

### Why is this issue important?

Climate change presents a threat to life, health and wellbeing.<sup>1</sup> The UK Climate Change Risk Assessment 2017 Evidence Report<sup>2</sup> demonstrates how UK increases in annual temperatures, milder winters, hotter summers, and episodes of severe rainfall are consistent with climate change projections. It sets out six areas of inter-related national climate change risk needing urgent action:

- Flooding and coastal change risks to communities, businesses and infrastructure
- Health, well-being and productivity impacts from high temperatures
- Shortages in the public water supply
- Risks to natural capital, ecosystems, soils and biodiversity
- Domestic and international food production and trade risks
- New and emerging pests and diseases, and invasive non-native species, affecting people, plants and animals

The report highlights urgent UK climate change risks affecting health & wellbeing under the section: 'People and the built environment':

- high temperatures
- flooding
- extreme weather
- changes in air quality
- vector-borne pathogens
- poor water quality
- water supply interruptions
- food-borne disease cases and outbreaks
- risks to passengers from high temperatures on public transport but also
- potential benefits to health & wellbeing from reduced cold

- opportunities for increased outdoor activity in warmer weather

The Health Protection Agency (now Public Health England) published their 3<sup>rd</sup> report on 'Health Effects of Climate Change in the UK' in 2012.<sup>3</sup> Climate projections indicate annual mean temperatures will be 2-5°C higher by 2080.

**Heatwaves** are likely to become more frequent: the South East is most vulnerable to their effects. At present, the health burden due to low temperature exceeds that of high temperature. Heat-related mortality (currently around 2,000 premature deaths per year), is projected to increase steeply this century, from a 70% increase in the 2020s to around 540% in the 2080s. Cold is likely to contribute to the majority of temperature related health effects over coming decades but this is due to decline by the 2080s.

**Air pollution** levels are affected by man-made atmospheric emissions, as well as weather and climate. Ozone is a respiratory irritant strongly affected by climate. Background levels are increasing. Ozone-related mortality is estimated at 11,900 premature deaths p/a. The PHE report predicts increases of up to 15,000 p/a by the 2030s, with the South East seeing the largest increase.

Human exposure to **aeroallergens** associated with pollen grains and fungal spores is likely to increase with warmer climate as will potency. Existing allergy sufferers may suffer longer pollen seasons and more rapid symptom development. PHE calls for further research on climate change health impacts of pollen exposure.

The population typically spends 90% of time indoors. PHE urge the effects of climate change on indoor environment to be interrogated as climate change may exacerbate health risks associated with building **overheating, indoor air pollution, flood damage** and **water and biological contamination of buildings**. Hospitals, health centres and care homes may be adversely affected by high temperatures during heatwaves and flooding.

<sup>1</sup> Department of Health. 2009 Annual Report of the Chief Medical Officer. 2010.

<sup>2</sup> Climate Change Risk Assessment: UK Government 2016 <https://www.theccc.org.uk/uk-climate-change-risk-assessment-2017/synthesis-report/>

<sup>3</sup> Health Protection Agency, 2012 <https://www.gov.uk/government/publications/climate-change-health-effects-in-the-uk>

Climate change may have an effect on ambient levels of **Ultraviolet (UV) radiation**. Warmer summers may increase population UV exposure from increased time spent outdoors, increasing associated health risks including some skin cancers. However, moderate exposure to the sun is beneficial for vitamin D production.

PHE investigate the effects of **floods and droughts** in terms of health impact. Impacts on mental health and disruption to critical supplies of utilities such as electricity and water have increased in recent years, but knowledge gaps still remain.

**Vector-borne diseases** are influenced in complex ways by the climate, land use changes and human activities. It is likely that the range, activity and vector potential of **ticks and mosquitoes** will increase across the UK by the 2080s. There is also potential for introduction of **exotic species and pathogens**.

Climate change can influence the incidence of certain **water and food-borne diseases** partly through changes in human behaviour e.g. around food hygiene. Increased temperatures allow pathogens like salmonella to grow more readily in food. Interventions to prevent this are likely to be more effective in reducing numbers of cases than climate change will have on increasing them. Climate change may also lead to **reductions in the availability of certain food groups**, and consequently reductions in nutritional quality of dietary intake in some population groups.

The PHE report discusses the **health co-benefits** of measures to reduce greenhouse gas emissions. Examples include improving air quality through reduced emissions, increased physical activity as a result of reduced car use in urban centres, and health benefits from reduced dietary saturated fat consumption from animal products from a more sustainable approach to diet. When taking into account these types of health co-benefits, climate change mitigation policies become more attractive.

However, some climate change mitigation policies, such as sealing buildings to increase energy efficiency, may lead to increased exposure to indoor air pollution (unless adequate ventilation is maintained). This highlights the need for climate change mitigation policies to be subject to health impact assessment.

