POLICY DOCUMENT

Burton Hospitals
NHS Foundation Trust

CLIMATE CHANGE ADAPTATION PLAN

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Burton Hospitals NHS Foundation Trust

POLICY INDEX SHEET

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REVIEW AND AMENDMENT LOG

Version	Type of change	Date	Description of Change
1	New Policy	TBC	New Policy

CLIMATE CHANGE ADAPTATION PLAN

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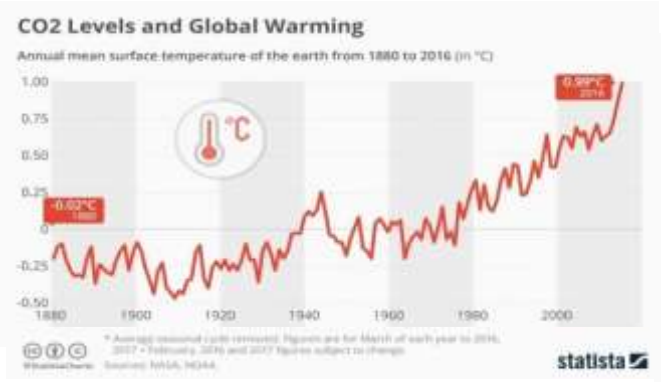
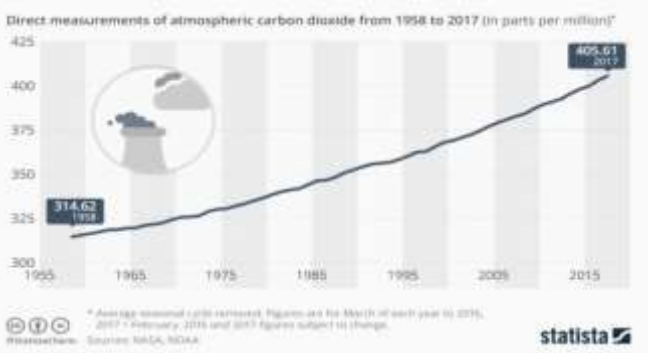
1 WHAT IS CLIMATE CHANGE?

"Scientific evidence for warming of the climate system is unequivocal[i]."

The Earth's climate has changed throughout history, with seven cycles of glacial advance and retreat being observed in the last 650,000 years alone – including the abrupt end to the last ice age 7,000 years ago which marked the beginning of the modern climate era and human civilization. Many of these climate changes are attributed to variations in the Earth's orbit; which change the amount of solar energy received on the Earth. However, evidence shows that current warming is occurring approximately ten times faster than the average rate of warming following the last ice-age, and 97% of climate scientists agree a 95% likelihood that the current trend of warming has been induced by human activity. Scientists agree that the main cause of current global warming is expansion of the "greenhouse effect" due to human activity. The greenhouse effect refers to warming resulting from certain atmospheric gases trapping heat that radiates from the Earth from escaping. Gases that contribute towards the greenhouse effect include[ii]:

- Carbon dioxide (CO_2):
  CO_2 emissions cause increases in atmospheric concentrations of CO_2 that will last for thousands of years, it is the primary greenhouse gas emitted through human activity. The majority of CO_2 emissions due to human activity are attributable to fossil fuel combustion for energy and transportation therefore, the most effective way to reduce CO_2 emissions is to reduce consumption of fossil fuels[iii]. Global CO_2 emissions attributable to human activity have increased by over 600% since 1950, leading to concentrations of atmospheric CO_2 increasing to around 400 parts per million by volume (ppm), compared to approximately 280ppm in pre-industrial times[iv].





- Methane (CH_4):
  CH_4 is the second most prevalent greenhouse gas emitted due to human activity, with 60% of global CH_4 emissions being attributable

to human activity. CH_4 is emitted though natural sources but also human activities such as rearing of livestock and degradation of waste at landfill[v].

- Nitrous oxide (N_2O):
  Approximately 40% of atmospheric N_2O is attributable to human activities including agriculture, the use of fertilizers and combustion of fossil fuels for transportation.[vi]

- Hydrofluorocarbons (HFCs):
  HFCs have higher global warming potentials than carbon, but the small quantities emitted mean that total contributions to global gas emissions by the UK is small. HFC emissions arise from the manufacture of halocarbon chemicals and the use of HFCs for purposes such as refrigeration and air cooling- which contributed to 82% of HFC emissions in 2014[vii]. Correct maintenance and disposal of redundant cooling equipment is essential to minimise HFC emissions.

