

Don Catchment Flood Management Plan

Summary Report December 2010



managing
flood risk

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Introduction



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

The Don 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 ground water 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 risk of flooding is significant within the Don CFMP area. The key sources of flood risk are fluvial and tidal flows and surface water. Analysis shows that during a one per cent probability flood from rivers, 16,587 properties are at risk of flooding. Over 10,000

properties are at risk of flooding during a 0.5 per cent probability tidal flood. In both situations this assumes there are no defences in place. The risks from surface water have not been fully explored within this CFMP, however, this form of flooding has been estimated to be the cause of up to 70 per cent of property flooding during recent floods

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 have worked with others including Planning and Local Authorities, Yorkshire Water, British Waterways, Internal Drainage Boards (IDBs) and Natural England to develop this CFMP.

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 necfmps@environment-agency.gov.uk or alternatively paper copies can be viewed at our Yorkshire offices.



David Dangerfield
Yorkshire and North East Regional Director

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The purpose of a CFMP in managing flood risk

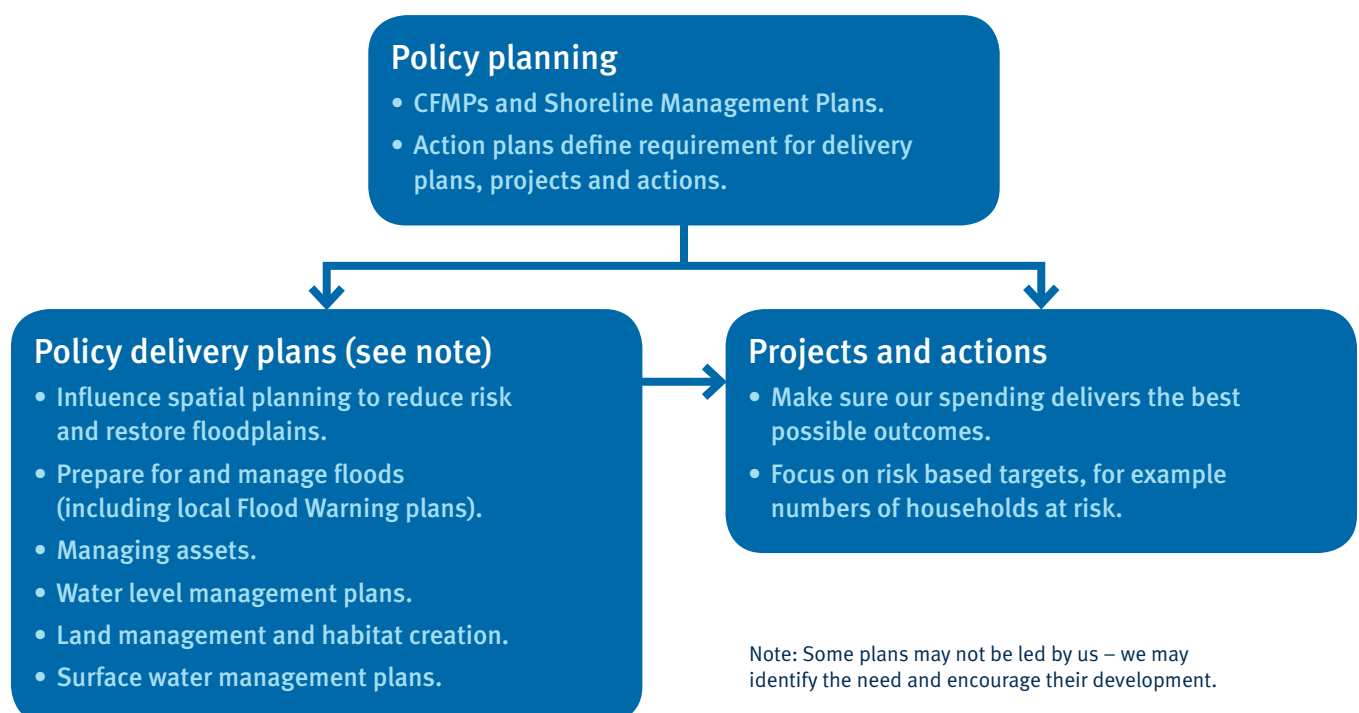
CFMPs help us to understand the scale and extent of flooding now and in the future, and set policies for managing flood risk within the catchment. CFMPs should be used to inform planning and decision making by key stakeholders such as:

- 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;
- landowners, 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. The following actions and their implementation will be subject to further appraisal and funding, and prioritised by their supporting evidence. The CFMP is a living document and actions will be updated as necessary to reflect changing responsibilities and delivery mechanisms.

Figure 1 shows the relationship between CFMPs, delivery plans, projects and actions



Catchment overview

The Don catchment extends over 1,800 square kilometres. Over 1.3 million people live within the CFMP area. The upper parts of the catchment comprise the steep-sided, well-defined valleys of the Pennine fringe, including Chesterfield, Sheffield and Barnsley. The middle reaches include Rotherham and an extensive artificially controlled washlands system. The lower part of the catchment includes Doncaster, the floodplain area of the Humberhead Levels, Old Goole and the settlements of Swinefleet and Reedness. The Humberhead Levels contain the lower reaches of several Main Rivers, including the Trent, Don, Torne, Went, Idle, Aire, Ouse and Derwent, and the Humber estuary. The Humber is not part of this CFMP. Information regarding the Humber can be found in the Humber Flood Risk Management Strategy 'Planning for Rising Tides'.

