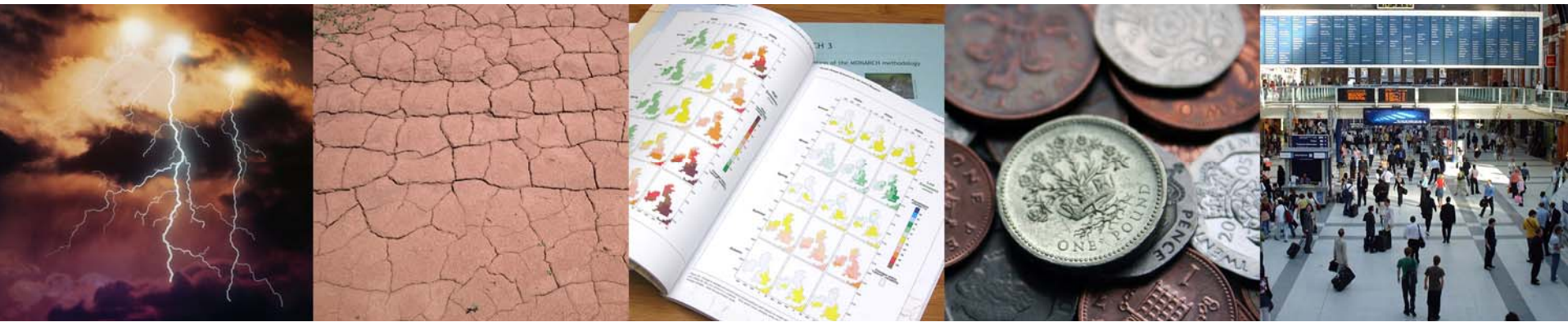
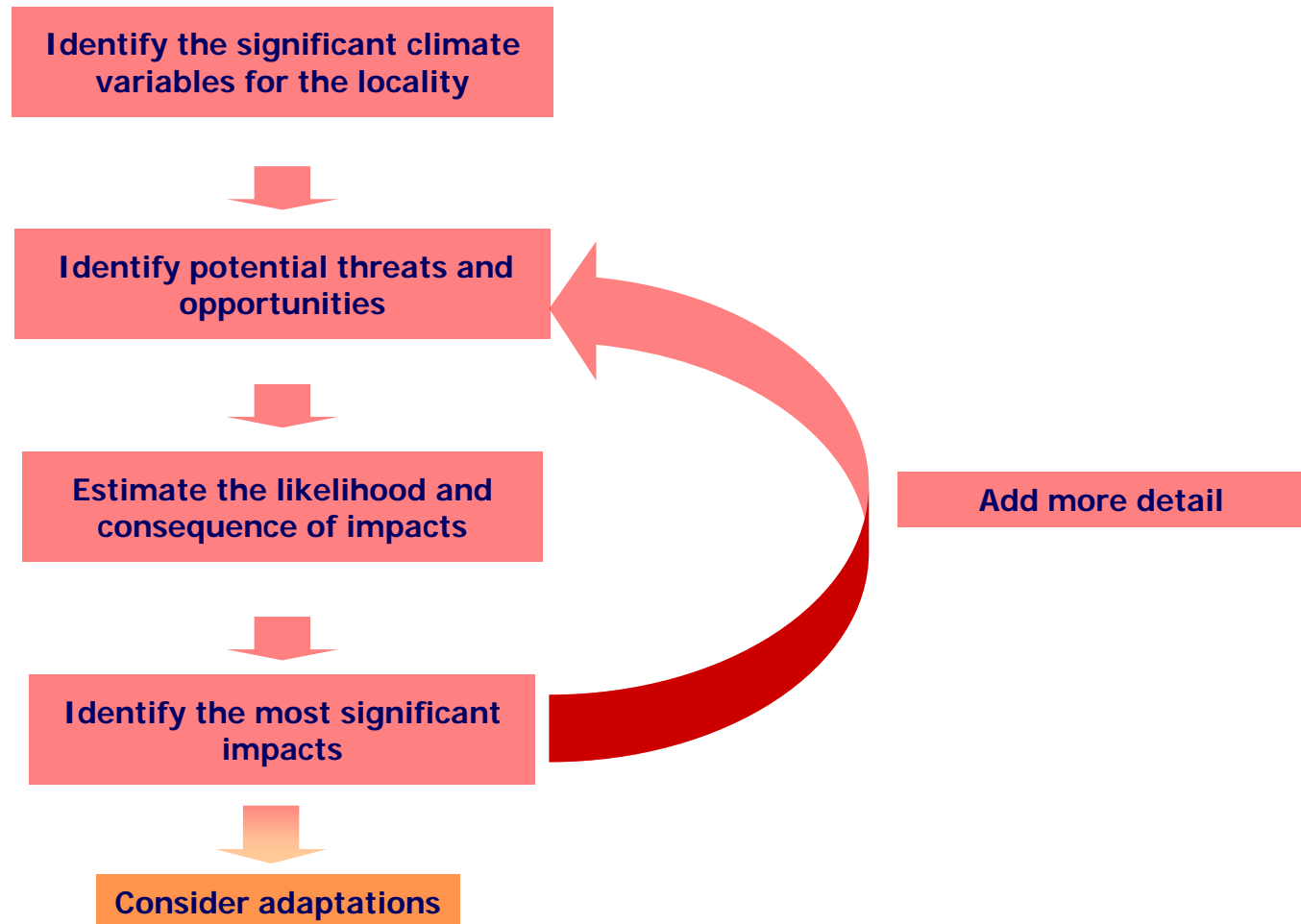


