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Agency



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

# Flood and Coastal Risk Management - A Risk Based Approach

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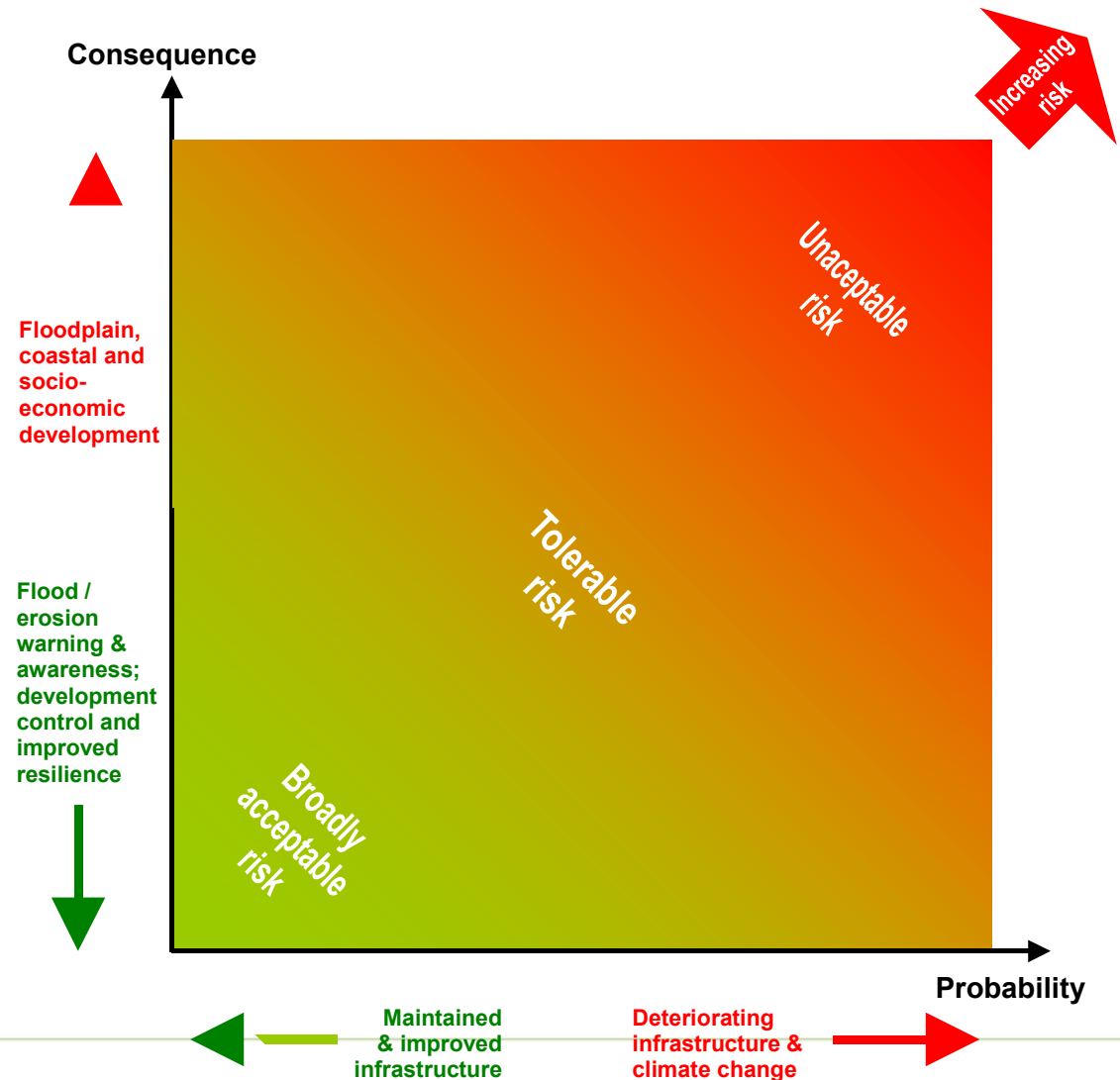
# Risk

## Significant risks to the delivery of Defra's outcomes in this area

Flood and coastal erosion are natural events that cannot always be prevented or predicted in advance. Flooding can happen at any time.

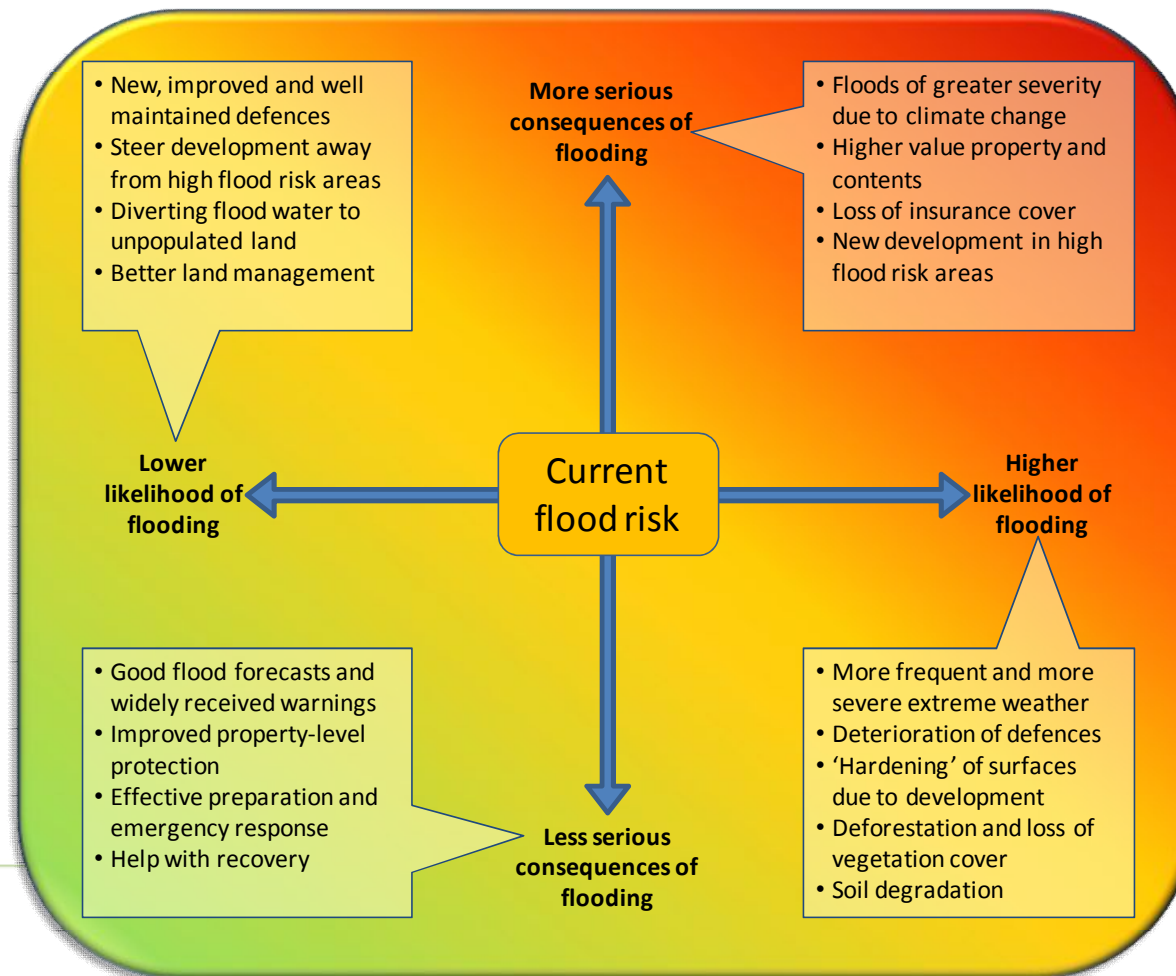
Policy is about managing the risk proactively - not eliminating all flooding and not waiting to shut stable doors. Requires long term commitment – funding pressures often increase following major flooding but more effective to invest strategically in advance. Hence importance of long term investment strategy.

