

River Stour 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 River Stour Catchment Flood Management Plan (CFMP). This CFMP gives an overview of the flood risk in the River Stour catchment and sets out our preferred plan for sustainable flood risk management over the next 50 to 100 years.

The River Stour 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, groundwater, 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 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.

The main source of flood risk in the Stour CFMP is from both river and tidal flooding and the risk to people and property is high, especially in Ashford, Canterbury and Dover.

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 management flood risk in the future. The key partners we have worked with are Defra, Ashford Borough Council, Canterbury City Council, River Stour (Kent) Internal Drainage Board and Natural England.

This is a summary of the main CFMP document, if you need to see the full document an electronic version can be obtained by emailing enquiries@environment-agency.gov.uk or alternatively paper copies can be viewed at any of our offices in Southern Region.

A handwritten signature in black ink that reads "T. Willison".

Toby Willison
Regional Director, Southern Region

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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:

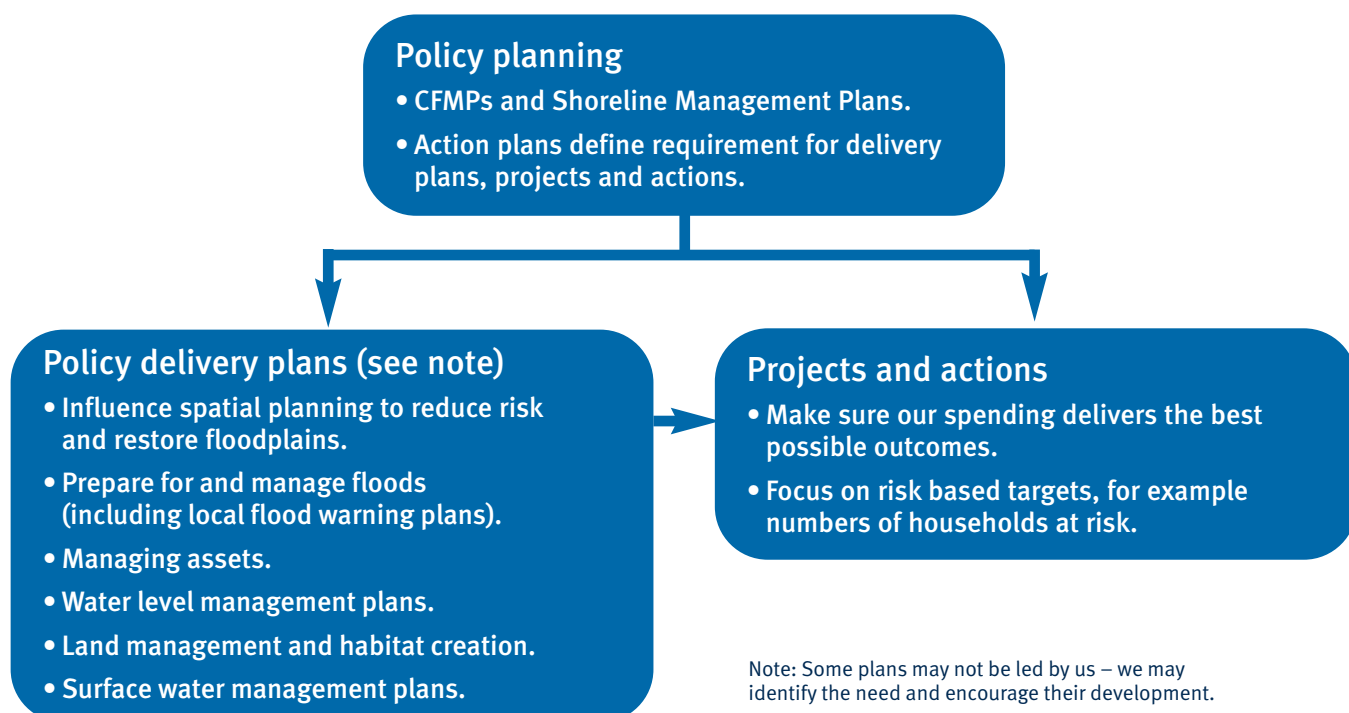
- The Environment Agency, who will use the plan to guide decisions on investment in further plans, projects or actions;
- Regional planning bodies and local authorities who can use the plan to inform spatial planning activities and emergency planning;

- 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 1,200 square kilometres area lies in the county of Kent and covers all or parts of the Ashford, Canterbury, Dover, Maidstone, Shepway, Swale and Thanet Districts. It is home to around half a million people.

The Stour has five main tributaries draining the clay headwaters which meet in the large urban area of Ashford. The river then flows through rural chalk downlands into Canterbury where the channel is highly modified with flood defences, sluices, gates and mills controlling the flow. Below Canterbury, the river enters the tidally influenced Lower Stour area and flows through internationally significant wetland habitat areas of the Stodmarsh and Hacklinge Marshes, before flowing out into Pegwell Bay.

