularly in areas that have been identified as being at greater risk (Tier 1 and Tier 2 areas of locally important flood risk). This should include encouraging property resilience through the installation of individual property protection measures, such as raised driveways, the use of flood gates or air brick covers, as well as a general increase in awareness and preparedness for a flood event. Options for funding of property protection measures should also be investigated, including the possibility of offering grants or subsidies for individual properties who are interested in installing such measures.

4.5.2 *Establish Community Flood Groups*

Working together as a community or group to complete a plan will facilitates a rapid and effective response when flooding happens. A plan can help the group decide what practical actions to take before and during a flood, helping reduce the damage flooding can cause. ECC supports the formation of Flood Action Groups who will be considered as partners in scheme development. The plan should generally include:

- Details of local flood co-ordination centre
- Means of reporting incidents
- Location of emergency evacuation rest centres
- Methods of passing on information
- Details about the areas at risk

Further guidance on establishment of Community Flood Groups and creation of Flood Plans is provided by the Environment Agency¹¹.

¹¹ Make a flood plan: <http://www.environment-agency.gov.uk/homeandleisure/floods/38329.aspx>

5. Implementation and Funding

It is important that the Local Strategy sets out how the proposed actions and measures will be funded and resourced within Essex. It is also important to identify what funding mechanisms are available to Essex County Council to pay for the flood risk management measures that are set out in the strategy. Effective practical implementation of flood policy objectives requires adequate resources both for the management and response activities of lead local flood authorities as well as for capital projects.

This chapter looks at addressing the skills gap within risk management authorities in Essex. It is acknowledged that lead local flood authorities and other risk management authorities, will need to expand their flood risk management skills and capacity in order to deliver their new responsibilities under the Flood and Water Management Act. This local strategy will help to identify what skills will need to be targeted to ensure that the plans set out in this strategy can be delivered and implemented successfully.

It will also provide a summary of the new partnership funding mechanism for available forms of funding that are being considered by Essex County Council and will also help to identify any further actions that will be needed to ensure that particular funding alternatives are feasible.

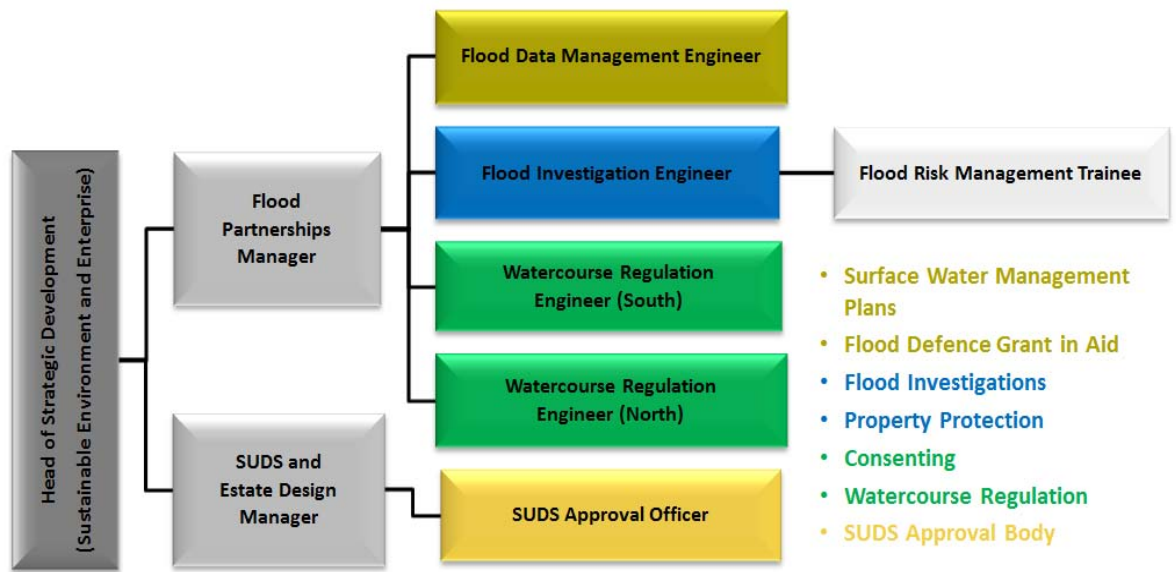
5.1 Council Resources

It is acknowledged that lead local flood authorities, as well as other risk management authorities, will need to increase their flood risk management capacity and skills in order to deliver their new responsibilities under the Flood and Water Management Act. DEFRA produced its Capacity Building Strategy in July 2010 which identified the following areas of key knowledge to be increased:

- Risk management approaches to local flooding;
- Delivering the legislative requirements;
- Surface water management plans;
- Geographical information systems and mapping skills; and
- Sustainable drainage systems (SuDS) knowledge.

Essex County Council is undertaking a number of measures to increase the skills capacity within the council and ensure they can deliver the measures and objectives of this strategy. The Flood and Water Management Team (as described in Section 1.6) is the result of the County's commitment to development of key. Figure 5—1 shows the current team structure – several roles within the team may be delivered by one person.

Figure 5—1: Flood and Water Management Team Structure (April 2013)

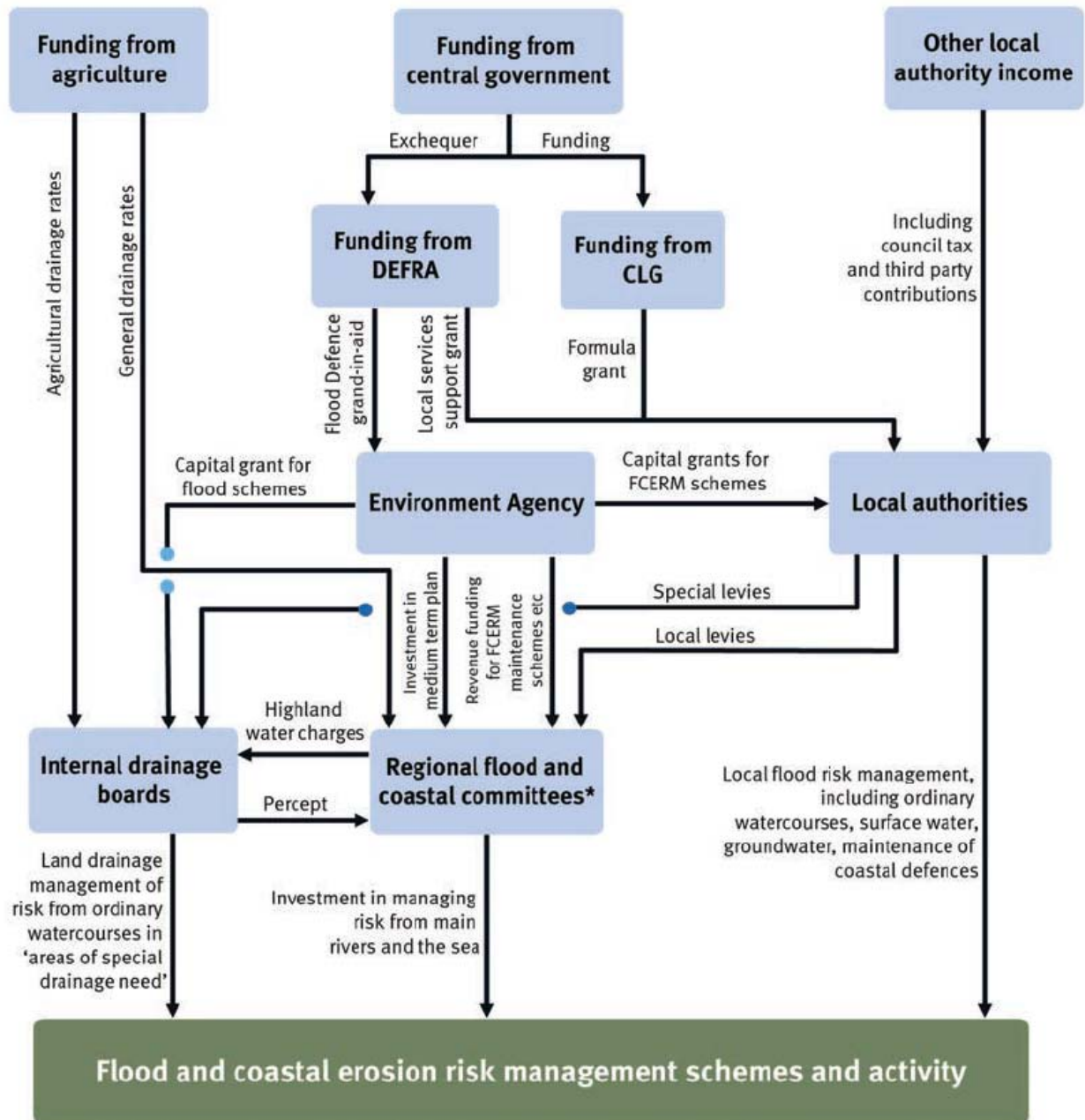


The measures proposed and actions being implemented by ECC to deliver the above objectives are detailed in Section 4.3.

5.2 Sources of Funding

The figure below identifies the various streams of funding open to risk management authorities. These are discussed further in the following sections.

Figure 5—2: Funding Streams for Risk Management Authorities



* Note the Environment Agency delivers flood risk management schemes and maintenance as approved by RFCCs

(Source: EA National Strategy)

5.2.1 Public / Central Government Funding

With less direct government funding available, it is clear that changes are needed to the traditional approaches to funding flood risk management. The current situation of government flood risk management funding is summarised on the DEFRA website

(<http://www.defra.gov.uk/environment/flooding/funding-outcomes-insurance/>). The main funding streams are summarised as follows:

Local Services Support Grants (Area Based Grants)

The money is not ring fenced so individual authorities must decide how much of this grant to spend, subject to limits on overall budgets and the need for investment on other priorities. The amount of money allocated to individual local authorities varies based on the overall risk within the relevant area. Essex County Council currently receives £598,800 per year, but this will be reviewed at the end of the current Spending Review Period (2014-2015) This money has been made available to support the council with its ongoing local flood risk management activities.

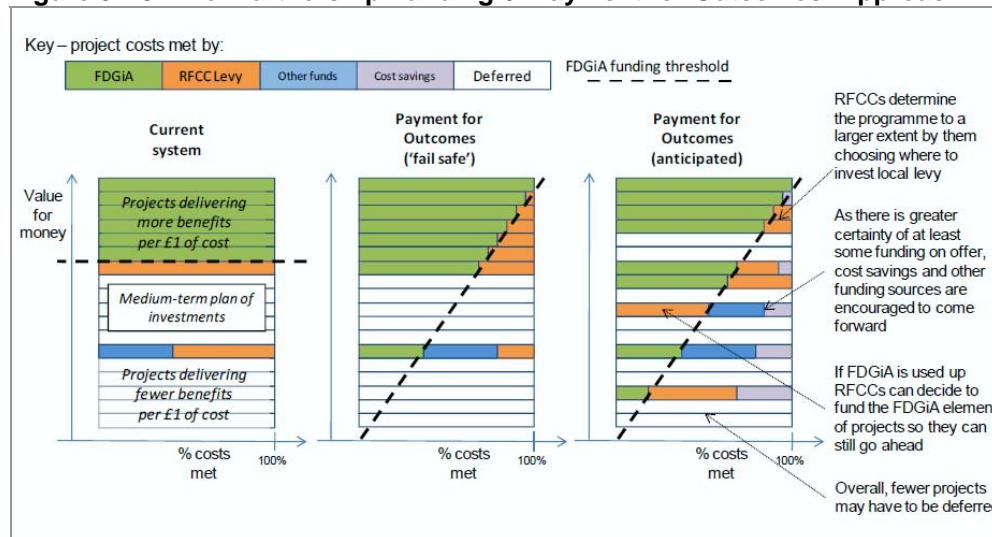
Flood Defence Grant in Aid (FDGiA) and Local Levy

Flood Defence Grant in Aid (FDGiA – centrally funded) and Local Levy (raised by RFCC from within their areas of representation) is available to all flood risk management authorities (RMAs) - that is, the Environment Agency and English local authorities and internal drainage boards (IDBs). Together, they use it to pay for a range of activities including flood defence schemes that help reduce the risk of flooding and coastal erosion.