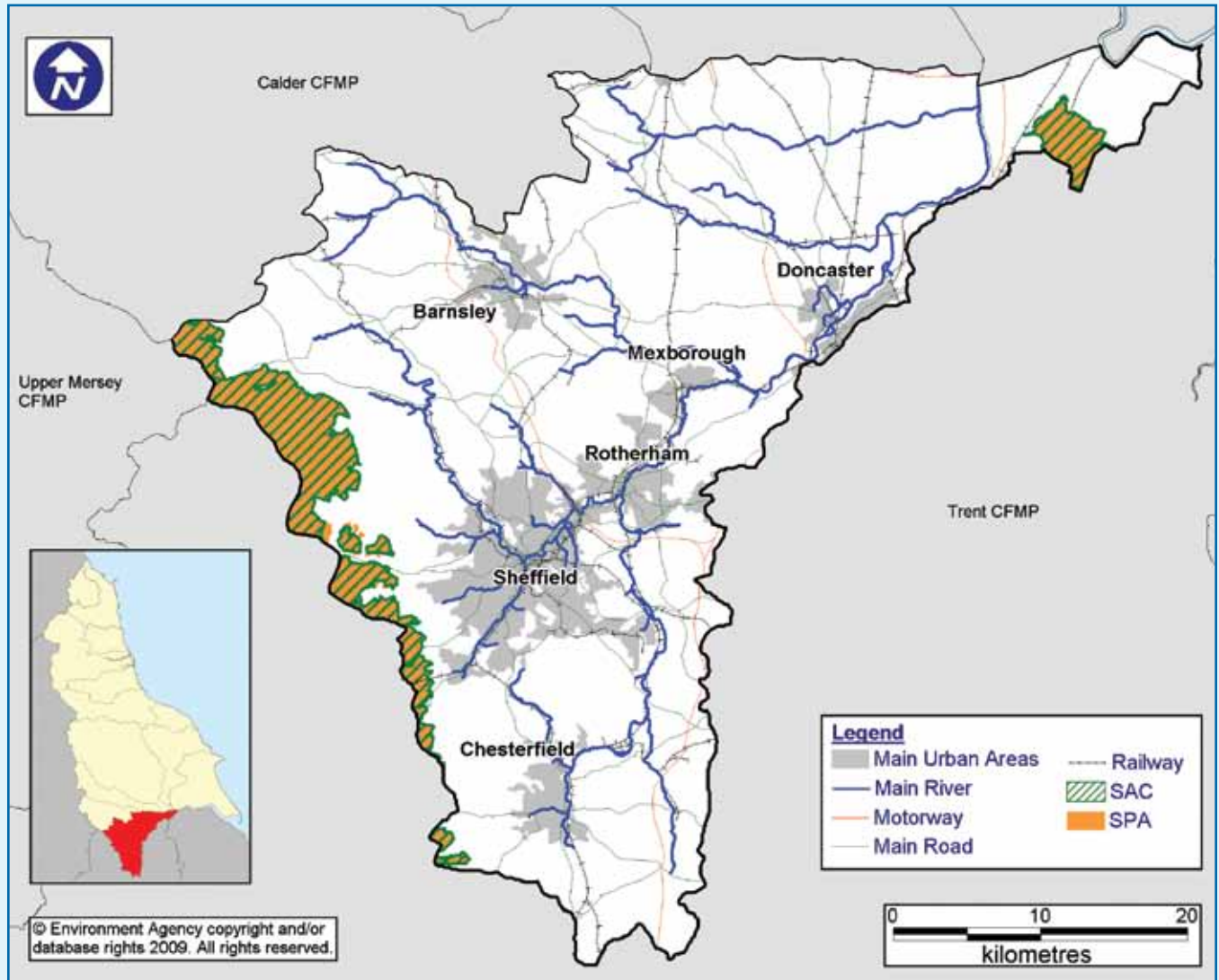
The largest main rivers in the catchment are the Don, Rother and Dearne. The River Don and River Rother meet in Rotherham town centre and the River Dearne

joins the River Don upstream of Doncaster. Downstream of Doncaster the River Went joins the River Don. The catchment is influenced by tidal patterns up to Crimpsall.

The catchment covers 13 Local Authorities, of which Sheffield, Barnsley, Chesterfield, Doncaster, North East Derbyshire and Rotherham cover the greatest area. Urban land use occupies 18 per cent of the catchment and the main settlements can be seen in Map 1. The area is recognised as vital for the economy. This will see significant economic growth and urban expansion.

The CFMP area has a wealth of environmental and culturally recognised sites that could be affected by flooding. These include the Peak District National Park, 39 Sites of Special Scientific Interest (SSSIs), two Special Areas of Conservation (SACs) and two Special Protection Areas SPAs. Culturally there are 201 Scheduled Monuments and 30 Registered Parks and Gardens within the CFMP area.

Map 1. The location and extent of the Don CFMP area



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 one per cent flood has a one per cent chance or 0.01 probability of occurring in any one year.

As part of the CFMP process, we have developed a catchment wide broadscale model to determine the risk of flooding from main and non-main rivers, if defences were not in place. It is vital that we understand this level of risk in the event that defences are overtopped or fail. The flood risks quoted in this report are for the one per cent flood figures.

There is a long history of flooding within the catchment. In June 2007 over 6750 properties flooded across the catchment including in Sheffield, Doncaster, Rotherham and Barnsley. In November 2000 over 240 properties were flooded across the catchment. Flooding in both of these events came from a number of sources including fluvial, surface water and sewers.

The water catchment cuts across Regional boundaries into Derbyshire and this is largely coincident with Sheffield City region area of influence.

Currently the main sources of flood risk within the catchment are:

- rapid river flooding in urban watercourses;
- surface water drainage and sewers has the potential to effect most urban areas in the catchment but has been recorded in Sheffield and Chesterfield;
- from tidal sources downstream of Crimpsall and can effect Swinefleet and Reedness;
- groundwater flooding which has been reported in the catchment near Marr;
- flooding from artificial sources such as reservoirs and canals. This has been reported at Rotherham town Centre as well as Kirk Bramwith Aqueduct where gates must be shut to prevent flood waters entering the South Yorkshire Navigation.

What is at risk?

Within the Don catchment there are 16587 properties at risk from a one per cent probability flood from rivers, without taking into account flood defences. Additionally, over 10000 properties are identified as at risk during the 0.5 per cent tidal event.

There are over 530 separate flood defence structures that reduce the probability of flooding in some communities.

The analysis of flooding to environmental sites shows there are 14 SSSI, 6.7 square kilometres of SAC and 6.6 square kilometres of SPA are at risk during a one per cent probability flood. None of these sites are assessed as being negatively affected by flooding, with a positive effect predicted to 7 SSSIs, 6.6 square kilometres SAC and 6.44 square kilometres of SPA.

