

# Adaptation to Climate Change

## Planning Guidance for Health and Social Care organisations

Part of the formal Emergency Preparedness, Resilience and Response (EPRR) guidance for NHS, public health and social care organisations

*Supersedes NHS Sustainable Development Unit Adaptation Guidance August 2012*

January 2014



## Table of Contents

<b>Executive Summary</b> .....	3
<b>Introduction</b> .....	4
What is adaptation? .....	4
What will we have to adapt to? .....	4
Why is it important? .....	5
Key points about adaptation planning .....	6
<b>Expectations</b> .....	7
<b>Checklist of a good organisational adaptation plan</b> .....	8
<b>Developing an Adaptation Plan</b> .....	9
<b>Appendices</b> .....	11
Appendix 1 – Context: Aligning current and future policy and practice .....	11
Appendix 2 - Identifying key stakeholders to involve in adaptation and resilience planning .....	13
Appendix 3 - Examples of Risks & Responses .....	14



## Executive Summary

Climate Change is recognised as one of the biggest public health threats this century<sup>1</sup>.

Health and social care organisations are at the forefront of action to address the health impacts of climate change and need to adapt to, and prepare for, these circumstances. Adverse weather events and climate change are affecting people and services now and this is predicted to increase in the future.

Climate change could have significant implications for the health and wellbeing of the UK population. There are implications for public health, the continuity of health and social care services, the resilience of local emergency services and the impacts on the most socially vulnerable.

The UK's National Adaptation Programme<sup>2</sup> – a requirement of the Climate Change Act 2008<sup>3</sup> - provides a framework for action. Addressing the health impacts of climate change is one of its main themes.

Building preparedness and resilience now to the predicted health impacts of climate change will save costs in the short and long term, protect lives and deliver health outcomes.

Adaptation planning is an opportunity to ensure a cohesive approach to current and future planning. The process of developing these plans should integrate with the development and refinement of local emergency preparedness and business continuity plans.

Adaptation should be an integral component of Sustainable Development Management Plans (SDMPs) and this Adaptation Guidance supplements the Sustainable Development Management Plan Guidance developed by the Sustainable Development Unit<sup>4</sup>.

### *Expectations:*

Local health and care systems can consider including adaptation planning in their health and wellbeing plans and/or resilience and emergency planning arrangements.

Organisations are expected to consider three key actions:

1. Be part of local planning arrangements for adapting to climate change.
2. Understand risks to the organisation from climate change and develop appropriate action plans (as part of a Sustainable Development Management Plan or equivalent).
3. Report adaptation plan progress in the organisation's annual report.



## Introduction

Many of the impacts of climate change, including those for health, will be felt locally, with effects differing from place to place even though impacts such as heat waves will have relevance across the country. Organisations will need to develop responses which encompass national guidance and yet are specific to their local circumstances. The local health and social care system has a crucial role to play.

This guidance looks specifically at climate change adaptation and outlines what it is, why it is important for NHS and health and social care organisations, and what actions they can take.

It supports the achievement of the measures of success outlined in the 'Healthy, Sustainable and Resilient Communities' module of the Health and Care System Sustainable Development Strategy 2014 - [www.sduhealth.org.uk/resilience](http://www.sduhealth.org.uk/resilience).

### What is adaptation?

Adaptation means responding to both the projected and current impacts of climate change and adverse weather events.


Adaptation for the health and care system is two-fold:

1. Climate change could negatively impact the physical and mental health and wellbeing of the UK population. The health and care system needs to be prepared for different volumes and patterns of demand.
2. Climate change could impact the operational delivery of the health and care system. The system infrastructure (e.g. buildings, communications, emergency service vehicles, models of care) and supply chain (e.g. fuel, food, care supplies) need to be prepared for and resilient to weather events and other crises.

### What will we have to adapt to?

According to the UK Climate Change Risk Assessment <sup>5</sup> (UK CCRA 2012), the UK is projected to see an increase in the frequency and intensity of weather-related hazards including heat waves and floods. While winters are projected to become warmer and wetter, cold spells will still occur. The NHS, health and social care organisations must therefore adapt to a range of scenarios so they can be prepared for future climates. The UK CCRA 2012 highlighted several key health risks from climate change including:

- Heat (increased summer temperatures and heat wave events)
- Cold (reduced deaths and illness but with continued risk from cold 'snaps')
- Ground level ozone
- Flooding and Storms (resilience and continuity of health and social care services, mental health impacts and injuries)
- Incidence and exposure to marine and freshwater pathogens
- Sunlight (UV risk)



These findings build on other evidence reports such as the DH 2008 'Report on the Health Effects of Climate Change in the UK'<sup>6</sup> and the Health Protection Agency 2012 'Report on Health Effects of Climate Change'<sup>7</sup>.