Current infrastructure provides a variable standard of service and there are big residual risks despite ongoing programme (over £1 billion remaining average annual economic damage) which arise from a combination of relatively low protection in some areas and extreme events.

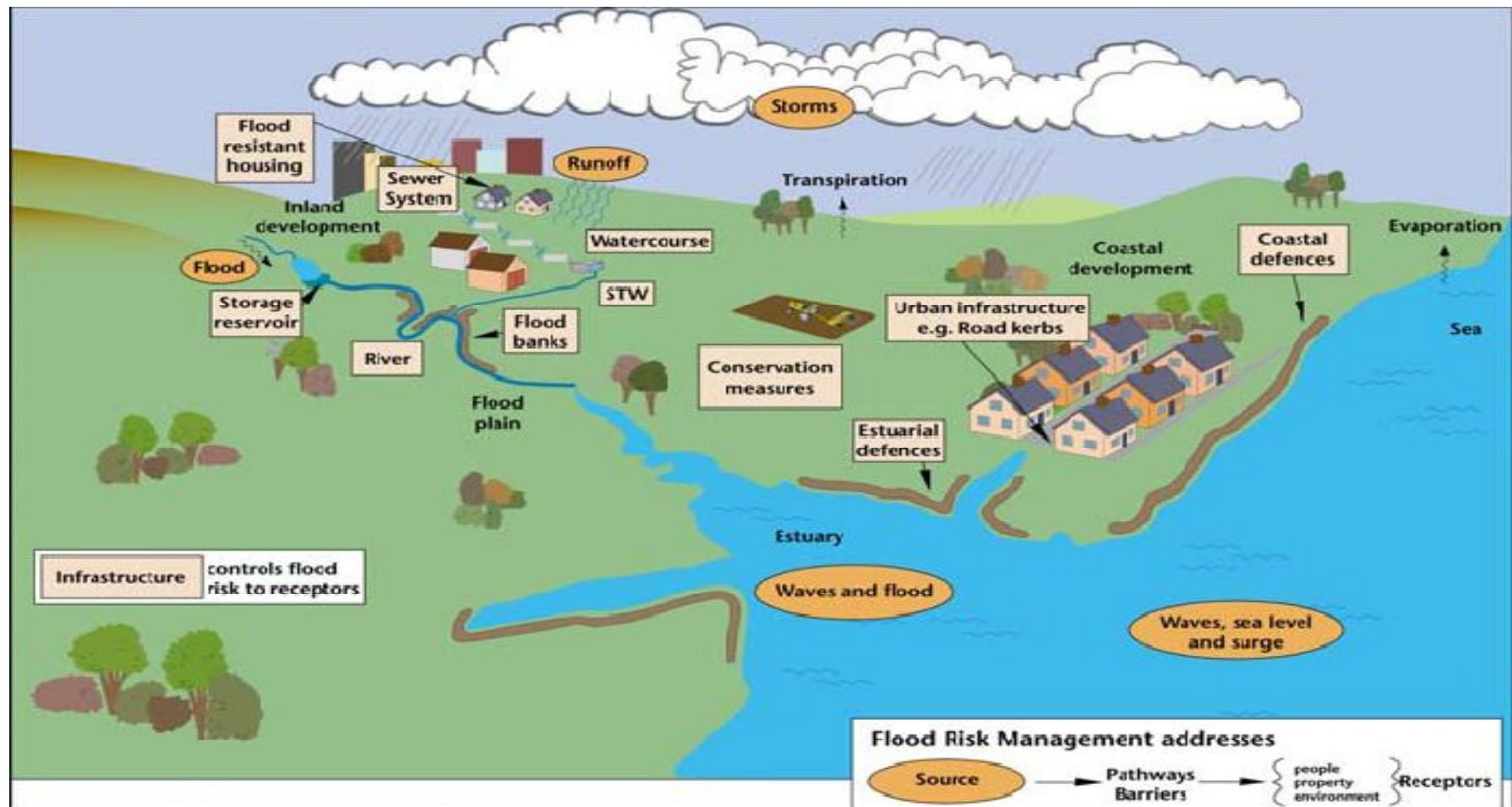


# Managing flood risk

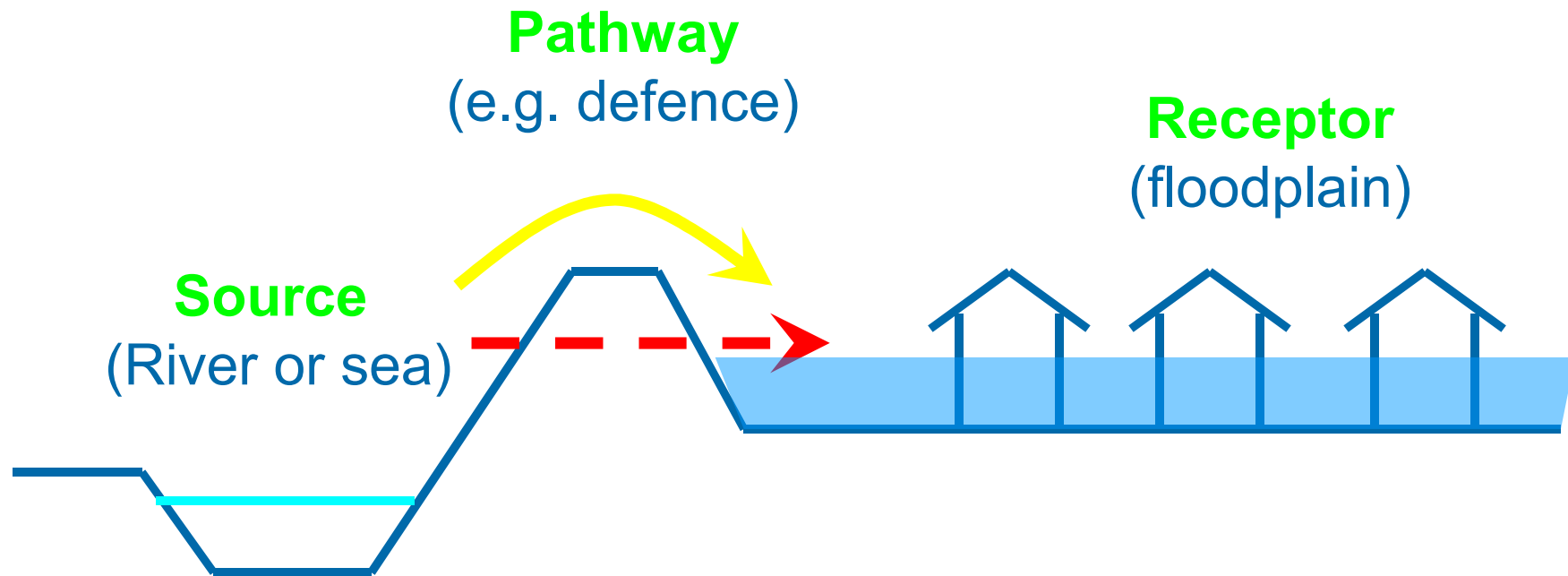
(Reduce, share, transfer, eliminate, accept)