# Planning to Adapt to Climate Change

## A risk based approach



# Assessing the local impacts of climate change



# Risk assessment terminology

- **Risk** – the combination of the likelihood, or probability, of an event occurring, and the impact, or consequence, associated with that event
- **Hazard** – a situation or event with the potential to cause harm
- **Impact** – a beneficial or (more usually) detrimental result (of a situation or event)
- **Consequence** – the end result or effect caused by a situation or event
- **Likelihood** – a general concept relating to the chance of an event occurring. Generally expressed as a probability or frequency
- **Receptor** – the entity that may be harmed by a particular set of hazardous events
- **Sensitivity** – the degree to which a system would be affected by a stimulus
- **Vulnerability** – the magnitude of harm that would result from a particular hazardous event. Note that different types of receptors may differ in their sensitivity to a particular level of hazard

# Summary of expected climate changes in the UK

- **Annual / seasonal averages**
  - Warmer, drier summers (spring, autumn too)
  - Milder, wetter winters
  - Rising sea levels
  - Seasonal shifts
- **Extremes**
  - More very hot days
  - More intense downpours of rain
  - Shorter return periods for high water levels at coast
  - Uncertain changes in storms – possible increase in winter

**In many cases these broad summary projections will be sufficient to develop a climate adaptation action plan**

# Some factors to consider in identifying climate impacts

- **People:** implications for workforce, customers/clients and changing lifestyles
- **Demand:** changing demand for services
- **Premises:** impacts on building design, construction, maintenance and facilities management
- **Process:** impacts on the processes of service delivery
- **Finance:** implications for investment, insurance and stakeholder reputation
- **Logistics:** vulnerability of supply chain, utilities and transport infrastructure
- **Management implications:** how will climate risks and impacts be managed effectively?

# Identifying potential climate impacts

## Assessing climate impacts on LA services

|               |  |       |
|---------------|--|-------|
| Service area  |  |       |
| Completed by: |  | Date: |

| Climate variables                          | Impacts | Threat(t)/<br>opportunity(o)/<br>ambiguous(a) | Notes |
|--|---------|---|-------|
| <b>Changes in annual or seasonal means</b> |         |   |       |
| <b>Hotter summers</b>                      |         |   |       |
| People - Clients                           |         |   |       |
| <b>Drier summers</b>                       |         |   |       |
|  |         |   |       |
| <b>Warmer winters</b>                      |         |   |       |
|  |         |   |       |
| <b>Wetter winters</b>                      |         |   |       |
|  |         |   |       |
| <b>Rising sea levels</b>                   |         |   |       |
| Process                                    |         |   |       |
| Finance                                    |         |   |       |
| <b>Extreme events</b>                      |         |   |       |
| <b>Heavier downpours</b>                   |         |   |       |
| People - Clients                           |         |   |       |
| <b>Heat waves</b>                          |         |   |       |
| - Staff                                    |         |   |       |
| <b>Combined</b>                            |         |   |       |
|  |         |   |       |
| <b>Indirect -- Logistics</b>               |         |   |       |
|  |         |   |       |
| Process                                    |         |   |       |
| Finance                                    |         |   |       |

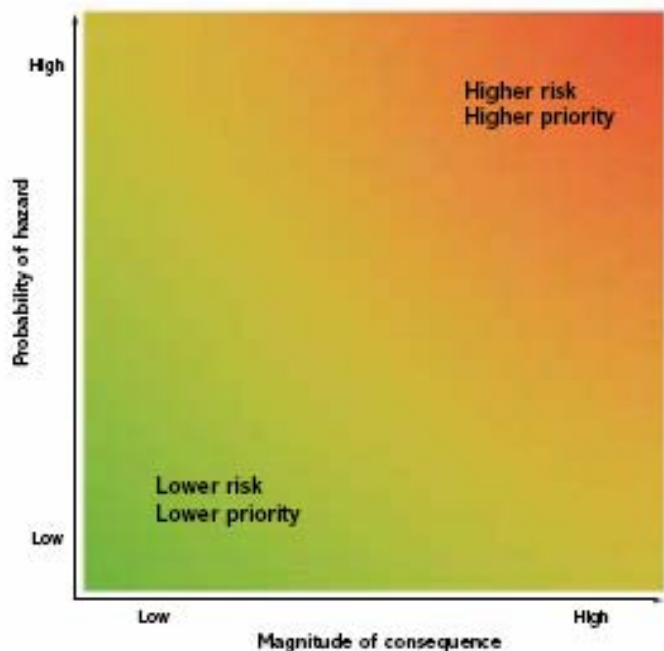
# Example of some potential impacts on care homes for the elderly

