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**University of Surrey  
IIASA**

# **TSUNAMI**

**Project on**

**The Uninsured Elements of Natural Catastrophic Losses**

## **EASTER FLOODS, UK**

**Case Study Report**

**December 1999**

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## 1. EXECUTIVE SUMMARY

The Easter floods (9<sup>th</sup> - 13<sup>th</sup> April, 1998) were the most severe flooding ever recorded in central England. The floods inundated much of Northampton and Peterborough, and affected a larger region.

The Easter floods were caused by systems being overwhelmed over long reaches and were attributable to a number of factors, including: flood conditions exceeding defence design criteria, lack of defences, rejection of flood defences by at risk communities, partly due to impact on gardens and public areas, lack of awareness, locations covered by future flood plain mapping programmes, flood plain developments occurring against advice of Environment Agency predecessors, and flooding from watercourses not classed as a main river.

There were five fatalities, and although initial insured losses were estimated as high as £1.2 bn (\$2bn) the final insured figure quoted by the ABI was £137m (\$230m). There are only very approximate estimates for total economic losses. Although mention has been made of approximately £1 billion (US\$ 1.6 bn) as initial total losses, this report has assumed that the figure is too high, in line with the other over-estimations, and that the final figure lies in the region of £500m (\$840). This figure has not been substantiated.

The distinguishing feature of the U.K. insurance system is that it is fully private, and government intervention after natural disasters is almost non-existent. The insurance market has responded to the wide range of possible risks by offering a voluntary choice of policies. Flood cover is automatically included in all household policies. For commercial insurance, cover for certain defined natural events is commonly extended to the basic fire policy, particularly for storm and flood damage. Premiums will vary according to the level of risk exposure. Business interruption cover is usually included. For household insurance, mortgage loans are granted on condition that natural disaster insurance is taken out. Premiums and deductibles are set on a case-by-case basis, taking into account the real risk exposure. This arrangement builds in incentives for private mitigation efforts.

Insurance density in the U.K. is estimated at 95 per cent (compared with Germany with less than 10 per cent); yet, research suggests that up to 1 in 3 of the victims in the affected areas may not have been covered, and in low income areas the figure is higher. Primary companies reinsure in the international market. There is also a legal obligation to hold tax-exempt claim equalisation reserves.

The Government position is that Local Authorities are able to apply to the Department of the Environment, Transport and the Regions for assistance to meet any excessive costs of dealing with the immediate aftermath of floods, under the Bellwin scheme. This amounted to £ 345,554 (US\$ 580,000). Flooding is an insurable risk for householders and businesses, and government compensation to victims is rarely made.

This report has been unable to clarify if pledges made by government officials to compensate victims in Northampton for uninsured losses were, in fact, carried out. In the true free market spirit, some regional fire brigades made charges to homeowners following the floods, to be passed on to insurers. In November 1998 the Environment Agency, the agency exercising a general supervisory role on flood defence and with responsibility for flood warning arrangements, published their Action Plan, as a response to the Independent Report on the Easter Floods. This set out a range of improvements for improving flood forecasting, warning and responses. The cost of implementation has been calculated to be £ 45.4m (US\$ 76m), spread over seven years. This has not yet been approved.

## 2. INTRODUCTION AND DESCRIPTION OF DISASTER

Note: Conversion rate for pound taken as rate on 9.4.98, which is £1=US\$ 1.6728

### 2.1 General Description

#### Date:

Heavy rain on 9<sup>th</sup> and Good Friday, 10<sup>th</sup> April 1998, caused widespread flooding. Rains continued until Easter Day, Monday 13<sup>th</sup> April when certain areas, such as Northampton and Peterborough, were flooded. April 1998 was recorded as the wettest April for more than 100 years.

#### Description:

Most severe flooding ever recorded (150 years). 75 mm of rain, more than a months' rain fell in less than 36 hours in parts of central and eastern England (Average Mean monthly rainfall for April 50mm). The rain fell on already saturated catchments, the result of a wet March. This caused rivers to rise at record rates, in places double previous limits. Consequently, many places experienced flooding of an intensity without precedent.

The 1998 flood levels fell away very rapidly, and the worst was over in 48 hours. This could have affected the lower final losses.

#### Areas affected:

Approximately 5,000 km<sup>2</sup>

Affected regions were Midlands, E.A. Wales, Thames, Anglian.

### 2.2 Total Losses

#### Human Losses:

There were 5 fatalities, and over 100 people had to be airlifted to safety. In Northampton 144 people were rescued by the Northampton Fire and Rescue, and hundreds more by other agencies and volunteers. More than 150 people in Northampton were taken to hospital.

4,500 families lost their homes and possessions to the floodwaters.