Where is the risk?

Flood risk is spread throughout the Don CFMP area. Table 1 below outlines some of the key communities with over 100 properties at risk of flooding, not taking into consideration defences. The areas with highest risk include Sheffield, Bentley and Chesterfield.

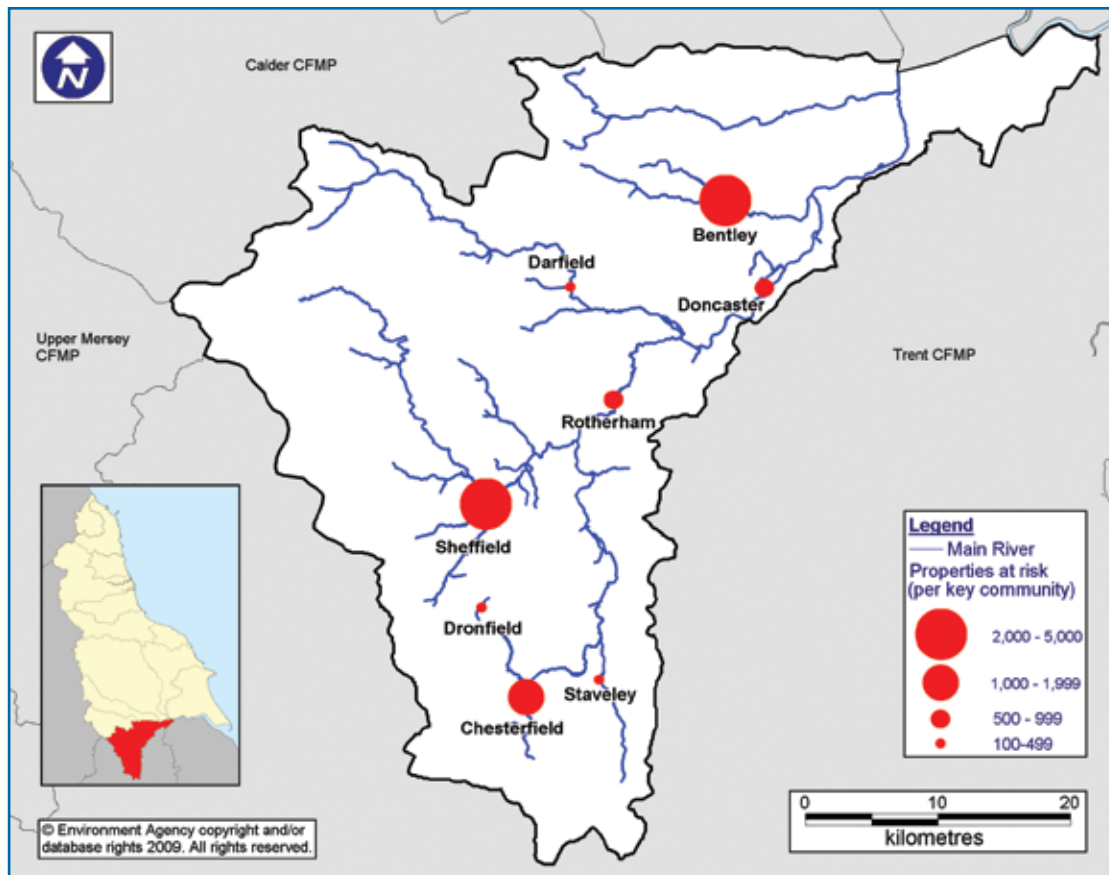
Table 1. Locations of towns and villages with 100 or more properties at risk in a 1% annual probability river flood

Number of properties at risk	Locations
2,000 to 5,000	Sheffield, Bentley
1,000 to 2,000	Chesterfield
500 to 1,000	Rotherham, Doncaster
100 to 500	Dronfield, Staveley, Darfield

Table 2. Critical infrastructure at risk:

155 gas and electricity assets
9 educational facilities
22 health facilities
26 wastewater treatment works
4 Emergency Services Buildings

Map 2. Properties at risk of flooding in the Don catchment



How we currently manage flood risk in the catchment

The catchment has a long history of flooding which has resulted in a number of engineering schemes being implemented to reduce the risk of flooding. Within the Don catchment there are currently 530 defences which include raised defences, screens, culverts and washlands. These defences offer various standards of protection but almost 60 per cent of these defences provide at least a 0.2 per cent (1 in 50 years) standard of protection. Defences are located in the main urban areas including Sheffield, Rotherham, Doncaster and Chesterfield. Washlands currently provide over 3.5 million cubic metres of flood water storage across the catchment.

In addition activities are carried out to reduce the probability of flooding.

- maintaining the above defences, including regular inspection to ensure condition is maintained;
- maintaining over 211 kilometres of river channels including removal of blockages likely to increase flood risk;
- working with local authorities to influence the location and layout of development, ensuring that inappropriate development is not allowed in the floodplain through the application of PPS25.

Further activities are carried out which reduce the consequences of flooding in the catchment including:

- understanding where flooding is likely by flood risk mapping including detailed modelling of the rivers and recording major flooding in the catchment;
- providing a flood forecasting and warning service via 70 separate flood warnings. This service also alerts our professional partners and emergency responders to instigate flood response;
- promoting awareness of flooding to organisations and members of the public so they are prepared in case they need to take action at times of flooding;
- promote resilience and resistance measures for those properties already in the floodplain.

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 (e.g. development), and changes in how land is managed.

We carried out a catchment sensitivity analysis to a number of future flood risk drivers within the Don CFMP area.

These included:

- slowing runoff by large scale changes to agricultural practices;
- increased urbanisation;
- impact of climate change.

Of these circumstances the changes in agricultural land management had the potential to decrease flows by up to 10 per cent indicating that the catchment was sensitive to land management change. However, to gain this scale of benefit changes across the whole catchment would be required which is unfeasible but remains a long term aim.

Significant development and regeneration is expected within the CFMP area. Although at a catchment scale this is unlikely to increase risk, if not managed correctly, local flood risk could increase. The implementation of PPS25 is vital in reducing the impact of development by minimising the impact of development in flood risk areas and controlling the drainage from new developments. development within flood risk areas and controls the drainage from new development.