The Nailbourne and Petham Bourne are ‘winterbournes’ that flow only once every few years. The small streams around Whitstable and Herne Bay that make up the Oyster Coast Brooks drain a clay area, giving them flashy characteristics. In contrast, the Dour in Dover and the Pent in Folkestone have chalk catchments that respond slowly to rainfall, and are dominated by groundwater levels in the chalk.

Over the years, floodplains have been modified creating a series of urban centres interspersed with agricultural areas important for flood storage. Flood storage reservoirs were completed in the Upper Stour in the 1990s, offering protection for Ashford.

Major changes have occurred over the last few centuries, the most significant being the draining of the Lower Stour which historically met the sea at Stourmouth. Changes in flow regime and the building of defences have modified this to valuable agricultural land.

83% of the area is agricultural land and some is amongst the most productive land in the country.

There are a number of historically important sites throughout the catchment.

Ashford is a major growth area that is likely to double in size in the next 20 years. Canterbury, Dover and Folkestone are also recognised as potential development sites.



← Aldington flood storage reservoir, November 2000.

Map 1. Overview map of Stour catchment.



‘Over the years, floodplains have been modified creating a series of urban centres interspersed with agricultural areas important for flood storage.’

Current and future flood risk

Overview of the current flood risk

Flood risk is the combination of the probability of flooding and its impact, that is, the chance of it happening and the consequences if it does happen. We have assessed flood risk across the CFMP area using broad-scale computer modelling, though making best use of existing knowledge and models where appropriate. Flood risk figures take into account current flood defences.

Several areas within the Stour CFMP study area are at risk from river flooding and records of major events go back to a great storm in the year 1272. Over the last 60 years the catchment has flooded regularly, experiencing at least nine major flood events. Prolonged rainfall in 2000/01 led to the most severe flood events in living memory in this area.

The main flood risks come either from the River Stour during prolonged rainfall, or from flash flooding on the short steep rivers in the coastal towns. High tides can worsen the effect of inland flooding as the flood waters are unable to drain to the sea. Flooding also damages farmland, which can be left inundated for long periods of time.

Ashford has historically been particularly vulnerable the surrounding five tributaries converging in the town. The storage reservoirs built in the 1990s now offer a high standard of protection.

Canterbury has not experienced extensive flooding for some time because walls protect most areas from flooding.

On years when the chalk groundwater-driven 'winterbournes' are flowing, flooding can be a major issue - the Petham Bourne caused flooding in 2000 having previously not flowed since 1930. Once they are flowing, these sub-catchments can respond rapidly to subsequent rainfall events.

Where is the risk?

The map on page 10 illustrates the estimated extent of a 1% annual probability (1 in 100 year) flooding event occurring within the CFMP area.

The areas with the highest concentration of properties at risk from river flooding are tabulated on page 9.



↑ The River Stour at Chartham.

How we currently manage the risk

Major urban areas have developed next to the River Stour, subsequently river structures and flood defences have also developed as an integral part of these towns. Existing defence infrastructure acts to defend the urban areas at risk and we are therefore looking for opportunities to revert the catchment back to its natural state. Our activity is prioritised on a risk basis and our main activities include:

- **Maintenance of existing flood defences and structures** such as flood alleviation scheme on the Nailbourne around Bridge and the Little Stour Flood Relief Channel.
- **Capital schemes**, to create new flood defences and replace existing ones.
- **Flood forecasting and warnings.**
- **Development control** to influence spatial planning so that new developments are sited away from flood risk areas, or appropriate mitigation measures.
- **Flood risk mapping.**
- **Strategic planning** to plan long term investment.
- **Environmental improvements.**

Table 1. Locations of towns and villages with 25 or more properties at risk in a 1% annual probability river flood.

| Number of properties at risk | Locations |
|------------------------------|---|
| >1000 | Ashford and Canterbury |
| 500 to 1000 | Dover |
| 100 to 500 | Oyster Coast Brooks, Folkestone and Nailbourne |
| 50 to 100 | Upper Stour, Middle Stour, Lower Stour and Sandwich Bay |
| 25 to 50 | None |

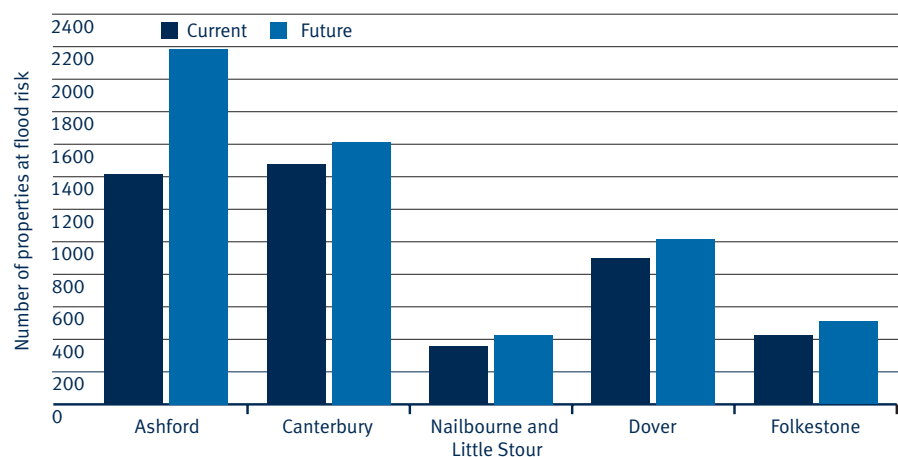
Table 2. Critical infrastructure at risk:

