

Trends in mean sea level rise for flood risk planning

Meeting NOC Southampton 30/03/2015

Owen Tarrant – Environment Agency

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2nd Highest

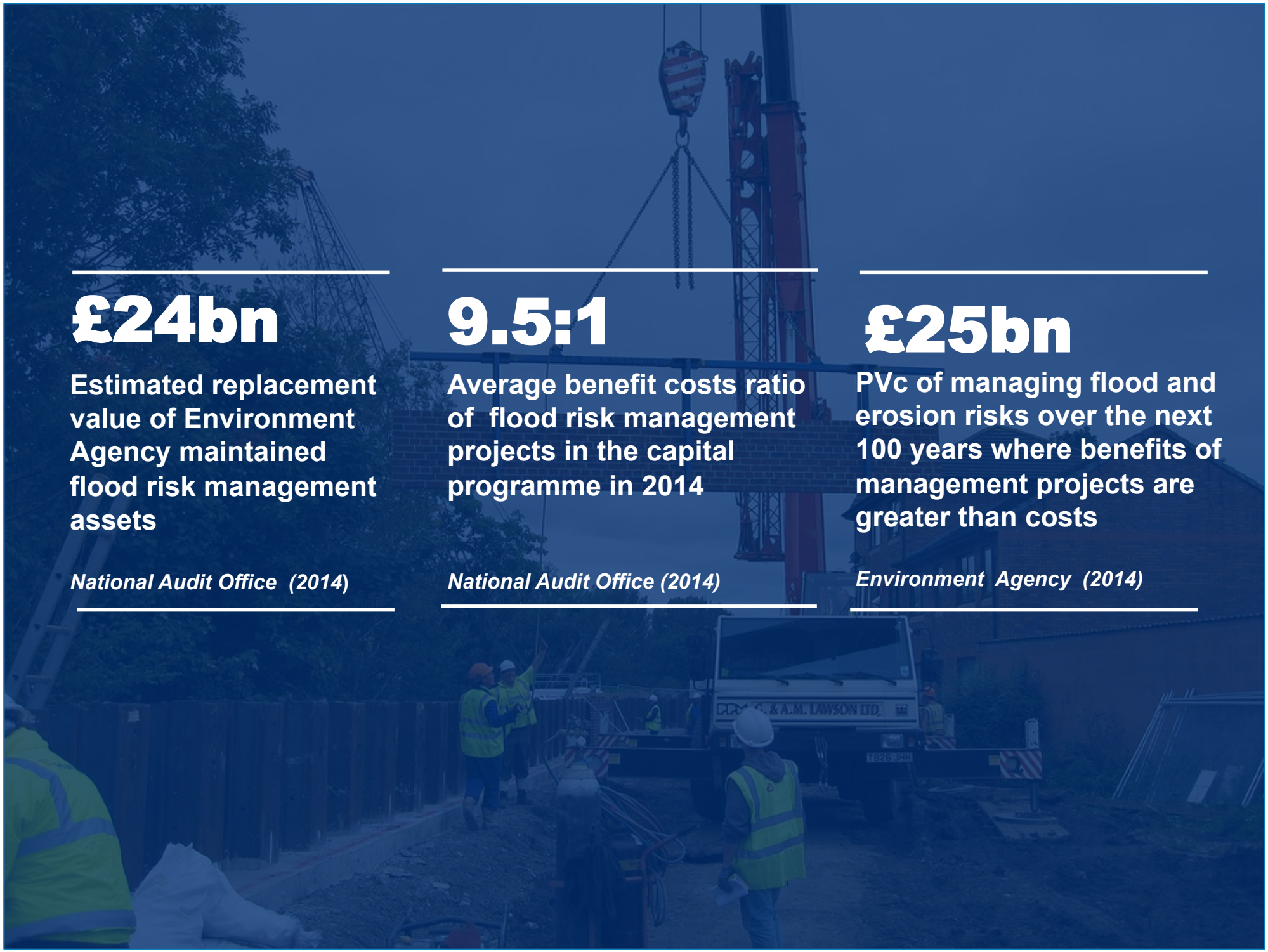
The level of priority that the government considers coastal flooding to be in it's national risk assessment – second only to pandemic flu

National Risk Register (2013)

5.4 million

Numbers of properties estimates to be at risk from flooding from the rivers, the sea and surface water

Environment Agency (2014)



£24bn

Estimated replacement value of Environment Agency maintained flood risk management assets

National Audit Office (2014)

9.5:1

Average benefit costs ratio of flood risk management projects in the capital programme in 2014

National Audit Office (2014)

£25bn

PVc of managing flood and erosion risks over the next 100 years where benefits of management projects are greater than costs

Environment Agency (2014)

Who does what

Department for Food and Rural Affairs

Environment Agency

Department for Communities and Local Government

Cabinet Office

Regional flood and coastal committees

Lead local authorities

Local resilience forum

District and Borough councils

Internal drainage boards

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Our planning activities

FLOOD ALERT

FLOODING IS POSSIBLE. BE PREPARED.

FLOOD WARNING

FLOODING IS EXPECTED. IMMEDIATE ACTION REQUIRED.

