

# **FLOOD WARNING DISSEMINATION PROJECT**

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**R E P O R T**

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**February 1996**

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# CONTENTS

	Page No.
EXECUTIVE SUMMARY	1
1. INTRODUCTION	5
2. LEGAL FRAMEWORK	7
3. TARGETS AND PERFORMANCE MONITORING	9
4. PROPOSED FLOOD WARNING DISSEMINATION SYSTEM	11
5. RESOURCES	16
6. ACTION PLAN	17
7. RECOMMENDATIONS	23
APPENDIX 1	
1. INTRODUCTION	24
2. OBJECTIVES	24
3. PERFORMANCE SPECIFICATION	25
4. INFORMATION HANDLING	29
5. PUBLIC AWARENESS	31

ENVIRONMENT AGENCY



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# NATIONAL FLOOD WARNING PROJECT

## EXECUTIVE SUMMARY

### 1. Ministerial Direction

MAFF are to issue a Ministerial Direction which will direct the NRA to take the lead role in the dissemination of flood warnings to the public. It places emphasis on the need for the NRA to ensure flood warning plans are developed in consultation with other Emergency Authorities, and to take reasonable steps to provide flood warnings. With effect from 1st April 1996, the NRA will become part of the Environment Agency.

### 2. Planning and Partnerships

The report highlights the continuing need for The Environment Agency to work in partnership with the Police and Local Authorities in the development of Nationally consistent flood warning dissemination plans and arrangements agreed to trigger Disaster plans. The Environment Agency will lead and maintain the production of a Joint Flood Warning Dissemination Plan. Agreement will be needed with Police Forces and Local Authorities to define future roles.

### 3. Legal

Legal advice has been sought on the current legal position in relation to flood warnings and the implications on the Environment Agency in taking the lead role in flood warning dissemination in the future. Counsel has expressed a view that whilst it remains a general duty or power which confers a wide discretion to issue flood warnings the fact that the Agency is taking a lead role should not compromise its position. The Agency is unlikely to be held liable in negligence for any action or inaction in relation to its general duty/power nor is it likely to be successfully judicially reviewed or held liable for breach of statutory duty. However, Counsel have indicated that the more closely the public are involved with the arrangements the greater the possibility that a duty of care situation may arise since this raises the relationship of expectation and reliance.

### 4. Targets and Performance Monitoring

Research indicates that currently effective action to limit flooding effects is taken in only 15% of cases. Of the 4 principal factors affecting effectiveness, the public's awareness of flood warnings (45%) is the most limiting factor. In order that a real difference in the flood warning service is realised, a new flood warning system is proposed which will, over a 5 year period to 2001, increase the awareness of warnings to 80% and will significantly increase the effectiveness of action taken in the event of flooding. There will be a commitment to undertake post event reviews to confirm the effectiveness of the new approach.

5. **Core Flood Warning System**

The core flood warning system aims to significantly increase public awareness of flood warnings in force for their area and thereby also improve their availability to respond.

The proposed core flood warning system will apply to all known flood risk areas where a flood forecasting system exists.

The report advocates that a consistent core system should operate throughout England and Wales. This should include at least two methods of alerting those at risk of flooding and should consist of:

Method 1

A system of media broadcasts in all areas including Local Radio, TV, Ceefax, Teletext, Met Office, AA Roadwatch, recorded voice messaging systems.

Method 2

An alert or hook system to alert people to the risk of flooding including:

- automatic voice messaging/direct dial systems
- flood wardens
- cascade direct contact systems
- sirens
- loudhailer systems

During 1995 highly successful trials took place on the Isle of Wight and in Lincolnshire. Automatic Voice Messaging was used in the former to alert residents to listen to local radio for further information. In Lincolnshire, extensive use of local radio in conjunction with existing siren and flood warden systems was used. The report concludes that these new techniques should be developed and be installed in each Agency Flood Warning Centre. The report finds that there is sufficient existing evidence to conclude that the use of these new methods, in conjunction with existing tried and tested techniques, to make real improvements in the dissemination of Flood Warnings and meet the proposed targets.

It is proposed that for September 1996 the target should be for the Environment Agency to at least maintain the current level of service and supplement systems by extensive use of the media.

6. **Public Awareness**

A public awareness system is proposed which aims to significantly improve understanding of flood warnings by those at risk of flooding and thereby to significantly improve their ability to effectively respond.

In order to educate those at risk, a national and local public relations campaign is proposed commencing 3 June 1996. A national leaflet should be provided to ensure consistency of approach with provision for a local information sheet. The key message will be that property owners must accept personal responsibility for ensuring their own safety and safeguarding their property during flood events by being aware of flood warning systems in their area and responding to flood warning messages. People will be made aware if they live in a flood risk area.

It is proposed that an 0990 telephone number be established to link to recorded voice messaging systems which will enable the public across England and Wales to establish, at any time, details of flood warnings in force in their area.

7. **Flood Warning Messages**

A system of nationally consistent flood warning statements for emergency authorities and media use is proposed.

The colour coded system of Yellow, Amber and Red warnings should be retained. The system should be used for internal state of preparedness within the Environment Agency and in discussion with Police and Local Authorities. Messages to the public should focus on where and when flooding, particularly to property, is likely to occur.

8. **Resources**

The report concludes that the cost of implementing the proposals will be:

£4.48m for initial set up costs  
£1.7m for annual running costs

Initial set up costs include principally staff costs, system costs and awareness campaign costs.

Revenue costs include staff costs and system running costs.

To implement and maintain delivery of the proposals, an additional 25.4 FTE's will be required in the period from 1/1/96 to 1/9/96 increasing to 26.4 FTE's to 31/3/97 and reducing to 22.8 FTE's thereafter.

Initial and revenue costs equate to approximately 1.8% and 1% respectively of total flood defence annual expenditure.

The costs of proposals will be met from Regional and Local Flood Defence Committee budgets. MAFF have indicated that the work will be of the highest priority.

Further detailed consideration of financial aspects will be included in the Business Case for the project.

9. **Project Management**

Implementation of the project should be via a National Project Team, to ensure consistent up take of the changes and drive the Business Case and National System Procurement, and 8 Regional Implementation Teams.

It is proposed that implementation be by performance specification not method specification. An implementation project brief including performance specification has been produced.

## 1.0 INTRODUCTION

1.1 The following report highlights the measures necessary to move towards a more consistent, reliable and improved flood warning service to be introduced across England and Wales with The Environment Agency taking the lead role in disseminating flood warning messages with effect from 1 September 1996.

1.2 It covers the steps in the process which have been taken to build on the work of the National Flood Warning Procedures Group chaired by Roy Hathaway, former Head of Flood and Coastal Defence at MAFF who concluded there was:

- confusion in the minds of the public on current roles and responsibilities.
- a low success rate in passing warnings through to the public who generally had a low level of awareness of flood risk.
- resource difficulties for the main partners involved - Police, Local Authorities and NRA suggesting that methods and new technologies of dissemination needed to be explored.

1.3 The report has been compiled by an NRA National Project Team. Four sub-groups were formed to investigate and draw up proposals in key activity areas relating to Flood Warning. Each group was led by a representative of the National Team. The National Team and their lead role areas are as follows:-

Bryan Utteridge	Head of Flood Defence	National Project Leader
Andy Baxendale	Area Flood Defence Manager, Anglian Region	Consistency of Approach
Geoff Champion	Public Relations Manager, Welsh Region	Public Awareness
Gary Lane	Regional Flood Defence Manager, Southern Region	Technology & Systems
David Pelleymounter	Area Flood Defence Manager, N/Y Region	Flood Plan Production

1.4 In considering what must be done to improve the flood warning dissemination service, the National Project Team has focused on proposals to improve public awareness and response to flood warnings.

- 1.5 The appendix contains guidance for Regional Project Teams to ensure there is a Nationally consistent uptake of the initiative as we move toward 1 September 1996 and beyond.
- 1.6 Further detailed supporting documentation has been compiled and will be issued to Regional Project Managers.