The Don catchment is most sensitive to the impacts of climate change. The key predictions for the impact of climate change are:

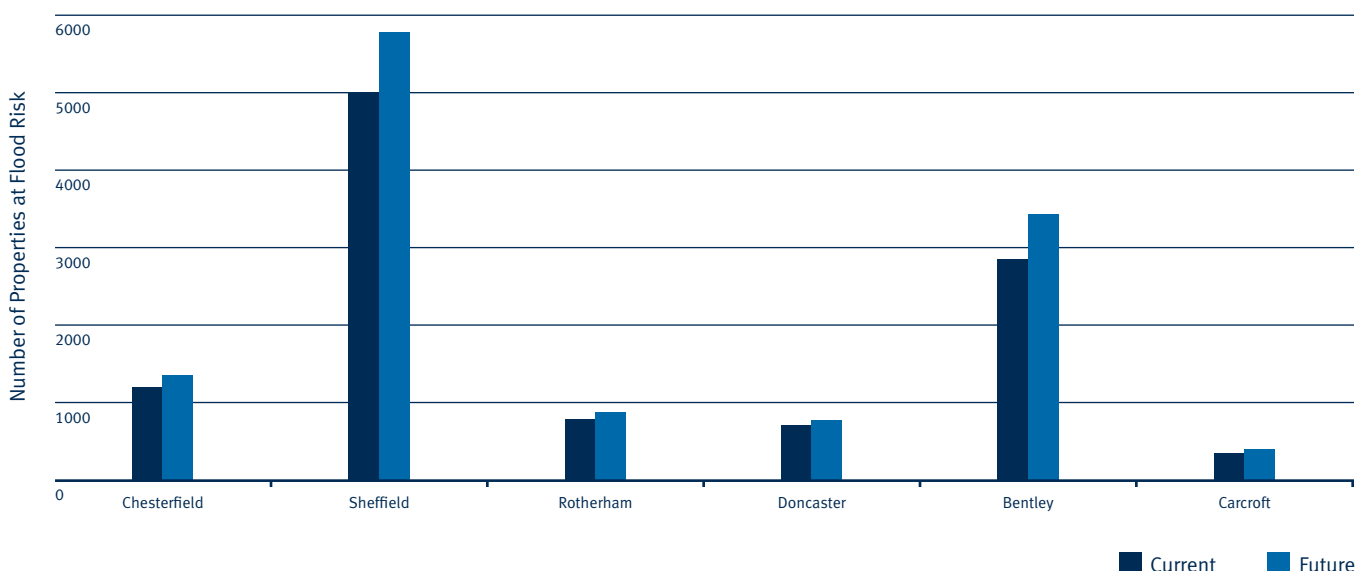
- more frequent and intense storms causing more widespread and regular flooding from drainage systems and some rivers;
- increased winter rainfall increasing the likelihood of large-scale flood events .

To represent this an increase of 20 per cent was applied to predicted river flows. The predicted

rainfall increases were input into the broadscale modelling of the catchment. In total the properties at risk of flooding from rivers rises from 16,587 currently to 18,399 in the future during the one per cent flood. Tidal risk rises from 10,041 to 10,079 properties during the 0.5 per cent flood. The number of properties which are at risk at various return periods were recorded which showed up to 46 per cent increases in risk of flooding to properties at the five per cent flood in the Rotherham catchment. This indicates that the sensitivity to climate change will be limited to small increases in flood extent within the catchment and that the major changes in flood risk will be increased frequency of flooding and increased depth and speed of flood water flows in the existing at risk communities. Figure 2 below shows the increase risk of flooding from rivers across the catchment

The increased intensity of rainfall will increase the occurrence of surface water and sewer flooding as existing drainage networks will be stretched to cope with the additional volumes of water.

Figure 2. Current and future (2100) flood risk to property from a one per cent annual probability river flood, not taking into account current flood defences.



Future direction for flood risk management

Approaches in each sub-area

Flood risk is not the same in all of the catchment. We have divided the Don catchment into seven 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.

In the following sections we outline the approach in each sub area by highlighting:

- key issues and messages for each sub area;
- our policy and vision for future management;
- key actions to implement the policy.