The predicted impacts of climate change will vary in different locations<sup>8</sup>. For instance coastal areas may be subject to significant coastal erosion and cities may suffer more from the 'urban heat island effect' due to the concentration of buildings in one place.

These changes will have an impact on individuals, services and society as a whole. It is likely that the vulnerable groups will suffer most and that those that already experience health inequality will also experience more disturbances from environmental changes<sup>9</sup>.

This is clearly of concern to health and social care organisations and they will need to consider how best to support vulnerable people in different scenarios and the models of care that will be fit for purpose.

Lessening social and health inequalities, equipping communities to act as first responders and identifying and supporting vulnerable populations will all help improve the adaptive capacity of local communities. Tools and information already exist to support the mapping of communities that might be considered vulnerable.


### Why is it important?

Climate Change is recognised as one of the biggest public health threats this century<sup>1</sup>. The NHS, health and social care organisations will need to consider how to respond and prepare for the changes ahead.

The impacts of climate change are already being felt in the UK and these impacts will increase in the future. Adaptation should therefore be addressed alongside mitigation actions to reduce carbon emissions in a twin-track approach to addressing climate change. Further information on reducing carbon emissions (mitigation) can be found on the Sustainable Development Unit website – [www.sduhealth.org.uk/carbon](http://www.sduhealth.org.uk/carbon).

Adapting to climate change will reduce the costs and damages of a changing climate in the UK from extreme weather events including floods, droughts, and heat waves.

Effective adaptation encourages better use of resources, can save money and can deliver wider health benefits too. For instance developing green spaces and infrastructure to help prevent overheating can help prevent flooding, save energy and promote biodiversity. It can also encourage people to go outdoors, be more active and promote mental well-being.



a - Defra 2012: Estimates suggest the 2007 flooding in Hull cost the NHS £1M, the economy £2M, and individuals in loss of quality of life a total of £19M

b - Defra 2012: Central estimates for the cost of annual additional patient days in UK per year due to increased temperatures from climate change are £51M for the 2020s, £183M for the 2050s, and £404M for the 2080s

c - Ebi et al 2008: Adaptation activities such as installing green roofs and increasing urban vegetation gave residents within a 2-block radius of the intervention: improvements in mental health, increased sense of community, and an overall expansion of social capital.

d - HPA 2012 : "heat-related mortality, which is currently around 2,000 premature deaths per year, is projected to increase steeply in the UK throughout the 21st century, from around a 70% increase in the 2020s to around 540% in the 2080s"

**Figure 1 – The effects and costs of a changing climate<sup>10</sup>**

Decisions being made now with long-term consequences, such as the commissioning and design of assets and estates, will affect how resilient an organisation will be to the impacts of climate change.

For the health and care system adaptation is not just about procurement practices and energy supply, but also about higher quality and less wasteful service design. Improved service design with the right care, in the right place, at the right time is good for adaptation and resilience as well as carbon reduction.

#### Key points about adaptation planning

- Adaptation is crucial to ensuring that the health and social care system is resilient and prepared for the future. It has a key role to play in supporting vulnerable groups during adverse weather events and increasing climate change impacts.
- Adaptation plans should be incorporated into organisation's Sustainable Development Management Plans (SDMPs).
- Much of what should be included under adaptation may already be in place in organisations, for example flooding preparedness. It is therefore vital that a dialogue is in place to check alignment with the whole organisation and to ensure longer term planning implications.
- There are a number of resources and websites that are useful in scoping out what the adaptation part of the SDMP should include.
- The UK's National Adaptation Programme – a requirement of the Climate Change Act - provides a framework for action in which addressing the health impacts of climate change is one of the priority themes.

*Additional context can be found in Appendix 1*



## Expectations

*At Local Area Level* – Local health and care systems can consider:

**Including adaptation planning in their local high level frameworks for planning and development.**

Action to build climate resilience can readily be embedded within established networks, fora and processes such as Health and Wellbeing Board strategies, existing emergency planning and business continuity plans and Joint Strategic Needs Assessments.