- Perfluorocarbons (PFCs):
  PFCs have higher global warming potentials than carbon, but the small quantities emitted mean that total contributions to global gas emissions in the UK is small. Historically PFCs were attributed to the production of aluminium, however the largest emitting sector within the UK is now electronics, accounting for approximately 50% of PFC emissions.

- Sulphur hexafluoride (SF_6):
  SF_6 has a significantly high radiative forcing effect, but annual emissions have decreased by 63% since 1990. SG_6 emissions in the UK are mostly attributable to its use as electrical insulation[viii].

- Nitrogen trifluoride (NF_3):
  Estimated emissions of NF_3, arising from the use of NF_3 electronics, are small, contribute to less than 0.0001% of UK greenhouse gas emissions[ix].

2 EVIDENCE FOR CLIMATE CHANGE

2.1 Sea level rise:

The rate of sea level rise in the last two decades is almost double that of the last century – when global sea levels rose by approximately 8 inches[x].

2.2 Global temperature rise:

All major global surface temperature constructions evidence that the Earth has warmed since 1880; with most warming occurring in the last few decades. 15 of the 16 warmest years on record have occurred since 2001, and surface temperatures continue to increase[xi].

2.3 Warming oceans:

The oceans have absorbed much of the increased heat observed on Earth and Earth's oceans are now warmer than at any point in the last 50 years. [xii]

2.4 Shrinking ice sheets and declining arctic sea ice:

The Earth's ice sheets have decreased in mass over recent years. Greenland ice sheets decreased by 36-60 cubic miles per year between 2002 and 2006; and Antarctica lost approximately 36 cubic miles of ice between 202 and 2006[xiii]. The extent and thickness of Arctic sea ice has also rapidly declined over the last several decades.[xiv]

2.5 Glacial retreat:

Glaciers are retreating across Earth; including in the Alps, Himalayas, Andes, Rockies, Alaska and Africa[xv].

2.6 Extreme events:

The number of global record high temperature, and prevalence of extreme weather events, has been increasing.

2.7 Ocean acidification:

Acidity of surface ocean waters has increased by approximately 30% since the Industrial Revolution; as a result of increased carbon dioxide emissions which contribute to increased absorption of carbon dioxide within the oceans[xvi]. An increase in the amount of carbon dioxide absorbed by the upper layer of the oceans is estimates at approximately 2 billion tonnes per year[xvii].

2.8 Decreased snow cover:

The amount of spring snow cover in the Northern Hemisphere has decreased during the last 5 decades; and snow in the area is melting earlier[xviii].

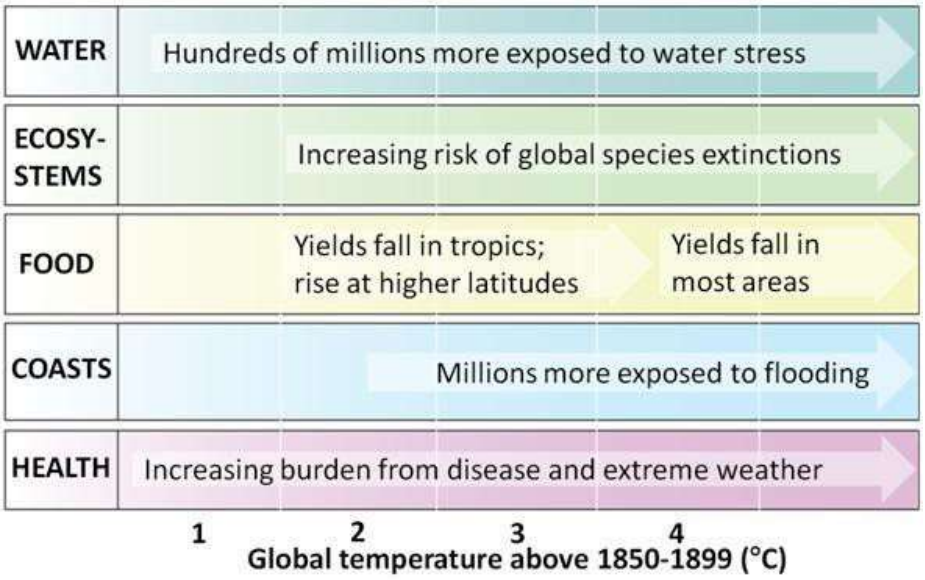
3 IMPACTS OF CLIMATE CHANGE

Understanding climate change and its potential impacts is essential for informing adaptation strategies and actions, in order to avoid dangerous levels of climate change and provide resilience to future challenges. Climate scientists project global surface temperatures to reach 4°C above pre-industrial levels by the end of the century; should global emissions continue at the current rate[xix]. Warming of 2-4°C would present negative global impacts and, if sustained, could lead to dangerous changes to the climate system which will ultimately impact human health and ecological systems. Global warming of above 4°C would present major increases in vulnerability globally, exceeding the adaptive capacity of many systems[xx].