5 emergency services, 7 schools, 5 sewage/water treatment works, 32 electricity sub-stations

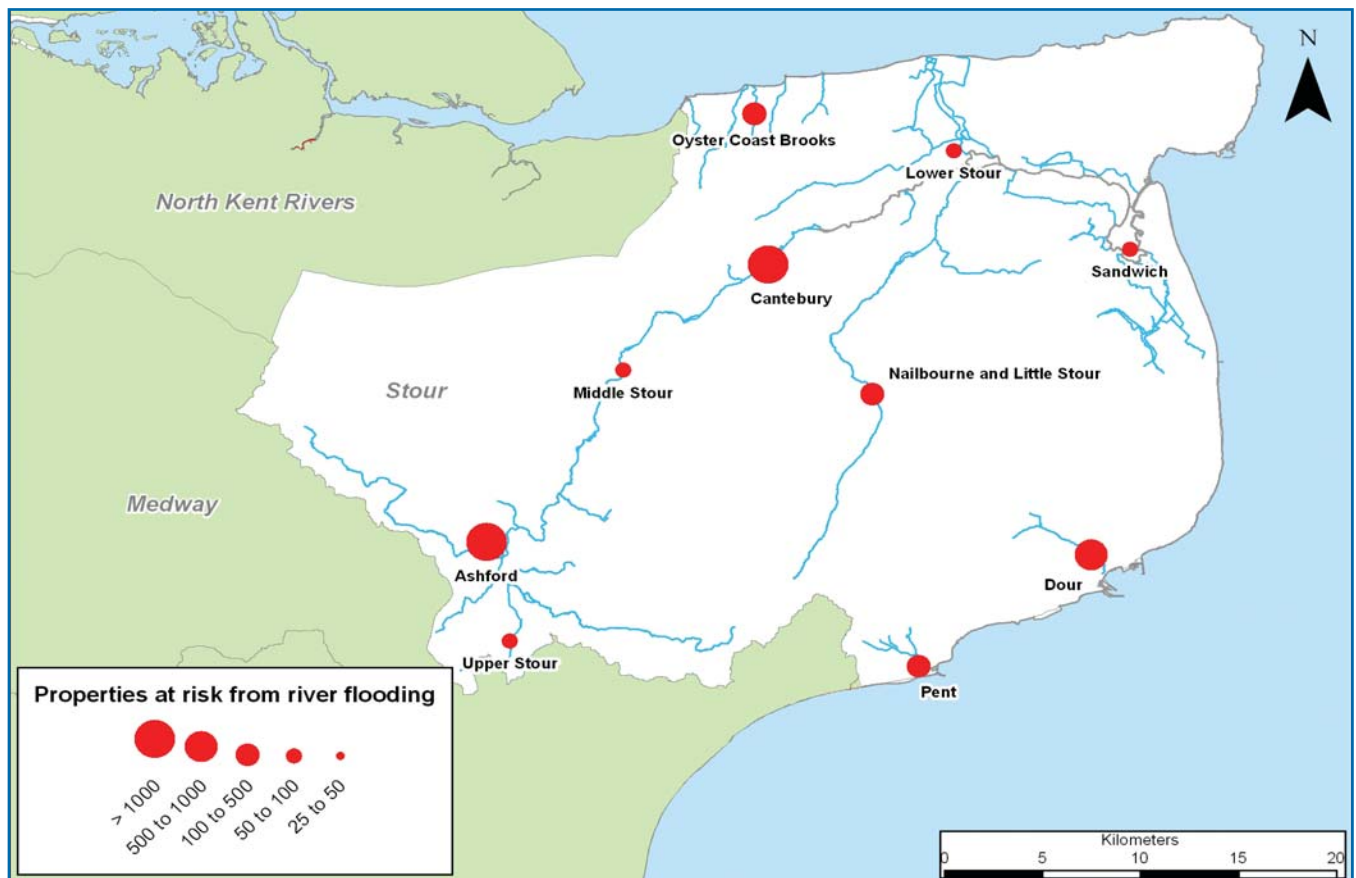
Table 3. Designated sites at risk:

Stodmarsh RAMSAR, SAC, SPA

Figure 2. Current and future (2100) flood risk to property from a 1% annual probability river flood, taking into account current flood defences.



Map 2. Flood risk to property in a 1% annual probability river flood, taking into account current flood defences.



The impact of climate change and future flood risk

The effect that flooding will have in the future is influenced by a range of issues such as climate change, changes in land use such as development, and changes in how land is managed.

