



managing flood risk

North Norfolk Catchment Flood Management Plan

Summary of Draft Plan June 2007

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Published by:

Environment Agency
Kingfisher House
Goldhay Way, Orton Goldhay
Peterborough PE2 5ZR
Tel: 08708 506 506
Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk

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June 2007

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What this booklet tells you

This booklet tells you about a draft Catchment Flood Management Plan (CFMP) that we have recently published for North Norfolk.

We are developing a Catchment Flood Management Plan (CFMP) for North Norfolk, which will assess how flood risks might change over the next 50 to 100 years, and how we might manage those changes.

The Draft CFMP outlines our current understanding of flood risk in the catchment, assesses future flood risk and identifies flood risk management policies.

You can find the timetable for producing the final plan on page 3.

This booklet aims to:

- inform – and get responses from – interested groups or individuals on why and how flooding might occur and the impacts of it;
- obtain your views on which flood risk management policies might be appropriate over the life of the plan.

In particular, we would like your comments on:

- the proposed flood risk management policies that we have identified for particular parts of the catchment;
- the policy units and action plan.

You have until **7th September 2007** to return your comments using the feedback form at the end of the booklet. You will find questions on the form to assist you in making your response.

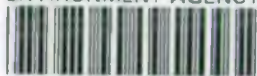
You can request further copies of the report by telephoning the number on the back of this booklet, or by e-mail at:

nnorfolkcfmp@environment-agency.gov.uk

or view the report at any of the following main libraries:

- Mundesley ■ Cromer ■ Sheringham
- Holt ■ Wells-next-the-Sea

Alternatively if you would like your own copy on CD, this can be sent on request.



What is a Catchment Flood Management Plan (CFMP)?

A Catchment Flood Management Plan provides an overview for managing the long-term risk of flooding in a particular area.

We are producing CFMPs for the whole of England and Wales. They look at flooding from all sources except for coastal flooding from the sea, which is considered in Shoreline Management Plans (SMPs).

CFMPs identify the main factors influencing flood flows and flood risk, and assess how they may change over time.

The final plan will outline sustainable flood risk management policies that will provide a balance between cost effectiveness, social needs, demands on land use for development and the environment over the next 50-100 years. It includes a Strategic Environmental Assessment (SEA) that looks at how our proposed policies might affect the environment.

The CFMP seeks to make sure that we provide a high level of protection and improvement, wherever possible, to safeguard the environment for the future.

Our policies determine whether we should take action to allow flood risk to:

- increase in suitable areas
- be reduced
- remain at the current level

The CFMP does not propose specific measures to manage flood risk but identifies where we should undertake further work.

Q Have we adequately explained the concept of Catchment Flood Management Plans?



Letheringsett Mill on the River Glaven

What is the Draft CFMP Stage?

This is the stage during which we prepare our draft plan and consult the public on it.

The Draft CFMP Stage aims to present:

- an understanding of the processes leading to flooding;
- a summary of past and current flood risk and flood risk management measures;
- possible future changes in the CFMP area;
- a set of CFMP objectives;
- a set of preferred policies for sustainable flood risk management;
- a clear policy appraisal process showing how we selected the preferred policy;
- a proposed action plan identifying further strategies and studies.

Timetable for the North Norfolk CFMP

When	Milestone	Output
March 2006 – May 2006	Inception Stage	Initial data collection and understanding of the catchment. Engage with interested parties. Inception Report.
June 2006 – November 2006	Scoping Stage	Understanding current flood risks and management. Identify draft opportunities and constraints. Identify draft scenarios and objectives. Scoping Report.
December 2006 – March 2007	Scoping Consultation	Consultation responses. Establish direction of CFMP.
February 2007 – June 2007	Draft CFMP Stage	Develop opportunities and constraints. Appraise policies. Draft CFMP.
June 2007 – September 2007	Draft CFMP Consultation	Consultation responses
September 2007 – November 2007	Final CFMP	Agree sustainable responses. Identify future strategies and studies. Publish final CFMP.

Catchment overview

The CFMP area comprises a relatively narrow strip of land along the North Norfolk coast, which stretches from Old Hunstanton in the west to Happisburgh in the east, and extends from the North Sea coast to just short of Fakenham in the south.

The CFMP area contains a number of separate watercourses, each with its own hydrometric catchment. For this CFMP we have combined these to form a larger unit with a total area of approximately 517 km². The catchment is mostly rural, with the largest urban areas being Mundesley, Cromer, Sheringham, Holt and Wells-next-the-Sea.