Climate Change will become more pronounced as emissions continue. In the UK climate change will be experienced in the form of extreme weather, sea level rise, coastal erosion and drought[xxi]. The UK is already impacted by the effects of climate change; average sea levels are rising by three millimetres per year and the onset of spring and summer are on average 11 days earlier than in the 1970s- impacting plant and animal species. Winter rainfall also arrives in more intense bursts within the UK compared to previous trends[xxii]. Climate change may also pose indirect challenges to communities; such as

food and energy insecurity and the consequences of climate change will disproportionally affect disadvantaged and vulnerable populations[xxiii].

Climate change risks as global temperatures rise[xxiv]:



The United Nations Framework Convention on Climate Change (UNFCCC) aim to stabilise global emissions to a rate that will limit temperature increases to below 2°C until at least 2500[xxv].The Trust Sustainable Development Management Plan outlines action that the Trust will take to limit its emissions. However, preparing for change is essential to minimise the impacts of climate change that cannot be avoided.

3.1 Current climate observations in the UK:

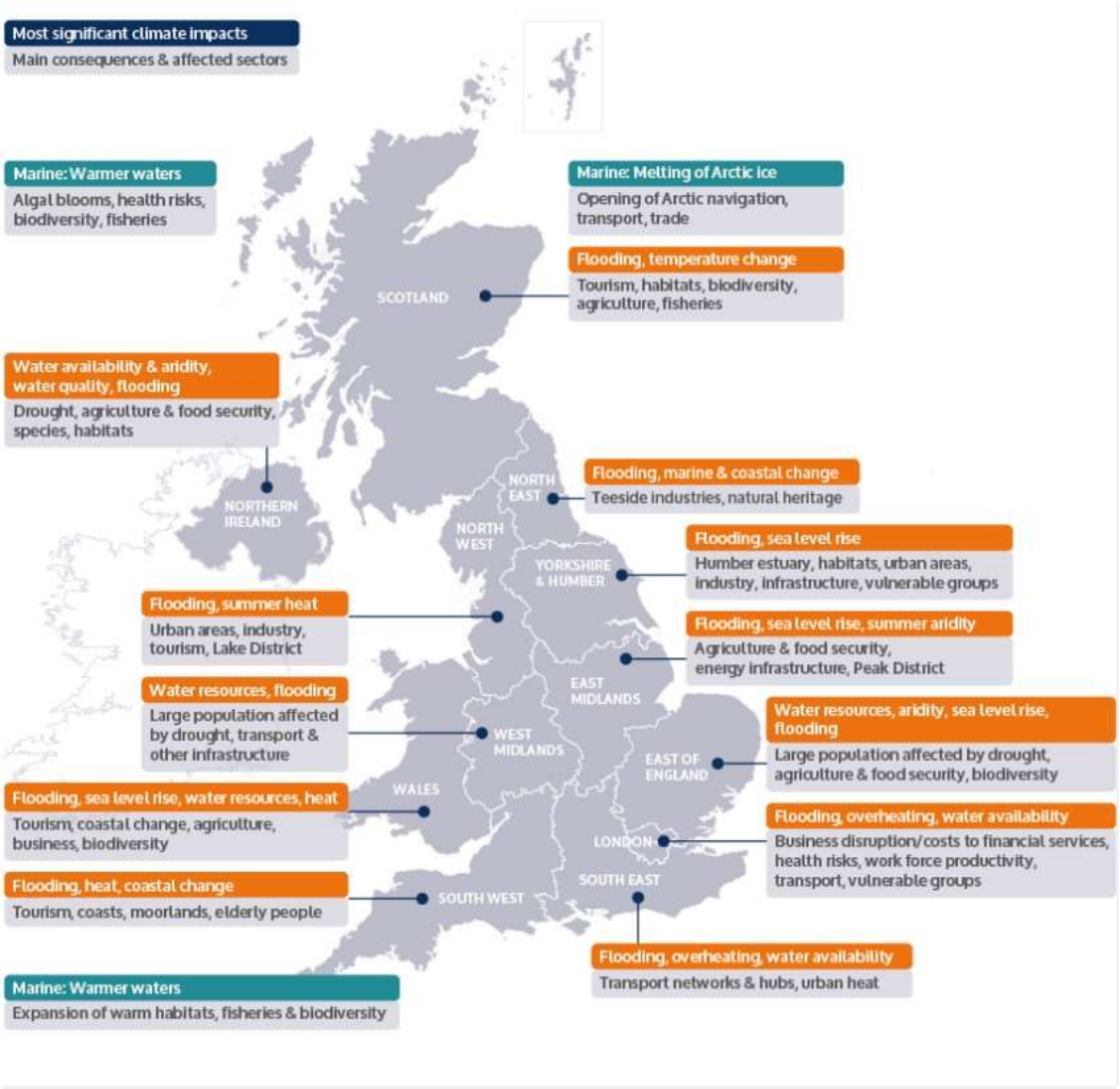
- Warming has been observed in the UK since 1960, with greater warming experienced in the summer rather than winter.
- A decreasing trend in the frequency of cool nights and cool days has been observed since 1960
- An increasing trend in the frequency of warm nights and warm days has been observed since 1960.
- The UK is projected to experience temperature increases of up to 3°C in the south and 2.5°C further north. Precipitation increases of approximately 10% are expected in the UK; though southern regions may experience decreases in precipitation of up to 5%[xxvi].

