Climate Adaptation Plan and Risk Assessment

Introduction

Hywel Dda University Health Board (HDdUHB) is strengthening its response to climate change by setting out our Climate Change Response and Resilience through embedding climate adaptation and nature recovery into business-as-usual planning and delivery. This approach reflects growing national expectations for the healthcare sector to prepare and adapt services for a changing climate.

Wales has set a clear direction for climate adaptation and the nature emergency. The Climate Adaptation Strategy for Wales (2024) and the Health & Social Care Climate Adaptation Toolkit (2024**),** enables accelerated action in addition to ensuring risks are measured and opportunities to adapt are sought through the Climate Change Risk Assessment - 4th edition (CCRA4) which requires every organisation to assess climate risks, define operational thresholds and monitor resilience.

This Climate Adaptation Plan brings our responsibilities and requirements together in a single, concise and coherent strategic document for HDdUHB, one that moves beyond an estate-led approach and places clinical services, patient safety and whole-system resilience at the centre of climate action.

The Health Boards Climate Adaptation Plan aims to build upon and further enhance the progress that has already been made through delivery of the Hywel Dda Decarbonisation Delivery Plan. Since 2021, the priorities and initiatives set out in the NHS Wales Strategic Delivery Plan (SDP) have been delivered across six work areas — Carbon Management, Buildings, Transport, Procurement, Estate Planning & Land Use, and Approach to Healthcare — with many actions embedded into the annual planning processes. This includes energy optimisation and renewables, fleet transition, virtual care where appropriate, lower-impact products and waste reduction, and greener clinical pathways.

Reducing emissions alone will not protect patients, staff or services from the climate impacts already being experienced; and adaptation without decarbonisation risks worsening future pressures, therefore our clinical leaders and multidisciplinary teams must actively own, shape and implement adaptation measures that affect patient care, service continuity, workforce safety and population health.

Collectively, these efforts ensure HDdUHB is not only reducing its contribution to climate change but also building a clinically-led, resilient, safe and sustainable health system. By shifting the focus from corporate-led adaptation to clinically accountable, whole-system resilience planning, the Health Board will ensure that climate risks are embedded into clinical governance, service redesign, quality improvement, population health strategies, workforce planning and everyday patient care.

Purpose of this adaptation plan

HDdUHB is committed to embedding climate adaptation across the whole organisation, with a strengthened focus on clinical and medical services where climate-related risks

most directly affect patient outcomes, service continuity and workforce resilience. While corporate functions, estates and planning processes remain essential enablers, a key driver of this plan is to ensure that all frontline clinical services and departments are equipped, supported and accountable for adapting to the impacts of a changing climate.

This plan sets out a clear direction for integrating adaptation into everyday clinical practice, quality improvement methodologies, service improvement and redesign, and governance structures. Its aim is to ensure that climate risks are recognised and managed as core determinants of patient safety, clinical effectiveness and long-term demand on health services, rather than as peripheral environmental concerns.

The plan fulfils the expectations of the Welsh Government's Climate Adaptation Strategy for Wales (2024) and meets the requirements of Welsh health Circular (WHC)/2025/005, including completion of the Climate Change Risk and Opportunity Assessment (CCROA), identification of priority risks, and establishment of robust review and assurance processes. Building on these foundations, HDdUHB will ensure that climate-related risks are integrated into service planning cycles, clinical governance, quality and service improvement frameworks, pathway redesign, and workforce planning across all clinical directorates and services.

Recognising that the greatest climate-sensitive impacts arise within patient-facing services—such as heat-related morbidity, disruption to clinical pathways, increased infectious disease risks, digital and equipment vulnerabilities, and pressure on urgent and emergency care—the Health Board will establish a multi-disciplinary Climate Adaptation Steering Group. This group will work with the Clinical Care Groups, Clinical Boards and improvement groups to embed adaptation requirements within routine service reviews, clinical audit, risk registers, and the development of new models of care.

