

East Suffolk Catchment Flood Management Plan

Summary Report December 2009



managing
flood risk

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Introduction



I am pleased to introduce our summary of the East Suffolk Catchment Flood Management Plan (CFMP). This CFMP gives an overview of the flood risk in the East Suffolk catchment and sets out our preferred plan for sustainable flood risk management over the next 50 to 100 years.

The East Suffolk CFMP is one of 77 CFMPs for England and Wales. Through the CFMPs, we have assessed inland flood risk across all of England and Wales for the first time. The CFMP considers 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 by Shoreline Management Plans (SMPs). Our coverage of surface and groundwater flooding is however limited due to a lack of available information.

The role of CFMPs is to establish flood risk management policies which will deliver sustainable flood risk management for the long term. This is essential if we are to make the right investment decisions for the future and to help prepare ourselves effectively for the impact of climate change. We will use CFMPs to help us target our limited resources where the risks are greatest.

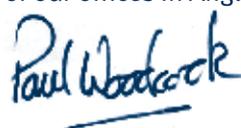
This CFMP identifies flood risk management policies to assist all key decision makers in the catchment. It was produced through a wide consultation and appraisal process, however it is only the first step towards an integrated approach to flood risk management. As we all work together to achieve our objectives, we must monitor and listen to each others progress, discuss what has been achieved and consider where we may need to review parts of the CFMP.

There are different sources of flood risk in the catchment. River flooding can result from heavy rainfall or obstructions in the channel. There is a risk of river flooding in Ipswich, Debenham, Great Blakenham and Claydon, Needham Market, Stowmarket, Framlingham and Halesworth.

Tidal flooding can occur within rivers and estuaries. There is a significant risk of tidal flooding in East Suffolk because the coastal land and land around the estuaries is low-lying. Tidal flooding can occur from the River Gipping in the ports, docklands and some areas of Ipswich. High tide levels can prevent river flows from draining away and this is called 'tide-locking'. This can affect Ipswich (River Gipping), along the Lothingland Hundred River, Cove Run (Wrentham Watercourse) and the River Minsmere.

Surface water flooding has occurred in the CFMP area, for example in Halesworth and Ipswich. Sewer flooding has occurred in parts of Ipswich, Woodbridge and Melton. We cannot reduce flood risk on our own. We will therefore work closely with all our partners to improve the co-ordination of flood risk activities and agree the most effective way to manage flood risk in the future. We work with many organisations, groups and individuals with an interest in how flood risk is managed including local authorities, Internal Drainage Boards (IDBs), water companies, conservation bodies such as Natural England and the public.

This is a summary of the main CFMP document. If you would like to see the full document an electronic version can be obtained by emailing enquiries@environment-agency.gov.uk or telephoning 08708 506 506. Alternatively, paper copies can be viewed at any of our offices in Anglian Region.

A handwritten signature in black ink that reads "Paul Woodcock".

Paul Woodcock
Regional Director Anglian Region

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↑ Ipswich Marina

The purpose of a CFMP in managing flood risk

CFMPs help us to understand the scale and extent of flooding now and in the future, and set policies for managing flood risk within the catchment. CFMPs should be used to inform planning and decision making by key stakeholders such as:

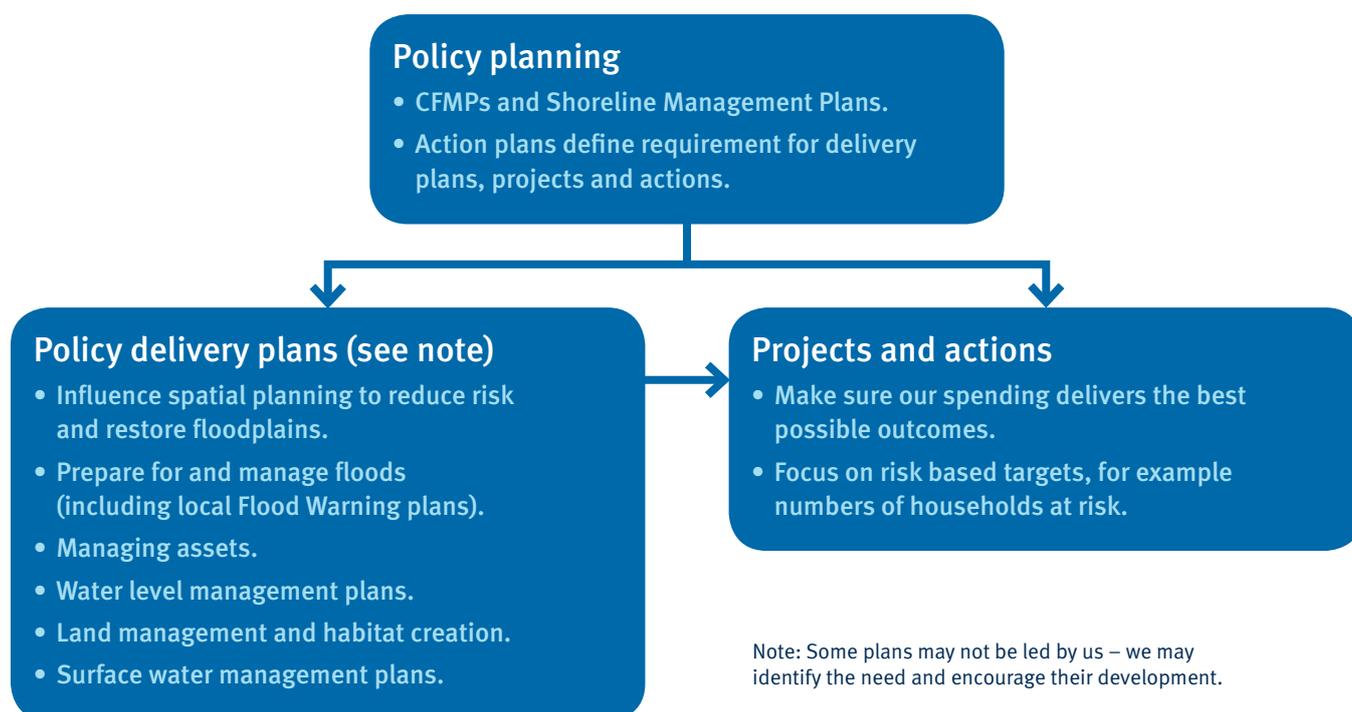
- the Environment Agency, who will use the plan to guide decisions on investment in further plans, projects or actions;
- regional planning bodies and local authorities who can use the plan to inform spatial planning activities and emergency planning;

- Internal Drainage Boards (IDBs), water companies and other utilities to help plan their activities in the wider context of the catchment;
- transportation planners;
- land owners, farmers and land managers that manage and operate land for agriculture, conservation and amenity purposes;
- the public and businesses to enhance their understanding of flood risk and how it will be managed.

CFMPs aim to promote more sustainable approaches to managing flood risk. The policies identified in the CFMP will be delivered through a combination of different approaches. Together with our partners, we will implement these approaches through a range of delivery plans, projects and actions.

The relationship between the CFMP, delivery plans, strategies, projects and actions is shown in Figure 1.