# Risk Based Approach

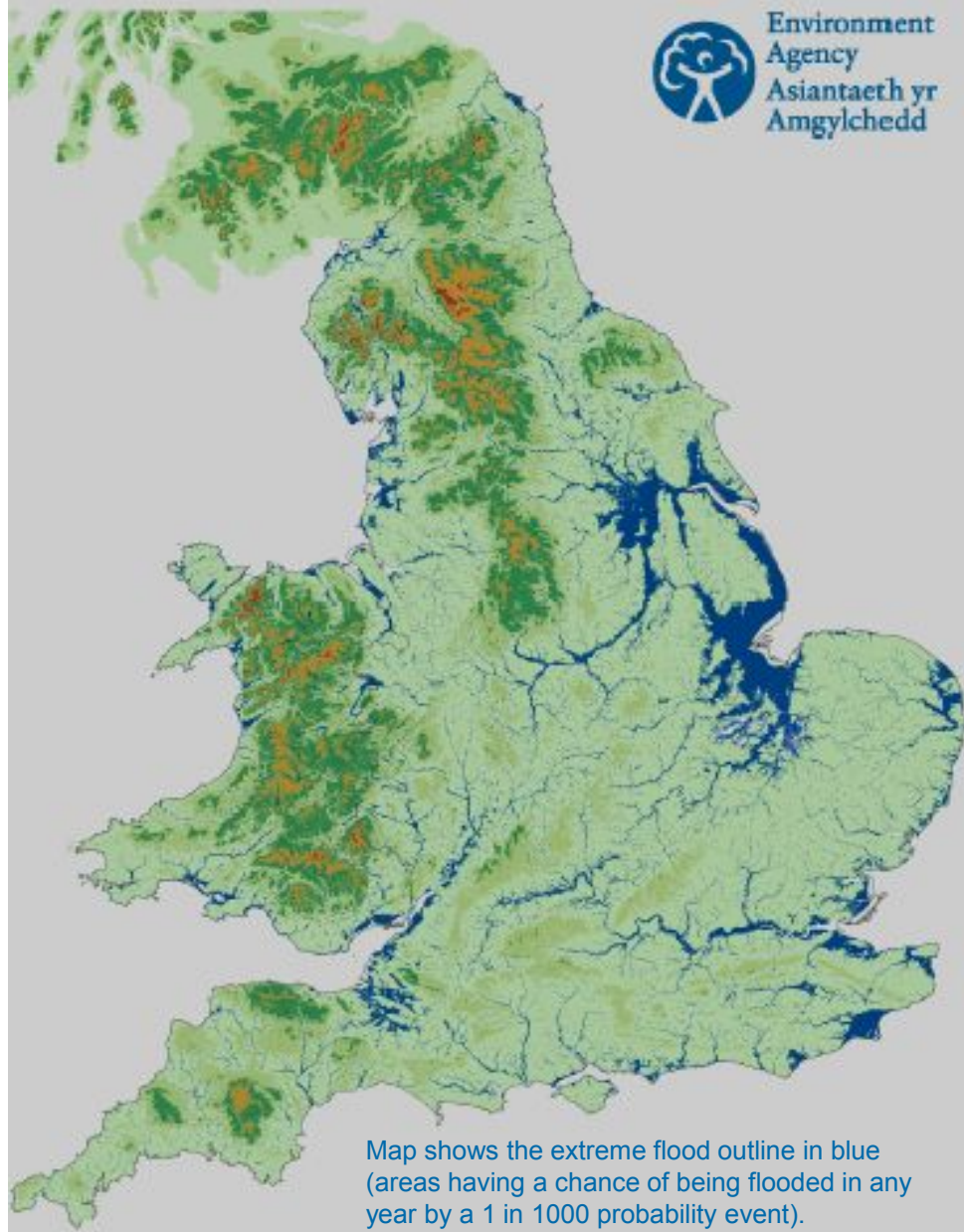


# Flood Risk Model



# Evidence and Current Position

What is the problem that we are trying to tackle?



River and tidal flooding threat is widespread

Annual estimated damages from flooding over the long term:

- With current measures: **£1bn** per year
- Do nothing: more than **£3bn** per year
- **Could increase to £27bn per year** by 2080 without mitigation measures

Over 2 million properties in flood risk areas.