Predictions of future change are based on understanding the existing condition of the catchment, an extrapolation of trends over the long term (up to 100 years), and a high level review of likely future change based on research findings and knowledge. Ashford has been identified as one of a number of key urban areas where there will be increased development within the next 20 years. The increase in urban development that will take place in Ashford will affect flood risk locally, particularly in South Ashford and South Willesborough and around the

Ruckinge and Whitewater Dyke. The impact on flows and flood levels through Ashford is, however, limited and continues to decrease through the Middle Stour. Over the whole catchment, the effect of urban growth upon flooding levels is minimal. Changes in land use and land use management, particularly agricultural practices, tend to have an impact on the peak flows of the various rivers in the Stour CFMP area. All reaches of the River Stour are modelled as being affected by land use change, with the largest changes seen in the Upper Stour. The change in the volume of water reaching the river and also the change in timing combine to create the change in flood risk. From the three drivers tested, climate change has the largest impact on the Stour CFMP catchment with up to 20% increase in peak flood flows. This scenario is

used to assess likely impacts in the catchment. In the Stour catchment the future flood risk is likely to be from river flooding and, to a lesser degree, surface water flooding. Our appraisal of the future risk in the catchment reveals the number of properties at risk to the 1% annual probability event will increase from 5023 to 6165 properties by the year 2100. The majority of these properties are located in Ashford, Canterbury, Folkestone and Dover.

The key trends are:

- More frequent and intense storms causing more widespread and regular flooding from drainage systems and some rivers.
- More rain in winter, increasing the likelihood of large scale flood events.

Future direction for flood risk management

Approaches in each sub-area

We have divided the Stour catchment into nine separate 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 4.

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.

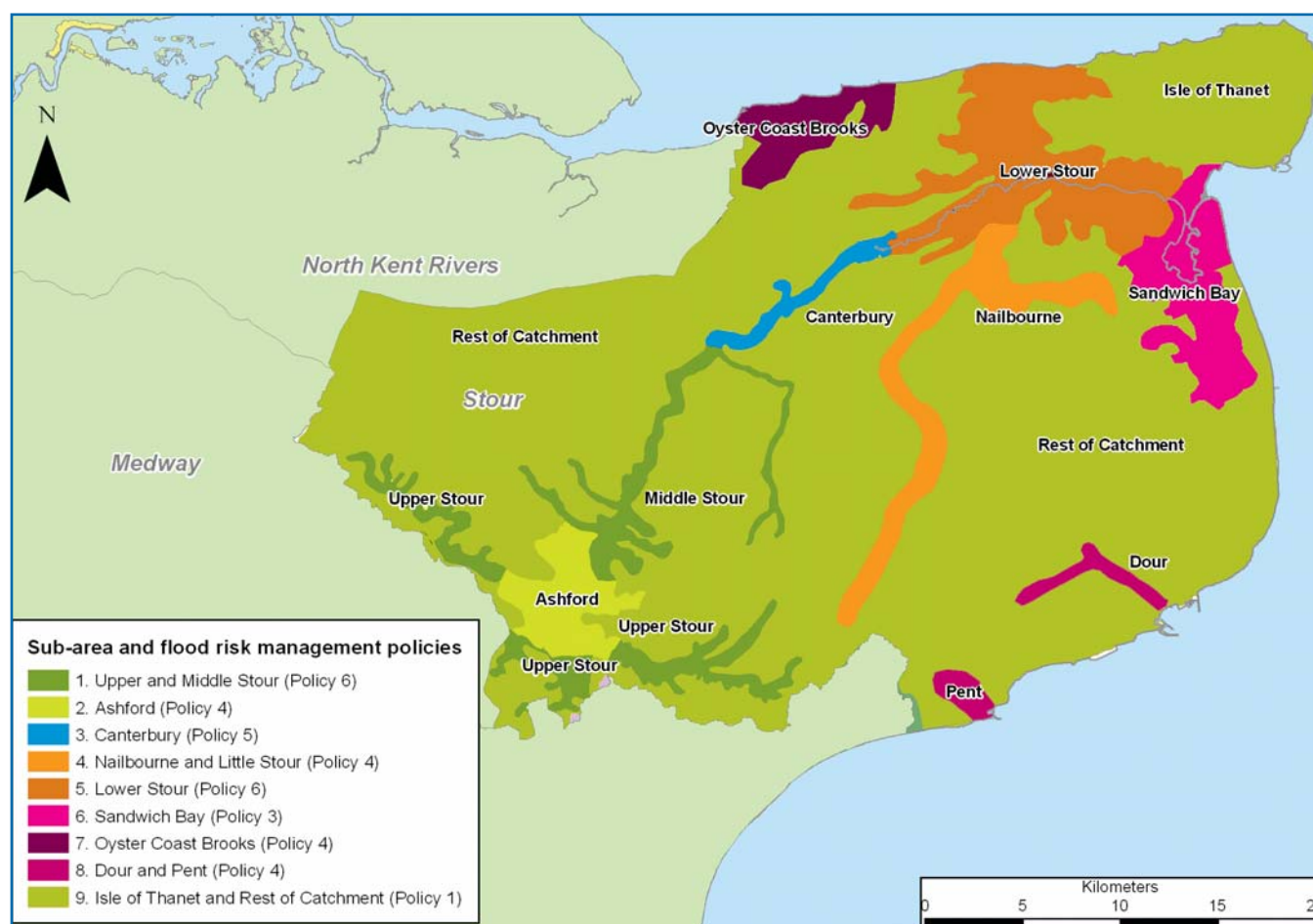


Table 4. Policy options.