## 2.0 LEGAL FRAMEWORK

### 2.1 Existing legal framework

The National Rivers Authority has functions relating to flood warnings and the Secretary of State has power to issue a direction to the NRA under the Water Resources Act 1991 (WRA). These functions will be transferred (on a day yet to be appointed) to the Environment Agency under the Environment Act 1995.

Under S.105(1) WRA the NRA is required to exercise a general supervision over all matters relating to flood defence. "Flood Defence" is defined in S.113(1) to mean the drainage of land and the provision of flood warning systems. "Flood Warning System" is defined by S.148(5) to mean:

"any system whereby, for the purpose of providing warning of any danger of flooding, information with respect to:-

- (a) rainfall, as measured at a particular place within a particular period; or
- (b) the level or flow of any inland water, or part of an inland water, at a particular time; or
- (c) other matter appearing to the Authority to be relevant for that purpose,

is obtained and transmitted, whether automatically or otherwise, with or without provision for carrying out the calculations based on such information and for transmitting the results of such calculations".

Under S.166(1) WRA the NRA is given the power to provide and operate flood warning systems. In view of the definition of "flood warning system" this power would appear to include the power to disseminate flood warnings. In any event the NRA has the general power under S.4 to do anything which in its opinion is calculated to facilitate, or is conducive to or incidental to, carrying out of its functions, and this power would cover dissemination of flood warnings were it not to be covered by S.166(1).

### 2.2 A Ministerial Direction

Under S.207(1) of WRA the Secretary of State may after "consultation with the Authority, give to the Authority such directions of a general character as appear to the Secretary of State to be requisite or expedient in the interests of National Security or for the purpose of mitigating the effects of any civil emergency which may occur."

The duty imposed on the Authority by this direction has effect notwithstanding any other duty imposed upon it. A civil emergency is defined in S.207(7) as a "natural disaster" or "other emergency" which is likely to disrupt water supplies or sewage services or involve such destruction of or damage to life or property "as seriously and adversely" to affect all inhabitants of that area or a substantial number of them.

### 2.3 Liability

In theory any action and inaction on the part of the NRA in relation to its duty of general supervision would be open to challenge by Judicial Review, but because of the general nature of the duty at present it is hard to envisage circumstances in which a successful challenge could be made provided that the NRA acts reasonably. For a similar reason an action for breach of statutory duty is likely to be unsuccessful. However, the more specific the duty the more likely it is that an action would lie.

The more important question is whether the failure to disseminate flood warnings could give rise to liability at common law in negligence. The approach of any judge would be to see whether it is fair and reasonable that a duty of care should be held to arise and then to consider foreseeability, proximity, public policy and discretion. In cases where there is a failure to exercise a power it is unlikely to give rise to a cause of action. However, in exception circumstances where particular arrangements have been established and a particular relationship exists between the NRA and a landowner in relation to flood warnings a duty of care in relation to the provision of warnings might be found to exist.

It is unlikely that giving public broadcast warnings or warnings over a loud hailer or public address or siren warnings would be enough to establish such a relationship. However, direct dial telephoning and any direct contact (such as knocking on peoples doors) may be enough to establish a duty of care, particularly in areas of repeated flooding where a pattern of such direct contact has been established.

### 2.4 Use of Disclaimers

The Authority/Agency if given the lead on dissemination of flood warnings would not be advised to issue disclaimers unless the terms of any direction. It is unlikely that any such disclaimer would be upheld by a court. There also may be PR problems with the issue of such disclaimers.

### 2.5 Employee Liability

The failure of the Agency/Authority employee to issue a warning is an internal matter between the Authority and its employee. In legal terms the actions of an employee will be seen as those of the Authority. At present the Authority will not usually hold the employee liable and will indemnify an employee in any claim made against them except in areas of wilful misconduct or fraudulent, dishonest or criminal action.

### 3.0 TARGETS AND PERFORMANCE MONITORING

For all known flood risk areas where a flood warning system is provided, it is proposed that the Environment Agency will, by 2001, achieve delivery of a flood warning to 80% of properties in advance of flooding occurring. It is also proposed to achieve a significant improvement in the response of the public to flood warning.

Recent research has indicated that there are 4 principal factors contributing to an effective flood warning dissemination system:

- a) the awareness of the public that a warning has been issued;
- b) the availability of the public to respond;
- c) the ability of the public to respond;
- d) effective action based on the warning.

The effectiveness of these factors is currently around 45%, 55%, 90% and 70% respectively. The net effect is that effective response occurs in only around 15% of flooding incidents. The very low awareness factor is a significant limiting factor in current systems.

It is proposed that new systems and procedures are introduced which will achieve progressive improvements in the above factors to around 80%, 80%, 95% and 85% respectively over a 5 year period to 2001. This will significantly increase the awareness of the public's and their understanding of flood warnings and the degree of effective action. Table 1 illustrates the current and target position.

Initially it is proposed that the target for September 1996 should be the current level of service (around 40% warning awareness) as a minimum. Thereafter it is proposed to progressively increase the target over the next 5 years to 80%.

It is proposed that post flooding event reviews are undertaken to confirm the progressive achievement of the target over the next 5 years.

TABLE 1

**FLOOD WARNING DISSEMINATION SYSTEMS  
CURRENT PERFORMANCE AND FUTURE TARGETS**

FACTORS AFFECTING FLOOD WARNING EFFECTIVENESS	CURRENT PERFORMANCE		TARGET PERFORMANCE		PROPOSALS TO ACHIEVE TARGET
	Performance	Cumulative Impact	Performance	Cumulative Impact	
Awareness of Warning	45%	45%	80%	80%	<ul style="list-style-type: none"> <li>• Information of Risk Areas</li> <li>• Media Broadcasts</li> <li>• Alert Systems</li> <li>• Public Awareness Campaign</li> <li>• Voicebank service</li> </ul>
Available to respond	55%	25%	80%	64%	<ul style="list-style-type: none"> <li>• Public Awareness Campaign</li> <li>• Greater awareness of risk</li> <li>• Direct Contact Alert Systems</li> <li>• Media Broadcasts Local/National</li> </ul>
Able to respond	90%	22%	95%	61%	<ul style="list-style-type: none"> <li>• Greater awareness of risk allowing pre planned actions.</li> <li>• Direct Contact Alert Systems</li> <li>• Voicebank service</li> <li>• Public Awareness Campaign</li> </ul>
Effectively respond	70%	15%	85%	52%	<ul style="list-style-type: none"> <li>• Public Awareness Campaign</li> <li>• Greater awareness of risk</li> <li>• Clear messages/advice</li> <li>• Clarification of Emergency Authority roles</li> </ul>
Overall effect		15%		52%	

## 4.0 PROPOSED FLOOD WARNING DISSEMINATION SYSTEM

### 4.1 Aims

- a) To provide an improved Nationally consistent flood warning service to people and property at risk of flooding through taking the lead role in disseminating flood warning messages to those affected.
- b) To improve the awareness and understanding of those affected so that they are in a position to act to protect their families and property.

### 4.2 Objectives

#### Core Flood Warning Service:

To provide timely, accurate warnings of flooding to areas at risk of flooding throughout England and Wales where a flood forecasting system has been established.

#### Dissemination Plan:

To document a flood warning dissemination plan agreed with the Police and local authorities.

#### Public Awareness:

To provide information to the public on;

the areas at risk from river, tidal and coastal flooding,  
the flood warning system operating in that community,  
the responsibilities of the public,  
the responsibilities of the emergency authorities.

#### Consistency:

The flood warning service should be delivered in a consistent manner across England and Wales.

### 4.3 Core Flood Warning Service

In developing the core flood warning service, the Environment Agency will make full use of local media and automatic voice messaging techniques which were successfully trialled during the Autumn/Winter of 1995/96 in the Isle of Wight and Lincolnshire. These, along with the use of recorded voice messaging systems and the optimised use of existing successful dissemination techniques, (eg. sirens, flood wardens, direct contact cascade systems) will be the main drivers, alongside a public awareness campaign, in improving the flood warning dissemination system and meeting the set targets.

