

Emergency Preparedness, Resilience and Response: Climate Change Adaptation Plan

V2.0

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1. Introduction

- 1.1. On the 6 October 2020 the NHS in Cornwall officially declared a Climate Emergency.
- 1.2. The current analysis in the national UK climate change risk assessment suggests that summers are going to get hotter in the future. Long-term planning now is essential to protect people and infrastructure from the effects of severe hot weather and thus reduce excess summer illness and death.
- 1.3. The ultimate aim is to reduce the risks from climate and change. Mitigation is reducing the magnitude of climate change by reducing emissions and adaptation is reducing the effects of climate change by reducing the vulnerability or exposure to present and future climate and weather. This plan deals with climate change adaptation in relation to operational emergency preparedness, resilience and response management of the Trust and not estates related adaptation.
- 1.4. Despite the warming climate, we may still experience very cold winters, although such cold weather is likely to become less frequent.
- 1.5. Extreme heat is dangerous to everyone and when the heat is prolonged over two days or more it can prove fatal to those who are in a risk group. Good preparation and timely intervention is therefore essential. By the time hot weather arrives, the window of opportunity for effective action is often very short indeed. This means that advanced and long-term planning and preparedness are essential.
- 1.6. Under the 2008 Climate Change Act, the UK Government must assess the risks for the UK from the current and predicted impacts of climate change. The 2022 Climate Change Risk Assessment identifies risks to human health, wellbeing and productivity from increased exposure to heat in homes and other buildings as being one of the highest priorities for further adaptation in the next 2 years.
- 1.7. Changes in weather extremes from 1961 to 2017 show higher maximum temperatures, longer warmer spells, milder minimum temperatures, more rainfall on wettest days and the sea level has risen around the entire UK coastline.
- 1.8. The population of Cornwall is predicted to increase by 25 over the next 30 years. To cater for a growing population, it is essential our health and care system has sufficient resources and infrastructure to support local populations and ensure its own operational resilience against the potential impacts of a changing climate.
- 1.9. This version supersedes any previous versions of this document.

2. Purpose of this Plan

The purpose of this plan is to ensure that operationally RCHT can adapt to ensure it is ready for future climate change.

3. Scope

The policy applies to all RCHT employees but focuses on changes and awareness within Pharmacy, CITS, Operational Estates and Strategic Estates.

4. Definitions/Glossary

Abbreviation	Definition
AWD	All Wheel Drive
BMS	Building Management System
CEV	Clinically Extremely Vulnerable
CiOS	Cornwall, Isles of Scilly
CITS	Cornwall IT Services
ED	Emergency Department
EPMA	Electronic Prescribing and Medicines Administration
EPRR	Emergency Preparedness, Resilience and Response
OPEL	Operational Pressures Escalation Level
PAS	Patient Administration System
PPE	Personal Protective Equipment
RADAR	RCHT Analysis Data and Reporting
UTC	Urgent Treatment Centre
UV	Ultraviolet Radiation
WHO	World Health Organisation

5. Ownership and Responsibilities

5.1. In each NHS organisation the Chief Executive is responsible for ensuring that there are plans in place for emergency planning and business continuity based on the principles of risk assessment, cooperation with partners, communicating with the public and, where necessary, to share information (NHS England Emergency Preparedness Resilience and Response Framework 2022).

5.2. Role of the Managers

Line managers are responsible for ensuring that:

- Strategic/long term decisions they make consider Climate Change Adaptation.

5.3. Role of the Chief Operating Officer

The Chief Operating Officer is the nominated executive director accountable officer and is responsible for ensuring that:

- A Climate Change Adaptation Plan is in place.
- Plans are written and published to ensure business continuity for any emergencies that may impact on Trust activity.
- That the plan is maintained, exercised and actioned.
- The Trust is compliant with all legislation relevant to emergency planning.
- The Trust's activity with regard to emergency planning meets the requirements of the NHS EPRR Core Standards and Care Quality Commission Standards.

5.4. Role of the EPRR Committee

The EPRR Committee is responsible for approval of this plan.

6. Climate Change Generic Risks

- 6.1. Climate change will result in changes in temperature, rainfall patterns and sea levels and will have a range of impacts on human health in the UK, mainly due to higher average temperatures and an increase in the frequency and severity of extreme weather events (e.g. floods and heatwaves).
- 6.2. Unless we take steps now to plan for the longer term changes we will not be prepared. Moreover, these need to be taken on a multi-agency basis in conjunction with partners to meet the expected challenges posed by climate change in the medium and longer term.

	Already happened	Likely inevitable by 2050	Best case scenario by 2100	Current scenario by 2100	Worst case scenario by 2100
Global average surface temperature	Over 1C above pre-industrial levels	+0.2 to +0.9C over present levels	-0.1 to +1.1C above present levels	+1.2 to +2.5C above present levels	+2.4 to +4.2 above present levels
UK annual average temperature	Approx. +1.2C above pre-industrial levels	Approx. +0.6C above present level by mid-2050s	Approx. +0.7C from present level by mid-2080s	Approx. +1.9C from present level by mid-2080s	Approx. +3.0C above present level by mid-2080s

Global mean sea level rise	21cm increase since 1900	1-25cm above present level by 2050	22-52cm above present levels by 2100	26-52cm above present levels by 2100	54-103cm above present levels by 2100
UK mean sea level rise	16cm since 1900	3-37cm above present level by 2060	5-67cm above present level by 2100	Not available	27-112cm above present level by 2100
UK heavy rainfall	Some indications of heavy rain	+10% increase from today by 2050	+20% increase from today by 2100	Not available	+50-70% increase from today by 2100
UK heatwaves – ‘like 2018 summer’	10-25% chance/year. <10% chance/year a few decades ago	50% chance/year by 2050	50% chance/year by 2100	Not available	90% chance/year by 2100

Table showing expected anticipated climate impact globally and on the UK in particular from anticipated scenarios based on IPCC and UK Met Office Data. Adapted from CCC (2020) *How much more climate change is inevitable for the UK?* (Copyright free).

<https://www.theccc.org.uk/2020/04/21/how-much-more-climate-change-is-inevitable-for-the-uk/>