→ 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.

Upper and Middle Stour

Our key partners are:

Ashford Borough Council

Shepway District Council

Natural England

Impact of a 1% annual probability flood event

| | Today | Future (2100) |
|------------------------------|-------|---------------|
| Number of properties at risk | 124 | 141 |

The issues in this sub-area

The Upper and Middle Stour sub-area includes the flood storage reservoirs of Aldington and Hothfield which protect Ashford and other locations downstream on the River Stour.

Within the Upper Stour there are some small residential areas close to the rivers that are affected by flooding, Wye is the only village at risk of flooding in the Middle Stour with a few properties at risk.

The sub-area covers the section of the Stour between the M20 and Shalmsford Street, and the Petham Bourne, which flows about once every hundred years. This is an important area for storing floodwater for Canterbury during flood events. In 2000, flooding from the Petham Bourne around Shalmsford Street disrupted the railway between Ashford and Canterbury.

The vision and preferred policy

Policy Option 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.

The key messages

There is potential in this sub-area to increase the amount of flood storage, which will reduce the flood risk to Ashford, Canterbury, Ashford and downstream on the River Stour.

The level of flood risk to people and properties is low and we could control and reduce it using this policy. The impact on agricultural land is limited to the floodplain areas which are fairly confined.

Implementing this policy could help to create around 235 hectares of new wetland habitat on the Great Stour floodplain and within the Middle Stour, in an area designated as a Site of Nature Conservation Importance for its floodplain and chalk river features.

Proposed actions to implement the preferred approach:

- Develop a System Asset Management Plan (SAMP) to ensure existing defences are in good condition and able to accommodate increased flooding due to climate change.
- Carry out Upper Stour Strategic Review, a wider study from Upper Stour to Wye, exploring options for flood risk management including looking for opportunities for increasing floodplain connectivity, storage and attenuation.
- Carry out Middle Stour strategy, a wider study from Middle Stour to Fordwich, focusing on reducing flood risk to Canterbury through increased floodplain connectivity, storage and attenuation.



↑ Inundated flood plain at Godmersham Park in the Middle Stour, January 2003.

Ashford

Our key partners are:

Ashford Borough Council

Impact of a 1% annual probability flood event

| | Today | Future (2100) |
|------------------------------|-------|---------------|
| Number of properties at risk | 1415 | 2184 |

The issues in this sub-area

Flooding has occurred in South Willesborough and this area is still at risk of flooding. The areas at Park Farm, around Singleton Lake and South Ashford are at particular risk of flooding, especially when looking at the future climate change scenarios. When flooding occurs, there are large volumes of water but it is generally slow moving where properties are flooded. Flood depths vary but are approximately 0.5m during the 1% annual probability flood event. Areas of South Ashford and South Willesborough flood up to 1m deep.

The vision and preferred policy

Policy Option 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.

The key messages

The existing flood storage reservoirs at Hothfield and Aldington provide important flood protection to residential areas in Ashford. Upper Stour Strategic Review is currently developing recommendations for the future. The risk to people in Ashford is set to increase by over 50% with climate change. Overtopping will become more common, flooding not only properties and businesses, but recreational areas along the riverside. In the future, 30,000 additional properties are proposed for Ashford. Continued close working with Ashford Borough Council and Ashford's Future will ensure that redevelopment/new development takes account of flood risk constraints and opportunities, adheres to PPS25, promotes the use of Sustainable urban Drainage Systems (SuDS) and does not have any negative flood impacts.

Proposed actions to implement the preferred approach:

- Develop a System Asset Management Plan (SAMP) to ensure existing defences in Ashford are in good condition and able to accommodate increased flooding due to climate change.
- Surface Water Management Plan (SWMP) for Ashford.
- Carry out Upper Stour Strategic Review, identifying a range of flood risk management options.

Canterbury

Our key partners are:

Canterbury City Council

Impact of a 1% annual probability flood event

| | Today | Future (2100) |
|------------------------------|-------|---------------|
| Number of properties at risk | 1478 | 1614 |

The issues in this sub-area

The River Stour through Canterbury has been highly modified, with the Stour incorporated into two channels which are interconnected by a complicated series of sluices and structures. The city is protected from flooding by a series of river defences, which can be overtopped during extreme events. Blackfriars is affected by a 4% probability flood. Medieval walls are affected by a 1% annual probability flood.