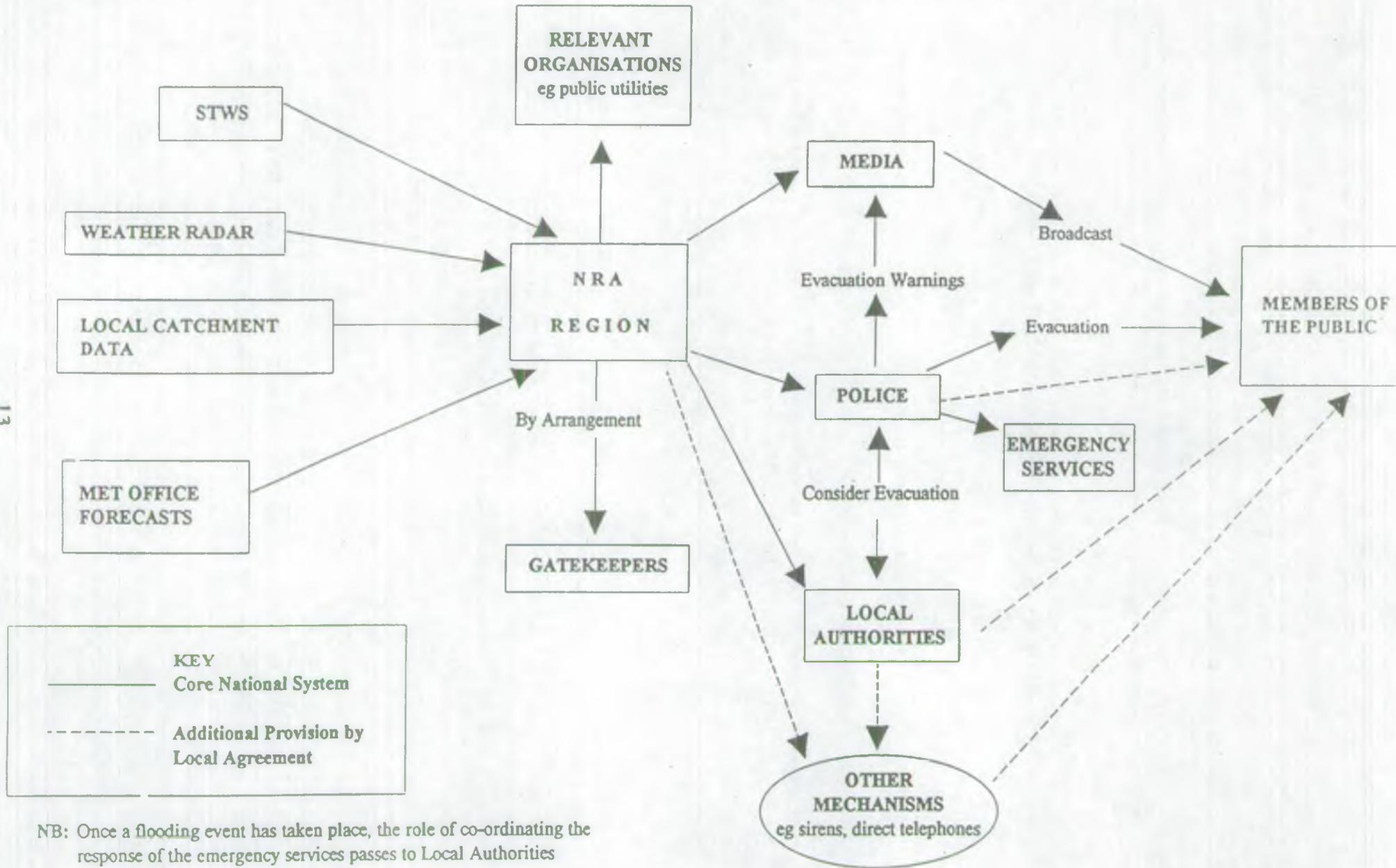
The Environmental Agency will aim to provide the following service throughout England and Wales by 2001. Table 1 illustrates the application of each component and Table 2 illustrates the general Flood Warning System proposed.

- Flood Warnings provided for river, tidal and coastal flooding where a forecasting system is established. Define areas covered.
- All warnings to be faxed to Police, Local Authorities, and appropriate Public Utilities and Major Industries. In silent hours a single 24 hour contact telephone number must be provided.
- A broadcast system of dissemination for property flood warnings transmitted regularly via Local Radio, TV, Ceefax, Teletext, AA Roadwatch, and Met Office. Warnings affecting roads only will also be broadcast via AA Roadwatch.
- An alert system to hook into the broadcast system, primarily Automatic Voice Messaging. Tried and tested methods typically Wardens, Sirens, Loudspeaker Vans may also be used where the resource is available. These methods may be provided by the Environment Agency, Police or Local Authority.
- Property subject to Red or Amber Flood Warnings to have available at least one broadcast system and one alert system. In areas where no broadcast system is available two alert system will be provided.
- The Environment Agency will provide a telephone information service to manage feedback from the public. This recorded message system will operate via an 0990 telephone number and will enable the public to find out details of flood warnings in force for their area.
- Regularly updated flood warning information leaflets covering a specific flood risk zone will be available from the Environment Agency, Public Libraries and Local Government Offices. Properties considered to be at high risk of flooding will receive a direct mailing of the leaflet.

TABLE 2

# FLOOD WARNING SYSTEM IN ENGLAND WALES

13



#### 4.4 Flood Warning Dissemination Plan

The Environment Agency will lead the production of a Flood Warning Dissemination Plan in partnership with the Police and Local Authorities.

The Dissemination Plan should cover an appropriate area where a degree of conformity in handling emergencies would be expected, e.g. Police Force Area, County Council etc.

The Dissemination Plan should define the roles in disseminating flood warnings applicable in the Plan Area.

The Dissemination Plan should identify potential "major" flooding incident locations and arrangements agreed with Police to trigger Disaster Plans in which the Police would have the lead co-ordinating role.

The local information insert in the National Leaflet will be based on agreed Flood Warning Dissemination Plans.

The Dissemination Plan will be maintained by the Environment Agency.

#### 4.5 Consistency

In order to achieve consistency of service across England and Wales a specification will be used for key areas of the service. These areas will include:

- Control of Documentation
- Usage of colour codes for warnings in both defended and undefended areas
- Warning dissemination standards
- Format and contents of Warnings to Police, LA etc.
- Format and content of warnings to Media
- Procedures
- Handling enquiries and feedback from the Public
- Monitoring Performance

Regions will consider their current service against these performance specifications in order to establish the work required under their regional implementation project.

#### 4.6 Dissemination Toolbox

In order to deliver the service across England and Wales a high level of information handling capacity will be required.

Guidance on requirements in proportion to workload will be given together with guidance on available equipment and services. Regions will consider their current service against these requirements in order to establish the work required under their regional implementation project.

Opportunities for consistency and standard solutions will be pursued by the National Project Team in liaison with the Regional Project Managers.

Two systems have been identified as being imperative to assist in the dissemination process. An Automatic Voice Messaging system will be nationally procured for each Area office together with a recorded message system for each Region.

#### 4.7 Public Awareness

The Environment Agency will undertake the promotion of a public awareness campaign with the following key elements.

- A national leaflet will be produced with provision for a local information sheet. People will be made aware if they live in a flood risk area.
- A national and local information campaign will be undertaken to launch the changes.
- Repeat campaign in September each year.

The key messages will be:

- Property owners must accept personal responsibility for ensuring their own safety and safeguarding their property during flood events by being aware of flood warning systems in their area and responding to flood warning messages.
- The Environment Agency, Local Authorities, Police and other Emergency Services will do all they can, subject to resources, to inform and warn people whose properties are at risk from flooding.

## 5.0 RESOURCES

### 5.1 Financial

The following table shows the additional resources required to set up and maintain the proposed dissemination service and meet set targets

CAPITAL COST ITEMS	COST £
Staff Costs	1,338,500
Automatic Voice Messaging	963,000
Recorded Messaging Service	149,700
National Public Awareness Campaign	496,000
Regional Public Awareness Campaign	237,300
Systems Development for FAX etc.	209,500
Public Alert Equipment	247,000
Flood Warden Schemes	64,900
Pagers, Cellphones etc.	34,000
Other Equipment	272,500
Other Services	150,000
National Fees and Staff Costs	100,000
<b>Sub Total</b>	<b>4,262,400</b>
Contingencies (5%)	212,950
<b>Total Capital Costs</b>	<b>4,475,350</b>
<b>Revenue Costs</b>	<b>1,734,600</b>

### 5.2 Human Resources

The following table shows the additional human resources required to set-up and maintain the system and maintain its operation.

