Queensland Climate Adaptation Strategy

Human Health and Wellbeing Climate Change Adaptation Plan for Queensland

Priority Adaptation Measures

NCCARF
National
Climate Change Adaptation
Research Facility

CLIMATE AND
HEALTH
ALLIANCE

Queensland
Government

This Sector Adaptation Plan was developed by health care, aged care and early childhood education and care stakeholders with the support of the Queensland Government. Sector Adaptation Plans are important components of the Queensland Climate Adaptation Strategy, outlining industry-led responses to the challenges presented by climate change.

Authors

Fiona Armstrong and Sue Cooke, Climate and Health Alliance (CAHA)

David Rissik and Fahim Tonmoy, National Climate Change Adaptation Research Facility (NCCARF)

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Executive Summary

The Queensland Government committed to implementing the Queensland Climate Adaptation Strategy (Q-CAS) in 2017. This Human Health and Wellbeing Climate Change Adaptation Plan (H-CAP) was developed as a component of the Q-CAS. The National Climate Change Adaptation Research Facility (NCCARF) and the Climate and Health Alliance (CAHA) worked with key stakeholders in the health and wellbeing sector in Queensland to develop the H-CAP.

The goal of the H-CAP is to support human health and wellbeing services to be innovative and resilient in managing the risks associated with a changing climate, and to harness the opportunities provided by responding to the challenges of climate change. It provides a preliminary climate change adaptation framework and guidance for stakeholders across health care, aged care, and childcare services.

This document outlines the process to develop the H-CAP and describes its scope. It provides an overview of existing policy, and outlines policy drivers and enablers, and case studies to inspire action. It also summarises the concerns of stakeholders in Queensland about the health impacts of climate change, in addition to the barriers, opportunities and pathways forward they saw for climate adaptation.

The consultation revealed concerns among stakeholders that are consistent with multiple lines of evidence: there is a policy gap in relation to addressing the health impacts of climate change.

Health and wellbeing services are faced with climate change adaptation challenges, but lack policy guidance, as well as capacity and resources to respond. The consultation revealed a strong appetite to build climate resilience in the sector to ensure service quality and continuity, and to protect the health of the community. There was a clear emphasis on the need for stakeholder engagement and for the establishment of collaborative networks to guide and support action.

To help guide efforts towards climate change adaptation among health and wellbeing services in Queensland, this H-CAP proposes 10 Priority Adaptation Measures, together with a vision and a set of guiding principles. The Priority Adaptation Measures offer high level guidance for services, policymakers and the community to prioritise and plan for climate adaptation. They include examples of possible responses at service, system and government levels, informed by stakeholders and existing best practice.

The Priority Adaptation Measures are:

1.   Leadership and governance—empowering leadership at all levels to plan and implement responsible, evidence-based, locally relevant climate change adaptation.

2.   Building the preparedness and ability of the health and wellbeing services sector and the community to respond to climate threats to health.

3.   Specific public health measures—evaluating specific vulnerabilities in the population and implementing appropriate measures to reduce avoidable morbidity and mortality.

4.   Risk management and legal liability—ensuring the operational and strategic plans of all facilities and services acknowledge and reflect the short-, medium- and long-term risks of climate change to health and wellbeing services.

5.   Research, data and evaluation—guiding policy and decision-making through well-planned research and climate-health risk surveillance to build greater understanding of risks, vulnerabilities and effective strategies.

6.   Economics and financing—ensuring that financing decisions to support climate change related programs and initiatives include assessment of all the relevant health costs and benefits associated with climate change and adaptation.

7.   Collaboration across agencies, sectors and stakeholder groups—ensuring that government agencies, peak bodies, and industry and professional associations and service providers work together to achieve climate change adaptation and sustainability goals.

8.   Education and communication—developing communication, education and training initiatives that inform and build capacity across the health and wellbeing workforce, policymakers and the wider community to respond to the health impacts of climate change.

9.   Policy, regulation and legislation—providing policy certainty for services, sectors and industries to guide decisions and investment for effective climate change adaptation.

10.   Infrastructure, technology and service delivery—investing in climate-resilient infrastructure, technology and service design to avoid delayed costs and ensure service integrity.