SEVERE FLOOD WARNING

SEVERE FLOODING. DANGER TO LIFE.

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The wettest winter in 250 years

December	January	February
2013	2014	

Most serious tidal surge for
60 years

1.4 million
properties protected by Environment Agency flood defences

Thousands
of homes and businesses protected by temporary flood defences

155
severe flood warnings issued

50 closures
of the Thames Barrier

Largest
pumping operation ever in England

7,000
properties flooded

4,500
staff involved

2,500 km²
farmland protected

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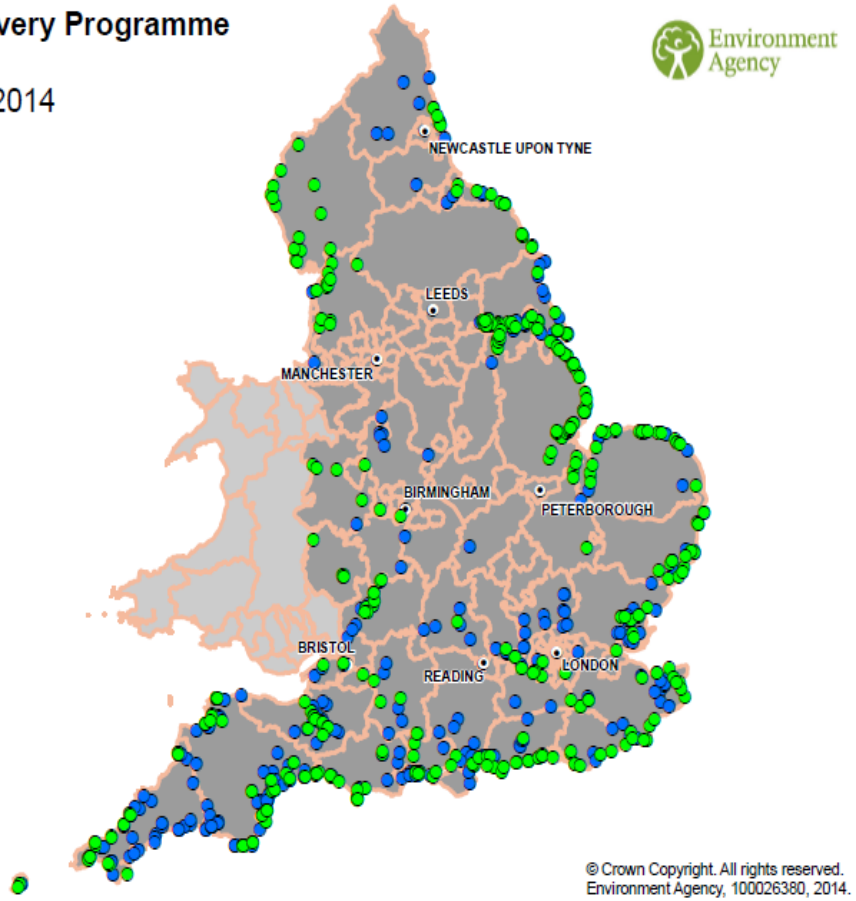
Recovery