The current flood risk to Canterbury is reduced by the important areas of flood storage upstream of Canterbury and through the Middle Stour. During extreme events such as the 1% annual probability flood event the flood storage is exhausted and flooding affects many areas in Canterbury.

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.

The key messages

The number of properties at risk of flooding in Canterbury is already high. Flood risk is set to increase with the impact of climate change.

Canterbury has a very high social vulnerability. As the risk is predicted to increase into the future, Policy 5 is the most suitable option to reduce risk to the high numbers of people, property and culturally designated sites in this area.

Proposed actions to implement the preferred approach:

- Carry out Middle Stour strategy, a wider study from Middle Stour to Fordwich, focusing on reducing flood risk to Canterbury by sustainable risk measures.
- Develop a System Asset Management Plan (SAMP) to ensure existing defences in Canterbury are in good condition and able to accommodate increased flooding due to climate change.
- Surface Water Management Plan (SWMP) for Canterbury.



↑ Flooding of a riverside pub garden at Wye, November 2000.

Nailbourne and Little Stour

Our key partners are:

Canterbury City Council

Dover District Council

Shepway District Council

Impact of a 1% annual probability flood event

| | Today | Future (2100) |
|------------------------------|-------|---------------|
| Number of properties at risk | 356 | Not available |

The issues in this sub-area

The Nailbourne flows infrequently (about every seven years) after prolonged rainfall. The Nailbourne and Little Stour are groundwater fed. High groundwater levels increase flood risk by raising baseflows in rivers and can result in flows from spring lines away from the rivers.

Because flow and flooding occurs infrequently, the channel has not been maintained. Structures have been built over the channels, which do not have enough capacity to allow the flow of water during flood events. There is also a risk of flooding where the channel has been diverted. Groundwater flooding and surface water drainage problems occur along the route of the original channel.

Flooding occurs through the villages along the Nailbourne and Little Stour. This also affects the roads that connect the villages. As groundwater causes the flooding, flooding can last for weeks, causing major disruption to these communities, with approximately 400 properties at risk of flooding.

The vision and preferred policy

Current flood risk is managed at an appropriate level, although we may need to do more to make sure that the risk does not rise in the future. The selected policy is Policy 4.

Policy Option 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.

The key messages

Flooding is very infrequent and the level of flood risk is limited to small villages. We have completed some work to improve the structures and divert channels on the Little Stour to improve conveyance and by Canterbury City Council on the Upper Nailbourne thus reducing the risk from flooding. As such, the current flood risk is managed at an appropriate level, although we may need to do more to make sure that the risk does not rise in the future.

Proposed actions to implement the preferred approach:

- Carry out groundwater study focusing on understanding the influence of groundwater on the Nailbourne and the Little Stour, and exploring options to reduce the expected increase in flood risk due to climate change.



↑ The Nailbourne.

Lower Stour

Our key partners are:

Canterbury City Council

Dover District Council

Thanet District Council

Natural England

The issues in this sub-area

The Lower Stour is a very low-lying flat area with a tidal limit at Fordwich (with the tide having increasing influence as the river moves downstream). The banks of the Stour have been built up by channel maintenance activities and farming practices.

The Lower Stour can be affected by both fluvial and tidal flooding. During flood events the water comes out of banks and then slowly spreads across this flat area. The area of inundation is quite large, affecting mainly agricultural land. Stodmarsh is an internationally and nationally designated fresh water site part of which can be adversely affected by severe floods. Part of the site lies behind flood defences although some of these are in a poor condition.

Impact of a 1% annual probability flood event

| | Today | Future (2100) |
|------------------------------|-------|---------------|
| Number of properties at risk | 59 | 79 |

The vision and preferred policy

Policy Option 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.

The key messages

The Lower Stour experiences flooding from fluvial and tidal areas and there will be an increase in flooding with climate change. The aim of this policy is to take positive action to reduce the risk of flooding to the existing properties and high grade agricultural land both on the Lower Stour and in other parts of the Stour catchment by identifying areas that could be flooded more frequently. The Marshes and Levels of the Lower Stour are ideal areas to reintroduce or expand valuable wetland habitats. Any long term flood management actions need to take into account the potential positive and negative impacts on Stodmarsh.

Proposed actions to implement the preferred approach:

- We will manage and protect the Stodmarsh Special Area of Conservation from the impacts of climate change through the Future of Stodmarsh Study.
- Carry out a detailed study of the Lower Stour, identifying specific areas which can set aside for flood management in the form of wetlands.



↑ Sluice on the Lower Stour Marshes.

Sandwich Bay

Our key partners are:

Dover District Council

Thanet District Council

Canterbury City Council

Natural England

The issues in this sub-area

This policy unit and, in particular Sandwich, is at risk of tidal flooding from the overtopping of sea defences as well as from the storm surges moving up the Stour. The tidal flood risk in this area has been assessed under the Pegwell Bay to Kingsdown coastal defence strategy. The Stonar Cut provides a 'short cut' for the Stour, allowing fluvial floodwater to bypass the Sandwich area and reach the sea. This structure is crucial in protecting Sandwich.