Forecasting and **Warning** systems important for evacuation and **reducing risk to life**

Government annual investment in risk management currently **£600m**.

Major **capital bid** in SR07 – importance of long term investment strategy

Managing risk involves effective use of a **broad portfolio of measures**, not *just* building bigger defences.

# Changes in Risk – economic damages

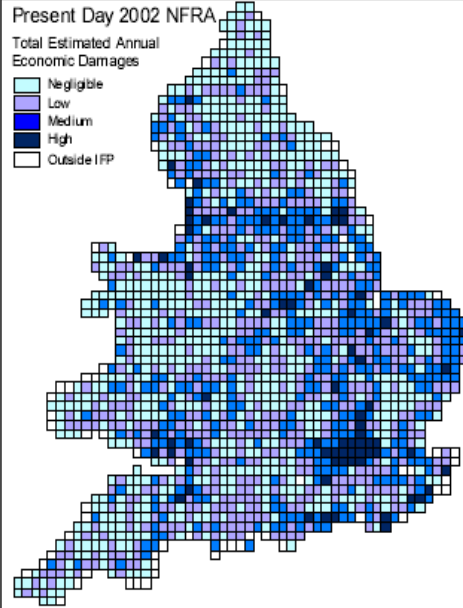
## Foresight Future Flood Risks

Figure 10  
All Scenarios: Comparative Risk  
Expected Annual Economic Damage  
to Residential and Commercial  
Properties

### Present Day 2002 NFRA

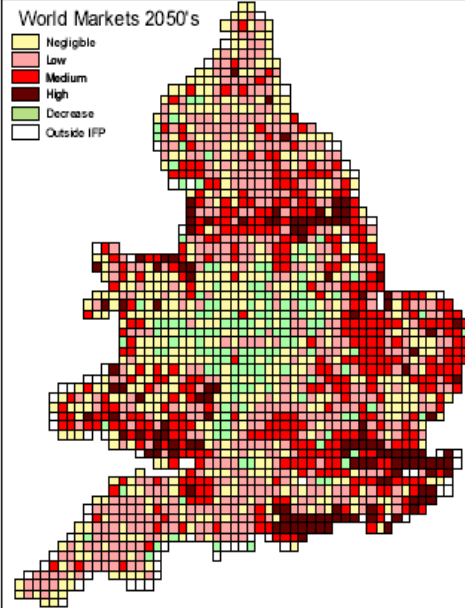
Total Estimated Annual  
Economic Damages

Negligible  
Low  
Medium  
High  
Outside IFP



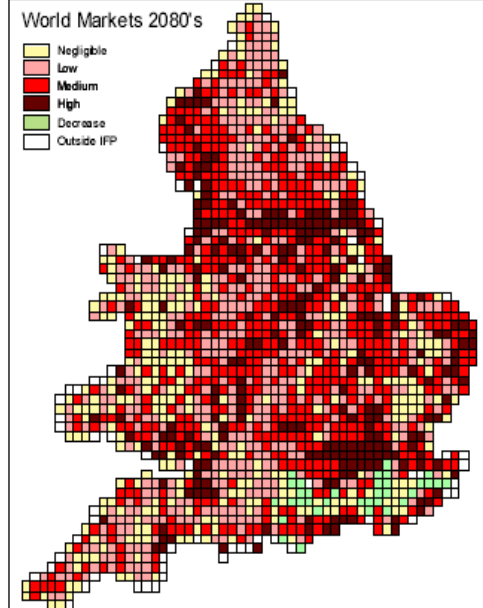
### World Markets 2050's

Negligible  
Low  
Medium  
High  
Decrease  
Outside IFP



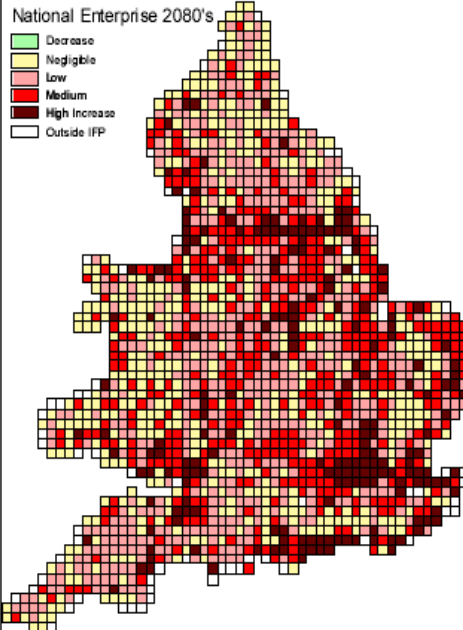
### World Markets 2080's

Negligible  
Low  
Medium  
High  
Decrease  
Outside IFP



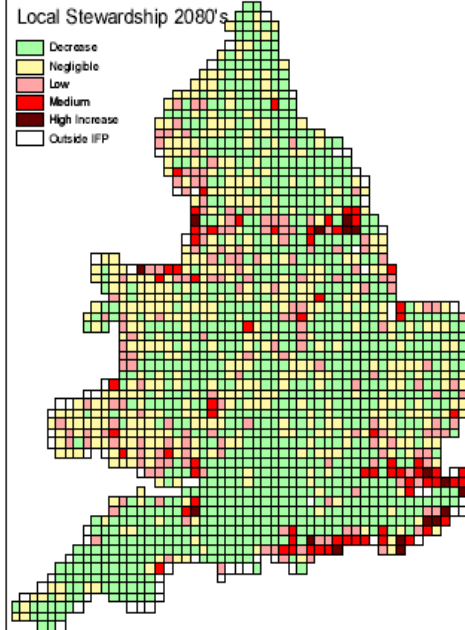
### National Enterprise 2080's

Decrease  
Negligible  
Low  
Medium  
High Increase  
Outside IFP



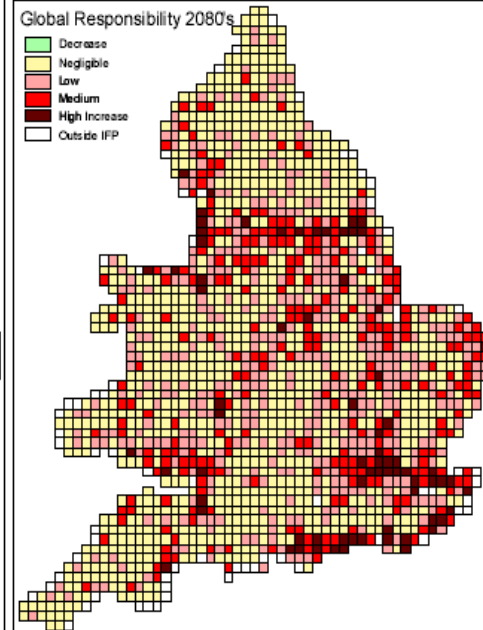
### Local Stewardship 2080's

Decrease  
Negligible  
Low  
Medium  
High Increase  
Outside IFP



### Global Responsibility 2080's

Decrease  
Negligible  
Low  
Medium  
High Increase  
Outside IFP



0 50 100 Kilometers

Date: 10/05/03



# Sources

e.g. rivers, seas, sewers

- Planning Policy Statement 25 (PPS25)
  - Strategic risk based approach to development taking account of all forms of flood risk
  - Directs vulnerable development away from high risk areas
  - Accept some development may be needed for broader reasons
  - Reduce existing and future flood risk to communities