Map 3. Catchment sub areas

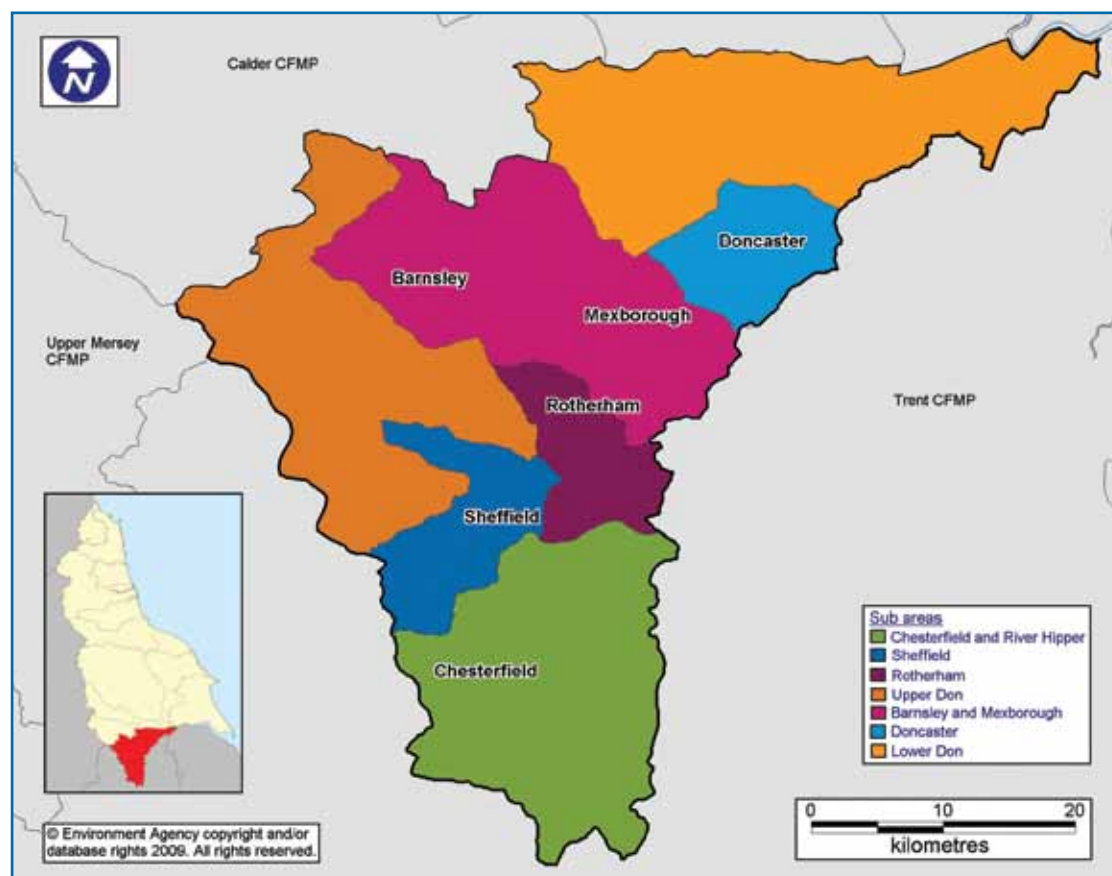


Table 3 Policy options

→ 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.

Chesterfield and River Hipper

Our key partners are:

Local Authorities

Natural England

Yorkshire Wildlife Trust

Highways Agency

Network Rail

Yorkshire Electricity Distribution PLC

Yorkshire Water

Landowners and farmers

Currently there are 1,731 properties at risk of flooding during a one per cent probability flood assuming no defences. This may rise to 1,899 in the future. We currently provide localised protection to properties through defences on the River Drone and River Rother. There are washlands which help store water during a flood. These provide between a 30 and 50 year (two to three per cent) standard of protection which does reduce the overall risk in sub area.

The key messages

- Flood defences cannot be built to protect everything.
- The provision of upstream storage on the River Hipper will provide an important contribution to reducing flood risk within this sub area.
- We need to improve the way we manage land to reduce runoff.
- Further development within flood risk areas should be minimised.

The issues in this sub-area

The sub area includes the main watercourses of the Rivers Hipper, Doe Lea, Drone, Whitting and Rother, draining from the south of Chesterfield northwards towards Rotherham and the southern outskirts of Rotherham. The Rivers Hipper and Whitting join the River Rother close to Chesterfield city centre. The main urban areas include Chesterfield, Dronfield, Staveley, and the southern outskirts of Sheffield. Flooding comes from the rivers, surface water and sewer systems.

The vision and policy

Under **Policy Option 6** our vision for the Chesterfield and River Hipper sub area is that washlands and floodplains work together to reduce the risk of flooding to people and property. When creating flood storage we will endeavour to incorporate habitat improvements and recreational facilities. Adaptation to flood risk and climate change will be central to the future sustainability of local communities.

Actions to implement the policy

- Continue to progress the development of a flood balancing reservoir at Avenue Coking Works to reduce the risk of flooding in Chesterfield.
- Work in partnership to develop the River Hipper Flood Alleviation Scheme.
- As part of future works, ensure that the potential for habitat creation and environmental improvement is fully investigated.
- Work in partnership with the Lead Local Flood Authority to reduce the risk of flooding from surface water.
- Work with landowners and other organisations to change the way land is managed to slow the rate at which floods are generated.
- Where it is not possible to redirect development to lower flood risk areas (sequential test) carryout the exceptions test through evidence based planning. In these circumstances, layout and design is vital in reducing flood risk.
- Produce a multi agency approach to registering culverts and outfalls. This should enable the location, capacity and condition of assets to be recorded and fed into their long term management.



↑ The watercourses drain towards Sheffield

Sheffield

Our key partners are:

Sheffield City Council

Yorkshire Water

Natural England

Developers

Highways Agency

Network Rail

Yorkshire Electricity Distribution PLC

The Department for Environment,
Food and Rural Affairs

The issues in this sub-area

The city of Sheffield lies at the foot of the Pennines, at the point where fast-flowing rivers, such as the River Don and Sheaf meet. Within the sub-area there are a number of transport links and critical infrastructure sites present, including the M1 motorway. Flooding sources include rivers, surface water and sewer systems. The River Don and its tributaries are contained within narrow channels and culverts across Sheffield. Development of the floodplain leaves little space for the rivers to expand during flood events. Currently 4,836 properties

are identified at risk assuming no defences. This could rise to 5,598 properties in the future. We currently manage the risk of flooding through a combination of raised defences and channel maintenance which provides a standard of protection to around a five per cent flood.

The vision and policy

With **Policy Option 5** our vision for the sub area is that we develop a partnership working approach to reduce the risk of flooding from all sources. To ensure management is sustainable we need to ensure an integrated approach is developed. Multiple approaches to managing risk are explored through the implementation of the Sheffield strategic flood risk management strategy.

The key messages

- Climate change is expected to increase flood risk from a variety of sources.
- Development must be controlled so that flood risk is not increased but also so that opportunities for the management of existing flood risk are taken.
- We need to work in partnership to reduce the risk of flooding from all sources.

Actions to implement the policy

- Produce community flood plans for locations that acutely need them e.g. Sharrow Vale, Winn Gardens and Kelham Island.
- Work in partnership to develop a Sheffield Strategic Flood Risk Management Strategy to identify the long term approach to reducing the risk of flooding throughout the sub-area.
- Work in partnership with the Lead Local Flood Authority to reduce the risk of flooding from surface water.
- Identify opportunities to enhance the river corridor habitats, landscape, access and amenity facilities to support the local planning policy drive to develop green infrastructure and increase access to the riversides.
- Where it is not possible to redirect development to lower flood risk areas (sequential test) carryout the exceptions test through evidence based planning. In these circumstances, layout and design is vital in reducing flood risk as well as the use of SuDs.
- Further identify the risk posed by contaminated land including the implications on FCRM works and water quality and identify approaches for managing this risk.
- Ensure that the reviews/updates undertaken by the local councils of their internal and multi-agency flood emergency plans take adequate account of changes in flood risk arising from climate change and other catchment changes, such as development.
- Produce a multi agency approach to registering culverts and outfalls. This should enable the location, capacity and condition of assets to be recorded and fed into their long term management.



