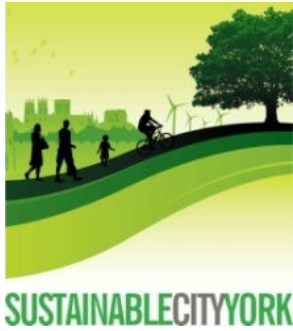


# **A changing climate, flood risk and emergency planning**

Jacqui Warren

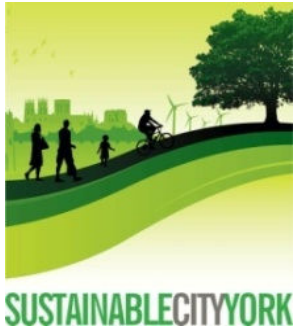
Mike Tavener

Jim Breen



## Outline of presentation

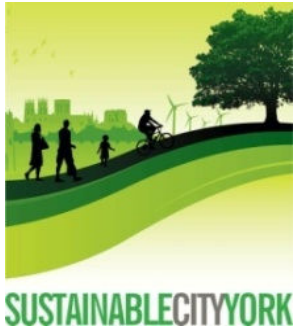
- Background
- Impacts of past weather events in York
- Predicted changes to our climate
- Controls in place to
  - Prepare for a changing climate
  - manage surface water flooding



# Preparing for a changing climate

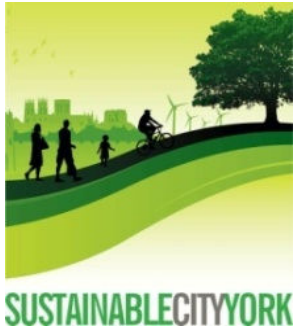
## Background

- In 2010 city approved its first Climate Change Action Plan
- Reduce CO2 emissions
- Prepare for a changing climate