### Key outcomes

Consistent with the Climate Change Act targets 2008, Brighton & Hove is committed to reducing city carbon emissions by 42% by 2020 and 80% by 2050.<sup>4</sup>

The public sector is a major contributor to carbon emissions (the NHS contributes the largest proportion).

### Impact in Brighton & Hove

Action is needed to reduce the contribution our city makes to climate change by reducing greenhouse gas and in particular carbon emissions; and to adapt our city to the changing climate by minimising the negative impacts and making the most of any positive impacts.

When activities of Brighton & Hove residents are assessed for the greatest carbon impacts, the food system is responsible for the highest impact (26%), followed by transport (24%) and then housing (20%). Achieving carbon reduction in these areas should be prioritised to mitigate climate change. Whilst addressing these areas, positive health and wellbeing impacts can be simultaneously secured.

The Intergovernmental Panel on Climate Change's Fifth Assessment Report (2015)<sup>5</sup> provides models on projected 21st century UK climate. These predict that the South East is one of three regions to receive potentially the highest additional winter rainfall, the greatest extremes in summer rainfall (higher rainfall or drought), and the highest mean increases in temperatures in both summer and winter.

Many health impacts identified by the PHE in their report on UK 'Health Effects of Climate Change' are predicted to impact most in the South East.

Premature death from low temperatures is expected to remain a greater issue than from high temperatures for several decades. Links between *EWD's and morbidity and the health risks associated with cold homes*<sup>6</sup> are well established.

<sup>4</sup> From the 2005 baseline. See

<http://www.bandhsp.co.uk/climatechangestrategy/>

<sup>5</sup> Climate Change Risk Assessment, UK Government, 2016. P24-25

<https://documents.theccc.org.uk/wp-content/uploads/2016/07/UK-CCRA-2017-Synthesis-Report-Committee-on-Climate-Change.pdf>

<sup>6</sup> Excess winter deaths and illness and the health risks associated with cold homes, National Institute for Health & Care Excellence, 2015

<https://www.nice.org.uk/guidance/ng6>

Risks to health can be reduced alongside carbon emissions by improving the energy efficiency in housing through insulation and efficient (low carbon) heating systems whilst ensuring appropriate ventilation. The 'Brighton & Hove Fuel Poverty and Affordable Warmth Strategy 2016-2020'<sup>7</sup> acknowledges that the EWD Index in Brighton & Hove for 2012-13 was 19%, equivalent to 130 EWD's. The report also acknowledges the city's poor housing stock, especially in the private sector.

The PHE Heatwave Plan for England (2015)<sup>8</sup> aims to protect the population from heat-related harm. Recommendations to Health Commissioners are to incorporate into JSNA's/HWS's long term plans to prepare for and mitigate the impact of heatwaves, identifying and improving resilience of those most at risk. Plans should ensure a local programme is in place covering: housing e.g. insulation and other plans to reduce internal energy use, heat production; environmental action e.g. increase trees and green spaces, external shading, reflective paint, water features; other infrastructure changes (e.g. porous pavements); engaging the community and voluntary sector to support local community emergency plans; and to make progress on relevant Public Health Outcomes Framework indicators.

The State of the Local Environment Report summarised local indicators showing the impact of climate change including these historic trends:

- Reducing average rainfall in spring and summer, contributing to greater "water stress" on the city's environment. This is important because the local groundwater supply has been assessed as "poor" due to quantity issues, (the amount of water abstracted).<sup>9</sup>
- However, due to maritime climate and location, the key risk of more summer storms with intensive rainfall levels is greater. This can result in overloading gullies and drains which may be blocked with leaves and debris.

- An upward trend in average temperatures, acknowledging that 2014 was the warmest year on record.<sup>10</sup>
- An estimated 1,100 local properties are at significant risk of coastal flooding.

The City Council has a statutory responsibility to prepare plans, respond to flooding incidents<sup>11</sup> and to act as Lead Local Flood Authority<sup>12</sup>. A report on 'Flooding risk in the City'<sup>13</sup> has been assessed by the Council's Overview and Scrutiny Committee. It acknowledges "recent significant flooding event occurred on 13th August 2015 and 28th July 2014, where predominantly basements, were affected by surface water flooding following heavy (summer) rainfall in a short period. The Community Risk Register assesses the highest risks of flooding as:

- Surface Water flooding – higher risk
- Ground water flooding – higher risk (but limited to specific identified areas)
- Sewer flooding – higher risk

There are eight well defined flow routes within B&H indicated in the 'updated Flood Map for Surface Water'. Schemes to reduce flood risk for Patcham and Bevendean are programmed for 2016 – 2019. BHCC have been allocated funding in 2016-2017 for a protection scheme in Hove & Portslade.