↑ The River Don runs past Meadowhall shopping centre

Rotherham

Our key partners are:

Natural England

Rotherham Metropolitan
Borough Council

Developers/landowners

Yorkshire Water

IDBs

Yorkshire Wildlife Trust

Highways Agency

Network Rail

Yorkshire Electricity Distribution PLC

The issues in this sub-area

Rotherham is situated at the confluence of the Rivers Don and Rother. Floodplains are available in the rural parts of the sub-area, in the urban areas the watercourses are restricted by the location of development. There are defences within Rotherham which reduce the risk of flooding. Without these defences 877 properties would be at risk of flooding currently and in the future this risk could increase to 961 properties during a one per cent flood. Due to the urban nature of the area there are a number of critical infrastructure sites and transport links which means that flooding can be very disruptive to both this area and neighbouring areas.

There are significant development pressures within Rotherham. Sites are allocated within the local plans lying within the floodplain which may increase risk in the future if development is not controlled effectively.

The vision and policy

Under **Policy Option 5** our vision for the Rotherham sub area is that we develop and implement an approach to working in partnership to reduce the risk of flooding from all sources. To ensure flood risk management is sustainable we need to further understand the role of flood risk management assets. We will do this through the implementation of the River Rother and Dearne regulator assessment. Of particular importance is the long term approach to managing this regulated system. The area and its character will become a safer location through the completion of the Rotherham flood alleviation scheme. It will give more effective management of the strategic river system and the enhancement of the river corridor.

The key messages

- Climate change is expected to increase flood risk from a variety of sources.
- Development pressure must be controlled so that flood risk is not increased but also so that opportunities for the management of existing flood risk are taken.
- Support and provide guidance to Rotherham Metropolitan Borough Council and Yorkshire Forward in the implementation of the Rotherham Flood Alleviation scheme.
- Work with our strategic partners to manage surface water.

Actions to implement the policy

- Identify the long term implications of the changing flood regime (due to FCRM works), including the implications of climate change, on Centenary Wetland Reserve and Rother Valley Country Park to ensure that the condition of these sites is maintained, and where possible improved.
- Where possible, opportunities should be sought to enhance the river corridor habitats, landscape, access and amenity facilities to support the local planning policy drive to develop green infrastructure and increase access to the riversides.
- Work in partnership with the Lead Local Flood Authority to reduce the risk of flooding from surface water.
- Incorporating policies and recommendations within Rotherham MBC LDF, through the development of a water management and flood resilient design Supplementary Planning Document (SPD);
- Significantly improve flood awareness throughout the sub-area using approaches such as Flood Action Groups (FAG); development of a Local Flood Website; focused flood warning and awareness campaign carried out in partnership.
- Determine in greater detail the risk of flooding to utilities, i.e. gas, electricity, water and telecommunications installations and the consequences of the loss of these installations during flooding.
- Work in partnership to identify potential blockages to high flows and determine the feasibility of removal or adaptation, for example Don Bridge.
- Following the completion of the 'River Rother and Dearne Regulator Assessment', ensure that this detailed scientific evidence is used to determine the long term approach to managing flood risk within the Rotherham policy unit.
- Continue to monitor the condition of structure integrity of all lakes and dams i.e. Ulley Reservoir, to ensure the potential for failure is reduced.
- Produce a multi agency approach to registering culverts and outfalls. This should enable the location, capacity and condition of assets to be recorded and fed into their long term management.

Upper Don

Our key partners are:

Local Authorities

Yorkshire Water

Natural England

Highways Agency

Network Rail

Yorkshire Electricity Distribution PLC

Peak District National Park

Landowners and farmers

The issues in this sub-area

This sub area contains the headwaters of the rivers Don and the Dearne. The River Don drains from the uplands in the Peak District National Park towards Sheffield. The River Dearne, drains north east from Denby Dale. The area is characterised by steep sided valleys and developed river channels, with limited natural floodplain. The fringe of Sheffield is the main urban area in the sub-area but also includes Penistone, Stocksbridge and Chapelton. There are currently 947 properties at risk of flooding and this could

increase to 1064 properties for the undefended one per cent flood. Due to the location of key transport links and critical infrastructure within the sub area flooding will be disruptive. We currently manage the risk of flooding through a combination of man made defences and a number of storage reservoirs which help slow the flow of water.

The vision and policy

Using **Policy Option 6** our vision for the sub area is that the condition and function of the upland environment will be improved to reduce runoff rates and the high frequency of local flood events. As the climate changes, these upland changes will help to mitigate the effects both within this sub area and in Sheffield. In following this policy we will contribute to wider environmental benefits by working with partner organisations to maximise the range of benefits that can be achieved. The area and its character will become a safer location through greater appreciation of flood risk and the application of sustainable development and regeneration.

The key messages

- The condition and function of the upland environment will be improved to reduce runoff rates.
- Promote land management in the Upper Don and Dearne to reduce surface runoff.
- As the climate changes, upland changes as part of the Policy 6 will help to mitigate the effects both within this sub area and in Sheffield.

Actions to implement the policy

- Work in partnership to develop a ‘Sheffield Strategic Flood Risk Management Strategy’ to identify the long term approach to reducing the risk of flooding throughout the policy unit.
- Produce and implement a System Asset Management Plan for the sub-area to determine the requirements for maintaining existing defences and optimising flood storage.
- Determine in greater detail the risk of flooding to utilities, i.e. gas, electricity, water and telecommunications installations and the consequences of the loss of these installations during flooding.
- Work with landowners and other organisations to change the way land is managed to slow the rate at which floods are generated.
- Where it is not possible to redirect development to lower flood risk areas (sequential test) carryout the exceptions test through evidence based planning.