The DEFRA policy on Flood and Coastal Resilience Partnership Funding¹² governs the allocation of funds under the FDGiA / Local Levy process. Instead of meeting the full costs of just a limited number of projects, the approach makes Government money available towards any worthwhile scheme over time. Regional Flood and Coastal Committees (RFCCs) play an important role in agreeing programmes of work, and can raise extra funding from local authorities, known as Local Levy.

Funding levels for each scheme will relate directly to the number of households protected, the damages being prevented, plus the other benefits a scheme would deliver ('outcomes based approach'). The figure below demonstrates how this approach works. Grants for surface water management and property-level protection are available alongside funding for other risks and approaches.

Figure 5—3: The 'Partnership Funding' / 'Payment for Outcomes' Approach



Some schemes will be fully funded, others only partly funded by FDGiA, according to how much public benefit they will give - for example by reducing flood risk to homes and vital infrastructure, such as power stations and water treatment works. There are always more schemes proposed than there is government funding available in any one year. Any shortfall in the amount of central government funding will need to be found from elsewhere. This could be from Local Levy funding from RFCCs, or from local businesses or other parties who will benefit from the scheme.

¹² <http://archive.defra.gov.uk/environment/flooding/funding/documents/flood-coastal-resilience-intro-guide.pdf>

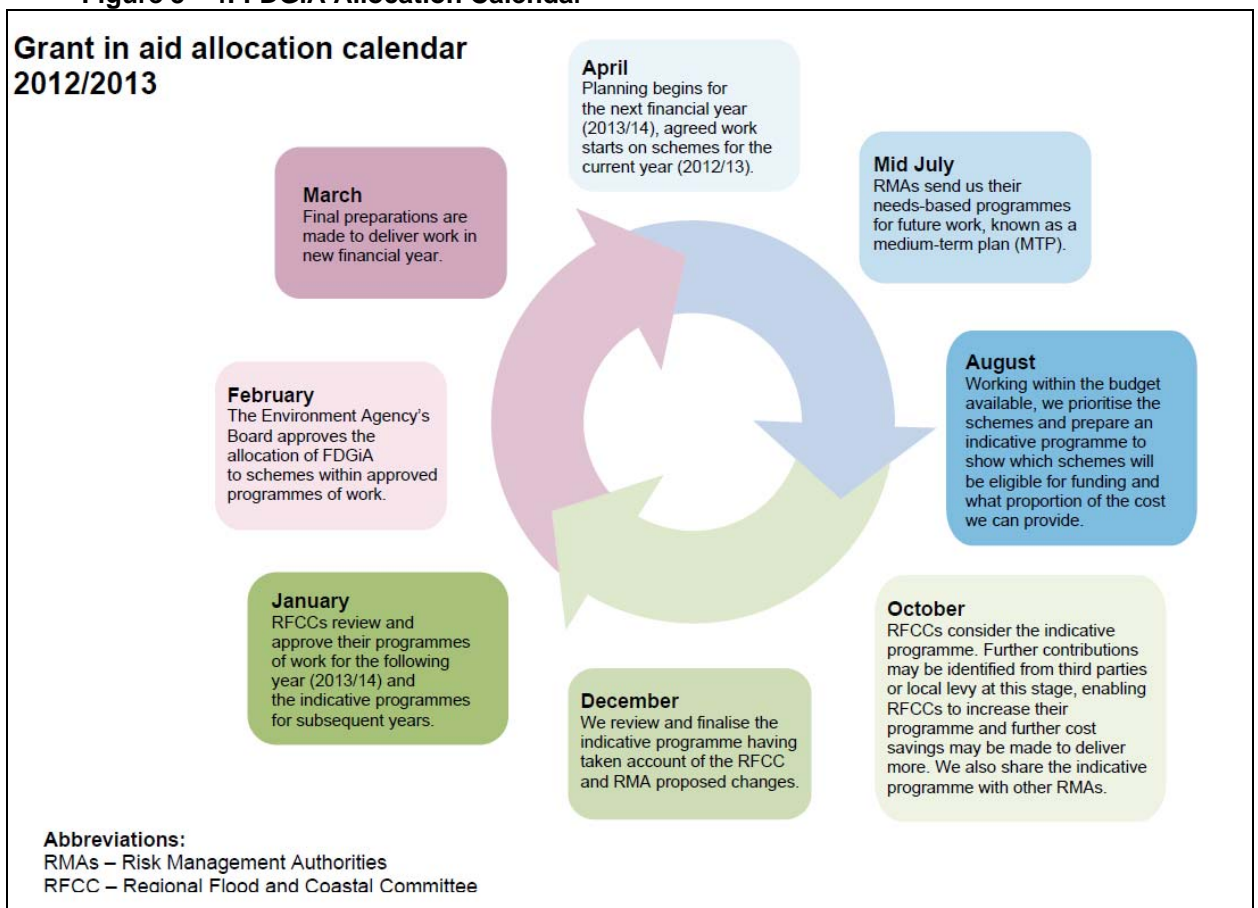
The FDGiA allocation process for the 2012-13 and 2013-14 financial years is summarised in the figure below. The process is expected to be similar for future financial years. Essex County Council will take the lead partner role for applying for FDGiA funding and will:

- Identify projects
- Plan projects
- Establish fees required
- Outline responsibilities
- Present to Regional Flood and Coastal Committee

Payment for outcomes puts a strong emphasis on the need for external contributions. Essex County Council will continue to establish partnership working with key stakeholders including:

- DEFRA and the Environment Agency
- District and Borough Councils
- Water Companies and OFWAT
- European Union funding streams
- NGOs
- Private sector developers
- Highways Agency
- Network Rail

Figure 5—4: FDGiA Allocation Calendar



5.2.2 *Local Funding – Community Infrastructure Levy*

The Community Infrastructure Levy came into force in April 2010 and provides Essex County Council with an alternative source of potential funding for flood defence schemes. It allows district and borough councils to raise funds from new development in their area in order to pay for the impact that the development has on local infrastructure. The funds raised by the levy are matched against a charging schedule of agreed projects. The levy is based on the concept that almost all development has some impact on infrastructure and services, so it is fair that development should contribute towards the cost of maintaining or upgrading local infrastructure.

It is estimated that the introduction of the levy has the potential to raise around £1 billion a year of funding for local infrastructure by 2016¹³. Local authorities are required to use this funding for infrastructure needed to support the development; it can be used to construct new infrastructure, increase the capacity of existing infrastructure or repair failing existing infrastructure. The Planning Act 2008 includes a broad definition of the infrastructure that can be covered by this scheme including transport, flood defences, schools, hospitals and parks.

The decision to put flood defence schemes on the charging schedule is up to the relevant district or borough council. Councils should look to put it on where it is relevant for ensuring future development. Flood defence schemes which only affect current development cannot be put on the charging schedule.

5.2.3 *European Union Funding – Regional Development Fund*

European Union funding is available through the Interreg scheme. Essex County Council is currently lead partner on a bid to the **European Regional Development Fund (ERDF)** through this initiative. The scheme will allow a major piece of work on the River Chelmer to go ahead and will enable land to be opened up to development. As surface water management plans are created across the study area, options proposals from these reports will be used to inform future proposals to the ERDF.

5.2.4 *Private Funding – Developer Contributions*

Section 106 of the Town and Country Planning Act 1990 allows a local planning authority, such as Essex County Council, to enter an agreement with a landowner or developer in association with the granting of planning permission. A Section 106 agreement is used to address issues that are necessary to make a development acceptable, such as supporting the provision of services and infrastructure.

One of the recommendations of 'Making Space for Water' was that local planning authorities should make more use of Section 106 agreements to ensure that there is a strong planning policy to manage flood risk. This means that any flood risk which is caused by, or increased by, new development should be resolved and funded by the developer.

A good example of how Section 106 agreements can be used to collect contributions from developers within Essex is described in Weymouth example for local fundraising in Section 5.2.6.

5.2.5 *Private Funding – Water Companies*

Water companies invest money in flood alleviation schemes as part of their duties to remove properties from the DG5 register (refer Appendix C). Sometimes the most effective way to do this is to work in partnership with risk management authorities on flood alleviation schemes in other areas which can help reduce surface water pressure downstream.

¹³ Community Infrastructure levy: An overview. Department for Communities and Local Government. May 2011

Water companies are able to raise funds for flood alleviation schemes through the prices they charge their customers. However these prices are heavily regulated by Ofwat. When determining price limits Ofwat determines how much water companies can charge its customers to:

- finance its day to day spending
- finance its capital investment programme
- reward outperformance in the previous five-year period
- continue to finance previous capital investment through the return the company earns on its regulatory capital value (RCV)
- pay tax it is liable for

5.2.6 Local Fundraising

Another important funding mechanism will come from local fundraising from the local communities and businesses who stand to benefit from the proposed flood defence schemes. Fundraising may appear to be a daunting task but the best place to start is with who stands to benefit from the project. Some examples of success stories include:

- **Hereford (Midlands region):** Asda contributed £2m as part of the planning conditions for a supermarket in the town, in addition to constructing £440m of flood defence. The total cost of the scheme was £7.5m and it provides protection to 196 properties including 25 listed buildings.
- **East Hanney (South Eastern region):** Volunteers cleared weeds from a local brook, increasing the brook's capacity, and also constructed a flood defence bank and footpath. The Environment Agency provided soil, the hire of two mini-excavators and two dump trucks. The local authority paid for coir rolls used to help stabilise the new bank.
- **Bawdsey (Anglian region):** In 2007 a group of local landowners and residents formed the East Lane Trust to raise £2.2m to implement a coastal protection and flood defence scheme for a 250m section of coast. The money was raised by selling plots of land in nearby villages. In 2007, the government granted special permission to allow 26 homes to be built on the plots which were not previously available for residential development. The money raised was given to the District Council to commission a sustainable coast protection scheme which was completed in summer 2009
- A scheme **in North Yorkshire** aims to help homeowners to protect their properties with a number of flood protection products including door guards and brick covers. The Parish Council (through EA support) has provided 2/3 of the costs and homeowners the remaining 1/3. Additional support is provided to low income families. The EA funding has come from the local levy fund which is raised from Council tax.

5.2.7 Other Sources

In areas prone to flooding, where potential mitigation schemes are identified, Essex County Council will liaise with the Essex Federation of Small Businesses (FSB) to assist in putting together funding to support projects. While the FSB will not have a significant budget, its support can be used to raise local business support.

DEFRA has produced a good practice guide to support LLFAs called *'Partnership funding and collaborative delivery of local flood risk management: "a practical resource for LLFAs" - FD2643*¹⁴. This guidance document explains the funding mechanisms and time cycles, approval processes of key partners and benefits of joint funding of local flood risk management.

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<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=17085>

6. Environmental Assessment

6.1 Background

The implementation of flood risk management measures and actions (as described in Section 4) within Essex provide a significant opportunity to improve the natural, rural and built environment across the county. This includes helping to provide better environments for residents and businesses as well as improving biodiversity and local habitats for wildlife. The Flood and Water Management Act states that the local strategy must specify how it will contribute to the achievement of wider environmental objectives and sustainable development.