Figure 1 The relationship between CFMPs, delivery plans, projects and actions



Catchment overview

The East Suffolk CFMP is located in the east of England and covers a total area of 1,595 km². It includes nine main river catchments, of which the Gipping, Deben, Alde-Ore and Blyth are the largest. It extends along the east coast of England from Felixstowe in the south to Kessingland in the north. Map 1 shows the location and extent of the East Suffolk CFMP. The downstream boundary of the East Suffolk CFMP is the Suffolk Shoreline Management Plan (SMP) and the Essex and South Suffolk SMP. The boundaries are located at the Orwell bridge on the Orwell estuary (Essex and South Suffolk SMP), Blyford bridge on the Blyth estuary (Suffolk SMP), Snape sluice on the Alde/Ore estuary (Suffolk SMP) and Melton road bridge on the Deben estuary (Suffolk SMP). The SMPs deal with coastal flooding and most of the tidal risk. However, the CFMP considers tidal flood risk along the River Gipping/Orwell upstream of the SMP boundary (Orwell bridge) to the tidal limit just upstream of Handford Road bridge in Ipswich.

The East Suffolk CFMP area is mainly rural with over half of the CFMP area being grade three agricultural land. Grades two, three and four agricultural land make up around 90% of the total land area. The population of the East Suffolk CFMP area is around 630,000. It is predominantly rural and supports a regionally and nationally valuable agricultural industry. Much of East Suffolk's urban population lives in Ipswich, Stowmarket and Needham Market. Other large urban areas include Halesworth, Woodbridge, Felixstowe, Aldeburgh, Debenham and Southwold.

The landscape of the catchment varies. The headwaters of the rivers are located on high ground towards the west of the CFMP area around Stowmarket, Debenham, Framlingham and Halesworth. Steep sections mean that rainwater can quickly runoff the land. Towards the east of the CFMP area, east of Ipswich, Saxmundham, Kesale and Carlton, the land gently falls towards the coast. Here coastal wetlands are common as water moves more slowly to the river channels. In general most of the East Suffolk CFMP area is flat.

Marine derived sands and gravels are the common underlying geology in the north and east of the CFMP area, whilst chalk dominates in the west. These underlying rocks are mainly overtopped by less permeable glacial till, which reduces the infiltration of rainfall into the soil. This leads to higher rates of rainfall runoff meaning there is a greater risk from surface water flooding in these areas. However flooding from groundwater is a small component of the source of flooding in East Suffolk.

Within the East Suffolk CFMP area there are a number of important environmental sites, including Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Sites of Special Scientific Interest (SSSIs) and Ramsar sites. These include the Stour and Orwell Estuaries (Ramsar, SPA), Deben Estuary (Ramsar, SAC, SSSI), Alde and Ore Estuary (Ramsar, SSSI, SAC, SPA) Benacre to Easton Bavents Lagoons (SPA, SAC) and Minsmere to Walberswick Heaths and Marshes (Ramsar, SAC, SPA, SSSI). There are 70 SSSIs and five National Nature Reserves (NNRs) in the CFMP area. The Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB) protects a large area of the coast. Scheduled Monuments (SMs) and listed buildings, designated for their heritage value, are distributed across the CFMP area.

Map 1 Location and extent of the East Suffolk CFMP area



↑ River Orwell

Current and future flood risk

Overview of the current flood risk

Flood risk has two components: the chance (probability) of a particular flood and the impact (or consequence) that the flood would have if it happened. The probability of a flood relates to the likelihood of a flood of that size occurring within a one year period, it is expressed as a percentage. For example, a 1% annual probability flood has a 1% chance or 0.01 probability of occurring in any one year, and a 0.5% annual probability flood has a 0.5% chance or 0.005 probability of occurring in any one year. The flood risks quoted in this report are those that take account of flood defences already in place.

There is a history of flooding across East Suffolk. River flooding has occurred in all the river catchments and tidal floods have occurred along the coast and estuaries.

The main sources of flood risk for people, property, infrastructure and the land are:

- river flooding from all the main rivers and their tributaries. Particular areas at risk are the towns of Ipswich, Debenham, Great Blakenham and Claydon, Needham Market, Stowmarket, Framlingham and Halesworth;
- tidal flooding from the River Gipping in the ports, docklands and some urban areas of Ipswich;
- the impacts of rivers not being able to flow freely to the sea at high tide (called tide locking), such as at Ipswich (River Gipping), along the Lothingland Hundred River, Cove Run (Wrentham Watercourse) and the River Minsmere;
- surface water flooding in parts of the upper/mid catchments due to the underlying geology combined with seasonally waterlogged soils and steep slopes. Halesworth, Leiston, Knodishall, Wrentham, Needham Market, Saxmundham and Pettaugh (near Stowmarket) have experienced this type of flooding. Ipswich has also experienced surface water flooding due to impermeable surfaces and blocked drains;
- sewer flooding due to heavy rainfall overwhelming the sewer network and discharge points becoming blocked by high river levels, or due to blockages within the sewer network. Sewer flooding has occurred in parts of Ipswich, Woodbridge and Melton.

0.5% annual probability tidal flood, taking into account the current flood defences. This means that 0.5% of the total population living in the CFMP area are currently at risk from flooding. There is approximately 6 km² of grade two agricultural land and 25 km² of grade three agricultural land, at risk of flooding in the current 1% annual probability river flood. There is no grade two agricultural land at risk and 0.4 km² of grade three agricultural land, at risk of flooding in the current 0.5% annual probability tidal flood.

It is difficult to assess the current impact of flooding to environmental features, but the internationally important sites of the Stour and Orwell Estuaries (SPA, Ramsar), Benacre to Easton Bavents Lagoons (SPA, SAC), Alde and Ore Estuaries (Ramsar, SSSI, SAC, SPA), Minsmere to Walberswick Heaths and Marshes (SPA, SAC, Ramsar), and Deben Estuary (SPA, Ramsar), may be at some risk from the impacts of flooding. The Stour and Orwell Estuaries (SPA, Ramsar) and the Benacre to Easton Bavents Lagoons (SPA, SAC) may be negatively impacted by flooding. The Minsmere to Walberswick Heaths and Marshes (SPA, SAC, Ramsar) may be positively impacted by flooding. The Alde to Ore Estuaries (Ramsar, SSI, SAC, SPA) and Deben Estuary (SPA, Ramsar) are not thought to be affected by flooding. There are 21 other SSSIs, 110 Scheduled

What is at risk?

At present there are around 2,300 people and 860 commercial and residential properties at risk in the CFMP area from the 1% annual probability river flood, and 900 people and 670 commercial and residential properties at risk from the

Monuments and 117 listed buildings that may also be at some flood risk in the 1% annual probability river flood. In the 0.5% annual probability tidal flood 11 listed buildings may be at risk.

Where is the risk?

Around 20% of the people and properties at risk from the 1% annual probability river flood (taking into account current flood

defences) are located in Great Blakenham and Claydon. A further 15% are located in Debenham. All of the people and properties at risk from a 0.5% annual probability tidal flood are located in Ipswich; there are also seven properties in Ipswich at risk from a 1% annual probability river flood.