3.2 Projected impacts within the UK:

Localised risks to water resources, with large populations affected by drought are predicted in the West Midlands over the coming decades. Impacts to transport and other infrastructure are also projected for the region due to flooding[xxvii].

Sea level rises and flooding are anticipated for the coming decades within the East Midlands; impacting agriculture, food security and energy infrastructure.

Aridity during the summer is also anticipated to impact the region; presenting additional impacts for agriculture and food security[xxviii].



3.2.1 Temperature:

It is estimated that deaths attributable to excess heat exposure will increase by 66%, 257% and 535% during the 2020s, 2050s and 2080s respectively compared to a 2000 baseline. Competitively, whilst it is estimated that deaths attributable to excess cold will increase by around 3% during the 2020s, decreases in cold related mortality are predicted in the 2050s (2%) and 2080s (12%). The burden of excess heat and cold is greater amongst those above the age of 75. During the baseline year of 2000 heat related mortality was greatest within the South East, London, East Midlands, West Midlands, the East of England and the South West compared to other regions of the UK and this trend is predicted to continue in future decades[xxix].

Cities and urban areas experience a Urban Heat Island (UHI) effect, further exasperating excess high temperatures within these areas which can be 5 to 10° warmer than countryside areas. Urban areas are therefore at heightened risk during spells of extreme high temperatures, particularly at night, when heat stored within concrete and similar materials is released[xxx].

Implementation of air conditioning and other cooling systems will reduce the vulnerability of populations to extreme heat; however distribution of such equipment within the community may reflect socioeconomic inequalities such as income[xxxi]. However, increased reliance on cooling equipment within private residences, hospitals and other healthcare services may further increase energy consumption- contributing further to climate change. As such passive cooling options such as building orientations, shading, choice of construction materials etc. should be considered at the design stage as a means to reduce the health burden of exposure to extreme heat[xxxii]. Promotion of health protection measures that individuals may undertake to protect themselves against extreme temperatures are likely to be effective.

Adaptation Actions:

- Maintaining awareness of weather forecasts to plan for extreme heat and cold.
- Promotion of measures that may be taken by the general public to avoid the impacts of extreme heat and cold; with a particular focus of the elderly and other vulnerable populations.
- Planning for increased admissions during periods of extreme heat.
- Implementing measures to maintain thermal comfort for patients and staff during periods of extreme heat and cold.
- Support for seasonal flu vaccination programmes.
- Implementing passive cooling options during the design of any new builds of major refurbishments. at the design stage

3.2.2 Precipitation and flooding:

The frequency of heavy precipitation will increase in the 21st Century across the UK, particularly during winter, presenting increased flood risks[xxxiii]. In addition to the physical health impacts of flooding, impacts are also observed on mental health and to the wider community due to impacts of flooding on critical infrastructure (water supply, transport, healthcare services).All populations are at risk of the health effects associated with flooding with poorer communities being at heightened risks of coastal flooding and higher income households at higher risk of river flooding[xxxiv].

Adaptation Actions:

- Flood preparedness plans – including measures to ensure continuity of health care services and facilities (including elderly care homes) within the area during floods.
- Implementation of flood controls and restrictions within new builds and major refurbishments.
- Identifying risk groups in the area served by Burton Hospitals.

3.2.3 Drought:

Developed countries such as the UK can encounter problems in obtaining drinking water during periods of low groundwater, redirection of surface supplies and overuse of reserves; all of which can cause restrictions on water supply[xxxv]. Droughts in the UK are projected to be more severe, affecting larger areas, over the next 100 years[xxxvi]

Adaptation Actions:

- Promoting more efficient water use amongst staff and the community
- Incorporating water efficiency, and means of reducing consumption, within all new builds and major refurbishments.
- Assess potentials for utilising used or rain water within hospital services.