Strong links exist with the work of emergency planners and bodies such as the Local Resilience Fora. Existing cross sector planning agencies can provide the organisational framework for whole system planning and are a good forum for this activity.

A cross-sector approach involving local authorities, voluntary sector, communities and other health and social care providers is essential for the development and delivery of effective adaptation and resilience strategies across local areas.

Guidance for Health and Wellbeing Boards on improving health, wellbeing and resilience in a changing climate<sup>11</sup> has been developed by the Sustainable Development Unit (SDU) in collaboration with DH and the Environment Agency Climate Ready Service. This is available on the SDU website along with guidance produced by Kent County Council on embedding sustainability into the Joint Strategic Needs Assessment (JSNA) process<sup>12</sup>.

*A list of key potential stakeholders can be found in Appendix 2*

*At Organisational Level* - NHS, Public health and social care organisations and services are expected to consider three key actions:

- 1. Be part of local planning arrangements for adapting to climate change.**
- 2. Understand risks to the organisation from climate change and develop appropriate action plans (as part of a Sustainable Development Management Plan or equivalent).**
- 3. Report adaptation plan progress in the organisation's annual report.**

**The NHS Standard Contract<sup>13</sup> requires providers of NHS services to comply with this guidance:**

*NHS Standard Contract: Service Conditions – SC30. Emergency Preparedness and Resilience Including Major Incidents. 30.7 - The Provider must comply with: 30.7.1 national and local civil contingency plans; 30.7.2 the Civil Contingencies Act 2004; 30.7.3 any other Law and/or Guidance in relation to Significant Incidents or Emergencies including the EPRR Guidance.*

*NHS Standard Contract: General Conditions – Definitions and Interpretations – EPRR Guidance. The emergency preparedness, resilience and response and sustainability guidance published by the Department of Health and NHS England from time to time, including: ... (iv) NHS Sustainable Development Unit Adaptation Guidance.*



## Checklist of a good organisational adaptation plan

### Our Adaptation Plan:

	is embedded in a Board approved Sustainable Development Management Plan
	is approved annually by the Board
	links to and cross refers to Emergency Preparedness Plans, Business Continuity Plans and vice versa
	is developed in partnership with Local Authority and other stakeholders, for example members of the Health and Wellbeing Boards, the third sector, service users
	includes a mechanism for review and updating
	is part of/aligned with local community plans e.g. Health and Wellbeing Board
	is scrutinised, or part of a mutual accountability process, e.g. by local resilience fora/HWBs.

### Have you assessed the RISKS you face re: adaptation to climate change in relation to?

	People/population risks (e.g. changes to disease patterns, changes to the health needs of population, social and community impacts including vulnerable communities, migration and mental health etc. )
	System risks: (e.g. resilience to normal ways of protecting health and delivering care, business continuity, workforce and service delivery including training requirements etc.)
	Infrastructure risks: (e.g. buildings, transport, supply chain, getting to essential services as user or staff, resource use, scarcity and continuity including energy, food and water etc.)
	The risks posed by specific events: (e.g. Heat, Cold, Floods, Air quality)

### Have you got ACTIONS and plans in place to assess and address these risks?

	Climate change risks are part of the organisational risk register
	Actions plans are in place to mitigate significant risks identified
	Each action in the plan includes timeframes and milestones
	Each action in the plan includes responsibilities/accountabilities for development, implementation and monitoring

### Are you assessing the IMPACTS of your actions?

	Quantitative measures are used to assess effectiveness of adaptation actions (e.g. What are the observed vs. expected death rates with vulnerable groups following a recent event or crisis e.g. heat wave?)
	Plans are reviewed and progress monitored at least annually
	A tool is used to assess resilience and preparedness (e.g. use the 'Adaptation section' in the Good Corporate Citizen assessment tool designed specifically for the health and care system to monitor and benchmark progress)
	A summary of progress is published in the annual report





## Developing an Adaptation Plan

Adaptation should be an integral component of Sustainable Development Management Plans (SDMPs) and this Adaptation Guidance supplements the Sustainable Development Management Plan Guidance developed by the Sustainable Development Unit<sup>4</sup>.