#### Economic Losses:

Initial estimates put the total insured losses in excess of £ 1billion (US\$ 1.6 bn), some even as high as £1,200m (US\$ 2bn). (BBC News, 13.4.98; Catflash 21, 20.4.98) These figures proved to be unfounded and the ABI announced that they expected losses to be in the order of £ 500m (US\$ 836m). (Miller, 23.4.98) The figure was then revised to £ 300m (US\$ 502m) and it currently stands at £ 137m (US\$ 230m). (ABI, 1999)

Experian announced that the insured losses had been vastly overestimated and estimated that they were in the region of £ 150m (US\$ 251m) (Experian, 21.4.98) and Sedgwick Re calculated that insured property losses would be in the region of £ 120m (US\$200m), but that damage to motor vehicles and mobile homes had not been included. (1998) Swiss Re estimated the insured damage at £150m (US\$249.5m) (Swiss Re, 1/99)

Shares in UK insurance stocks fell sharply on Tuesday 14<sup>th</sup> April, but recovered when the initial estimates were perceived to be exaggerated. There was much speculation in the media that premiums would be rising by 35% as a result of the floods. This did not occur.

There is little information about the total losses available. Mention has been made of approximately £ 1bn (US\$ 1.6bn) losses. (Miller, 1998) This is approximately 50% of the estimated losses of £500m made at the times, and it has been assumed that the final figure for total loss is more likely to be in the region of £500m (US\$ 840).

The interesting question is why the estimates were so inaccurate. There was a maverick loss adjuster who received a lot of publicity by claiming wildly exaggerated figures, but all the initial estimates were substantially higher than the final insured loss estimate. David Crichton (1999a) has suggested that it is the problem of market penetration. Time and again the worst flood effects are on cheap land where the inhabitants cannot afford insurance. One can assess the extent of the flood using aerial photography and satellite images, but that does not give a clear indication of insured losses.

### **2.3 Detailed description of floods**

In the worst case, the Environment Agency issued red flood warnings for a 150-km stretch of the River Avon. Up to 30 rivers were put on red flag warnings, while 40 had amber warnings, mainly across central and eastern England. Red Alert signifies that serious flooding is likely to affect many properties, roads and large areas of farmland. The EA issued 75 Red Alert warnings over the 6 day period.

Rain was swiftly followed by snow and wintry showers. Many rivers in South Midlands and East Anglia burst their banks and floodplains. The cause of the flooding was heavy rainfall over a long period, falling on saturated ground with catchment areas being relatively full. The highest rainfall recorded for this event was in Pershore, Hereford and Worcester where 75 mm of rain made it a 1-in-100 rainfall event. Water levels rose 16ft at Evesham, which is calculated as a 1-in-180 year event. Leam and Warwickshire Stour reached a 1-in-200 year flood return period, while the banks of Avon river, in Warwickshire suffered their worst flooding recorded. A recent £5-million refurbishment of weirs and sluices on the navigable section of the River Avon undertaken by the Environment Agency ensured that the river banks held firm. Other severely flooded rivers included the Nene, Great Ouse, Cherwell, and Leam. Formal flood defences were breached in the few places where they exist, Wellesbourne and Long Itchington.

Northampton was the worst hit area exacerbated by structural failures during the floods. Banbury suffered the worst floods in living memory, with depths of 1.8 metres and an estimated 100 homes affected. The most serious incidents were at Northampton, Leamington Spa, Kidlington, Skenfrith and Talgarth.

The Easter floods were caused by systems being overwhelmed over long reaches and were attributable to a number of factors beyond the Agency control, including:

- flood conditions exceeding defence design criteria
- lack of defences due to past feasibility studies being rejected on economic grounds
- rejection of flood defences by at risk communities, partly due to impact on gardens and public areas
- lack of awareness of vulnerability due to non-existent, vague past records
- locations covered by future flood plain mapping programmes
- flood plain developments occurring against advice of Environment Agency predecessors
- flooding from watercourses not classed as a main river. (Bye & Horner, 1998)

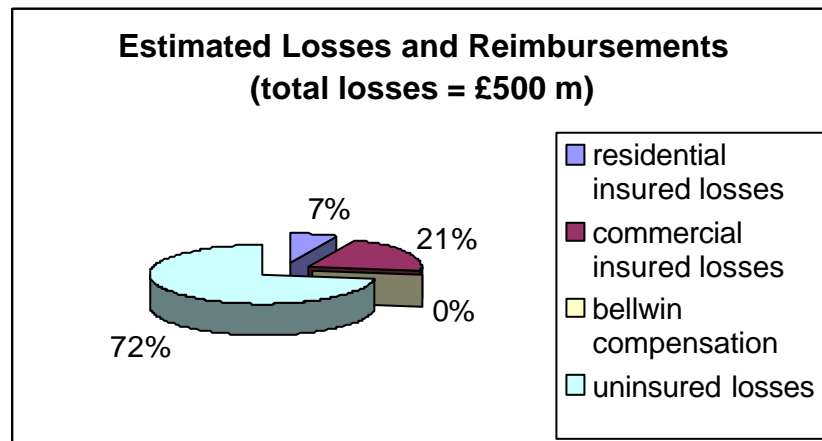
There were calls for the resignation of Lord de Ramsey, chairman of the Environment Agency. Countryside minister Elliot Morley announced a major review of flood forecasting and warning, but ruled out a public enquiry. He stressed that the government would not provide compensation for insurable risks. (BBC News, 1998)