PERIOD	Jan - Mar 96	Apr - Aug 96	Sep 96 - Mar 97	Apr 97 onwards
<b>FTE REQUIREMENTS</b>	25.4	25.4	26.4	22.8

The human resource requirements from 1 September 1996 onwards consists of an additional 25 FTE permanent staff across Regional and Area Offices.

## 6.0 ACTION PLAN

### 6.1 Strategy

The core elements of the implementation strategy will be as follows:

- National Project Team overseeing Regional Projects (see Table 3).
- Performance Specification not method specification, clear understanding of end result to be delivered, structural change if any to be determined by Regions.
- It is targeted to progressively achieve an 80% success rate in the five years to September 2001.
- It is proposed by September 1996 the current level of service will be maintained by the Environment Agency and existing systems will be supplemented by extensive use of the media.
- The actions required are summarised on Table 4.

### 6.2 National Project

The National Project Team will continue to steer Regional Projects and target the delivery of the following National Products:-

- Regional project brief including targets for September 1996 (Appendix 1)
- Supporting Information Documents
- National Seminars
- National agreement with MAFF on criteria and guidance on grant aid submissions by 1 January 1996
- National agreement by 1 January 1996 with AA Roadwatch for dissemination of flood warning messages.
- National agreement by 1 January 1996 with Meteorological Office, Ceefax, Teletext to incorporate flood warning messages in their services.
- National Business Case approved by NRA Board mid-February 1996.
- National claim for grant aid for 1995/96 by Mid-March 1996.

- National core information leaflet with area/catchment/zone specific "inserts" and display posters by June 1996. All content to have been approved by legal department and tested against "Plain English" standards.
- National support for publicity materials from Insurance industry by March 1996.
- National public awareness campaign including news releases, "lines to take", possible news videos/tapes etc and nationally approved design/content of advertisements prepared by April 1996.
- AVM and recorded message systems installed and commissioned by 1 July 1996.
- National Specification/Contract for performance monitoring by August 1996
- National business case for additional staff and financial resources to be prepared by 1 January 1996.
- While all efforts should be made to ensure efficient use of existing NRA staff resources, the standard of existing NRA activities should not be reduced as a result of the Environment Agency taking on this additional role. The National Project Team will endeavour to secure the National Agreements referred to in this section by means of a Memorandum of Understanding with each organisation. This will ensure roles are understood and signed up too.

### 6.3 Regional Projects

Each Region to set up an implementation team with a Project Manager by mid-November 1995 working to the Regional Project Brief (Appendix 1).

Key products from Regions will be:

- Discussions with Police forces to determine which Flood warning dissemination activities they will continue with after 1 September 1996 and those they wish to withdraw from. To be completed by 1 January 1996.
- Discussions with Police and Local Authorities on an agreed joint dissemination plan. Completed by 1 September 1996.
- Produce a Form A for Regional Project by 1 January 1996 including items required by the Region to allow delivery of Performance Specification and required information handling capacity.

- Ensure adequate funding is included in Flood Defence Committee Budgets for 1996/97, 1997/98, 1998/99.
- Include Manpower requirements in Corporate Plan for 1996/97, 1997/8, 1998/99.
- Regional submission of required systems and resources to National Project Team by 31 December 1995.
- Media links for Flood Warning Dissemination agreed by 1 September 1996.
- Alert systems to cover for withdrawn Police activities to be operational by 1 September 1996.
- Recorded message systems to be operational by 1 September 1996.
- Local Flooding Information "insert" for area/catchment/zone/reach to be prepared by May 1996.
- Distribution of leaflets/inserts to selected properties from June 1996.

Key milestones are shown on Table 5.

**TABLE 3**

**NATIONAL QUALITY REVIEW GROUP**

- John Chatterton
- Head of Flood Defence
- 2 x Area Managers

**REGIONAL QUALITY REVIEW GROUP**

- RFDM
- AFDM
- Regional Project Manager

## **NATIONAL PROJECT BOARD**

- BRU, DP, GL, GC, AB
- Regional Implementation Project Manager
- Chair Quality Review Group
- IS, Procurement, Legal Representative

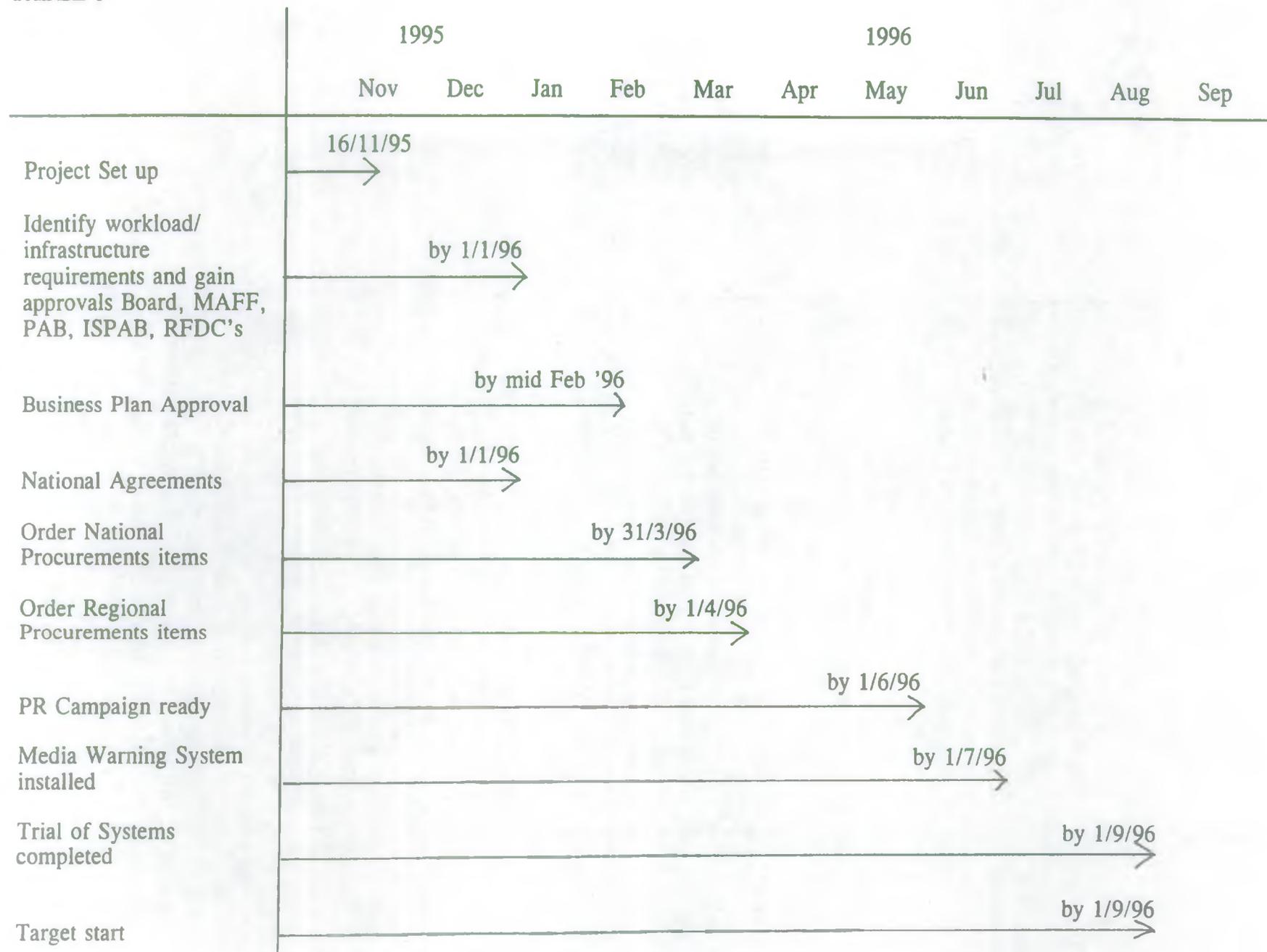
## **REGIONAL PROJECT TEAM**

- Regional Project Manager
- Area Representatives
- IS, Procurements Representatives