National Flood Recovery Programme
Asset repair status
Compiled: 29 August 2014



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Shoreline management plans

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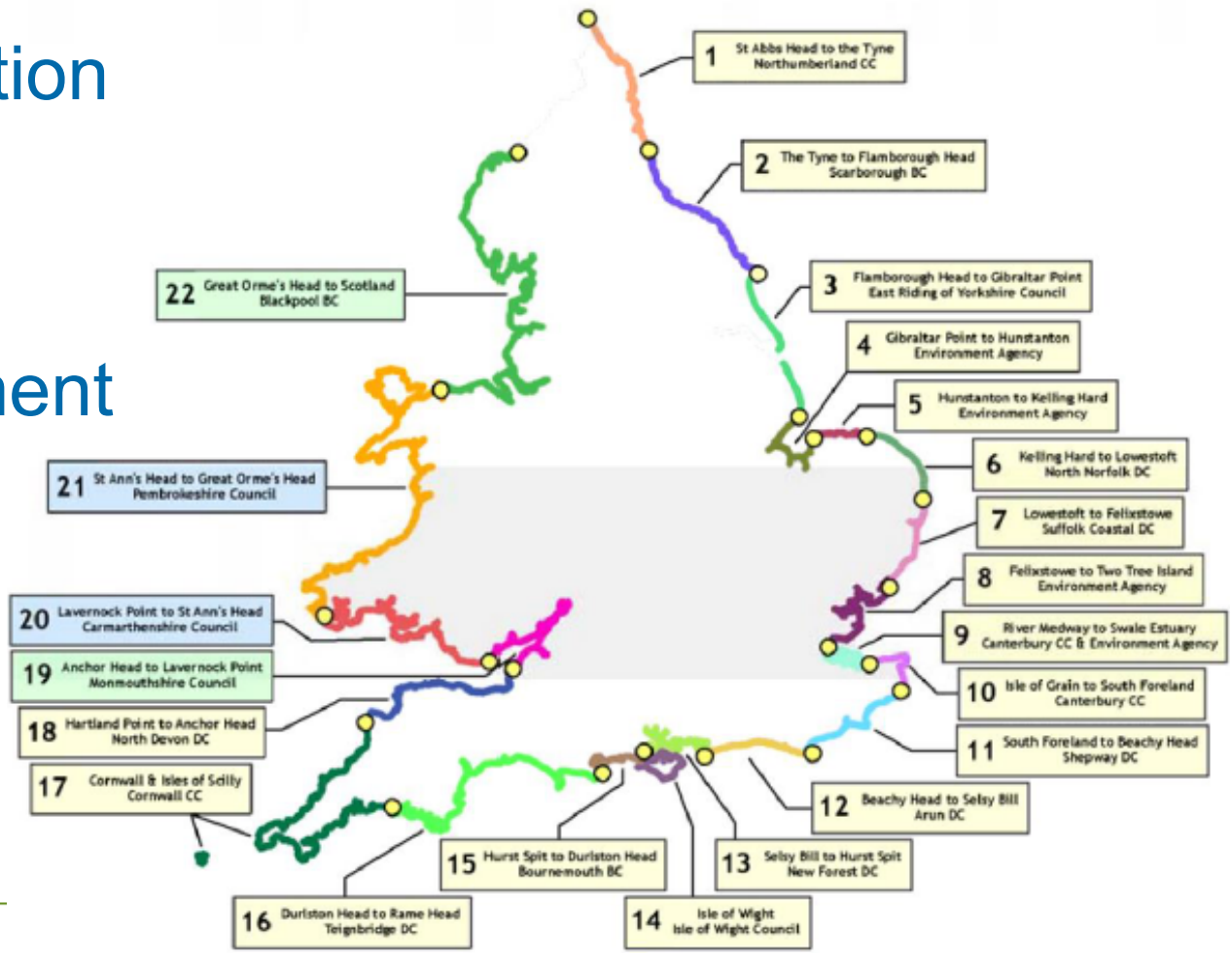
Shoreline management planning

- No active intervention
- Hold the line
- Advance the line
- Managed realignment

3 Epochs

20, 50 and 100yrs



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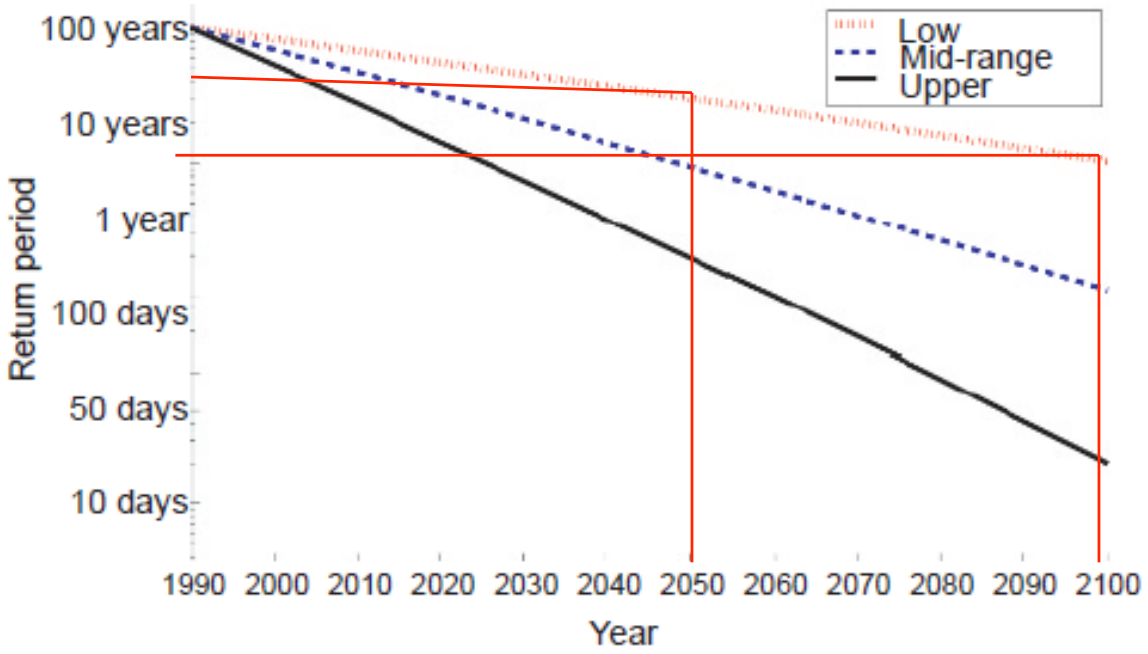
Flood probabilities