This H-CAP represents the start of an ongoing and iterative journey towards climate change resilience within the health and wellbeing sector. The plan will need to be developed further through effective engagement with many more participants in the health and wellbeing sector, different government departments, and the community in general. Further engagement and additional strategies will need to be incorporated over time.

The Human Health and Wellbeing Climate Change Adaptation Plan

Vision

An innovative and resilient health and wellbeing system that manages the risks and harnesses the opportunities of a changing climate.

This plan provides a roadmap to support the health and wellbeing system. It is targeted to the health care, aged care and early childhood education and care stakeholders, and all levels of government. It will enable sector participants to work collaboratively, harness opportunities to protect the health and wellbeing of present and future generations, and realise economic and social co-benefits through climate change adaptation and mitigation action.

Principles

Seven principles underpin the adaptation measures identified in this Plan. They are:

- Human health and wellbeing depends on a healthy natural environment.
- Effective adaptation requires avoiding and managing risk.
- Adaptation must be supported by mitigation to be effective.
- Collaboration with and engagement of all affected stakeholders is key.
- Adaptation must build resilience to be effective.
- Responses must be equitable, evidence-based, inclusive and responsive to change.
- Responses must recognise social vulnerability and build on existing strengths(1).

Priority Adaptation Measures

The following Priority Adaptation Measures have been developed in response to the needs and priorities identified in consultation with stakeholders, and informed by existing best practice climate change adaptation measures:

1. Leadership and governance

2. Building capacity in the sector and the community

3. Specific public health measures

4. Risk management and legal liability

5. Research, data and evaluation

6. Economics and financing

7. Collaboration across agencies, sectors and stakeholder groups

8. Education and communication

9. Policy, regulation and legislation

10. Infrastructure, technology and service delivery

The following section provides high level recommendations for each of these Priority Adaptation Measures. Some of the recommendations are cross-cutting and shared across the sectors, making them relevant across other SAPs

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1 Social vulnerability in this context means society's ability and capacity to prepare for, cope with and recover from events or impacts related to climate change. It differs between individuals, communities and varies spatially and in time.

in the Q-CAS, and should be addressed using whole-of- government and whole-of-community approaches.

Note: The specific examples given below are possible actions for different stakeholders; they are not intended to provide a thorough or exhaustive list of actions. They are intended as a guide for government, services, institutions and facilities to plan their own actions, and to be shaped by local conditions.

1.   Leadership and governance

Policy direction:
Empowering leadership at all levels to plan and implement responsible, evidence-based, locally relevant climate change adaptation.
Desired outcomes The health sector becomes a leading example of effective climate change adaptation and climate resilience. Health executives, policymakers and health professionals provide strong and visible encouragement for services, staff and the community to prioritise climate change action as both a risk and an opportunity.

Building a culture of leadership in relation to climate change adaptation and mitigation is needed. Effective leadership can empower organisational staff to plan and act.

Stakeholders at all levels can play a part in demonstrating leadership, whether it is at the service level by facilities management or clinicians, government (local and state), academia and research, or the community. Many levers for institution-wide and sector-wide change, however lie with executive leadership and policymakers. Significant actions need to be highly visible to demonstrate leadership.

Health, aged care, early childhood and other social service sector boards must work to become more familiar with their climate change risks, and create a culture of leadership throughout their organisations. Health departments and other agencies, both not-for-profit and for profit, should respond to the evidence of risk and imperatives for action, and provide advice and leadership accordingly.

Creating an environment that harnesses the 'wisdom of the crowd' can cultivate buy-in as well as lead to innovative, locally relevant solutions and strategies. To implement the H-CAP, stakeholders are encouraged to form supportive networks to collaborate and collectively develop a culture of empowerment and engagement across health, aged care and childcare services. This can support the development of a more widely shared 'best practice' approach, and help reduce barriers and challenges, especially for smaller services with less capacity to pilot and test different responses.

Some examples of strategies to demonstrate leadership and strengthen governance in relation to climate, health and wellbeing are provided below.