TABLE 4 SUMMARY OF PROJECT ACTIVITIES AND TIMINGS

Date	Achievement	Performance %of Properties receiving a Warning before flooding occurs
1 Nov 1995 (t-10 months)	National report completed. Regional Implementation Group established	Status quo Say 40%
1 Jan 1996 (t-8 months)	Regional Projects Established National agreements with Met Office, AA Roadwatch, MAFF Resources framework established	
1 June 1996 (t-3 months)	Public Awareness Campaign starts Flood Information leaflets available	
1 September 1996 (t)	Complete and agree Dissemination Plan Establish Alert services to cover withdrawn Police activities Broadcast system established Media links established and pre-formatted media warnings prepared. Feedback and monitoring infrastructure in place	
1 September 1997 (t+1 Year)	Review all major flood risk areas Establish a Broadcast and Alert systems for all major flood risk areas Revise Local flood warning information leaflets Establish review programme for all flood risk sites with a forecasting system	55%
1 September 1998 (t+2 Years)	Complete review of all flood risk sites with a forecasting system Establish a Broadcast and Alert systems for all flood risk sites Revise Local flood warning information leaflets	65%
1 September 2001 (t+5 years)	Overall system reviewed and refined with experience All flood risk sites where it is possible to forecast flooding both technically and economically are included in the system	80%

**TABLE 5**



## 7.0 RECOMMENDATIONS

1. In accordance with the proposed Ministerial Direction the Flood Warning Dissemination system as set out be implemented to enable Regions to deliver the current standard of service by the 1 September 1996 and work toward an 80% success rate by 2001.
2. An additional 25.4 FTE's be sought for allocation to Regions and Areas from 1 March 1996 - 31 August 1996 to meet the additional workload increasing to 26.4 FTE's to March 1997, thereafter reducing to 22.8 FTE's.
3. Approval be sought to £4.48m capital and £1.7m annual revenue expenditure to enable the initiative to be adequately financed.
4. A National Business Case be developed incorporating the above and submitted to the NRA Board for approval.

# NATIONAL FLOOD WARNING REPORT

## APPENDIX ONE

### REGIONAL IMPLEMENTATION PROJECT BRIEF

#### 1.0 INTRODUCTION

- 1.1 This brief covers the requirements for Regional Implementation Projects to deliver the minimum Flood Warning Service by 1 September 1996.
- 1.2 Progress towards longer term targets is encouraged. A review of progress will be undertaken in October 1996 to focus on work required to meet the service required in 2001.

#### 2.0 OBJECTIVES

- 2.1 To ensure that flood warnings issued by the Environment Agency have a broadcast dissemination route to the Public. Establish agreement with Regional/Local media for the Dissemination of Flood Warnings.
- 2.2 In locations where the Police have indicated their withdrawal from a current alert system an alternative system should be established by the Environment Agency.
- 2.3 Through liaison with Police and Local Authorities establish an agreed Flood Warning Dissemination Plan.
- 2.4 Fully support the public awareness campaign at Regional/Area level. Key components will be to establish regional contacts with AA Roadwatch, Ceefax, Teletext and the Met Office; and where possible, agreement with regional/local radio stations for broadcasting warning messages and the production of local information sheet "inserts" to accompany the national flood warning leaflet.
- 2.5 Compare existing regional service with National Specification and identify where existing services need to be amended or changed to meet the required level of service.
- 2.6 Prepare implementation plans for the incorporation of Automatic Voice Messaging and Public Enquiry/Feedback systems into Regional/Area flood warning arrangements. Review existing regional/area fax, telephone and other systems used in issuing flood warning messages and prepare a proposal for upgrading equipment/systems. Guidance on systems appropriate to alert situations should be followed.
- 2.7 Draw up regional project to include all elements needed for 1 September 1996 and implement.

### 3.0 NATIONAL PERFORMANCE SPECIFICATION

#### 3.1 Roles and Responsibilities:

- The EA will ensure flood warnings are delivered to target standards, to the Police, Local Authorities, Gatekeepers, the Media, the Public, Industry/Commerce and landowners in known flood risk locations.
- The EA will deliver warnings directly itself or indirectly via Emergency Authorities, Agencies, Media, Cascade Chains, or other appropriate indirect means.

#### 3.2 Use of Colour Codes:

- The meaning of colour codes for fluvial, tidal and coastal events will follow consistent interpretations across England and Wales. The revised meanings will be incorporated into all Flood Warning Dissemination Plans.
- The colour code warning will be used to make the Police and Local Authorities aware of the predicted impact of the flood event and the predicted nature of its effects.
- For media broadcasts colour codes will be used but warnings will focus on when and where property flooding will occur.

*See Revised colour code meanings are given on Tables 6-9.*

#### 3.3 Warning Dissemination Standards:

- A warning system for all known flood risk areas where forecasting is reasonably practicable will be defined and incorporated in the Flood Warning Dissemination Plan.
- Flood Warnings will be disseminated from Dissemination Centres of viable size, and providing adequate resources and support to meet targets.
- Target standards for the receipt of warnings before flooding occurs for all properties in known flood risk areas will be set and warning systems implemented to meet the target. In general warnings should be targeted to be received at least 2 hours before the onset of flooding.
- The minimum warning system for all known flood risk areas will consist of
  - i) local radio/TV broadcasts and;
  - ii) at least one alert/hook system primarily automatic voice messaging.

The type of alert/hook mechanism used at any location shall be defined taking into account the impact and nature of the effects of flooding. The use of multiple alert/hook systems will be considered, as necessary, to ensure target compliance.

- The alert/hook systems will be used to enable property owners in flood risk areas to receive updated warning information via local radio (in all areas where local radio operates).
- Implementation of target standards and objectives will be phased as shown in Section 7.0.

#### 3.4 Format and Content of Warnings:

To the Police/Emergency Authorities:

- All colour phase warnings will have a nationally consistent EA identity.
- All colour phase warnings will adopt the format and general style as set out in Tables 10-12.

To the Media:

- All warnings will conform to a national standard.
- Warnings to the Media will focus on property flooding.
- Warnings will include reference to colour phases but will focus on general and specific areas affected and impacts.
- All warnings will contain the information shown in tables 13-16.
- Media warnings will be in plain english easy-read style and will include update (new warnings), summary (all warnings in force) and cancel (cancelled warning) versions.

#### 3.5 Media Dissemination Standards:

The target standards set out below will apply to all radio stations broadcasting flood warnings.

- Radio Stations will broadcast update, summary and cancel warnings.
- Update warnings will be broadcast immediately received, if requested by the Environment Agency, interrupting programmes if necessary.

- Summary warnings will be provided and broadcast regularly at times and frequencies agreed between the EA and the Radio Station to be consistent with the severity of the event and the number of warnings in force.
- Warnings will be broadcast as provided by Environment Agency.
- The Radio Station will be geared to provide a 24-hour, 365 day service.
- Contact numbers (working and silent hours) shall be provided and updated along with fax numbers etc. to ensure rapid and effective contact.
- The Radio Station will record the time an update warning is broadcast. This will be used after a flooding event to monitor the time delay from EA initiation of warning to Radio Station Broadcast.
- The Radio Station and EA will co-operate to supply/broadcast any additional relevant information.

### 3.6 Managing Feedback from the Public:

- All Flood Warning Dissemination centres will provide an infrastructure to manage feedback from the public at all times in line with Customer Charter standards.
- Feedback from the Public will be filtered and directed to appropriate recipients both within and external to the EA.
- The specific infrastructure required will be determined by Regions but must account for:
  - i) provision of effective links between relevant internal EA activity centres and external agencies;
  - ii) staff and communications systems designed to meet workloads and standards;
  - iii) the preference for operational delivery at Area level.