3.2.4 Air pollution and aeroallergens:

Short term exposure (hours to days) to ambient ground level ozone (O_3) has significant impacts of human health, morbidity and mortality due to its effects on the respiratory system[xxxvii].

Pollen from anemophilous (wind pollinated) plants contributes most significantly to the symptoms of pollen related allergy[xxxviii]. Whilst not all anemophilious pollen is allergenic, some of the most common pollen types contributing to allergy within the UK include the Betulaceae, Fagaceae, Poaceae, Urticaceae, and Asteraceae families. Temperature increases are predicted to contribute to earlier greening of vegetation in the spring, leading to earlier pollen seasons. The potency of aeroallergens associated with pollen and fungal spores may also increase with climate change; resulting in allergy sufferers experiencing longer pollen seasons and more rapid development of symptoms. Changes in plant and fungal distribution may also impact UK populations[xxxix].

Adaptation Actions:

- Maintaining awareness of air pollution and aeroallergen forecasting systems to inform staff, patients and high risk groups.
- Provision of high quality information regarding types and seasonal occurrences of aeroallergens to staff and the community – in order for healthcare professionals to effectively plan treatments, and for sufferers to understand their symptoms, avoid exposure and manage medication
- Promotion of the adverse effects of ground level ozone.

3.2.5 Ultraviolet radiation[xl]:

Ambient levels of ultraviolet radiation (UVR) many be affected by climate change; however lifestyle and behaviour are critical factors impacting exposure to UVR. The amount of UVR received at ground level depends on variations in cloud cover, sun elevation and stratospheric ozone. However, it is suggested that people will spend more time outdoors as temperatures increase, presenting a possibility for increased exposure to UVR.

However, the benefits of increased time spend outdoors must also be considered – and increased 'reasonable' sun exposure is likely to be linked with increased exercise, intake of fresh air and vitamin D production.

Adaptation Actions:

- Messages regarding the risks and benefits of exposure to optical radiation from the sun need to be developed and distributed. Materials must be appropriate for specific target groups (such as young people and the elderly), and take account of differences between exposure in the UK and recreational exposure overseas.
- Guidelines for target audiences should be given; on how audiences can optimise sun exposure protection strategies to avoid excessive sun exposure based on the sensitivity of their skin and of others for whom they may be responsible.
- Provision of shade within outdoor spaces
- Information should provided to warn individuals of increases of ultraviolet radiation exposure related to the thinning of the stratospheric ozone layer.

3.2.6 Vector-borne diseases[xli]:

Due to the complexity of the relationship between human activity, climate and land use changes and Vector-borne diseases it is difficult to predict the impact of climate change on vector-borne diseases. However, it is anticipated that the range, activity and vector potential of many mosquitoes and ticks will increase in the UK by the 2080s. Existing infectious agents transmitted by ticks (such as Lyme disease) is likely to increase, as will the abundance of mosquitos- presenting implications for the transmission of arboviruses. Establishment of exotic ticks and mosquitos (such as Hyalomma marginatum and Aedes albopictus) in the UK is also likely. Whilst these species transmit Crimean-Congo Haemorrhagic Fever virus and chikungunya virus within Europe presently, the risk of transmission of malaria by increased mosquito numbers is likely to remain low within the UK

Adaptation Actions:

- Maintaining awareness of local and geographical changes to trends in vector-borne diseases in order for clinical preparedness.
- Education programmes to inform the public of risk factors and preventative measures

3.2.7 Water and food-borne diseases[xlii]:

Human behaviour can be affected by climate, and changes in food consumption and preparation practices can increase the risk of food-borne diseases. Warmer weather and milder winters will also allow pathogens (such as Salmonella) to grow more readily in food. Increased temperatures will also favour flies and other pests that impact food safety. Many enteric infectious derive from foreign travel (work, holiday, visiting family, migration) and infections from these sources are likely to increase (although not necessarily as a direct result of climate change) particularly if extreme weather events overseas result in increased migration.

Adaptation Actions:

- Maintaining awareness of local and geographical changes to trends in food and water-borne diseases in order for clinical preparedness.
- Informing communities about trends in food and water borne diseases in the area; in order for preventative action to be taken. This includes providing information to prevent people from bathing in contaminated waters.
- Communicate risks related to food and water safety.