After Haigh et al 2011

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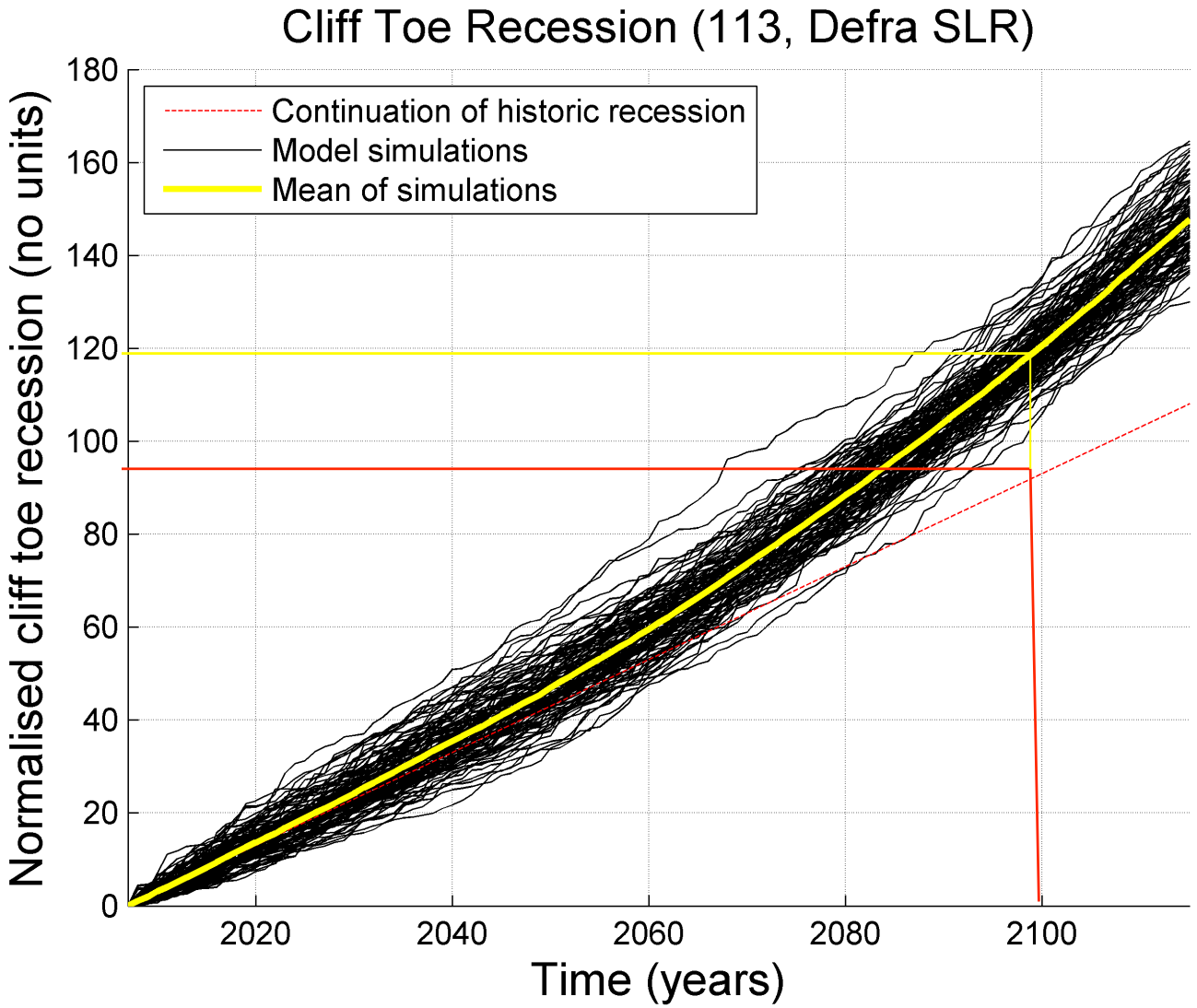
Sensitivity of shore position