### 3.7 Procedures:

- Regions/Areas will set up clearly documented procedures to cover all aspects of the Flood Warning Dissemination activity and which shall be linked to the details in the Dissemination Plan.

- In particular, these procedures will define:
  - i) roles and responsibilities for EA staff involved in warning dissemination and their inter-relationship with EA staff engaged on other related activities and external agencies involved;
  - ii) robust systems to record dissemination activity including:
    - warning issued and confirmed logs
    - radio/media broadcast logs
    - voice recording of Warning and Dissemination teams
    - Log books for all staff involved in Warning and Dissemination
    - Contemporaneous notes of telephone calls, and other actions and responses by Warning and Dissemination staff both internal and external to the EA.
  - iii) action by Warning and Dissemination managers to ensure effective upward reporting of key information.
- Regions/Areas will appoint a nominated officer who's responsibility it will be to update procedures and collate, verify and store all flood event log information and to enable a clear audit trail of actions.
- Regions/Areas will undertake a review of procedure compliance and effectiveness following all events.
- Regions/Areas will undertake regular exercises to test procedures and systems.

### 3.8 Monitoring Performance

- Performance of Dissemination Centres against set targets for receipt of warnings will be assessed. OPM's for flood warnings will be reviewed by National Project Team.
- The performance assessment will be undertaken in accordance with a nationally consistent specification.

### 3.9 Control of Documentation

- All Key Flood Warning Emergency documents shall be controlled and a nominated officer (document controller) appointed to ensure they are always accurate and up to date and managed in a professional manner.

- Key Flood Warning Emergency documents shall include:
  - i) NRA emergency procedure manuals;
  - ii) NRA emergency directories;
  - iii) NRA contingency emergency plans;
  - iv) NRA Flood Warning Dissemination Plans;
  - v) relevant external emergency plans.
- The documents will define the roles, responsibilities, procedures and actions for all interested parties including document owners, controllers, holders and users.
- A code of practice for document control procedures shall be implemented in line with Quality Assurance Standard BS 5750.

#### 4.0 INFORMATION HANDLING CAPACITY

##### 4.1 Implementation Plan and Procurement

The success of the dissemination process will rely upon the progressive implementation of appropriate technology. The "implementation of technology" sub-group has worked toward identifying Relevant, Reliable and Robust technical solutions which will support the new Environment Agency in the process of disseminating flood warnings to both the public and other authorities. These solutions are presented in tabular form supported by fact sheets and supporting information. All of the solutions are tried and tested although some require substantial data assembly for their implementation i.e. Direct Fax ref. South Western Region.

The long term objective is for all regions to operate with common technical solutions. However, the immediate priority, to at least match current performance by 1st September 1996, demands that regions continue with their bespoke systems and contribute to the future development of national solutions.

Regions now need to review their technical infrastructure and identify any shortfall; this shortfall needs to be stated in terms of technical needs against flood dissemination centres (some regions will have regional centres, some area centres and some a combination of the two). This statement of shortfall will be reviewed by the national group and assessed for opportunities for the national procurement of common solutions together with providing advice on interim solutions and overall priorities.

The national study has called for a broadcast system to be in place by the 1st September 1996 supported by an alert system, for those areas which currently receive a warning from the police. The success of the broadcast system relies upon a method for raising the awareness of those affected by an impending flood. As a consequence the procurement of "Automatic Voice Messaging" is being pursued for all regions.

The national study has highlighted the possible increase in enquiries from the public to the new flood dissemination centres. It is important that regions have systems in place to respond to this increased traffic. In order to meet this demand national procurement of a "voicebank" system is being pursued

It is recognised that the telecommunication infrastructure to support these systems is critical. Recent technical developments offer many opportunities for bureau facilities which support peak demand activities without the investment in large numbers of private dedicated telephone lines.

In conclusion the activities can be summarised as follows:-

#### Regional Project Group

- Review existing technical infrastructure and identify shortfall.
- Identify the regions approach to dissemination of flood warnings which will quantify new technical solutions.
- Review the existing telecommunications infrastructure.
- Look for opportunities for the use of bureau facilities.

#### National Project Team

- Review Regional statements of technical shortfall.
- Identify opportunities for the national procurement of common solutions.
- Provide advice on overall priorities.
- Provide advice on interim solutions.
- Support Procurement

## National Procurement

- Procure an "Automatic Voice Messaging" system for all existing flood dissemination centres.
- Procure a "Voicebank" for all regions.

## 5.0 PUBLIC AWARENESS CAMPAIGN

### 5.1 Media Broadcasting of Flood Warnings

- AA Roadwatch, which currently provides mainly a traffic/roadwork information service to more than 100 BBC regional and local independent radio stations throughout England and Wales, are extending their information services. A national agreement with AA Roadwatch for disseminating general "overview" messages about flood warnings will be finalised by 1 January 1996.

Regions will establish links with Regional AA Roadwatch studios, as advised, by 1 March 1996.

National agreements with Ceefax, Teletext and the Meteorological Office to incorporate flood warning messages in their services will be finalised by 1 January 1996.

Regions will establish links with their regional contacts for these services, as advised, by 1 March 1996.

- National guidelines for establishing, maintaining and developing agreements with regional BBC/ITV and local radio stations for the dissemination of more detailed flood warning messages have been produced and will be further refined.

Regions will seek to establish as many of these agreements as practicable and "trial" them in preparation for 1 September 1996. Local radio stations, in particular, often welcome such initiatives in the context of community service broadcasting.

### 5.2 Leaflets and Posters

- A National core leaflet on the flood warning service will be available by June 1996 for distribution to people in "at risk" properties.
- Regions will arrange for the production of area/catchment/zone specific information sheet inserts following national guidelines re. corporate ID and content etc. All content to have been approved by legal department and tested against "Plain English" standards.

Regions will decide upon and arrange for the inogensive distribution of the leaflets and inserts targeted at "high risk" properties from 1 June 1996.

- Regions to arrange for production of posters, following national guidelines re. corporate ID and content etc. and their display in public places, such as libraries, council offices, from 1 June 1996.

### 5.3 General PR Activities

- Regions to embark upon public awareness campaign by arranging public meetings of residents, where appropriate, news releases, photocalls, interviews, media briefings etc. from 1 June 1996 progressively building up campaign for official launch on 1 September 1996.

### 5.4 . Advertising

- Arrange advertising in appropriate regional newspapers following national guidelines.

### 5.5 Review

- Provide regular feedback to National and Regional Flood Warning Project Teams on the effectiveness or otherwise of publicity initiatives.

### 5.6 Future

- Further advice will be given to Regions on which activities should be undertaken annually following the outcome of reviews.

## 6.0 **PROJECT MANAGEMENT**

- The general project management infrastructure is shown on Table 3.

## 7.0 **MILESTONES AND PHASING OF IMPLEMENTATION**

Initially the objectives of National and Regional Implementation Projects will be to deliver the core flood warning system for all areas where media coverage exists and all areas that currently receive a flood warning. This objective is to be met by 1st September 1996.

Key milestones to be achieved are shown on Table 5.

TABLE 6

## GUIDANCE (External)

## MEANING OF COLOUR PHASE WARNINGS (RIVER, TIDAL AND COASTAL)

COLOUR PHASE	UNDEFENDED AREAS		DEFENDED AREAS	
	PREDICTED IMPACT	AFFECTING	PREDICTED IMPACT	AFFECTING
YELLOW	LOW	Roads Agricultural Land	LOW	No effects
AMBER	MEDIUM	Roads Agricultural Land Isolated Properties	MEDIUM	Roads, agricultural land and some properties affected by seepage or backing up of rivers or drains; or Roads, agricultural land and many properties at risk from bank/defence failure and/or some overtopping
RED	HIGH	Roads Agricultural land Many properties	HIGH	Roads, agricultural land and large numbers of properties affected by bank/defence failure or overtopping

**NOTE:**

Colour Phase warnings represent EA forecasts and are principally for use by emergency authorities.  
 Defended/undefended areas and areas at risk of flooding are identified in Flood Plans.  
 Public and others will be warned of specific road, land or property flooding in their area.