The main rivers in the catchment are the Hun, the Burn, the Glaven, the Stiffkey and the Mun. They are generally small watercourses, many of which have been modified in the past including construction of mills, straightening and diversion, and channel modifications.

The underlying geology of the area is chalk, which dips from west to east and is buried by later glacial deposits in many places.

The landscape value of North Norfolk is recognised in its designation as part of the Norfolk Coast Area of Outstanding Natural Beauty (AONB).

The catchment supports a variety of land uses, although

“We have a range of flood risk management powers for the main rivers in the catchment.”

most is agricultural land used for production of cereals and some root crops. There is also a significant amount of animal husbandry and horticulture with fruit crops widely grown. Besides agriculture, 4% of the catchment is urban and the remaining area is made up of grassland, heath land, woodland and coastal marshes.

We have a range of flood risk management powers for the main rivers in the catchment. Local authorities manage ordinary watercourses while the Norfolk Rivers Internal Drainage Board maintains several smaller tributaries and the land around them.

Figure 1 shows an overview of the catchment.



River Glaven at Hunworth



Figure 1 - The North Norfolk CFMP area



Towns

Main Rivers

Lakes

Flood Zone 3 (1% risk of Fluvial flooding and/or 0.5% risk of Tidal flooding)

Borough of King's Lynn and West Norfolk

North Norfolk District

Current flood risks and management

People, property and the environment are at risk of flooding now. We spend a significant amount each year on flood risk management. Anglian Water, local authorities and Internal Drainage Boards undertake management in addition to this.

The main cause of flooding in the catchment is heavy rain falling over a short period of time, particularly when the ground is already saturated or when channels become blocked. High tide levels may also result in flooding due to 'tide locking' of low-lying watercourses or drainage systems.

Most flooding occurs when floodwater overtops riverbanks and spills out onto the flood plain. In settlements, buildings on the flood plain are obstacles to floodwater flowing downstream and can prolong flooding.



Burnham Thorpe

Excess water from heavy rainfall can run off across the surface of the land and cause surface water flooding. This can also occur behind sea defences on the coast when outfalls are closed by high tides or become blocked, and in low-lying reclaimed marsh areas. This type of flooding can carry a large volume of silt, causing problems on local roads and in any properties flooded. Surface water flooding poses a low direct risk to life, although blocked roads may prevent emergency services getting through.

Our flood map shows the area at risk of flooding and can be viewed on our website www.environment-agency.gov.uk. The flood map does not distinguish between flooding from the sea and flooding from rivers. It also assumes there are no flood defences. In reality, there are coastal flood defences that we maintain designed to protect against flood events of various sizes.

Other types of flood risk management within the catchment are:

- Management Operations – such as maintenance and monitoring. We have an annual maintenance program, which includes channel dredging and weed cutting when necessary.
- Flood warning – most of the areas at risk of flooding are covered by our Flood Warning service where we aim to give 2 hours notice of the possible onset of flooding. However, we realise that with some upper river reaches reacting very quickly to rainfall, we may not always be able to meet this target.

Q Have we adequately explained the current flood risk and how we manage it?

Future changes

We need to understand how possible changes in urban development, land use and climate could affect flood risk in the future.

To develop a sustainable, long-term plan for flood risk management, we need to understand how climate change, urban development and changes in land use will affect flood risk over the next 50 to 100 years.

In the CFMP, we assess the impact of these changes by looking at what might happen under various scenarios. We need to develop and implement a range of flood risk management policies that can react to change.

Climate Change

The 2002 UK Climate Impacts Programme (UKCIP) findings for the East of England suggest:

- an increase in average temperature of 3°C by the 2050s and 4°C by the 2080s.
- hotter, drier summers which will trigger more thunderstorms and increase the risk of flash flooding and surface water flooding
- milder, wetter winters in which prolonged rainfall could saturate catchments and cause severe flooding
- rising sea levels which could increase tide-locking on the rivers Glaven, Stiffkey and Burn

Urban Development

Urbanisation increases the cover of impermeable surfaces so that more runoff is generated during heavy rainfall. This has to be managed by urban drainage systems, which can become overloaded and cause surface water and sewer flooding.

Development and regeneration within the existing flood plain increases flood risk. Developments in areas that are likely to flood in the future as a result of climate change and land use change are equally at risk.