Essex County Council is committed to protection and enhancement of locally, nationally and internationally recognised environmental sites. Environmental impacts will be considered by any flood risk management work carried out by the County Council. Appropriate assessment will be made at every stage and we will not pursue any activities which would have a negative impact on them.

Environmental objectives that the local strategy will contribute to through the effective management of local risk flood include:

- Encourage source control measures (such as SuDS) which can help improve water quality through reducing runoff and providing filtration, natural treatment and settling. This can reduce diffuse pollution entering watercourses and drainage systems
- Water Framework Directive targets (under Article 4.1) which are relevant to this local flood risk management strategy include:
 - Ensure no deterioration of surface water and groundwater and the protection of all water bodies
 - Achieve 'good' ecological status by 2015 for surface water and groundwater
 - Reduction of pollution and hazardous substances in surface water and groundwater
 - Reverse any upwards trends of pollutants in groundwater
 - Achieve standards and objectives set for protected areas
- Enhance biodiversity and habitat creation within any future capital schemes, such as SuDS or flood storage areas. These schemes can also be used within urban areas to provide green spaces for amenity
- Prioritise solutions to manage flooding from local sources that work with natural processes, encourage biodiversity enhancements and minimise adverse effects to the local environment
- Adaptation to climate change through local flood risk management measures, in order to build in community and operational resilience
- Protect Sites of Special Scientific Interest (SSSIs) within Essex. All flood risk management authorities have a duty (under Section 28G of the Wildlife and Countryside Act 1981) to take reasonable steps to further the conservation and enhancement of SSSIs
- Ensure no loss or degradation of habitat through flood risk management works to comply with the Biodiversity Action Plan (BAP). As a flood authority, Essex County Council has a duty (under Section 40(1) of the Natural Environment and Rural Communities Act 2006) to conserve biodiversity within Essex
- Link to Green Infrastructure Strategy to achieve common goals and environmental objectives.
- The Conservation of Habitats and Species Regulations 2012, as amended ('Habitats Regulations') and Government policy protects all internationally designated sites (Special Areas for Conservation, Special Protection Areas and Ramsar sites). An Appropriate Assessment will be undertaken for any activities assessed having a

likely significant effect, under Regulations 61 of The Habitats Regulations. The Strategy will ensure that the integrity of internationally designated sites will not be adversely affected.

Given the scope and content of this local strategy, Defra has determined that a statutory Strategic Environmental Assessment (SEA) and Habitats Regulation Assessment (HRA) are required to be prepared by Essex County Council to support the local strategy. The following section (Section 6.2) summarises the outcomes of these assessments.

6.2 Statutory Assessments

6.2.1 Strategic Environmental Assessment (SEA)

The aim of the SEA is to identify potentially significant environmental effects created as a result of the implementation of the Local Strategy on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic, material assets including architectural and archaeological heritage, landscape and the interrelationship between the above factors. The table below summarises the potential for impact on the above environmental factors.

Table 6-1: Summary of Potential Impact Assessment

Environmental Factor	Impact Assessment
Water	The Local Strategy objectives and measures are unlikely to affect water supply within Essex, however, they may affect the way in which major groundwater reserves are managed. Construction, changes in flood risk to areas of potentially contaminated land and changes in flood frequency associated with flood mitigation solutions could lead to changes in the water bodies within Essex. Such changes may affect a water body's ability to achieve and / or maintain good ecological status
Flooding	The objectives and measures are likely to move towards closing the gap between national and local flood risk management identifying local measures to minimise the risk of flooding. Proposals for a streamlined NPPF would further necessitate clear guidance with regard to development and flood risk at the local level
Population and Human Health	The Local Strategy seeks to manage flood risk for the benefit of the population of Essex. The Local Strategy objectives and measures may affect public access to recreational features, goods and public services that can make a material difference to their Quality of Life. The perceived level of flood risk that communities are exposed to may also affect levels of stress and impact on Quality of Life
Biodiversity and Landscape	The Local Strategy may include construction, land use change, changes in flood risk, frequency or changes in water levels that have the potential to adversely affect nature conservation, biodiversity and landscape features. Alternatively, such changes may present opportunities to improve the condition of existing habitats or create new biodiversity and landscape features
Climatic Factors	The Local Strategy has the potential to lead to an increase in greenhouse gas emissions through construction or intensive maintenance. Alternatively, options may provide an opportunity to reduce emissions by adopting more sustainable approaches to flood management. The flood risk options may provide the opportunity to address any potential increase in flood risk due to climate change.
Material Assets (Housing, Economy, Agriculture, Mineral Resources, Waste Management and Transport Infrastructure)	The Local Strategy will seek to manage flood risk to critical infrastructure and material assets within Essex. The implementation of options has the potential to disrupt critical transport infrastructure (such as road or rail networks), waste management facilities, utilities (such as clean water) or access to community care facilities (hospitals or health centres). The location of such infrastructure may influence the range of available options. The options may change the frequency and extent of flooding leading to

Environmental Factor	Impact Assessment
	consequent changes in the use of land affecting its versatility and or productivity. The options may have the potential to compromise mineral resources and degrade soil quality and/or function and, as a result, what that land can be used for.
Cultural Heritage	The Local Strategy may lead to construction activities, land use changes or alterations to flooding regimes that can adversely affect historic environment sites and their settings. The options may also manage the flood risk to heritage features or lead to improved access to historic environment sites
Air Quality	Significant impacts on air quality as a result of the Local Strategy are unlikely to occur

Appraisal of Strategy Objectives

The overall combination of Local Strategy objectives will have a significantly positive impact on managing the flood risk within Essex. The reporting and documentation of local flood events; the production of plans for flood risk management; and ensuring that everyone is aware of their role will all assist in minimising the risk of flooding.

Increased knowledge on local flood issues and their future impact, particularly with regards to climate change, will also contribute to more informed planning decisions which determine the location of, and mitigation measures required, for new development. It is likely that the objectives would positively support human health and wellbeing and the environment in general by stipulating the need for management schemes to have regard to them. They could also lead to improved water quality through the implementation of measures such as Sustainable Drainage Systems (SuDS) and local action to reduce local flooding which is often linked to the pollution of water courses.

Prioritisation of resources to manage flood risk should also ensure that the impact on critical infrastructure is minimised however it is important to note that these objectives don't seek to protect all structures and developments from flooding because financial constraints would make this unattainable.

Appraisal of Strategy Measures and Actions

The SEA appraised the Local Strategy measures and actions against nine key environmental objectives:

- 1) To minimise the risk of flooding.
- 2) To maintain and enhance water resources and quality.
- 3) To protect and enhance human health and wellbeing.
- 4) To ensure the potential impact of flooding on existing and future critical infrastructure is minimised.
- 5) To ensure that new development is located with respect to the Sequential Test
- 6) To protect and enhance biodiversity and geodiversity across Essex
- 7) To maintain and/or enhance the character of townscapes, cultural heritage and assets within Essex.
- 8) To protect best quality soil and enhance the quality and character of the landscape
- 9) To adapt development to the impacts of climate change.

The SEA appraisal concluded that all proposed actions / measures would have no impact or strong positive impacts on the SEA objectives. No uncertain or negatives impacts were identified. The SEA identified several areas where the Local Strategy could be strengthened to promote a more sustainable approach. These recommendations have already been incorporated into the Local Strategy.

6.2.2 Habitats Regulations Appraisal (HRA)

The aim of the HRA screening report is to assess the Essex LFRMS and attempt to identify any potential effects on international sites. The Habitats Directive states that the priority is to avoid impacts, and mitigation and compensation should only be considered successively if avoidance is not possible.

The screening stages of the HRA for the Essex LFRMS have followed the methods outlined in the SNH HRA Guidelines'. Figure 1 of the Guidance is a flowchart which sets out the procedures required by Regulations 61 of the Habitats Regulations 2010. The first box in this figure asks:

Is the plan directly connected with or necessary to the nature conservation management of a European site?

Following a review of the Essex LFRMS, the findings were that the Strategy is not directly connected with the management of any of the European sites listed. The next question asks:

Would the plan be likely to have a significant effect on a European site or a European Offshore Marine Site either alone or in combination with other plans or projects?

In order to answer this question it is necessary to undertake the HRA. The screening report covers the first 7 of 13 key stages of the HRA process for plans, as set out in Figure 2 of the Guidance. These are summarised below.

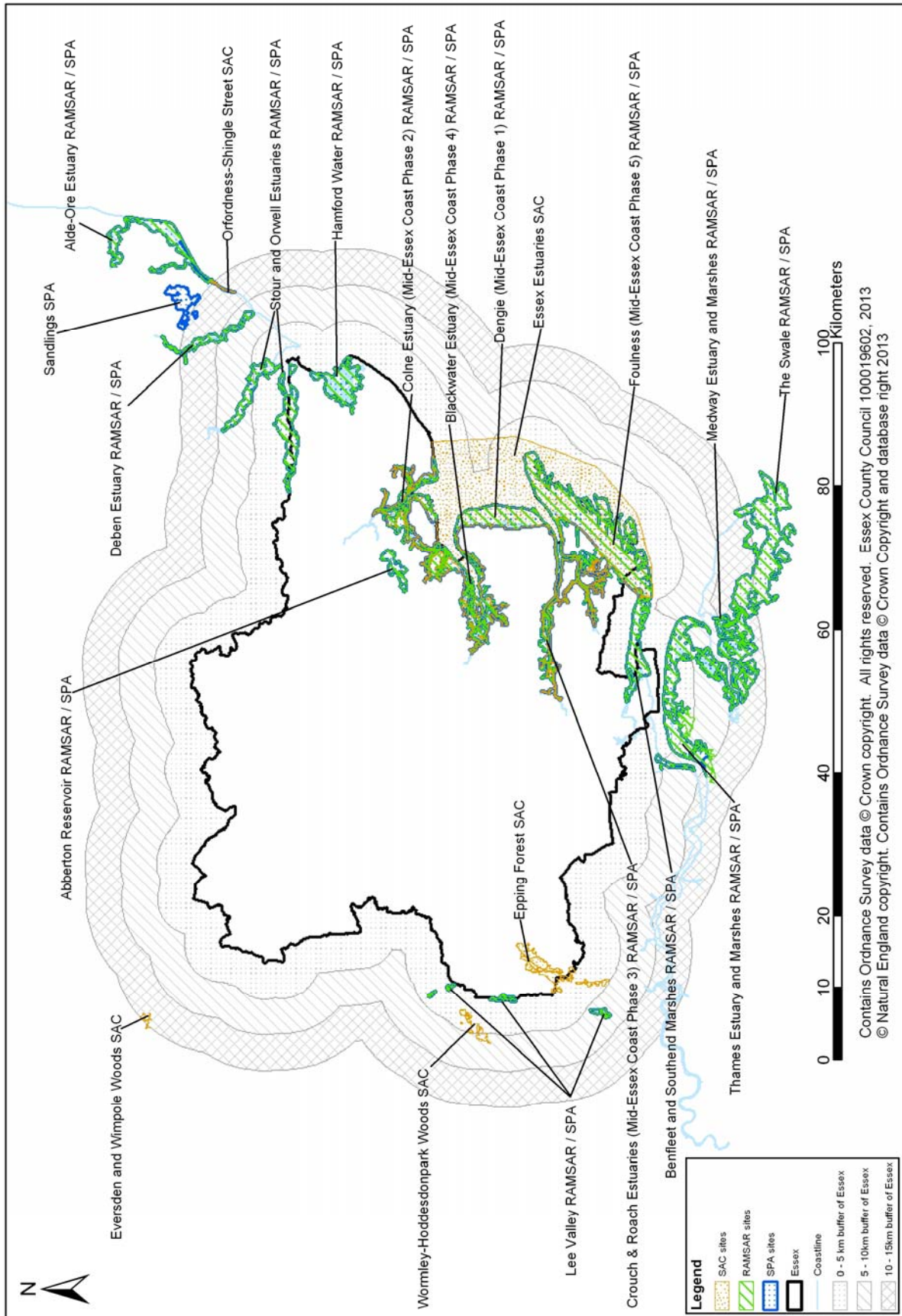
- Stage 1: Decide whether plan is subject to Habitats Regulations Appraisal – The LFRMS contains proposals which could affect one or more European sites and Natural England have advised that an appraisal is required.
- Stage 2: Identifying the European sites that should be considered in the appraisal – Figure 6-1 shows the sites identified.
- Stage 3: Gather information about the European sites - Each of the sites identified in the previous stage had further information gathered about them. This included reasons for site designation, conservation objectives, vulnerabilities, site condition and factors currently influencing the site. This stage also identifies potential effects that could arise from the Essex LFRMS. Potential effects on each site generally included:
 - • Disturbance (noise, visual) during winter months (October to March);
 - • Changes to water quality (e.g. increased concentration of pollutants to aquatic habitats through reduced water flows); changes to water chemistry, nutrient enrichment; change to balance of saline and non saline conditions;
 - • Changes to water table levels (e.g. increased concentration of pollutants to aquatic habitats through reduced flow levels);
 - • Habitat fragmentation, deterioration or loss;
 - • Increased risk of spread of non-native species through changes to water flows or conveyance routes.
- Stage 4: Discretionary consultation on the method and scope of the appraisal – Natural England was consulted as part of the initial review of the Essex LFRMS proposed a list of sites to be considered. The HRA increased the number of sites considered and Natural England have confirmed agreement with this approach.
- Stage 5: Screen the plan for likely significant effects on a European site – The 'screening' stage is a filter intended to identify which proposed plans or projects require further assessment. Significant effects were identified with all Tier 1 sites (refer Section 2.5.2) and three of the six Tier 2 sites. SWMPs undertaken for these areas will need to carefully consider potential impacts on European sites.
- Stage 6: Applying mitigation measures at screening stage to avoid likely significant effects – Modifications were made to the LFRMS to ensure that possible impacts on