TABLE 7

## GUIDANCE (Internal)

## INTERNAL DETAILED GUIDANCE ON THE USE OF COLOUR PHASE WARNINGS

COLOUR PHASE	UNDEFENDED AREAS	DEFENDED AREAS
YELLOW	<p><b>General</b></p> <p>A low impact flooding event with no impact on public safety. Some minor flooding to low lying roads and agricultural land.</p> <p>Specific impacts detailed in Flood Warnings.</p>	<p><b>General</b></p> <p>A low impact flooding event with no impact on public safety.</p> <p>Some minor flooding to roads and agricultural land.</p> <p>Specific impacts detailed in Flood Warning.</p>
	<p><b>Coastal</b></p> <p>Tidal warning issued - STWS.</p> <p>Wind and waves will cause some spray overtopping in coastal areas.</p>	<p><b>Coastal</b></p> <p>Tidal warning issued - STWS.</p> <p>Some spray may be blown over beaches, seawalls and defences.</p>
	<p><b>Tidal</b></p> <p>Tidal warning issued - STWS.</p> <p>High tide levels affecting some low lying areas. Some windblown spray.</p>	<p><b>Tidal</b></p> <p>Tidal warning issued - STWS.</p> <p>Tidal levels will be contained within defences but there may be some spray, minor seepages, water backing up rivers and drains.</p>
	<p><b>River</b></p> <p>Recent rainfall leading to rising river levels. Levels contained within banks except in low lying valley areas.</p>	<p><b>River</b></p> <p>Recent Rainfall leading to rising river levels. Levels will be contained within the defences but there may be minor seepages, water backing up rivers and drains.</p>

TABLE 8

## GUIDANCE (Internal)

## INTERNAL DETAILED GUIDANCE ON THE USE OF COLOUR PHASE WARNINGS

COLOUR PHASE	UNDEFENDED AREAS	DEFENDED AREAS
<p style="text-align: center;"><b>AMBER</b></p>	<p><b>General</b></p> <p>A medium impact flooding event with some impact on public safety in high risk properties, and impacts on roads and considerable areas of agricultural land. Rivers are likely to overtop banks and waves are likely to overtop seawalls and beaches.</p> <p>Specific impacts detailed in Flood Warnings</p>	<p><b>General</b></p> <p>A generally low impact flooding event but with some impacts on high risk properties and roads. In some situations there may be a developing risk of local overtopping or breaching of defences.</p> <p>Specific impacts detailed in Flood Warnings.</p>
	<p><b>Coastal</b></p> <p>Tidal Warning issued - STWS.</p> <p>Significant waves and windblown spray will cause flooding in high risk coastal areas.</p>	<p><b>Coastal</b></p> <p>Tidal warning issued - STWS.</p> <p>Defences under pressure from wave action. Wave and spray overtopping in high risk areas.</p> <p>If conditions deteriorate there will be a risk of local breaches.</p>
	<p><b>Tidal</b></p> <p>Tidal warning issued.</p> <p>High tide levels will cause flooding in high risk areas.</p>	<p><b>Tidal</b></p> <p>Tidal warning issued.</p> <p>High tide levels will put defences under pressure. There may be some seepages, local overtopping, water backing up rivers and drains. If conditions deteriorate there will be a risk of local breaches.</p>
	<p><b>River</b></p> <p>Rainfall leading to rivers overtopping banks and flooding low lying areas and floodplains.</p>	<p><b>River</b></p> <p>Rainfall leading to high river levels putting defences under pressure. There may be some seepages, local overtopping, water backing up rivers and drains. If conditions deteriorate or persist over extended periods there will be a risk of local breaches.</p>

TABLE 9

## GUIDANCE (Internal)

## INTERNAL DETAILED GUIDANCE ON THE USE OF COLOUR PHASE WARNINGS

COLOUR PHASE	UNDEFENDED AREAS	DEFENDED AREAS
<b>RED</b>	<p><b>General</b></p> <p>A high impact flooding event with significant impact on public safety and severe disruption in some cases.</p> <p>Many properties, roads and large areas of agricultural land affected.</p> <p>Widespread flooding from rivers, tides, sea.</p> <p>Impacts detailed in flood warnings.</p>	<p><b>General</b></p> <p>A high impact flooding event with significant impact on public safety and severe disruption in some cases.</p> <p>Many properties and roads affected.</p> <p>Severe pressure on defences. Significant overtopping and/or a number of breaches.</p> <p>Impacts detailed in Flood Warnings.</p>
	<p><b>Coastal</b></p> <p>Tidal warning issued - STWS.</p> <p>Dangerous sea conditions.</p> <p>Widespread coastal flooding.</p>	<p><b>Coastal</b></p> <p>Tidal warning issued - STWS.</p> <p>Dangerous sea conditions.</p> <p>Significant overtopping and/or a number of breaches.</p>
	<p><b>Tidal</b></p> <p>Tidal warning issued - STWS.</p> <p>Dangerous conditions.</p> <p>Widespread tidal inundation.</p>	<p><b>Tidal</b></p> <p>Tidal warning issued - STWS.</p> <p>Significant overtopping and/or a number of breaches.</p>
	<p><b>River</b></p> <p>Widespread overtopping of rivers.</p>	<p><b>River</b></p> <p>Significant overtopping of defences and/or a number of breaches.</p>

## POLICE/EMERGENCY AUTHORITY WARNING

**YELLOW FLOOD WARNING**  
**RIVER FLOODING**



LOGO

Issued by the Environment Agency

At: 01.00hrs

On: 02/11/96

**E A**

**ENVIRONMENT  
 AGENCY  
 ANGLIAN REGION**

**GENERAL SITUATION:**

River levels are rising but are not expected to overtop banks. Some flooding to low lying roads and agricultural land is expected.

Aqua House  
 Harvey Street  
 Lincoln  
 LN1 1TF

Tel: 01522 513100  
 Fax: 01522 512927

**AREAS AT RISK OF FLOODING:**

River(s): River Welland and its tributaries  
 Reach/Zone: Risk Area 10E

Fax transmission  
 to: Lincs Police  
 Fax No: 01522 512222

**SPECIFIC AREAS AFFECTED:**

(Time from warning is 0hrs unless stated)

- The A151 near to the West Glen at Corby Glen.
- A minor road near to the East Glen at Braceborough.

Originator:  
 M Pettifor  
 Control Room Manager  
 Location: Lincoln

**ADDITIONAL INFORMATION:**

- Further rainfall is/is not forecast and conditions are likely to deteriorate/improve.
- The Flood Control Room at Lincoln is open.
- For clarification or a situation report please refer to the Flood Control Room at Lincoln (Tel. (01522) 513100).

If you do not receive  
 fax correctly please  
 telephone us  
 immediately on

Tel No. 01522 513100

Warning No. 016

## POLICE/EMERGENCY AUTHORITY WARNING

## AMBER FLOOD WARNING

## TIDAL FLOODING



Issued by the Environment Agency

At: 15.00hrs

On: 01/09/96

E A

ENVIRONMENT  
AGENCY  
ANGLIAN REGION

## GENERAL SITUATION:

A warning has/has not been issued by STWS. High tide levels will put defence under pressure. If conditions deteriorate there may be a developing risk of local overtopping or breaching of defences affecting high risk properties and roads.

Aqua House  
Harvey Street  
Lincoln  
LN1 1TF

There may be some impact on public safety in affected areas.

Tel: 01522 513100  
Fax: 01522 512927

## GENERAL AREAS AT RISK OF FLOODING:

River(s): Tidal River Nene in Cambridgeshire  
Reach/Zone: Risk Areas 12D

Fax transmission  
to: Lincs Police  
Fax No: 01522 512222

## SPECIFIC AREAS AFFECTED:

(Time from warning is 0hrs unless stated)

Originator:  
M Pettifor  
Control Room Manager  
Location: Lincoln

## ADDITIONAL INFORMATION:

- High tide is at 18.00 hrs
- The Flood Control Room at Lincoln is open.
- For clarification or a situation report, please refer to the Flood Control Room at Lincoln (Tel. 01522 513100).