Courtesy - Mike Walkden

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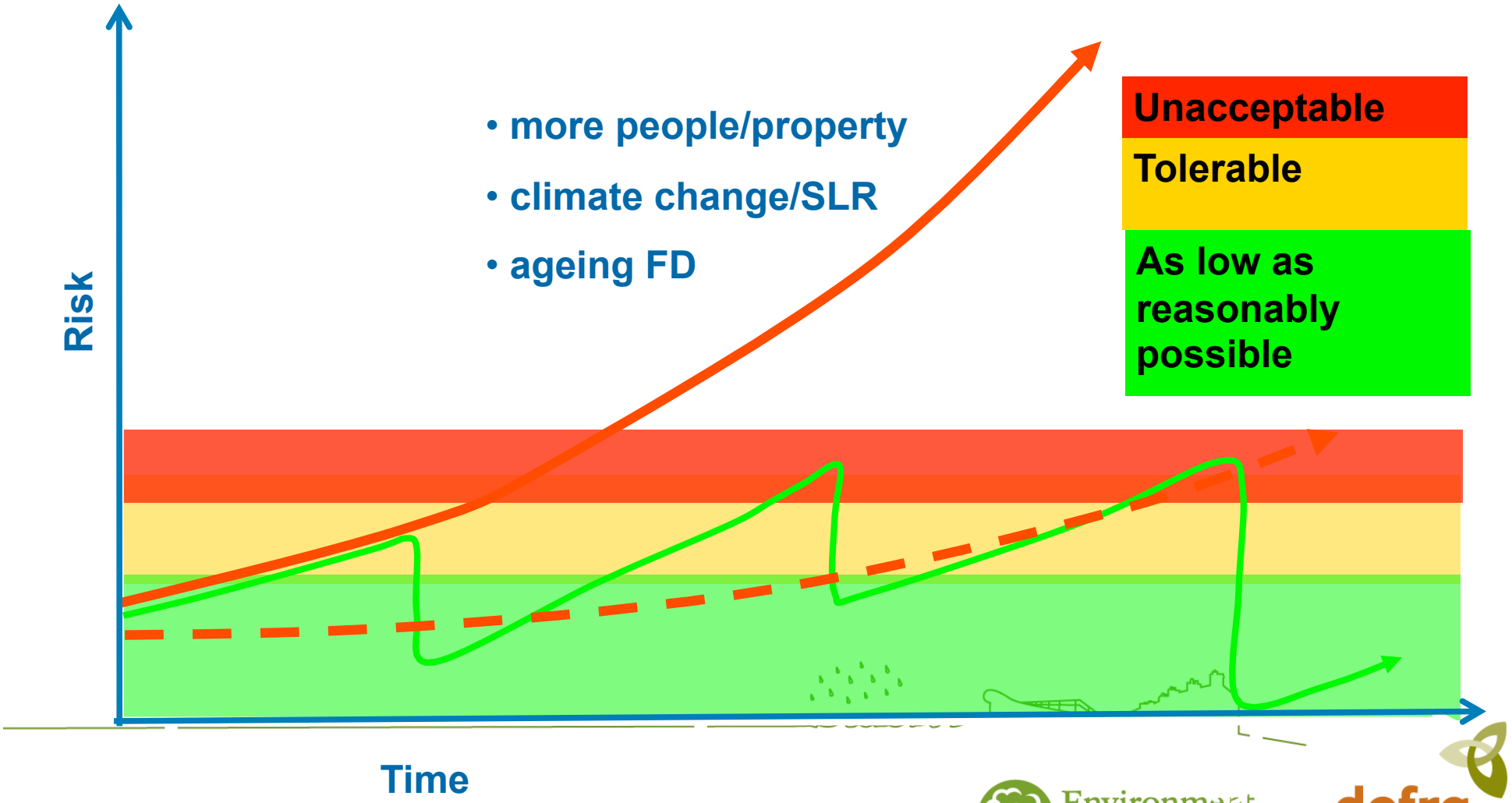
Interim flood defence level
Flood defence raised post 1953
Flood defence raised post 1928 flood
Flood defence level pre-1928