7. Climate Change Risks to Health

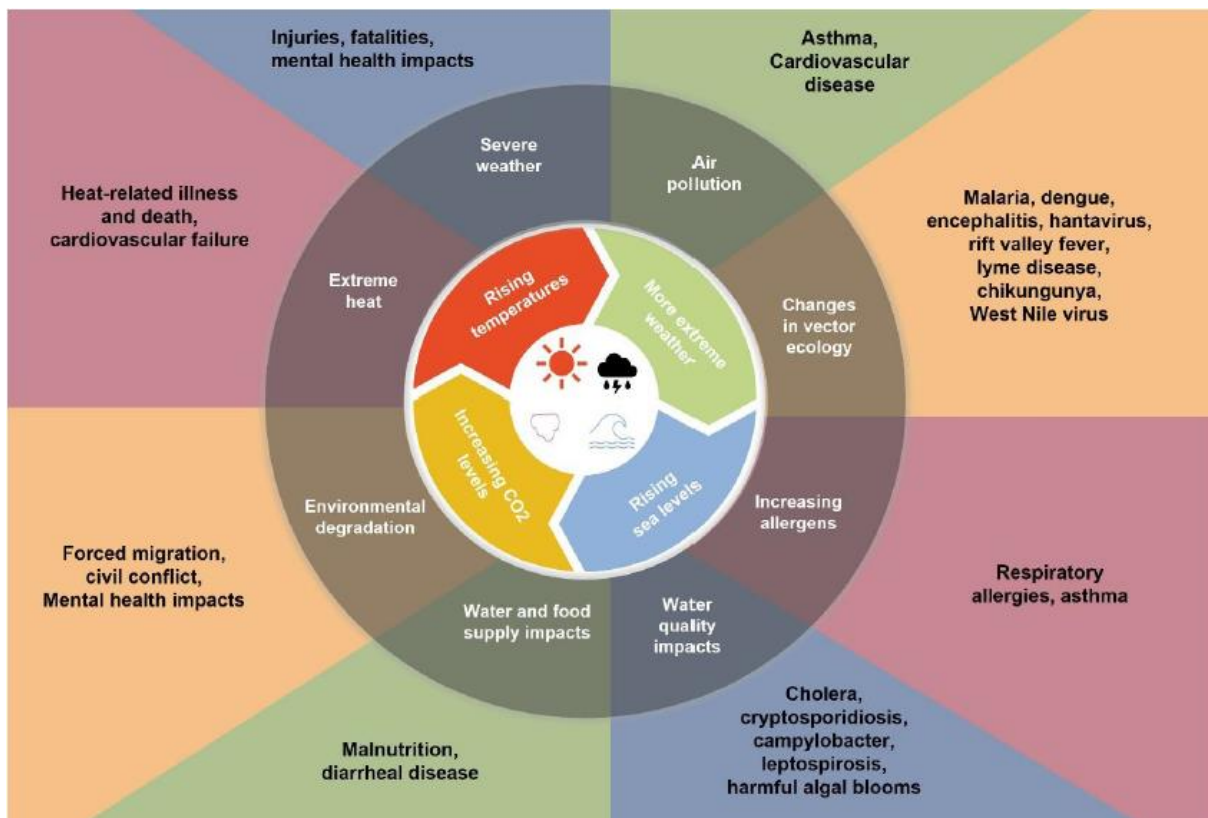


Diagram shows impacts of climate change on human health taken from the NHS Health and Care Adaptation Report 2021. (Copyright free).

- 7.1. The main causes of illness and death during a heatwave are respiratory and cardiovascular diseases. In order to keep cool, large quantities of extra blood are circulated to the skin. This causes strain on the heart which, for elderly people and those with chronic health problems, can be enough to cause cardiac conditions.
- 7.2. Increase in activity for heat-related illness or medical conditions exacerbated by extreme temperatures should be expected.
- 7.3. Everyone can be affected by heat but the groups most at risk are:
- Older people, especially women, over 75 years.
 - Babies and children under 4 years.
 - People with mental health problems, dementia and those relying on help for day to day activities.
 - People taking certain medication to control cardiac function or electrolyte balance.
 - People with infections.
 - People using psychoactive or illicit drugs.
 - People who are bed bound.
 - People who have previously experienced problems adapting to extreme heat.
 - People who suffer from chronic ill health.
 - People who are unable to adapt their behaviour in order to keep cool.
 - People who are very obese.
- 7.4. A recent systematic review recommends that pregnant women should also be considered as a vulnerable group in terms of risks from heat exposure. This is because heatwaves have been associated with gestational diabetes, low birth weight and stillbirth.
- 7.5. Additional groups at particular risk in the acute hospital setting are those who are:
- Nil by mouth patients.
 - Patients with cardiovascular disease.
 - Patients with malnutrition.
 - Patients with diabetes.
 - Patients with respiratory or renal insufficiency.

- Patients with peripheral vascular conditions.

7.6. Other conditions that might cause increased presentations at ED/UTC are:

- Heat cramps – caused by dehydration and loss of electrolytes, often following exercise.
- Heat rash – small, red, itchy papules.
- Heat syncope – dizziness and fainting, due to dehydration, vasodilation, cardiovascular disease and certain medications.
- Heat exhaustion – occurs as a result of water or sodium depletion, with non-specific features of malaise, vomiting and circulatory collapse, and is present when the core temperature is between 37°C and 40°C. Left untreated, heat exhaustion may evolve into heatstroke.
- Heatstroke – can become a point of no return whereby the body's thermoregulation mechanism fails. This leads to a medical emergency, with symptoms of confusion; disorientation; convulsions; unconsciousness; hot dry skin; and core body temperature exceeding 40°C for between 45 minutes and 8 hours. It can result in cell death, organ failure, brain damage or death. Heatstroke can be either classical or exertional (e.g. from strenuous exercise).

7.7. It is estimated that there are 75 extra deaths per week for each degree of increase in temperature. High temperatures have significant health consequences and are associated with increased mortality and increased morbidity.

7.8. Medications that potentially affect renal function, sweating, thermoregulation or electrolyte balance can make this group more vulnerable to the effects of heat.

7.9. Medications Likely to Provoke or Increase the Severity of Heatstroke

Those causing dehydration or electrolyte imbalance.		Diuretics, especially loop diuretics. Any drug that causes diarrhoea or vomiting (colchicines, antibiotics).
Those likely to reduce renal function.		NSAIDs, sulphonamides, indinavir, cyclosporine.
Those with levels affected by dehydration.		Lithium, digoxin, antiepileptics, biguanides, statins.
Those that interfere with thermoregulation:	by central action	Neuroleptics, serotonergic agonists.
	by interfering with sweating	Anticholinergics:

		- atropine, hyoscine. - tricyclics. - H1 (first generation) antihistamines. - certain antiparkinsonian drugs. - certain antispasmodics. - neuroleptics. - disopyramide. - antimigraine agents.
		Vasoconstrictors
		Those reducing cardiac output : - beta blockers. - diuretics.
	by modifying basal metabolic rate	Thyroxine.
Drugs that exacerbate the effects of heat:	by reducing arterial pressure	All antihypertensives. Anti-anginal drugs.
Drugs that alter states of alertness		(including those in section 4 (Central Nervous System) of the British National Formulary – particularly 4.1 (Hypnotics and Anxiolytics) and 4.7 (Analgesics).

7.10. Other Potential Problems Associated with Hot Weather

7.10.1. Swimming in open water and the potential risk of drowning

Hot weather conditions cause an increase in people undertaking recreational activity such as swimming in open water. This has historically led to an increase in drowning and near-drowning incidents putting an additional strain on rescue services, the ambulance service and acute hospital.

7.10.2. Air pollution, ground level ozone and low atmospheric ozone

Hot weather is often associated with still weather conditions, which may trap air pollutants or add them to a higher background concentration which can lead to higher concentrations of nitrogen dioxide and particulate matter. Hot sunny weather may also generate higher levels of ozone. Air pollution increases the level of cardio-respiratory deaths. Heatwave conditions often lead to increased ozone levels following interactions of other pollutants with sunlight. Given the recent predictions of the impact of climate change in the UK, actions

recommended in this adaptation plan aim to be energy neutral, except in very high-risk situations where lives may be saved.