Regular and extensive cleansing along with maintenance of the drainage infrastructure is imperative in order to minimise surface water flooding, however this is both costly and resource intensive and must be balanced against the need to save money".

### Where we are doing well

Low carbon housing and development has been successfully secured through the planning system in Brighton & Hove since the 2006 Local Plan. The National Planning Policy Framework tasks authorities to address climate change impacts. It is

<sup>7</sup> Brighton & Hove City Council, 2016 [http://present.brighton-hove.gov.uk/Published/C00000884/M00006159/AI00049300/\\$20160606115747\\_008637\\_0038007\\_DraftBHFuelPovertyAffordableWarmthStrategyv2.docxA.ps.pdf](http://present.brighton-hove.gov.uk/Published/C00000884/M00006159/AI00049300/$20160606115747_008637_0038007_DraftBHFuelPovertyAffordableWarmthStrategyv2.docxA.ps.pdf)

<sup>8</sup> <https://www.gov.uk/government/publications/heatwave-plan-for-england>

<sup>9</sup> Water Framework Directive <http://www.environment-agency.gov.uk/research/library/data/97343.aspx> [Accessed 25/08/2013].

<sup>10</sup> Met Office 2014

<http://www.metoffice.gov.uk/news/releases/archive/2015/Record-UK-temps-2014>

<sup>11</sup> Civil Contingencies Act 2004

<sup>12</sup> Flood and Water Management Act 2011

<sup>13</sup> 'Risk of Flooding affecting Brighton and Hove' Brighton & Hove City Council (Scrutiny Committee report) 2015 [http://present.brighton-hove.gov.uk/Published/C00000881/M00005908/AI00046973/\\$Floodrisk.docx.pdf](http://present.brighton-hove.gov.uk/Published/C00000881/M00005908/AI00046973/$Floodrisk.docx.pdf)

## 6.4.8 Climate change

important to maintain climate mitigation approaches and to mainstream adaptive design approaches through implementation of City Plan Part One, and the development and adoption of policies under Part Two. Solutions such as green and blue infrastructure to minimise 'urban heat island' effects, flooding, and prevent overheating bring health and environmental benefits.

Carbon Dioxide (CO<sup>2</sup>) comprises 83% of the UK greenhouse gas emissions that drive global warming. In line with the national trends, there has been a downward trend in local CO<sup>2</sup> emissions but continuing this trend presents a considerable challenge. 2016 Data show Brighton & Hove's annual CO<sup>2</sup> emissions have reduced by 33.4% per capita from 2005-2014.

In April 2013 Brighton & Hove became the world's first designated One Planet City. The city's Sustainability Action Plan 2015-2017<sup>14</sup> provides a comprehensive framework for work across the city that aims to promote and support healthy and sustainable lifestyles and communities that are more resilient to the impacts of climate change.

In 2014 the city achieved UNESCO Biosphere status. The Brighton & Lewes Downs Biosphere aims to serve as a world-class demonstration area of how we might live better in the future. The Biosphere status provides positive opportunities for improving public health by getting people more outdoors and closer to nature.

In 2015 Brighton & Hove was the first city to achieve Sustainable Food City Silver status, for the work of Brighton & Hove Food Partnership and city partners in achieving a healthier, more sustainable food system<sup>15</sup>, delivering health benefits whilst addressing climate mitigation and adaptation approaches to the food system.

The Trust for Developing Communities (TDC) works towards reducing the contribution the city makes to climate change through low carbon projects. For example it work with communities to respond to their identified needs and concerns including

projects to grow food locally, recycle, compost; and greening city areas.<sup>16</sup>

### Local inequalities

Climate change affects everyone but impacts are likely to be greater on vulnerable groups, for example, older people, people with long-term conditions, infants, homeless and people living in poor housing conditions. Public services and other support providers need to work together to ensure those most affected by climate change receive the support they need.

### Predicted future need

The State of the Local Environment identified that the most likely scenario is that by 2050 (in comparison with the 1969-90 baseline) Brighton & Hove will experience:

- a 26% decrease in summer rainfall but more intense summer storms, and a 14% increase in winter rainfall
- a 3.2°C increase in average maximum daily summer temperatures and 1.9°C increase in winter temperatures.

Altering behaviour to respond to the impacts of climate change is known as 'adaptation'. Adaptation protects the city, its residents and businesses against negative impacts, and makes us better able to take advantage of any benefits.

