



Environment  
Agency

# managing flood risk

## Louth Coastal Catchment Flood Management Plan

Summary of Draft Plan November 2006

We are the Environment Agency. It's our job to look after your environment and make it a better place – for you, and for future generations.

Your environment is the air you breathe, the water you drink and the ground you walk on. Working with business, Government and society as a whole, we are making your environment cleaner and healthier.

The Environment Agency. Out there, making your environment a better place.

Published by:

Environment Agency  
Kingfisher House  
Goldhay Way, Orton Goldhay  
Peterborough PE2 5ZR  
Tel: 08708 506 506  
Email: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)  
[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

© Environment Agency

All rights reserved. This document may be reproduced with prior permission of the Environment Agency.  
November 2006

# Contents

What this booklet tells you . . . . .	1	Future flood risk . . . . .	7
What is a Catchment Flood Management Plan (CFMP)?	2	Catchment objectives . . . . .	8
What is the Draft CFMP Stage? . . . . .	3	Policy appraisal . . . . .	9
Timetable for the Louth Coastal CFMP . . . . .	3	Action plan . . . . .	11
The Louth Coastal catchment . . . . .	4	Next steps . . . . .	14
Current flood risks and management. . . . .	6	Feedback form . . . . .	15

## What this booklet tells you:

This booklet tells you about a Draft Catchment Flood Management Plan (CFMP) we have recently published on flood related issues within the Louth Coastal catchment.

We are developing a Catchment Flood Management Plan for the Louth Coastal catchment. This will be a plan that will look to assess how flood risks might change and be managed over the next 50 to 100 years. The Draft CFMP outlines our current understanding of flood risk in the catchment, assesses future flood risk and identifies flood risk management policies. Details of the timetable for producing the final plan are given on page 3.

This booklet aims to:

- Inform, and get response from interested groups or individuals on our understanding of 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 CFMP.

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 **15 January 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. If you would like to see the full Draft CFMP, you can either view this at any of the following libraries:

- Skegness      ■ Louth
- Mablethorpe   ■ Alford
- Spilsby        ■ Sutton on Sea

Or if you would like your own copy on CD, please e-mail us at: [lccfmpconsultation@environment-agency.gov.uk](mailto:lccfmpconsultation@environment-agency.gov.uk)

ENVIRONMENT AGENCY



102628

# What is a Catchment Flood Management Plan (CFMP)?

A Catchment Flood Management Plan provides an overview for sustainable flood risk management in a particular catchment.

We are producing a CFMP for each major river in England and Wales. CFMPs look at flooding from all sources except for coastal flooding from the sea, which is considered in Shoreline Management Plans (SMPs).

This CFMP will 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 and demands upon land use for development and the environment over the next 50 to 100 years. It will include a Strategic Environmental Assessment (SEA) that will look at how the policy options we propose might affect the environment.

The SEA will seek to make sure that we provide a high level of protection and enhancement, wherever possible, to safeguard the environment for the future.

The policies will establish whether we should take action to allow flood risk to:

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

The CFMP will not identify specific measures to manage flood risk but will identify where we should undertake further work.

## Q Have we adequately explained what a Catchment Flood Management Plan is?

# 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 flood risk;
- a summary of past and current flood risk and flood risk management measures;
- possible future changes in the catchment;
- a set of catchment objectives;
- a set of preferred policies for sustainable flood risk management;
- a proposed action plan identifying further strategies and studies.

## Timetable for the Louth Coastal CFMP

When	Milestone	Result
April 2005 – July 2005	CFMP Inception Stage	Initial data collection and understanding of the catchment Engage with interested parties Inception Report
August 2005 – January 2006	CFMP Scoping Stage	Understanding of current flood risks and management Identify draft opportunities and constraints Identify draft objectives Scoping Report
February 2006 – April 2006	Scoping Consultation	Consultation responses
May 2006 – October 2006	Draft CFMP Stage	Finalise future scenarios Develop opportunities and constraints Select policies Identify future strategies and studies Draft CFMP
October 2006 – January 2007	Draft CFMP Consultation	Formal consultation Consultation responses
January 2007 – March 2007	Final plan	Agree and incorporate responses Publish final plan

# The Louth Coastal catchment

The Louth Coastal catchment extends from the Lincolnshire Wolds at its western boundary to the coastline of the North Sea at its eastern boundary and from Gibraltar Point in the south to Tetney Haven in the north.