Profile of risk



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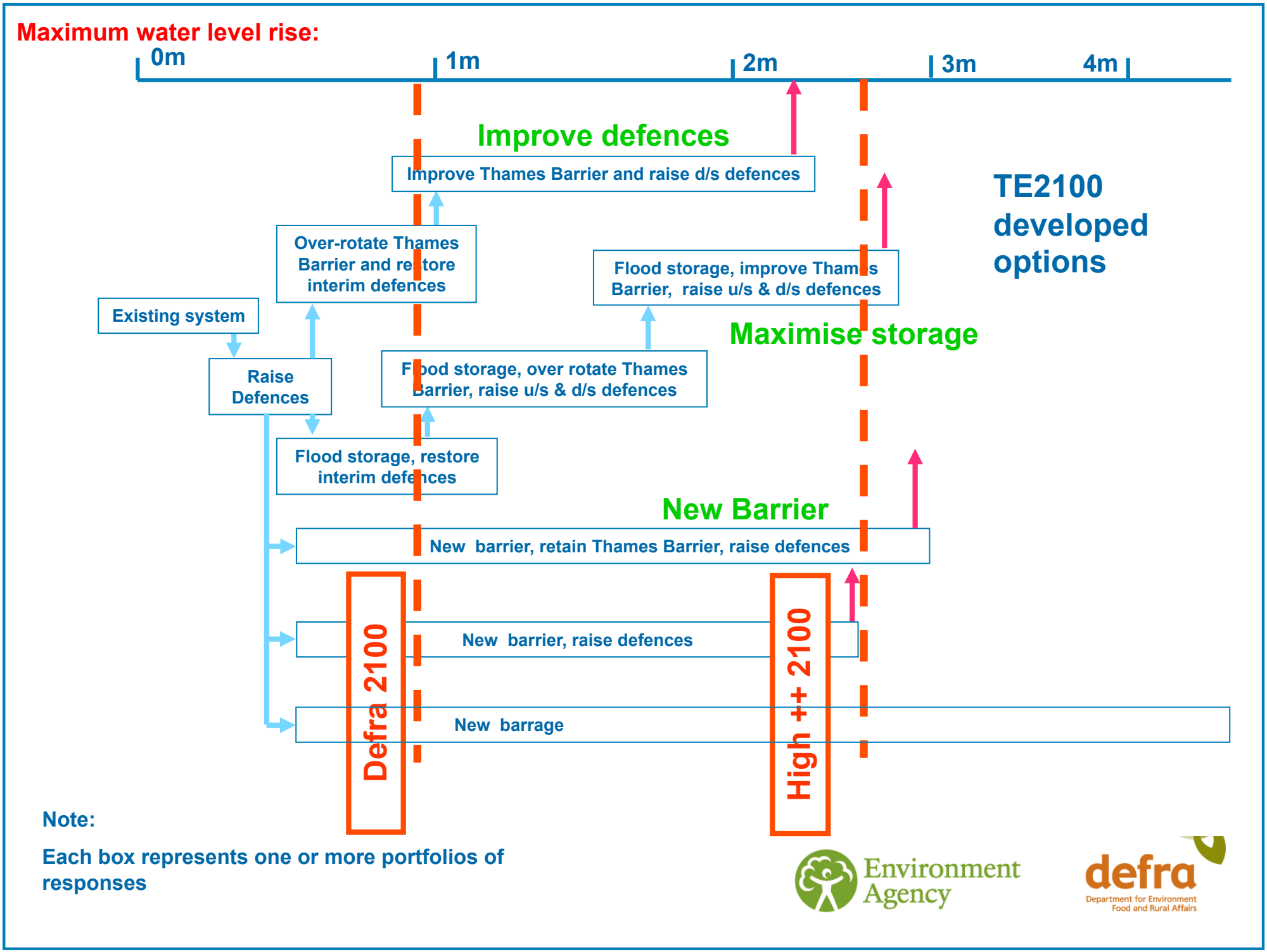
Maximum water level rise:
0m
1m
2m
3m
4m
Improve defences
Improve Thames Barrier and raise d/s defences
Over-rotate Thames Barrier and restore interim defences
Flood storage, improve Thames Barrier, raise u/s & d/s defences
TE2100 developed options
Existing system
Raise Defences
Flood storage, over rotate Thames Barrier, raise u/s & d/s defences
Maximise storage
Flood storage, restore interim defences
New Barrier
New barrier, retain Thames Barrier, raise defences
New barrier, raise defences
New barrage
Defra 2100
High ++ 2100
Note:
Each box represents one or more portfolios of responses
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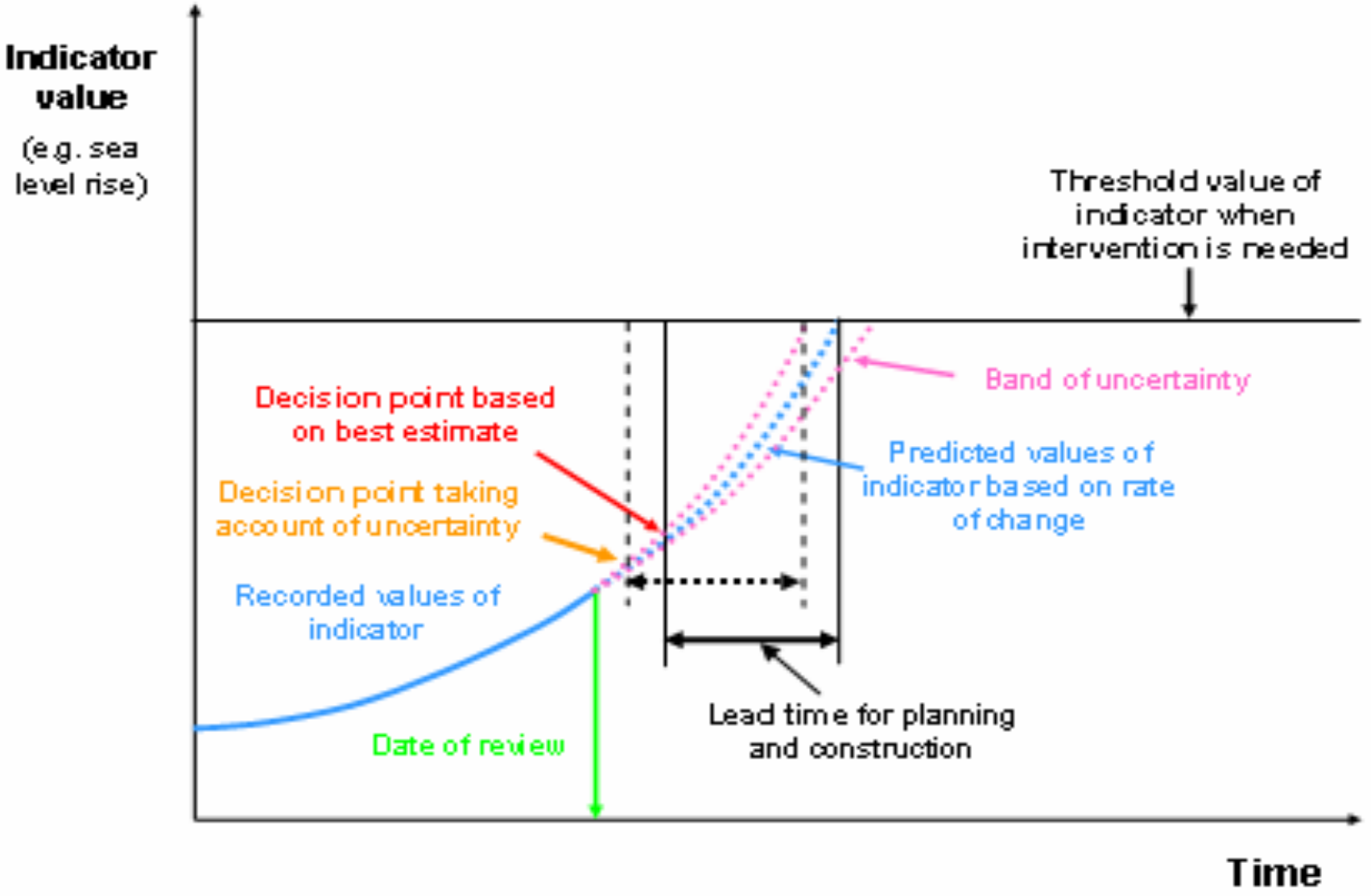
Lead-times for decisions