# Pathways

e.g. flood defences & floodplain



**“ We want to reduce the likelihood of flooding by improving the condition and maximising the performance of the flood defence asset infrastructure over the whole life cycle”.**

# Receptors

e.g. people, property & environment

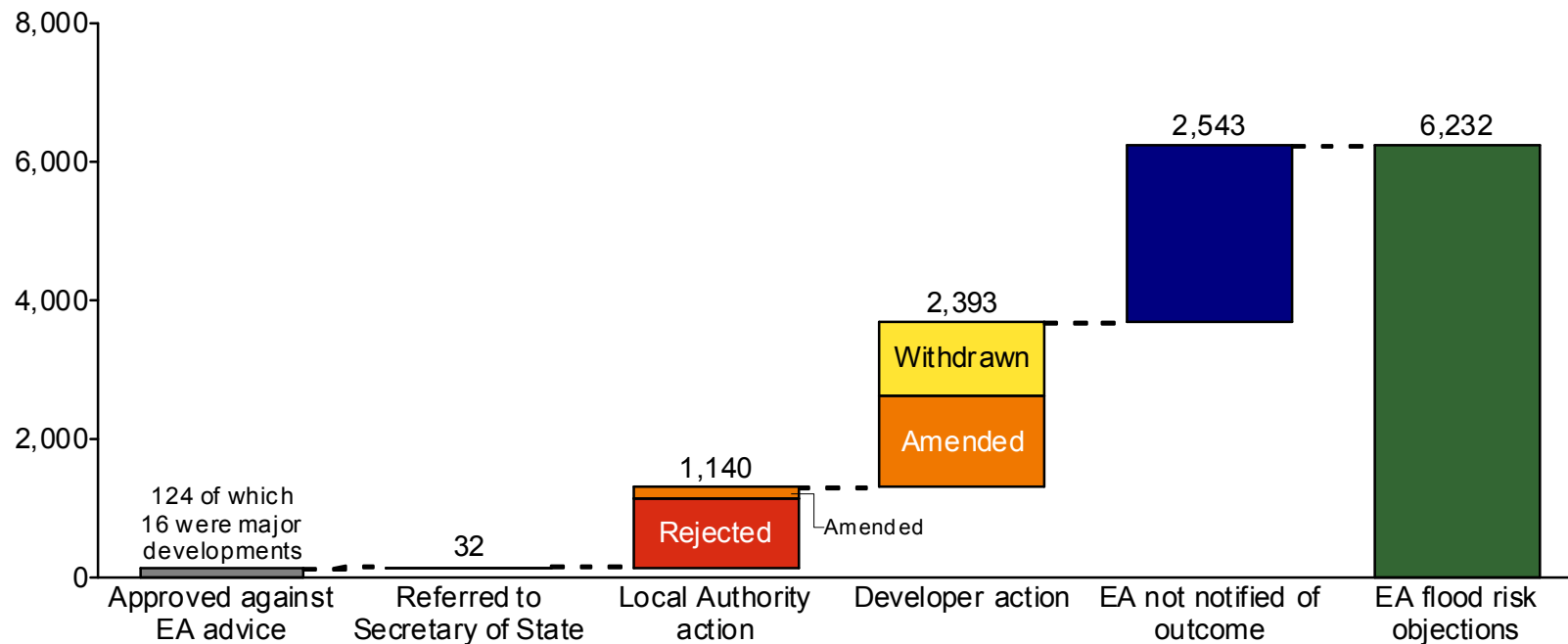


Environment Agency Flood Map

- national risk assessment allows us to identify those areas at highest risk
- we provide flood maps to help the public identify their risk of flooding
- and offer a free flood warning service to those in flood risk areas