Consistent with the advice of the UK Climate Change Committee (CCC), HDdUHB will prepare for a ≥ 2 °C warming scenario by 2050 and stress-test critical clinical services and assets against 4 °C end-century conditions. This includes assessing the resilience of Acute, Community, Primary Care and specialist services to environmental hazards and ensuring continuity of care during climate-driven system pressures. Integration with the Wales Risk and Preparedness Register (WRPR), civil contingencies frameworks and emergency preparedness structures will strengthen whole-system readiness.

Aligned to further enable the NHS Wales Decarbonisation Strategic Delivery Plan, this plan positions adaptation as a mechanism to protect clinical services—ensuring that every investment delivers both emissions reduction and increased service resilience. By shifting the centre of gravity from corporate-led adaptation to clinically owned, evidence-based resilience planning, HDdUHB aims to build a health system that remains safe, effective and sustainable in a warming climate.

Expectations for Departmental Leaders and Heads of Service:

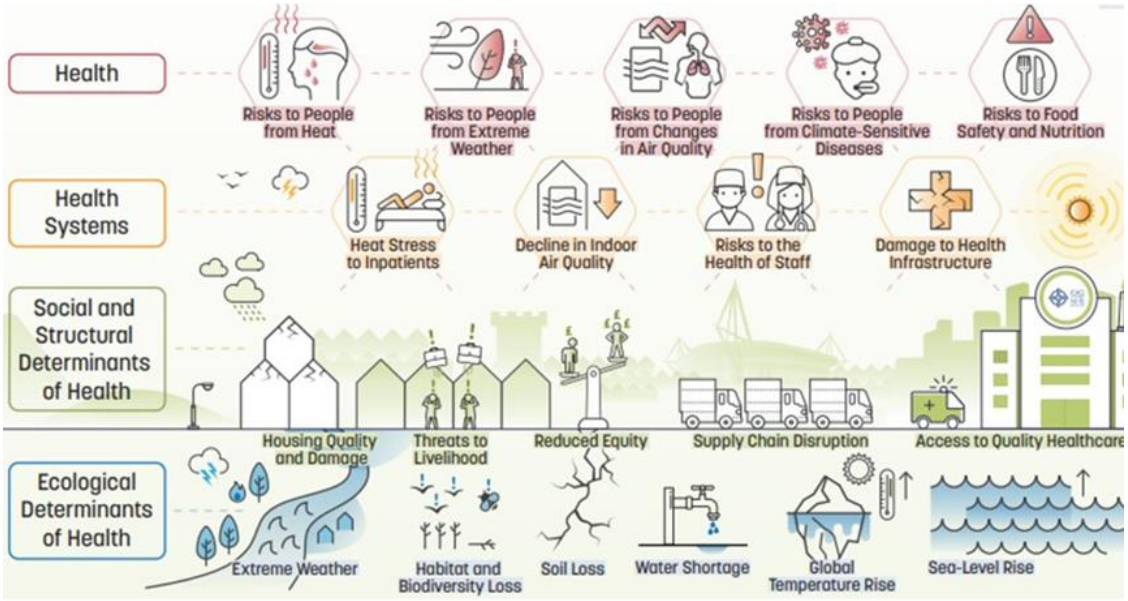
- Departmental leaders and Heads of Service must integrate climate adaptation risks and actions into annual service plans, clinical governance reviews, and pathway or service redesign and transformation programmes.

- Services and departments are expected to embed adaptation considerations into workforce planning, patient flow strategies, infection prevention, and heat- and cold-related care protocols.
- Service Leads must ensure that quality improvement projects, risk registers, and business continuity arrangements include climate-related vulnerabilities and adaptation measures.

Background

Climate change presents a growing risk to population health, healthcare delivery and organisational resilience in Wales. Rising temperatures, more frequent extreme weather events, flooding, coastal change and disruption to critical infrastructure are already affecting health outcomes and the ability of health and social care services to operate safely and effectively.