↑ The River Dearne after flood risk management works

Barnsley and Mexborough

Our key partners are:

Local Authorities

Natural England

Landowners/developers

Yorkshire Water

Highways Agency

Yorkshire Electricity Distribution PLC

British Waterways Network Rail

Yorkshire Wildlife Trust

The issues in this sub-area

The River Dearne is the main watercourse in this sub area. It flows from Haigh in the northwest, through the largely urban areas of Barnsley and Mexborough, before joining the River Don at Conisborough. There are large lengths of infrastructure present including the A61, M1 and M18 motorways and railway lines. Within the sub area there are 595 properties within the undefended one per cent flood outline. This could rise to 648 properties in the future. However, there are regulated and unregulated washlands which help to control flows and reduce the risk and provide an approximate standard

of protection of one in 30 years (3.3 per cent). In addition to the rivers other sources of flooding include surface water and sewer flooding. There are development pressures which may increase risk in the future if not effectively controlled.

The vision and policy

By selecting **Policy Option 6**, our vision is that we develop and implement an approach to working in partnership to reduce the risk of flooding from all sources. To ensure flood risk management is sustainable we need to further understand the role of flood risk management assets through the implementation of the River Rother and Dearne regulator assessment. Of particular importance to this vision is the long term approach to managing this regulated system and the potential removal of our river regulators. The area and its character will become a safer location through more effective management of the strategic river system and the enhancement of the river corridor.

The key messages

- Better use of washlands in a more natural system will provide localised improvements to risk. Our policy compliments the range of initiatives for the Dearne Valley for washland optimisation and habitat creation.
- There is a need for rigorous development control in accordance with the principles outlined in PPS25. This will see the production of policies to safeguard vital functional floodplain from development.
- We will understand more about the risk of flooding from surface water and flooding from sewer systems.

Actions to implement the policy

- Develop a ‘River Rother and Dearne Regulator Assessment’ to identify the long term approach to managing flood risk;
- Produce community flood plans for locations that acutely need them e.g. Low Valley (Barnsley).
- Continue to work in partnership to implement the Dearne Valley Green Heart Project.
- Determine in greater detail the risk of flooding to utilities, i.e. gas, electricity, water and telecommunications installations and the consequences of the loss of these installations during flooding.
- Work in partnership with the Lead Local Flood Authority to reduce the risk of flooding from surface water.
- Following the completion of the ‘River Rother and Dearne Regulator Assessment’, ensure that this detailed scientific evidence is used to determine the long term approach to managing flood risk within the sub-area.
- As part of future FCRM works, ensure that the potential for habitat creation and environmental improvement is fully investigated.
- Produce a multi agency approach to registering culverts and outfalls. This should enable the location, capacity and condition of assets to be recorded and fed into their long term management.
- Install telemetry on the Don Navigation to enable effective flood forecasting and warning of imminent canal overtopping.



↑ The Dearne Valley Green Heart project

Doncaster

Our key partners are:

Doncaster Council

Developers

Yorkshire Water

Highways Agency

Yorkshire Electricity Distribution PLC

Network Rail

Natural England

Royal Society for the Protection of Birds

Yorkshire Wildlife Trust

this is predicted to rise to 5056 properties in the future. We currently manage risk through a combination of channel maintenance, raised defences, upstream washlands and pumped drainage.

The vision and policy

Under **Policy Option 5** our vision is that we will develop a working partnership to reduce the risk of flooding from all sources. To ensure flood risk management is sustainable we need to further understand the role of flood risk management assets through the implementation of the Lower Don defence assessment. Of particular importance is the long term approach to managing our current raised man-made defences and the possible role of upstream storage and reducing flood risk within Doncaster.

The key messages

- We need to work with our partners to understand the sources of flooding and the implications of further development and regeneration.
- We need a better understanding of surface water and drainage related flooding to develop a wider strategy for addressing all sources of flooding.
- We need to make better use of the washlands and flood storage. This involves protecting the storage areas and available floodplain around Doncaster, which provide a route for floodwater during larger floods.

The issues in this sub-area

The sub area includes Doncaster, with the River Don flowing from Sprotbrough in the south, through Doncaster and Bentley. Ea Beck drains the north of the area before joining the River Don at Thorpe in Balne. The area is low lying and areas of the river corridor are heavily urbanised. There is a large amount of infrastructure present with the A1 (M), many A roads and large sections of railway line. Flooding is caused by a number of sources including rivers, surface water and sewer systems. The risk of flooding is spread throughout the sub area with 4431 properties currently at risk during the one per cent flood assuming no defences,

Actions to implement the policy

- Where it is not possible to redirect development to lower flood risk areas (sequential test) carry out the exceptions test through evidence based planning.
- Work in partnership with the Lead Local Flood Authority to reduce the risk of flooding from surface water.
- Determine in greater detail the risk of flooding to utilities, i.e. gas, electricity, water and telecommunications installations and the consequences of the loss of these installations during flooding.
- Significantly improve flood awareness throughout the sub-area using approaches such as Flood Action Groups (FAG); development of a Local Flood Website; focused flood warning and awareness campaign carried out in partnership.
- Ensure that the development of stand alone studies upstream, such as the ‘Sheffield Strategic Flood Risk Management Strategy’ and the ‘River Rother and Dearne Regulator Assessment’, are integrated into the long term managing of flood risk within the Doncaster policy unit.
- Identify the potential for upstream and small scale flood storage on EA Beck to reduce the risk of fluvial flooding due to the backing up of EA Beck when levels are high in the River Don.
- Investigations are needed to determine the scale and number of pumping assets owned and managed by a number of organisations. In addition their importance with regards to flood risk management is required.
- Carry out a ‘Lower Don Defence Assessment’ to identify the long term approach to managing flood risk.

Lower Don

Our key partners are:

Local Authorities

Natural England

Highways Agency

Network Rail

Yorkshire Electricity Distribution PLC

Yorkshire Water

Department for Environment,
Food and Rural Affairs

Landowners and farmers

Yorkshire Wildlife Trust

The issues in this sub-area

The sub area is largely rural but includes the urban areas of Pontefract, North and South Elmsall, Hemsworth and South Kirkby. Infrastructure includes the motorways of the M18, M62 and a new construction of the A1M as well as several railway lines. Current undefended flood risk within the sub area is 3138 properties, however current defences reduce this to 1383 properties for the one per cent probability flood. Under the climate change scenario, the risk of fluvial flooding to property is not expected to increase. The CFMP reflects the findings of the Upper Humber Study we carried out in autumn 2009.