### 3. SUMMARY TABLES

**DAMAGE BY SECTOR, TOTAL LOSSES AND PORTION INSURED**

Sector	Share of total losses as a percentage	Total direct losses, in million pounds	Total compensated losses, in million pounds
Commercial/Industrial	Insurance 20.6%	N/A	£103m [75% of insured losses*] (US\$ 172m)
Residential losses	Insurance 6.8%	N/A	£34m [25% of insured losses] (US\$ 57m)
Public sector losses	Bellwin scheme 7%	N/A	£ 0.35m (US\$ 0.58m)
Agricultural losses		?£57m ?(US\$ 95m)	No mention
<b>TOTAL</b>	<b>100%</b>	<b>£ 500m (US\$ 836m)</b>	

\* refer to section 7.2



## 4. GENERAL ECONOMIC INDICATORS

### 4.1 Economic and demographic characteristics of the UK

#### ECONOMIC AND DEMOGRAPHIC CHARACTERISTICS OF UNITED KINGDOM 1998

Population (millions)	59.1
GNP (US\$ billions)	1,263.8
GNP per capita (US\$)	21,400
% inflation 1998	3.4
% annual growth in GDP, 1998	3.4
Current account balance /GDP	0.2
% population below poverty line	--
% urban population	89
Life expectancy	77
% GDP agriculture	2.0
% GDP services	60.4
% GDP manufacturing	24.6
% GDP industry	37.6

Source: <http://www.worldbank.org/data/countrydata> 1999

### 4.2 Level of insurance by coverage

Insurance density 95%\* (compared with Germany flood  
<10%) (Swiss Re, 7/97)

\*These figures have been contradicted - see item 7.2)

Total Business	US\$1694.2
Non-Life	US\$ 615.5
Life	US\$ 1078.7

Insurance penetration, premiums as a share of GDP (%)

Total Business	10.33 %	
Non-Life	3.75 %	
Life	6.58 %	(Swiss Re, 4/97)

### 4.3 Area affected by flooding

Area affected by the flooding: 5,000km<sup>2</sup>.  
Bounded by:  
Peterborough (north)  
Oxford (south)  
Bedford (east)  
Evesham (west)

## 5 INSTITUTIONAL ASPECTS

### 5.1 Regulatory/legal framework

The Land Drainage act of 1861 established the Internal Drainage Boards (IDBs) which are still in operation today. There have been changes in priority since that time, but the hierarchy of organisations responsible for dealing with land drainage and flood defence has been the Ministry of Agriculture, Catchment Boards, Internal Drainage Boards, County Councils and District Councils.

Since 1991 the Water Resources and Land Drainage Acts have formed the legal basis for the administration and financing of flood defence in England and Wales. MAFF, the Ministry of Agriculture, Food and Fisheries together with the Welsh Office sets the policy framework and administers grant aid from the Exchequer for capital projects concerned with both flood defence and coastal protection.

In 1995 the responsibility for flood defence was transferred to the Environment Agency under The Environment Act 1995. The Agency and three other types of authority have the responsibility for flood defence of the following:

- a) The Environment Agency is responsible for river, sea and tidal defences which are of strategic importance.
- b) Internal drainage boards are responsible for watercourses covering 1.25m hectares in certain low lying areas, such as the Somerset Levels, parts of Yorkshire and the Fens, mainly for agricultural use.
- c) District councils may carry out flood defence on minor watercourses and sea defences.
- d) Local Authorities (or the EA) other than district councils can promote schemes for the drainage of small areas of agricultural land.

The boundaries of drainage districts are related to known flood levels and do not coincide with catchment or local authority boundaries.

On 1 September 1996, the Environment Agency took over from the police the responsibility for disseminating flood warnings. The Environment Agency Flood Warning Service includes monitoring of climatic conditions, monitoring and forecasting of river and sea conditions, and the dissemination of warnings to the public. There are three levels of flood warnings. Flood warnings are issued by direct warnings, the Media and Floodcall, a 24-hour dial and listen national telephone service that the public can call to get information about flood warnings.

The Environment Agency has identified the need for more stringent land use controls, and as a statutory consultee should advise planning authorities on the implications of development on flood risk under Circular 30/92. This should ensure that floodplain protection is an objective of the development plan, but economic pressures often override this. A major failing of the system was planning relating to caravan sites, which are often situated next to rivers and along the coast.