## Assessing climate impacts on LA services

|               |                            |       |  |
|---------------|----------------------------|-------|--|
| Service area  | Care homes for the elderly |       |  |
| Completed by: |                            | Date: |  |

| Climate variables                              | Impact   | Threat (t)/<br>opportunity<br>(o)/<br>ambiguous (a) | Notes  |
|--|--|---|--|
| <b>Changes in annual<br/>or seasonal means</b> |  |   |  |
| <b>Hotter summers</b>                          |  |   |  |
| People - Clients                               | Difficulty maintaining comfortable internal temperatures during summer | <b>t</b>  | The elderly are particularly vulnerable to high temperatures, particularly at night. Likely to be most extreme during heat waves (see below) |
|  | May offer more opportunities for outdoor activities                    | <b>o</b>  | May be need for shading to take advantage of this opportunity  |
| - Staff  | Difficulty maintaining comfortable internal temperatures during summer | <b>t</b>  | Reduction of staff efficiency  |
|  | Potentially greater risks to outdoor workers                           | <b>t</b>  | Likely to be most extreme in heat waves (see below)  |

# Estimating the likelihood and consequence of impacts



|                      |      |     |     |      |
|----------------------|------|-----|-----|------|
| Likelihood of hazard | High |     |     |      |
|                      | Med  |     |     |      |
|                      | Low  |     |     |      |
|                      |      | Low | Med | High |

Magnitude of consequence

Example

## Residential care for the elderly

Impact: Heatwave

Receptor: Elderly residents

Potential consequence: Death

Timescale: Short/medium/long

# Forthcoming UKCIP08 Scenarios

## Single value projection (UKCIP02)

Average change in temperature

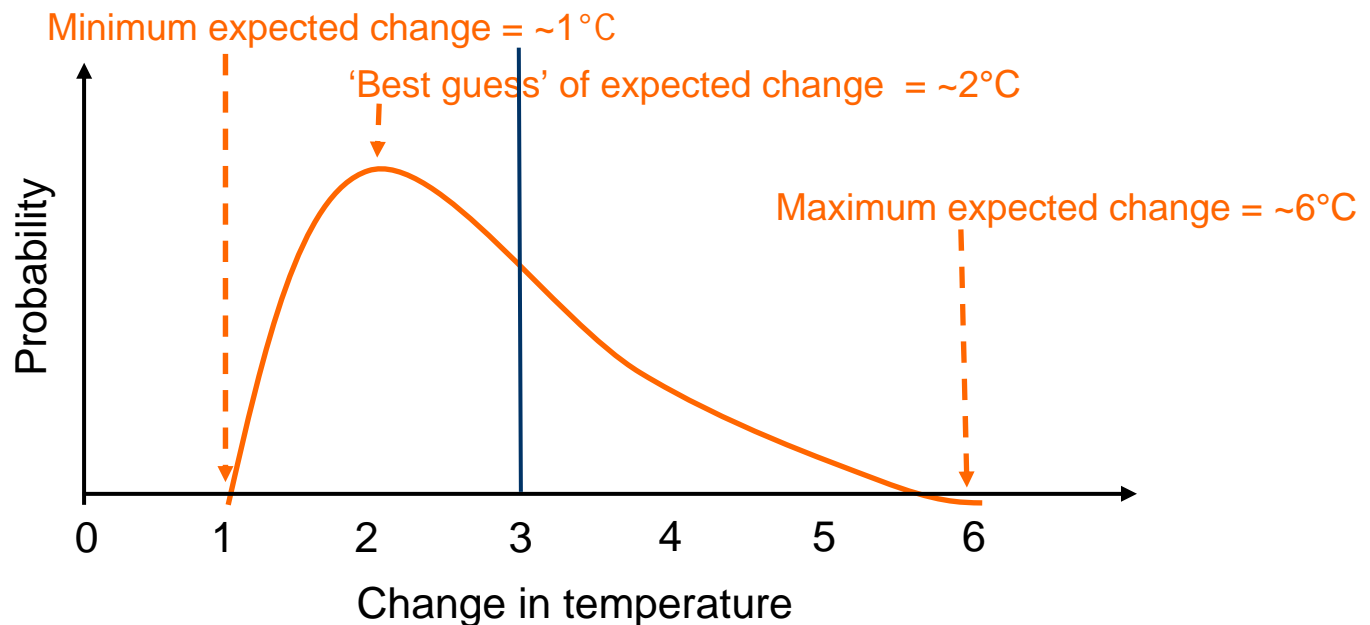
Effectively a 'best guess'

## Probabilistic projection (UKCIP08)

Shows range of model results

Plan according to attitude to risk

eg. Maximum expected change



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