Land use

Agricultural land use and land management can have an important influence on runoff generation and sediment production. The type of crops that are grown, the way the land is prepared, and changes in agricultural drainage practice affect how quickly water reaches watercourses. These factors also affect the amount of silt that gets washed into rivers during rainfall events.

There are many uncertainties surrounding the future of agriculture, and changes might be driven by:

- Climate Change – sunnier, drier summers will increase the production of crops that thrive in these conditions and enable farmers to grow a greater variety of crop types. The productive land of North Norfolk is also well placed to meet potential demands for home-grown foods and fuel crops following changes in the availability of imports. This could cause agricultural intensification.
- Socio-economic factors and government aid – including agri-environmental schemes such as the Environmental Stewardship Scheme. These schemes encourage farming methods that reduce the rate of rainwater runoff and promote flood storage, and will stimulate changes in agricultural drainage practices.

Q Have we correctly identified and adequately considered potential future changes in the CFMP area?

CFMP objectives

We have developed objectives for the North Norfolk CFMP area and have used them to assess which of our flood risk management policies are most appropriate.

The overall objective of a CFMP is to develop policies that work together to manage flood risk in the long term, bring about a range of benefits and encourage sustainable development.

We have put together a set of objectives for the CFMP area by looking at opportunities to reduce flood risk and constraints that could limit the number of options available to us.

The objectives for the North Norfolk CFMP are:

- to manage flood risk to people;
- to manage flood risk to communities;
- to manage flood risk to property and essential infrastructure;
- to manage flood risk to rural areas;
- to ensure flood risk management expenditure is risk based;
- to manage flood risk to designated conservation sites and species;
- to manage and improve fisheries;
- to achieve 'good ecological status' under the Water Framework Directive where applicable;
- to manage natural river features and promote joint use of the flood plain and river corridor for flood risk management and environmental conservation;
- to manage flood risk to sites of cultural, architectural and heritage value;
- to manage flood risk to landscape character;
- to achieve sustainable land use that benefits flood risk management and biodiversity .



Cley Marshes

Policy appraisal

The draft CFMP assesses the effect of flood risk management policies and allocates a proposed policy to each part of the CFMP area.

We aim to identify the most sustainable flood risk management approach for the North Norfolk area. We must identify preferred policies for different parts of the area, and to do this we have divided the CFMP area into smaller policy units.

Policy units are areas in a catchment where the same flood risk management policy applies. They are defined by a similar set of characteristics and features such as:

- causes of flood risk
- the main ways in which flooding occurs
- type of river and flood plain
- social, economic or environmental factors

Figure 2 shows the North Norfolk Policy units

Flood risk management policies

There are six available CFMP policies:

- P1** No active intervention
- P2** Reduce existing flood risk management actions
- P3** Continue existing and alternative actions to manage flood risk at the current level
- P4** Take further action to sustain the current scale of flood risk into the future
- P5** Take further action to reduce flood risk
- P6** Take action to increase the frequency of flooding to achieve benefits locally or elsewhere

Policies for North Norfolk:

Policy Unit	Policy
Burn	5
Glaven, Stiffkey & coastal streams	3
Spring Beck	5
Mun	5



River Glaven at Cley



Figure 2 - The North Norfolk CFMP Policy Units



KEY:

- Towns
- Main Rivers
- Burn Policy Unit
- Glaven, Stiffkey and Coastal Streams Policy Unit
- Spring Beck Policy Unit
- Mun Policy Unit

Action plan

CFMPs help us to prioritise our work, concentrate our resources in the locations with the greatest need, and determine which responses we need to consider further and which ones will not be effective. We will select from a range of plans, projects and actions to create the best possible approach to managing flood risk in a policy unit. This is set out in our action plan.

We have suggested actions that should be the next stage of the process in reducing flood risk (see pages 12-14). We have developed these actions with the help of other authorities and organisations.

We are responsible for most of the actions, but we wish to promote and encourage a working relationship with other responsible parties to improve flood risk management as a whole. We aim to strengthen existing links and to continue working together to achieve these actions.

As well as detailed recommendations per policy unit, we will take the following actions throughout the North Norfolk CFMP area:

- Encourage rigorous planning control to restrict new development in the flood plain.
- Promote the use of sustainable drainage systems in all new developments.
- Continue to improve the flood warning service and emergency planning procedures.
- Increase flood awareness and education.
- Encourage more high level environmental stewardship schemes to reduce flood risk to vulnerable areas.
- Actively encourage more people in flood warning areas to register to receive our flood warning service.
- Identify sites that may be suitable for habitat creation.
- Encourage householders to take action to protect their properties from increased flood risk over time.