Conclusions

- MSL change will strongly govern future flood probabilities
- Coastal position is strongly dependant of MSL and particularly timing of acceleration
- To identify adaptable pathways we need a good understanding of sea level trends of possible future trajectories
- Large investment decisions need long lead times. Its essential that we monitor trend particular to pick up accelerations

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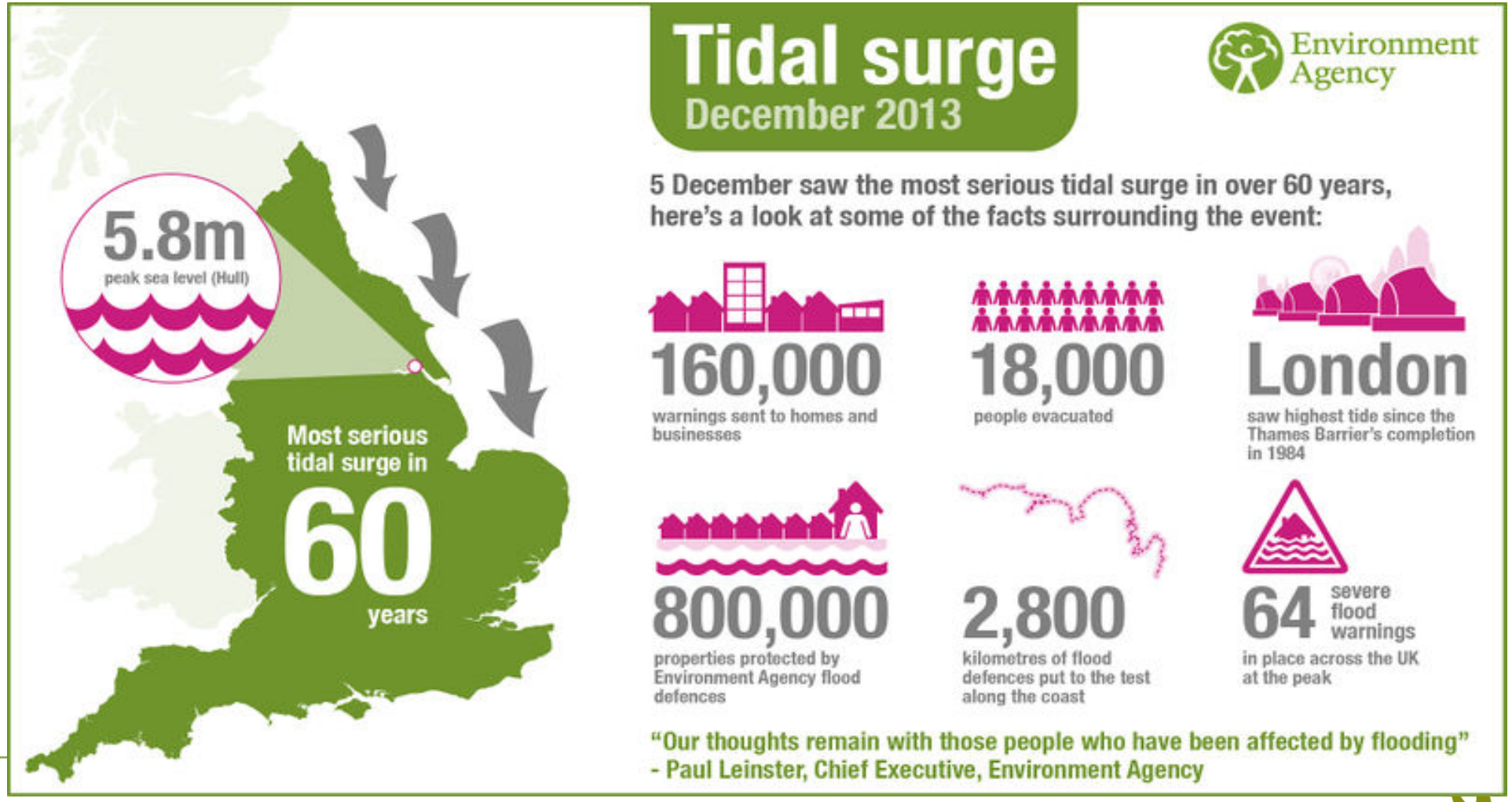
Tidal surge 5 December 2013