The Environment Agency does not have the power to prevent new development taking place on the flood plains in England and Wales. (Environment Agency, 1997) The Government strategy to build an additional 4.4 million homes in England and Wales over the next 25 years will increase demand for this development even when it is opposed by the Environment Agency as an unacceptable flood hazard. In Scotland, a more effective scheme has been established. There planners are advised to consult insurers first to ascertain whether insurance cover will be available before planning consent is given, enabling insurers to identify the risk as unacceptable before development, not after. (Crichton, 1999b)



The Environment Agency "uses the best information to predict the possibility of flooding, but no warning system can cover every eventuality. It is the responsibility of those who live in flood prone areas to be aware of any risk and to know what action they should take to protect themselves if flooding occurs." This statement has some bearing on the future of flooding insurance in the UK. Insurers and public are becoming aware that it is not possible to guarantee complete protection to communities in flood prone areas. Flood defences should be viewed as works to alleviate, rather than remove the likelihood of flooding.

## **5.2 Emergency measures**

The majority of people affected by the floods did not receive any form of warning. The flooding occurred over a bank holiday weekend, so staffing levels were lower than normal. The extent of flooding was not clear to the authorities, but the emergency responses engaged worked to contain the scale of the disaster. All the emergency responses were engaged. This included the police, fire and rescue services, ambulance services, local authority staff, as well as Environment Agency staff on flood defence duties. Soldiers were called back from Easter leave to help emergency services in the Midlands area. The police declared a state of emergency in Worcestershire and co-ordinated a major response to problems caused by severe weather conditions. More than 1,500 people were evacuated from their homes across the country.

Many lives were saved and there were few serious injuries. Those requiring medical treatment were promptly removed to hospital, but the majority were evacuated to the emergency centres that had been set up or were helped to find accommodation with relatives and friends.

A varied response to the emergency services was reported. Warwickshire had no assistance from the Environment Agency other than warnings, while in other areas the Agency supplied sandbags and boats. Buckinghamshire, which straddles both regions of the Environment Agency, noted the differences between the Thames and Anglia regions. There were complaints that there was not any clear understanding of the situation in the Environment Agency control rooms, and that co-ordination was lacking with the Police Silver Command and Local Authority Emergency Centres.

## **5.3 Flood insurance in the UK**

The UK has a strong tradition of private insurance, and government intervention after natural disasters is almost non-existent. The insurance market has responded to the wide range of possible risks by offering a free choice of policies. Flood insurance has been automatically included as part of contents cover since WW1, and since 1961 it has been automatically included as part of the building fabric cover as well. In areas where there is a known flood risk, insurers can impose a higher excess. Flood insurance includes the cost of temporary rehousing whilst the house is uninhabitable. Household insurance is usually a requirement of the mortgage lender.

Insurance penetration is traditionally very high due to the following factors:

- The existence of a well developed planning system covering land use zoning and controlling development
- The relatively low flood risk (6% of the land area) relative to the capacity of the industry,
- The allowance for cross-subsidising of premium rates between flood plain occupiers and other consumers. (Green et al, forthcoming)

Pricing and availability of flood insurance has not been a problem to date. Insurers have been providing cover in areas of high hazard, often at uneconomic rates, in the expectation that the government would tackle the issue of planning and flood defence. In July 1997 the Association

of British Insurers (ABI) gave notice to Government that they would not be able to sustain the current situation under the following conditions:

- New floodplain development undertaken against the advice of the Environment Agency in England and Wales and the SEPA in Scotland.
- New development taken without adequate flood defence protection.
- Properties for which residents have declined flood defence on aesthetic grounds
- Properties purchased cheaply because of a history of flooding. (Crichton, 1999b; Clark, 1998)

#### **Commercial/ Industrial risks.**

Cover for certain defined natural events is commonly extended to the basic fire policy, particularly for storm and flood damage. Premiums will vary according to the level of risk exposure. Business interruption cover is usually included.

#### **Household risks:**

Mortgage loans are granted on condition that natural disaster insurance is taken out. Premiums and deductibles are set on a case-by-case basis, taking into account the real risk exposure. Insurers are able to set prohibitively expensive rates, particularly where the risks are located in areas too exposed to flooding.

#### **Protection for Insurers:**

##### Reinsurance:

Direct companies reinsure in the international market.

##### Equalisation reserves:

There is a legal obligation to hold tax-exempt claim equalisation reserves in the 1996 statements of insurance companies. The maximum total amount of reserves is set as a percentage of premiums, net of reinsurance, for the previous five years, and can vary from 3-7% according to the branch concerned. A company would be able to use its reserves when the loss ratio to net premiums reaches a certain defined value, comparable to the situation in other European Union countries.

##### Flood protection:

The government carries out large scale work to minimise flood risk, particularly by the building of sea walls. The Thames Flood Barrier was completed in 1983, at a cost of £ 500m.

## **5.4 General characteristics of riverine flooding**

An important form of flood defence is the avoidance of development on the flood plains. This land is cheap and planning permission has traditionally been easy to obtain. Housing developments on flood plains have an impact on flood risk by:

- increasing surface run-off
- reducing availability of soak-away areas
- allowing less space for adequate flood defences

The Environment Agency have calculated that nearly 11,000km<sup>2</sup> (7%) of England and Wales at risk in a 1-in-100 year flood. The risk of flooding to a property is often described in terms of a return period, which relate to the long term average time interval between events of a particular magnitude. The 1-in-100 return period has a 1% chance of occurring in any one year, but it cannot be assumed that it will be 100 years before the next event of a similar magnitude. It is statistically possible for such events to occur in successive years.