The catchment is made up of a number of separate watercourses divided by natural watersheds. Each watercourse has a separate catchment area. For this CFMP we have combined these to form a larger unit, with a total area of 1,050km<sup>2</sup>. The catchment is mainly rural and the major land use is for agriculture. The main towns include Louth, Mablethorpe, Skegness, Alford and Sutton on Sea.

The watercourses within the catchment generally rise on the eastern boundary of the Lincolnshire Wolds. They flow in an easterly direction discharging into the North Sea. The coastal strip extends inland for about 60km, much of which is low lying and protected by flood defences. The main watercourses within the catchment include the River Lud, Louth Canal, River Lymn, River Steeping, Great Eau and Woldgrift Drain. The catchment

includes a mix of land uses. In terms of area the land is 78% arable, 13% pasture, 3.5% urban (developed) and the remaining land area consists of various other land use types. Approximately 65 per cent of the agricultural land is of good to moderate quality and 24 per cent is of good quality.

We have a range of powers for flood risk management for the main rivers in the catchment. Ordinary watercourses and much of the areas of low lying ground are managed by local authorities and Lindsey Marsh Drainage Board. We are also responsible for flood warning and emergency planning in partnership with local authorities.

Figure 1 shows the main features of the catchment.

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



Louth Canal



# Current flood risks and management

We work with the Internal Drainage Boards, local authorities and Anglian Water in managing flood risk. Although we spend a significant amount each year on flood risk management, people, property and the environment remain at risk from flooding in areas within the catchment.

Rivers are the main source of flooding in the Louth Coastal catchment and is largely associated with excessive rainfall events, particularly when the ground is already saturated or when channels become blocked. Coastal towns are also at risk from high tide and storm surge, which is considered in Shoreline Management Plans (SMPs).

Most of the catchment is low lying and relies heavily on pumped drainage, which is managed by the Lindsey Marsh Drainage Board. The main watercourses draining across the lowland coastal strip are raised embanked channels and above the general level of the surrounding land. These are maintained, however should the embankments fail or be overtopped, serious flooding could result. Any failures of the pumped drainage system could also lead to flooding.

Our flood map shows the area at risk of flooding and you can look at it on our website [www.environment-agency.gov.uk](http://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.

Current flood risk management includes:

- Pumped drainage – much of the low lying land drainage is pumped. Generally the drains are pumped either directly into the main watercourses, which then flow to the sea or they drain towards pumping stations at the sea outfall.



**River Steeping**

- Flood storage areas – embanked channels crossing the lowland coastal strip provide water storage when discharge to the sea is interrupted by the tide. In addition, there are off-channel flood storage areas.
- Management work, such as maintenance, monitoring and operation of defence structures. We also have an annual maintenance programme, which includes channel dredging and weed cutting.
- 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 flood risk

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

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

In the CFMP, we assess the impact of these changes on flood risk by looking at what might happen under various scenarios. We can only achieve effective and sustainable management by developing and putting in place a range of flood risk management policies that can react to change.

## Climate change

Climate change will lead to frequent and heavier rainfall and more flooding events.

Higher average summer temperatures will result in a greater risk of thunderstorms and flash flooding.

Sea level rise can result in changes to the tide locking of watercourses draining to the sea and in coastal and tidal flooding.

**Q** Have we adequately considered future changes in the catchment?

## Urban development

Development is unlikely to have a significant impact on the Louth Coastal catchment as a whole. However, development would have local impacts, especially if significant parts of the development are concentrated in a small location.

Crucial to managing flood risk is to ensure that further development is minimised in areas at risk of flooding.

It is essential that drainage systems for new developments are planned fully. Using sustainable drainage systems (SuDS) where possible in new developments, reduces the impact of urban growth on flood flows and risk.

## Land use

Over the past 100 years agriculture has experienced both growth and decline. This has the potential to occur over the next 100 years, but overall growth is not considered likely due to future sustainability pressures. Due to the generally high grade nature of the land in Lincolnshire, compared to other parts of the United Kingdom, it is unlikely that a significant reduction in agriculture would occur. We suggest that the existing land use is likely to continue in the future.