The distribution of properties at risk across the CFMP area from a 1% annual probability river flood and a 0.5% annual probability tidal

flood in Ipswich is illustrated on Map 2. The flood risk illustrated on Map 2 takes account of current flood defences. Table 1 summarises where there is flood risk to more than 25 properties. Table 2 shows the critical infrastructure at risk in the catchment.

We recognise that there is also a potential risk from surface water and groundwater flooding. However, further studies following on from the CFMP are needed by us and our partners to quantify this potential

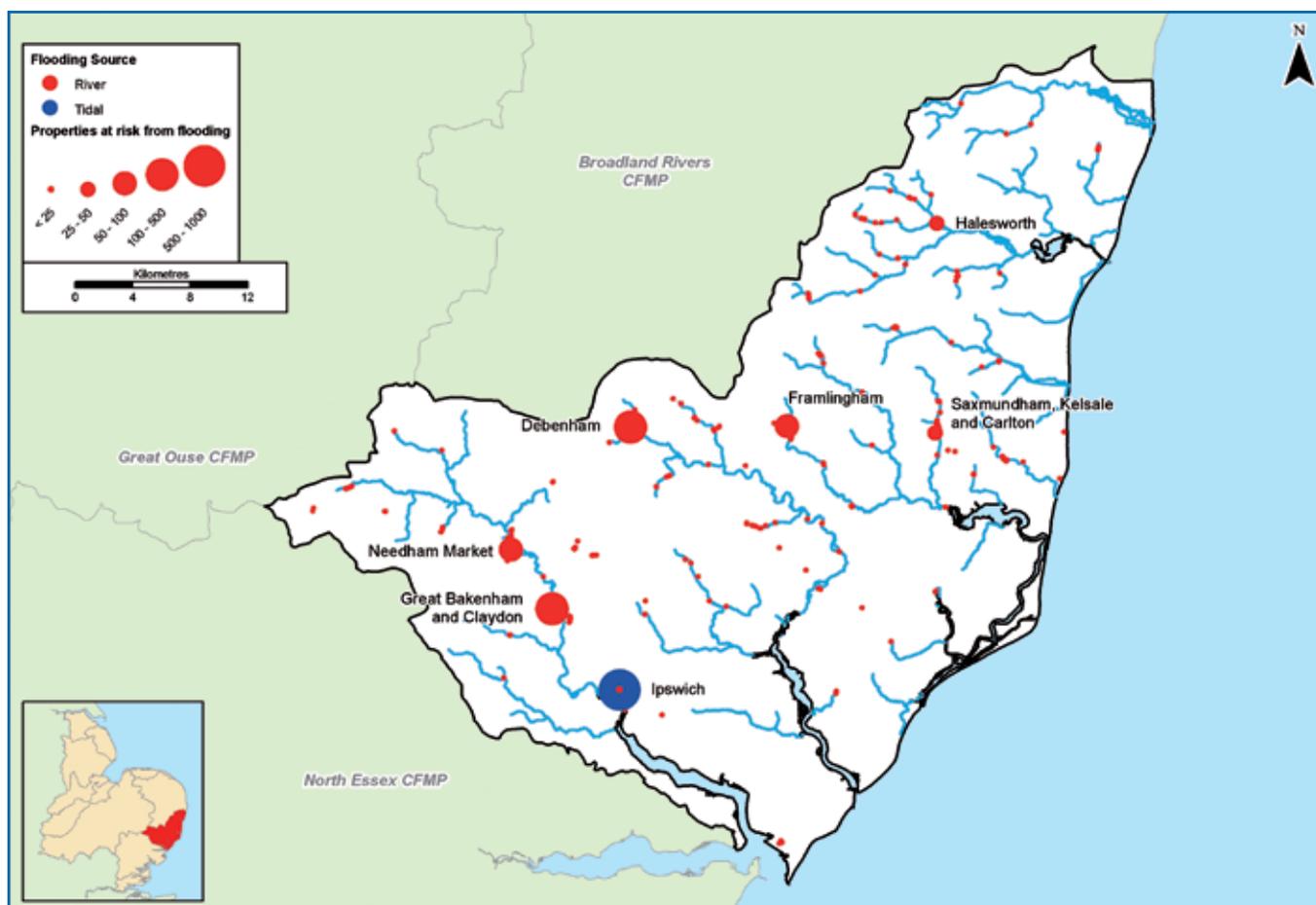
Table 1 Locations of towns and villages with 25 or more properties at risk in a 1% annual probability river flood and in Ipswich during a 0.5% annual probability tidal flood, taking into account current flood defences

Number of properties at risk	Locations	
	At risk from 1% annual probability river flood	At risk from 0.5% annual probability tidal flood
500 to 1,000	None	Ipswich
100 to 500	Great Blakenham/Claydon, Debenham	None
50 to 100	Framlingham, Needham Market	None
25 to 50	Saxmundham, Kelsale and Carlton, Halesworth	None

Table 2 Critical infrastructure at risk in the catchment

	Risk from a 1% annual probability river flood	Risk from a 0.5% annual probability tidal flood
Critical infrastructure at risk	Three electricity sub-stations, One sewage treatment works, Sections of A-road and railway	Seven electricity sub-stations, Sections of railway

Map 2 Flood risks to property from the 1% annual probability river flood and in Ipswich during a 0.5% annual probability tidal flood, taking account of current flood defences



How we currently manage the risk in the catchment

The CFMP area has a history of river and tidal flood risk, particularly in Ipswich. Generally across the East Suffolk CFMP area there are no formal flood defences, however in the past some engineering schemes have been implemented to reduce flood risk in Ipswich, including:

- widening and reinforcing river channels. Widening of the River Gipping and River Orwell through Ipswich provides protection up to the 1% annual probability river flood;

- building flood walls. Flood walls along the River Gipping in Ipswich provide protection up to the 1% annual probability river flood;
- constructing raised defences. Raised hard defences along the Tidal River Orwell provide protection up to the 2% annual probability tidal flood;

The defences in Ipswich are 25 to 30 years old and are getting near to the end of their effective life. Sections of the defences have failed in the past. This reduces their standard of protection and increases the risk of flooding.

As well as the above flood defences in Ipswich there is also a flood alleviation scheme for Stowmarket. The flood alleviation scheme reduces peak flows along the River Gipping and Rattlesden River providing protection to Stowmarket up to the 4% annual probability river flood.

The above measures have all reduced flood risk in the CFMP area. Around 1% of the total population in this CFMP area, are currently living in areas that benefit from flood risk management schemes.

In addition to these engineering schemes, other flood risk management activities are carried out in the CFMP area. These include activities which help to reduce the probability of flooding and those that address the consequences of flooding.

Activities that reduce the probability of flooding include:

- maintaining and improving existing flood defences and structures;
- maintaining river channels;
- maintenance of drainage networks by Internal Drainage Boards (IDBs) and landowners;
- maintenance of road drains and sewer systems.

Activities that reduce the consequences of flooding include:

- working with local authorities to influence the location, layout and design of new and redeveloped property and ensuring that only appropriate development is allowed on the floodplain through the application of Planning Policy Statement 25 (PPS25);
- understanding where flooding is likely by using flood risk mapping;
- providing flood forecasting and warning services;
- promoting awareness of flooding so that organisations, communities and individuals are aware of the risk and are prepared in case they need to take action in time of flood;

- promoting resilience and resistance measures for those properties already in the floodplain.