Table 2: Examples of strategies to demonstrate leadership and strengthen governance

Influencers	**Example strategies**
State and local government	Establishing comprehensive cross-portfolio working committees on climate change to bring perspectives from all sectors to guide adaptation actions
	Developing guidelines to embed a climate lens in all health policy decision-making (i.e. what are the implication for human health and wellbeing associated with any given strategy? What are the likely benefits / risks associated with its implementation?)
All stakeholders (local and state government, peak bodies, public and private health and wellbeing service providers)	Embedding community consultation and engagement in all strategic planning efforts
	Embedding climate change risk assessment and planning in quality frameworks, accreditation standards and key performance indicators

2.   Building capacity in the sector and the community

Policy direction:
Building the preparedness and ability of the health and wellbeing services sector and the community to respond to climate change threats to health and wellbeing.

Desired outcomes
Health and wellbeing services and their workforces understand and are well prepared to anticipate, respond to and recover from climate-related impacts. They are able to maintain service quality and continuity to best meet community needs, even during periods of surging demand.

Building the capacity of health and wellbeing services to respond and adapt to climate change is vital to ongoing service continuity and safety and quality of care. Services providing health care, child care and aged care are typically under strain in normal circumstances. Climate change places additional burdens on services, and amplifies existing health burdens for individuals and the population. Strengthening the ability of services to anticipate, prepare for and respond to climate-related disasters, extreme weather events, disease outbreaks and health crises must be prioritised across the sector. Existing international tools to manage health and hospital system risk, vulnerability and capacity assessments should be used to develop local tools and instruments and processes.

Lessons from successful capacity building for disaster and emergency management can inform climate health risk response capacity building. Wider community engagement, proactivity and resilience building is however required for long-term solutions to be effective. Supporting at-risk communities to increase their resilience to the effects of climate change can reduce near- and long-term demand on all health and wellbeing services.

Some practical steps to build capacity to respond to climate change in health and wellbeing services and community are shown in Table 3.

Table 3: Examples of strategies to build capacity in the sector and the community

Influencers	Example strategies
State and local government Healthcare and professional organisations Universities	Developing and widely disseminating guidelines, risk identification frameworks and tools to support decision-making
	Undertaking community education programs to raise awareness about climate change risks to health and wellbeing and promote behaviour change
	Undertaking workforce education and development to raise awareness about climate change risks to health and community services, and effective sector adaptation and mitigation measures
	Establishing / participating in collaborative stakeholder and service networks to share case studies and examples of successful implementation and leadership
	Undertaking scenario planning and climate hazard preparedness drills in service facilities
Public and private health and wellbeing service providers	Developing climate adaptation and mitigation plans to help future-proof all services (i.e. enhance resilience, promote preparedness, minimise climate change impacts and help manage costs)
	Encouraging and supporting innovation through stakeholder and community engagement in the development of climate adaptation plans
	Building on institutional and community strengths when developing strategies

3.   Specific public health measures

Policy direction:

Evaluating specific health and wellbeing vulnerabilities in the population to well-established risks from climate change and implementing appropriate public health measures to reduce avoidable morbidity and mortality.

Desired outcomes

People in Queensland are well informed about the risks that climate change poses to their health and are able to reduce their exposure to risk. Services are provided to those most vulnerable to reduce their exposure to risks.

A significant gap currently exists between existing knowledge and coordinated public health initiatives on climate change. A coordinated public health action strategy is vital for effective climate change adaptation plans. Examples of specific public health measures to address immediate and longer term health threats are presented in Table 4.

Table 4: Examples of specific public health measures

Influencers	Example strategies
Local and state government, in cooperation with public and private health and wellbeing service providers	Heatwaves—developing community-wide and facility-level heatwave plans; expanding the reach of heatwave warnings to vulnerable populations and groups; identifying publicly accessible facilities for respite during heatwaves; and promoting changed work practices in increasingly heat-affected locales
	Bushfires, floods, storms—undertaking education and community preparedness programs to highlight the links between climate change and extreme weather and the likelihood of increasing frequency and severity of these events
	Air quality—undertaking public education campaigns to highlight links between rising temperatures and declining air quality / aeroallergens to support health-protective behaviours and early intervention for at-risk populations; collaboration between planning and health agencies to reduce environmental triggers
	Ensuring public health measures address indirect climate change impacts on health associated, including: - potential changes in the incidence of infectious and vector-borne diseases. Community and health sector education campaigns can help minimise risks of exposure and boost surveillance and precautionary behaviour - mental health—increased support to protect and promote positive mental resilience community-wide. This would recognise the effects on social and emotional wellbeing of extreme weather events, and anxiety and concern about future climate change projections. - food-borne diseases—develop resources to communicate impacts of climate change on food-borne illness and strategies to mitigate them - water-borne disease—align health and other planning efforts to ensure continuous access to safe drinking water in climate-related disasters and slow onset changes

4.   Risk management and legal liability

Policy direction:

Ensuring the operational and strategic plans of all facilities and services acknowledge and reflect their short-, medium- and long-term risks from climate change.