## Scenarios

We developed scenarios of the future, which combine urban development and climate change. Our investigation of flood risk under these scenarios reveals that future flood risk could be far greater than it is now.

# Catchment objectives

The main objective of the CFMP is to develop policies for flood risk management within the catchment now and in the future.

We have developed detailed objectives for the management of flood risk in the catchment. We have used these to assess which policies are the most appropriate.

In summary, our catchment objectives are:

- To manage the flood risk to the built environment.
- To manage the flood risk to the rural environment.
- To reduce the flood related health risks to population.
- To increase awareness of self help methods (flood warning awareness / flood proofing).
- To manage flood risk so that the development objectives at a Regional and Local Government level can be achieved.
- To reduce the vulnerability to the impacts of climate change.
- To protect and enhance the historic environment.
- To protect and enhance landscape character and visual amenity.
- To protect and enhance all designated sites of nature conservation interest.
- To protect and enhance the nature conservation value of non-designated sites.
- To maintain and enhance Biodiversity Action Plan (BAP) habitats and species in line with national and local targets.
- To maintain and improve the quality of surface sewers.
- To protect and enhance surface water resources.
- To maintain and enhance recreation and amenity facilities.
- To protect and enhance land quality.

**Q** Do you agree with these catchment objectives?

# Policy appraisal

Policies for sustainable flood risk management in the Louth Coastal catchment aim to meet environmental, social and economic objectives.

We aim to identify the most sustainable flood risk management approach for the Louth Coastal catchment. To do this, we must identify the preferred policy for specific areas within the catchment. We have divided the catchment into smaller areas, called policy units.

We have selected three policy units. Figure 2 shows the policy units, together with the proposed policies for each.

We have selected, through a process of policy appraisal, the set of policies, which best meets, the catchment objectives.

## Flood risk management policies

We can use six available policies within the catchment. They are:

- P1** No active intervention (including flood warning and maintenance), continue to monitor and advise;
- P2** Reduce existing flood risk management actions (accepting that flood risk will increase with time);
- P3** Continue existing and alternative actions to manage flood risk at the current level (accepting that flood risk will increase over time from this baseline);
- P4** Take further action to sustain the current scale of flood risk into the future (responding to the potential increases in flood risk from urban development, land use change and climate change);
- P5** Take further action to reduce flood risk (now and/or in the future);
- P6** Take action to increase the frequency of flooding to achieve benefits locally or elsewhere (which may lead to an overall reduction in flood risk). An example of this would be the creation of wetlands or washlands, which in addition to delivering environmental benefits could reduce the frequency of flooding threatening people and property elsewhere.

We have selected, through a process of policy appraisal, the set of policies which best meets the catchment objectives.

### Policy unit 1- Highland catchment: P3

It is not anticipated that flood risk will significantly increase over time. There is currently little active flood defence in the policy unit, but what does exist, needs to be maintained.