Development of the Adaptation plan component of the SDMP should involve three stages:

### **Stage 1 - RISK: Assessing risks, identifying threats and opportunities**

An organisation or local area should have an appreciation of the current and potential climate risks to its operations and/or functions based on the current best evidence.

Examples of action could include:

- Draw on existing risk assessments, adaptation tools such as the UKCP09<sup>14</sup> projections and other local information to assess the risks to the organisation or local system.
- Assess predicted impacts on vulnerable people, services, models of care and local infrastructures.

### **Stage 2 - ACTION: Developing adaptation plans**

The risk assessment should produce a priority list of risks for which a range of possible adaptation responses can be developed.

Examples of action at a local level could include:

- Promote dialogue for example through a workshop with relevant partners and stakeholders including sustainable development, emergency preparedness, business continuity, finance, estates and clinical leads across the health system and local authorities in order to:
  - o help agree co-ordinated action
  - o share important information about which climate impacts and parts of the system should be prioritised for adaptation
  - o raise awareness across the health and social care sector
- Agree actions to take forward drawing on cost benefit analysis, across the system and within organisations
- create plans that reduce impact on and ensure continuation of care for the most vulnerable groups in society (such as frail older people) during heat waves, floods and other extreme weather events
- Develop plans which encompass national guidance yet are specific to their local circumstances

Examples of action at an organisational level could include:

- Ensure the risks are registered on organisational risk registers
- Ensuring that buildings and locations:
  - o Can cope with rising temperatures and floods and minimise the risk to individuals (both patients and staff)



- Are built with sustainability in mind; BREEAM for Healthcare Excellent Standard
- Develop plans or actions that are embedded in the SDMP and link to wider Heat Wave, Cold Wave, flooding, emergency preparedness and business continuity plans and control measures
- Changing behaviours in relation to working patterns and locations, codes of practice and service delivery systems such as telephone follow ups instead of appointments where feasible.

*See Appendix 3 for some examples of risks and adaptation responses.*

### **Stage 3 - IMPACT: Implementing the adaptation plan, embedding adaptation into existing structures and monitoring the effects**

Having prepared a programme of adaptation responses, the next step is taking adaptation actions, as well as an on-going evaluation of their effectiveness in reducing the risk to the local area or organisation.

Examples of action could include:

- Review plans and monitor progress at least annually
- Use the 'Adaptation section' in the Good Corporate Citizen assessment tool designed specifically for the health and care system to monitor and benchmark progress
- Publish a summary of progress in the annual report

If you require support to achieve any of the three stages an overview of the tools, resources and evidence for developing health and care system adaptation plans can be found on the Sustainable Development Unit website – [www.sduhealth.org.uk/resilience](http://www.sduhealth.org.uk/resilience)



## Appendices

### Appendix 1 – Context: Aligning current and future policy and practice

The development of the UK's first National Adaptation Programme (NAP) – a requirement of the Climate Change Act - provides a framework for action. The NAP will address the key risks and opportunities identified in the UK's first Climate Change Risk Assessment (UKCCRA 2012). Addressing the health impacts of climate change will be one of the priority themes of the NAP.

The Department for Environment, Food and Rural Affairs (Defra) leads on climate adaptation within UK Government and has established a cross-Government Climate Ready Programme. For further background please visit [www.gov.uk/government/policies/adapting-to-climate-change](http://www.gov.uk/government/policies/adapting-to-climate-change).

The Environment Agency has taken on the role of the Government's Climate Ready Support Service to help organisations adapt to climate change within England. This role builds on the work to date of the UK Climate Impacts Programme (UKCIP), based at Oxford University. The Environment Agency will provide advice and support to key sectors to help them build resilience to climate change. Visit the Environment Agency's web pages ([www.environment-agency.gov.uk/research/137557.aspx](http://www.environment-agency.gov.uk/research/137557.aspx)) for the current information sources and tools which are available to help you now.

Local authorities, through the duties placed on Directors of Public Health, play a lead role in commissioning and delivering of local public health and social care services to their local communities. The Local Government Association has launched a 'Climate Local' initiative which seeks to support and showcase local climate change action. A health and communities section of the Climate Local website<sup>15</sup> provides links to sources of information, tools, advice and case studies.

The nine Climate Change Partnerships<sup>16</sup> across England are another valuable source of climate change advice.