Desired outcome

Health and wellbeing services ensure strategies to mitigate and manage risks from climate change are understood and addressed at every level of the organisation.

There is a significant opportunity to prioritise climate change adaptation across health care, aged care and child care through evaluation of climate risk. Very few stakeholders involved in consultation for the H-CAP reported any assessment of climate risks for their facilities, workforce or services. Recent clarification of legal liability for boards of governance and their directors highlights their fiduciary responsibility to acknowledge climate risks in their strategic and operational plans. This should prompt the evaluation of climate risk.

There is potential for climate risk assessment to be mainstreamed through service accreditation standards, key performance indicators for executives, and criteria for government funding and grants. Climate change risk should be reported at board level and should not be considered an environmental issue, but an overarching issue affecting all organisation interests and activities. The development of climate risk management frameworks should involve consultation across all levels of service provision, suppliers and clients and the community.

Where necessary, products and tools to support decision-making in the health sector should be developed to support climate risk management. One such tool is Health Impact Assessment (HIA), which recognises that human health and development are critically linked to environmental, social, cultural and economic factors. Use of HIA considers the types of health impacts that may occur, and the distribution of those impacts in any affected community. HIA is applicable to risk assessment of any new, or upgrades to existing development projects in sectors like health, transport, environment, mining and resources, agriculture, energy, waste, housing and planning. A new set of national guidelines for undertaking HIA (2017) is available from enHealth, the national body for environmental health(2).

Table 5: Examples of strategies to help address risk and legal liability issues

Influencers	Example strategies
Queensland Government (e.g. Department of Premier and Cabinet, Queensland Health) Public and private health and wellbeing service providers	Increasing understanding among executives and boards in relation to their fiduciary responsibility ('duty of care') and potential for personal liability if they fail to account for climate risks in strategic and operational plans
	Ensuring all services conduct climate change risk assessments as a core risk management strategy
	Embedding climate risk assessment and management in annual reporting, service accreditation standards, executive key performance indicators, service and grant funding requirements

2 enHealth 2017, Health Impact Assessment Guidelines, accessed 15 May 2018,

<http://www.health.gov.au/internet/main/publishing.nsf/content/A12B57E41EC9F326CA257BF 0001F9E7D/$File/Health-Impact-Assessment-Guidelines.pdf>

5.   Research, data and evaluation

Policy direction:
Guiding policy and decision-making through well-planned research and climate health risk surveillance, to build greater understanding of risks, vulnerabilities and effective strategies.

Desired outcome
Timely, relevant research supports the development of initiatives to reduce climate change related risks and promote positive community health and wellbeing.

Investment in knowledge about how climate change is challenging health and wellbeing and related services is required for both now and in the future. Decision-making needs to be guided by robust research. Research should particularly focus on building the capacity of vulnerable communities and community organisations. Further, regionally specific research is required into food-, water- and vector-borne disease transmission, and the mechanisms by which climate change interacts with other drivers. These other drivers include current trends in health and disease management, urbanisation, international travel, population growth and migration, water supply, and food production and distribution.

Other critical research priorities include greater understanding of ways to:

- build individual, family and community resilience, and increase community cohesion to plan, prepare for and respond to extreme climate events and impacts
- protect mental health and wellbeing in the face of uncertainties and traumatic events.

Monitoring, evaluation and reporting of all research projects must be properly resourced to ensure that initiatives are achieving desired outcomes, and that changes are made to programs and activities when outcomes are not being achieved. Monitoring over long time periods with robust indicators can help governments and services understand climate change risk and vulnerability and region-specific adaptation challenges, and track how communities and organisations are responding.

Development of indicators should also align other jurisdictions, locally, nationally and internationally, wherever possible. Such an approach would ensure interjurisdictional comparability, and facilitate Australia's annual reporting in this global program. It would also enable benchmarking of Queensland's efforts and effectiveness against those of others regionally and internationally.