3.2.8 Food security:

The UK currently experiences extremely low levels of undernourishment. And it is estimated that the UK will remain food secure over the next 40 years due to its capacity to adapt, and import food. However, projected population increases and potential declines in crop yields (due to climate change) by the 2080s could increase the prevalence of undernourishment in the UK[xliii].

Adaptation Actions:

- Maintaining awareness of local and geographical changes to trends in food security in order for clinical preparedness.
- Informing communities about dietary recommendations and maintaining good nutrition.
- Provision of high quality, nutritious and sustainable meals for patients.

3.2.9 The Indoor environment:

People residing in developed countries such as the UK spend approximately 90% of their time indoors (with vulnerable individuals –the elderly, young children, those with ill-health spending even greater proportions of their time indoors)[xliv]. Therefore, the quality of indoor environments plays an important role in health and wellbeing. Climate change presents direct and indirect impacts on health attributable to the indoor environment including building overheating, indoor air pollution, flooding / water damage, and biological contamination[xlv].

Future mean temperature increases and prevalence of heatwaves will increase susceptibility of buildings to overheating[xlvi]. Presently, most buildings (particularly private residences) are cooled in high temperatures by natural ventilation however; effectiveness of such a cooling technique may reduce as outdoor temperatures increase. As such, existing buildings are likely to become uncomfortable in the summer if other methods of cooling are not undertaken[xlvii].

Exposure to high concentrations of indoor air pollutants can cause acute and chronic effects including lung cancer[xlviii], leukaemia[xlix] and mesothelioma[l]. Exposure to indoor air pollutants may also cause or aggravate respiratory infections, cardiac/cardiovascular disease, allergic symptoms and chronic obstructive pulmonary disease[li]. Outdoor air pollutants (excluding O_3) are predicted to decrease in future decades, thus impacts of internal sources of air pollution are likely to become proportionally more significant that presently

experienced[lii]. Increasingly, buildings are designed with improved energy efficiency; including increased airtightness to reduce thermal losses, in certain circumstances this may result in higher concentrations of indoor contaminants as, in inadequately ventilated houses, pollutants have the potential to accumulate and remain indoors for longer[liii].

Extreme weather events including heatwaves and heavy precipitation can compromise the quality of the indoor environment through building overheating, flooding and power generation and distribution disruption[liv]. Existing health care building infrastructure, including hospitals, may not be resilient to climate change and the associated extreme weather events[lv]. More frequent extreme weather events attributable to climate change may compromise the delivery of health care across the UK if adaptation measures including flood defence, thermal insulation, passive and active cooling and ventilation are not implemented[lvi].

Adaptation Actions:

- Assess current building infrastructure for potential associations with climate-sensitive health impacts in the indoor environment.
- Assess new builds and significant developments for impacts on indoor climate-sensitive health impacts, incorporating means of mitigating these
- Incorporate energy efficient building design interventions (including adequate ventilation) in all new builds and significant developments.
- Identify risk reduction strategies in the indoor environment that will help cope with disease outbreaks.

3.2.10 Health co-benefits of carbon reduction and adaptation[lvii]:

Policies and measures put in place to reduce greenhouse gas emissions are projected to have positive effects on public health. Considering the co-benefits of climate change mitigation and adaptation, such policies and actions could offset the increased costs of putting mitigation actions in place. Co-benefits of climate change mitigation include:

- Reduced particulate air pollution as a result of reduced coal combustion
- Reduced particulate air pollution as a result of more active travel
- Reduced dietary saturated fat consumption from animal products, in response to a more sustainable food sources
- Increased physical activity as result of increased active travel

4 VULNERABLE POPULATIONS

How badly a person will be impacted by climate impacts or extreme weather events will depend on their exposure to the even, and also on their social vulnerability including; how well they are able to cope with and respond to events. Those experiencing multiple vulnerabilities are the most vulnerable to the impacts of climate change. The main drivers of social vulnerability include:

- Age

- Health
- Low personal mobility
- Levels of inequality and income
- Social isolation
- Type of housing
- Availability of green space
- Strength of social networks and cohesion of neighbourhoods

4.1 Age- older people:

In comparison to other adults those over 65, and particularly those over 75, face more severe impacts as a result of extreme weather events such as flooding and heatwaves. Not all older people are equally sensitive or vulnerable to the effects of extreme events and those experiencing multiple cases of vulnerability have a lower capacity to adapt than others. Older people may also be less likely to seek assistance than people in other groups and may live in types of housing particularly vulnerable to extreme weather – including single level residences.