Although all floods are unique, river management has used the 1947 floods as a 'baseline' or standard. Unfortunately, the Easter floods differed markedly from the predecessor in terms of speed, concentration and severity.

## 6. TOTAL LOSSES

### 6.1 Direct losses

No information on direct losses has been found in the public domain.

#### **Corporate/Business Losses**

Northampton suffered major impact from the floods.

#### **Public Sector Losses**

Northampton: £1.5m damage to Borough Council depot at Westbridge  
£ 500,000 - loss of 32 leased Council vehicles  
£1 m - 150 council houses affected by floods, of which 127 required major refurbishment.

#### **Private Residential Sector Losses**

Northampton: 2,300 properties affected by flooding  
Hundreds of caravans(estimated 700 caravans) and mobile homes affected (Experian, 1998)

#### **Agriculture**

MAFF mentions that the value of sheep and lambs fell by 5% (£57million) despite an increase in sheep subsidy payments of £134million, partly as a result of the wet summer and floods. (MAFF et al, 1998, p 11)

#### **Life**

No mention found.

### 6.2 Indirect Losses

#### **Corporate/Business Disruptions**

No information has been found, but business disruption is generally covered and corporate liability compensation issues should have been addressed.

#### **Public Sector Losses**

Trains: Delays throughout Midlands  
Northampton: no train services on 10.4  
Busses: Northampton: severe disruptions to service  
Utilities: Power cuts

#### **Household Losses**

The most marked losses for the majority of victims were the loss of personal belongings and memorabilia, all of which are irreplaceable. The subjective costs of a flood are the emotional and psychological costs, which are uninsurable. These range from fear of death or injury, loss of confidence, ill health, chronic anxiety. (Tapsell et al, 1999)

One issue not often raised is the fact that flood waters are polluted. This issue was an important one for flood victims, and linked to problems some encountered with their insurance. Many people had to wait for the loss adjusters to come, and spent 2-3 weeks uncertain about what to do.

Another problem mentioned was that of demand surge, with good builders and materials in short supply. Many people felt that they did not have the time or money to replace their treasured, if somewhat battered, possessions. Flood victims stressed the lack of reliable information on:

- why they were flooded
- whether it would happen again
- what to do about contaminated water
- what to do about drying out their homes
- adoption of public health assistance
- compensation.

## **7. COMPENSATION**

### **7.1 Government**

Under section 155 of the Local Government and Housing Act of 1989 (Bellwin schemes) the government will provide discretionary financial assistance to local authorities for exceptional incidents. These incidents are usually incurred as a result of an emergency caused by the weather, and any application for assistance must demonstrate that an undue financial burden would otherwise fall on the local authority. (DETR, 1998)

The scheme is administered by the Department of the Environment, Transport and the Regions, and in the event of a scheme being activated, the DOE would pay a grant at the rate of 85% on qualifying expenditure above a threshold. MAFF announced that local authorities were able to apply for this assistance to meet any excessive costs of dealing with the immediate aftermath of the floods. (MAFF News Release, 159/98)

#### **Bellwin Scheme**

**£345,554**

This figure covers approved applications to date, there are a few applications still under consideration. Successful applicants are Wychavon District Council, Northamptonshire P.A, Warwickshire District Council, Stratford on Avon District Council, Worcester City, Northampton Borough Council, Cherwell District Council, Huntingdonshire District Council, Melton Borough Council. (DETR,1999)

#### **Compensation to victims**

There is no form of government compensation as flooding is considered to be an insurable loss. There is mention of the Lord Mayors Appeal Fund, but the charity only awards donations internationally. Any compensation would have come from local authorities, but it appears to be unlikely.

### **7.2 Private Insurance Sector**

The ABI has estimated the insured losses from the Easter floods at £137m. (US\$230m) The cost of repairing the Easter flood damage was reported to have knocked £13m off the profits of Norwich Union. (BBC News, 1998)

Experian, using figures from the Environment Agency and Meteorological Office estimated that relatively few properties, maximum 5 000 properties, were directly flooded. Over 1000 properties were expected to make some kind of claim. Most of the claims are for contents, as opposed to building claims.

### **Insurance payments to:**

#### **Businesses**

Initial estimates indicated that around 75% of the insured loss related to commercial lines. Crawford-THG had several claims in excess of £1million, but Mark Chapman, of Davies Chartered Loss Adjusters estimated that the commercial mode figure was £20 000, with some claims rising to £200 000. (Wellington, 1998) Refer also to the Dundee Flood Loss Tables for comparative commercial losses. (Black & Evans, 1999)

#### **Households**

The Dundee Flood Loss Tables set out analyses of insured losses for the Easter floods, and cover both building and contents losses to semi-detached, detached and terraced properties at varying levels of inundation. The median losses for the summer floods examined, of which the Easter (Midlands) flood was one, was £9,922 for buildings and £1,184 for alternative accommodation. Analysis of the tables is beyond the scope of this report but it appears to be a useful tool for the insurer. (Black & Evans, 1999)

According to Davies Chartered Loss Adjusters, the average mode of claims on personal lines was around £8000, rising to £50 000. Other reports suggest average policy claims to be in the region of £10,000. The worst hit buildings were in Stratford, where a number of historic 16<sup>th</sup> century cottages were built with water soluble materials.