The vision and preferred policy

Policy Option 3 – areas of low to moderate flood risk where we are generally managing existing flood risk effectively.

Demountable tidal defences →
at Sandwich.

Impact of a 1% annual probability flood event

| | Today | Future (2108) |
|------------------------------|-------|---------------|
| Number of properties at risk | 93 | 95 |

The key messages

The risk of flooding from the impacts of tide-locking is likely to increase as sea levels increase under the impacts of climate change, but some of this will be mitigated with sea defence improvements expected in other plans. There are additional opportunities to reduce fluvial flood risk within the Sandwich Bay area from upstream policies, for example increasing flood storage within the Lower Stour.

Proposed actions to implement the preferred approach:

- Tidal flood risk will be addressed through the Sandwich Tidal Scheme. See the Pegwell Bay to Kingsdown coastal defence strategy for further details.
- We will make decisions on how and when the water on the marshes upstream of Sandwich marsh should be moved around and managed through the Sandwich Bay to Hacklinge Marshes Water Level Management Plan (WLMP).
- We will address the issues of surface water flooding and drainage through the Surface Water Management Plan (SWMP) for Sandwich.



Oyster Coast Brooks

Our key partners are:

Canterbury City Council

The issues in this sub-area

This policy unit covers the catchment areas of the Oyster Coast Brooks. This includes Swalecliffe Brook, Westbrook, Plenty Brook, Kite Farm Ditch and Gorrell Stream. The Oyster Coast Brooks have a flashy flood characteristic that is intensified by tidal locking and small culverts and drainage pathways. In recent years, properties have been flooded in Whitstable, Swalecliffe and Herne Bay. Future climate change with forecast increasing storminess will increase urban run-off and increase the risk of surface water flooding. The coastal areas of the Oyster Coast Brooks are also at risk from tidal flooding, though there are sea defences along this whole stretch of coast. The urban areas are also susceptible to surface water flooding as shown in the July 2007 flood event in Whitstable.

The vision and preferred policy

Policy Option 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.

Impact of a 1% annual probability flood event

| | Today | Future (2100) |
|------------------------------|-------|---------------|
| Number of properties at risk | 137 | 218 |

The key messages

The selected policy for the Oyster Coast Brooks should ensure that tide-locking flood risk does not increase as a result of climate change, and we will work with the Council and Water Company to work towards reducing the risk of surface water flooding.

Proposed actions to implement the preferred approach:

- Carry out flood mapping project to increase our understanding of watercourses.
- Carry out pre-feasibility study on options for flood storage and local improvements in the policy unit.
- Develop a System Asset Management Plan (SAMP) to ensure existing defences are in good condition and able to accommodate increased flooding due to climate change.



↑ Flooding at Whitstable in 2008.

Dour and Pent

Our key partners are:

Dover District Council

Shepway District Council

The issues in this sub-area

The Rivers Dour and Pent are highly modified watercourses that flow mainly through the urban areas of Dover and Folkestone respectively.

The Dour has a groundwater dominated flow system that can prolong high water levels. However, flooding is caused by heavy storms when run-off causes flooding from the both the river and surface water. Blocked culverts and structures within the main channel and in the urban drainage network are the main cause of localised flooding.

Similarly, flooding along the Pent is caused by poor urban drainage and high intensity storm events. There is also a risk of tide-locking in the future as a result of sea-level rise. Shepway District Council has completed a series of flood defence schemes following extreme rainfall events in the late 1990s. These flood defences significantly reduced the flood risk to urban areas of Folkestone, leaving just a slight risk of flooding.

Impact of a 1% annual probability flood event

| | Today | Future (2100) |
|------------------------------|-------|---------------|
| Number of properties at risk | 1325 | 1524* |

*Future scenario figure extrapolated from similar catchment modelling in Southern region.

The vision and preferred policy

Policy Option 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.

The key messages

The policy will allow us to analyse structure and the channel further, reducing the flood risk but also taking into account biodiversity and barriers that prevent species moving. As the Dour is a heavily modified river, meeting this objective also meets the requirements of the Water Framework Directive.

The flood defence schemes in Folkstone along the Pent has reduce the level of risk to some areas from the 1% event. Further study of the Pent Stream is required as this is a newly enmained watercourse, this shall enhance our understanding and decide the best way of managing and maintaining it in the long term.

Proposed actions to implement the preferred approach:

- Develop a System Asset Management Plan (SAMP) to ensure existing defences in Folkestone and Dover are in good condition and able to accommodate increased flooding due to climate change.
- Surface Water Management Plans (SWMP) for Folkestone and for Dover .
- Carry out the Dour fluvial study, focusing on understanding future flood risk in the Dour in Dover.
- Carry out Pent fluvial study, focusing on understanding flood risk from the Pent in Folkestone.



↑ Crabble Mill on the River Dour in Dover.