The Joseph Rowntree Foundation has published Public health in a changing climate<sup>17</sup> which reviews strategies and actions to address climate change by public health departments and partners. The report identifies that "*Climate change poses both a threat and an opportunity for public health*". In response, "*JSNAs need to outline all local climate risks and opportunities regarding health and wellbeing. JHWSs need to include plans to address these risks, and health and wellbeing boards need to provide the leadership required to turn strategy into action*"

### What we don't know

Clear projections of climate change impacts on UK health and wellbeing are uncertain. The 'UK

<sup>14</sup> Brighton and Hove City Council 2015 <http://www.brighton-hove.gov.uk/content/environment/sustainability-city/one-planet-city>

<sup>15</sup> Brighton & Hove Sustainable Food Cities Award 2015 <http://bhfood.org.uk/bhfp-case-studies/sustainable-food-cities/23-final-application-feb-2015/file>

<sup>16</sup> Submitted as part of the Call for Evidence 2016 by TDC

<sup>17</sup> Public health in a changing climate Joseph Rowntree Foundation 2016 <https://www.jrf.org.uk/report/public-health-changing-climate>

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Climate Change Risk Assessment 2012<sup>18</sup> cites 2003 type Heatwaves becoming a “1 in 2 or greater” annual chance.

Modelled ranges of summer rainfall in UK are the greatest in the South East region: incidences of summer drought or severe rainfall events are therefore highly unpredictable.

### Key evidence and policy

Committee on Climate Change, UK Climate Change Risk Assessment 2017 Evidence Report, 2016.<sup>19</sup>

Public Health in Changing Climate, Joseph Rowntree, 2016.<sup>20</sup>

Public Health England third report on Health Effects of Climate Change in the UK (2012).<sup>21</sup>

UK Climate Change Act (2008).<sup>22</sup>

### Recommended future local priorities

1. The Health and Wellbeing Board should consider how it will contribute towards climate mitigation and adaptation. ‘JHWSs [Joint Health and Wellbeing Strategies] need to include plans to address climate risks, and health and wellbeing boards need to provide the leadership required to turn strategy into action’.<sup>23</sup> Local NHS organisations to implement the NHS Sustainability Strategy.
2. All local partners collaborating to ensure City-wide implementation of the Brighton & Hove Sustainability Action Plan and Biosphere objectives, and deliver and promote local climate change mitigation and adaptation measures.
3. Opportunities must be identified to pursue funding methods for climate change mitigation and adaptation programmes to reduce risks.

4. The Planning Authority and partners should continue to deliver good practice healthy urban planning through the implementation of City Plan Part One and the development of City Plan Part Two, including robust climate adaptation and mitigation principles throughout Part Two.
5. Ensure new public sector construction (e.g. housing, healthcare) mitigates and adapts to climate change, addressing the risks and opportunities of climate change on health and wellbeing.

### Key links to other sections

- Air quality
- Transport and active travel
- Excess Winter Deaths and Fuel poverty
- Housing
- Good nutrition and food poverty
- Green and open spaces
- Groups most affected by climate change (e.g. older people; specific long term conditions)

### Further information

Brighton & Hove Local Health Economy ‘Heatwave’ and ‘Cold Weather’ plans.

Brighton & Hove low emission zone<sup>24</sup>

Brighton & Hove Climate Change Strategy (2011)<sup>25</sup>

### Last updated

October 2016

<sup>18</sup> Climate Change Risk Assessment HM Government 2016 <https://www.theccc.org.uk/tackling-climate-change/preparing-for-climate-change/climate-change-risk-assessment-2017/>

<sup>19</sup> Climate Change Risk Assessment HM Government 2016 <https://www.theccc.org.uk/uk-climate-change-risk-assessment-2017/synthesis-report/>

<sup>20</sup> Joseph Rowntree Foundation 2016 <https://www.jrf.org.uk/report/public-health-changing-climate>

<sup>21</sup> Climate Change Health Effects in the UK, Health protection Agency (Now PHE), 2012 <https://www.gov.uk/government/publications/climate-change-health-effects-in-the-uk>

<sup>22</sup> Climate Change Act 2008. UK Government, 2008 [http://www.decc.gov.uk/en/content/cms/legislation/cc\\_act\\_08/cc\\_act\\_08.spx](http://www.decc.gov.uk/en/content/cms/legislation/cc_act_08/cc_act_08.spx) Climate Change Act 2008.

<sup>23</sup> Joseph Rowntree Foundation 2016 <https://www.jrf.org.uk/report/public-health-changing-climate>

<sup>24</sup> Travel, transport and road safety, Brighton & Hove City Council (Website) 2016 <https://www.brighton-hove.gov.uk/content/parking-and-travel/travel-transport-and-road-safety/low-emission-zone>

<sup>25</sup> ‘Climate change strategy’ Brighton & Hove City Strategic Partnership 2011 <http://www.bandhsp.co.uk/climatechangestrategy>