Swiss Re states that the UK has insurance density for flooding of 95%, yet research suggests that up to 1 in 3 of the victims in the affected areas may not have been covered, and in low income areas the figure is higher. 25% of homes damaged by floods had no flood insurance. (BG Remetrics, 1998, Post 16.4.98)

The issue of assessment of losses from disasters is important. Official values for these losses are lower than the values paid out by the insurer, which are on average 2.5 times the government figures. These official figures are used to justify the costs of flood defence investment. (Crichton, 1999b)

#### **Agriculture**

There is no mention of agricultural insurance.

#### **Automobiles**

Reports indicate an expected increase in motor property damage, as residents did not receive sufficient warning to remove their vehicles from threatened area. The estimated average claim for a write-off was in the region of £2,500-£3,000.

#### **Insurance payments for indirect losses**

Business interruption claims were presumed to be fairly low as the number of businesses badly affected was very limited.

## **8. EX POST MEASURES**

### **8.1 Public policy**

Deputy Prime minister John Prescott promised Government aid for people affected by the floods in central England as insurance bills threatened to reach up to £1.5bn. This contrasts with statements by Elliot Morley, Fisheries and Countryside Minister at MAFF that the government

would not be compensating people for insurable loss. It has not been possible to ascertain if the aid ever occurred.

The Environment Agency funding is from the Exchequer, with approval by MAFF and the National Assembly for Wales. No records exist as to how the funds are being diverted. Current annual flood defence expenditure has been £250million, approximately 40% of the Environment Agency budget. The requirements set out in the Bye Report necessitate an additional £30-40 million annually, to develop and maintain the £7.5 billion flood defence assets. The Agriculture Committee has subsequently examined the basis of current flood defence policy, and called for major administrative changes to one based on principles of social, economic and environmental sustainability. (1998)

### **Cleanup operations**

There is little information on the scale of the cleanup operations. Northampton reported that 1,500 tonnes of flood damaged belongings had been collected by council.

Some regional fire brigades made charges to homeowners following the floods. More than 100 Buckinghamshire households were charged £278.50/hour bills after the fire brigades pumped water out of homes following the flooding, and were told that the money could be reclaimed from their insurance. Norwich Union, Commercial Union and Eagle Star withheld payments for these charges, questioning whether the government should cover flood damage. Norfolk fire brigade announced that it would be charging for certain call-outs.

## **8.2 Private insurance sector**

Implications of the relatively high lack of insurance cover were raised in subsequent talks between loss adjusters and local authorities. There is a growing percentage of uninsured people who cannot afford to buy a policy or need to pay for it in one lump sum, the only method currently possible without a bank account.

Floods occurred over bank holiday, but helplines were set up and people were able to help immediately. Phone-in slots made on local radio to address any problems for policy-holders. The Warwickshire Trading Standards have published a report criticising the insurance industry and their handling of the Easter Flood Claims. (1998)

## **8.3 Hazard Mitigation**

### **Infrastructure Repair**

Ahead of the Bye report, the Government announced a preliminary package of measures to improve flood defence and warning system for Northampton. No costs have been given for the work. This will include:

- Raising of existing defences
- Works to improve river flow and river level monitoring
- Revision of the Northamptonshire Flood Warning Plan.

After the report had been published, Archie Robertson, Environment Agency Director of Operations stated that £1million would be taken from other Agency budgets to pay for better flood defence and warning systems. (BBC News, 2.10.98)

In November 1998 the Environment Agency published their Action Plan, as a response to the Independent Report on the Easter Floods, (the Bye report - refer to Appendix A) which set out a

range of improvements for improving flood forecasting, warning and responses. Together with other improvement initiatives identified or underway prior to the Action Plan, this should alleviate some of the problems identified by the Bye report. A programme of telemetry network improvements, (which was approved by MAFF and the Welsh Assembly in July 1999) has been initiated and a public awareness campaign is already underway. The Environment Agency has yet to obtain approval for the public awareness campaign and the identification of the scale of flood defences owned/operated by third parties. Approximately 80 new posts have been filled across the Environment Agency to undertake inspections and record the condition of all flood defences. (Environment Agency, 1999)

**Total Cost of Action Plan** **£45.4m,**

spread over seven years.

(Total cost of all improvement work over a ten year investment period: £70.5m.)

telemetry network improvements	£20m
public awareness campaign	£ 2m
80 new staff at Environment Agency.	