7.10.3. Ultraviolet (UV) radiation

Ultraviolet (UV) radiation may cause harm during heatwaves but also at other times when people expose themselves to the sun. While small doses of UV from the sun help the body produce vitamin D, excessive exposure is damaging to human health. Excessive exposure may have consequences ranging from premature ageing of the skin to skin cancer. WHO states that the number of cases of malignant melanoma has doubled every 7 to 8 years over the last 40 years – mostly due to a marked increase in the incidence of skin cancers in fair-skinned populations since the early 1970's. Children are most at risk, as exposure to the sun during childhood appears to set the stage for the development of skin cancer later in life. UV radiation can also severely damage the cornea and lens of the human eye – long exposures may result in photo keratitis and a lifetime of cumulative exposure contributes to the risk of cataracts and other forms of ocular damage.

The South West of England has the highest levels of UV radiation in the UK and is also where the highest percentage of the population visit the outdoors for recreation on a weekly basis and the population also have a higher incidence of skin cancer relative to the national average.

7.10.4. Wildfires

The risk of wildfire during a heatwave can be greater because the vegetation will be that much drier than usual. The smoke and other risks from wildfire can contribute to local and regional air pollution. Wildfire smoke contains toxins and particulate matter which can cause adverse respiratory, cardiovascular and eye effects. Burn injuries can affect those in close contact with the fires and psychological morbidity relating to the trauma of exposure to the event and loss of life, health or material goods can occur.

7.10.5. Thunderstorms (and asthma)

Thunderstorm asthma is a term used to describe any observed increase in acute bronchospasm cases following the occurrence of thunderstorms in the local vicinity, placing increased pressures on health services. Although thunderstorm asthma doesn't occur after every thunderstorm, it is important that professionals and the general public are aware of the potential risks.

7.10.6. Algal blooms

Some algal blooms and their surface scums, which grow on open waters and are often blown onto shorelines, can release toxins which adversely affect human and animal health. Symptoms following ingestion of contaminated water during recreational activities include gastro intestinal effects (e.g. abdominal pain, nausea, vomiting and diarrhoea) and respiratory features (e.g. sore throat and cough). Water

treatment removes algal bloom contamination from drinking water.

7.10.7. Food Poisoning

Higher temperatures can lead to increases in BBQ cooking and/or difficulties storing food. This can lead to an increase in the cases of food poisoning and diarrhoeal illness. These illnesses can lead to further dehydration and exacerbation of the symptoms of heat exhaustion.

7.10.8. Drought and public water scarcity

The public health impacts associated with drought include disruption to public water supplies. Water companies have plans in place to deal with failure in the supply of mains water or sewerage services – these plans are regularly reviewed and tested by the water companies and are independently certified every year. Drought can also be difficult for those whose livelihood or lifestyle depends on water, leading to mental health and wellbeing impacts due to stress, financial worries and employment uncertainty.

7.10.9. Aeroallergens (pollen), hay fever and related respiratory diseases

Climate change may result in earlier seasonal appearance of respiratory symptoms and longer duration of exposure to aeroallergens.

8. Historical Case Studies of the Effects of Heatwaves and Predicted Changes in the Future

- 8.1 A qualitative study to critically assess the impacts of very hot weather on frontline staff in hospitals in England and on healthcare delivery and patient safety in 2019 found it caused significant disruption to health services, facilities and equipment, staff and patient discomfort, and an acute increase in hospital admissions. The response was affected by competing priorities and tensions including infection control, electric fan usage and patient safety. [Sourced from: Sari Kovats, Katya Brooks, Owen Landeg, Mark Sewell, & Emer OConnell. (2023). Heatwaves, hospitals and health system resilience in England: a qualitative assessment of frontline perspectives from the hot summer of 2019. *BMJ Open*, 13(3). <https://doi.org/10.1136/bmjopen-2022-068298>]
- 8.2 A systematic review studying the current impacts of extreme temperature and heatwaves on human health in terms of both mortality and morbidity looked at 32 studies. It concluded that heatwave events increased mortality and morbidity incidence. Sociodemographic (elderly, children, male, female, low socioeconomic, low education), medical conditions (cardiopulmonary diseases, renal disease, diabetes, mental disease), and rural areas were crucial vulnerability factors. [Sourced from: Arsad, F. S., Hod, R., Ahmad, N., Ismail, R., Mohamed, N., Baharom, M., Osman, Y., Radi, M. F. M., & Tangang, F. (2022). The Impact of Heatwaves on Mortality and Morbidity and the Associated Vulnerability Factors: A Systematic Review. *International Journal of Environmental Research & Public Health*, 19(23), 16356. <https://doi.org/10.3390/ijerph192316356>]

- 8.3 Another systematic review found that in 14 studies which examined the links between heat exposure and mortality there was a consistent association between exposure to extreme heat and increased risk of mortality. [Sourced from: Ige-Elegbede, J., Powell, J., & Pilkington, P. (2024). A systematic review of the impacts of extreme heat on health and wellbeing in the United Kingdom. *Cities & Health*, 8(3), 432–446. <https://doi.org/10.1080/23748834.2023.2283240>]
- 8.4 The number of heat-related deaths in the UK are projected to increase by around 250% by the 2050s, due to climate change and an ageing and growing population. The number of heat-related deaths per year is predicted to be >12,500 by the 2080's.
- 8.5 The greatest burden of these deaths will occur in the older age groups. The results provide a strong indication that the burden of heat remains much higher in 75–84 year olds and in particular those over 85 years.
- 8.6 These results indicate that action to protect health from hot weather will become increasingly necessary this century. Better general health and wellbeing of elderly individuals may help to alleviate some of the large burdens expected. However, the future pace of ageing may have hitherto unrecognised consequences for healthcare. Changes in household size and living patterns may also be important modifiers of future risk among the elderly. [Sourced from: Hajat S, Vardoulakis S, Heaviside C, et. al. (2014). Climate change effects on human health: projections of temperature-related mortality for the UK during the 2020s, 2050s and 2080s. *Journal of Epidemiology and Community Health*, Volume 68:641-648].
- 8.7 Public Health England analysis suggests that a 5°C increase in ambient mean temperature across the year will result in up to 500 extra deaths attributable to ozone exposure. Present day ozone-related mortality is estimated to be up to around 11,900 premature deaths per year and the assessment shows increases of up to between 14,000 and 15,000 for the 2030's depending on future ozone precursor emissions.
- 8.8 Evidence also exists that links increased ambient temperatures and associated dehydration with an increase in bloodstream infections caused by Gram-negative bacteria, particularly *Escherichia coli*. The risk is greatest in individuals aged over 65, emphasising the importance of ensuring adequate fluid intake in older people during periods of raised temperatures to reduce the risk of infection. [Sourced from: Al-Hasan MN, Lahr BD, Eckel-Passow JE, Baddour LM. Seasonal variation in *Escherichia coli* bloodstream infection: A population-based study. *Clin Microbiol Infect* 2009; 15(10): 947-50].
- 8.9 There is uncertainty over which pathogens will pose the greatest risk to human health in the future with climate change. There are several pathogens where exposure in the UK could increase in the future. This may be particularly relevant to people who are returning from travel abroad and may not be aware of these 'new' health risks.