One such monitoring tool is the *Lancet Countdown: Tracking Progress on Health and Climate Change*. It has developed 40 indicators across five thematic indicator groups covering:

- health impacts of climate change
- health resilience and adaptation
- health co-benefits of mitigation
- finance and economics associated with health and climate change
- political and broader engagement

Table 6: Examples of research projects to support adaptation to climate change in Queensland

Influencers	Example strategies
Research institutions State and Australian governments (including Treasury departments)	Assessing and forecasting climate health impacts across the state, and of vulnerable population groups
	Undertaking ongoing evaluation of community attitudes and knowledge (including psychological wellbeing) in relation to climate change
	Assessing the health-related economic benefits from pro-health climate mitigation and adaptation strategies
	Assessing the health sector's contribution to greenhouse gas emissions

6. Economics and financing

Policy direction:

Ensuring that financing decisions to support climate change programs and initiatives include assessment of all relevant health costs and benefits.

Desired outcome:

Health and wellbeing services have sufficient funding to manage climate change risks and realise savings from climate adaptation and mitigation programs.

Limited access to appropriate financing to support climate change adaptation was identified as a barrier by all stakeholders.

Building a business case for adaptation action through cost-benefit modelling would help services prioritise available funding and secure adaptation financing. A pathways approach (funding for sequenced adaptation activities) is recommended to build capacity and resilience. Evaluation of both the health costs of projected climate impacts, as well as savings from health co-benefits can help build the case to persuade decision-makers and justify investment.

Greater awareness of the financial and legal drivers should assist decisions regarding the allocation of funds to address adaptation and climate risk management at whole-of-government and Department of Treasury levels, and within the sector. Consideration should be given to public–private partnerships, redirection of subsidies that support activities harmful to health and climate stability, and application of levies or taxes on external drivers (e.g. 'the polluter pays' principle for the health and environmental costs of activities which traditionally have not been accounted for).

Table 7: Examples of economic and financing initiatives

Influencers	Example Strategies
State government	Allocating funds to support development of climate adaptation and climate mitigation plans
	Assessing the current and future economic costs of health impacts from climate change, and economic savings from health co-benefits of climate adaptation and mitigation measures
Public and private health and wellbeing service providers	Exploring opportunities for private funding for social and ecosystem resilience, for example through impact investing and philanthropy

7. Collaboration across agencies, sectors and stakeholder groups

Policy direction:

Ensuring that Government agencies, peak bodies, and industry and professional associations work together to achieve climate change adaptation and sustainability goals across service provider groups.

Desired outcome:

Collaboration across agencies, sectors and stakeholder groups to share information, guidance and good practice. This makes the most of scarce resources and results in innovative, effective and locally relevant responses for health and wellbeing services.

The health and wellbeing community crosses a range of different sectors. To reduce pressures on the system and increase the resilience of vulnerable groups, there is a need for the many stakeholder groups in the system to collaborate, share information and guidance, and make the most of scarce resources.

Climate risk can be effectively addressed with a bottom-up and a top-down approach, provided there is clarity of purpose and shared awareness of the challenges. Processes to identify gaps, and systems to monitor, review progress and ensure lessons learned are used to develop agility to respond to changing circumstances are also

required.

Funders and regulators should embed health impact and climate change risk assessment and planning in quality frameworks and accreditation standards. Peak bodies, and industry and professional associations should work together to support their members achieve climate change adaptation and sustainability goals. This might include, for example, practitioner learning networks, resourcing professional development and sharing practical resource materials.

For hospitals, health and aged care services, the Global Green and Healthy Hospitals (GGHH) network is an opportunity for collaboration with others locally and globally to share information and ideas, access tools and resources, and learn from one another.

Table 8: Examples of initiatives to improve collaboration across agencies, sectors and stakeholder groups

Influencers	Example strategies
State government Health and wellbeing services Peak bodies Professional organisations	Establishing collaborative cross-sectoral groups in different regions throughout Queensland to support climate change and adaptation knowledge sharing and collaboration
	Encouraging participation in existing platforms such as the GGHH network
	Developing outreach material to support better knowledge and understanding of cross-sectoral issues and opportunities

8.   Education and communication

Policy direction:

Developing communication, education and training initiatives that inform and build capacity across the health and wellbeing workforce, policymakers and the wider community to respond to the health impacts of climate change.