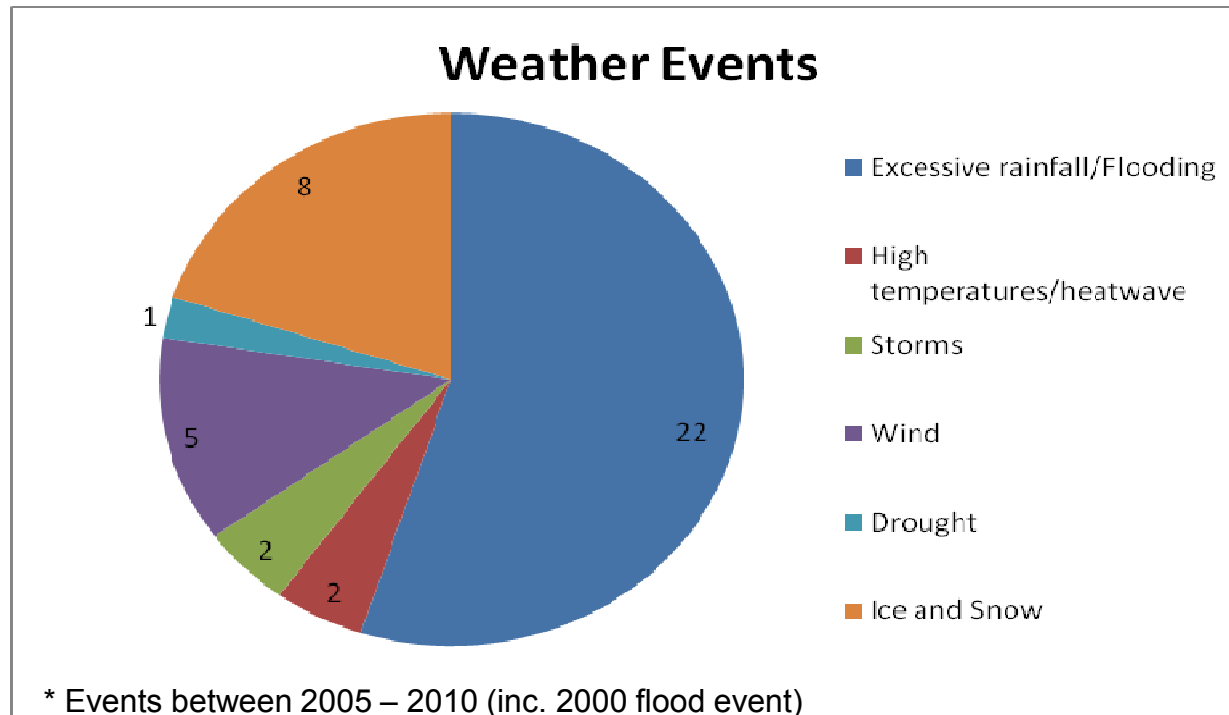


## Why prepare?

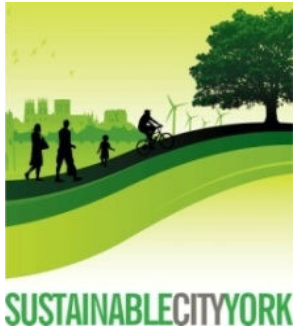
- In 2003, around 2000 excess deaths were recorded in England and Wales during the August heatwave.
- In 2007, summer floods affected England, Wales and Northern Ireland costing the economy more than £3 billion in England alone.
- In 2009, the Cumbria floods resulted in £100s of millions of damage, including the loss of bridges and long-term disruption for local communities.
- In 2009 and 2010, prolonged cold caused wide-ranging problems for UK transport and water infrastructure.
- In 2011, parts of the UK experienced a much drier than average spring, resulting in insufficient rainfall for some crops.
- (Source:CCRA 2012 <http://www.defra.gov.uk/environment/climate/government/risk-assessment/>)