8.10 Changing suitability of the UK climate for pests and pathogens:

Disease/Illness	Evidence of current/future range shifts
Lyme Disease	Likely to increase. Already present in UK. Primarily transmitted to human via <i>Ixodes ricinus</i> (sheep tick), which is spreading and increasing in Europe. Spread is linked to warmer temperatures at high altitudes.
Dengue Fever	Some risk of introduction. Transmitted mainly by <i>Aedes</i> mosquitoes; not currently present in UK, but future climate may become suitable for <i>A. albopictus</i> and other species. Breeds in containers such as water butts, and would benefit from warmer summers. Cases of infection in France and Croatia reported in 2010.
Chikungunya Virus	Risk of introduction. The most likely invasive species to establish in the UK would be <i>Aedes albopictus</i> , a competent vector for Chikungunya virus.
Crimean-Congo Haemorrhagic Fever (CCHF)	Some risk of introduction. <i>Hyalomma marginatum</i> is the most important vector for CCHF. Imported on migrating birds from Africa. Not currently established in UK as spring/summer mean temperatures are too low. Warmer temperatures may increase climatic suitability in the UK, leading to establishment of imported ticks.
Infection with <i>Vibrio vulnificus</i>	Could increase. Suitability of coastal waters and in shellfish could increase with warmer sea temperatures and more coastal flooding. Can cause death if not treated immediately.
Other food poisoning	Could increase. Outbreaks linked to <i>Staphylococcus aureus</i> , <i>Bacillus cereus</i> and <i>Clostridium perfringens</i> are likely to increase with increased ambient temperatures, if food is stored incorrectly.
Norovirus	Could increase. Contamination of shellfish beds could increase in winter due to higher sewage contamination from higher river flows.
Malaria	Some risk of local transmission. Transmitted by <i>Anopheles</i> mosquitoes, six species currently resident in UK but do not carry the <i>Plasmodium</i> parasite. The climate is warm enough for transmission and warmer temperatures will increase chances of transmission.
Tick-borne encephalitis	Unlikely to be introduced. Common in central/eastern Europe, recently reported in Scandinavia for the first time. Modelling studies suggest that risk of increased transmission in UK is small.
Legionella	Heatwaves correspond to higher cases of the disease than periods of more stable weather.

9. Organisational Risks

9.1. The RCHT organisational risks from climate change include:

- Influx of patients resulting in increased activity.
- Rise in mortality rates.
- Staff unable to work in overheated conditions.
- Increase in staff absenteeism due to illness, school closures or caring for relatives during a traditional holiday period.
- Utilities failure due to excessive demand.
- Poorer patient recovery from illness/injury/surgery.

- Mutual aid unlikely to be an option.
 - Maintaining a comfortable environment for patients (this should extend to outpatients as well as inpatients).
 - Maintaining business continuity throughout the heatwave or flooding.
 - Impact on caseload (e.g. patients not attending appointments – gone out for the day as weather good or increase in requests for appointments/visits due to heat related illness).
 - Medicine being stored outside of permitted temperature range.
 - Flooding could mean hospital discharges can't get home, patients not attending appointments, staff either stranded at work or cannot get to work. There may also be supply chain issues.
 - Flooding on an actual RCHT site.
- 9.2. Cornwall acts as a break weather and breakwater for the south of the UK and is particularly susceptible to flood risk from intense rainfall. Flooding events present an immediate risk to life.
- 9.3. Much of the increased risk of hot weather is thought to be mediated by exposure to high temperatures indoors. Homes may already be overheating even in normal summer conditions. People in developed countries typically spend over 90% of their time indoors. The risk from overheating in hospitals, care homes, schools, prisons and places of work in England is unknown. There is currently no agreed definition of building overheating in the UK. Several different guideline temperatures in health and safety and building design exist but are based on thermal comfort for healthy people in offices.
- 9.4. Safe upper temperature thresholds for health are difficult to establish; most research to date has used outdoor temperatures to characterise the relationship between temperature and mortality and morbidity. An indoor temperature threshold of around 25-26°C is recommended in several health documents. This is thought to have originated from an expert consensus view at a World Health Organization meeting.
- 9.5. Building designers can estimate internal temperatures at which occupants are likely to feel comfortable. The Climate Change Adaptation Sub-Committee report 90% of the UK hospital buildings are vulnerable to overheating and the ability to control temperatures is often limited. Temperatures in some wards can exceed 30°C even when external temperatures are 22°C. Newly built hospitals are found to overheat during periods of hot weather, whereas 1920's blocks with open 'Nightingale' wards and 1960's blocks were shown to be more resilient to heat.
- 9.6. Also needing to be considered are future outbreaks like Covid-19 that may contain people to staying indoors (social distancing regulations, isolating, CEV shielding, etc.) which will contribute to indoor overheating and restricted access to cool outdoor spaces. [Sourced from: Adaptation Sub-Committee Progress Report 2014 "Managing climate risks to wellbeing and the economy". Full

report is available at:

www.theccc.org.uk/wp-content/uploads/2014/07/Final_ASC-2014_web-version.pdf

10. Trust Actions Required to Mitigate

- 10.1. When considering overheating in existing buildings and addressing it, there are multiple options that range on a spectrum from 'hard engineering' to 'managed acceptance'. This section of the plan assumes learning to live with hotter temperatures as opposed to widespread installation of air conditioning at significant capital, revenue and carbon cost.
- 10.2. The RCHT current Building Management System (BMS) is used to monitor the temperatures in the wards, and this can then control to some degree the heating and cooling (if present) in that area. The current BMS is far from perfect as it takes the temperature in only a couple of locations in each area, normally near the centre of the ward. This data is logged, however, the accuracy of the sensors should be considered and it is unclear whether the sensors have ever been calibrated. During current heatwave conditions manual checks and data logging are required to get accurate readings within each bay on a ward or in specific locations. The BMS could in theory also be used to monitor air quality measurements.
- 10.3. The BMS should be optimised for ambient temperature monitoring for all wards to include each bay and in other key locations on the ward/unit. This could be achieved ward by ward over the next 5 to 10 years. There should be future capability for the BMS to 'feed' data on hot ward temperatures into the EPMA/Nervecentre system.
- 10.4. If EPMA then knows it is being used for a patient in a hot temperature ward environment then it should be able to flag a warning on administration of certain heat wave associated risk drugs and potential review of drug regimes as theoretically some drugs may increase the risk of heat stroke. EPMA could do this generically for all patients in the hot temperature ward environment or could only alert if they are to be administered or prescribed one of these heat wave associated risk drugs. A more simplistic and easier to achieve alert would be for EPMA to feed into RADAR the patients having been prescribed a heatwave associated risk drugs.
- 10.5. If Nervecentre knows the patient is in a hot temperature ward environment it needs to prompt heatwave actions either because the ward has a hot temperature and would therefore apply to all patients in this hot temperature ward environment or specifically to those admitted with a relevant condition (potentially fed from PAS/MAXIMS) and/or are taking medication likely to make them more vulnerable to heat stroke.
- 10.6. The heatwave actions are as follows:
 - Encourage the wearing of loose cotton clothing.
 - Consider spraying clothing with water.
 - Encourage fluid intake and consider IV fluids as clinically appropriate.