# Living out of harm's way – eliminate ?

Number planning applications

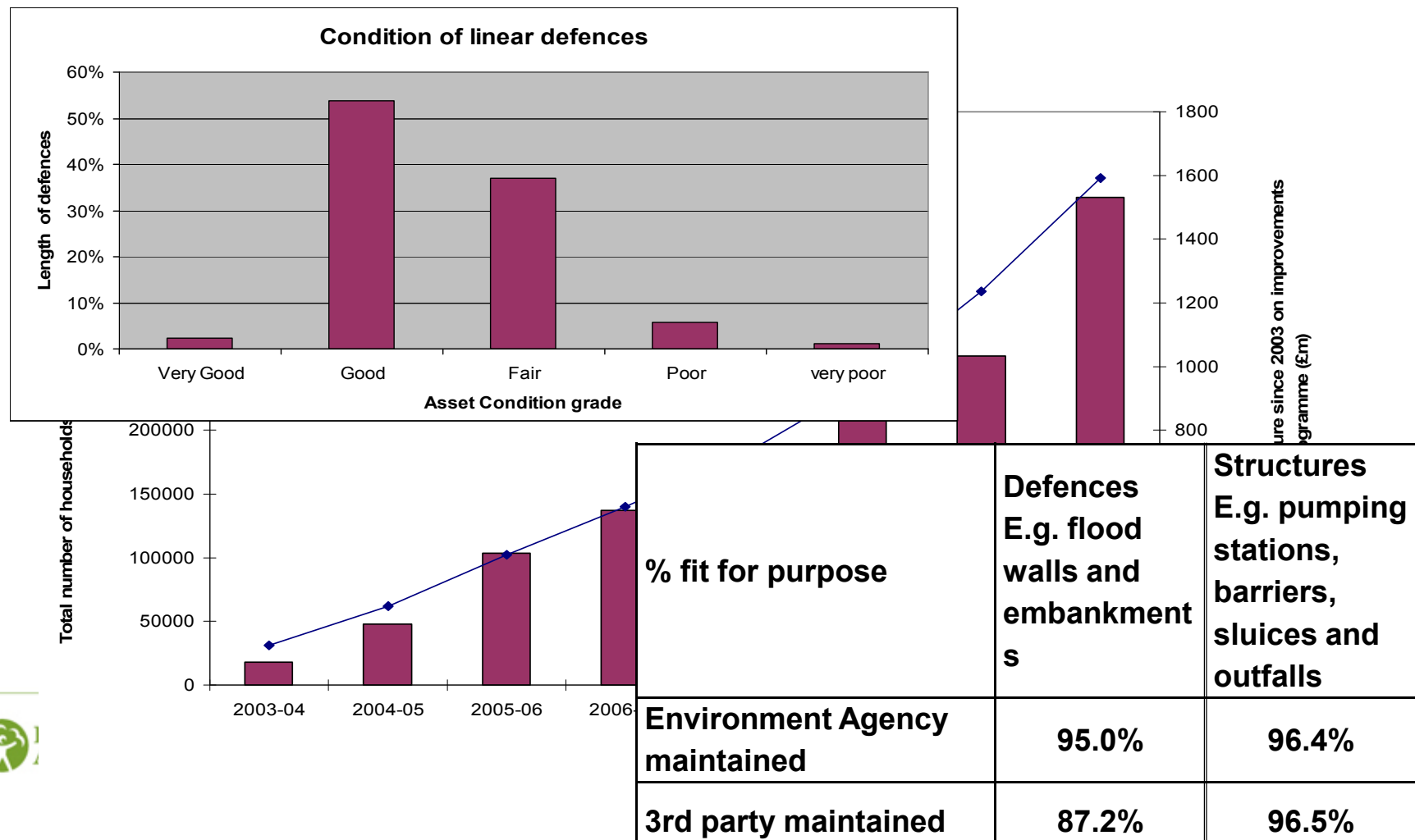


Data from High Level Target 5 report for 2007-08

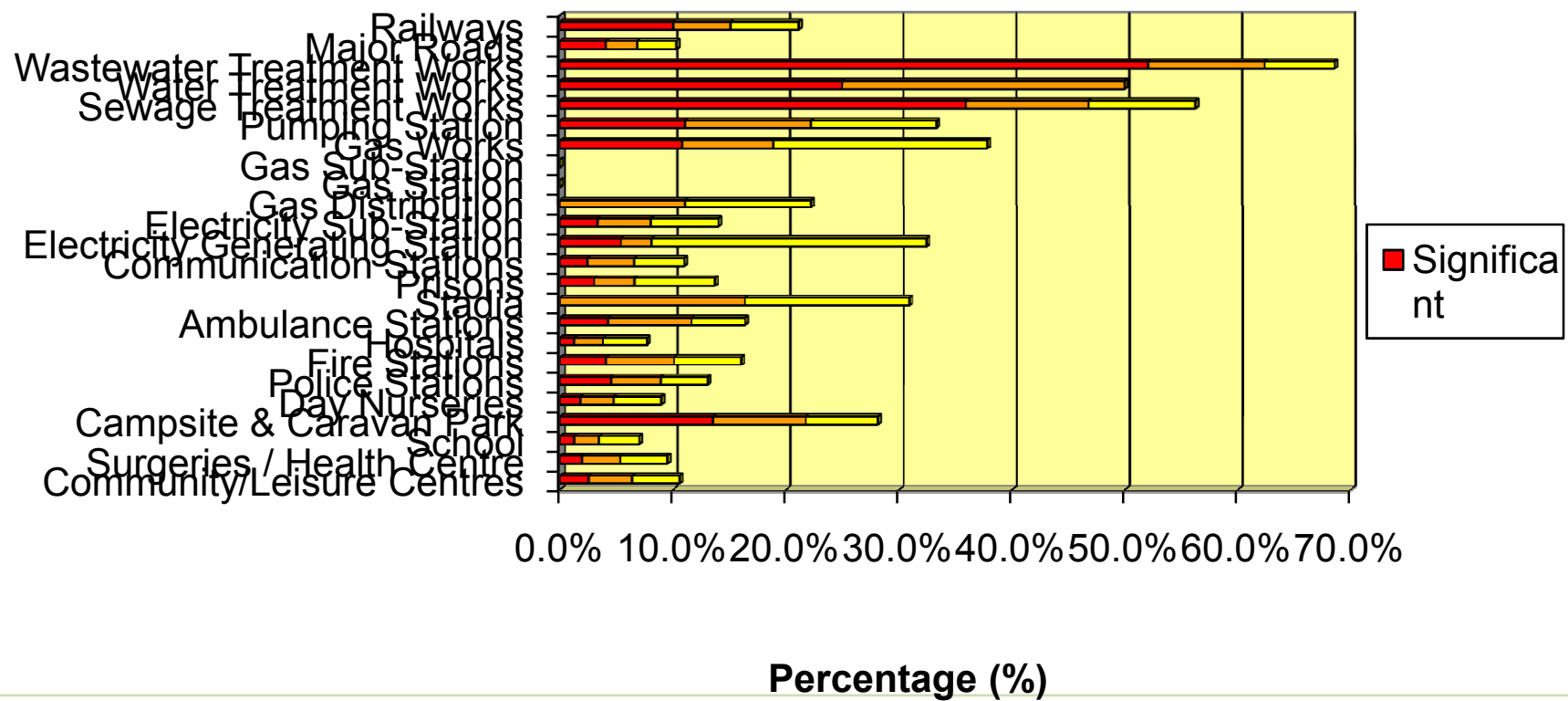
Impact of flooding	HIGH e.g. LUB A/B or Habs Regs sites protected.	1 HIGH	2 HIGH	3 HIGH	4 HIGH	
	MEDIUM e.g. LUB C, or SSSI's protected	5 LOW	6 MEDIUM	7 MEDIUM	8 HIGH	
	LOW e.g. LUB D/E	9 LOW	10 LOW	11 LOW	12 MEDIUM	
		Low -Negligable risk to life.	Medium- Time likely to be available for evacuation in event of failure.	High- Little w arning of flooding to residential or commercial property	Very High- Little w arning of failure. Possible loss of life/major injury. Sudden impact to vulnerable groups.	
		e.g. small/medium w atercourses, defences protecting agricultural land, Category D FSRs.	e.g. significant w atercourses w ithout raised defences, diversion channels, Category C FSRs, etc	e.g raised defences.	e.g. very significant raised defences or category A/B FSRs. Very significant structures.	
		Potential Impact on People from System Failure				
taken from Environment Agency Work Instruction 148_05, 2005						