4.2 Age- young children and babies:

In comparison to adults young children and babies face more severe impacts as a result of extreme weather events such as flooding and heatwaves. Young babies and children are more likely to be affected by hot weather and dehydration affects than more quickly than it does healthy adults[lviii]. Young children are also less able to adapt their own clothing and behaviour in hot weather. Evidence shows correlations between flooding and increased mental health and behavioural problems in children; traumatic events may also lead to potential development impacts[lix]

4.3 Ill health[lx]:

The impacts of climate change and extreme weather can be exacerbated for those in ill-health. Not all in ill-health are equally sensitive and individual conditions and circumstances mean that people will be affected in different ways. Other characteristics such as age, low income, social isolation and housing can reduce the ability for those in ill-health to adapt to climate change and extreme events. Groups particularly sensitive include:

- Those with pre-existing health conditions such as chronic cardiovascular, respiratory illness, diabetes, renal diseases, nervous system disorders, Parkinson's disease, emphysema and epilepsy may be particularly susceptible to the effects of heatwaves, as are those with already heightened body temperatures. Flooding may restrict access to medicine and healthcare, and may make it harder to obtain medical help during an emergency.
- Those with limiting long term illnesses, including those who are bed-bound, unable to leave home, or care for themselves may have diminished ability to adapt to extreme weather events.
- Those with mental health disorders may be less able to cope with and respond to extreme weather events.

- Those on medication that affect the body's ability to sweat or perform temperature regulation will be more susceptible to the effects of heat[lxi].
- Those in care homes are often more reliant upon other to assist them in dealing with high temperatures- greater exposure to high temperatures may be experienced by care home residents if indoor temperatures are not sufficiently controlled, sufficient refreshments provided and consideration into temperature preferences of residents taken[lxii]. Some of the most independent residents in care homes may be disproportionately affected by the effects of heatwaves due to staff concentrating on the most dependent residents[lxiii]
- Those who misuse alcohol or take illegal substances may be unable to adapt quickly during extreme weather events[lxiv]
- Those who are homeless often present higher rates of physical and mental illness and social isolation compared to others. Exposure to extreme temperatures is also increased amongst the homeless population as they spend more time outside in urban areas.

4.4 Low personal mobility[lxv]:

Those with low personal mobility, or living in an area with reduced accessibility of services, often have less ability to respond to and recover from the impacts of climate change and extreme weather events. Extreme weather events such as flooding may also impact transport networks, further isolating vulnerable populations from access to assistance and services.

4.5 Low income[lxvi]:

Poverty is a determinant of how people can prepare for, respond to and recover from extreme weather events. However, additional factors may increase the vulnerability of those on low incomes including ill-health, having a disability of being a lone parent.

Those on low incomes have increased risk of exposure to high temperatures due to work, home or neighbourhood conditions. These populations may work outdoors, within confined spaces or on tasks which involve exposure to high temperatures[lxvii]. Low income populations are also more likely to live in vulnerable housing (such as caravans and mobile homes) or to be private sector or social tenants; presenting lower adaptive capacity for extreme weather events.

Those on low incomes are also more likely to live in urban areas where temperatures are elevated and may be reliant on public transport services which may be impacted by extreme weather events[lxviii].

4.6 Social Isolation[lxix]

Those who are socially isolated may lack the necessary support networks required to obtain help following extreme weather events. Those who are socially isolated may have additional vulnerabilities further heightening the impacts of extreme weather.

4.7 Type of housing[lxx]

Those is social and privately rented accommodation are likely to be less able to adapt to climate change and its impacts, compared to those that own their own home. Tenants are reliant upon their landlord to ensure that housing is resilient to and insured against extreme weather events. Residents in rented accommodation are also less likely to have contents insurance – heightening their ability to recover following extreme weather events such as flooding.

Other types of housing which increases a residents vulnerability to extreme weather events include single storey and mobile housing such as bungalows and caravans. Those with other vulnerabilities, such as older people and those on a low income are likely to live in such properties.

4.8 Availability of green space[lxxi]:

Those living in urban areas with little green space may experience more extreme impacts of events such as heatwaves or flooding, due to the Urban Heat Island effect and increased run off within built up areas.

4.9 Strength of social networks and cohesion of neighbourhoods[lxxii]:

Communities with high rates of population change are more vulnerable to the impacts of climate change compared to areas with a stable population – due in part to the residents being less aware of how to seek support in the event of extreme weather. Areas of frequent population changes may also lack cohesion and residents may be socially isolated.