- Prioritise high risk patients for movement into cool areas within the ward/hospital.
- Request that cold food is served to the patient instead of hot food.
- Recommend food with high water content i.e. fruit and discourage caffeinated drinks.
- Ensure that high risk patients being discharged or transferred are provided with bottled water for the journey.
- Discourage physical activity between 11:00 and 15:00 hours including physiotherapy and having visitors.
- Facilitate regular cool showers, baths or washes.
- Fluid balance monitoring and regular weighing to identify dehydration.
- Increase clinical observations in high risk patients.

10.7. A Nervecentre Heatwave Assessment could be introduced that would assess every patient's risk from heatwave. This could be score weighted against the risk factors to give the patient an overall risk score which could then drive which actions are completed from the above list based on proportionately.

10.8. The current standard is for ward temperatures to be between 18°C to 28°C in general wards, and 18°C to 25°C for more sensitive areas, such as birthing and recovery rooms. Cool areas (set at below 26°C as of 2021) in the future are likely to be in the Tremeneil Unit or new Women's and Children's Wing. This is where vulnerable patients will need to go if their existing ward cannot be made into a cool area. This would mean switching one of the Paediatric Wards in the new build into an Adult 'Cool' Ward. This would mean an Adult Ward having the ability to convert into a Paediatric Ward in return. Nothing in the design and specification of the new Paediatric Wards in the Women's and Children's Wing should stop adult patients from occupying them. However, there will be risks for children occupying an adult area and not having the children's wards together. The ward with HDU area will not be able to move and there would be loss of the classroom so children would not be taught together. There would also not be a quiet room for families.

10.9. Once the Tower Block is vacated by the Paediatric Wards a further Infectious Diseases or Isolation Ward needs to be commissioned from a former Paediatric Ward with all side rooms (ideally with ensuite bathroom) to accommodate future pandemics/epidemics, contacts from outbreaks and a general increase in infectious diseases due to climate change as already highlighted. We may need to commission an Infectious Disease service as opposed to an isolation ward or at least ensure that our workforce is adequately trained to deal with these new presentations. Generally, an increase in admissions during a heatwave will require the opening of surge/escalation areas. The Trust OPEL/Capacity Management Escalation Plan will need to take into account heatwave predictions in its triggers along with other potential alerts on flooding, emerging disease outbreaks, pollution levels and air quality.

- 10.10. Increased occurrences of flooding could prevent staff from attending work and, also, achieving discharge of patients to affected areas. In 2019, a business case was presented to create a car pool for general use to decrease hire car usage and costs. The vehicles being considered were 7-seater 4x4/AWD cars that would be utilised in severe weather to enable maximum staff to be collected and taken to work and returned home at the end of work. This business case was rejected.
- 10.11. However, the risk will change in the future due to climate change moving away from snow/ice (becoming less likely due to climate change) to flooding. A vehicle suitable for flood conditions would not necessarily need 4x4/AWD but would need to have high clearance and would still need to have 7 seats to maximise the number of staff that could be carried per journey.
- 10.12. The Cornwall Green Plan says at least 90% of the NHS fleet should be low-emission vehicles by 2028, pool vehicles to be fully electric by 2030. A future contingency pool car scheme like the rejected 2019 business case would need to be based on an electric car or hybrid. There are currently limited electric 7-seater cars available on the market and even less that have 4x4/AWD or high clearance. A business case should be resubmitted based on electric/hybrid 7-seater vehicles with AWD/4x4/high clearance which would provide contingency initially for snow/ice but also flooding and fuel disruption. Any vehicles should have a reflective paint colour to reflect heat - all London Buses now have white roofs to reflect heat.
- 10.13. We can encourage RCHT staff to buy/lease low or zero emission cars but can we also get them to buy 4x4/AWD high clearance cars to be able to get themselves to and from work during flooding and therefore being self-reliant? A future CFT/RCHT merger would help resilience as staff could attend any location closest to home in the event of flooding affecting transport links in the county. We may need to invest in more accommodation on-site to allow for staff stranded at work overnight or following night duty due to flooding conditions.
- 10.14. Estates will need to be more reactive to potential storms and floods with the surveying of trees along with remedy of any outstanding works that would be affected by adverse weather such as blocked drainage, broken guttering, loose roofing, etc. They will also need to assess the risk from any scaffolding on site.
- 10.15. In the future, we will need to ensure that our supply chain is resilient and has adequate business continuity like we do currently but will also need to build in an assessment of contractors' climate risk mitigation. The NHS relies on highly complex international supply chains and climate impacts in other countries that may have lower levels of resilience and could affect availability of medicines, consumables and equipment within Cornwall.
- 10.16. Currently, as an Acute Provider, we have very little jurisdiction for people in the community who are at risk from heatwave conditions or at risk from flooding in their homes. We have a RADAR Information Services report that identifies potentially vulnerable people based on certain factors that is searched by postcode and assumes the use will be for evacuation purposes by Civil Contingencies Act (2004) multi-agency Category 1 and 2 partners.

This report can be adapted in the future to identify potentially vulnerable patients to heatwave conditions.

10.17. Current potentially vulnerable criteria:

- PAS Alert for - Learning Disability, Learning Difficulty, Mental Health, Enduring power of attorney, Lasting power of attorney, Autism, British Sign Language, Cognitive Impairment, Downs Syndrome, Hearing impairment, Interpreter required, Mobility impairment, Speech impairment, Visual impairment, Non-Invasive Ventilation at Home, Medical Device at Home such as Dialysis or Nebulisers.
- Frailty score 6 or above (only recent admissions assessed for this).
- Anyone over the age of 80.
- Anyone we have discharged as an inpatient in the last 48 hours.

10.18. Laboratories, pharmaceutical storage and food storage areas in hospitals may be adversely affected by increasing temperatures during heatwaves. Most pharmaceutical and laboratory products are heat sensitive and start to degrade if stored at higher than room temperature (usually 25°C). Certain laboratory equipment will fail to work if room temperatures are excessively high and there is a particular issue with the lack of air movement around point of care testing equipment. IT server overheating and disruption to IT services may occur in hospitals during heatwaves. There will be a greater need to ensure that refrigeration units and server rooms are serviced and that in general all electrical purchases have an acceptable operating temperature range to take into account future heatwave conditions. The long-term plan is the development of temperature-resistant drugs and laboratory materials. In general the capital approval process should take into account best practice for climate adaptation and future climate scenarios.

10.19. Wearing personal protective equipment (PPE) in hot environments increases the risk of heat stress. Research has shown medical errors have also been linked to indoor environmental parameters such as temperature. Infectious Disease (Isolation) Wards should especially be cooled to prevent this from occurring. Staff may require more frequent breaks to remain hydrated and the frequency of PPE changes may increase, with a resulting increase in demand. More staff may be needed per shift to maintain service levels while accommodating increased staff breaks. Demand on PPE may increase as PPE may need to be changed more often because of the increased regularity of breaks (during which PPE must be discarded). PPE also needs to be changed and discarded when it becomes uncomfortable or damp, for example with sweat. In general, future uniform requirements and policies for warmer temperatures may need amending and staff will need to be aware of the signs/symptoms of heat exhaustion/heat stroke.