European sites are identified and mitigated at the planning stage of any scheme proposed by a SWMP or CDA investigation.

- Stage 7: Re-screen the plan after mitigation measures applied - Any impacts on European sites will not result directly from the Essex LFRM Strategy itself but it is recognised that this Strategy will set the strategic direction for managing flood in Essex. Subsequent plans and projects arising from the Strategy will need to be subject to further Habitats Regulations Assessment. Impacts upon particular designated European sites may also need to be assessed, where they may be affected by LFRMS activities. These area or site-specific issues are best addressed by Habitats Regulations Assessment alongside the development of lower-tier strategies, plans or projects. Each HRA should make its own assessment of the relevant effects.

It is concluded that, with the additional mitigation proposed above, the Essex Local Flood Risk Management Strategy is not likely to have any significant negative effects on any European sites, alone or in combination with other plans or projects. Given this conclusion, there is no requirement to progress to the next stage of the Habitats Regulations Assessment.

Figure 6—1: All SACs, SPAs and Ramsar sites within and near to Essex which considered for inclusion within the HRA



6.3 Sustainability

All flood risk management authorities must aim to make a contribution towards the achievement of sustainable development. DEFRA have defined the approach that risk management authorities should take via their document '*Guidance for risk management authorities on sustainable development in relation to their flood and coastal erosion risk management functions*'¹⁵. The key components of this guidance are summarised below.

What is Sustainable Development?

The most widely accepted definition is that of the Brundtland Commission (1987) which defines sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. Essentially, the principle of sustainable development recognises the concern that we are living beyond our means, unsustainably exceeding the capacity of the planet to support our needs.

There are three generally recognised and interlinking components, known as the “three pillars” of sustainable development. Long term growth depends on the recognition and incorporation of all three into decisions:

- Economic sustainability
- Environmental sustainability
- Social sustainability

Sustainable Development within the context of Flood and Coastal Erosion Risk Management

The DEFRA guidance (described above) states that sustainable development is highly applicable to the Flood and Coastal Erosion Risk Management. It is important when making decisions to take into account the safety and wellbeing of people and the ecosystems on which they depend, and avoid exposing current and future generations to increased risk by responsible planning and improving the resilience of communities, the economy and the environment to risk. Where finite resources are involved they should be managed efficiently, and waste should be minimised.

When considering flood risk and planning issues, it is also important to consider the importance of sustainable development to the new National Planning Policy Framework (NPPF) which has a presumption in favour of it. The presumption is a new government policy designed to ensure that the planning system as a whole focuses on opportunities. The presumption means that where local plans are not up-to-date, or do not provide a clear basis for decisions, development should be allowed. But the development should not be allowed if it would undermine the key principles for sustainability in the NPPF (such as protecting the Green Belt and Areas of Outstanding Natural Beauty). The presumption also means that where development is in line with the local plan, it should be allowed without delay.

The government hopes that the presumption will encourage plan-making by councils and communities, giving them a greater say in how they meet their development needs. It hopes that it will also give communities, developers and investors more certainty about the types of applications that are likely to be approved. This, it hopes, will help to speed up the planning process.

How can Sustainable Development be achieved?

Sustainable development can be achieved by considering a range of alternative ways to reduce risk. This can include focusing on increasing the awareness and preparedness of communities and businesses, improving emergency warning and response procedures, as well as employing effective development control to reduce the likelihood of new

¹⁵ <http://www.defra.gov.uk/publications/files/pb13640-sdg-guidance.pdf>

developments increasing risk, for example with the use of Sustainable Drainage Systems (SuDS).

Consideration should be taken into how flood and coastal erosion risks can be managed in a manner which not only solves these issues, but also provides multiple benefits. For example, providing a retention pond in a SuDS system which not only works as a component of the system, but also serves as an amenity and an ecological habitat.

When considering management options, decision processes should be transparent and make clear the route which was taken to reach the decision, particularly when publicly funded. If any trade-offs are made between different forms of sustainability then this should be clear and properly explained.

Recognition needs to be made of the role that sustainable development plays on all scales, for example by adapting and establishing the priorities of a project based on leading local issues whilst recognising wider societal objectives. For schemes to be effective it is important that local communities are engaged with Flood Risk Management Authorities in projects.

6.4 Climate Change

6.4.1 *Projected Changes*

Based on the UK climate projections 2009 (funded by DEFRA¹⁶) medium emissions scenario and central estimate for 2020 to 2080, the East of England can expect wetter winters with a winter mean precipitation percentage change ranging from +6% to +20% and drier summers with a summer mean precipitation percentage change ranging from -7% to -21%. Also an increase of 36cm in sea level, and as weather is likely to become more variable, there could be more frequent extreme events, such as flash flooding, storms and coastal erosion. Although these projections are not a definite forecast, there is still potential to change the projections for the 2050 and 2080 period through climate change mitigation.

For further information on the climate risks to East of England the best resource is UK Climate Change Risk Assessment (UKCCRA). It is the first assessment of its kind for the UK and the first in a 5 year cycle. It provides underpinning evidence that can be used by Government to help inform priorities for action and appropriate. The UKCCRA report can be found at <http://www.defra.gov.uk/environment/climate/government/risk-assessment/> .

6.4.2 *Adaptation Measures*

To coincide with the publication of UKCCRA and to underline the importance of local adaptation action DEFRA commissioned Sustainability East through ClimateUK to produce an information pack that would help highlight the opportunities and threats of climate change within the East of England. This document is available at <http://susteast.org.uk/yl6zO4>

With the significant changes in our weather patterns and our climate it is now essential to adapt our behaviour and plan for severe weather events and the likely implications, such as flooding to build resilience, reduce the potential damage and cost. Essex County Council have an Adaptation Action Plan. This is to ensure that LAs are prepared to manage climate risks to service delivery, local communities and the natural environment.

This action plan sets out adaptation measures and opportunities that ECC can and should take now, and over the next ten years. It can be found at <http://www.essex.gov.uk/Environment%20Planning/Environmental-Issues/Strategic-Environment/Pages/Adapting-to-climate-change.aspx>

¹⁶ <http://ukclimateprojections.defra.gov.uk>

7. Next Steps

7.1 Consultation

As a result of this strategy, the resultant annual action plans and other planned work by risk management authorities, there will be local plans and flood defence schemes to help manage flooding in parts of Essex. In all of these situations, the lead risk management authority should create an engagement plan to ensure that the affected communities are engaged early with the issues and are able to discuss it and share their concerns, interests and priorities.

It is important to understand that final decisions will still be made by the responsible risk management authority but those decisions must be informed by proper engagement with the affected residents. This engagement requires both the organisations and the households involved to work together to ensure that engagement events are well attended and local issues are properly understood and discussed.

7.2 Review and Update

As has been stated, this is the beginning of a new stage in flood risk management for Essex. There are going to be substantial changes in the next few years with changes to the planning system, sustainable drainage requirements and the provision of flood insurance as well as innovations in the funding and design of flood prevention schemes and improvements in the knowledge of where the greatest flood risk is. Some strategy supplements may need to be produced before the next review to recognise these changes.

It is proposed that a review should take place in 2015, to coincide with the production of the flood risk management plans legislated for in the Flood Risk Regulations (Refer Section 1.7.2). The strategy should then continue to be reviewed in conjunction with the production of the flood risk management plans or when the Essex Partnership for Flood Management deems it necessary.

7.3 Revised Data Sources

The table below summarises the key data sources used to assess flood risk within Essex and subsequently influence prioritisation of further work in several areas. The table also shows when these data sources are expected to be updated. Should significant change be noted as part of the update process, then Essex County Council will review the potential impacts and revise priorities where appropriate.

Table 7-1: Data Sources

Data Source	Version	Update Frequency
Preliminary Flood Risk Assessment	January 2011	Every six years
EA - Areas Susceptible to Ground Water Flooding	November 2012	Unknown
EA - Flood Map	November 2012	Quarterly
EA - Flood Map for Surface Water	November 2012	As required – next update due March 2013
EA - National Receptors Dataset	November 2012	Annually
OS – 10k and 50k Mapping Tiles	November 2012	Quarterly

7.4 Annual Action Plans

To complement the Essex Strategy for Flood Risk Management, annual action plans will be put before the Essex Partnership for Flood Management. These will state:

- The newest information available about local flood risk, indicating where flood risk has decreased due to work done or where new information has changed prioritisation.
- Actions required to meet the Flood Risk Regulations in the coming year
- Projects which will be put forward to the Environment Agency for entry onto the medium term plan
- Actions from Surface Water Management Plans which will be delivered in the current year
- Other flood risk management activities which will be taken by Essex risk management authorities in the next year

The meeting to agree the annual plan will occur in early Autumn so as to be available for reference in budget discussions by risk management authorities. All annual plans will need to comply with the principles laid out in the both the Essex Strategy for Flood Risk Management and the National Strategy for Flood and Coastal Erosion Risk Management. These annual plans are to ensure operations are joined up across the different stakeholders in Essex and to ensure that decisions on resources are evidence-based.

Key strategic actions that are currently in progress include of delivery Surface Water Management Plans in Tier 1 areas and targeted Critical Drainage Area option investigations. These are summarised in Figure 7—1 below.