River Burn at South Creake

Actions	Success criteria	Priority	Timescale	Proposed lead organisations
River Mun				
Use a System Asset Management Plan (SAMP) to assess where we should reduce/ continue/ increase maintenance	Development and implementation of SAMP	M	2008-2033	Environment Agency Asset Systems Management Team
Encourage soil conservation practices in river valleys	Development and implementation of a plan to increase land management/ increased uptake of Environmental Stewardship schemes and advice on soil conservation	M	2008-2033	Environment Agency Environmental Management, Defra, North Norfolk Catchment Sensitive Farming Project
Undertake a study to look at how we can reduce flood risk in Mundesley	Production of report and implementation of recommendations	H	2008-2012	Environment Agency Asset Systems Management Team
Investigate potential for sustainable land use on the flood plain in agricultural areas	Landowners changing land use in the flood plain to be compatible with flooding	L	2008-2033	NFU, Defra, local landowners
Investigate potential to improve flood forecasting and warning	Development and implementation of a Flood Forecasting and Warning Plan	M	2008-2013	Environment Agency Flood Incident Management Team
Restrict development in flood risk areas that may have localised flood defence provided to reduce residual risk	Development and implementation of a plan to influence spatial planning and development	H	2008-2033	Environment Agency Development Control and Planning Liaison teams, North Norfolk District Council
Spring Beck				
Use a SAMP to assess where we should reduce/ continue/ increase maintenance	Development and implementation of SAMP	M	2008-2033	Environment Agency Asset Systems Management Team
Encourage soil conservation practices in river valleys	Development and implementation of a plan to increase land management/ increased uptake of Environmental Stewardship schemes and advice on soil conservation	M	2008-2033	Environment Agency Environmental Management, Defra, North Norfolk Catchment Sensitive Farming Project
Complete Weybourne pre-feasibility study and implement its recommendations	Production of report and implementation of recommendations	H	2007-2012	Environment Agency Asset Systems Management Team

Actions	Success criteria	Priority	Timescale	Proposed lead organisations
Investigate potential for sustainable land use on the flood plain in agricultural areas	Landowners changing land use in the flood plain to be compatible with flooding	L	2008-2033	NFU, Defra, local landowners
Investigate potential to provide flood warning for the fluvial Spring Beck	Development and implementation of a Flood Forecasting and Warning Plan	H	2008-2013	Environment Agency Flood Incident Management Team
Restrict development in flood risk areas that may have localised flood defence provided to reduce residual risk	Development and implementation of a plan to influence spatial planning and development	H	2008-2033	Environment Agency Development Control and Planning Liaison teams, North Norfolk District Council
Increase awareness of people at flood risk in the natural flood plain of the Spring Beck	Development and implementation of a Flood Awareness Plan	H	2008-2010	Environment Agency Flood Incident Management Team
River Burn				
Use a SAMP to assess where we should reduce/continue/increase maintenance	Development and implementation of SAMP	M	2008-2033	Environment Agency Asset Systems Management Team
Encourage soil conservation practices in river valleys	Development and implementation of a plan to increase land management/increased uptake of Environmental Stewardship schemes and advice on soil conservation	M	2008-2033	Environment Agency Environmental Management, Defra, North Norfolk Catchment Sensitive Farming Project
Undertake a study to look at how we can reduce flood risk in South Creake, North Creake and Burnham Thorpe	Production of report and implementation of recommendations	H	2008-2012	Environment Agency Asset Systems Management Team
Investigate potential for sustainable land use on the flood plain in agricultural areas	Landowners changing land use in the flood plain to be compatible with flooding	L	2008-2033	NFU, Defra, local landowners
Investigate potential to improve flood forecasting and warning	Development and implementation of a Flood Forecasting and Warning Plan	M	2008-2013	Environment Agency Flood Incident Management Team
Restrict development in flood risk areas that may have localised flood defence provided to reduce residual risk	Development and implementation of a plan to influence spatial planning and development	H	2008-2033	Environment Agency Development Control and Planning Liaison teams, Borough of King's Lynn and West Norfolk