10.20. Occupational Health may need to assess the working conditions of identified heatwave vulnerable staff, they may devise a “Heatwave Age” similar to the ‘Covid age’ principles.

11. Dissemination and Implementation

This plan will be published on the Trust Documents Library.

12. Monitoring Compliance and Effectiveness

Information Category	Detail of process and methodology for monitoring compliance
Element to be monitored	The whole plan requires monitoring for progress in its delivery.
Lead	Head of Emergency Preparedness Resilience and Response.
Tool	Committee monitoring.
Frequency	Quarterly.
Reporting arrangements	The EPRR Committee meets quarterly. The EPRR Committee reports to the Audit and Risk Assurance Committee and annually to the Trust Board.
Acting on recommendations and Lead(s)	Recommendations and action planning for any or all deficiencies will be completed in a reasonable timeframe. This will be monitored by the Head of Emergency Preparedness Resilience and Response.
Change in practice and lessons to be shared	Changes in practice will be identified through receiving national guidance, attendance at meetings, seminars, conferences and sharing of best practice between organisations.

13. Updating and Review

- 13.1 This plan will be reviewed following guidance changes from the UK Health Security Agency or the Department of Health and Social Care.
- 13.2 Where the revisions are minor, e.g. amended job titles or changes in the organisational structure, amendments can be made by the Head of Emergency Preparedness Resilience and Response without approval being sought from the EPRR Committee.
- 13.3 Any revision activity is to be recorded in the Version Control Table as part of the document control process.

14. Equality and Diversity

- 14.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the [Equality Diversity And Inclusion Policy](#) or the [Equality and Diversity website](#).

14.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

Appendix 1. Governance Information

Information Category	Detailed Information
Document Title:	Emergency Preparedness, Resilience and Response: Climate Change Adaptation Plan V2.0.
This document replaces (exact title of previous version):	Emergency Preparedness, Resilience and Response: Climate Change Adaptation Plan V1.0.
Date Issued/Approved:	July 2025.
Date Valid From:	July 2025.
Date Valid To:	July 2028.
Author/Owner:	Matt Overton, Head of Emergency Preparedness Resilience and Response.
Contact details:	01872 256356.
Brief summary of contents:	Guidance on operational planning and adaptation that will be required in the future for RCHT to be able to deal with Climate Change.
Suggested Keywords:	Heatwave, hot weather, climate change adaptation, flooding, severe weather.
Target Audience:	RCHT: Yes CFT: No KCCG: No
Executive Director responsible for Policy:	Chief Operating Officer.
Approval route for consultation and ratification:	Emergency Preparedness, Resilience and Response Committee.
Manager confirming approval processes:	Matt Overton.
Name of Governance Lead confirming consultation and ratification:	Matt Overton.
Links to key external standards:	None required.
Related Documents:	RCHT Green Plan.
Training Need Identified:	No.

Information Category	Detailed Information
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet & Intranet
Document Library Folder/Sub Folder:	Chief Operating Officer / Emergency Planning

Version Control Table

Date	Version Number	Summary of Changes	Changes Made by
March 2022	V1.0	Initial issue	Matt Overton, Emergency Planning Lead
July 2025	V2.0	Full update. Updated academic references providing evidence base of risk and need for adaptation	Matt Overton, Head of Emergency Preparedness Resilience and Response

All or part of this document can be released under the Freedom of Information Act 2000.

The NHS England EPRR Framework requires EPRR related documents to be retained for 30 years. RCHT requires all Policies, Strategies and Operating Procedures, including Business Plans, to be kept for the lifetime of the organisation plus 6 years.

This document is only valid on the day of printing

Controlled Document.

This document has been created following the Royal Cornwall Hospitals NHS Trust [The Policy on Policies \(Development and Management of Knowledge Procedural and Web Documents Policy\)](#). It should not be altered in any way without the express permission of the author or their Line Manager.

Appendix 2. Equality Impact Assessment

Section 1: Equality Impact Assessment (EIA) Form

The EIA process allows the Trust to identify where a policy or service may have a negative impact on an individual or particular group of people.

For guidance please refer to the Equality Impact Assessment Policy (available from the document library) or contact the Equality, Diversity, and Inclusion Team
rcht.inclusion@nhs.net

Information Category	Detailed Information
Name of the strategy/policy/proposal/service function to be assessed:	Emergency Preparedness, Resilience and Response: Climate Change Adaptation Plan V2.0.
Department and Service Area:	Emergency Planning.
Is this a new or existing document?	Existing.
Name of individual completing EIA (Should be completed by an individual with a good understanding of the Service/Policy):	Matt Overton, Head of Emergency Preparedness Resilience and Response.
Contact details:	01872 256356.

Information Category	Detailed Information
1. Policy Aim - Who is the Policy aimed at? (The Policy is the Strategy, Policy, Proposal or Service Change to be assessed)	Continued operational management and service delivery in the future regardless of the effects of climate change.
2. Policy Objectives	Guidance on operational planning and adaptation that will be required in the future for RCHT to be able to deal with climate change.
3. Policy Intended Outcomes	To reduce the risks associated with climate change.
4. How will you measure each outcome?	Progress towards and completion of actions contained within.
5. Who is intended to benefit from the policy?	RCHT staff, patients and visitors.

Information Category	Detailed Information
6a. Who did you consult with? (Please select Yes or No for each category)	- Workforce: Yes - Patients/ visitors: No - Local groups/ system partners: No - External organisations: No - Other: No
6b. Please list the individuals/groups who have been consulted about this policy.	Please record specific names of individuals/ groups: Staff Side Representative via EPRR Committee.
6c. What was the outcome of the consultation?	No issues raised.
6d. Have you used any of the following to assist your assessment?	National or local statistics, audits, activity reports, process maps, complaints, staff or patient surveys: No.

7. The Impact

Following consultation with key groups, has a negative impact been identified for any protected characteristic? Please note that a rationale is required for each one.

Where a negative impact is identified without rationale, the key groups will need to be consulted again.

Protected Characteristic	(Yes or No)	Rationale
Age	No	
Sex (male or female)	No	
Gender reassignment (Transgender, non-binary, gender fluid etc.)	No	
Race	No	
Disability (e.g. physical or cognitive impairment, mental health, long term conditions etc.)	No	
Religion or belief	No	
Marriage and civil partnership	No	

Protected Characteristic	(Yes or No)	Rationale
Pregnancy and maternity	No	
Sexual orientation (e.g. gay, straight, bisexual, lesbian etc.)	No	

A robust rationale must be in place for all protected characteristics. If a negative impact has been identified, please complete section 2. If no negative impact has been identified and if this is not a major service change, you can end the assessment here.

I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.