The vision and policy

By selecting **Policy Option 3** our vision is that we further improve our knowledge of the risk of flooding both now and in the future. As well as this we will carry out further studies to understand the long term management of the sub area. Including its relationship with areas upstream and outside of this CFMP area, for example the Humber Estuary. Before we can fully appraise the long term approach to managing risk, we will continue to manage the significant number of washland assets we hold and continue to work in partnership to determine the implications of climate change.

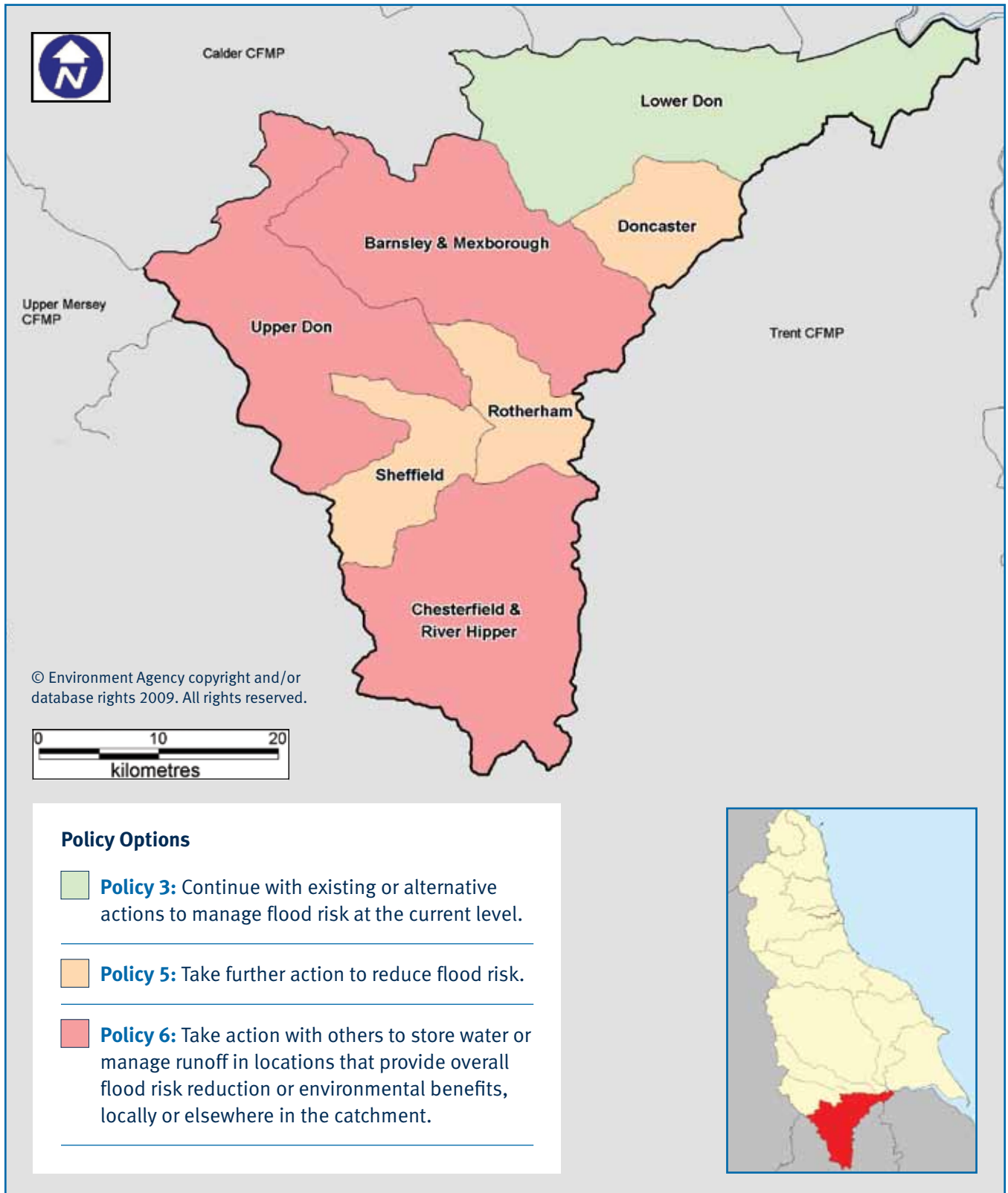
The key messages

- Climate change will result in a greater risk of flooding, particularly due to rising sea levels.
- Our current approach to managing flood risk needs to be scrutinised in light of climate change predictions to ensure that the risk to life is reduced through effective flood risk management.
- Flood storage is vital in reducing the risk to life. We may need to increase the amount of water we store within natural floodplains and storage areas.

Actions to implement the policy

- Produce and implement a System Asset Management Plan (SAMP) for the Lower Don sub-area to determine the most sustainable approach to managing assets to ensure that the standard of protection is maximised under current levels of investment.
- Significantly improve flood awareness throughout the sub-area using approaches such as Flood Action Groups (FAG); development of a Local Flood Website; focused flood warning and awareness campaign carried out in partnership.
- Determine in greater detail the risk of flooding to utilities, i.e. gas, electricity, water and telecommunications installations and the consequences of the loss of these installations during flooding.
- Ensure that the reviews/updates undertaken by the local councils of their internal and multi-agency flood emergency plans take adequate account of changes in flood risk arising from climate change and other catchment changes, such as development.
- Develop a 'Tidal River Don FRM Study', to identify the long term approach to managing flood risk between Went Outfall and Goole (including this sub-area).
- As part of future works, ensure that the potential for habitat creation and environmental improvement is fully investigated.
- Develop a role for a Sustainable Land Management Officer to work with landowners and our partners to promote sustainable agricultural land management, where possible implementing the principles of Higher Level Stewardship.
- Carryout a long term assessment into the implications of the water environment to the agricultural sector.

Map of CFMP policies





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