Figure 1: An overview of health risks associated with climate change and biodiversity loss and their exposure pathways (Adapted from World Health Organisation (WHO)): https://www.unescap.org/blog/why-environment-health-nexus-important-asia-and-pacific-and-how-strengthen-it

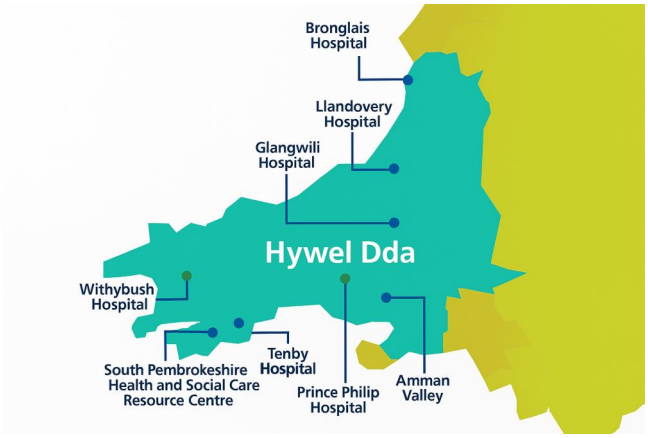


HDdUHB serves a predominantly rural and coastal population across the Counties of Ceredigion, Carmarthenshire and Pembrokeshire, with a dispersed service footprint and an ageing estate. These characteristics increase vulnerability to climate-related hazards such as heat, storms, flooding, access disruption and digital connectivity failures, particularly for people who rely on community and home-based care. Recent extreme weather events have already caused service disruption, access challenges and pressure on staff and infrastructure, demonstrating that climate impacts are no longer a future risk.

The Health Board has over 13,000 staff and together provides Primary, Community, In-Hospital, Mental Health and Learning Disabilities Services. HDdUHB works in partnership with the three Local Authorities, as well as public, private and third sector colleagues, including our valued team of volunteers.

Services are provided across four acute sites: Bronglais (BGH), Glangwili (GGH) and Withybush (WGH) Hospitals and Prince Philip Hospital (PPH), alongside community hospitals from which out-patient clinics are held with some providing in-patient beds. Each site will have their own climate risks identified and contained within the Health Board risk register.

Figure 1: Map of hospital sites of Hywel Dda University Health Board



While HDdUHB has made progress in embedding decarbonisation across estates, transport, procurement and clinical pathways, decarbonisation alone is insufficient to address the current and future impacts of climate change. Without a structured approach to adaptation, there is a risk of increased service disruption, patient safety incidents, widening inequalities and avoidable costs.

This Climate Adaptation Plan has therefore been developed to provide a coherent, organisation-wide framework for identifying, managing and reducing climate risks to patients, staff, services and assets. It sets out how climate adaptation and resilience will be embedded into annual plans, business continuity, clinical governance, service redesign, quality improvement, population health strategies, workforce planning, everyday patient care and partnership working, supporting the Health Board's statutory duties and long-term environmental sustainability.

Risk Assessment

An initial assessment of climate-related risks has been undertaken to understand the Health Board's current and emerging risks and to inform the prioritisation of adaptation actions. This assessment draws on structured engagement with key directorates, reviews of recent local incidents, national and regional climate risk evidence, and application of the Welsh Government Health and Social Care Climate Adaptation Toolkit.

Climate risk to the Health Board is determined by the interaction between exposure to climate hazards, sensitivity of services, assets and populations, and adaptive capacity. While exposure varies across sites and services, common risk themes were consistently identified across the organisation.

Current risk profile

The assessment identified that HDdUHB is already experiencing impacts associated with climate variability and extreme weather. Key current risks include:

- Overheating of clinical environments, particularly in older estate and inpatient areas, affecting patient comfort, clinical safety and staff wellbeing during warmer periods.

- Disruption to access and service continuity caused by flooding, storms, snow and high winds, affecting staff ability to reach sites, patient attendance, and timely delivery of care.

- Reliance on vulnerable infrastructure and utilities, including electricity, water and digital connectivity, where climate-related disruption can have cascading impacts on clinical systems, diagnostics and communications.

- Risks to medicines, medical equipment and sterile systems, where temperature and humidity extremes together with supply chain fragilities threaten product integrity and service reliability. Increased risks and pressures on community and home-based care, as more patients depend on power-dependent, temperature-sensitive equipment in settings that are not designed to cope with extreme weather (including the effects of national power outages).