Many NHS, health and social care organisations are already addressing these issues through the following:

1. The Civil Contingencies Act 2004<sup>17</sup> requires all NHS organisations to prepare for adverse events/ incidents.
2. HBN 00-07 Resilience planning for the healthcare estate<sup>18</sup>
3. HTM 00 Best practice guidance for healthcare engineering<sup>19</sup>
4. HTM 07-07 Sustainable health and social care buildings<sup>20</sup>; design, construction and refurbishment sets – links into BREEAM healthcare score rating.
5. HBN 11-01 Facilities for primary and community care services<sup>21</sup>.
6. HTM 07-02 Encode, making energy work in healthcare<sup>22</sup>
7. Using your local Climate projections (UKCP)<sup>14</sup> to adapt future infrastructure developments or building renovation/retrofit to cope with projected changes. This could be anything from solar shading, passive cooling to flood defences or grey



water storage. The climate change partnerships (CCPs) have regional and/or local information on the climate impacts in their scoping reports. In addition the CCPs produced regionalised summary reports (and adaptation case studies) of the Climate Change Risk Assessment (CCRA) to make the information more accessible and understandable at local level.

8. Local partnership work with other public sector organisations, for example through Joint Strategic Needs Assessments (JSNA) & Local Strategic Partnerships.
9. Links to best practice and case studies. See CCRA health sector reports and each 'Regional' headline risks including case studies produced for each English CCP.

### ***Civil Contingencies Act 2004***

The Civil Contingencies Act delivers a single framework for public protection in the UK. It establishes Local Resilience Forums (LRFs) that are designed to ensure multi-agency co-ordination and co-operation between responders to emergencies and extreme events at the local level. The health and care system are important parts of this planning and response requirement. Local Health Resilience Partnerships (LHRPs) have been established to deliver national Emergency Preparedness, Resilience and Response (EPRR) plans and to understand and address local risks to health and wellbeing.

Our changing climate is a major driver of many of the emergencies and extreme events that the UK must be better-prepared for. Heat-waves, flooding and cold weather can disrupt the operation of the health and care system and have direct impacts on health. These situations are recognised as relevant to the Act, alongside major incident situations.



## Appendix 2<sup>23</sup> - Identifying key stakeholders to involve in adaptation and resilience planning

<p><b>Council</b></p> <ul style="list-style-type: none"> <li>• Adult Social Care (leads in the following areas: social work, residential care, day care, domiciliary care, telecare, personalisation, learning and physical disabilities, mental health)</li> <li>• Emergency and resilience planning</li> <li>• Spatial planning/development control</li> <li>• Infrastructure planning</li> <li>• Climate change adaptation</li> <li>• Neighbourhood management</li> <li>• Community services (e.g. CVS liaison and leisure facilities)</li> </ul> <p><b>Coordinating bodies</b></p> <ul style="list-style-type: none"> <li>• Local Strategic Partnership</li> <li>• Local Resilience Forum</li> <li>• Health and Wellbeing Boards</li> <li>• Sustainability Forums</li> </ul>	<p><b>CCG and HWBB</b></p> <ul style="list-style-type: none"> <li>• Public Health Intelligence</li> <li>• Join Planning and Commissioning</li> <li>• Community care representative</li> <li>• GP representative</li> </ul> <p><b>Acute Trust</b></p> <ul style="list-style-type: none"> <li>• General Acute Inpatient Services</li> <li>• Geriatric Inpatient Care</li> <li>• Inpatient Dementia and Mental Health Care</li> <li>• Accident and Emergency</li> <li>• NHS Estates</li> </ul> <p><b>Community Trust (where applicable)</b></p> <p><b>Mental Health Trust</b></p> <p><b>Service Users</b></p>
<p><b>Utilities</b></p> <ul style="list-style-type: none"> <li>• Water company</li> <li>• Electricity company</li> <li>• Gas company</li> <li>• Telecommunications</li> </ul>	<p><b>Emergency Services</b></p> <ul style="list-style-type: none"> <li>• Fire and Rescue Service</li> <li>• Police Force</li> <li>• Ambulance Service</li> </ul>
<p><b>Independent Sector</b></p> <p><b>Community and Voluntary Sector</b></p> <ul style="list-style-type: none"> <li>• Age UK</li> <li>• WRVS</li> <li>• NCVS</li> <li>• Older People’s Forum</li> <li>• Carers’ advisory groups</li> <li>• Alzheimer’s Society</li> <li>• ‘Other’ local user-led groups</li> <li>• Older people’s charter groups</li> <li>• British Red Cross</li> <li>• National and local flood forums</li> </ul> <p><b>Private Care Providers</b></p> <ul style="list-style-type: none"> <li>• Private care companies</li> <li>• Care homes</li> <li>• Care in the community schemes</li> </ul> <p><b>Social Housing Corporation/Major Housing Associations</b></p>	<p><b>Other</b></p> <p><b>Government Departments</b></p> <ul style="list-style-type: none"> <li>• Department for Environment and Rural Affairs</li> <li>• Department of Health</li> <li>• Department of Communities and Local Government</li> </ul> <p><b>Inspection and Regulation</b></p> <ul style="list-style-type: none"> <li>• Environment Agency</li> <li>• Care Quality Commission</li> </ul> <p><b>Transport</b></p> <ul style="list-style-type: none"> <li>• Rail service providers</li> <li>• Network Rail</li> <li>• Local bus companies</li> <li>• Dial-a-ride schemes</li> </ul> <p><b>Advocacy and Brokerage Groups</b></p> <ul style="list-style-type: none"> <li>• Health-Watch</li> <li>• Climate Change Partnerships</li> </ul>