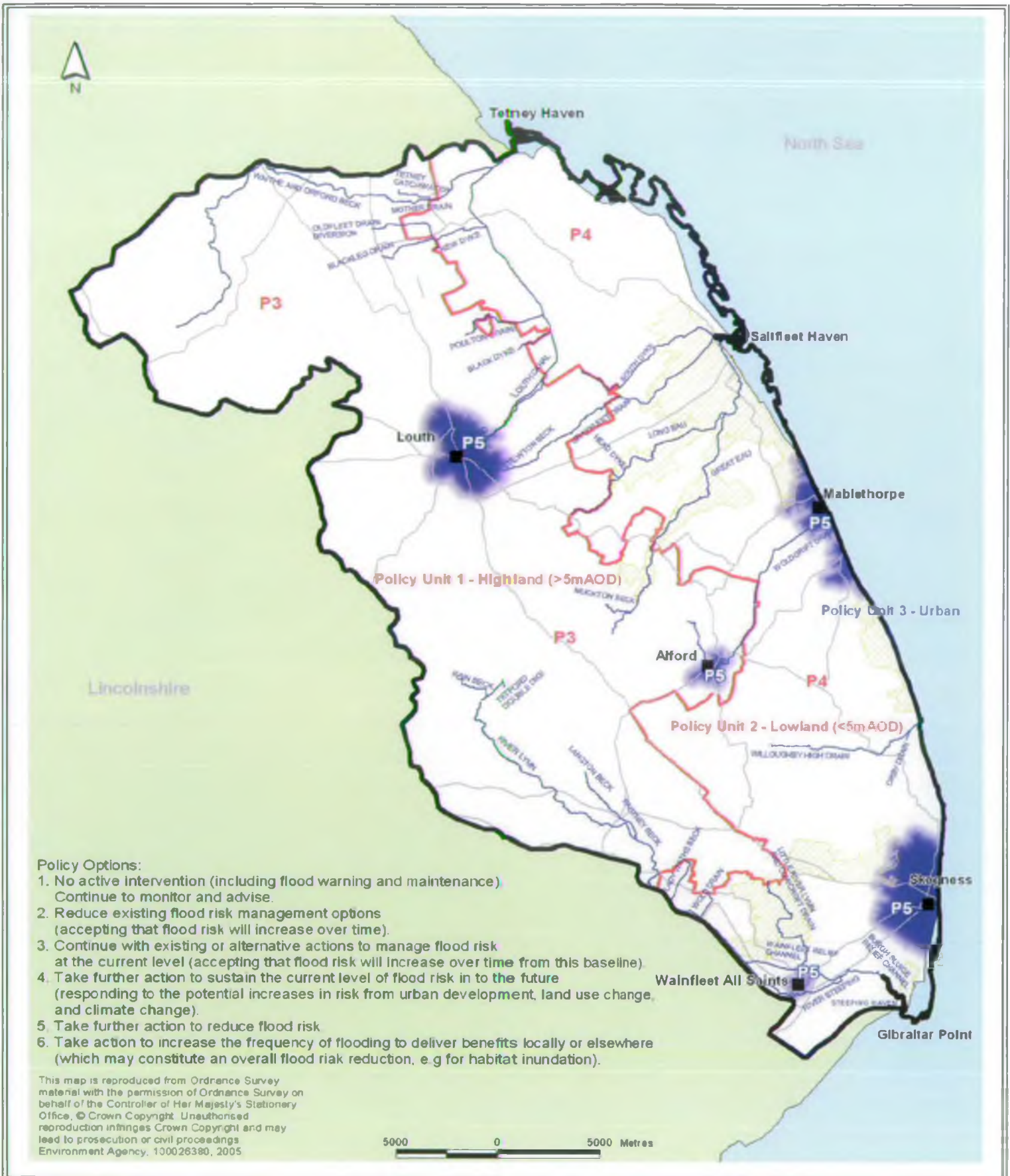
### Policy unit 2 – Lowland catchment: P4

The flood risk in this policy unit will increase in time. Development and land use change will have little impact, so future flood risk of this policy unit will depend on the nature of climate change over the next 100 years. As risk increases, further action needs to be undertaken to sustain the current flood risk.

### Policy unit 3 – Urban: P5

The flood risk in this policy unit will increase in time. The magnitude of the future development will have limited impact and there will be little land use change, so future flood risk will depend on the nature of climate change over the next 100 years. As risk increases, further action needs to be undertaken to reduce the flood risk and to allow for future urban development.

**Q** Do you think we have identified the correct policy units and policies?










Key	
	Policy Unit 1 - Highland (>5mAOD)
	Policy Unit 2 - Lowland (<5mAOD)
	Policy Unit 3 - Urban
	Potential Grazing Marshes
	P3 - Policy option 3
	P4 - Policy option 4
	P5 - Policy option 5

Figure 2

Policy units and proposed policies

# Action plan

The action plan identifies actions to achieve sustainable flood risk management throughout the Louth Coastal catchment.

We have suggested actions that should be the next stage of the process leading to reducing flood risk (see pages 12 and 13). We have developed these policies and 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 as a whole. We aim to strengthen existing links and to continue to work together to achieve these actions.

We are already working to extend the coverage of, and to improve, flood warning throughout the catchment and to increase awareness of flood risk.