- Greater exposure to coastal flooding and storm surge impacts, driven by sea-level rise increases risks to transport corridors, access routes, and essential services for coastal communities. From a healthcare perspective, this also impacts emergency care accessibility, staff travel, transport availability, patient transfer times, and community-based services.

- Risks to Digital connectivity from weather related power outages, causing failures affecting virtual care, digital records, diagnostics, telehealth and remote monitoring.

- Risk to West Wales' grassland, heathland and forestry areas create exposure to wildfire ignition and spread, affecting air quality, staff safety, and site accessibility, impacting respiratory health, service disruption and workforce deployment.

- Risk to water supplies and increased competition for water during hotter, drier summers, with impacts on sterilisation, dialysis, catering, sanitation and heat-management systems. Water supply dependencies are critical for clinical safety and continuity.

- Risks from rising temperatures and humidity increasing risks from mosquitoes, ticks, food-borne and water-borne pathogens.

- Risks to society from psychological distress, community trauma and long-term wellbeing impacts following climate-driven events (e.g., flooding, heatwaves).

- Risk to loss of natural buffers (wetlands, dunes, woodlands) reducing protection from flooding and heat creating disruption to food systems, agriculture and local economy.

- Climate change intensifies existing economic vulnerabilities in rural West Wales by disrupting climate-sensitive sectors such as agriculture, tourism, and rural supply chains. These shocks undermine household income, livelihoods, and community wellbeing—key determinants of population health. Fragile transport and

infrastructure systems further increase service delivery challenges and place additional pressure on already stretched health and social care services. Consistent with national wellbeing assessments, the interconnected ecological, economic, and social impacts of climate change reduce rural resilience and heighten long-term risks to population health outcomes.

These risks are compounded by the issues highlighted above together with existing organisational pressures, and workforce constraints and financial limitations.

Future risk outlook
Climate projections for Wales indicate that many of these risks will increase in frequency, intensity and duration, even under moderate warming scenarios. Hotter summers and warmer nights are expected to exacerbate overheating risks in clinical and residential care settings, while wetter winters and more intense rainfall will increase the likelihood of flooding, access disruption and infrastructure damage. Coastal changes will present longer-term risks to certain sites and transport corridors, with implications for service planning and capital investment.

In parallel, wider system pressures including increasing demand for care, workforce availability, supply-chain volatility and financial constraints are likely to amplify the impacts of climate hazards on service delivery if not proactively managed.

Risks will be reviewed on a regular basis by the Climate Adaptation Steering Group and the risk register updated as required.

Priority risk themes
The initial assessment identified a set of priority risk themes that require coordinated action across the organisation. These include:

- Population Health and Inequalities
- Functional Suitability of the Estate
- Staff And Patient Wellbeing
- Access To Services
- Inpatient, Outpatient and Community-Based Care Delivery
- Supply-Chain Resilience
- Business Continuity Under Surge Pressure
- Critical Infrastructure and Utilities
- Clinical/Medical Resilience Planning and Enhanced Responsibilities
- Medical Equipment and Sterile Systems
- Organisational Knowledge and Adaptive Capacity
- Financial Exposure.
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Many of these risks are not unique to HDdUHB and are shared across NHS Wales; however, the Health Board’s geography, service model and estate profile means that local impacts and thresholds vary, requiring site- and service-specific responses.