Actions	Success criteria	Priority	Timescale	Proposed lead organisations
Glaven, Stiffkey and Coastal Streams				
Investigate potential for local river restoration works on the river Glaven and Stiffkey	Development and implementation of River Restoration Plan	M	2008-2033	Environment Agency Fisheries, Recreation and Biodiversity Team, Environment Agency Asset Systems Management Team, River Glaven Conservation Group, Norfolk Coast Partnership, Natural England
Use a SAMP to assess where we should reduce/continue/increase maintenance	Development and implementation of SAMP	M	2008-2033	Environment Agency Asset Systems Management Team
Encourage soil conservation practices in river valleys	Development and implementation of a plan to increase land management/Increased uptake of Environmental Stewardship schemes and advice on soil conservation	M	2008-2033	Environment Agency Environmental Management, Defra, North Norfolk Catchment Sensitive Farming Project, River Glaven Conservation Group
Investigate potential for sustainable land use on the flood plain in agricultural areas	Landowners changing land use in the flood plain to be compatible with flooding	L	2008-2033	NFU, Defra, local landowners
Develop an Urban Drainage Plan for Cromer and Sheringham	Development and implementation of Urban Drainage Plan	H	2008-2013	Anglian Water, North Norfolk District Council
Support the review of the Cley and Salthouse Marshes and Holme Water Level Management Plans	Development and implementation of Water Level Management Plan	L	2008-2009	Environment Agency Fisheries, Recreation and Biodiversity Team
Avoid development wherever possible in areas that are currently at flood risk or may be at flood risk in the future	Development and implementation of Plan to influence planning and urban development	H	2008-2033	Environment Agency Development Control and Planning Liaison Teams, North Norfolk District Council, Borough of King's Lynn and West Norfolk

Q Do you think we have identified the most appropriate actions?

Next steps

The next stage is the production of the final plan. Before this is done, we will take into account all feedback received from the consultation on the Draft CFMP.

We will incorporate any feedback we receive during this consultation period into the final CFMP. We will also make sure that we have identified all future plans and strategies before we publish it. We will inform people that we have published the CFMP by advertising in the local press.

Once we have published the North Norfolk CFMP, we will set up an Implementation Group to monitor and review how we put it into practice. We will also need to check that the CFMP's policies and action plan are being achieved.

We will check how the CFMP is performing by using suitable indicators and outcomes, which we will also use in annual progress reports. During our review of the CFMP we will consider:

- any new planning and modelling tools;
- the effects of recent significant flood events and urban development;
- developments in our understanding of climate change;
- the most up-to-date information on flood outlines, environmental data, property databases and improved flood estimates;
- how we will implement the European Floods directive.

Following this review we may revise the CFMP's flood risk management policies, although we do not expect any fundamental changes. The CFMP will be a 'living document' that develops as we improve our understanding of flood risk.



River Mun Outfall Sluice

Feedback form

Thank you for taking the time to fill in this questionnaire.

Name: Organisation:

Address:

..... E-mail:

Section 1

Please use this section to give us feedback on the contents of this consultation report. You can also use this form to respond to the full Draft CFMP document.

1. Have we adequately explained what a Catchment Flood Management Plan is?

.....
.....

2. Have we adequately explained current flood risk and how we manage it?

.....
.....

3. Have we adequately considered future changes in the catchment?

.....
.....

4. Do you agree with these catchment objectives?

.....
.....

5. Do you think we have identified the correct policy units?

.....
.....

6. Do you think the proposed policies are the most sustainable?

.....
.....

7. Do you think we have identified the most appropriate actions?

.....
.....

8. Can you suggest other ways to monitor how well the CFMP works?

.....
.....

9. Any other comments, questions or feedback?

.....
.....

Please attach additional pages if required

Section 2

Please use this section to give us feedback about how you have received information from us.

1. How did you receive the North Norfolk CFMP Summary/Draft CFMP? (please indicate)?

Paper copy by post CD Internet

2. Was the information easy to understand?

Yes No

3. Was there enough information? Yes No

4. Would you prefer to have received the full Draft CFMP?

Yes No

5. Was the format suitable for you? Yes No

If no, why?

6. Are you confident that we will take your comments into account? Yes No

If no, why not?

Please return completed forms to Duncan Campbell, North Norfolk CFMP Project Manager, Environment Agency, Kingfisher House, Goldhay Way, Orton Goldhay, Peterborough, PE2 5ZR.

Comments can also be e-mailed to:

nnorfolkcfmp@environment-agency.gov.uk



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incident hotline 0800 80 70 60 (24hrs)

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