### Appendix 3 - Examples of Risks & Responses

Health and Social Care organisations may wish to consider the following checklist in developing their adaptation response:

Category	Risk to	Examples of Adaptive response
<b>Infrastructure</b>	<ul style="list-style-type: none"> <li>➤ Estate/building stock and other supporting infrastructure e.g. roads, utilities and telecommunications</li> </ul>	<ul style="list-style-type: none"> <li>➤ Providing more natural ventilation instead of air conditioning as heat wave temperatures become more frequent</li> <li>➤ Cool spots within buildings identified for patients and staff</li> <li>➤ Use of trees, shade and other green infrastructure to provide cooling</li> <li>➤ Sustainable drainage systems to help reduce risk of localised flooding</li> <li>➤ Enhancing green space and infrastructure in the design of health and social care facilities, towns and cities to help manage surface water drainage and cope with rising temperatures and heat waves</li> </ul>
<b>Resource use, scarcity and continuity</b>	<ul style="list-style-type: none"> <li>➤ Increase in fuel, energy, water and food costs</li> <li>➤ Supply of drinking water</li> <li>➤ Supply chain and transport network</li> </ul>	<ul style="list-style-type: none"> <li>➤ More energy from renewable sources</li> <li>➤ Assurance from suppliers of fuel, water (and sewerage), power and other key resources that climate change risks are accounted and planned for.</li> </ul>
<b>Workforce and service delivery</b>	<ul style="list-style-type: none"> <li>➤ Work of staff in the NHS and other care agencies</li> <li>➤ Changes in vector disease migration</li> <li>➤ Clinical issues which may require changes to structure or service models e.g. increase in respiratory conditions and potential need to provide medical gases to all bed spaces or increase in care related to mental health and wellbeing.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Access considerations for staff to work, for patients to services and for providers to communities</li> <li>➤ Training requirements and potential guidance on how to respond to extreme weather events including emerging ones such as heat waves, drought and wildfires</li> <li>➤ Planning of transport requirements for future models of care</li> <li>➤ Inclusion in current emergency preparedness plans and business continuity</li> <li>➤ Impact on public health and commissioning requirements</li> </ul>
<b>Social and community impacts</b>	<ul style="list-style-type: none"> <li>➤ Social impacts of climate change – and impacts on vulnerable communities e.g. migration, transient populations or community resilience</li> <li>➤ Need for enhanced preparedness, resilience and recovery to extreme weather events e.g. heat wave, air pollution event</li> </ul>	<ul style="list-style-type: none"> <li>➤ Information, targeted warning systems, and support to individuals who may be most at risk, to help them take basic action to adapt and be more resilient to climate change</li> <li>➤ Influencing fundamental changes in behaviours</li> </ul>