5 RESILIENCE AND ADAPTATION PLANNING

Effective climate change adaptation planning, in line with Trust emergency preparedness and business continuity, will increase the Trust's capacity to adapt and remain resilient to the impacts of climate change. The Sustainable Development Group will review this Adaptation Plan annually or earlier as required and will use the information contained within to highlight key areas for further action and planning. Appendix 1 details key actions, laid out within this plan, that are required as a minimum to improve the Trust's adaptive capacity and resilience to climate change. When undertaking adaptation planning, the Trust will:

- Work in partnership with the community and other stakeholders to identify the demographics of the communities that the Trust serves, in order to plan according to specific climate change risk factors.
- Identify key climate risks and opportunities, focusing on actions to manage priority risks.
- Address risks associated with today's climate variability and extremes as a starting point
- Understand all risks that are identified in the adaptation planning process, including any associated uncertainties
- Use information on current climate vulnerability assist in addressing risks and opportunities associated with longer-term climate change.
- Monitor and evaluate the effectiveness of adaptation decisions, as well as any changes in risk.

The action plan summarised in Appendix 1 consolidates required actions detailed within this Climate Change Adaptation Plan. The Sustainable Development Action Plan is a working document, thus information regarding timescales, responsibility for undertaking each action and progress towards completion will be consolidated within the Sustainable Development Action Plan rather than within this document.

Appendix 1

Adaptation Action Plan

Area	Action
Temperature	Develop means of maintaining awareness of weather forecasts to plan for extreme heat and cold.
	Develop a communications plan to promote measures that may be taken by the general public to avoid the impacts of extreme heat and cold; with a particular focus on the elderly and other vulnerable populations.
	Plan for increased admissions during periods of extreme heat.
	Implement measures to maintain thermal comfort for patients and staff during periods of extreme heat and cold.
	Support seasonal flu vaccination programmes.
	Implement passive cooling options during the design of any new builds of major refurbishments at the design stage
Precipitation and flooding	Develop flood preparedness plans – including measures to ensure continuity of health care services and facilities (including elderly care homes) within the area during floods.
	Implement flood controls and restrictions within new builds and major refurbishments.
Drought	Develop a communications plan to promote more efficient water use amongst staff and the community.
	Incorporate water efficiency, and means of reducing consumption, within all new builds and major refurbishments.
	Assess potentials for utilising used, or rain, water within hospital services.
Air pollution and aeroallergens	Develop a communications plan to maintain awareness of air pollution and aeroallergen forecasting systems - to inform staff, patients and high risk groups.
	Develop a communications plan to provide high quality information regarding types and seasonal occurrences of aeroallergens to staff and the community – in order for healthcare professionals to effectively plan treatments, and for sufferers to understand their symptoms, avoid exposure and manage medication
	Develop a communications plan to provide information regarding the adverse effects of ground level ozone.
Ultraviolet radiation	Develop a communications plan to deliver messages regarding the risks and benefits of exposure to optical radiation from the sun. Materials must be appropriate for specific target groups (such as young people and the elderly), and take account of differences between exposure in the UK and recreational exposure overseas. Guidelines for target audiences should be given; on how audiences can optimise

	sun exposure protection strategies to avoid excessive sun exposure based on the sensitivity of their skin and of others for whom they may be responsible.
	Assess outdoor spaces to ensure that shade is provided. Shade should be provided within any new outdoor space developments.
	Develop a means of establishing when increases of ultraviolet radiation exposure related to the thinning of the stratospheric ozone layer may occur. Develop a communications plan to warn individuals of these increases.
Vector borne diseases	Maintain clinical awareness of local and geographical changes to trends in vector-borne diseases in order for clinical preparedness.
	Develop a communications plan to inform the public of risk factors and preventative measures
Water and food-borne diseases	Maintain clinical awareness of local and geographical changes to trends in food and water-borne diseases in order for clinical preparedness.
	Develop a communications plan to inform communities about trends in food and water borne diseases in the area; in order for preventative action to be taken. This includes providing information to prevent people from bathing in contaminated waters.
	Develop a communications plan to communicate risks related to food and water safety.
Food security	Maintain clinical awareness of local and geographical changes to trends in food security in order for clinical preparedness.
	Develop a communications plan to inform communities about dietary recommendations and maintaining good nutrition
	Provide high quality, nutritious and sustainable meals for patients.
The Indoor environment	Assess current building infrastructure for potential associations with climate-sensitive health impacts in the indoor environment.
	Assess new builds and significant developments for impacts on indoor climate-sensitive health impacts, incorporating means of mitigating these.
	Incorporate energy efficient building design interventions (including adequate ventilation) in all new builds and significant developments.
	Identify risk reduction strategies in the indoor environment that will help cope with disease outbreaks.
Vulnerable Populations	Identify risk groups in the area served by Burton Hospitals and plan accordingly.

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