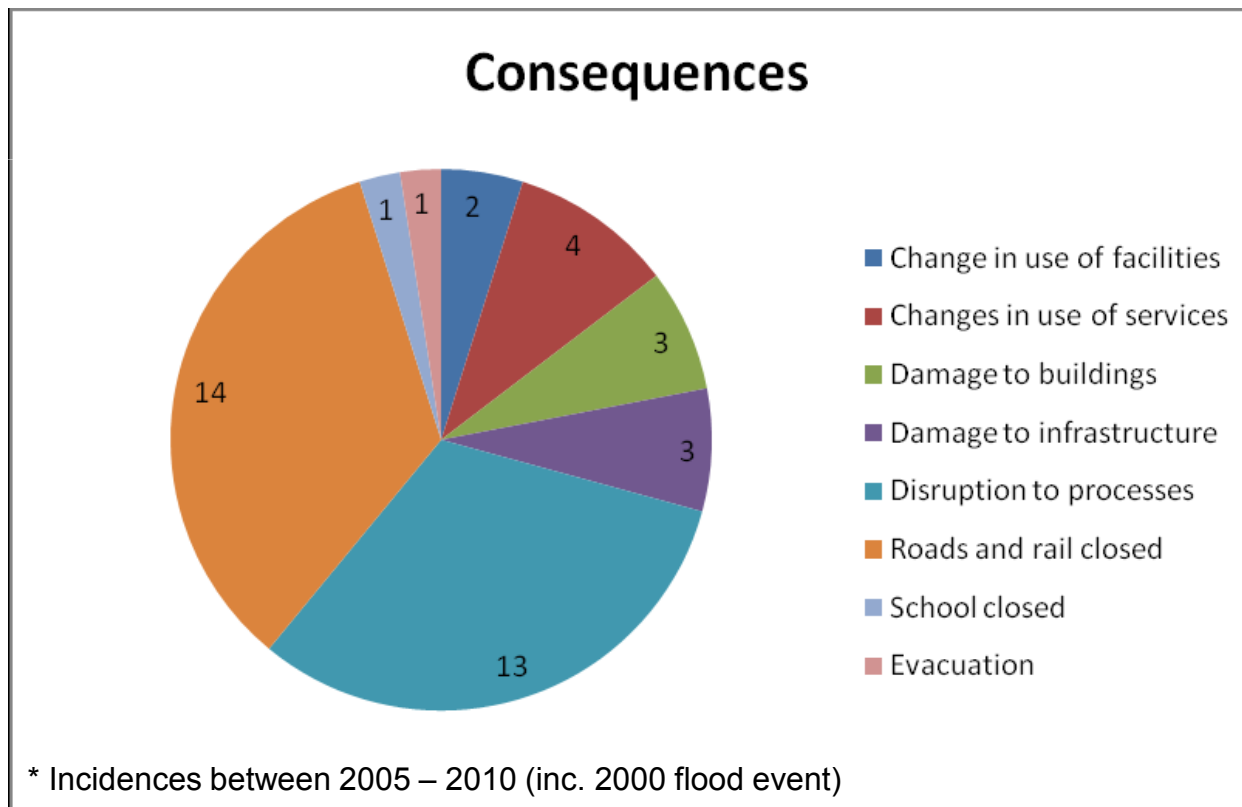
# York vulnerability to past events



Source: York Local Climate Impact Profile (2010)

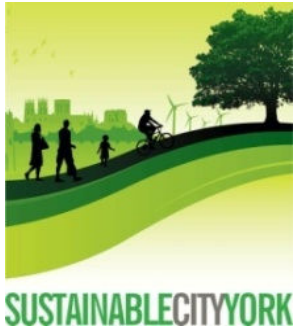


# What are the consequences?



Source: York Local Climate Impact Profile (2010)

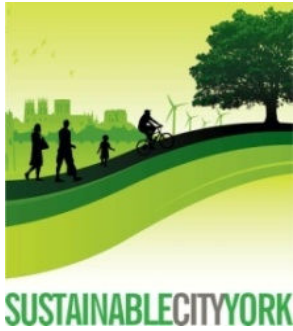




## Predicted changes in climate

Future Climatic condition	2020	2050	2080
Increased summer temperature	+ 1.3°C	+ 2.3°C	+ 3.3°C
Decreased summer rainfall	- 8%	- 19%	- 23%
Increased winter temperature	+ 1.3°C	+ 1.9°C	+ 2.9°C
Increased winter rainfall	+ 4%	+ 11%	+ 15%
Increased storminess	Increase overtime		
Increased rainfall intensity	Increase overtime		
Rising sea level	22cm by 2050, 36cm by 2080		

Source: Weathering the storm: Yorkshire and Humber regional adaptation study 2009

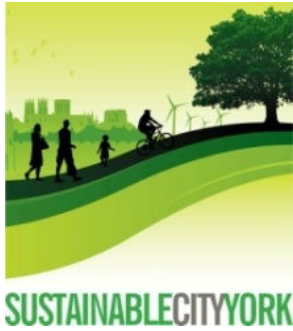


## Potential future impacts – Flooding

- More frequent flood problems for local residents, businesses and infrastructure
- Erosion and possible over topping of flood defences
- Traffic impacts on main roads
- Increased risk to vulnerable caravan and camping sites

(Source: Y&H Climate Change Adaptation Study – City of York Report)

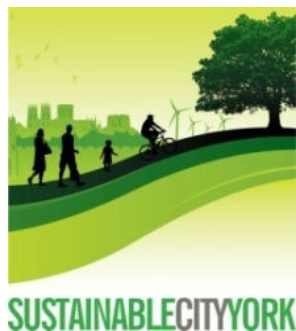




## Potential future impacts – Other

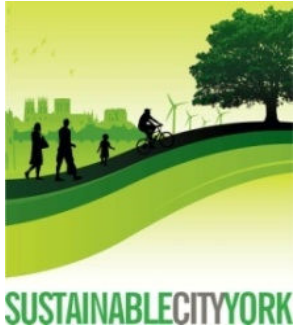
- Overheating and risk to public health
- Loss of local biodiversity
- Increase demand on public sector to respond to more frequent and severe weather events
- Increase disruption to service delivery, transport , utilities and business continuity

(Source: City of York Local Climate Impact Profile 2010)



## Preparing for a Changing Climate (CC) controls in place:

- National CC Risk Assessment 2012
- CC Action Plan – Local Climate Impact Profile and CYC CC risk assessment 2010
- Identified key risks for the CYC
- Now need to embed risks in relevant services and work with partners / businesses, CVS .....
- Local Plan