## References

- 
- <sup>1</sup> Costello A, Abbas M, Allen A, Ball S, Bell S, Bellamy R et al., 2009. Managing the health effects of climate change. London: *The Lancet*, Vol 373, no. 9676, pp.1693—733
- <sup>2</sup> Department of Environment, Food, and Rural Affairs, 2013. Policy - Adapting to climate change [Online] Available at: [www.gov.uk/government/policies/adapting-to-climate-change/supporting-pages/national-adaptation-programme](http://www.gov.uk/government/policies/adapting-to-climate-change/supporting-pages/national-adaptation-programme) [Accessed 06 January 2014]
- <sup>3</sup> HMSO, 2008. Climate Change Act 2008 (c.27) [Online] Available at: [www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga\\_20080027\\_en.pdf](http://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga_20080027_en.pdf) [Accessed 06 January 2014]
- <sup>4</sup> Sustainable Development Unit, 2014. *Sustainable Development Management Plan (SDMP) Guidance*. [Online] Available at: [www.sduhealth.org.uk/plan](http://www.sduhealth.org.uk/plan) [Accessed 06 January 2014]
- <sup>5</sup> Department of Environment, Food, and Rural Affairs, 2012. *UK Climate Change Risk Assessment: Government Report* [Online] Available at [www.gov.uk/government/publications/uk-climate-change-risk-assessment-government-report](http://www.gov.uk/government/publications/uk-climate-change-risk-assessment-government-report) [Accessed 06 January 2014]
- <sup>6</sup> Department of Health and Health Protection Agency, 2008. *Health effects of climate change in the UK 2008: an update of the Department of Health report 2001/2002* [Online] Available at: [http://webarchive.nationalarchives.gov.uk/+www.dh.gov.uk/en/publicationsandstatistics/publications/publicationspolicyandguidance/dh\\_080702](http://webarchive.nationalarchives.gov.uk/+www.dh.gov.uk/en/publicationsandstatistics/publications/publicationspolicyandguidance/dh_080702) [Accessed 06 January 2014]
- <sup>7</sup> Vardoulakis, S. and Heaviside, C. (Eds), 2012. *Health Effects of Climate Change in the UK 2012* [Online] Available at: [www.hpa.org.uk/hecc2012](http://www.hpa.org.uk/hecc2012) [Accessed 06 January 2014]
- <sup>8</sup> Oven, K.J., Curtis, S.E., Reaney, S., Riva, M., Stewart, M.G., Ohlemuller, R., Dunn, C.E., Nodwell, S., Dominelli, L. and Holden, R., 2012. Climate change and health and social care: Defining future hazard, vulnerability and risk for infrastructure systems supporting older people's health care in England. *Applied Geography* 33: 16-24. Summarised in: BIOPICCC briefing report
- <sup>9</sup> Marmot, M. 2010. *Fair Society, Healthy Lives: Strategic Review of Health Inequalities in England post 2010* [Online] Available at: [www.instituteofhealthequity.org/Content/FileManager/pdf/fairsocietyhealthylives.pdf](http://www.instituteofhealthequity.org/Content/FileManager/pdf/fairsocietyhealthylives.pdf) [Accessed 06 January 2014]
- <sup>10</sup> a – Department of Environment, Food, and Rural Affairs, 2012. *The Economics of Climate Resilience: Health and Well-Being Theme* (pg. 40) [Online] Available at: <http://randd.defra.gov.uk/Default.aspx?Module=More&Location=None&ProjectID=18016> [Accessed 06 January 2014]
- b - Department of Environment, Food, and Rural Affairs, 2012. *Economics of Climate Resilience Buildings and Infrastructure Theme: Overheating in Residential Housing- Annexes* (pg. 27) [Online] Available at: <http://randd.defra.gov.uk/Default.aspx?Module=More&Location=None&ProjectID=18016> [Accessed 06 January 2014]
- c - Ebi et al, 2008. Community-Based Adaptation to the Health Impacts of Climate Change. *American Journal of Preventative Medicine*, Vol 35, Issue 5, p504.
- d – Vardoulakis, S. and Heaviside, C. (Eds), 2012. *Health Effects of Climate Change in the UK 2012* [Online] Available at: [www.hpa.org.uk/hecc2012](http://www.hpa.org.uk/hecc2012) [Accessed 06 January 2014]
- <sup>11</sup> Climate Ready and Sustainable Development Unit, 2014. *Under the Weather. Improving health, wellbeing and resilience in a changing climate* [Online] Available at: [www.sduhealth.org.uk/resilience](http://www.sduhealth.org.uk/resilience) [Accessed 06 January 2014]
- <sup>12</sup> Kent County Council, 2013. *Joint Strategic Needs Assessment: A Guide to Integrating Sustainability* [Online] Available at: [www.sduhealth.org.uk/resilience](http://www.sduhealth.org.uk/resilience) [Accessed 06 January 2014]
- <sup>13</sup> NHS England, 2014. 2014/15 NHS standard contract [Online] Available at: [www.england.nhs.uk/nhs-standard-contract/](http://www.england.nhs.uk/nhs-standard-contract/) [Accessed 06 January 2014]
- <sup>14</sup> Department of Environment, Food and Rural Affairs, 2009. *Adapting to Climate Change - UK Climate Projections 2009* [Online] Available at: [www.gov.uk/government/publications/adapting-to-climate-change-uk-climate-projections-2009](http://www.gov.uk/government/publications/adapting-to-climate-change-uk-climate-projections-2009) [Accessed 06 January 2014]
- <sup>15</sup> Local Government Association, 2012. Climate local [Online] Available at: [www.local.gov.uk/web/guest/the-lga-and-climate-change/-/journal\\_content/56/10180/3574359/ARTICLE](http://www.local.gov.uk/web/guest/the-lga-and-climate-change/-/journal_content/56/10180/3574359/ARTICLE) [Accessed 06 January 2014]
- <sup>16</sup> Climate UK, 2012. Homepage [Online] Available at [www.climateuk.net/](http://www.climateuk.net/) [Accessed 06 January 2014]
- <sup>17</sup> HMSO, 2004. Civil Contingencies Act 2004 (c.36) [Online] Available at: [www.legislation.gov.uk/ukpga/2004/36/contents](http://www.legislation.gov.uk/ukpga/2004/36/contents) [Accessed 06 January 2014]