No	Key risk theme	Specific risk (what could happen)	Primary impacts (why it matters)	Priority mitigation actions	Lead owner	Delivery route	Measurable indicator
1	Population health and inequalities	Heat, flooding and poor air quality potentially related to wildfires disproportion-ately affect services. Risk to the local economy	Increased morbidity, mortality and demand; widening inequalities. Economic resilience in HDdUHB is tightly linked to population health outcomes	Heat-health pathways; targeted communications; PSB and LRF partnerships resilience planning	Executive Director of Public Health	Climate Adaptation Steering Group; Annual Plan; Public Health programmes; Stakeholder collaboration (LRF/PSB):	Heat-related admissions; Emergency Department (ED) respiratory attendances versus baseline
2	Functional suitability of estates & property	Overheating, flooding or water ingress makes clinical spaces unsafe	Patient safety risks; service disruption; unplanned decants	Overheating risk assessments; flood resilience; climate-ready capital design; robust power outage mitigations.	Director of Estates	Capital gateways; backlog maintenance; Refit; Climate Adaptation Steering Group	% of mitigated estate related climate risks identified in the risk assessment and climate action plan.
3	Staff & patient health and wellbeing	Heat stress, poor air quality and climate-linked infections affect staff and patients.	Reduced productivity; increased sickness absence; IPC pressures	Assessment of quality impact assessments undertaken; Staff welfare protocols; ventilation	Executive Director of Nursing, Quality and Patient Experience;	Workforce. IPC governance; Climate Adaptation Steering Group	Quality impact assessments undertaken/reviewed; Heat-related staff sickness; IPC incidents

No	Key risk theme	Specific risk (what could happen)	Primary impacts (why it matters)	Priority mitigation actions	Lead owner	Delivery route	Measurable indicator
		psychological distress, community trauma and long-term wellbeing impacts following climate-driven events		improvements; IPC adaptation planning	Director of Estates		
4	Access to sites and services	Flooding, storms or digital outages prevent access to care	Missed appointments; delayed treatment; reduced continuity	Access route mapping; digital resilience; alternative care pathways	Executive Director of Public Health; Chief Operating Officer	Business Continuity Plans (BCPs); Digital strategy; Climate Adaptation Steering Group	Hours of access disruption; digital downtime
5	Strengthening inpatient, outpatient and community-based care delivery to increase resilience to climate-related	Power, access or temperature failures disrupt home-based care	Risk to vulnerable patients; emergency admissions	Identify high-risk patients; community contingency planning	Chief Operating Officer; Executive Director of Public Health;	Community service plans; EPRR; Climate Adaptation Steering Group	% high-risk patients with contingency plans

No	Key risk theme	Specific risk (what could happen)	Primary impacts (why it matters)	Priority mitigation actions	Lead owner	Delivery route	Measurable indicator
	risks and service disruptions				Director of Estates		
6	Medicines, products & supply chains	Climate events disrupt availability and/or storage of medicines	Treatment delays; patient safety risks; cost pressures	Stock resilience standards; supplier engagement; storage monitoring	Clinical Director of Medicines Management and Pharmacy; Procurement/ NHS Wales Shared Services Partnership (NWSSP)	Procurement / NWSSP; Climate Adaptation Steering Group	% critical items meeting stock cover standard
7	Business continuity under surge pressure	Extreme weather drives demand while reducing staff availability	Service instability; increased adverse incidents	Surge planning; flexible staffing; escalation triggers Severe weather response plans	Chief Operating Officer; Executive Director of Public Health	BCPs; Annual Planning; Climate Adaptation Steering Group	Surge days exceeding capacity thresholds
8	Critical infrastructure & utilities	Power, water or digital system failure due to climate stress	Immediate risk to life-critical services	Resilience testing; backup assurance; interdependency mapping	Director of Estates / Executive Director of Public Health	EPRR; Capital and Estates planning; Climate	Generator and UPS test success rate

No	Key risk theme	Specific risk (what could happen)	Primary impacts (why it matters)	Priority mitigation actions	Lead owner	Delivery route	Measurable indicator
						Adaptation Steering Group	
9	Medical equipment & sterile systems	Temperature and humidity extremes damage equipment or sterile supplies	Equipment failure; cancelled procedures	Specification reviews; monitoring; lifecycle replacement	Director of Estates / Clinical Engineering	Equipment replacement programmes; Climate Adaptation Steering Group	% equipment within safe operating limits
10	Knowledge, data & adaptive capacity	Insufficient data, skills and thresholds limit adaptation	Reactive responses; missed prevention opportunities	Training; site-specific risk assessments; NHS Wales learning	Executive Director of Public Health; Executive Director Strategy and Planning	Workforce development; All-Wales collaboration; Climate Adaptation Steering Group	% directorates with completed climate risk assessments; % of staff per Directorate/service area undertaking relevant E-learning
11	Financial exposure & affordability	Climate impacts increase costs and undermine affordability	Budget volatility; deferred maintenance; service trade-offs	No/low-regret investment prioritisation; planning alignment	Executive Director of Finance	Annual Planning; Capital prioritisation; Climate Adaptation Steering Group	Costed adaptation actions delivered vs planned