Combinations of engineering and other flood risk management activities are used to reduce the probability or consequences of flooding. We have investigated which activities are likely to be most effective and appropriate in different parts of the CFMP area in the future.



↑ Combs Ford

The impact of climate change and future flood risk

In the future, flooding can be influenced by climate change, changes in land use (for example urban development) and rural land management. Using river models we tested the sensitivity of the rivers in the CFMP area to these drivers.

For urbanisation, we tested the sensitivity of the rivers in the catchment to urban growth, based on a 15% to 30% increase in urbanisation in the CFMP area up to 2100. Increasing urbanisation had an impact on flood risk.

For climate change we tested the following changes up to 2100:

- 20% increase in peak flow in all watercourses. This will increase the probability of large-scale flood events;
- A total sea level rise of 980 mm by the year 2100. This will increase the probability of tidal flooding and increase the length of time watercourses will not be able to flow freely to the sea at high tide (tide-locked).

For rural land management, we adjusted the river models to represent the effect of reducing and increasing intensive farming practices. At a catchment scale this had a limited impact on flood risk. Therefore, changes in rural land management were not taken forward into the final future scenario.

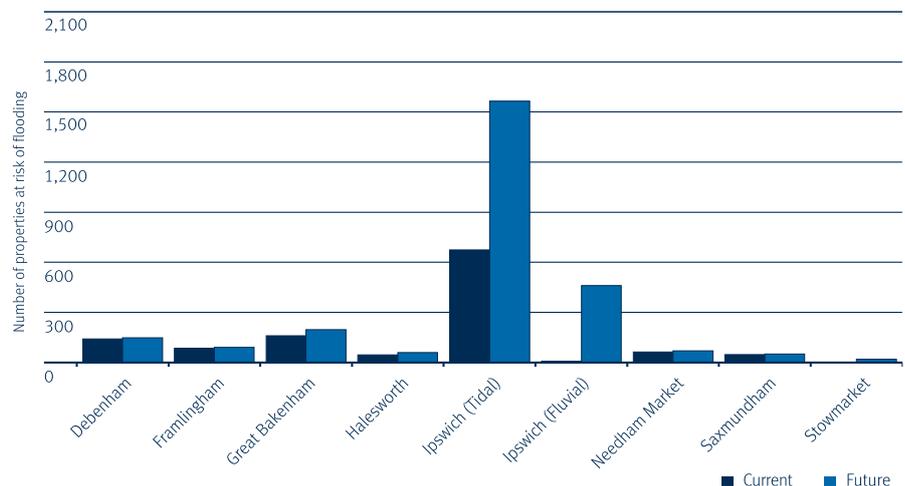
In the East Suffolk CFMP area, climate change and urbanisation were shown to have the greatest impact on flood risk. Therefore, the scenario used to model future flood risk was based on urbanisation and climate change as described.

Using river models we estimate that by 2100, 3,500 people and 1,500 commercial and residential properties will be at risk across the CFMP area from the 1% annual probability river flood, and 1,600 people and 1,500 properties will be at risk in Ipswich from the 0.5% annual probability tidal flood. These figures take account of current flood defences. Flood risk from

rivers increases mainly in Ipswich, Debenham and Great Blakenham. There is also an increase in the risk from tidal flooding in Ipswich.

Figure 2 shows the difference between current and future flood risks at for a 1% annual probability river flood at key locations in the CFMP area, and for a 0.5% annual probability tidal flood in Ipswich. Following on from the CFMP, organisations need to work together to investigate flood risk from other sources (for example, surface water and ground water flooding) in more detail.

Figure 2 Current and future (2100) flood risk to property from a 1% annual probability river flood at key locations in the CFMP area and 0.5% annual probability tidal flood in Ipswich, taking into account current flood defences



Flood risk to agricultural land is expected to increase slightly (by approximately 8% for grade two and 12% for grade three) in the future 1% annual probability river flood. It is not expected to increase in the 0.5% annual probability tidal flood. Flood risk to infrastructure and transport services is expected to increase in the future. During a 1% annual probability river flood five electricity sub-stations, two

sewage treatment works, sections of A road and railway line could be at risk. During a 0.5% annual probability tidal flood 14 electricity sub-stations and sections of railway line could be at risk.

In the future no additional designated environment sites are expected to be at risk. The area of the environmental site at risk is expected to increase but the

consequences of flooding is unlikely to change. There are 32 additional Scheduled Monuments and 46 additional listed buildings that could be at flood risk from the 1% annual probability river flood in the future. An additional 18 listed buildings may be at risk from the 0.5% annual probability tidal flood in the future.



↑ Peasenhall

Future direction for flood risk management

Approaches in each sub-area

We have divided the East Suffolk catchment into seven distinct sub-areas which have similar physical characteristics, sources of flooding and level of risk. We have identified

the most appropriate approach to managing flood risk for each of the sub-areas and allocated one of six generic flood risk management policies, shown in Table 3.

To select the most appropriate policy, the plan has considered how social, economic and environmental objectives are affected by flood risk management activities under each policy option.