An integrated flood forecast modelling system (AFFMS) contract for the Anglian region, which covers 20% of England and Wales, has been awarded. **£1.33m**

(<http://www.wsatkins.co.uk/news/pr739.htm>)

## 9. CONCLUSIONS

The final extent of insured losses from the Easter floods was a relatively small percentage of the initial estimates. The news coverage generated from the expected losses focussed attention on the present system of flood defence. The Environment Agency was heavily criticised, and it has initiated a range of measures to improve its performance. It is as yet uncertain whether the funding of these measures will be forthcoming.

Losses from flooding would only be reduced by 5-10% if warnings were given and properly disseminated. (Penning-Rowsell, 1999) This issue has been addressed by the Environment Agency, but there have been calls from the insurance industry that the proposed flood mapping measures are inadequate.

Historically, the insurance industry has drifted into providing wider cover against natural hazards. To date there have not been many large scale losses from flooding. Climate change and the tilting of the landmass could change this scenario and the sheer scale of potential costs forces a new approach. This could lead to a situation where much bigger insurance premium differentials between properties are set, or where a reevaluation of the relationship between interested parties takes place. (Dlugolecki, 1990, Crichton, 1999b)

## 10. REFERENCES

Agriculture Committee. (1998) *Flood and Coastal Defence: Sixth Report of the 1997/98 Session*. Stationery Office, London.

Association of British Insurers (ABI). (1999) Insurance Statistics Yearbook. 1988-1998.

Black, A & Evans, S (1999) *Flood Damage in the UK: New Insights for the Insurance Industry. A report presenting the Dundee Flood Loss Tables*. University of Dundee, Dundee.

BBC News (1998)      Floods cost insurers dear. April 13, 1998  
                            Floods inquiry attacks Environment Agency. June 2, 1998  
                            Floods hit Norwich profits. September 6, 1998  
                            Flood report condemns agency. October 2, 1998  
                            No public inquiry into floods. October 20, 1998

<http://news1.thls.bbc.co.uk/hi/english/oldbusiness/newsid>

Benfield Greig Remetrics (1998) UK Inland Flooding 09-14.04.98

Bye, P & Horner, M. (1998) Easter 1998 Floods. Volumes I and II. Report by the Independent Review Team to the Board of the Environment Agency. 30 September 1998.

Clark, M.J. (1998) Flood Insurance as a Management Strategy for UK Coastal Resilience. *The Geographical Journal*, vol 164, no 3, November 1998, p333-343

Crichton, D (1999a) Private communication.

Crichton, D (1999b) UK Climate Change Programme. UK Insurance Industry. Minutes of Evidence to the Select Committee on Environment, Transport and Regional Affairs. <http://www.publications.parliament.uk/pa/cm199899/cmselect/cmenvtra/171/9832410.htm>

DETR (1999) Personal communication with Local Government Revenue Expenditure Division

DETR (1998) "Bellwin Scheme of Emergency Financial Assistance to Local Authorities: 1998/99 Guidance notes and thresholds. <http://www.local.doe.gov.uk/finance/bellwin/bell9891.htm>

Dlugolecki, A (1990) Changing Climate - What Effect will this have on the Insurance Industry? Symposium Changing Weather Patterns, 19<sup>th</sup> October 1990.

Doornkamp, J. (1996) Inland Flooding and Coastal Inundation - Where will it end ? *Catastrophe Reinsurance Newsletter*, Issue no 40, June 1996. P 111-113.

Environment Agency (1997) Policy and Practice for the Protection of Floodplains.

Environment Agency (1998) Flooding information on the Easter floods. [http://www.environment-agency.gov.uk/ourservices/flood\\_a.../fld\\_a fld\\_wn\\_inf\\_easter.ht](http://www.environment-agency.gov.uk/ourservices/flood_a.../fld_a fld_wn_inf_easter.ht)

Environment Agency (1999) Easter 1998: One year on. - the Agency's response. Riverwatch, Issue no 2.



12/13/99

Environment Agency (1999) Action Plan for Flood Forecasting, Warning and Response. Progress Report, June 1999.

Environment Agency (1999) Flood Warning Service Strategy for England and Wales. September 1999.

Experian (1998) Easter floods: Insured losses vastly overestimated.

Green, C et al (1999, forthcoming) *Thematic study of Flooding*. World Commission on Dams. Flood Hazard Research Centre, Middlesex University

Handmer, J. (1996) Policy Design and Local Attributes for Flood Hazard Management. Journal of Contingencies and Crisis Management. Vol 4, no 4, December 1996, p 189-197

Higney, F. (1998) Wet, wet, wet to the tune of 500m. Post magazine, 16 April 1998. Insurance Age, Easter Floods. May 1998. P 3.

Keeble, Sally. (MP for Northampton) <http://freespace.virgin.net/sally.keeble/1press-releases/EACRITIC.txt>. Information from Northampton Flood Emergency from Keeble's office.

Ketteridge, A.M. & Green, C. (1994) Technical annex for the full flood impacts module. Euroflood Project.