Figure 7—1: Action Locations

7.5 Scrutiny

7.5.1 Safer and Stronger Communities Policy and Scrutiny Committee

The Safer and Stronger Communities Policy and Scrutiny Committee is an Essex County Council scrutiny committee which covers a wide range of subjects including flooding. Its role is to:

- Engage in policy review and policy development, with a focus on improvement and how it can best be achieved
- Scrutinise decisions made or actions taken in connection with the discharge of the council's and the cabinet's functions
- Scrutinise the performance of the council
- Conduct research and consult
- Engage with the community and encourage community engagement
- Question and engage with members of the cabinet and / or committees and chief officers
- Look outwards and show community leadership by providing constructive challenge to other public bodies particularly those with whom the council delivers services in partnership
- Consider any matter affecting the area or its inhabitants
- Consider any matters referred by full council or cabinet
- Make recommendations to the cabinet and/or council arising from the outcome of the scrutiny process.

Under the Flood and Water Management Act, they now have the power to review and scrutinise risk management authorities (including Anglian Water, Thames Water, District and Borough Councils and the Environment Agency) about their flood or coastal erosion risk management functions which affect Essex.

They also receive an annual report which has been approved by the Essex Partnership for Flood Management, which provides information about performance and progress over the last financial year and plans for the upcoming financial year. This is delivered to the Committee in April every year.

7.5.2 *Regional Flood and Coastal Committees*

Regional Flood and Coastal Committees scrutinise the Environment Agency's work. They also examine documents that Essex County Council and other Lead Local Flood Authorities produce under the Flood and Water Management Act and the Flood Risk Regulations.

7.6 Information Sharing

It is essential that risk management authorities work together to achieve the functions set out in recent legislation. Effective sharing of information between risk management authorities can go a long way towards this aim.

Section 14 of the Flood and Water Management Act gives Essex County Council, as Lead Local Flood Authority, the power to request information in connection with its flood risk management functions. It also states that information requested must be provided in the manner and within the period specified in the request.

The Environment Agency and DEFRA have prepared a draft guidance document on information sharing, which aims to facilitate effective partnerships and ensure information is shared between relevant authorities. Essex County Council will use the principles of this document for future data requests to other risk management authorities within Essex.

'Information' can cover any data, documents or facts recorded in any form and includes paper files, notes, reports, databases, spreadsheets, drawings and plans, photographs and videos, electronic documents, emails, etc. There is a vast amount of data, in these different forms, held by a number of different risk management authorities within Essex; the challenge is identifying what information exists and where it is held.

This process was initiated through the work completed as part of Essex County Council's recent Preliminary Flood Risk Assessment where a large amount of data was collected from different risk management authorities within Essex. This data has provided the overall evidence base of flood risk information which will inform future flood risk management work. As part of the Essex Partnership for Flood Management, data sharing agreements are in place between key stakeholders.

Essex County Council will aim to put in place a clear record of what information has been collected and where it is available for future use. This information will be contained in an overall data register.

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Appendix A - Index of Related Studies

A.1 Strategic Flood Risk Assessments

This is a list of current Strategic Flood Risk Assessments. Please note this list is subject to change and the planning departments for each Local Planning Authority should be contacted to confirm the status of the document.

Table A-1: Index of Strategic Flood Risk Assessments (SFRA) in Essex County

District Council	URL
Braintree Chelmsford Colchester Maldon <i>(All completed together as the 'Mid Area SFRA')</i>	http://www.braintree.gov.uk/NR/ronlyres/DC5AB540-9F6F-41F0-B6AB-E9D87B33EA80/0/00MainReport.pdf
Rochford	http://www.rochford.gov.uk/PDF/ldf_evibase_flood_1_78.pdf
Castle Point	http://www.castlepoint.gov.uk/Documents/Planning/devFramework/D130256%20Castle%20Point%20SFRA%20Main%20Report%20FINAL.pdf
Basildon	http://www.basildon.gov.uk/CHttpHandler.ashx?id=3280&p=0
Epping Forest Harlow <i>(Completed together)</i>	http://www.eppingforestdc.gov.uk/Council_Services/planning/forward_planning/LDF/Strategic_Flood_Risk_Assessment_Level_1.asp
Uttlesford	http://www.uttlesford.gov.uk/documents/website%5CPlanning%5CCore%20Strategy%2FUttlesford_SFRA_FinalReport.pdf
Tendring	http://www.tendringdc.gov.uk/TendringDC/Environment/Planning+and+Buildings/Planning+Policy/StrategicFloodRiskAssessment(SFRA).htm
Brentwood	http://www.brentwood.gov.uk/pdf/21032011162645u.pdf
Essex County Council Minerals and Waste Team	http://www.essex.gov.uk/Environment%20Planning/Planning/Minerals-Waste-Planning-Team/Planning-Policy/Policy-Consultations/Current-Consultations/WDD-Issues-Options/

A.2 Surface Water Management Plans

This is a list of current Surface Water Management Plans. Please note this list is subject to change and Essex County Council should be contacted to confirm the status of the document.

Table A-2: Index of Surface Water Management Plans (SWMPs) in Essex County

District Council	URL
Basildon Rochford Castlepoint <i>(All completed together as the 'South Essex SWMP')</i>	http://www.castlepoint.gov.uk/file/Final%20South%20Essex%20SWMP%20-%20Phase%202.%203%20and%204.pdf

A.3 Catchment Flood Management Plans

This is a list of current Catchment Flood Management Plans with a summary of each and a link to the full plan. Please note this list is subject to change and the Environment Agency should be contacted to confirm the status of the document.

Table A-3: Index of Catchment Flood Management Plans (CFMPs)

CFMP	Summary	URL
North Essex	<p>The North Essex CFMP looks at fluvial risk and covers an area of 3000km² in North Essex. The main sources of flood risk in the area are river flooding from the River Colne, River Chelmer and the Blackwater, as well as sewer flooding due to heavy rainfall and failure of pumping stations. The report states that surface water flooding, although not considered a major risk, may be significant in some towns and villages in the headwaters of catchment areas where steep slopes cause rapid runoff such as Little Yeldham and Kelvedon.</p> <p>The report states that the areas considered to be at most severe risk of river flooding are Heybridge, Chelmsford and Colchester, whilst Clacton-on-Sea, Billericay, Boxford, Billericay, Hundon, Witham and Great Yeldham exhibit a moderate risk. Climate change and severe weather events are predicted to substantially increase flood risk in some areas, with Chelmsford, Heybridge and Colchester projected to have a large rise in the number of properties susceptible to flooding, whilst the areas of Billericay, Boxford and Hundon are predicted to experience a large relative rise. The report highlights in particular the necessity of monitoring and potentially increasing the level of management in the areas of Heybridge, Chelmsford and Colchester.</p>	http://publications.environment-agency.gov.uk/PDF/GEAN0909BPCF-E-E.pdf

CFMP	Summary	URL
South Essex	<p>The South Essex CFMP looks at fluvial risk covers an area of 727km² in the south of the county. The levels of flood risk are far larger in the south of the county with all of the areas mentioned at greater flood risk than any of the areas in North Essex. The main sources of flood risk are river flooding from the River Crouch, River Roach and Eastwood Brook, as well as surface water flooding particularly in the larger urban areas.</p> <p>The report highlights Wickford and North Benfleet as the areas experiencing the most severe risk, whilst Basildon is also considered to exhibit substantial risk of river flooding. Climate change and sever weather events are predicted to have a major impact on flood risk in South Essex, with large increases in the number of properties at risk from river flooding in Wickford and North Benfleet, as well as large relative increases in Canvey Island and Basildon. The report also recommends the monitoring and potential implementation of further action to reduce flood risk in Rochford, Basildon and Wickford.</p>	<p>http://publications.environment-agency.gov.uk/PDF/GEAN0909BPCB-E-E.pdf</p>
Great Ouse	<p>The Great Ouse CFMP looks at fluvial risk and covers a large area from as far west as Buckingham to parts of Norfolk and Suffolk. The plan incorporates the Essex town of Saffron Walden, in the Uttlesford District. The most significant source of flooding in Saffron Walden identified by the plan is river flooding from the Slades, with an estimated 188 properties at risk from a 1% probability river flood. Whilst the number of properties at risk from this flooding is not predicted to rise substantially in the future, the plan recommends that the level of current Flood Risk Management is maintained, and that efforts should be made to improve public awareness and warning systems.</p>	<p>http://publications.environment-agency.gov.uk/PDF/GEAN0111BTJL-E-E.pdf</p>
Thames	<p>The Thames CFMP looks at fluvial risk and covers a large area from the Cotswolds to the Thames Estuary. It includes the Essex districts of Harlow and Epping Forest. The areas within Essex indicated to be at most severe risk of river flooding are Epping Forest and Upper Roding, whilst Harlow exhibits a moderate risk.</p>	<p>http://publications.environment-agency.gov.uk/PDF/GETH1209BQYL-E-E.pdf</p>

Appendix B - Glossary

B.1 Acronyms

Acronym	Definition
CFMP	Catchment Flood Management Plan
DEFRA	Department for Environment, Food and Rural Affairs
ERDF	European Regional Development Fund
FIR	Flood Investigation Report
FRR	Flood Risk Regulations (2009)
FWMA	Flood and Water Management Act (2010)
GIS	Geographic Information System
HRA	Habitats Regulations Assessment
LP	Local Plan
LLFA	Lead Local Flood Authority
NPPF	National Planning Policy Framework
PFRA	Preliminary Flood Risk Assessment
PPG25	Planning Policy Guidance 25 (<i>superseded by the NPPF</i>)
PPS25	Planning Policy Statement 25 (<i>superseded by the NPPF</i>)
S26	Section 26 of the Land Drainage Act
SAB	SuDS Approval Body
SEA	Strategic Environmental Assessment
SFRA	Strategic Flood Risk Assessment
SuDS	Sustainable Drainage Systems
SWMP	Surface Water Management Plan
WaSC	Water and Sewerage Companies
WFD	Water Framework Directive
WIA	Water Industry Act

B.2 Glossary of Terms

Word / Phrase	Definition
Adoption (of SuDS and watercourses)	The process of taking ownership and assuming the associated responsibilities.
Asset Record	A database of designated local flood risk assets, including a map of assets across Essex, available for public use.
Asset Register	A database of designated assets, including further information on each asset and ownership, for use by Risk Management Authorities.
Brownfield land	Land that is, or was, previously occupied by a permanent structure (excluding agricultural or forestry buildings) and associated fixed surface infrastructure.
Community Groups	Self organised community groups containing members of the local community, often specialising in issues such as flooding.
County Council	The elected administrative body governing a county. In Essex, Essex County Council governs all areas except the Unitary Authorities of Southend-on-Sea and Thurrock.
Designating (of flood or coastal erosion assets)	If an asset becomes 'designated' its owner cannot alter or remove it without first consulting the designating risk management authority.
District/Borough Council	The elected administrative body governing a district or borough area. In Essex there are 12 districts and boroughs as follows: Basildon, Braintree, Brentwood, Castle Point, Chelmsford, Colchester, Epping Forest, Harlow, Maldon, Rochford, Tendring and Uttlesford.
Flood or Coastal Erosion Risk Assets	A structure or feature which the existence or location of is considered to influence flood or coastal erosion risk.
Flood Zone 1	Areas with the lowest probability of flooding from rivers and the sea, where the chance of flooding in any one year is less than 0.1% (i.e. a 1000 to 1 chance)
Flood Zone 2	Areas with the chance of flooding in any one year between 0.1% and 1% fluvial or 0.5% tidal (i.e. between a 1000 to 1 and a 100 to 1 fluvial or 200 to 1 tidal chance).
Flood Zone 3	Areas with the highest probability of flooding. The chance of flooding in any one year is greater than or equal to 1% (i.e. a 100 to 1 chance) for river flooding and greater or equal to 0.5% (i.e. a 200 to 1 chance) for coastal and tidal flooding.
Foul Water	Water containing sewage.
Greenfield land	Land that has never been built on or where the remains of any structure or activity have blended into the landscape over time.
Groundwater	All water which is below the surface of the ground and in direct contact with the ground or subsoil.
Indicative Flood Risk Area	An area where flooding is deemed significant (in a national context for reporting to Europe).
Internal Drainage Board (IDB)	Locally based organisations with general responsibilities for land drainage of low-lying areas. IDBs have Boards elected by agricultural ratepayers and with District or Borough Elected Member representation where the District or Borough contributes financially to the running of the Board. No such boards currently exist in Essex.
Local Flood Risk	Risk of flooding from surface water, groundwater and ordinary watercourses.