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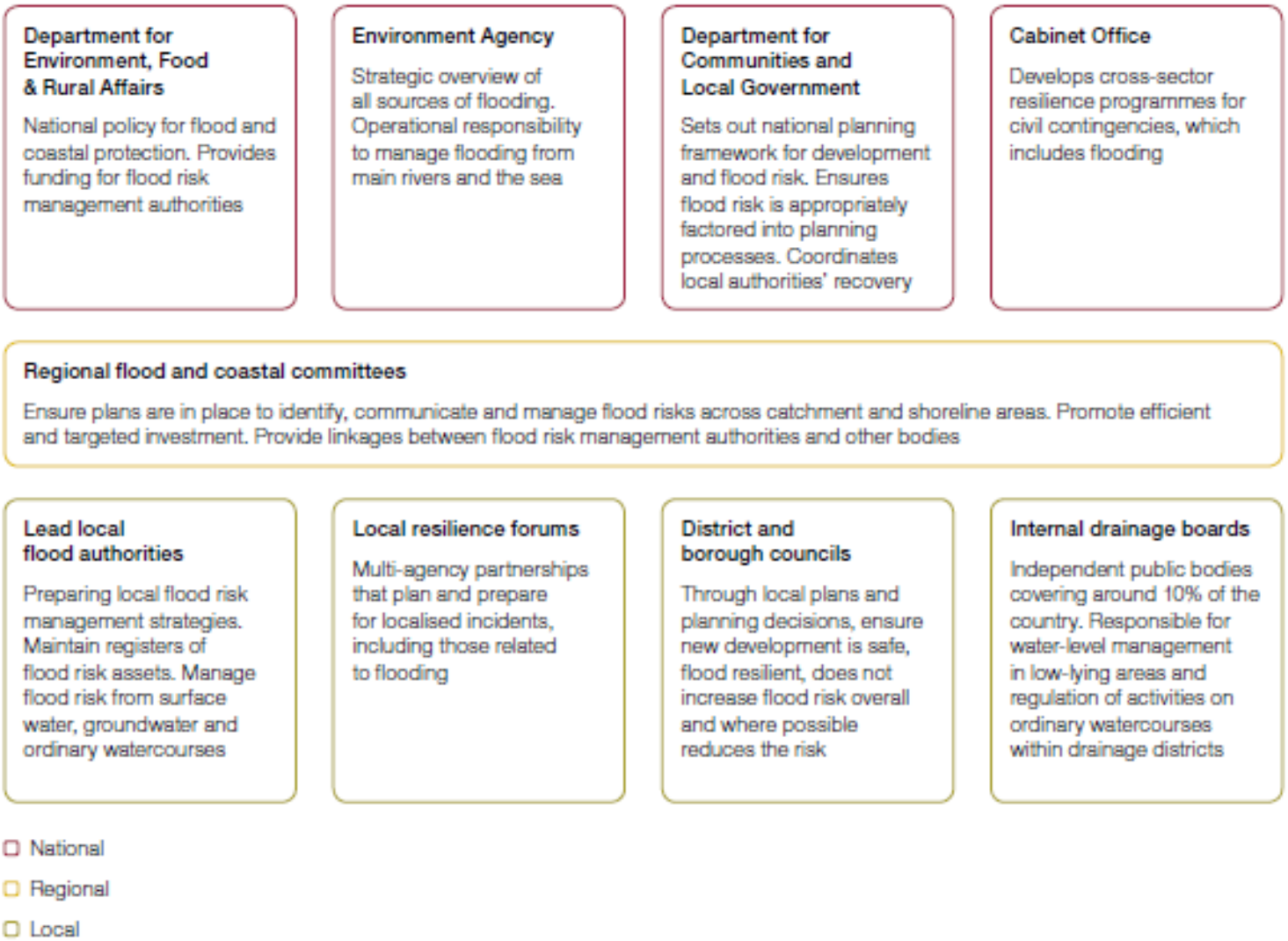
Department for Environment, Food & Rural Affairs
National policy for flood and coastal protection. Provides funding for flood risk management authorities
Environment Agency
Strategic overview of all sources of flooding. Operational responsibility to manage flooding from main rivers and the sea
Department for Communities and Local Government
Sets out national planning framework for development and flood risk. Ensures flood risk is appropriately factored into planning processes. Coordinates local authorities' recovery
Cabinet Office
Develops cross-sector resilience programmes for civil contingencies, which includes flooding
Regional flood and coastal committees
Ensure plans are in place to identify, communicate and manage flood risks across catchment and shoreline areas. Promote efficient and targeted investment. Provide linkages between flood risk management authorities and other bodies
Lead local flood authorities
Preparing local flood risk management strategies. Maintain registers of flood risk assets. Manage flood risk from surface water, groundwater and ordinary watercourses
Local resilience forums
Multi-agency partnerships that plan and prepare for localised incidents, including those related to flooding
District and borough councils
Through local plans and planning decisions, ensure new development is safe, flood resilient, does not increase flood risk overall and where possible reduces the risk
Internal drainage boards
Independent public bodies covering around 10% of the country. Responsible for water-level management in low-lying areas and regulation of activities on ordinary watercourses within drainage districts
National
Regional
Local