Desired outcomes:

The health and wellbeing workforce is well educated about, and can confidently respond to, the health risks of climate change.

The Queensland community, including socially vulnerable individuals and groups, is well informed and empowered to participate actively in climate change adaptation planning and responses locally and regionally.

A key cross-cutting factor in effective climate adaptation is the application of accurate, appropriate and relevant information for decision-making. Staff across the sector need to be made aware of the health impacts of climate change and its risks to service provision and quality of care. Equally important is access to knowledge and guidance about robust, evidence-based and solutions-focused climate adaptation and mitigation options.

Targeted communication and deliberative engagement is needed to overcome issues of psychological distancing, motivation and differences in available information. This targeted communication should be informed by psychological and sociological research and climate change communication science. Inclusive approaches to risk assessment and planning at local community and service levels can also strengthen and empower communities, services and individuals and help reduce feelings of helplessness.

As a highly trusted source of credible information, the health and medical community can advance community understanding of climate change and its health impacts, and the message that climate solutions are a health priority and will provide health benefits. Professional health and medical organisations are increasingly advocating for policy on climate change. Increasing their profile and capacity to contribute to public dialogue would help build understanding and support for adaptation in the community.

The inclusion of climate change content, including climate change risk management, in all curricula for health and wellbeing practitioners is vital for workforce development—from undergraduate to postgraduate and continuing professional education. Well-designed (and social science research-informed) social marketing efforts can help address what is understood to be a significant knowledge gap among health and wellbeing practitioners, health service executives, policymakers and the wider community.

Public education and communication must also focus on disadvantaged groups who are most at risk from climate-related pressures. These groups are less likely to access information through conventional channels. Educational and communication efforts need to support such groups to understand, prioritise and respond to increasing volumes of complex information. Some suggested interventions are listed below.

Table 9: Examples of initiatives to improve education and communication

Influencers	Example strategies
State government	Compiling and promoting climate change related health adaptation materials on departmental and institutional websites
Local and state government Health and wellbeing services	Using social media as a tool to swiftly engage large audiences to promote information and alerts related to climate adaptation
	Working with communities and stakeholders to identify information gaps and developing tailored resources to address them
	Developing approaches to engage the entire community about these issues
	Recognising that vulnerable communities are dynamic, and that as an aging population in changing climatic conditions, many people who are not at risk now will be in the future
Academic and educational institutions Accrediting bodies	Developing curricula for the health, aged care and childcare workforces at all levels (undergraduate, postgraduate and professional development) about health impacts of climate change, effective adaptation and mitigation strategies, at-risk communities, and how to talk about climate risks with patients, clients and the public

9.   Policy, regulation and legislation

Policy direction:

Providing policy certainty for services, sectors and industries to guide decisions and investment for climate change adaptation.

Desired outcome:

Appropriate and evidence-based policy, regulation and legislation provide a predictable environment to support decision-making by public and private health and wellbeing service providers.

There is a clear need for policy guidance to help public and private sector organisations to adapt effectively to climate change. Policy, regulation and legislation can together ensure responses are timely, appropriate and evidence-based. Targeted policy would also help to reduce inequity, by ensuring those that are at socioeconomic, geographical and cultural disadvantage receive the investment necessary for effective adaptation.

Supportive policy from state and Australian governments is critical to provide clear direction for both public and private service providers. A comprehensive policy framework on climate mitigation and adaptation for health and wellbeing services should be developed in close consultation with the sector and the broader community as a follow on from this high level adaptation plan. Local and state governments should jointly advocate for a national policy on climate change and human health, and collaborate to develop a coordinated response.

Existing quality standards and accreditation in health, aged care and early childhood service should be reviewed to ensure appropriate climate risk management criteria are included. Implementation must be supported with training and professional development, tools, and human and financial resources.

Inevitability services will need to adopt low carbon operations. The Queensland Government should establish a dedicated unit to guide and support services to reduce their carbon and environmental footprint.

Some examples of policy initiatives are shown in Table 10.