If you do not receive  
fax correctly please  
telephone us  
immediately on

Tel No. 01522 513100

Warning No. 016

## POLICE/EMERGENCY AUTHORITY WARNING

## RED FLOOD WARNING

### COASTAL FLOODING


 LOGO

Issued by the Environment Agency

At: 16.00hrs

On: 01/09/96

E A

ENVIRONMENT  
AGENCY  
ANGLIAN REGION

#### GENERAL SITUATION:

A warning has/has not been issued by STWS. Dangerous sea conditions are developing and there is a serious risk of flooding to many properties and roads. There will be significant impacts on public safety in affected areas.

Aqua House  
Harvey Street  
Lincoln  
LN1 1TF

Tel: 01522 513100  
Fax: 01522 512927

#### GENERAL AREAS AT RISK OF FLOODING:

Section(s): East Coast of Lincolnshire north of the Wash  
Reach/Zone: Risk Areas 12D

Fax transmission  
to: Lincs Police  
Fax No: 01522 512222

#### SPECIFIC AREAS AFFECTED:

(Time from warning is 0hrs unless stated)

- Low lying properties in Saltfleet village
- The whole of Trusthorpe, Mablethorpe and Sutton on Sea

Originator:  
M Pettifor  
Control Room Manager  
Location: Lincoln

If you do not receive fax  
correctly please telephone  
us immediately on

Tel No. 01522 513100

#### ADDITIONAL INFORMATION:

- High tide is at 18.00 hrs
- The Flood Control Room at Lincoln is open.
- For clarification or a situation report, please refer to the Flood Control Room at Lincoln (Tel. 01522 513100).

Warning No. 016

**TABLE 13 URGENT FLOOD WARNING FAX**

**MEDIA WARNING**

**THIS IS A YELLOW FLOOD WARNING  
OF FLOOD RISKS TO  
ROADS AND FARMLAND**



**ISSUED BY THE  
ENVIRONMENT AGENCY**

**E A**

**At: 01.00hrs**

**On: 02/11/96**

**ENVIRONMENT  
AGENCY  
ANGLIAN REGION**

**There is a risk of flooding from heavy rainfall and high river levels.**

**Aqua House  
Harvey Street  
Lincoln  
LN1 1TF**

**The general areas affected by this warning are the River Welland and its tributaries in Lincolnshire.**

**Tel: 01522 513100  
Fax: 01522 512927**

**The specific areas affected by this warning are:**

- **The A151 near to the West Glen at Corby Glen.**
- **A minor road near to the East Glen at Braceborough.**

**Fax transmission  
to: Lincs FM  
Fax No: 01522  
513333**

**Originator:  
Diane Shaw  
Communications  
Room Manager  
Location: Lincoln**

**If you do not receive  
fax correctly please  
telephone us  
immediately on**

**Additional Information (select as appropriate):**

- **Further rainfall is/is not forecast and conditions are likely to deteriorate/improve.**
- **In addition to the areas at risk detailed, some localised flooding problems may result from surface run-off in urban areas and blocked culverts in small drains and dykes.**
- **For the latest information on flood warnings in your area, listen to (local radio station) or telephone 0990 123456**

**Tel No. 01522 513100**

**For general media  
enquiries Tel. 01733  
371811**

**Warning No. 016**

**TABLE 14 URGENT FLOOD WARNING FAX**

**MEDIA WARNING**

**THIS IS AN AMBER FLOOD WARNING  
OF FLOOD RISKS TO  
HIGH RISK PROPERTIES  
ROADS AND FARMLAND**



**ISSUED BY THE  
ENVIRONMENT AGENCY**

**E A  
ENVIRONMENT  
AGENCY  
ANGLIAN REGION**

**At: 12.00hrs**

**On: 01/09/96**

**There is a risk of flooding from high tide levels and some local overtopping of defences and seepage is possible.**

**Aqua House  
Harvey Street  
Lincoln  
LN1 1TF**

**The general areas affected by this warning are the Tidal River Nene in Cambridgeshire.**

**Tel: 01522 513100  
Fax: 01522 512927**

**The specific areas affected by this warning are:**

**Fax transmission  
to: Lincs FM  
Fax No: 01522  
513333**

- 
- 
- 

**Originator:  
Diane Shaw  
Communications  
Room Manager  
Location: Lincoln**

**Additional Information (select as appropriate):**

**If you do not receive  
fax correctly please  
telephone us  
immediately on**

- **High tide is at 18.00hrs.**
- **In addition to the areas at risk detailed, some localised flooding problems may result from surface water backing up in urban areas and seepage through defences.**
- **For the latest information on flood warnings in your area, listen to (local radio station) or telephone 0990 123456.**
- **Residents of property at risk should monitor conditions locally, listen to local radio for updated information and take action to protect their family and property.**

**Tel No. 01522 513100**

**For general media  
enquiries Tel. 01733  
371811**

**Warning No. 016**

**TABLE 15 URGENT FLOOD WARNING FAX**

**MEDIA WARNING**

**THIS IS A RED FLOOD WARNING  
OF FLOOD RISKS TO  
MANY PROPERTIES, ROADS  
AND LARGE AREAS OF FARMLAND**



**ISSUED BY THE  
ENVIRONMENT AGENCY**

**E A**

**ENVIRONMENT  
AGENCY  
ANGLIAN REGION**

**At: 16.00hrs**

**On: 01/09/96**

**There is a serious risk of flooding from high tide levels accompanied by high waves and strong winds.**

Aqua House  
Harvey Street  
Lincoln  
LN1 1TF

**The general area affected by this warning is the East Coast of Lincolnshire north of the Wash.**

Tel: 01522 513100  
Fax: 01522 512927

**The specific areas affected by this warning are:**

- **Low lying properties in Saltfleet village**
- **The whole of Trusthorpe, Mablethorpe and Sutton on Sea**

Fax transmission  
to: Lincs FM  
Fax No: 01522  
513333

Originator:  
Diane Shaw  
Communications  
Room Manager  
Location: Lincoln

If you do not receive  
fax correctly please  
telephone us  
immediately on

Tel No. 01522 513100

**Additional Information (select as appropriate):**

- **High tide is at 18.00hrs.**
- **In addition to the areas at risk detailed, some localised flooding problems may result from surface water backing up in urban areas.**
- **For the latest information on flood warnings in your area, listen to (local radio station) or telephone 0990 123456.**

For general media  
enquiries Tel. 01733  
371811

Warning No. 016

**TABLE 16 URGENT FLOOD WARNING FAX**  
**SUMMARY MEDIA WARNING**

---

**THIS IS A SUMMARY OF ALL  
FLOOD WARNINGS  
CURRENTLY IN FORCE**



**ISSUED BY THE  
ENVIRONMENT AGENCY**

**E A**

**At: 12.00hrs**

**On: 01/09/96**

**ENVIRONMENT  
AGENCY  
ANGLIAN REGION**

**There are risks of flooding from rainfall and high river levels.**

**The general areas affected are the River Welland and its tributaries in Lincolnshire**

**Aqua House  
Harvey Street  
Lincoln  
LN1 1TF**

**Specific warnings for properties are:**

- 
- 

**Tel: 01522 513100  
Fax: 01522 512927**

**Specific warnings for road and farmland flooding are:**

- 
- 

**Fax transmission  
to: Lines FM  
Fax No: 01522  
513333**

**Flood warnings in the following areas have been cancelled:**

- 
- 

**Originator:  
Diane Shaw  
Communications  
Room Manager  
Location: Lincoln**

**Additional Information (select as appropriate):**

- **High tide is at 18.00hrs.**
- **Further rainfall is/is not forecast and conditions are likely to deteriorate/improve.**
- **In addition to the areas at risk detailed, some localised flooding problems may result from surface run-off in urban areas and blocked culverts in small drains and dykes.**
- **Residents of property at risk should monitor conditions locally, listen to local radio for updated information and take action to protect their family and property.**

**If you do not receive  
fax correctly please  
telephone us  
immediately on**

**Tel No. 01522 513100**

**For general media  
enquiries Tel. 01733  
371811**

**Warning No. 016**

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