No	Key risk theme	Specific risk (what could happen)	Primary impacts (why it matters)	Priority mitigation actions	Lead owner	Delivery route	Measurable indicator
12	Digital Connectivity	Failures affecting virtual care, digital records, diagnostics, telehealth and remote monitoring	Patient safety risks, General Data Protection Regulation (GDPR) breaches, Risk to vulnerable patients. Delayed diagnostics.	Broadband with Segmented networks to protect critical systems Upgrading aging hardware and ensuring adequate bandwidth Resilient power supplies	Director of Estates / Clinical Engineering	EPRR; Capital and Estates planning; Climate Adaptation Steering Group Power Outage Planning Group Equipment replacement programmes	% Diagnostic delivered on time. Number of unplanned outages per month. Bandwidth utilisation v capacity.
13	Risk to water supplies and increased competition for water	Impacts on sterilisation, dialysis, catering, sanitation and heat management systems	Water supply dependencies are critical for clinical safety and continuity	Strengthen Governance through Water Safety Plans; Improve Water System Resilience and Efficiency; Secure Redundant and Alternative Supplies	Director of Estates	Capital and Estates planning; Climate Adaptation Steering Group	Onsite water storage capacity (litres) versus critical service requirements Activation rate of contingency supplies

Low/No-Regret Measures, Threshold Breaches, and Residual Risks

Low/no-regret measures are actions that deliver clear benefits under current climate conditions while also strengthening resilience to future climate impacts. They require minimal additional cost or risk, and yield co-benefits such as improved service efficiency, reduced operational disruption, and enhanced staff and patient wellbeing. In line with good practice for climate adaptation planning, these measures are included within the Adaptation Plan to ensure early progress, visible impact, and momentum across the organisation. Examples may include strengthening emergency preparedness processes, improving asset maintenance regimes, enhancing heat-health awareness, or integrating climate risk considerations into routine planning and capital decision-making.

Threshold breaches

Threshold breaches refer to climate-related conditions that exceed the Health Board's ability to maintain safe, effective, and sustainable service delivery. These may involve physical thresholds (e.g. prolonged heat exceeding building design limits), operational thresholds (e.g. demand surges that exceed service capacity), or supply-chain thresholds (e.g. transport or utilities disruption beyond existing contingencies).

Identifying potential threshold breaches allows the Health Board to plan targeted interventions, prioritise high-risk assets and services, and understand where additional investment or redesign will be required.

Residual risks

Residual risks are the climate-related risks that remain after all planned adaptation actions have been implemented. These risks cannot be fully eliminated due to uncertainty, system limitations, or constraints on funding, technology, or operational capacity.

The Adaptation Plan sets out a clear process for:

- Defining residual risk at service, system, and organisational levels;
- Escalating significant residual risks via governance structures; and
- Ensuring they are incorporated into long-term planning, risk registers, and capital programmes.

Taken together, front-loading low/no-regret measures, identifying threshold breaches, and managing residual risks will provide a structured, proportionate, and evidence-based approach to strengthening HDdUHB's resilience to climate change over the short, medium, and long term.

Next Steps

Following Board approval of the Adaptation Plan, the Climate Adaptation Project Group's governance, membership, and Terms of Reference will be revised to establish a multi-disciplinary Climate Adaptation Steering Group to lead the

implementation of the action plan, regularly assess the risks and report on progress. Formal Terms of Reference, a workplan and governance, reporting arrangements will be established.

Assurance will be provided to the Strategy and Planning Committee on:

- Delivery against agreed actions (with no/low-regret measures front-loaded)
- Threshold breaches and residual risks
- Dependencies on partner-led systems (catchment/coastal, utilities, transport)

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