## Risk matrix for asset management

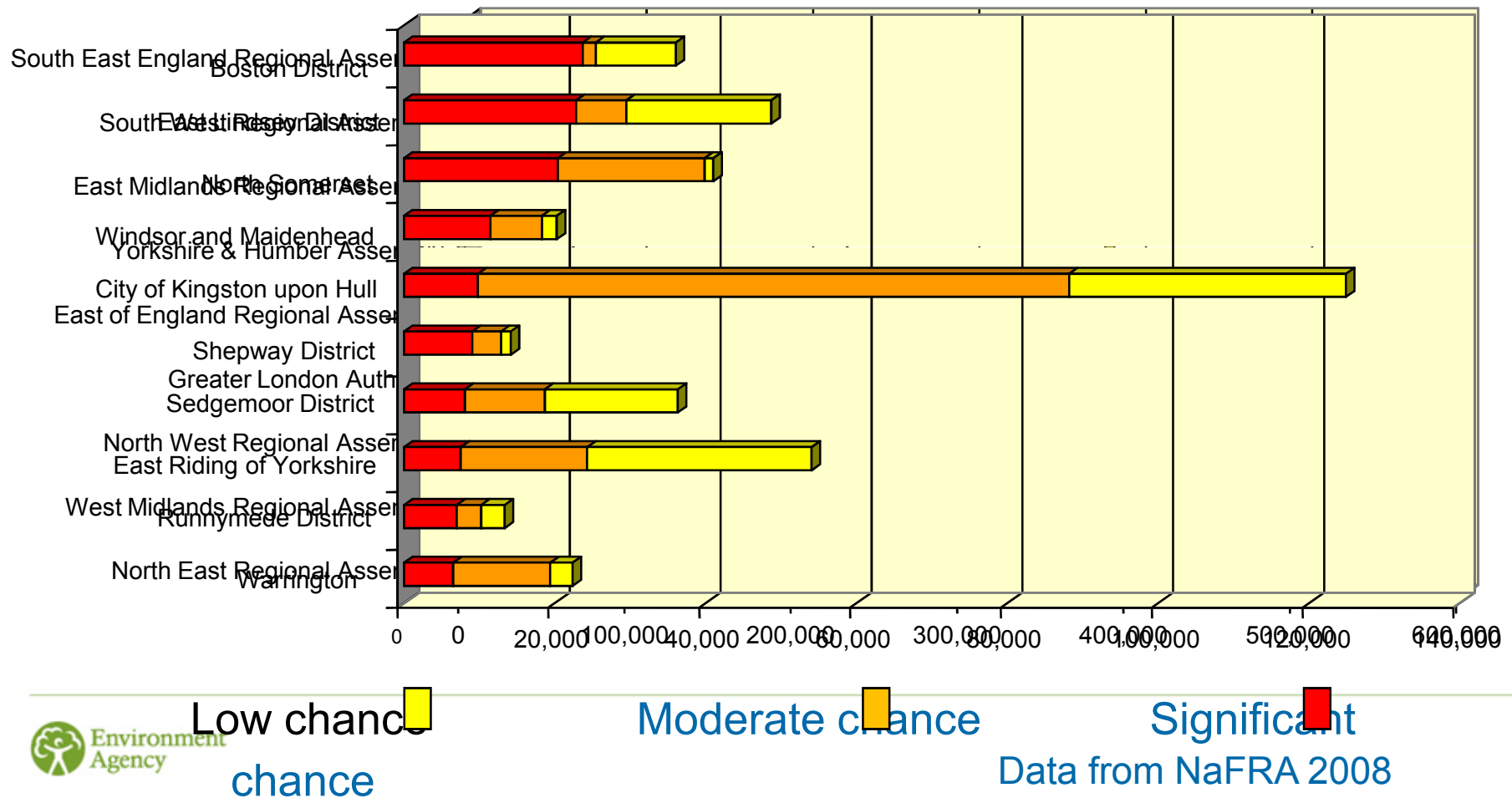
# Protecting communities – flood defences



# Keeping essential services running



# Properties at flood risk across regions and local areas



# Catchment Flood Management Plans

**Policy 1** Areas of little or no flood risk where we will continue to monitor and advise

**Policy 2** Areas of low to moderate flood risk where we can generally reduce existing flood risk management actions

**Policy 3** Areas of low to moderate flood risk where we are generally managing existing flood risk effectively

**Policy 4** Areas of low, moderate or high flood risk where we are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change