Word / Phrase	Definition
Main River	Watercourses shown on the statutory Main River map held by the Environment Agency and DEFRA.
Ordinary Watercourse	A watercourse that is not part of a main river including (amongst others) ditches, drains, cuts, culverts, dikes, sluices and passages, through which water flows.
Parish Council	A non compulsory elected body, forming the lowest level of Local Government, which is responsible for a civil parish.
Riparian Owner	A landowner on, or adjacent to the boundaries of, whose land lies any watercourse. Where a watercourse is sited between two or more property boundaries each owner may be equally responsible.
Risk Management Authority (RMA)	District and Borough Councils, Lead Local Flood Authorities, the Environment Agency, Water Companies, Highways Authorities and Internal Drainage Boards.
Surface Water	Rainwater (including snow and other precipitation – which is on the surface of the ground (whether or not it is moving), and has not entered a watercourse, drainage system or public sewer.
Unitary Authority	A single local authority which has combined powers and functions which would be carried out by a district or county council elsewhere.

Appendix C - Detailed Roles and Responsibilities

C.1 Essex County Council

C.1.1 Lead Local Flood Authority Role

Responsibility	Description
Strategic Leadership	<p>Essex County Council has an important role to play as the strategic leader for local flood risk management in Essex. This involves developing this Local Flood Risk Management Strategy document, ensuring that all organisations involved in flood risk management are aware of their responsibilities, monitoring progress and activity by all parties involved in flood risk management and co-ordinating communication with the public and between organisations.</p> <p>The Essex Partnership for Flood Management provides an important forum for elected representatives to discuss flood risk. There are also officer groups which bring together relevant officers from the different organisations to discuss issues of policy and to ensure that information is being captured and shared.</p>
Meeting the Flood Risk Regulations	<p>The Flood Risk Regulations 2009 require all Lead Local Authorities to produce a Preliminary Flood Risk Assessment (PFRA). The first PFRA was published December 2011 and can be found on the ECC website¹⁷. A new version will be published in 2017. The PFRA identifies any Indicative Flood Risk Areas in the county. There is one in South Essex which stretches from Billericay to Southend-on-Sea.</p> <p>The Flood Risk Regulations also require that Flood Risk and Flood Hazard Maps are produced for any Indicative Flood Risk Areas. These will be published in December 2013. This will be followed by a Flood Risk Management Plan which will be published in December 2015.</p>
Recording Flood Incidents	<p>To assemble an accurate picture of flood risk across Essex requires the collection of precise and useful records from actual flood incidents occurring across the County. A process for this is described in Section 4.3.1 of the Local Strategy.</p> <p>Anglian Water, Thames Water and the ECC Highways Authority may respond to certain incidents so a process needs to be formulated so that this data can be efficiently shared with the Lead Local Flood Authority.</p> <p>On receipt of any incident records the Lead Local Flood Authority will update our central database of historic flooding in Essex. When combined with mapping of future flood risk in the County, these historic records help provide a good picture of the highest risk areas in Essex.</p>
Flood Investigation Reports	<p>A Flood Investigation Report should examine which authorities have an involvement in a flood incident, and clearly outline their responsibility or actions, if any. A process for this is described in Section 4.3.1 of the Local Strategy.</p>

¹⁷ <http://www.essex.gov.uk/Environment%20Planning/Environmental-Issues/local-environment/flooding/Pages/Preliminary-Flood-Risk-Assessment.aspx>

Responsibility	Description
Designating Assets	<p>Essex County Council, the Environment Agency and the District Councils are all 'designating authorities'. That is, they may 'designate' features or structures where the following four conditions are satisfied:</p> <ol style="list-style-type: none"> 1. The designating authority thinks the existence or location of the structure or feature affects <ol style="list-style-type: none"> a. a flood risk, or b. a coastal erosion risk. 2. the designating authority has flood or coastal erosion risk management functions in respect of the risk which is affected 3. the structure or feature is not designated by another authority 4. the owner of the structure or feature is not a designating authority. <p>If an asset becomes 'designated' its owner cannot alter or remove it without first consulting the designating risk management authority.</p> <p>The aim of designating flood risk assets is to safeguard them against unchecked works which could increase flood risk in the area. Designating of features is not something that should be done regularly but only when there are concerns about the asset.</p> <p>In order to ensure that there is a consistency in designating across all the designating authorities, it is proposed that there is a biannual meeting between the designating authorities to compare proposed assets for designation.</p>
Register and Record of Assets	<p>Flood Risk Assets are structures or features which are considered to have an effect on flood risk. An example could be an embankment protecting properties and therefore decreasing flood risk, or an undersized culvert in a residential area, which may actually increase flood risk during high rainfall.</p> <p>Essex County Council is required to keep both an asset record (for use by risk management authorities) and an asset register (available for inspection by the public at all reasonable times). This process will take a number of years.</p> <p>The Asset Register (for public use) will include a map of local flood risk assets across Essex. Information with the mapping would clarify whether an asset is publically or privately owned. The Asset Record (for LLFA use) will then provide further information about each asset, and contact details for the owner/maintainer. This database will be used to investigate cases where flood risk asset issues have been reported.</p> <p>Unlike major assets associated with fluvial or tidal flooding, there has often been much confusion over the ownership and maintenance responsibility of local flood risk assets. This is likely to be due to local drainage infrastructure commonly being hidden underground or along land boundaries, where landowners either do not realise or acknowledge that they have any responsibility. The Asset Register is a way to address this problem and mean that residents are aware of assets in their area and can contact the assets' owners when there are problems.</p> <p>There are no defined criteria for what defines an asset as significant but the most important consideration is its location. Future flood risk mapping and the</p>

Responsibility	Description
	<p>flood history at a site will be used to analyse the 'significance' of each flood risk asset. The vulnerability of the asset's surroundings will also be used to determine the consequences of its failure.</p> <p>Pro-active collection of information regarding existing assets is required and this requires Essex County Council to work with Districts, Boroughs and Parishes as well as working with Essex County Council's Highways team, Anglian Water and Thames Water.</p> <p>New sustainable drainage assets will be recorded via the SUDS approval process and asset data may also be captured through local studies, such as Surface Water Management Plans.</p>
<p>Regulation of Ordinary Watercourses</p>	<p>Essex County Council as the Lead Local Flood Authority is responsible for the regulation of ordinary watercourses to ensure that flood risk is managed appropriately.</p> <p>Regulation consists of two elements:</p> <ul style="list-style-type: none"> • Issuing of consents for any changes to ordinary watercourses that might obstruct or alter the flow of an ordinary watercourse • Enforcement action to rectify unlawful and potentially damaging work to a watercourse. <p>These tasks were previously undertaken by the Environment Agency but, in keeping with the Pitt Review which recommended that local flood risk be managed by local organisations, it has been transferred to the Lead Local Flood Authorities as part of the Flood and Water Management Act 2010. The Lead Local Flood Authority may delegate these responsibilities to district councils where appropriate but will not be transferring these responsibilities to any council which has not performed the role previously.</p> <p>Actions to implement this regulation regime are detailed in Section 4.3 of the main Local Strategy document.</p> <p>It is widely recognised that culverting of watercourses has many adverse effects and applications will generally only be granted where it has been demonstrated that there is no viable alternative, that there is an overriding need for the works and that suitable mitigations have been proposed and are considered, by the LLFA, to be acceptable. Byelaws may be introduced to support this position.</p> <p>Riparian owners will have to apply for consent for works which may affect the flow of water within ordinary watercourses, which include any ditch, stream or sewer that is not designated as a main river (which remain the responsibility of the Environment Agency). They can do this through a form that is available on the Essex County Council website at www.essex.gov.uk/flooding.</p> <p>Information on what forms of obstruction need to consent will also be on the website but riparian owners are encouraged to call the Flood Risk Management team to discuss this. Further byelaws may be enacted to ensure that forms of obstruction which are not covered by the Land Drainage Act but which Essex County Council and its partners believe increase flood risk require consents.</p>

Responsibility	Description
	<p>Consents on forms of obstruction identified by the Land Drainage Act will be charged at £50. This will be reviewed if and when the Secretary of State changes the regulations determining the price for consents.</p> <p>The power to serve notice on riparian owners to remedy the condition of a watercourse which is impeding flow was also transferred to Essex County Council from the district and borough councils. Essex County Council has delegated this power back Epping Forest District Council only. This will be reviewed in line with the next Local Strategy review (Refer Section 7.2).</p>
<p>SuDS Approval Body (SAB)</p>	<p>A SAB has the following duties for SuDS systems that serve more than one property:</p> <ul style="list-style-type: none"> • Review and approval of SuDS designs submitted as part of planning applications • Supervision of SuDS construction • Adoption and ongoing maintenance of SuDS systems <p>The date for these powers to be commenced has not been confirmed – but is currently expected to be April 2014 (as advised by DEFRA).</p> <p>This is a parallel process to planning permission, similar to Building Regulations Approval. However, it is more intrinsically linked to the planning approval process and therefore the SAB will be come a consultee to all planning applications where it is deemed to have an interest. Drainage is a complicated issue and should be considered early on in the development design. DEFRA will publish guidance on both National Standards for SuDS and the approval process but it will also be necessary to explain local design expectations</p>

C.1.2 Highways Authority Role

Responsibility	Description
<p>Responsibility to maintain the Highways – <i>Highways Act (1980)</i> – Sections 41 and 291</p>	<p>Under the Highways Act, the Highways Authority has a duty to maintain the highway. This includes ensuring that highway drainage systems are clear and that blockages on the highway are cleared, where reasonably practicable. As part of this duty, roads are regularly inspected and maintained. Highways Structures are inspected on a 2 year cycle.</p> <p>In order to complete the above activities, the highway authority has the power to maintain, alter or remove any structure or work which is situated on, over or under any land, and that land neither belongs to the highway authority nor forms part of a highway. The authority must notify the owner / occupier of the land and enter a reasonable time to complete the works.</p>
<p>Responsibility to drain the highway – <i>Highways Act (1980)</i> –Sections 100, 101 and 299</p>	<p>The highway authority may, for the purpose of draining or otherwise preventing surface water flowing onto the highway do any of the following:</p> <ul style="list-style-type: none"> a) Construct or lay, in the highway or in land adjoining or lying near to the highway, such drains as they consider necessary; b) Erect barriers in the highway or in such land as aforesaid to divert surface water into or through any existing drain; c) Scour, cleanse and keep open all drains situated in the highway or in such land as aforesaid. <p>In delivering the above activities, the highways authority may divert flow into any existing drain, inland waterway (natural or artificial) or tidal waters. If any works relating to the above causes damage to a third party land owner or occupier, then appropriate compensation must be paid.</p> <p>Similarly, if a third party alters, obstructs or interferes with a drain or barrier constructed by the highways authority without their consent, then the highways authority may complete repair works and recover associated costs and/or impose fines.</p> <p>The highways authority can also act as a ‘sewerage undertaker’ (i.e. Thames Water or Anglian Water) for the purposes of draining the highway. The roles and responsibilities of the ‘sewerage undertaker’ are defined in Appendix C.4. When exercising this authority, the highways authority must notify affected District Councils and sewerage undertakers.</p> <p>Where the highways authority determines that a ditch on land adjoining or lying near to the highway constitutes a danger to users of the highway, the authority may:</p> <ul style="list-style-type: none"> a) If they consider the ditch unnecessary for drainage purposes and any occupier of the land known to the authority agrees in writing that it is unnecessary for those purposes, fill it in; or b) Place in the ditch, or in land adjoining or lying near to it, such pipes as they consider necessary in substitution for the ditch, and thereafter fill it in. <p>Similar to the activities for creating drainage for the highway, the highways authority must compensate any third parties for damages caused by the above</p>