Map 3 Sub-areas and flood risk management policies

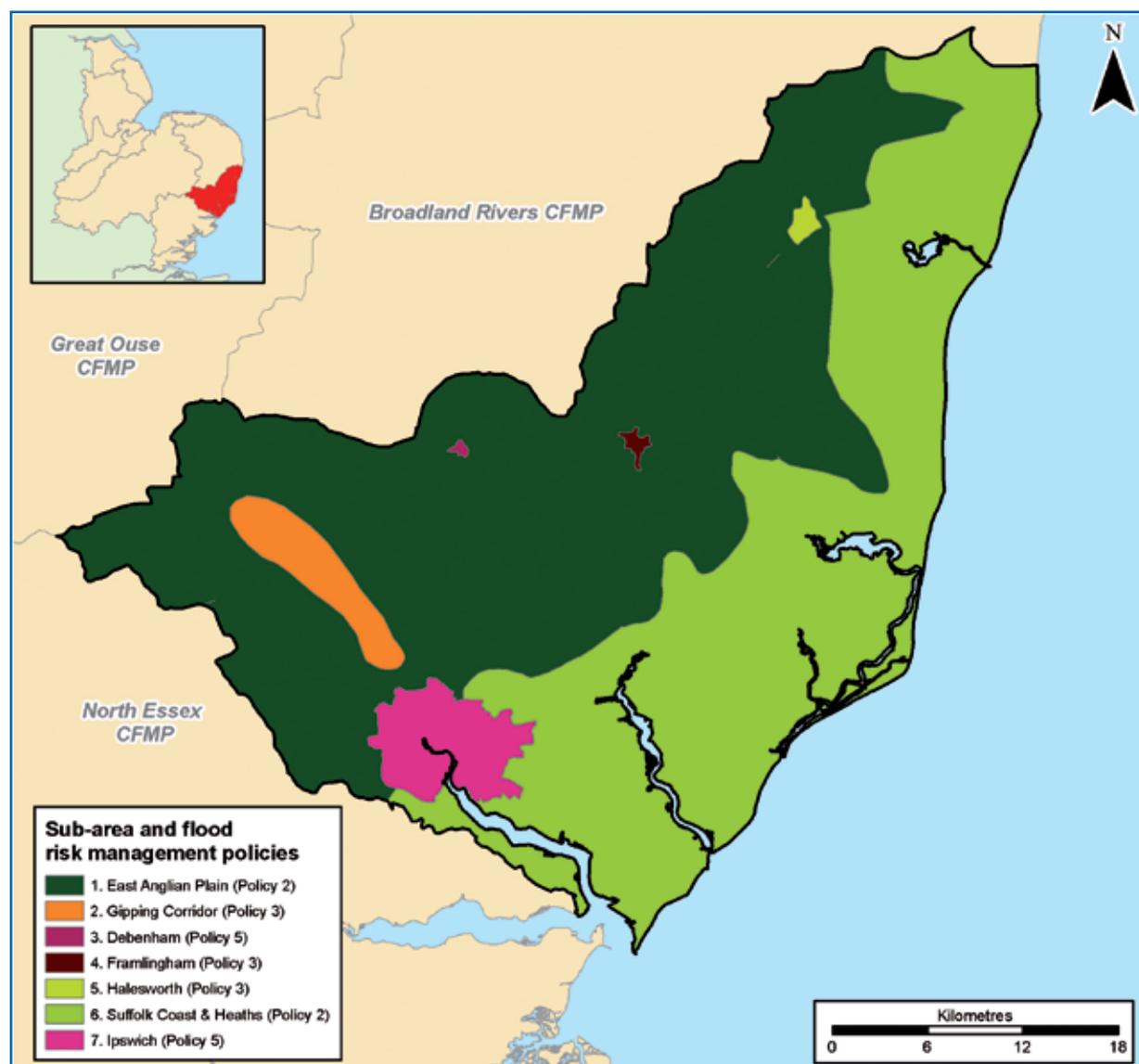


Table 3 Flood risk management policy options

→ Policy 1

Areas of little or no flood risk where we will continue to monitor and advise

This policy will tend to be applied in those areas where there are very few properties at risk of flooding. It reflects a commitment to work with the natural flood processes as far as possible.

→ Policy 2

Areas of low to moderate flood risk where we can generally reduce existing flood risk management actions

This policy will tend to be applied where the overall level of risk to people and property is low to moderate. It may no longer be value for money to focus on continuing current levels of maintenance of existing defences if we can use resources to reduce risk where there are more people at higher risk. We would therefore review the flood risk management actions being taken so that they are proportionate to the level of risk.

→ Policy 3

Areas of low to moderate flood risk where we are generally managing existing flood risk effectively

This policy will tend to be applied where the risks are currently appropriately managed and where the risk of flooding is not expected to increase significantly in the future. However, we keep our approach under review, looking for improvements and responding to new challenges or information as they emerge. We may review our approach to managing flood defences and other flood risk management actions, to ensure that we are managing efficiently and taking the best approach to managing flood risk in the longer term.

→ Policy 4

Areas of low, moderate or high flood risk where we are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change

This policy will tend to be applied where the risks are currently deemed to be appropriately-managed, but where the risk of flooding is expected to significantly rise in the future. In this case we would need to do more in the future to contain what would otherwise be increasing risk. Taking further action to reduce risk will require further appraisal to assess whether there are socially and environmentally sustainable, technically viable and economically justified options.

→ Policy 5

Areas of moderate to high flood risk where we can generally take further action to reduce flood risk

This policy will tend to be applied to those areas where the case for further action to reduce flood risk is most compelling, for example where there are many people at high risk, or where changes in the environment have already increased risk. Taking further action to reduce risk will require additional appraisal to assess whether there are socially and environmentally sustainable, technically viable and economically justified options.

→ Policy 6

Areas of low to moderate flood risk where we will take action with others to store water or manage run-off in locations that provide overall flood risk reduction or environmental benefits

This policy will tend to be applied where there may be opportunities in some locations to reduce flood risk locally or more widely in a catchment by storing water or managing run-off. The policy has been applied to an area (where the potential to apply the policy exists), but would only be implemented in specific locations within the area, after more detailed appraisal and consultation.

East Anglian Plain

Our key partners are:

Mid Suffolk District Council

Suffolk Coastal District Council

Babergh District Council

Waveney District Council

Essex and Suffolk Water

Anglian Water

The issues in this sub-area

This sub-area is covered by the area based on the Natural England “East Anglian Plain Natural Area”. A large part of the sub-area is characterised by rural, undeveloped land where the rivers use their floodplain. Within this large sub-area there is low risk to people and property, located in small towns and villages or in isolated areas scattered throughout the sub-area. Currently 292 properties within this sub-area are at risk from the 1% annual probability river flood. The properties at risk are in towns and villages such as Rattlesden, Coddham, Laxfield, Walpole, Saxmundham, Kesale and Carlton. There is approximately 5 km² of grade two agricultural land, 10 km² of grade three agricultural land and parts of the A14 and A12 at risk. Table 4 details flood risk to people and property in this sub-area.

Table 4 Risk to people and property within the East Anglian Plain sub-area during a 1% annual probability river flood, taking into account current flood defences

	Current	Future (2100)
Number of people at risk	952	1,121
Number of properties at risk	292	349

The vision and preferred policy

Policy option 2: Areas of low to moderate flood risk where we can generally reduce existing flood risk management actions.

In this rural area, the current activity to manage flooding is out of proportion with the level of flood risk, or is not effective. In general, overall flood risk management activities will be reduced within the sub-area, however where flood risk is more concentrated (for example in towns and villages) existing actions to manage flooding may be continued.

The preferred approach is to reduce bank and channel maintenance in some locations. This will enable limited resources to be targeted to other areas of the catchment where the risks are greater, to ensure value for money. The preferred approach will also help improve the flow between the river and its floodplain and so improve wetland and aquatic habitats.

Flood warning is an important way of managing the consequences of flooding throughout the catchment. Therefore, the local flood warning infrastructure (such as river flow gauging stations) needs to be maintained.

The key messages

- Where feasible, flood risk management activities will be reduced as the current activity to manage flooding is out of proportion with the level of flood risk.
- Reducing bank and channel maintenance will help naturalise rivers and improve the flow between the river and its floodplain.
- Maintain flood warning infrastructure (such as river flow gauging stations) to ensure that an effective flood warning service can be provided throughout the catchment.

Proposed actions to implement the preferred policy

- Investigate options to cease or reduce current bank and channel maintenance and flood defence maintenance. In addition, changes in land use, development of sustainable farming practices and environmental enhancement should be investigated to mitigate an increase in flooding in the future.
- Continue with the flood warning service including the maintenance of flood warning infrastructure (such as river flow gauging stations) and public awareness plans.
- Work with partners to develop emergency response plans for critical infrastructure and transport links at risk from flooding.
- Continue maintenance of flood storage areas on the River Rattlesden and River Gipping.
- Work with local authorities to influence the location, layout and design of new and redeveloped property and ensure that only appropriate development is allowed on the floodplain through the application of Planning Policy Statement 25 (PPS25).
- Work with our partners to put in place the recommendations from the Haven Gateway Water Cycle Study to ensure that water resources and flood risk management issues can be addressed in a sustainable way to accommodate future planned growth.