Table 10: Examples of policy, regulation and legislation initiatives to support adaptation

Influencers	Example strategies
State government Public and private service providers	Establishing standards for the implementation and monitoring of climate change adaptation for the health and wellbeing sector
	Providing practical support for initiatives to reduce energy and waste in service delivery and the supply chain (e.g. baseline audits, targets to reduce waste, energy, water, resource consumption and pollution)
	Collaborating with industry manufacturers to supply carbon neutral products
Local government	Preventing development in areas which place communities or community services at risk
	Providing guidance and practical support to help community support organisations undertake risk assessment and adaptation planning
Health and wellbeing service providers	Exploring initiatives that provide energy and water security (e.g. solar power and rainwater tanks)
	Providing amenities to encourage low carbon transport options
	Joining supportive organisations and networks and exploring evidence- and practice-based options (e.g. GGHH network)

10. Infrastructure, technology and service delivery

Policy direction:

Investing in climate-resilient infrastructure, technology and service delivery to avoid future costs and ensure service integrity.

Desired outcome:

Health and wellbeing services are able to withstand climate change related shocks and stresses, and ensure the community has access to affordable, high-quality care.

Improved designs for low carbon infrastructure and technology are increasingly available to support climate adaptation and mitigation, and reduce operational and service costs. Given that the determinants of health occur largely outside the healthcare sector, prioritising climate adaptation measures through decisions around the design of buildings, transport, infrastructure, energy and urban areas will help reduce climate impacts on health.

Rapid improvements and cost reductions in smart technologies provide opportunities to improve service delivery, and manage and respond to climate risks. As well as advances in telemedicine, 'hospital in the home', and other primary and community-based approaches, the smart building and smart city concepts have much to offer changing models of acute care and the management of chronic conditions, and should be further investigated and developed.

Some examples of actions that could be taken in relation to infrastructure, technology and service delivery are outlined below.

Table 11: Examples of infrastructure, technology and service design to support adaptation

Influencers	Example strategies
State government Public and private service providers Facilities and asset management professionals	Retrofitting service infrastructure such as hospital, emergency, aged care and early childhood centres to improve climate resilience, enhance energy and water security, and improve capacity to continue providing essential and emergency services(3)
	Investing in communications technologies that can withstand climate shocks and stresses to support service coordination during disasters and reduce vulnerability of isolated or remote communities
	Changing models of care to reduce exposure and build community and sector resilience to climate change threats (e.g. shifting from a reliance on centralised facilities, adopting 'hospital in the home' approaches and localised service provision, and using information communications technologies to provide guidance)

3 WHO 2015, Hospital Safety Index Guide for Evaluators, accessed 15 May 2018,

<http://www.who.int/hac/techguidance/hospital_safety_index_evaluators.pdf?ua=1>

Glossary

CAHA	Climate And Health Alliance
CO2 or CO2 equivalent	Carbon dioxide or concentrations of other greenhouse gases expressed as carbon dioxide (e.g. equivalents)
DES	Department of Environment and Science
GGHH	Global Green and Healthy Hospitals network
H-CAP	Human Health and Wellbeing Climate Change Adaptation Plan for Queensland
kWh	Kilowatt hour (a unit of energy)
NCCARF	National Climate Change Adaptation Research Facility
QCOSS	Queensland Council of Social Services
QH	Queensland Health
Adaptation	In the context of human dimensions of global change usually refers to a process, action or outcome in a system (household, community, group, sector, region, country) for the system to better cope with, manage or adjust to some changing condition, stress, hazard, risk or opportunity (Smit and Wandel 2006, p. 282)
Adaptive capacity	'The ability of a system to adjust to climate change (including climate variability and extremes), to moderate potential damages, to take advantage of opportunities, or to cope with the consequences' (IPCC 2007, p. 869)
Adaptive capacity (psychological)	Having the ability and resources (psychological, social, community, economic, etc.) to adjust to, adapt to and cope with the impacts of climate change (APA 2009)
Climate	The average weather over a period of months to thousands or millions of years
Climate change	Any significant change in the measures of climate lasting for several decades or longer, including changes in temperature, precipitation or wind patterns. Historically, the Earth's climate has changed over time, but there is strong scientific consensus that the recent observed changes, over the past 50 years or so, have been primarily caused by human activities.
Climate legal risk	Climate legal risk is the risk of exposure to legal action that accompanies a decision that relates to climate change impacts. It encompasses the elements of factual and legal uncertainty, and specifically concerns the risk arising from legal duties and obligations as they relate to the impacts of climate change.
Climate risk	The potential for adverse consequences on lives, livelihoods, health, ecosystems and species, economic, social and cultural assets, services (including environmental services) and infrastructure.