Name of person confirming result of initial impact assessment: Matthew Overton

If a negative impact has been identified above OR this is a major service change, you will need to complete section 2 of the EIA form available here:

[Section 2. Full Equality Analysis](#)

Appendix 3. University of Exeter Assessment of Climate Change Risks to Cornwall/RCHT

Heatwaves

Cornwall is likely to see a steady increase in temperature over the coming decades. Data from the MET Office (UKCP18 future climate dataset), processed by University of Exeter academics, shows a significant increase of mean temperature between 2020 and 2090. During the Summer, the forecast is a steady increase from 16.96 degrees Celsius to 21.35. In Winter, temperatures will rise from 6.79 to 9.01. Equally as important, this includes increases in both the maximum and minimum temperatures. While predicting a trend of heatwave prevalence is dependent on definitions of heatwaves (e.g. day/night temperature threshold over what period of time), an increase in maximum temperatures from 20.09 in Summer 2020 to 25.17 in Summer 2090, is likely to see significant impact on the frequency of heatwaves.

Flooding

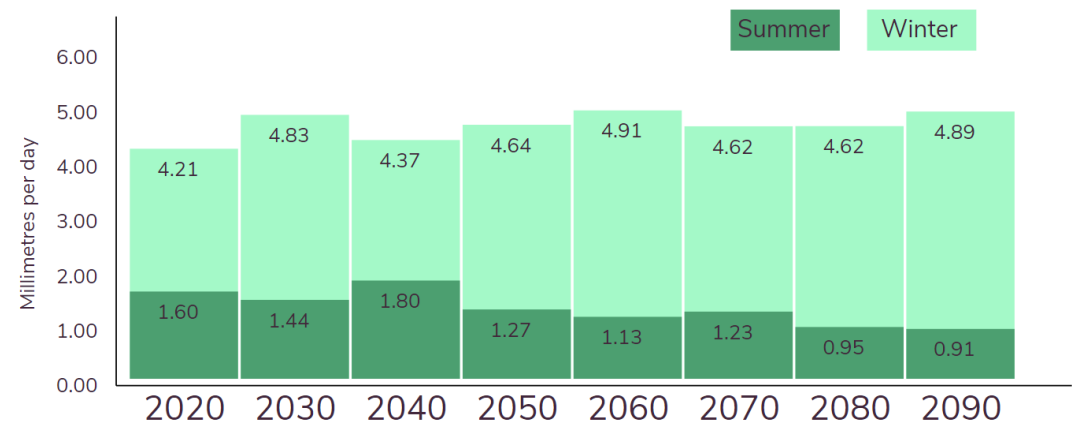
Coastal flooding and surface water flooding will affect different areas of Cornwall in different ways. By 2050, according to independent Climate Central forecasting, all of Cornwall's coastline will be affected, with particular impacts in Penzance, Hayle, Par, St Germans, Wadebridge, Bude and Lostwithiel. Royal Cornwall Hospital is unlikely to be directly affected by rising sea levels, though St Michaels Hospital and West Cornwall Hospital will be much closer to direct impacts. However the impacts of rising sea levels are not just measured by the land projected to be below the annual flood level. Increased storms and higher extremes of their reach will impact beyond the direct area. A more complex approach could look at flood risks not only in terms of direct flood risk to hospital sites, but impacts on local transport links (for staff and patients) and supply chains.

Surface water flooding will affect all three hospital sites. Data from the Environment Agency's flood risk modelling tool shows long term high risk of flooding from surface water around St Michaels Hospital, and medium to low risk on and around Royal Cornwall Hospital and West Cornwall Hospital.

While average precipitation is projected to decrease (with some deviation) between 2020 and 2090, this contains significant seasonal variation. Cornwall is likely to see drier Summers (1.6mm per day in 2020 to 0.91mm in 2090) but wetter Winters (4.21mm in 2020 to 4.89mm in 2090). This will increase surface water flooding across Cornwall during the wetter Winters.

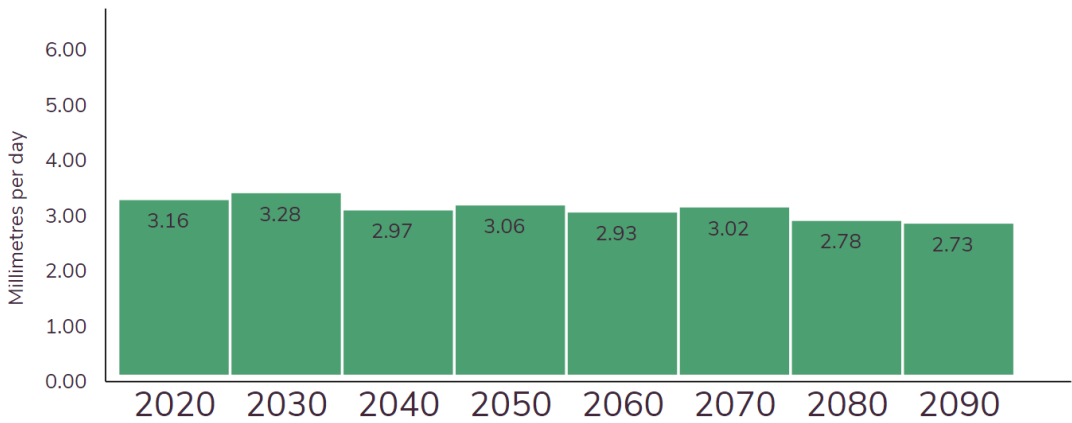
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003D and North Cornwall 003C. You are viewing Seasonal averages for Daily precipitation



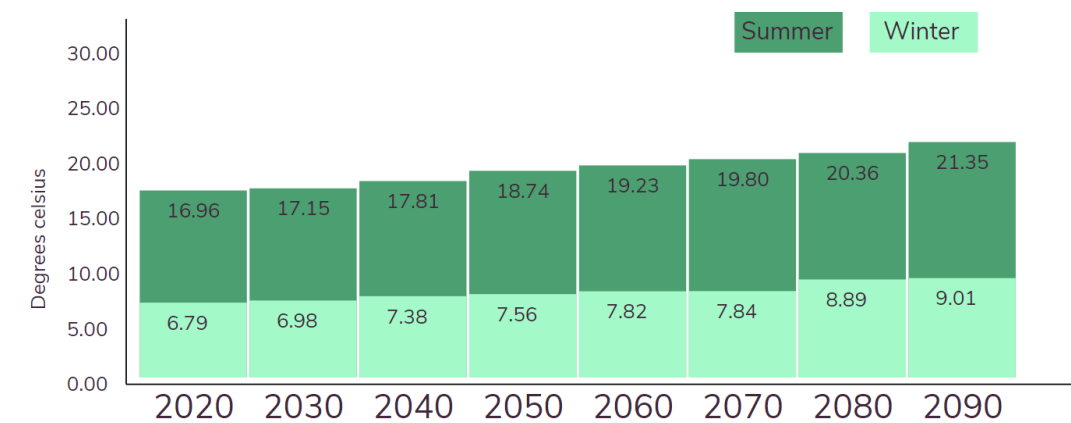
The original data for your selected areas can be [downloaded here](#) and comes from MET Office UKCP18 future climate dataset, and processed by Alexandra Gardner, James Duffy & Ilya Maclean (University of Exeter). For more info see [UKCP18 Guidance](#).