---

<sup>18</sup> Department of Health, 2007. *HBN 00-07: Resilience planning for the healthcare estate* [Online] Available at: [www.gov.uk/government/publications/resilience-planning-for-nhs-facilities](http://www.gov.uk/government/publications/resilience-planning-for-nhs-facilities) [Accessed 06 January 2014]

<sup>19</sup> Department of Health, 2000. *Health Technical Memorandum 00: Policies and principles of healthcare engineering* [Online] Available at: [www.gov.uk/government/publications/guidance-policies-and-principles-of-healthcare-engineering](http://www.gov.uk/government/publications/guidance-policies-and-principles-of-healthcare-engineering) [Accessed 06 January 2014]

<sup>20</sup> Department of Health, 2007. *Health Technical Memorandum 07-07: Sustainable health and social care buildings: Planning, design, construction and refurbishment* [Online] Available at: [www.gov.uk/government/publications/sustainable-health-and-social-care-buildings-planning-design-construction-and-refurbishment](http://www.gov.uk/government/publications/sustainable-health-and-social-care-buildings-planning-design-construction-and-refurbishment) [Accessed 06 January 2014]

<sup>21</sup> Department of Health, 2001. *Health Building Note 11-01: Facilities for primary and community care services* [Online] Available at [www.gov.uk/government/publications/guidance-for-facilities-for-providing-primary-and-community-care-services](http://www.gov.uk/government/publications/guidance-for-facilities-for-providing-primary-and-community-care-services) [Accessed 06 January 2014]

<sup>22</sup> Department of Health, 2002. *HTM 07-02: Encode - Making Energy Work in Healthcare* [Online] Available at [www.gov.uk/government/publications/encode-guidance-on-the-procurement-and-management-of-energy-in-the-nhs](http://www.gov.uk/government/publications/encode-guidance-on-the-procurement-and-management-of-energy-in-the-nhs) [Accessed 06 January 2014]

<sup>23</sup> Durham University Research Team, 2012. *BIOPICCC (Built Infrastructure for Older People's Care in Conditions of Climate Change) Toolkit* [Online] Available at BIOPICCC project source: [www.dur.ac.uk/geography/research/researchprojects/biopiccc/toolkit/](http://www.dur.ac.uk/geography/research/researchprojects/biopiccc/toolkit/) [Accessed on 24 July 2012]

Sustainable Development Unit  
Victoria House  
Capital Park  
Fulbourn  
Cambridge  
CB21 5XB

e: [england.sdu@nhs.net](mailto:england.sdu@nhs.net)  
w: [www.sduhealth.org.uk](http://www.sduhealth.org.uk)

Twitter @sduhealth

Document published January 2014

 Sustainable Development Unit  
Working across the NHS, Public Health and Social Care system