**Policy 5** Areas of moderate to high flood risk where we can generally take further action to reduce flood risk

**Policy 6** Areas of low to moderate flood risk

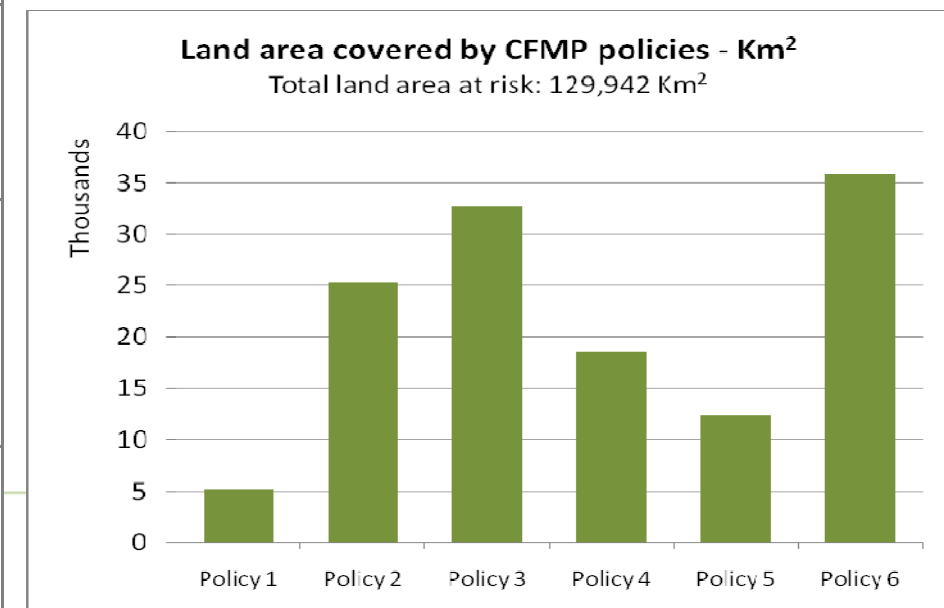
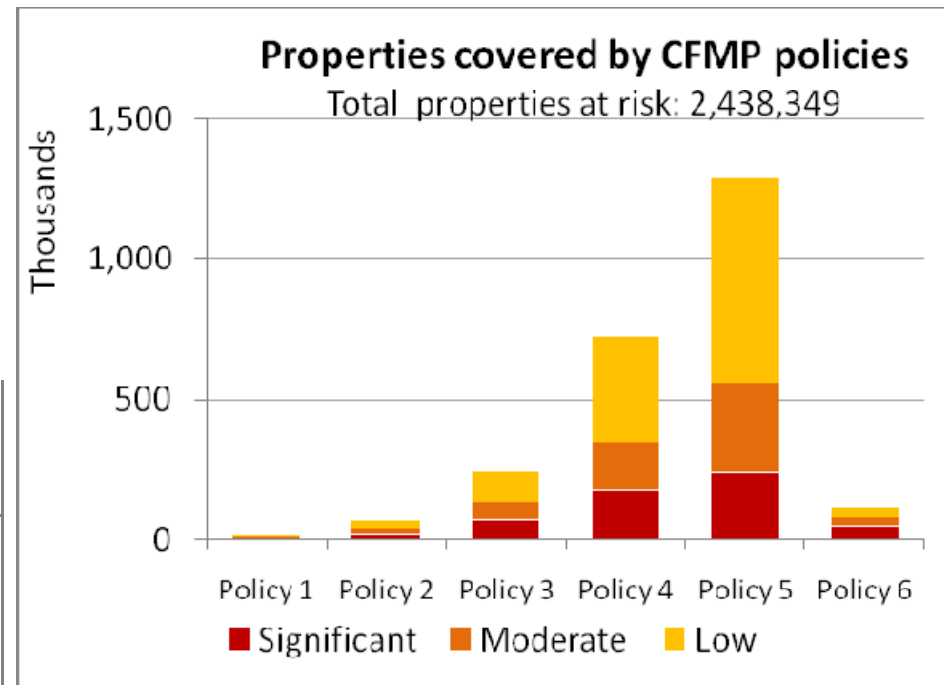
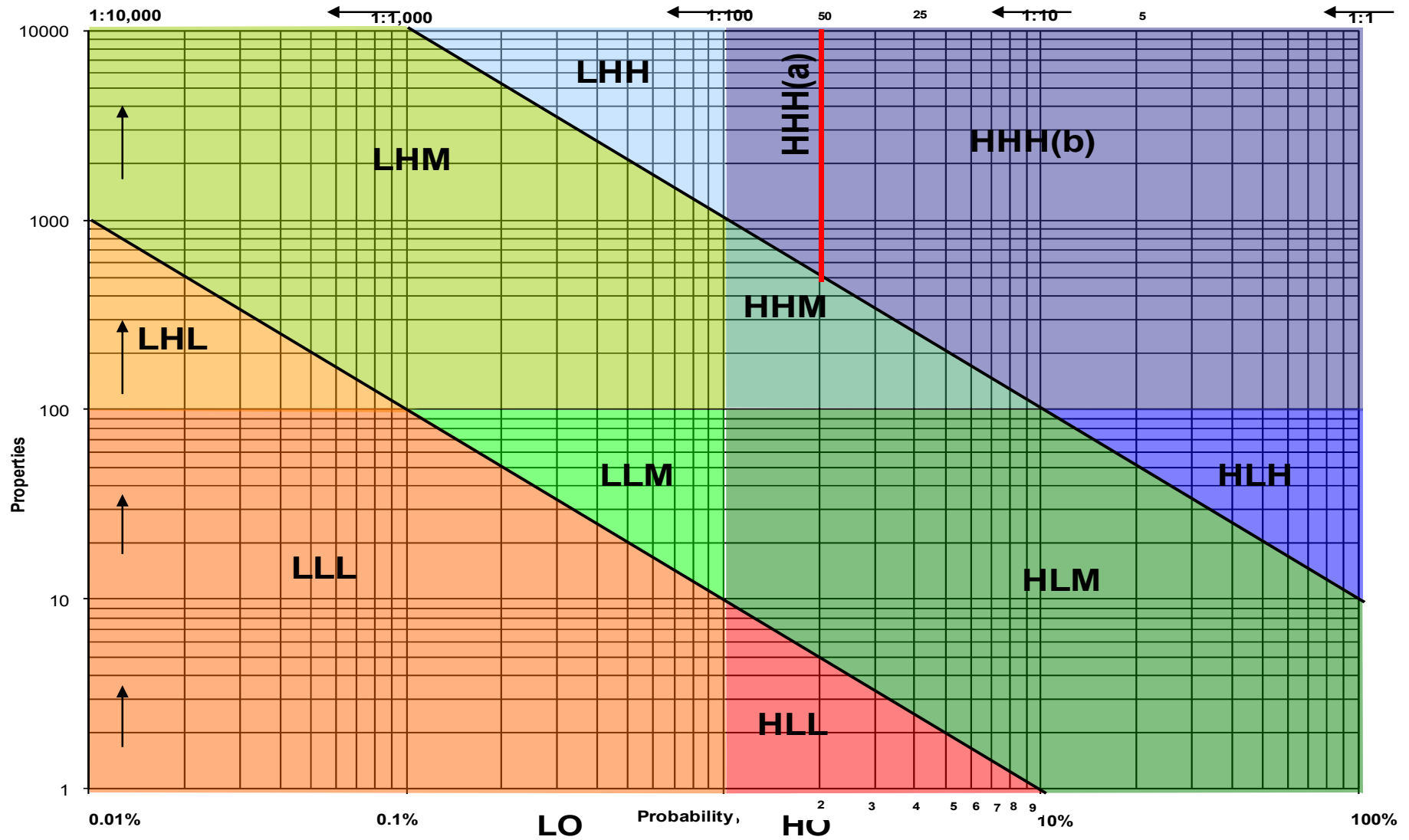


Figure 1 Flood Warning risk matrix for fluvial risk locations



# Investment

## ➡ Long Term Investment Strategy (LTIS)

- Recommended by Pitt Review and the EFRA Select Committee (2008)
- Covers investment needs for 2010-2035
- Looks at risk, how to manage it and costs over the next 25 years