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



Waithe Beck

## Action plan

Action proposed	Success criteria	Lead partner	Timescale Year(s)	Priority (H/M/L)
<b>Policy unit 1</b>				
Assess risks of flooding from rivers and alter maintenance to suit.	Flood risk management strategy completed.	Environment Agency	2010/2012	Medium
Investigate groundwater flood risks.	Groundwater flood risk strategy completed.	Environment Agency	2010/2015	Low
<b>Policy unit 2</b>				
Identify outfalls at risk and investigate outfall options.	Investigation into outfall options completed.	Environment Agency	2008/2010	High
River Steeping Flood Alleviation Scheme.	Alleviation scheme completed.	Environment Agency	2008/2010	High
Waithe Beck Flood Alleviation Scheme.	Alleviation scheme completed.	Environment Agency	2008/2010	High
Investigate Lincolnshire Coastal Grazing Marshes for benefits to potential flood risk management.	Investigation completed.	Lincolnshire Wildlife Trust	2010/2012	Medium
Develop models for Lindsey Marsh Drainage Board catchments.	Models for the outstanding catchments completed.	Lindsey Marsh Drainage Board	2010/2015	Medium
Assess risks of flooding from rivers and alter maintenance to suit.	Flood risk management strategy completed.	Environment Agency	2010/2012	Medium
Investigate groundwater flood risks specifically in the areas around the Tetney Blow wells and other areas.	Groundwater flood risk strategy completed.	Environment Agency	2010/2015	Low

Action proposed	Success criteria	Lead partner	Timescale Year(s)	Priority (H/M/L)
<b>Policy unit 3</b>				
Problem areas identified and solutions recommended. Investigate urban drainage flood problems in Louth, Mablethorpe, Sutton on Sea and Skegness.	Investigation completed.  Constraints identified to feed into the Local Development Framework.	Anglian Water	2008/2010	High
Develop strategic urban drainage plans for future development around Louth, Mablethorpe, Sutton on Sea, Skegness and Alford.	Drainage Area Plans completed for respective urban areas.	Environment Agency/Anglian Water/Lindsey Marsh Drainage Board/East Lindsey District Council	2008/2010	High
<b>Catchment wide</b>				
Continue with the Louth catchment flood map improvements, including obtaining LiDAR (Light Detection and Ranging) survey data of catchment.	Louth catchment flood map improvements completed.	Environment Agency	2006/2008	Medium
Continue with developing and improving the National Flood Forecasting System.	Continual updates to the existing National Flood Forecasting System.	Environment Agency	2006/2008	Medium

# Next steps

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

We will include any feedback received 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 you that we have published the CFMP by advertising in the local press.

Once we have published the Louth Coastal CFMP, we will set up a system to review and monitor how we put it into practice. We will also need to check that the CFMP is being used as we intended and that its policies and action plan are being achieved.

We will check how the CFMP is performing by using suitable indicators and targets, 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 understanding climate change;
- changes in national policy guidance;

- the most up-to-date information on flood outlines, environmental data, property databases and improved flood estimates.

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

We look forward to receiving your feedback on this stage. However, when making your response, please keep in mind the fact that the CFMP will be a high level document taking a strategic view at the catchment scale and will not be addressing local issues in detail or flooding from the sea.

**Q Can you suggest other ways to monitor how well the CFMP works?**



# 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?**

.....  
.....

## Section 2

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

**1. How did you receive the Louth Coastal 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? .....

Please return completed forms to Tracy Hodsman, Louth Coastal CFMP Project Manager, Environment Agency, Kingfisher House, Goldhay Way, Orton Goldhay, Peterborough, PE2 5ZR.

Comments can also be e-mailed to:

[lccfmpconsultation@environment-agency.gov.uk](mailto:lccfmpconsultation@environment-agency.gov.uk)







**Would you like to find out more about us,  
or about your environment?**

**Then call us on**

**08708 506 506** (Mon-Fri 8-6)

**email**

**enquiries@environment-agency.gov.uk**

**or visit our website**

**www.environment-agency.gov.uk**

**incident hotline 0800 80 70 60** (24hrs)

**floodline 0845 988 1188**



**Environment first:** This publication is printed on paper made from 100 per cent previously used waste. By-products from making the pulp and paper are used for composting and fertiliser, for making cement and for generating energy.