↑ River Fromus

Gipping Corridor

Our key partners are:

Mid Suffolk District Council

Suffolk County Council

Essex and Suffolk Water

Anglian Water

The issues in this sub-area

This sub-area runs along the River Gipping between the settlements of Needham Market, Great Blakenham and Claydon. There are no formal defences in this sub-area. The settlements of Needham Market, Great Blakenham and Claydon have developed floodplains. Currently there are 252 properties at risk from the 1% annual probability river flood. These are located in towns such as Stowmarket, Great Blakenham, Claydon and Needham Market. There is approximately 0.2 km² of grade two agricultural land, 3 km² of grade three agricultural land, sections of railway, parts of the A14 and one electricity sub-station at risk from the 1% annual probability river flood. Table 5 details flood risk to people and property in this sub-area.

Table 5 Risk to people and property within the Gipping Corridor sub-area during a 1% annual probability river flood

	Current	Future (2100)
Number of people at risk	356	417
Number of properties at risk	252	313

The vision and preferred policy

Policy option 3: Areas of low to moderate flood risk where we are generally managing existing flood risk effectively.

The focus of this policy in the future is to use alternative actions to manage flood risk at the current level within this sub-area. We want to continue with our current maintenance activities within Needham Market and Great Blakenham and Claydon. However, we want to ensure investment is proportional to the risk by reducing maintenance along the rural corridor where the risk is low. This means we can invest in developing emergency response plans for the critical infrastructure at risk and develop a flood awareness plan. As part of our long term approach to flood risk management, we also want to work in partnership with local planning authorities to target future development to land previously developed within the settlements, and prevent any future development within the rural corridor between these settlements. By reducing maintenance and preventing development on the floodplain in the rural corridor, we can maintain the floodplain and maximise opportunities to enhance the environment.

The key messages

- The current level of flood risk management should be continued.
- As an alternative approach to managing flood risk consider reducing maintenance activities where flood risk is low and targeting resources to areas where the risk is more concentrated.

Proposed actions to implement the preferred policy

- Continue with the current level of flood risk management to maintain the flow of water through Stowmarket, Needham Market, Great Blakenham and Claydon.
- Investigate options to reduce flood risk maintenance activities in the rural corridor between the main settlements of the Gipping Corridor sub-area.
- Continue with the flood warning service including the maintenance of flood warning infrastructure for example, river flow gauging stations.
- Develop a flood awareness plan to encourage people to sign up to, and respond to flood warnings. The flood awareness plan will inform people about the actions they can take to protect themselves and their property.
- Work with partners to develop an emergency response plan for critical infrastructure and transport links at risk of flooding.
- Encourage planners to develop policies for no inappropriate development within Stowmarket, Needham Market, Great Blakenham and Claydon following principles set out in PPS25, and to prevent development in the floodplain between these settlements. The floodplain between these settlements should be maintained as an asset to make space for water.



↑ River Gipping, Badley

Debenham

Our key partners are:

Mid Suffolk District Council

River Deben (Upper) IDB

The issues in this sub-area

Development on the floodplain in this sub-area means that the impacts of flooding can be significant. Debenham is located in the headwaters of the River Deben and is at risk from flash flooding due to intense rainfall events and rapid run-off. Currently there are 132 properties at risk from the 1% annual probability river flood. There is also risk from lower magnitude river floods in this settlement, with 100 properties at risk from the 10% annual probability river flood. There is some agricultural land at risk in this sub-area, but there is no critical infrastructure at risk. Table 6 and Table 7 detail flood risk to people and property in this sub-area from the 10% and 1% annual probability river flood respectively.

Table 6 Risk to people and property within the Debenham sub-area during a 10% annual probability river flood, taking into account current flood defences

	Current	Future (2100)
Number of people at risk	210	233
Number of properties at risk	100	133

Table 7 Risk to people and property within the Debenham sub-area during a 1% annual probability river flood, taking into account current flood defences

	Current	Future (2100)
Number of people at risk	246	270
Number of properties at risk	132	147

Within Debenham there are no flood formal defences. We currently manage the risk of river flooding through routine maintenance of the watercourses that flow through this settlement. The benefits of this approach will reduce in the future as storms are expected to become more frequent and intense.

There is also risk from surface water flooding due to a combination of impermeable surfaces and steep slopes within the urban area.

The vision and preferred policy

Policy option 5: Areas of moderate to high flood risk where we can generally take further action to reduce flood risk.

Our focus in the future is to reduce the current and future level of flood risk in the 10% annual probability river flood. In Debenham the narrow developed floodplain means that a very high level of flood risk to people and property occurs in the 10% annual probability river flood. We should investigate options to manage this risk. This may include constructing a defence system that gives protection at lower magnitude but higher frequency events. However, there will still be people and property at risk in the 1% annual probability river flood. To manage the consequences of larger floods we will produce flood awareness plans to encourage people to sign up to and respond to the flood warnings. In the long term we will work with planners to target future development to previously developed land.

The key messages

- Investigate options to reduce the risk of flooding.
- Work with planners to target future development to previously developed land.
- Flood awareness plans should be used to manage the consequences of flooding.

Proposed actions to implement the preferred policy

- Investigate the feasibility of constructing new flood defences to reduce the risk of flooding during a 10% annual probability river flood.
- Increase current maintenance activities through the settlement.
- Continue with the flood warning service including the maintenance of flood warning infrastructure for example, river flow gauging stations.

- Develop a flood awareness plan to encourage people to sign up to, and respond to flood warnings. The flood awareness plan will inform people about the actions they can take to protect themselves and their property.
- Work with partners to develop an emergency response plan for critical infrastructure at risk of flooding.
- Encourage planners to develop policies for new development to be appropriate following the principles of PPS25 and be targeted to previously developed land.



↑ River Deben

Framlingham

Our key partners are:

Suffolk Coastal District Council

Natural England

The issues in this sub-area

Framlingham is a small town located in the headwaters of the Ore catchment at the confluence with Framlingham Gull. Framlingham Gull runs straight through the town which means its floodplain is developed mainly by small shops and local businesses. There are no formal flood defences in this sub-area. Currently 81 properties within the sub-area are at risk from the 1% annual probability river flood. There is some agricultural land, one electricity sub-station and one STW at risk in the 1% annual probability river flood. Table 8 details flood risk to people and property in this sub-area.

Table 8 Risk to people and property within the Framlingham sub-area during a 1% annual probability river flood

	Current	Future (2100)
Number of people at risk	66	85
Number of properties at risk	81	90

The vision and preferred policy

Policy option 3: Areas of low to moderate flood risk where we are generally managing existing flood risk effectively.

The settlements in this sub-area have been built in the floodplain and as a result have a history of flooding. In the past flood defences have been constructed and maintenance work carried out to reduce flood

risk. Although flood risk is not expected to increase significantly in the future, as there is a concentration of people and property within the floodplain, it is still feasible and effective to continue with the current level of flood risk management. This will be achieved by continuing with existing flood risk management activities.