Responsibility	Description
	actions and any third parties completing these actions without consent are liable for corrective works costs and possible fines. Where these works are likely to affect the drainage of a railway or canal, the highways authority must give 14 days notice to the relevant asset owners.
Responsibility to protect the highway against hazards of nature – <i>Highways Act (1980) – Section 102</i>	The highways authority may provide and maintain barriers or other works as they consider necessary to protect the highway against hazards of nature (including flooding, snow and landslide). The highway authority must compensation to any person who suffers damage through their action under this provision of the Highways Act (1980).
Responsibility as an undertaker – <i>Reservoirs Act (1975)</i>	Essex Highways are quarter stakeholders of Gosfield Lake Dam embankment and so are obliged to satisfy statutory responsibilities under The Reservoirs Act 1975 and updated reservoirs act legislation. This includes producing a reservoir flood plan and reporting any flood incidents.
Adoption of SuDS – <i>Highways Act (1980) – Section 38 and Flood and Water Management Act (2010)</i>	Highways Authorities currently have the power to adopt SuDS that serve the highway through Section 38 of the Highways Act but are under no obligation to do so. Under the Flood and Water Management Act, highways authorities will be required to adopt any SuDS approved by the SuDS Approval Body which exist within the highways boundary.
Delivery of Works – <i>Highways Act (1980) – Sections 108, 109 and 110</i>	<p>The highway authority can deliver works that they consider necessary to protect the highway from flooding. These can be on the highway or on land which has been acquired by the highway authority in the exercise of highway land acquisition powers for that purpose. An example of this is the provision of attenuation ponds on highway land to alleviate flooding in Sible Hedingham.</p> <p>Highway Authorities may divert parts of a watercourse (navigable or non-navigable) carry out any other works on any form of watercourse if it is necessary for the construction, improvement or alteration of the highway or provides a new means of access to any premises from a highway.</p>
Prevention of water falling on or flowing on to a highway – <i>Highways Act (1980) Section 163</i>	<p>A competent authority (i.e. a Local Authority or highways authority) may, by notice to the occupier of premises adjoining a highway, require them within 28 days from the date of the notice to construct or erect and thereafter to maintain such channels, gutters or downpipes as may be necessary to prevent:</p> <ul style="list-style-type: none"> a) Water from the roof or any other part of the premises falling upon persons using the highway, or b) So far as is reasonably practicable, surface water from the premises flowing on to, or over, the footway of the highway.
Response in an Emergency Flooding Event	<p>In the event of an emergency or major incident Essex Highways Authority will provide:</p> <ul style="list-style-type: none"> • The means to transport people through its contacts with local bus, coach and taxi operators and the in house fleet to assist with evacuations and helping uninjured survivors at the scene of a major incident to travel home or to a place of safety • Assistance in management of the transportation network to restore the flow of traffic in the event of an evacuation or away from the area of an incident. This includes providing equipment such as barriers, cones

Responsibility	Description
	<p>and signs and setting up and marking route diversions (service provided by Works Contractors in conjunction with the Police) and changing traffic signal controls to improve the flow of traffic (service provided by SA2000)</p> <ul style="list-style-type: none"> • Use of the Essex Traffic Control Centre facilities and established media contacts to keep staff and the public across the County informed on travel related matters plus detection systems to enable management of traffic on the road network in Chelmsford • The means to inspect, repair or clear the highway network through the provision of staff, materials and equipment sourced through contractors.

C.1.3 Planning Authority Role

Responsibility	Description
<p>Planning Policy - Minerals and Waste Local Plans</p>	<p>When considering flooding concerns in developing Minerals and Waste plans the Minerals & Waste Planning Authority needs to do all the actions that Local Planning Authorities have to do and in addition:</p> <ul style="list-style-type: none"> • Consider whether to promote sustainable water management through a Waste Water Treatment Works • Work with developers to locate new development and regeneration according to the flood vulnerability category of the intended use in relation to Minerals and Waste. Avoid creating additional risk by not developing in areas served by critical infrastructure which is in a flood vulnerable location.
<p>Development Management - Planning Application process (Minerals, Waste & County Councils own development)</p>	<p>Information about the role and requirements of the SuDS Approval Body can be found in Appendix C.1.1. Co-operation between the Planning Authority and SuDS Approval Body requires the planning authority:</p> <ul style="list-style-type: none"> • To alert developers at the pre-application stage of the need to consult with the SuDS Approval Body about drainage issues on the site • Ensure that requests for outline and full planning permission are discussed with the SuDS Approval Body (area to be expanded within the Statement of Community Involvement) • Consult with SuDS Approval Body on applications which require a drainage application, to ensure that approval is not given to planning applications which require material changes to the application in order to receive drainage approval.

C.2 District and Borough Councils

Responsibility	Description
Planning Authority	<p data-bbox="491 371 1439 439"><i>N.B. This area of responsibility is subject to change due to expected new guidance.</i></p> <p data-bbox="491 465 1286 533">District and Borough Councils' planning function affects Flood Risk Management in three key ways:</p> <p data-bbox="491 560 1161 593">Considering flooding concerns in developing local plans;</p> <ul data-bbox="539 595 1439 786" style="list-style-type: none"> • Working with the SuDS Approval Body in ensuring that planning applications and drainage applications are complementary; • Considering flood risk assessments submitted in support of applications on which the Environment Agency do not require to be consulted; • Developing proactive strategies to mitigate and adapt to climate change which take full account of flood risk; <p data-bbox="491 819 1382 887">When considering flooding concerns in developing local plans the Planning Authority needs to do the following:</p> <ul data-bbox="539 913 1439 1939" style="list-style-type: none"> • Ensure flood risk is taken into account at all stages in the planning process • Avoid locating inappropriate development in areas at risk of flooding and direct development away from areas at highest risk by applying the Sequential Test. • Where new development is, exceptionally, necessary in areas of medium or high flood risk, ensure that it is safe, it does not increase flood risk elsewhere and, where possible, it reduces flood risk overall. • Ensure that all new development that has to be located in flood risk areas is appropriately flood resilient and resistant, includes for safe access and escape routes (should these be required for the nature of the development), and that any remaining risk can be safely managed. • Produce a Strategic Flood Risk Assessment which considers not just fluvial and coastal flooding but also local flood risk issues. Where Critical Drainage Areas have been identified these will need to be included. • Consider whether to promote sustainable water management through the Waste Plan addressing the issue of Waste Water Treatment work • Develop a Local Plan (LP) that carefully considers flood risk. This is a statutory planning document which planners can then use to object to inappropriate development in the floodplain. Consequently the LP should embed the Strategic Flood Risk Assessment (SFRA), the Preliminary Flood Risk Assessment and Surface Water Management Plan (where applicable). This should allow the LP to assess and record the flood risks for new developments and steer development to areas of lowest flood risk. • Work with developers to locate new development and regeneration according to the flood vulnerability category of the intended use. Avoid creating additional risk by not developing in areas served by critical infrastructure which is in a flood vulnerable location. • Promote development in hazard free areas through embedding the sequential approach referred to in the National Planning Policy

Responsibility	Description
	<p>Framework into the LP.</p> <ul style="list-style-type: none"> • Safeguard land for critical infrastructure and agricultural use. • Develop action plans, where necessary, to support sustainable spatial planning and ensure all plans are integrated and firmly linked to local strategies. • Ensure that community plans fully consider flood risk issues. <p>Co-operation between the Planning Authority and SuDS Approval Body requires the planning authority to:</p> <ul style="list-style-type: none"> • Inform the SuDS Approval Body of any pre-application discussions taking place with developers so they can attend and advise on drainage. • Alert developers at the master planning stage of the need to consult with the SuDS Approval Body about drainage issues on the site. • Ensure that requests for outline planning permission are discussed with the SuDS Approval Body. • Ensure that when the planning application arrives, the attached drainage application is immediately sent on to the SuDS Approval Body (subject to change depending on DEFRA application system proposals). • Amend local guidance so that, as with objections from highways authorities, local planning authorities are able to reject planning applications on the basis that they have failed their drainage application.
Maintenance of public spaces	<p>District and Borough Councils are responsible for maintenance of some parks and public spaces. Good maintenance practices can help to reduce flood risk, for instance by ensuring that rubbish and leaves are not tidied into watercourses or drains. For new public spaces which are under the control of a management company, these activities should be included in the management contract.</p> <p>District and Borough Councils may also be riparian owners of both ordinary and main watercourses and as such should carry out the duties imposed on riparian owners by the Land Drainage Act. They should maintain all assets in their ownership.</p>
Coastal erosion risk management authority	<p>Coastal erosion risk management authorities are identified as those districts or unitary councils that have a coastal erosion risk management function. Among the districts and boroughs of Essex, Tendring is a coastal erosion risk management authority, as is the neighbouring unitary of Southend-on-Sea.</p> <p>Responsibilities include:</p> <ul style="list-style-type: none"> • Planning shoreline management activities with input from the Environment Agency. • Delivery of coastal erosion risk management activities. • Working alongside the Environment Agency to develop and maintain coastal flood and erosion risk information. • Maintain a register of assets and other features that help to manage coastal risks. • Implement, manage, maintain and monitor shoreline management plans to understand and manage coastal flood and erosion risks. • Assist communities in planning for the future and taking appropriate steps to adapt to changing flood and coastal erosion risks.

Responsibility	Description
Emergency Planning authority	<p>District and Borough Councils are 'Category 1' responders to emergencies and members of the Essex Resilience Forum. Further information about this group can be found on the Essex County website¹⁸. The Forum has duties to:</p> <ul style="list-style-type: none"> • undertake risk assessments. • manage business continuity. • carry out emergency planning. • share information and cooperate with other responders. • warn and advise the public during times of emergency. <p>During and after an emergency, district and borough councils have the following roles and responsibilities:</p> <ul style="list-style-type: none"> • Coordinate emergency support within their own functions. • Respond to requests for assistance from local flood risk • Work with the other Category 1 and 2 responders as part of the multi-agency response to floods. • Liaise with central government departments. • Liaise with essential service providers. • Open rest centres. • Liaise with the relevant transport authorities (Highways Agency, Essex County Council, Essex Police) • Liaise with Essex County Council social care around mobilising trained emergency workers. • Provide emergency assistance. • Deal with environmental health issues, such as contamination and pollution. • Coordinate the recovery process. • Liaise with public health organisations • Provide advice and management of public health. • Provide support and advice to individuals. • Assist with business continuity.