Isle of Thanet and the rest of catchment

Our key partners are:

- Ashford Borough Council
- Canterbury City Council
- Dover District Council
- Maidstone Borough Council
- Shepway District Council
- Swale Borough Council
- Thanet District Council

The issues in this sub-area

In the past there has been little or no risk of flooding from rivers, surface water or foul water flooding.

The vision and preferred policy

Policy Option 1 – areas of little or no flood risk where we will continue to monitor and advise.

Impact of a 1% annual probability flood event

| | Today | Future (2100) |
|------------------------------|-------|---------------|
| Number of properties at risk | 0 | 0 |

The key messages

In the past there has been little or no risk of flooding from rivers, surface water or foul water flooding. Large parts of upland areas are chalk, which is characterised by a lack of surface water features. Flood risk management is not necessary in these areas but will continue to have drainage consents and other site specific drainage issues addressed.

Proposed actions to implement the preferred approach:

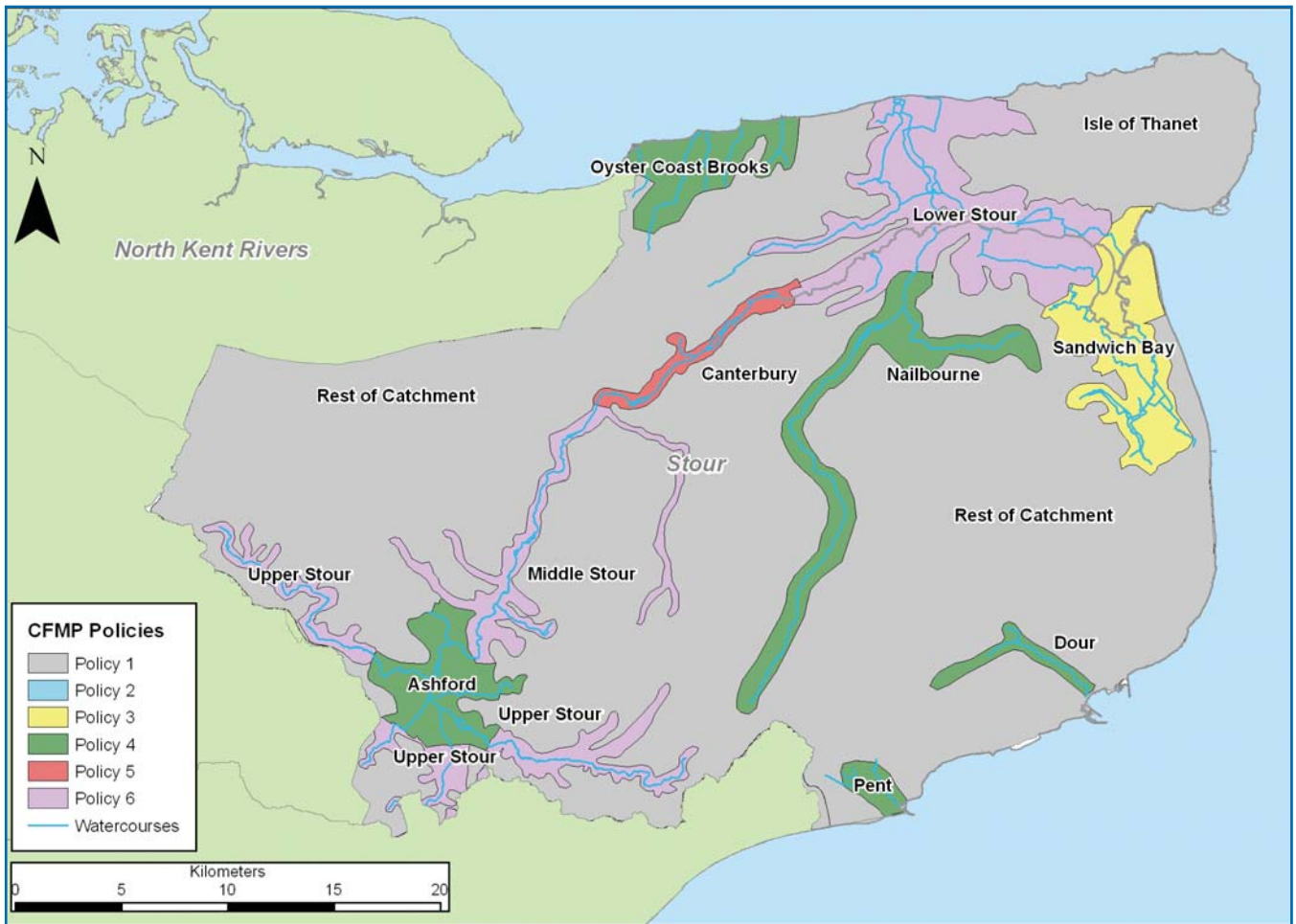
No actions proposed.



Kent Downs (photo courtesy of Kent Downs AONB Unit). →

Map of CFMP policies

Map of the policies in the Stour catchment.



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