MAFF, Scottish Office of Agriculture, Environment and Fisheries, Department of Agriculture for Northern Ireland, Welsh Office. (1998a) *Agriculture in the United Kingdom*. Stationery Office, London.

MAFF, UK News Releases: (1998b) 159/98; 409/98  
<http://www.maff.gov.uk/inf/newsrel/1998/981020b.htm>

Miller, A (1998): Flood teams give it some welly. *Post magazine*, Vol. 159, Issue 16, 23 April 1998, p15

Munich Re. (1997) Flooding and Insurance.

Parliament (1998) House of Commons Hansard Debates for 21 July 1998.  
<http://www.parliament.the-stationery-office.co.uk/pa/cm199798/cmhansrd/>

Penning-Rowsell, E.C. (1999) Assessing the Economic and Social Impacts of Flooding: The Methodology used in England and Wales. May 1999. Flood Hazard Research Centre, Middlesex University

Post Magazine, (1998) Freak flooding fails to sink good name of insurers. 16 April 1998, p 47.

Post Magazine, (1998) Agency in deep water over floods. 21 May 1998, p 11.

Pye, D.J. (1995) Flood Insurance - Availability and Pricing. *Journal of the Insurance Institute of London*, p 14-16

Sedgwick Re: Easter Flooding in England 1998 note: contains an accurate listing of damage according to postcode units EXCEL (Sedgwick Re)

12/13/99

Stratford Council: Council compiles flood data. <http://www.cwn.org.uk/politics/stratford-district-council/news/9810/981022.floods.htm>

Swiss Re UK: (1997) Too little reinsurance of natural disasters in many markets, *Sigma* no 7/1997

Swiss Re (1998) Floods - an insurable risk?  
Floods - an insurable risk? A market survey.

Swiss Re. (1999) *Sigma*. No 1/1999

Tapsell, S.M, Tunstall, S.M, Penning-Rowse, E.C, Handmer, J.W. (1999) The Health Effects of the 1998 Easter Flooding in Banbury and Kidlington. Report to the Environment Agency, Thames Region. March 1999. Flood Hazard Research Centre, Middlesex University.

Threadgold, S. (1995) A call for Change. *Post Magazine*, 14 December 1995, p23-25

Warwickshire Trading Standards (1998) *A flood of claims..how insurance companies have measured up in the aftermath of the Warwickshire floods*. Warwickshire County Council.

Water Board, (1999) Strategic and Policy issues arising from the Easter 1998 floods.  
[http://www.ice.org.uk/enginfo/water\\_news.html](http://www.ice.org.uk/enginfo/water_news.html)

Wellington Underwriting Plc (1998) Catflash issue no 21. UK Easter floods.  
<http://www.wellington.co.uk/cat21.txt.htm>

Zong, Y, Tooley, M.J, Donoghue, D.N.M. (1995) Geographical information systems and sea flooding risk assessment in the Thames lowlands. *Journal of the Society of Fellows*, vol 9, pt 2, January 1995, p3-18.

## **APPENDIX A**

### **THE BYE REPORT**

The Environment Agency was heavily criticised for their late response and poor co-ordination of the floods, which led to increased household, personal and motor property losses. They commissioned an independent report, which acknowledged that the exceptional floods would have occurred, but that the effects could have been mitigated through better co-ordination, control and maintenance. The interim report referred to an overcomplicated set of procedures with some Agency staff being unaware of their roles and thereby failing to provide timely warnings. The final assessment, the Bye report, described the lack of public awareness of the warning systems, an inconsistent application across the regions and misunderstandings between the Agency and emergency services which resulted in a poor overall performance.

Failures highlighted by the Bye report were:

- Out of date or incorrect information in procedures
- Local authority contacts were unavailable over the holiday period
- Local authority resources insufficient to meet pre-planned strategies. Staffing levels on River Authority work had been reduced by 80% since 1973/4, with a loss of flood defence expertise, developed local knowledge and professional competence.
- Inadequate links established between gold and silver control
- Information not being passed down to lower levels in the communication chain
- Insufficient understanding of flooding characteristics, preventing the best use of resources

Recommendations of the Bye report were the need for:

- Greater national consistency in organisational, management, technical approaches to fluvial flood forecasting and warning. The quality of the flood maps was questioned, and importance of high quality, high resolution floodplain mapping identified. (For a discussion on the problems with flood mapping refer to Zong 1995)
- Believability of flood warnings and need for personal warning messages, especially to the multi-ethnic communities.
- More effective flood awareness and response, e.g. attention to human and social aspects of the warning message, an alternative to the present system of colour-coded warnings, adopting the continental practice of flood markers on telegraph poles and buildings, records of flood history in the title deeds of riparian properties, reminder messages and advertisements in the media.
- Escalating safeguards into flood monitoring procedures
- Review of flood forecasting data networks
- 'Flood Watch' message introduced
- Liaison with neighbouring regions to be introduced to develop flood threats close to boundaries
- Better partnership with the Meteorological Office. (Bye & Horner, 1998)