Yearly averages for Daily precipitation



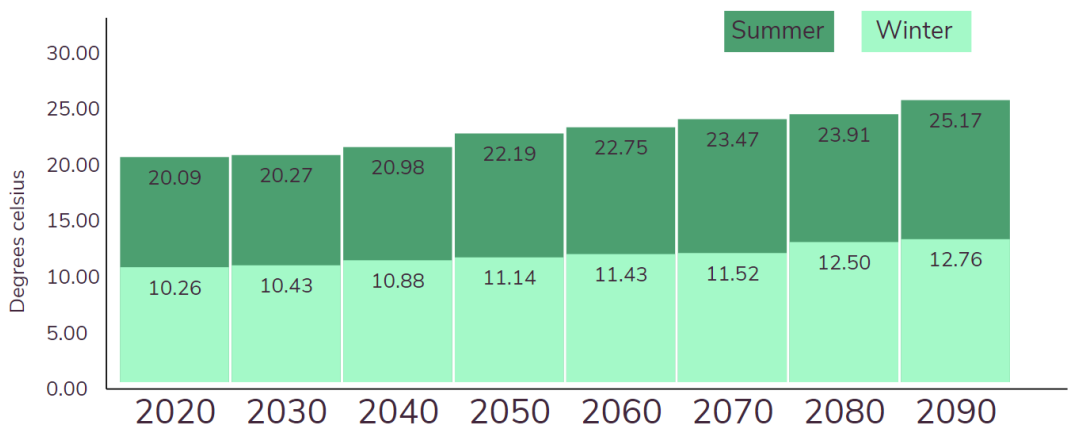
The original data for your selected areas can be [downloaded here](#) and comes from MET Office UKCP18 future climate dataset, and processed by Alexandra Gardner, James Duffy & Ilya Maclean (University of Exeter). For more info see [UKCP18 Guidance](#).

003D and North Cornwall 003C. You are viewing Seasonal averages for Mean temperature



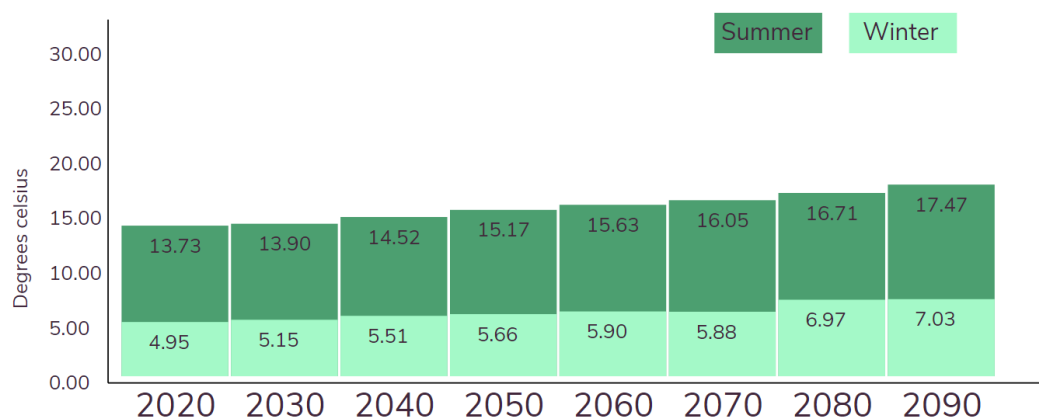
The original data for your selected areas can be downloaded here and comes from MET Office UKCP18 future climate dataset, and processed by Alexandra Gardner, James Duffy & Ilya Maclean (University of Exeter). For more info see UKCP18 Guidance.

003D and North Cornwall 003C. You are viewing Seasonal averages for Max temperature

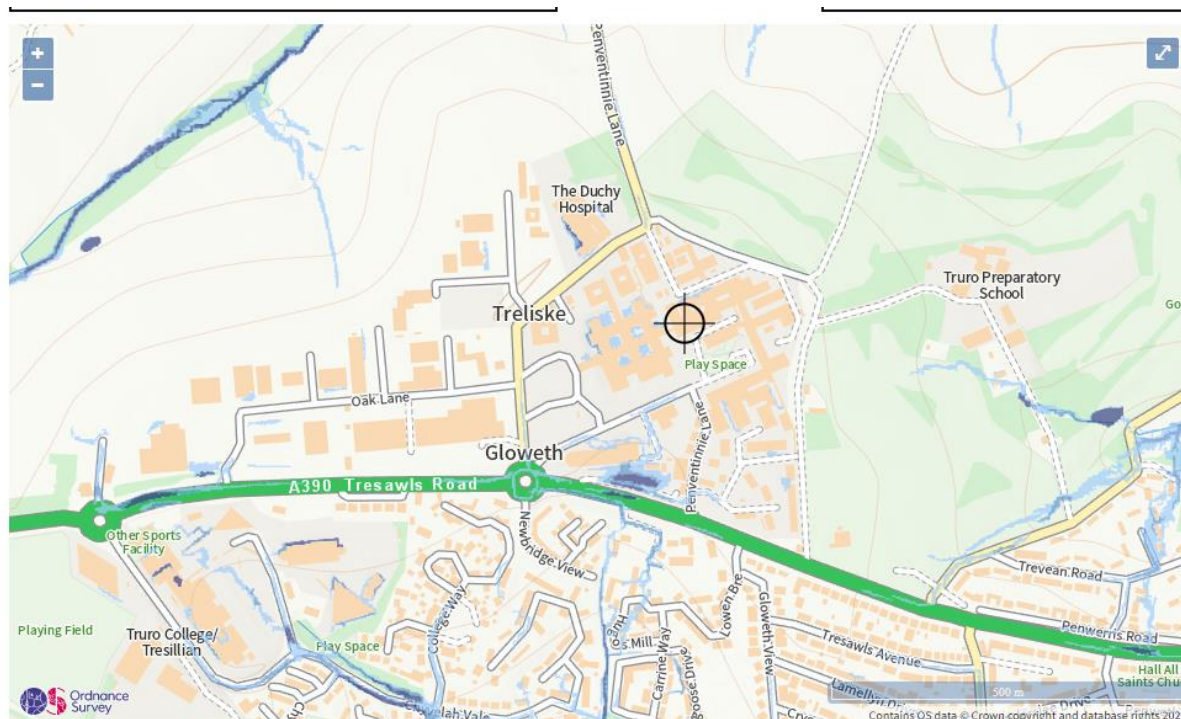


The original data for your selected areas can be downloaded here and comes from MET Office UKCP18 future climate dataset, and processed by Alexandra Gardner, James Duffy & Ilya Maclean (University of Exeter). For more info see UKCP18 Guidance.

003D and North Cornwall 003C. You are viewing Seasonal averages for Min temperature



The original data for your selected areas can be [downloaded here](#) and comes from MET Office UKCP18 future climate dataset, and processed by Alexandra Gardner, James Duffy & Ilya Maclean (University of Exeter). For more info see [UKCP18 Guidance](#).



Extent of flooding from surface water

● High
 ● Medium
 ● Low
 Very low
 ⊕ Location you selected