## Potential future impacts – flood related

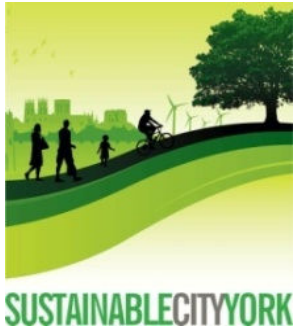
Changing rainfall patterns affect flooding

Two types of flooding:

- Fluvial
- Pluvial

Both mapped by EA for guidance – no link between the two types of flooding in the York area

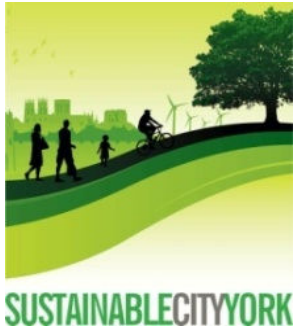
- Flood risk management, not prevention



## Projections - changes by the 2050s relative to the recent past are:

- Winter precipitation +12% (very likely to be between 2 and 26%)
- Precipitation on wettest day in winter + 12% (very unlikely to be more than 24%)
- Relative sea level at Grimsby very likely to be up between 10 and 41cm from 1990 levels
- Peak river flows in a typical catchment likely to increase between 8 and 14%

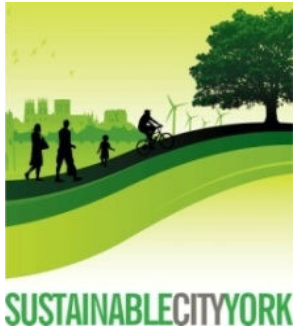
Source: City of York Council Preliminary Flood Risk Assessment <http://www.york.gov.uk/environment/flooding/>



## Implications for Flood Risk

Impacts will depend on local conditions and vulnerability:

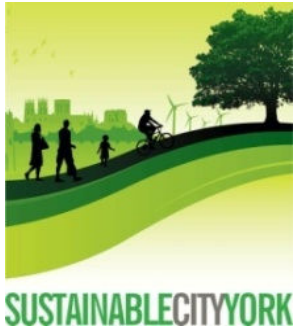
- Wetter winters likely to increase river flooding – frequency/level.
- More intense rainfall causes more surface runoff, increasing localised flooding and erosion. May increase pressure on drains, sewers and water quality
- Drainage systems have been modified to manage water levels and could help in adapting locally to some impacts of future climate on flooding, but may also need to be managed differently.
- Where appropriate, need local studies to understand climate impacts in detail, including effects from other factors like land use. Sustainable development and drainage will help adapt to climate change and manage risk of damaging floods in future.



## Preparing for a changing climate – Flood risk management controls

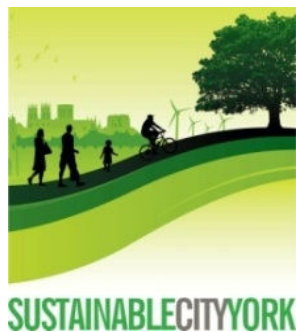
To manage flood risk the Council has a range of documents:

- SFRA: LDF evidence base for strategic planning and advice for development control
- PFRA: High level assessment of surface water flood risk
- SWMP: Action plan for future management of surface water flood risk – maintenance and planning identified as key issues
- LFRMS: Strategy for flood risk management in LLFA area
- River Flood Emergency Plan – management of fluvial events



## Preparing for a changing climate – emergency planning controls

- Work with LRF partners based on National Risk Assessment
- Arrangements in place to cascade DH Heat Health watch alerts and Met Office Cold Weather alerts within the Council
- Annual Review of both Internal and Multi-Agency Flood Plans



## Preparing for a changing climate – emergency planning controls

- Event by Event review of efficacy of flood plans
- Continuing emphasis of importance of Business Continuity Planning
- Ongoing maintenance of Council contingency plans such as the Emergency Handbook
- Input (on request) into planning applications for developments in the flood zones





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Questions?