Co-benefits	When additional benefits accrue beyond the single objective of a policy or measure
Disaster resilience	The capacity to prevent, mitigate, prepare for, respond to and recover from the impacts of disasters
Fiduciary risk	The risk that people with fiduciary responsibilities (e.g. a board) do not perform their duties or achieve the best value with relation to the beneficiary's interests
Hazard	In the context of climate change, any potential occurrence of a natural or human-induced physical event that may cause damage to property, infrastructure, livelihoods, service provision, environmental resources, etc.
Health Impact Assessment (HIA)	A combination of procedures or methods by which a policy, program or project may be judged as to the effects it may have on the health of a population
Health and wellbeing	A 'state of complete physical, mental, and social wellbeing, and not merely the absence of disease or infirmity' (World Health Organisation 1948)
	'The extent to which an individual or group is able to realize aspirations and satisfy needs, and to change or cope with the environment. Health is a resource for everyday life, not the objective of living; it is a positive concept, emphasizing social and personal resources, as well as physical capacities' (Ottawa Charter for Health Promotion 1986)
	Wellbeing is generally seen as a broader concept. For example, QCOSS has a wellbeing framework for individuals and families (domains: safe, healthy, strong personal relationships, community connections, adequate standard of living, achieving in life, secure for the future), which is nested within community (domains: healthy, safe and democratic, dynamic and resilient, sustainable, culturally rich and vibrant, democratic and engaged). The Queensland Mental Health Commission uses a Wheel of Wellbeing model (https://www.wheelofwellbeing.org/) characterised by the domains mind, body, spirit, people, place and planet (https://www.qmhc.qld.gov.au/media-events/news/wheel-of-wellbeing-rolls-on).
Health and wellbeing 'sector'	This term (for the purposes of this document) arises from the Q-CAS, and refers to services related to human health and wellbeing, and includes hospitals, health services, primary healthcare services, as well as aged care and early childhood services.
Heatwave	Three or more days of unusually high maximum and minimum temperatures in any area
Maladaptation	An action that leads to an increased risk from climate change
Mitigation	For climate change mitigation, actions taken globally, nationally and individually to limit changes in global climate caused by human activities. Mitigation activities are designed to reduce greenhouse emissions or increase the amount of greenhouse gases removed from the atmosphere.
No-regrets options	Adaptation options which, if implemented immediately, will address current climatic pressures and extremes, as well as influencing longer term pressures. If pursued now, they will move toward climate-resilient pathways, while at the same time helping to improve livelihoods, health, social and economic wellbeing, and responsible environmental management.
Psychological adaptation	In the context of climate change, those within-individual adjustments and changes in risk perception, threat appraisal, and associated cognitive, emotional and motivational responses to the threat and perceived physical

	environmental impacts of climate change, as well as to altered behavioural responses and engagements associated with such changed thinking, feeling and motivational responses. Psychological adaptation also refers to those underlying psychological processes mediating and moderating such individual change (e.g. emotion management, self- perception, self-efficacy, protection motivation, coping strategies), as well as to the achieved state of relative balance with respect to own needs and environmental pressure or threat. Psychological adaptation in the context of climate change can also encompass community and societal changes in how the phenomenon and threat of climate change is perceived, understood and responded to in terms of shared understandings and collective behaviour change and adjustment.
Resilience	The capacity of social, economic and environmental systems to cope with a hazardous event, trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure, while also maintaining the capacity for adaptation, learning and transformation
Risk assessment	A systematic process of evaluating the potential risks that may be involved in a projected activity or undertaking
Social capital	Links, shared values and understandings in society that enable individuals and groups to trust each other and so work together
Social vulnerability	Differing levels of access to resources to prepare for, cope with and recover from disasters and climate change. It is influenced by factors such as poverty and inequality, marginalisation, education, food security and diet, access to insurance, transport options, community and family networks, gender, race, socio-economic status, age and language, geography and housing quality. While low-income families and disadvantaged communities contribute the least to climate change, they are most at risk of being impacted by climate change and climactic events, and are least able to respond effectively.
Vulnerability	The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a result of the type, magnitude and rate of climate variation to which a system is exposed, its sensitivity and its ability to adapt

Climate Change