The key messages

- The current level of flood risk management should be continued.
- Continue current flood risk management activities.

Proposed actions to implement the preferred policy

- Continue with the flood warning service including the maintenance of flood warning infrastructure (such as river flow gauging stations) and public awareness plans.
- Work with planners to influence the location, layout and design of new and redeveloped property. Ensure that only appropriate development is allowed on the floodplain through the application of Planning Policy Statement 25 (PPS25).
- Continue with the current level of flood risk management in Framlingham.
- Work with partners to develop emergency response plans for critical infrastructure and transport links at risk from flooding.

Halesworth

Our key partners are:

Waveney District Council

The issues in this sub-area

This sub-area includes the small urban area of Halesworth which has a high population density. Halesworth lies on the Chediston watercourse in the upper parts of the River Blyth catchment. There are no formal flood defences in this sub-area. Currently, 45 properties within this sub-area are at risk from the 1% annual probability river flood. There is some agricultural land, some railway, parts of the A144 and 1 electricity sub-station at risk during a 1% annual probability river flood. Table 9 details flood risk to people and property in this sub-area.

Table 9 Risk to people and property within the Halesworth sub-area during a 1% annual probability river flood

	Current	Future (2100)
Number of people at risk	48	49
Number of properties at risk	45	58

The vision and preferred policy

Policy option 3: Areas of low to moderate flood risk where we are generally managing existing flood risk effectively.

The settlements in this sub-area have been built in the floodplain and as a result have a history of flooding. In the past flood defences have been constructed and maintenance work carried out to reduce flood

risk. Although flood risk is not expected to increase significantly in the future, as there is a concentration of people and property within the floodplain, it is still feasible and effective to continue with the current level of flood risk management. This will be achieved by continuing with existing flood risk management activities.

The key messages

- The current level of flood risk management should be continued.
- Continue current flood risk management activities.

Proposed actions to implement the preferred policy

- Continue with the flood warning service including the maintenance of flood warning infrastructure (such as river flow gauging stations) and public awareness plans.
- Work with planners to influence the location, layout and design of new and redeveloped property. Ensure that only appropriate development is allowed on the floodplain through the application of Planning Policy Statement 25 (PPS25).
- Continue with the current level of flood risk management in Halesworth.
- Work with partners to develop emergency response plans for critical infrastructure and transport links at risk from flooding.

Suffolk Coast and Heaths

Our key partners are:

Suffolk Coastal District Council

Babergh District Council

Waveney District Council

The issues in this sub-area

This sub-area contains a large area of lowlying coastal plain which is largely uninhabited, but there are small communities such as Knodishall, Wangford, Wrentham and Alderton. The rivers and streams of this sub-area are largely undefended. River flood risk to people and property is low. Currently 49 properties are at risk from the 1% annual probability river flood.

There is some agricultural land, some railway and parts of the A12 at risk in a 1% annual probability river flood. Environmental sites are most vulnerable receptors to flooding in this sub-area. The majority of the environmental sites at risk are wetland habitats that could benefit from increased frequency of flooding. For many of the environmental sites at risk, the area affected by flooding is small and we do not expect any adverse effects. Tidal and coastal flooding within this sub-area is covered by the SMP. Table 10 details flood risk to people and property in this sub-area.

Table 10 Risk to people and property within the Suffolk Coast and Heaths sub-area during a 1% annual probability river flood, taking into account current flood defences

	Current	Future (2100)
Number of people at risk	147	183
Number of properties at risk	49	64

The vision and preferred policy

Policy option 2: Areas of low to moderate flood risk where we can generally reduce existing flood risk management actions.

Within this coastal sub-area the current activity to manage flooding is out of proportion with the level of flood risk, or is not effective. In general, overall flood risk management activities will be reduced within the sub-area. However where flood risk is more concentrated (for example in towns and villages), or where an increase in river flooding would have a negative impact on an internationally designated conservation area, existing actions to manage flooding may be continued.

The preferred approach is to reduce bank and channel maintenance in some locations. This will enable limited resources to be targeted to other areas of the catchment where the risks are greater, to ensure value for money. We need to make sure that the way the policy is implemented in this sub-area does not cause adverse effects for internationally designated conservation sites.

Flood warning is an important way of managing the consequences of flooding throughout the catchment. Therefore, the local tidal flood warning infrastructure needs to be maintained.

The key messages

- Where feasible, flood risk management activities will be reduced as the current activity to manage flooding is out of proportion with the level of flood risk.
- Maintain flood warning infrastructure (such as river flow gauging stations) to ensure that an effective flood warning service can be provided throughout the catchment.
- The implementation of this policy must not cause adverse effects for internationally designated conservation areas.

Proposed actions to implement the preferred policy

- Investigate options to cease or reduce current bank and channel maintenance and flood defence maintenance. In addition, changes in land use, development of sustainable farming practices and environmental enhancement should be investigated to mitigate an increase in flooding in the future.
- Continue with the flood warning service including the maintenance of flood warning infrastructure (such as river flow gauging stations) and public awareness plans.

- Encourage planners to develop policies to prevent inappropriate development in the floodplain using measures set out in Planning Policy Statement 25 (PPS25). Any new development should be targeted to areas with lowest flood risk, must not increase risk to existing development and should provide opportunities to improve river environments.
- Work with partners to develop emergency response plans for transport links at risk from flooding.
- Work with our partners to put in place the recommendations from the Haven Gateway Water Cycle Study to ensure that water resources and flood risk management issues can be addressed in a sustainable way to accommodate future planned growth.
- Work with partners to investigate the extent and impact of surface water flooding around the town of Kessingland.
- Develop resilience and resistance projects to investigate the impact and extent of flooding on the environmental sites and also the impact of reducing maintenance on the sites.



↑ View towards Orfordness, River Ore

Ipswich

Our key partners are:

Ipswich Borough Council

Suffolk County Council

Anglian Water

Essex and Suffolk Water

The issues in this sub-area

The town of Ipswich is the most densely populated urban centre in the catchment. The River Gipping flows through the centre of this sub-area, becoming the River Orwell. It has a developed floodplain with formal river and tidal flood defences.

The probability of river and tidal flood risk has been reduced in Ipswich through the construction of flood defences. However, the area is still at risk from significant tidal flooding due to the overtopping of these defences. The defences in Ipswich are 25 to 30 years old and are nearing the end of their effective life. Sections of the defences have failed in the past. Failure of the defences in Ipswich will significantly increase the risk from flooding, particularly the risk from river flooding.

Currently seven properties within Ipswich are at risk from the 1% annual probability river flood. Currently 657 properties within Ipswich are at risk from the 0.5% annual probability tidal flood.

There is less than 1 km² of grade two agricultural land and less than 0.4 km² of grade three agricultural land at risk in the 1% annual probability river flood. There is no grade two agricultural land and approximately 0.4 km² of grade three agricultural land at risk in a 0.5% annual probability tidal flood. There is some railway and parts of the A14 at risk in the 1% annual probability river flood. There is some railway, parts of the A14 and A12 and seven electricity sub-stations at risk in the 0.5% annual probability tidal flood. Tables 5 and 6 detail flood risk to people and property in the Ipswich and suburbs sub-area during river and tidal flooding.