C.3 Environment Agency

Responsibility	Description
Coastal Erosion Risk Management Authority	The Environment Agency is a coastal erosion risk management authority with the power to protect land against coastal erosion and to control third party activities on the coast. This includes the construction of private defences or the removal of beach material.
Emergency Planning	<p>The Environment Agency contributes to the development of multi-agency flood plans, which are developed by local resilience forums (LRFs) to help the organisations involved in responding to a flood to work better together. It also contributes to the National Flood Emergency Framework for England which includes guidance on developing and assessing these plans.</p> <p>It works with the Met Office to provide forecasts of flooding from rivers and the sea in England and has a responsibility to communicate flood warnings to the public, the media and to professional partner organisations.</p>

¹⁸ http://microsites.essexcc.gov.uk/microsites/essex_resilience/index.html

Responsibility	Description
	The Environment Agency and other asset operating authorities also have a role in proactive operational management of their assets and systems to reduce risk during a flood incident.
Planning process	Since October 2006, the Environment Agency in England has been a statutory consultee for all planning applications (other than minor development) in areas where there is a risk of flooding and for any site greater than 1 hectare in size. Local Planning Authorities must consult the Environment Agency before making any significant decisions on new development in flood risk areas. The Agency will provide advice on Flood Risk and help the local planning authority to technically interpret developer's flood risk assessments that have been submitted as part of the evidence base in support of a planning application.
Main Rivers	<p>Main Rivers are watercourses shown on the statutory Main River map held by the Environment Agency and DEFRA. The Environment Agency has permissive powers to carry out works of maintenance and improvement on Main Rivers. This can include any structure or appliance for controlling or regulating flow of water into or out of the channel. The overall responsibility for maintenance of Main Rivers, however, lies with the riparian owner.</p> <p>It can also bring forward flood defence schemes through the Regional Flood and Coastal Committees, and it will work with lead local flood authorities and local communities to shape schemes which respond to local priorities. It also has a regulatory role with regard to consenting works carried out by others in, under, over or within 9 metres of a main river or within 9 metres of a main river flood defence to ensure that those works do not adversely affect the operation of the drainage system or cause unnecessary environmental damage. It has also produced Statutory Byelaws which apply to operations in and around the main river, its flood plain and near to any associated flood defences.</p>
Reservoirs	<p>The Environment Agency enforces the Reservoirs Act 1975, which is the safety legislation for reservoirs in the United Kingdom. The Environment Agency is responsible as the Enforcement Authority in England and Wales for reservoirs that are greater than 10,000m³. As Enforcement Authority the Environment Agency must ensure flood plans are produced for specified reservoirs. However responsibility for carrying out work to manage reservoir safety lies with the reservoir owner/operator who should produce the flood plans. The Environment Agency is also responsible for establishing and maintaining a register of reservoirs, and making this information available to the public.</p> <p>It also acts as the enforcement authority for reservoirs with a storage capacity greater than 25,000m³ and, once the relevant parts of the Act have been commenced, reservoirs with a capacity of 10,000 m³. Responsibility for carrying out work to manage reservoir safety lies with the reservoir owner/operator.</p>
Coastal Flooding	<p>The Environment Agency is the lead organisation responsible for all flood and erosion risk management around the coastline of England, including tidal flood risk. The Environment Agency leads the country in developing a coastal management plan that works at local, regional and national level, with partner organisations, including local authorities, putting agreed plans into practical action. The Environment Agency supports this by giving Grant-in-Aid funding for coastal defence schemes and overseeing the work carried out.</p> <p>The Environment Agency also has a regulatory role with regard to consenting works carried out by others, on or in the immediate vicinity of coastal flood defences and has produced statutory byelaws specifying the range of operations that are precluded from occurring or that require the Agency's formal consent.</p>

C.4 Water and Sewerage Companies

Responsibility	Description
DG5 Register	<p>All water and sewerage companies maintain a register of properties at risk of flooding due to a hydraulic overload in the sewerage network, known as the DG5 register. This is part of the set of Ofwat DG (Director General) indicators (DG2 – DG9) used to monitor company performance.</p> <p>The DG5 register is a register of properties and areas that have suffered or are likely to suffer flooding from public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant period. There are 3 at risk reporting categories: '1 in 20 year', '1 in 10 year' and '2 in 10 year'. The reporting category reflects the frequency of flooding incidents in properties/areas and not the return period of the storm that causes the flooding. A sewer is overloaded when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded. Flooding events that occur during more intense storm events will also be excluded. It is also worth noting that properties will be removed from the register once a solution is in place.</p>
Sewer flooding	<p>As part of their obligation to Ofwat, water and sewerage companies are required to undertake capacity improvements to alleviate sewer flooding problems on the DG5 register during the current Asset Management Period (2010-15) with priority being given to more frequent internal flooding problems. It is important to identify solutions that are robust and cost beneficial.</p>
System of public sewers and works	<p>An essential flood risk management duty is defined under Section 94 of the Water Industry Act 1991, which states that Water and Sewerage Companies (WaSCs) have a duty to provide, maintain and operate systems of public sewers and works for the purpose of effectually draining our area. WaSCs also have a duty under the WIA 1991 relating to premises for 'domestic sewerage purposes'. In terms of wastewater this is taken to mean the ordinary contents of lavatories and water which has been used for bathing, washing and cooking purposes and for surface water the removal from yards and roofs. However, there is no legal duty or responsibility relating to highway drainage, land drainage and watercourses, with the exception that WaSCs can accept highway drainage by agreement with a Highway Authority.</p> <p>Water companies have no powers to prevent new foul connections to its network even if they know it will cause flooding to customers. This is why water companies actively seek engagement with the planning process, even though they are not statutory consultees. This is to ensure infrastructure can be provided at the appropriate time to adequately serve new development.</p> <p>The Flood and Water Management Act (2010) amends section 106 of the Water Industry Act. Therefore, the approval to connect to the surface water sewer will be granted by the SuDS Approving Body. Water companies will be statutory consultees to the SuDS Approval Body</p>

C.5 Highways Agency

Responsibility	Description
Responsibility to maintain the Highways	<p>Under the Highways Act, the Highways Authority has a duty to maintain the highway. This includes ensuring that highway drainage systems are clear and that blockages on the highway are cleared, where reasonably practicable.</p> <p>As part of this duty, roads are regularly inspected and maintained. Highways Structures are inspected on a 2 year cycle.</p>
Powers to deliver works	<p>The highway authority can deliver works that they consider necessary to protect the highway from flooding. These can be on the highway or on land which has been acquired by the highway authority in the exercise of highway land acquisition powers for that purpose.</p> <p>Highway Authorities may divert parts of a watercourse or carry out any other works on any form of watercourse if it is necessary for the construction, improvement or alteration of the highway or provides a new means of access to any premises from a highway.</p>
Adoption of SuDS	<p>The SuDS Approval Body has no obligation to adopt any part of a drainage system which is a publicly-maintained road. If it is on a Highways Agency road, the Highways Agency is expected to adopt and maintain the part of the drainage system on its property in accordance with the approved proposals and the National Standards for sustainable drainage.</p>

Appendix D – Guidance for Property Owners and Residents

D.1 Discovering whether your property is at risk

Information on whether households are at risk from all forms of flooding can be provided by the Environment Agency and Essex County Council. This should only be considered the first step. It is not possible to know details about individual properties, for example how high the floor level is above ground level or what household level protection has taken place. Therefore, when considering the flood risk of individual properties, whether for valuation or insurance, the information available should only be considered the first stage in assessing the flood risk.

For those at risk from river or coastal flooding, information is provided by the Environment Agency. The Environment Agency has classified the country into three Flood Zones: 1, 2 and 3. Those in Flood Zone 1 have less than a 0.1% or 1 in 1000 chance of being flooded from main rivers or the coast in any particular year. Those in Flood Zone 2 have a 0.1-1.0% (or 1 in 1000 to 1 in 100) chance. Those in Flood Zone 3 have a greater than 1.0% (or 1 in 100) chance.

All households in Flood Zones 2 and 3 should have been contacted notifying them of this and, unless they have chosen to opt-out, will receive flood warnings from the Environment Agency when the risk of river or coastal flooding is high. It should be noted that these flood zones do not consider the impact that flood defences have but work on what would happen if the defences failed.

Residents can request a printed copy of a map showing flood zones for their location, for personal use, by:

- Contacting their local Agency Office,
- Calling the National Customer Contact Service on 0370 8506506
- Emailing enquiries@environment-agency.gov.uk.
- Reviewing information can also be found on the Environment Agency website: <http://www.environment-agency.gov.uk/homeandleisure/floods/31650.aspx>

Information about surface water flood risk is much harder to map but some rough information can be found in the Essex Preliminary Flood Risk Assessment (PFRA). This is a high level document and cannot be applied to individual properties. It is not possible at this point to provide information at household level for surface water flood risk. Residents who have concerns can contact the Flood Risk management team (flood.prevention@essex.gov.uk) who can advise on what information is available.

Many residents may be unaware of the flood risk to their property if there has not been a flooding incident while they have lived there. Parish councils can be the best way of letting residents know that they should be aware of flood risk and to check with Essex County Council and the Environment Agency as to the extent of the risk. Finding out through the community has the advantage of being provided the information in context so as to know the extent to which residents should be concerned.

D.2 Preparation for Emergencies

The Environment Agency provides information on what to do to prepare a household for emergencies. This includes how to make a flood plan which will help you decide what practical actions to take before and after a flood – details can be found at <http://www.environment-agency.gov.uk/homeandleisure/floods/38329.aspx>. Other organisations have also produced useful reference material – these include:

- British Red Cross booklet entitled FLOODING
- HM Government document Preparing for Emergencies – a guide for communities

The Environment Agency has also developed a pamphlet which provides advice on how to make your house more resilient: <http://publications.environment-agency.gov.uk/PDF/GEHO1009BRDL-E-E.pdf> If a parish is at risk from flooding it is advisable to create an Emergency Plan which details who can be contacted to lead and assist in an emergency, what equipment is available and where can be used as emergency accommodation.

D.3 Household Level Flood Protection Measures

It is possible to apply for some support from central government for installing flood protection measures through Parish Councils. There have been some funds which have helped provide for surveys and installation of equipment in historically badly flooded communities. It is also possible to apply for funding through the general grant for flood defences. However this will only pay a small proportion of the total and the majority of the money will have to be found locally if it is to be successful. To find out more about this, talk to your Parish Council Clerk or contact flood.prevention@essex.gov.uk who can advise as to the requirements.

Parish Councils can look to raise funds through council tax precept or through other local commitments to raise the funds. They can also look to see in what way local residents can contribute to ensure that the price of work is kept low, and hence residents have to pay less. This may be enlisting residents who have training as surveyors or residents with the equipment to do some of the work, such as clearing ditches. There have also been some funds which have helped provide for surveys and installation of equipment in badly hit communities. Parish Councils will be informed by Essex County Council when these opportunities appear but it is up to the Parish Councils to lead on the application.

The National Flood Forum's Blue Pages Directory provides information and advice on what products are available to help protect your home or business against flooding. It can be found here: <http://www.bluepages.org.uk/BluePages/tabid/1664/Default.aspx>

It is important when buying flood products that they have the 'Kitemark' symbol or equivalent accreditation which shows that they have been tested properly. It is also strongly recommended that, if when buying a household flood protection product, professional advice is sought from a building surveyor, architect or other independent professional. Essex County Council will be working with the National Flood Forum in certain areas at great risk of local flooding to provide advice and workshops about what type of flood protection may be right for them.

Appendix E – Tier 3 Areas

(in alphabetical order)

Abridge	Little Totham
Brightlingsea	Lower Nazeing
Broomfield	Lower Sheering
Burnham-on-Crouch	Manningtree
Chappel	Manuden
Chigwell Row	Mayland
Clavering	North Weald Bassett
Coggeshall	Radwinter
Dovercourt	Roxwell
Epping	Rush Green
Finchingfield	Stansted Mountfitchet
Frinton and Walton	Stanway
Galleywood	Stapleford Abbots
Grange Hill	Takeley
Great Clacton	Thaxted
Great Dunmow	Theydon Bois
Ingatestone	Tollesbury
Kelvedon	Upper Dovercourt
Latchingdon	West Horndon
Little Tey	West Mersea

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