Table 11 Risk to people and property within the Ipswich and suburbs sub-area during a 1% annual probability river flood, taking into account current flood defences

	Current	Future (2100)
Number of people at risk	0	742
Number of properties at risk	7 (commercial properties)	461

Table 12 Risk to people and property within the Ipswich and suburbs sub-area during a 0.5% annual probability tidal flood, taking into account current flood defences

	Current	Future (2100)
Number of people at risk	897	1,641
Number of properties at risk	657	1,532

This area is highly urbanised and there is significant development behind the defences. If the defences in this area were to fail the consequences would be significant.

We currently manage the risk of tidal and river flooding by widened and reinforced channels, flood walls, raised defences, embankments, water level control structures and upstream washlands. The benefits of this approach will reduce in the future as storms are expected to become more frequent and intense.

Ipswich is also at risk from surface water and sewer flooding due to the high concentration of impermeable surfaces.

The vision and preferred policy

Policy option 5: Areas of moderate to high flood risk where we can generally take further action to reduce flood risk.

Historically, flood defences have been constructed to reduce the probability of river and tidal flooding. In the future the standard of protection offered by existing defences may decline. For Ipswich, the preferred approach is to continue with and implement the recommendations from the Ipswich Strategy, which considers the construction of a tidal barrier. Investigation into the impacts of surface water flooding and urban drainage issues may also identify the need for further management.

For this policy to be sustainable it must be recognised that flood defences cannot completely remove the flood risk. There will be risk to people and property behind the defences, as they could fail or be overwhelmed. With people at risk from several sources of flooding, organisations will need to work together to develop flood awareness and emergency response plans. We must also work in partnership with the local planning authority and target future development to previously developed land.

The key messages

- Continue with the Ipswich Strategy and implement the recommendations to reduce flood risk in the town.

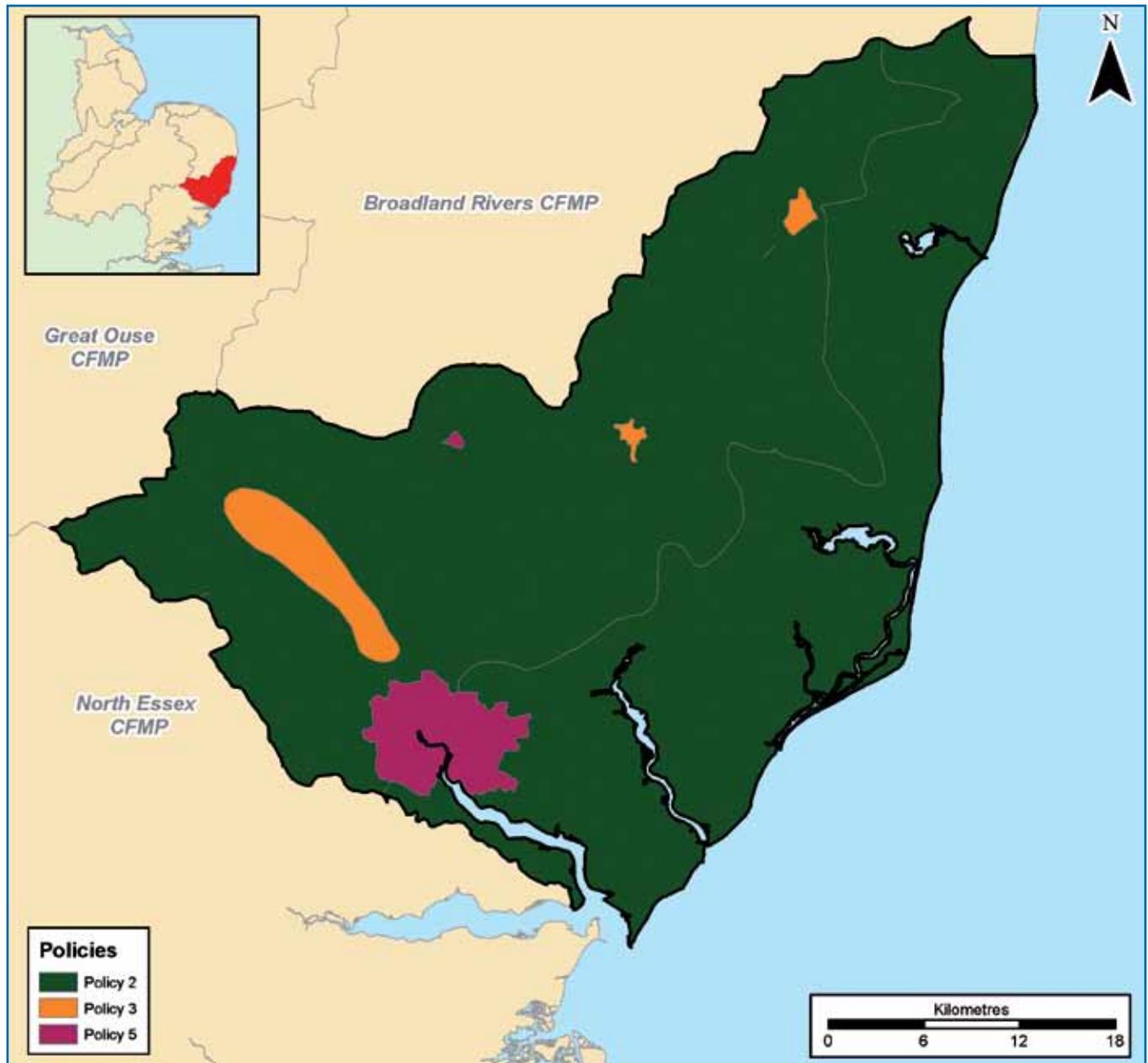
- Emergency response and flood awareness plans will be used to manage flood risk from the flood defences failing or being overwhelmed.
- Within many of these settlements organisations need to take an integrated approach to managing river, tidal and surface water flooding.
- Work with planners to target future development to previously developed land.

Proposed actions to implement the preferred policy

- Reduce the consequences of flooding by improving public awareness of flooding and encouraging people to sign up to, and respond to, flood warnings. Flood awareness plans will inform people about the risk of defences breaching and the actions they can take to protect themselves and their property.
- Develop emergency response plans to manage flood risk from the defences failing or being overwhelmed, and work with key partners to manage flood risk to critical infrastructure.
- Continue with the Ipswich Strategy to construct a tidal barrier and to maintain river defences.
- Work with partners to develop a Surface Water Management plan for Ipswich.
- Work with partners to implement the recommendations from the Ipswich Strategic Flood Risk Assessment (SFRA) for future development to be targeted to previously developed land and regeneration to be prioritised within the inner areas of Ipswich. Planners should be encouraged to develop policies for new development and regeneration that incorporate resilience measures so that the location, layout and design of development can help to mitigate residual flood risk. Regeneration should also provide opportunities to improve the environment and make space for water.
- Work with our partners to put in place the recommendations from the Haven Gateway Water Cycle Study to ensure that water resources and flood risk management issues can be addressed in a sustainable way to accommodate future planned growth.

Map of CFMP policies

Map 4 The flood risk management policies for the East Suffolk CFMP area



Notes

Notes

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